CITY OF NEWPORT BEACH

PUBLIC WORKS DEPARTMENT
David A. Webb, Public Works Director

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Subject: Draft Area of Special Biological Significance (ASBS) Compliance Plan, as required by State Water Resources Control Board Resolution 2012-0012

Mr. Berchtold:

The City of Newport Beach (City), and on behalf of the Pelican Point Homeowners Association, respectively submit the *Draft Compliance Plan, Newport Beach Areas of Special Biological Significance* as required by Section I.A.3.b of the State Water Resources Control Board (SWRCB) Resolution 2012-0012 (General Exception).

This companion compliance plan shall be integrated into the City's ongoing Local Implementation Plan (LIP) as part of the NPDES MS4 permit and Drainage Area Management Plan (DAMP), inclusive of the compliance schedule timeline as required by the SWRCB's Resolution 2012-0031.

It is our understanding that this Draft will be revised to Final on or before September 20, 2015 to allow for both regulatory review and comment, and evaluation of pending final results for constituent thresholds protective of natural water quality. These thresholds, as determined per Bight '13 regional monitoring efforts to support the General Exception, shall provide the basis for targeting the development of effective BMP design and implementation required to maintain natural water quality.

The City of Newport Beach takes pride in the success of our ongoing structural BMP implementation and public outreach under our LIP and DAMP to enhance overall water quality. We look forward to working with both the Regional and State Boards to integrate this plan into our programmatic efforts to maintain beneficial uses of the State's ocean waters.

If you have any questions please contact Bob Stein at (949) 644-3322 or rstein@newportbeachca.gov

Sincerely,

David A. Webb
Director of Public Works, City of Newport Beach

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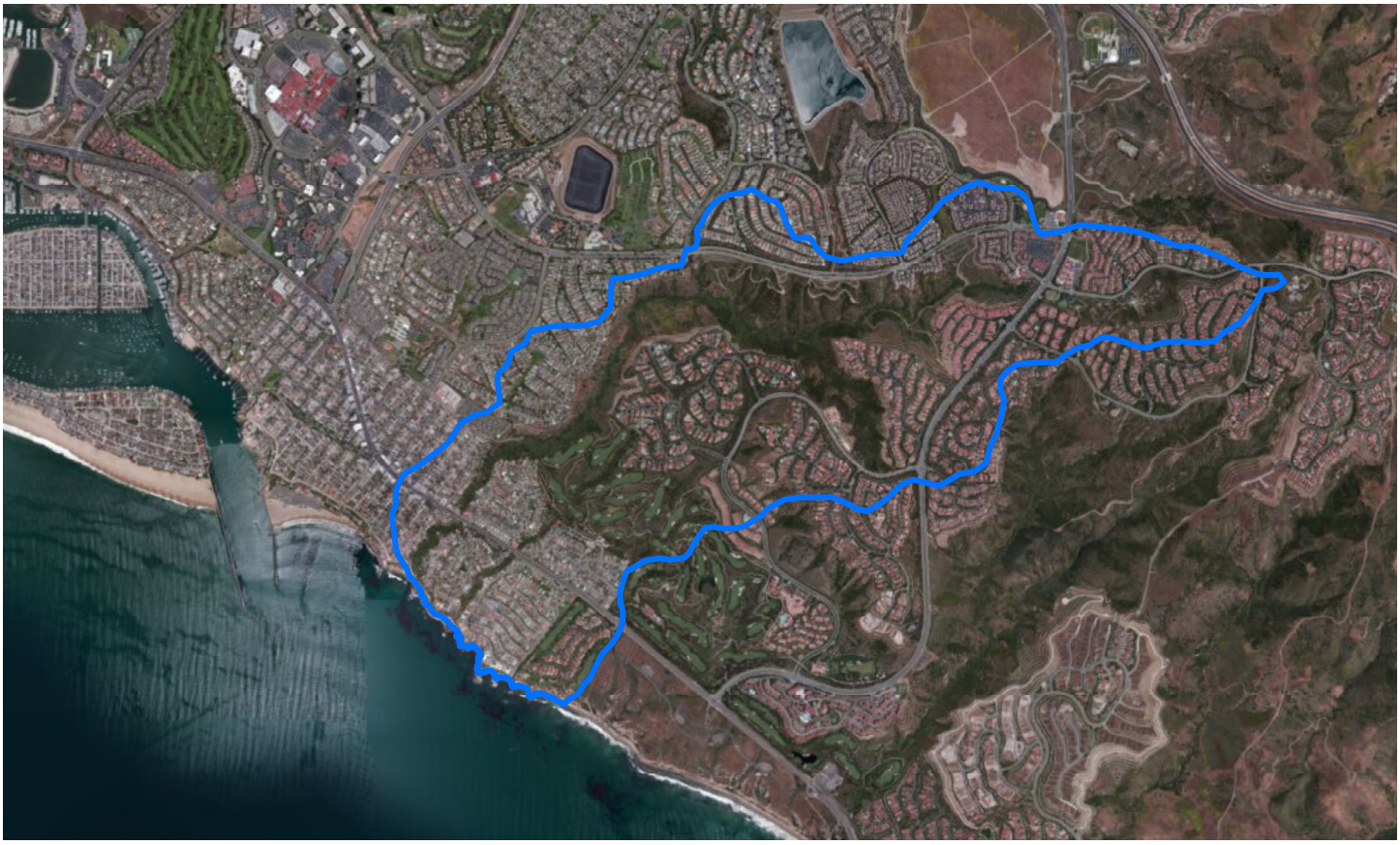
NEWPORT BEACH AREAS OF SPECIAL BIOLOGICAL SIGNIFICANCE

Draft Compliance Plan

Submitted to:
Santa Ana Regional Water Quality Control Board

September 2014



NEWPORT BEACH AREAS OF SPECIAL BIOLOGICAL SIGNIFICANCE

Draft Compliance Plan

Submitted to:
Santa Ana Regional Water Quality Control Board

Submitted by:
City of Newport Beach

Prepared by:
Environmental Science Associates
San Diego, California

and

AMEC Environment & Infrastructure, Inc.
San Diego, California

September 2014

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Acronyms and Abbreviations

ASBS	area of special biological significance
ASBS 32	Robert E. Badham ASBS, also referred to as Newport Coast ASBS
ASBS 33	Irvine Coast ASBS
Bight '08	*Southern California Bight 2008 Regional Monitoring Survey* (SCCWRP, 2008)
Bight '13	*Southern California Bight 2013 Regional Monitoring Survey* (SCCWRP, 2013)
BMP	best management practice
City	City of Newport Beach
FY	(City) fiscal year
DAMP	drainage area management plan
General Exception	Resolution Number 2012-0012 (SWRCB, 2012b), a general exception to the Ocean Plan
HOA	Homeowners' Association
IC	illicit connection
ID	illicit discharge
LID	low-impact development
LIP	local implementation plan
MS4	municipal separate storm sewer system
NPDES	National Pollutant Discharge Elimination System
Current NPDES MS4 Permit	Order Number RB8-2009-0030, amended by R8-2010-0062 (SARWQCB, 2010)
Proposed NPDES MS4 Permit	Order Number R9-2013-0001 (SARWQCB, 2014)
Ocean Plan	Water Quality Control Plan for Ocean Waters of California (SWRCB, 2012e)
PFEIR	Program Final Environmental Impact Report (PFEIR) (SWRCB, 2012a)
RWQCB	(California) Regional Water Quality Control Board
SARWQCB	(California) Santa Ana Regional Water Quality Control Board
SDRWQCB	(California) San Diego Regional Water Quality Control Board
SWMP	stormwater management plan
SWPPP	stormwater pollution prevention plan
SWRCB	(California) State Water Resources Control Board
TSS	total suspended solids
USEPA	U.S. Environmental Protection Agency
Watershed	Newport Coast Watershed
WLA	Waste Load Allocation
WQO	water quality objective

SECTION 1
Introduction and Background

This compliance plan applies to direct stormwater discharges within the jurisdiction of the City of Newport Beach (City) to the Newport Coast (referred to as Robert E. Badham) and Irvine Coast Areas of Special Biological Significance (ASBS 32 and ASBS 33, respectively). Specifically, the plan describes the City's proactive approach to complying with the requirements of Resolution Number 2012-0012[1] of the State Water Resources Control Board (SWRCB), *Approving Exceptions to the California Ocean Plan for Selected Discharges into Areas of Special Biological Significance, Including Special Protections for Beneficial Uses, and Certifying a Program Environmental Impact Report* (2012b) (General Exception). The City is included in the General Exception for discharges into ASBS 32 and, on behalf of the Pelican Point Homeowners' Association (HOA), for discharges into ASBS 33. The City has an agreement with the Pelican Point HOA to incorporate the HOA into the City's approach to address requirements of the General Exception for ASBS 33.

Since 2005, the City has taken proactive steps to preserve and restore the ASBS through a comprehensive program to address the SWRCB Storm Water Discharge Exception process (currently regulated under the General Exception), and common recognition of the need to protect and preserve these vital marine natural resources. This comprehensive program was initiated with an investigation of the coastal canyon creeks and adjacent receiving water (ocean) quality under dry and wet weather conditions along both ASBS 32 and 33. Based on the findings of this water quality and flow assessment, the City developed nonstructural and structural best management practices (BMPs) to address sources of constituents that may impact the ASBS. The nonstructural and structural BMPs implemented to protect and restore the ASBS are presented in this compliance plan (Sections 4 and 5).

Continuing scientific investigations and monitoring of dry weather and wet weather conditions, toxicity testing of marine species, mussel bioaccumulation, the impact of public use, including trampling and scavenging in the rocky intertidal areas, and relative migration of constituents from Newport Harbor (cross-contamination) have been used to evaluate the effectiveness of implemented management measures in meeting the conditions of the General Exception (pollutant and impact reduction goals), and further characterize sources of potential impacts to the ASBS. From these additional studies and the effectiveness assessment of implemented management measures, the City has continued to developed and implement the ASBS Protection and Restoration Program, which was first defined in the response to the SWRCB request for Stormwater Exemption letter. The City developed an ASBS Protection and Restoration Plan

[1] Resolution 2012-0012 was subsequently revised under Resolution 2012-0031 (SWRCB, 2012c). The only change was a correction of the compliance timeframe, from four years to six years.

(Weston, 2006) and then updated it in the Newport Coast Watershed Management Plan (Weston, 2007) and incorporated it into the Integrated Coastal Watershed Management Plan (City, 2007).

The City has used an adaptive management approach to implement the ASBS Protection and Restoration Program. This is an interactive process that includes investigation/planning, implementation and assessment/re-assessment. The City, through its proactive approach, has already completed several cycles of this interactive process, first by identifying priority water quality issues, implementing management measures, and then further assessing sources of potential impacts to the ASBS along with the effectiveness of implemented measures. This approach has focused resources to higher priority impacts that include measurable impacts to the rocky inter-tidal marine resources from trampling and scavenging activities. The potential impacts from sediment and metals loading from the coastal canyon creeks have also been addressed with structural management measures in both Buck Gully and Morning Canyon. The City also focused resources to address non-storm flows to the ASBS through a comprehensive runoff reduction program as well as the implementation of structural BMPs, which are described in Section 4.

Using this adaptive management approach to the ASBS Protection and Restoration Program, the City has conducted multiple studies to identify impacted receiving waters and produce environmental quality information to direct management activities, including prioritization of potential impacts to the ASBS to support the development of specific controls to address these constituents. The City's implementation of nonstructural and structural BMPs is based on findings from numerous years of studies and prioritized in accordance with regional and local watershed plans and conformance with the General Exception requirement to protect natural water quality. Based on the preliminary results of the Bight '13 monitoring and analysis program, additional measures are planned pending further detailed analysis of the final results, comparisons of these results to historical data and re-evaluation and re-prioritization of planned structural and non-structural management measures. The City's implementation of BMPs is in accordance with the schedule required in the General Exception (discussed in Section 6.1). The City plans to continue to maintain and implement existing BMPs (Section 4), implement planned new structural and other BMPs as required (Section 5), and continue monitoring in the ASBS per the General Exception.

The following sections describe the regulatory framework for this ASBS compliance plan.

1.1 Stormwater Regulation

The Clean Water Act (CWA), which was adopted in 1972, prohibits point sources of discharges, such as storm water, into waters of the United States unless the discharge complies with the National Pollutant Discharge Elimination System (NPDES) program. The U.S. Environmental Protection Agency (USEPA) authorizes the SWRCB to administer the NPDES program under CWA Section 402. Similarly, the SWRCB authorizes the Regional Water Quality Control Boards (RWQCBs) to issue NPDES permits for storm water discharges.

Storm water runoff is commonly transported through a municipal separate storm sewer system (MS4). These drainage systems typically discharge water (and any potential pollutants) directly into streams, bays, and/or an ocean. Currently the City's discharges are regulated under the Santa Ana RWQCB (SARWQCB) Municipal NDPES Storm Water Permit (Order Number R8-2009-0030, as amended by R8-2010-0062). However, the SARWQCB has developed a Proposed Orange County Municipal NDPES Storm Water Permit (Draft Order No. R8-2014-0002) (SARWQCB, 2014) which becomes effective 50 days after the date of its adoption. Based on Section I.A.2.d of the General Exception, this compliance plan is subject to approval from the Executive Director of the SARWQCB. Where there are conflicts between the NPDES MS4 Permit and the General Exception, the most protective requirements, as determined by the Executive Officer, shall prevail (SARWQCB, 2014).

The new NPDES MS4 Permit requires the City to develop a Drainage Area Management Plan (DAMP), which is the Permittees' primary policy, planning, and implementation document for municipal NPDES Storm Water Permit compliance. The DAMP requires the City to conduct multiple activities, including:

- Prohibit unpermitted discharges into the MS4.
- Detect and eliminate all non-storm water discharges to the MS4, except as specifically and legally exempted.
- Identify major outfalls and pollutant loadings.
- Monitor discharges and impacts on receiving waters.
- Provide pertinent education about and promote public pollution prevention and reporting of pollution.
- Require appropriate site design, source control and treatment control BMPs from new development and significant redevelopment to address specific water quality issues.
- Improve existing municipal pollution prevention and BMPs to further reduce the amount of pollutants entering the storm drain system, and achieve the Waste Load Allocations (WLAs) required by TMDLs, as applicable.
- Inspect industrial, commercial, and construction activities and ensure discharges are addressed.
- Assess ASBS watersheds and manage urban runoff on a watershed basis.
- Develop a local implementation plan (LIP), specific to each Permittee.

The SARWQCBs recognize the importance of integrated watershed management initiatives and regional planning and coordination related to water quality protection. The DAMP is designed to address impacts on water quality and the environment on a regional watershed basis. Each Permittee is also required to outline management measures specific to their jurisdiction in an LIP. The City utilizes data collected through various programs and summarized in integrated watershed management plans to guide the decision process for design and selection of management measures.

These watershed planning documents began with the response to the SWRCB request for response to the Stormwater Exemption letter that included the framework for the ASBS Protection and Restoration Program. The ASBS Protection and Restoration Plan (Weston, 2006) was prepared in response to the request from SWRCB for storm water discharge prohibition exemption to the Ocean Plan dated August 18, 2005. Based on the results of the Coastal Canyon Watersheds Water Quality and Flow Assessment (Weston, 2006), the Newport Coast Watershed Management Plan (Weston, 2007) was developed that included the planning and implementation elements of the ASBS Protection and Restoration Plan.

The Newport Coast Watershed Management Plan was developed to serve as a planning document for the integration and prioritization of management measures in the coastal canyon creek watersheds that include those that drain to the ASBS. This plan was then incorporated into the Integrated Coastal Watershed Management Plan (City, 2007) that expanded the goals of the watershed management measures to include greater integration with regional natural resource protection plans and regional watershed plans.

The recommended measures in the Newport Coast Watershed Management Plan were developed through investigations and studies of the relative impacts from storm water discharges as well as from public access and inputs from adjacent larger flows, such as the discharge from Lower Newport Bay. High-priority BMPs recommended by the ASBS Protection and Restoration Program framework (Weston, 2006) and the Newport Coast Watershed Management Plan (Weston, 2007) have been implemented and are described in Section 4. Further studies conducted as recommended in the ASBS Protection and Restoration Program framework were also completed to further assess the source of potential impacts to the ASBS. These studies included additional toxicity testing of marine species, mussel bioaccumulation studies, biological surveys of the rocky inter-tidal areas, constituent migration from Newport Harbor, and an extensive public use study that included Laguna Beach. The results of these studies lead to the development of the ASBS Impact Metric (Weston, 2009 & 2014) and refinement of the ASBS Protection and Restoration Program. The City also participated in the Bight ’08 ASBS Regional Monitoring and conducted pre- and post-storm samples in the ocean and storm event pollutagraph sampling at Buck Gully and one of the priority MS4 outfalls (Shorecliffs) (Weston, 2009). These results of these studies and regional monitoring under Bight ’08 lead to implementation of additional watershed measures described in Section 4.

The City remains committed to protecting the beneficial uses as designated in the California Ocean Plan as evidenced by the implementation of the nonstructural and structural BMPs first defined in the ASBS Protection and Restoration Program framework (Weston, 2006) and the Newport Coast Watershed Management Plan (Weston, 2007), and through planned projects and management measures identified in Section 5 of this report. These planned management measures further address potential impacts to the ASBS as identified in studies since these plans were completed using an adaptive management approach. These implemented and planned management measures also address the prohibition of non-storm flows to the ASBS.

1.2 ASBS Regulations

In 1974, the SWRCB designated 34 regions along the coast of California as ASBS under Resolution Number 74-28 (SWRCB, 1974a). These ASBS are "areas designated by the SWRCB as ocean areas requiring protection of species or biological communities to the extent that alteration of natural water quality is undesirable" (SWRCB, 2012b). The Irvine Coast and Robert E. Badham areas were not included in Resolution Number 74-28, which was the initial designation of ASBS. However, after considering additional information, the SWRCB designated Irvine Coast and Robert E. Badham as ASBS in Resolution Number 74-32, adopted one month later (SWRCB, 1974b).

Section 13170.2 of the *California Water Code* requires the SWRCB to prepare and adopt a *Water Quality Control Plan for Ocean Waters of California* (last revised, 2012d) (Ocean Plan). The Ocean Plan establishes water quality objectives (WQOs) that are the basis of regulating point source and non-point source waste discharges into coastal waters. The Ocean Plan prohibits all discharges to an ASBS and requires discharge points to be located far enough away from an ASBS to maintain natural water quality conditions; however, the SWRCB can issue permits that exempt certain discharges to an ASBS.

In March 2012, the SWRCB adopted the General Exception (SWRCB, 2012b), which exempts certain listed dischargers. The conditions in the General Exception are designed to protect beneficial uses of the receiving water, yet allow continuation of essential public services, such as flood control, slope stability, erosion prevention, maintenance of the natural hydrologic relationship between terrestrial and marine ecosystems, public health and safety, public recreation and coastal access, commercial and recreational fishing, navigation, and essential military operations (national security) (SWRCB, 2012b).

The General Exception designates the City as the sole discharger to ASBS 32. The City (on behalf of the Pelican Point Homeowners) is listed as one of four dischargers to ASBS 33. Per the General Exception, the City shares responsibility with the Irvine Company, the California Department of Transportation (Caltrans), and the California Department of Parks and Recreation to protect and maintain natural water quality in ASBS 33. However, this plan specifically addresses the approach of the City to comply with the General Exception. Other responsible parties will submit their own compliance plans independently. The General Exception authorizes the City to discharge into ASBS 32 and 33, provided that it:

- Complies with the NPDES MS4 Permit.
- Includes an ASBS compliance plan in the LIP[2] as part of the DAMP, the Permittees' primary policy, planning and implementation document for municipal NPDES Storm Water Permit compliance.

[2] The NPDES MS4 Permit (Order Number R8-2009-0030, as amended by R8-2010-0062) (SARWQCB, 2010) and proposed NDPES MS4 Permit (Draft Order No. R8-2014-0002) (SARWQCB, 2014) require the City to develop a LIP, which is equivalent to a stormwater management plan (SWMP) or stormwater pollution prevention plan (SWPPP).

1.3 Document Organization

1.3.1 General Compliance

In general, this ASBS compliance plan:

- Addresses the prohibition of non-stormwater runoff and the requirement to maintain natural water quality for storm water discharges to ASBS 32 and 33, according to Section I.A.2 of the General Exception.
- Serves as the ASBS Pollution Prevention Plan required for non-point source discharges, according to Section I.B.2 of the General Exception.
- Describes the City's strategy to comply with the General Exception.
- Will be updated according to Sections I.A.2.h and I.B.2.c of the General Exception.

1.3.2 Specific Compliance

Specifically, this ASBS compliance plan:

- Describes the measures by which non-authorized, non-stormwater runoff has been eliminated by the City, and how these measures will be maintained, monitored, and documented.
- Includes minimum frequencies for inspection of MS4s.
- Addresses stormwater discharges and, in particular, describes how pollutant reductions in stormwater runoff are achieved by implementing BMPs.
- Addresses erosion control and the reduction and/or prevention of anthropogenic sedimentation in the ASBS.
- Describes the City's nonstructural and structural BMPs currently employed and planned to be continued or implemented in the future, including an implementation schedule for the City's LIP.

1.3.3 General Exception Requirements

Requirements of this ASBS compliance plan per the General Exception are addressed in sections of this report, as noted below:

Section 1—Introduction: Describes California discharge regulations, ASBS-specific requirements, compliance actions, and the organization of this ASBS compliance plan.

Section 2—Discharges to ASBS 32 and 33: Describes the ASBS 32 and 33 drainage areas, identifies discharges to ASBS 32 and 33 and specifically addresses the prohibition of non-stormwater runoff and the requirement to maintain natural water quality for stormwater discharges to an ASBS; describes measures by which all non-authorized, non-stormwater runoff

has been eliminated, states how these measures will be maintained over time, and how these measures are monitored and documented; and identifies stormwater runoff and pollutant sources from the City's parks and recreation facilities and areas of erosion potential. (Addresses Sections I.A.2.a, Section I.A.2.e, I.B.2.b, and II of the General Exception.)

Section 3—Prioritization of Discharges: Identifies municipal and industrial stormwater discharges, prioritizes them based on risk to water quality, and incorporates data from stormwater runoff and ocean receiving water monitoring. (Addresses Section I.A.2.a of the General Exception.)

Section 4—Implemented BMPs: Describes existing nonstructural BMPs, including an education and outreach program, and describes existing structural BMPs. (Addresses Sections I.A.2.b, I.A.2.c, I.A.2.d, I.A.2.e, I.A.2.f, I.A.2.g, I.B.2.b, and II of the General Exception.)

Section 5—Planned and Future BMPs: Describes the planned continuation of currently implemented nonstructural and structural BMPs, and the role of BMPs in maintaining natural water quality. (Addresses Sections I.A.2.b, I.A.2.c, I.A.2.d, I.A.2.e, I.A.2.f, I.A.2.g and I.B.2.b of the General Exception.)

Section 6—Compliance and Implementation Schedule: Provides the compliance schedule and the BMP implementation schedule; mandates submitting a report if receiving water monitoring indicates that discharges are altering natural conditions; and describes the procedures for revising the ASBS compliance plan to maintain compliance with the General Exception. (Addresses Sections I.A.2.g, I.A.2.h, I.A.3, I.B.2.c, and I.B.3 of the General Exception.)

Section 7—References: Presents documents referenced in the development of this ASBS compliance plan.

SECTION 2
Discharges to the Areas of Special Biological Significance

The Newport Coast Watershed Management Area (Newport Coast WMA) coastline has two ASBS designations: Robert E. Badham (ASBS 32) and Irvine Coast (ASBS 33). The land adjacent to the ASBS are protected Critical Coastal Areas (CCAs) requiring the protection of species or biological communities. The Newport Coast WMA, shown in Figure 2-1, is under jurisdiction of the SARWQCB with the exception of El Morro Canyon and Emerald Canyons, which are in the San Juan WMA under San Diego RWQCB (SDRWQCB) jurisdiction and outside of the City's jurisdiction.

The Newport Coast WMA drains the San Joaquin Hills, and comprises the drainage areas for Buck Gully, Morning Canyon, Pelican Point Creek, Pelican Point Middle Creek, Pelican Hill Waterfall Creek, Los Trancos Creek, Muddy Creek, El Morro Canyon, and Emerald Canyon. Eight of the creeks discharge directly into ASBS 32 or 33 with the exception of Emerald Canyon.

As shown in Figure 2-1, the focus of this ASBS Compliance Plan is the drainage areas defined as the Newport Beach ASBS Watershed (ASBS Watershed) that discharges directly to ASBS 32 and 33, and are under the jurisdiction of the City of Newport Beach. Within the ASBS Watershed are the two canyon creek sub-watersheds of Buck Gully and Morning Canyon that drain to ASBS 32. Also within the ASBS Watershed are the coastal storm drain outfall drainage areas that discharge directly to ASBS 32. The City has an agreement with the Pelican Point HOA to incorporate the HOA into the City's approach to address requirements of the General Exception for ASBS 33.Therefore, the drainage area (that includes the HOA) that discharges directly to ASBS 33 is included in the ASBS Watershed, and is included as part of this Compliance Plan.

2.1 Newport Coast WMA

Newport Beach is a coastal community in Southern California, located in Orange County. The Newport Coast Watershed comprises 9 miles of coast and encompasses approximately 12 square miles of watershed that overlie portions of the cities of Newport Beach, Corona Del Mar, and an unincorporated portion of Orange County that includes the Newport Coast Planned Community. Land uses are primarily residential or vacant land located on either side of Buck Gully and Morning Canyon. The remaining land uses include mixed use, areas under construction, commercial, or transportation uses. Because the entire Newport Coast WMA drains to two ASBS, the WMA conditions directly impact the coastal ecosystem. Urban development increases population density and potential pollutant sources such as construction activities, industrial facilities, auto emissions, wastes related to automobile maintenance activities, sanitary wastes, pesticides, pet wastes, household hazardous wastes, and trash (SARWQCB, 2010).

SOURCE: ESRI Imagery, State Water Resource Control Board, and Newport Beach GIS

Figure 2-1

Newport Coast Watershed Management Area

2.1.1 Robert E. Badham (ASBS 32) Description

ASBS 32 is located off the northern coast of the Newport Coast WMA. ASBS 32 is approximately 0.68 miles long and extends 1,000 feet off the shoreline (seaward), or to the 100-foot isobath, whichever is greater, comprising about 0.26 square-miles. The coast is composed of sandy beaches and rocky headlands. Offshore, there are rocky reefs rocks with stacks and arches visible from the coastline continuously, while smaller formations only break the surface during low tides. The northern portion of the ASBS consists of sandy beach; the southern portion contains rocky intertidal areas and tide pools areas bordered by sandstone bluff (City and Weston, 2006 and SWRCB, 1979b). The bluffs are lined with private residences, and a mix of native coastal scrub and non-native vegetation. Sloughing of the bluffs produces cobbles at their base.

Public access is available from a large partially paved walkway at Poppy Avenue. It is also easily accessible from the north (Corona del Mar area) by climbing over rocks along the shore (SWRCB, 1979b). Despite many signs indicating that this is a protected area, visitors often trample and remove habitats within the ASBS boundaries. Furthermore, recreational activities such as scuba diving, snorkeling, swimming, boating, fishing, and tide pool exploration are popular within the area.

The ASBS 32 drainage area has an average impervious surface percentage of 44.5 percent. However, along the coast in residential areas where the majority of the population resides, the impervious surface area is close to 85 percent (City and Weston, 2006). The City has implemented low-impact development (LID) techniques to direct and capture or filter runoff from impervious surfaces such as rooftops, streetscapes, parking lots, sidewalks, and medians before reaching the ocean (California Coastkeeper Alliance [Coastkeeper], 2012).

As shown in Figure 2-2, two creeks, Buck Gully and Morning Creek, are the primary conveyances that transport runoff to ASBS 32. The sub-watersheds of Buck Gully and Morning Canyon comprise the majority of the drainage area that discharges directly to ASBS 32. In addition, there are three coastal storm drain outfall drainage areas that discharge directly to ASBS 32, as shown in Figure 2-2. The storm drain outfalls from these three drainage areas are identified in Figure 2-2 as 018, 012, and 002.

2.1.2 Irvine Coast (ASBS 33) Description

ASBS 33 consists of a long, sandy beach interspersed with a few rocky outcroppings. The shoreline is bordered with high sandstone coastal bluffs. The bluffs are primarily undeveloped and covered by native coastal sage scrub vegetation. The coastline is approximately 3 miles long, from its southeasterly border, which is adjacent to ASBS 32 (generally at Cameo Shores Road), to its intersections with the City of Laguna Beach (at Abalone Point). The boundaries extend 1,000 feet seaward, or to the 100-foot isobaths, whichever is greater, for a total of approximately 1.6 square miles (SWRCB, 1979a).

The majority of the Newport Coast WMA draining to ASBS 33 remains undeveloped. However, the upstream portions of the watersheds are becoming more developed. The primary land use of the ASBS 33 drainage area is golf course and residential. The drainage also includes some surface streets and, because of a few vacant lots, some areas of mixed use (City and Weston, 2006).

The City is responsible for discharges to ASBS 33 associated with and occurring from the Pelican Point HOA only. The Pelican Point HOA is gated community consisting of 55 single-family residential lots. It is bordered by the Pacific Coast Highway to the northeast. The Pelican Hill Golf Club's Ocean South Course surrounds the other three sides. The southwest perimeter of the golf course is adjacent to Crystal Cove State Park, which provides public trails accessing the recreational beach park (City and Weston, 2006).

The residential community (Pelican Point HOA) is the high-elevation point of the drainage area , and gently slopes downward toward the ocean. The remainder of the drainage area draining to ASBS 33 slopes toward a single discharge point (circular pipe) located on the southeast corner of the Pelican Hill Golf Course near the Crystal Cove State Park footbridge (City and Weston, 2006). This is the storm drain outfall identified in Figure 2-2 as 033.

Golf courses have a low percentage of impervious surfaces (approximately 5 percent) (City and Weston, 2006). The Pelican Point residential area has an average impervious surface of 40 percent, which allows for infiltration and reduces the transport of runoff into the ASBS.

The City is not responsible for the following list of creeks discharging to ASBS 33. These creeks discharge to the beach area of Crystal Cove State Park and waters of the Irvine Coast ASBS and comprise the following:

- Pelican Point Creek
- Pelican Point Middle Creek
- Pelican Point Waterfall Creek
- Los Trancos Creek (Crystal Cove Creek)
- Muddy Creek
- El Morro Canyon

2.2 Dry Weather Flows

Non-stormwater discharges are prohibited under the General Exception. The only discharges allowed are those that are essential for emergency response purposes, structural stability, or slope stability, or those that occur naturally. Within the ASBS Watershed, no direct discharges from wastewater treatment plants, industry, or groundwater treatment facilities discharge to the ASBS (City, 2007b).

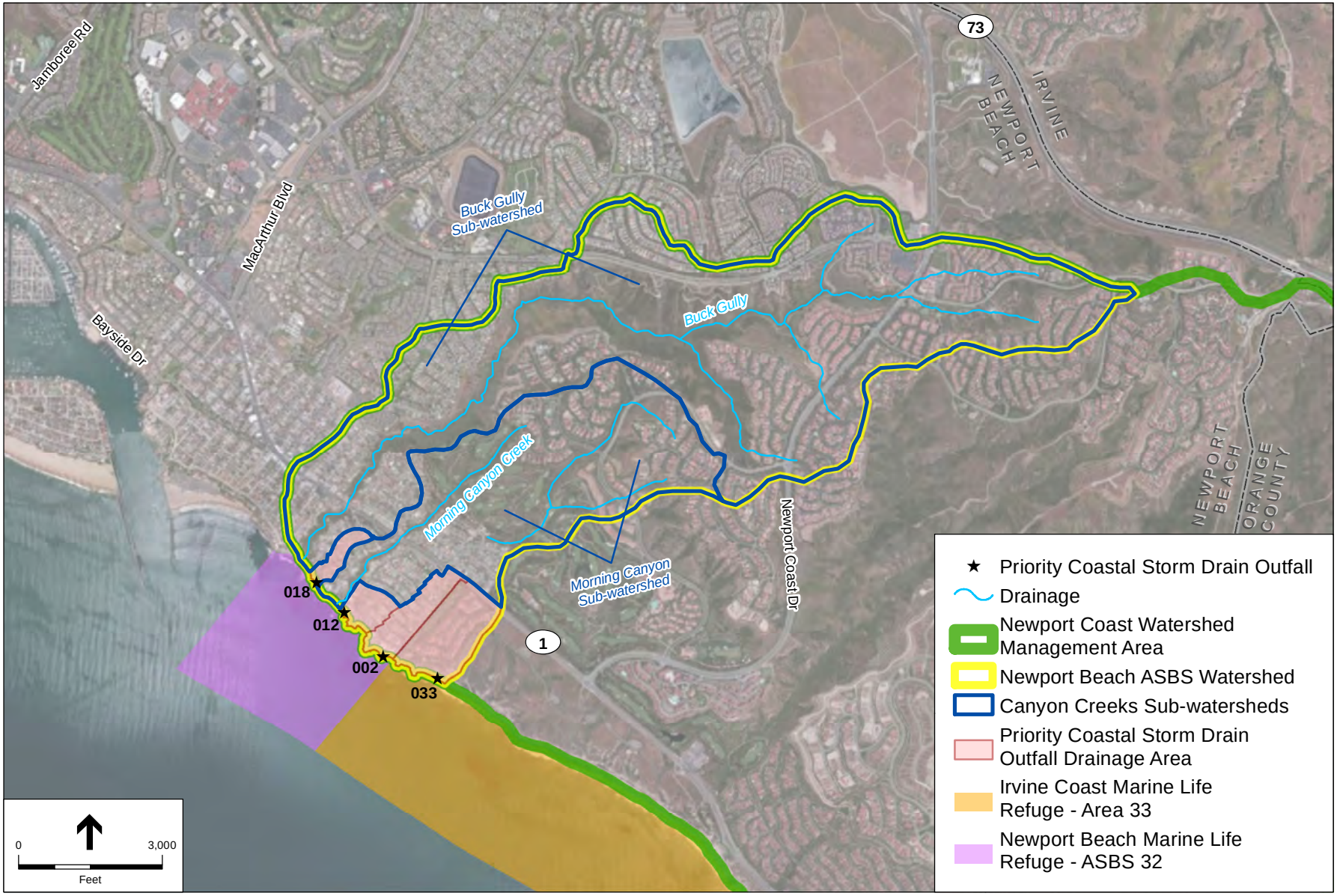
2.2.1 Dry Weather Flows—Robert E. Badham (ASBS 32)

As shown in Figure 2-2, the sub-watersheds for Buck Gully and Morning Canyon discharge directly into ASBS 32. Bucky Gully and Morning Canyon Creek transport dry and wet weather flows into ASBS 32. Buck Gully discharges to Little Corona Beach. Morning Canyon discharges on the beach, south of Little Corona Beach. These two coastal canyon creeks are characterized by year-round perennial flows. The source of dry weather flows within these creeks consist primarily from groundwater seepage as a result of rising groundwater elevations within these coastal canyons from increased use of imported water for irrigation that infiltrates into the unconfined geologic layers and surfaces at lower elevations within these canyon creeks (Todd Engineering, 2006) .

Dry weather source investigations (Weston, 2007, and Irvine Ranch Water District, 2008) conducted in Buck Gully, confirm the results of the earlier Groundwater Seepage Study (Todd Engineering, 2006) that identified dry weather flows from groundwater seepage into the channel from alluvial deposits along the stream bed and/or groundwater discharges where the channel cuts below the ground water table. The greatest relative flows were observed in a drainage channel between Spyglass Ridge Community and the outlet structure at Fifth Street and Poppy Street within a sub-drainage area, which includes Pelican Hill Community. Pelican Hill Community has been identified in water use mapping studies as a high water-use area and is a target area for water conservation BMPs.

To reduce the groundwater mound and resulting seeps (i.e., dry weather flows), the City has partnered with the Irvine Ranch Water District to promote water conservation and water-use reduction measures as part of an overall Runoff Reduction Program. These water conservation and water-use reduction measures that result in a decrease in non-storm flows in both the canyon creeks and storm drain outfalls include a tiered water-use rate structure and rebates for installation of smart irrigation controllers, more efficient irrigation drip systems, turf replacement, and use of drought-tolerant plantings. These water conservation measures have been implemented in combination with the City Runoff Reduction Ordinance and revised City Building Codes that promotes these measures and prohibit wasteful water behavior that results in non-stormwater flows. These measures are further promoted through an extensive public outreach and education program conducted in coordination with a number of local and regional nongovernmental organizations. The City, through a Proposition 84 grant, is also targeting commercial properties to reduce over-irrigation. The City's measures to eliminate dry weather flows are discussed further in Section 4.

These runoff reduction measures are implemented throughout the ASBS watershed, including the drainage areas for the storm drain outfalls that discharge directly to the ASBS, as shown in Figure 2-2. Frequent inspections of these outfalls have indicated no evidence of persistent dry weather flows. Periodic observance of dry weather flows are identified and followed up with first outreach and education on the prohibition of these flows to the ASBS. Repeated violations are followed by fines and required corrective action. In addition, structural BMPs have been implemented and are planned for these storm drain outfalls as discussed in Sections 4 and 5 to directly address these periodic non-storm flows. No persistent dry weather non storm water flows are present at any of the three priority MS4 outfalls.



SOURCE: ESRI Imagery, State Water Resource Control Board, and Newport Beach GIS

Figure 2-2

Newport Coast Watershed and ASBS 32 and 33 with Outfall Locations

2.2.2 Dry Weather Flows—Irvine Coast (ASBS 33)

The drainage area for the Pelican Point HOA drains to a single storm drain outfall, as shown in Figure 2-2. The City has addressed the prohibition of non-storm flows directly to ASBS 33 from this HOA drainage area through the Runoff Reduction Program and the installation of a low-flow diversion at this outfall. These nonstructural and structural BMPs are further discussed in Section 4.

2.3 Storm Water Discharges (Wet Weather Flows)

Under the General Exception, the only permitted point source discharges of stormwater are those authorized by the General Exception or by an NPDES permit issued by the SWRCB or RWQCB. Per the General Exception, the only allowed discharges to the ASBS are those from existing stormwater outfalls, and the discharges must comply with all of the applicable terms, prohibitions, and special conditions in the General Exception.

Because of urbanization, steep slopes, and a highly developed storm drain network of its drainage system, the ASBS Watershed responds quickly to rainfall events, resulting in fast-moving stormwater surges downstream. Most of the runoff from the ASBS Watershed is conveyed through a network of storm drains before it is discharged at several locations along the shoreline, or into the creeks prior to discharging to the ASBS. Most of the runoff enters the City's NPDES-permitted MS4 through curb inlets in public streets or through catch basins at the lower (western) ends of open space and undeveloped areas. Runoff is then discharged into the ASBS via outfalls or creeks along the shoreline.

Diversion of stormwater discharges is not feasible for the MS4 outlet due to space and capacity constraints (City and Weston, 2006). LID is an approach to land development (or redevelopment) that works with nature to manage stormwater as close to its source as possible by using structural and nonstructural BMPs to reduce environmental impacts (SARWQB, 2010). The USEPA has determined that LID and green infrastructure can be a cost-effective and environmentally preferable approach for the control of stormwater pollution and will minimize downstream impacts by limiting the effective impervious area of development. LID and the reduction of impervious areas may achieve multiple environmental and economic benefits in addition to reducing downstream water quality impacts, such as enhanced water supplies, cleaner air, reduced urban temperatures, increased energy efficiency and other community benefits, such as aesthetics, recreation, and wildlife areas (SARWQB, 2010).

The City has been committed to study and characterize stormwater flows from the MS4 direct discharges and canyon creeks and their impact on the ASBS in order to develop management actions to address these impacts. The results of these studies and monitoring are summarized in Section 3. The City's current and planned BMPs to address stormwater runoff are discussed is Sections 4 and 5.

2.3.1 Wet Weather Flows—Robert E. Badham (ASBS 32)

The potential impact and relative constituent load contribution of wet weather flows to ASBS 32 from the canyon creeks, Buck Gully and Morning Canyon, was investigated in the Coastal Canyon Creek Water Quality and Flow Assessment (Weston, 2007). The results of this investigation are summarized in Section 3. Further studies on the potential impact of storm flows from these creeks and Newport Bay were conducted as part of the ASBS Impact Metric study (Weston, 2009 & 2014) that included additional toxicity testing of storm flows, mussel bioaccumulation studies, and plume studies. These are also summarized in Section 3. In addition, the City participated in the Bight '08 Regional Compliance Monitoring that included pre- and post-storm monitoring in the ocean and storm event pollutagraph monitoring at Buck Gully and one of three priority MS4 outfalls (Shorecliffs)(Weston, 2009). The contribution of this MS4 outfall that discharges directly to ASBS 32 was further investigated as part of the BMP effectiveness assessment of the recently constructed infiltration gallery at this outfall in 2013-2014. Ocean water quality at this outfall location was recently assessed through the Bight '13 ASBS Regional Monitoring Program. The location and priority of these discharges of stormwater, and the historical and recent monitoring results are discussed in Section 3. The City has taken a proactive approach to assessing potential impacts to the ASBS that includes understanding constituent loading from storm flows from the coastal canyon creeks and storm drain outfalls that discharge directly to the ASBS. Management measures that have been implemented are presented in Section 4. Based on the preliminary results of the Bight '13 monitoring and analysis program, additional measures are planned pending further detailed analysis of the final results, comparisons of these results to historical data and re-evaluation and re-prioritization of planned structural and non-structural management measures.

2.3.2 Wet Weather Flows—Irvine Coast (ASBS 33)

The contribution of the storm drain outfall that drains the Pelican Point HOA and discharges directly to ASBS 33 was investigated as part of the most recent Bight '13 ASBS Regional Monitoring Program. The City has taken a proactive approach to assessing potential impacts to the ASBS that includes understanding constituent loading from storm flows. Management measures that have been implemented are presented in Section 4.

2.4 Parks and Recreation Facilities Discharges

The General Exception requires the City to address stormwater runoff from parks and recreation facilities and to identify all pollutant sources (including sediment sources) that may cause constituents to enter stormwater runoff. Over-watering landscaped areas increases the potential for fertilizer, herbicides, and pesticides to be conveyed into the City's MS4. Parking lots in parks and recreation facilities are potential sources of heavy metals, oil, and sediment. In addition, pet waste that is not properly disposed of in parks is a source of pathogenic bacteria and other parasites. As a result, stormwater pollutant mitigation measures must address parks and recreation facilities and their associated potential pollutant sources.

To meet the requirements of the General Exception, the City implemented a number of structural and nonstructural BMPs throughout the ASBS Watershed (Section 4), including within the City's parks and recreation facilities. The City plans to continue maintaining and implementing current BMPs. These BMPs are effective at controlling soil erosion, preventing pesticide discharges, carrying out public education and outreach, controlling trash, and reducing runoff from parking areas are included (discussed further in Section 4).

The City's Recreation Services Department oversees 73 parks, beaches, marine habitats and recreational facilities (City, 2014b). Three of these parks, Canyon Watch Parks, Harbor Watch Park, and Upper Buck Gully are in the ASBS 32 drainage area (Figure 2-3). There are no parks in the ASBS 33 drainage area maintained by the City.

2.4.1 Parks and Recreation Facilities—Robert E. Badham (ASBS 32)

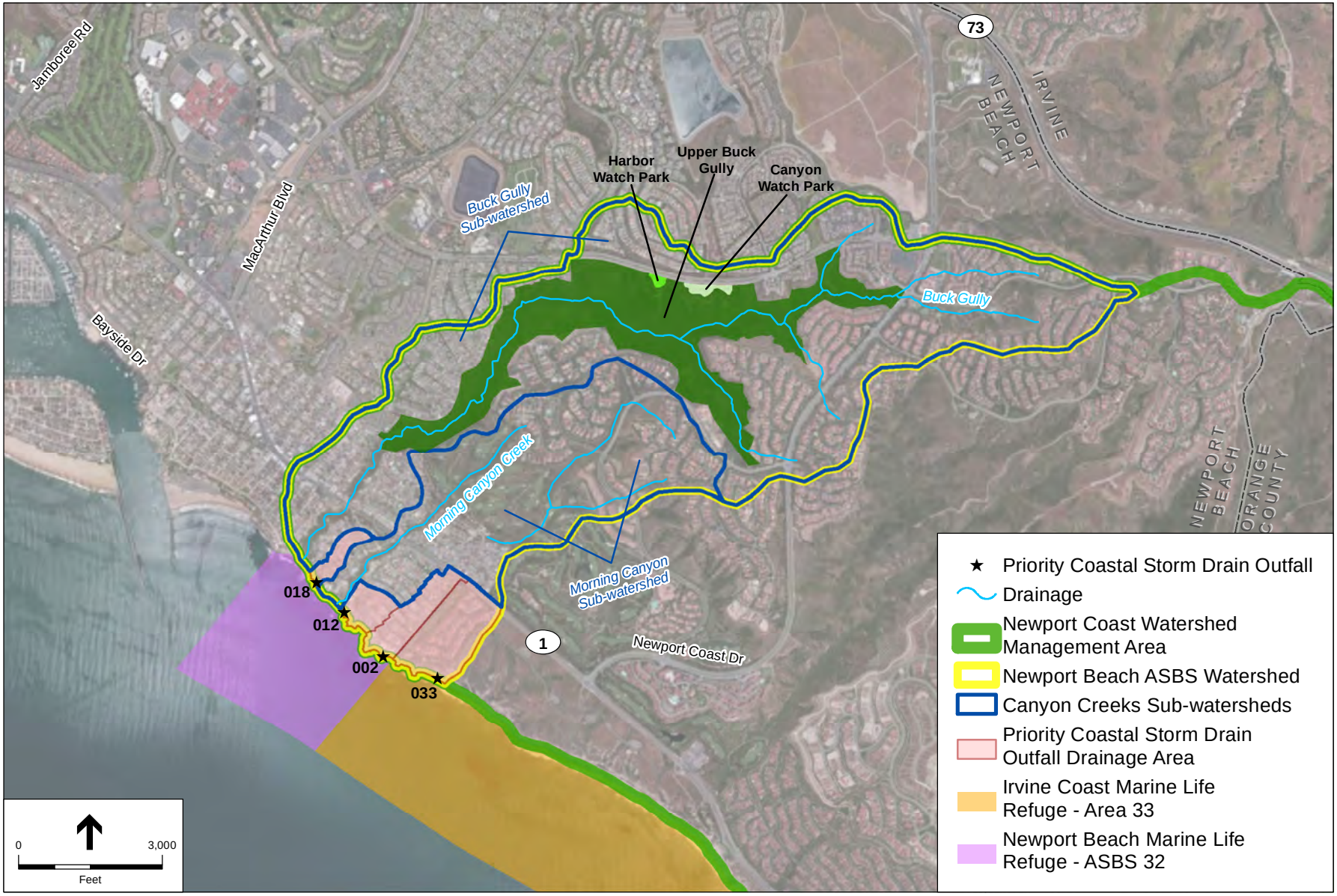
As shown on Figure 2-3, there are three parks located within the ASBS Watershed that are within the Buck Gully sub-watershed that drains to ASBS 32. These parks are maintained by the City's Recreation Services Department, and are briefly described below.

- **Canyon Watch Park** (on San Joaquin Hills Road, east of Spyglass Hill Road) is a small park with no amenities (no restrooms, playground, drink fountains, etc.) (Play Parks Creative LLC, 2014). The park attracts residents and visitors for the canyon and ocean views. This scenic lookout also provides some structures for sun shade.
- **Harbor Watch Park** (on San Joaquin Hills Road, east of Spyglass Hill Road) is located down the hill from Canyon Watch Park and is also a small park with no amenities (no restrooms, playground, drink fountains, etc.). The park attracts residents and visitors for the views of Newport Bay and the ocean. It also offers an interpretive sign with information on the history of the area (Play Parks Creative LLC, 2014).
- **Upper Buck Gully** (stretching north from San Joaquin Hills Road to Newport Coast Drive and southwest to Poppy Avenue) is a 300-ac nature reserve with an expansive trail system. Miles of trails running through protected open space habitats bring residents close to nature while they walk, run, hike and bike.

Potential sources of pollutants are identified and discussed in subsequent sections.

2.4.1.1 Trash Cans

Adequate trash cans are provided and maintained by the City at each park to properly manage trash and to reduce the amount of trash that could enter the ASBS.



SOURCE: ESRI Imagery, State Water Resource Control Board, and Newport Beach GIS

Figure 2-3

Park and Recreation Facilities within ASBS Drainage Area

2.4.1.2 Roadways and Parking Lots

Impervious surfaces in urban landscapes increase runoff volume and contribute pollutants. Roadways and parking lots collect pollutants from tailpipe emissions and brake linings, which are associated with pollutants, including copper, lead, zinc, and polycyclic aromatic hydrocarbons (PAHs) (City, 2007b). There are dedicated parking lots for access to each of the Parks.

2.4.1.3 Picnic Areas

Picnic areas are often sources of litter. Waste generated from recreational picnic area use (such as carelessly discarded trash, paper wrappers, and plastic bottles) has the potential to enter the storm drain system and ASBS.

Picnic facilities are available at City parks, as follows:

- **Canyon Watch –** There are three picnic tables available at Canyon Watch Park (Play Parks Creative LLC, 2014).
- **Harbor Watch** – There are no picnic facilities at Harbor Watch Park, but it does offer benches for visitors (Play Parks Creative LLC, 2014).
- **Upper Buck Gully** – There are no picnic facilities in the reserve, but benches are available along the trail for visitors.

Providing maintained picnic areas reduces "spillover" caused by visitors taking food, trash, and decorations (e.g., balloons) into more sensitive beach areas.

2.4.1.4 Soil Erosion

Park areas have the potential to deliver sediment into the storm drain system and/or ASBS. Unpaved areas, nonvegetated areas, and parking lots are potential sources of sediment.

Potential soil erosion and sediment delivery from parks and recreation facilities in the ASBS drainage area are as follows:

- Canyon Watch Park has a low potential to contribute sediment to the ASBS because it consists of well-established grassy areas, a concrete walkway, and a developed parking area. Other landscaped areas are generally within curbing.
- Harbor Watch Park has a low potential to contribute sediment to the ASBS because it consists of well-established grassy areas, a concrete walkway, and a developed parking area. Other landscaped areas are generally within curbing.
- Unprotected bluffs on the path between Canyon Watch and Harbor Watch Parks, which drop off to the canyon below have potential to erode and transport sediment to the ASBS.

Upper Buck Gully has a higher potential to contribute sediment as a results of hydromodifcation from increased storm flow velocities and volumes from developed areas of this drainage area. The open space areas are well vegetated with native coastal scrub and have a low erosion potential.

2.4.2 Parks and Recreation Facilities—Irvine Coast (ASBS 33)

There are no parks in the ASBS 33 drainage area maintained by the City.

2.4.3 Parks and Recreation BMPs

The nonstructural BMPs applying to parks and recreation facilities are:

- Erosion control measures (Section 4)
- Public education and outreach (Section 4)
- Trash management (Section 4)
- Pesticide use management (Section 4)

Signage related to the ASBS is a requirement of the General Exception. Signs or other appropriate measures are placed throughout the parks, beaches, and visitor centers that inform and educate the public of any applicable requirements of the General Exception and identify the ASBS boundaries. At the parks, City regulations prohibit alcohol use, glass containers, smoking, littering, disturbing noises, and overnight sleeping, camping, or parking. Preservation of the marine environment is encouraged through placards within areas of access to the ASBS that inform visitors of locations of the preserves and that nothing may be disturbed or taken without a permit. A Ranger resides at the tide pool areas near the ASBS to educate visitors and promote the conservation of the natural resource. The main objectives of the position are to ensure the tide pool rules are followed and to educate and enforce regulations and issue citations when necessary.

No structural BMPs are used at these facilities because the potential impacts to the ASBS are minimal. The parks are small and contain few potential pollutant sources.

2.5 Erosion Potential and Control

2.5.1 Open Space and Coastal Canyons

The General Exception identifies sediment as a targeted pollutant. The most likely source of sediment in ASBS 32 and 33 is erosion of canyon and open space areas within the drainage area. Development around open space areas has increased dry weather and stormwater flow volumes and velocities, leading to higher rates of erosion. Urban development increases impervious surfaces, leading to increased storm water runoff volume and velocity, and decreases vegetated, pervious surface areas available for infiltration and evapotranspiration of stormwater. Increase in runoff volume and velocity can cause scour, erosion (sheet, rill and/or gully), and aggradation (raising of a streambed from sediment deposition) and can change fluvial geomorphology, hydrology, and aquatic ecosystems (SARWQCB, 2010).

The City has taken a proactive approach to addressing the stability and erosion potential of the coastal canyon creeks in Buck Gully and Morning Canyon through the implementation of bank-stabilization projects, grade controls, and restoration of creek habitat. Stabilization and restoration measures reduce erosion and sediment transport to the ASBS. BMPs have been designed and implemented in accordance with the Buck Gully Erosion and Sediment Control Plan and the Buck Gully Reserve Resource and Recreation Management Plan (City and Dudek, 2009) to address erosion and improve water quality in Buck Gully. The BMPs include the implementation of grade controls to reduce downstream channel and bank erosion and constructed wetlands to enhance the creek habitat and improve water quality. Through grant funding and partnerships with the Irvine Ranch Conservancy, an improved trail system with more defined trails and educational materials and a habitat restoration program, including non-native removal, are implemented. Furthermore, the City encourages the neighbors of Buck Gully to landscape with native, drought-tolerant plants to support the habitat of the Reserve. These projects are further described in Section 4.

2.5.2 Construction and Other Land-Disturbing Activities

Sediment loading to stormwater may result from land-disturbing activities at residences, such as landscaping, construction, and exposed nonvegetated soils. Other potential sources of turbidity are urban and residential land uses, transportation uses (such as roads, highways, and parking lots), and coastal bluffs. Road grit and finer particles not collected through street sweeping also contribute sediment to stormwater.

Construction activities within the drainage areas to ASBS 32 and 33 are required to follow the BMP requirements of the Construction General Permit (Order 2009-0009-DWQ) (SWRCB, 2009). These measures reduce or eliminate transport of sediment and other potential pollutants from construction sites to the MS4 and/or receiving waters.

The City has adopted grading and erosion-control ordinances and guidelines for the implementation of BMPs for municipal, commercial, and construction activities (SARWQCB, 2010). In addition, the City conducts weekly street sweeping of all the City's primary roadways.

2.5.3 Coastal Bluffs

Newport Beach has a variety of coastal features ranging from replenished beach sands in West Newport, to steep bluffs composed of sandstone and siltstone to the south of Corona del Mar. Significant coastal bluff retreat, bluff-top erosion, gullying, and beach erosion are occurring along the eastern Newport shoreline. The rates of erosion are dependent on the underlying geologic units and their different responses to the weathering effects of water (including rain and waves), gravity, and wind. Coastal erosion occurs as a result of natural processes such as long-shore drift, storm surge, and sea level rise. Sea bluff erosion occurs as a result of processes that impact both the bottom and top of the cliffs (City, 2006b). The erosion potential characteristics of the ASBS shoreline are highlighted in Figure 2-4.

SOURCE: ESRI Imagery, State Water Resource Control Board, and Newport Beach GIS

Figure 2-4
Erosion Potential

ASBS 32 and 33 are protected from northwest swells by the breakwater extending from Newport Bay, but are exposed to southwesterly swells. Because the beach is unprotected from powerful southwesterly swells, and occasional high surf, the bluffs along the shoreline are subjected to erosion from wave action. Wave action during high tide and storm surges can cause damage to the bottom of the bluffs.

To minimize coastal erosion hazards, the City implements policies such as:

- Development of defined trails with posted educational information, and ongoing trail improvements and maintenance (City, 2007b).
- Removal of invasive species (City, 2007b).
- Implementation of grade controls, wetlands, and stream habitat enhancements (City, 2007b).
- Development and implementation of shoreline management plans for shoreline areas subject to wave hazards and erosion that protect private property, public improvements, coastal access, public recreation, and coastal resources (City, 2006b).
- **Coastal Hazard Studies**—periodic comprehensive studies of seasonal and long-term shoreline change, episodic and chronic bluff retreat, flooding, and local changes in sea levels, and other coastal hazard conditions (City, 2006b).
- **Beach Width Monitoring and Maintenance**—Develop and implement a beach replenishment program to assist in maintaining beach widths and elevation for shore protection. Monitor beach widths and elevation to establish thresholds for when erosion could facilitate flooding or damage from storm waves (City, 2006b).
- **Shoreline Protection Processes**—Permit revetments, breakwaters, groins, harbor channels, seawalls, cliff retaining walls, and other structures altering natural shoreline processes. These structures serve coastal-dependent uses or protect existing structures or public beaches in danger from erosion and, when designed to, eliminate or mitigate adverse impacts on local shoreline sand supply. Maintain groin fields and jetties and modify as necessary to eliminate or mitigate adverse effects on shoreline processes. Design and locate protective devices as far landward as possible to minimize impacts to coastal resources, minimize alteration of natural shoreline processes, provide for coastal access, and eliminate or mitigate adverse impacts on local shoreline sand supply (City, 2006b).
- **New Development Impact on Coastal Erosion**—Locate and design new structures to avoid the need for shoreline and bluff protective devices during the economic life of the structure (75 years), unless an environmentally acceptable design to stabilize the bluff and prevent bluff retreat is devised. Require that applications for new development with the potential to be impacted by or to impact coastal erosion include slope stability analyses and erosion rate estimates provided by a licensed Certified Engineering Geologist or Geotechnical Engineer. Require new development adjacent to the edge of coastal bluffs to incorporate drainage improvements, irrigation systems, and/or native or drought-tolerant vegetation into the design to minimize coastal bluff recession (City, 2006b).

Under the Cross Contamination Study (City, 2008), the City conducted sediment budget analyses to evaluate sediment erosion and deposition characteristics in the ASBS. Additionally, the City's General Plan includes a seismic safety study (City, 2006b) that contains a series of maps that identify likely geological hazards throughout the City. Based on these maps, Figure 2-4 shows unstable coastal bluffs, known landslide areas, and areas with slide-prone geology. BMPs currently implemented and planned to be continued to address the erosion control requirements of the General Exception are discussed in Section 4 and include:

- Canyon stabilization
- Increase in perviousness of parking lots
- Allow course ground material to deposit on beaches and/or sand replenishment
- Prohibit the removal of sand and rocks
- Buck Gully Erosion Control and Water Quality BMP Project
- Invasive plant removal
- Fire prevention
- Maintain and define trails with educational information

SECTION 3
Priority Discharges

3.1 Historical and Current Studies

3.1.1 Historical Studies

The City has conducted a number of scientific studies to characterize the water quality of the coastal canyon creeks and ocean waters of the ASBS, and to identify and assess the sources of impacts to the ASBS. The results of these studies have informed the development of the City's ASBS Protection and Restoration Program. The findings and conclusions of the studies are presented in the following documents:

- Newport Coast Groundwater Seepage Study (Todd Engineering, 2006)
- Coastal Canyon Creeks Water Quality and Flow Assessment – Grant Agreements 04-191-558-0 and 02-204-558-0)(Weston, 2006)
- Public Use, Biological Surveys, Bioaccumulation and Restoration Monitoring for Newport Coast and Laguna Beach ASBS Protection and Restoration Program – Grant Agreement No. 05-230-550-0 (Weston, 2009)
- Newport Coast ASBS Regional Compliance Monitoring (in cooperation with Bight'08)(Weston, 2009)
- Newport Coast ASBS Protection Implementation Program -Proposition 84 ASBS Grant Program - Grant Agreement No. 10-414-550 -Final Project Report (Weston, 2014)

The overall findings of the initial Coastal Canyon Creek Water Quality and Flow Assessment (Weston, 2006) identified the priority constituents for the coastal canyon creeks for Buck Gully and Morning Canyon to be metals, pesticides and bacteria indicators. For wet weather flows, total cadmium, cooper, and zinc concentrations were above the fresh-water quality objectives (WQO) in Morning Canyon, and total cadmium concentrations were above the WQO in Buck Gully. The chronic criterion for dissolved cadmium was exceeded in dry weather samples from Buck Gully and Morning Canyon. The concentration of cadmium in the ocean sample during the first storm event was detected above the Ocean Plan daily maximum and instantaneous maximum concentrations. The organophosphate pesticide Diazinon was detected above the WQO in one of three storm events.

To determine which portion of urban runoff (dry or wet weather flows) contributes more to metals loading to the ASBS, an assessment was performed of the total loads for those dissolved metals with the highest concentrations (cadmium, copper, and zinc) using the modeled flow rates. The results of this assessment indicated that the cumulative annual dry weather loads for Buck

Gully account for the majority of its total annual load. Similar results were calculated for Morning Canyon Creek, indicating that dry weather flows on average constitute the greatest portion of cumulative estimated metals loading to the ASBS. The actual impact of these metals entering the ASBS, however, will depend upon dilution rates and the bioavailability of the metals to sensitive marine species. As shown in the Table 3-1, the contribution of natural background metals loading to the ASBS was estimated to constitute 46% to greater than 90% of the total metals load based upon comparisons of annual loads from Buck Gully and El Morro (natural background)(Weston, 2006).

TABLE 3-1
COMPARISON OF TOTAL DRY, WET, AND ANNUAL LOADS FOR TOTAL METALS FROM BUCK GULLY AND EL MORRO (REFERENCE CANYON)

Station ID	No of Samples	Cadmium (Cd)	Copper (Cu)	Lead (Pb)	Zinc (Zn)
Total Metals Annual Wet Weather Loads (lbs)					
BG1 (Buck Gully)	3	1.450	4.790	0.276	7.212
EMD (El Morro)	3	0.661	3.352	0.311	8.410
Total Metals Annual Dry Weather Loads (lbs)					
BG1	2	4.76	4.66	0.03	16.76
EMD	2	2.21	3.82	0.05	13.79
Total Metals Total Annual Yearly Loads (lbs)					
BG1	5	6.21	9.45	0.30	23.97
EMD	5	2.88	7.17	0.36	22.20

SOURCE: Weston, 2006

Findings from the dry weather source investigation at Buck Gully indicated that the largest tributary flow was found in a drainage channel that collects dry weather runoff from a subdrainage that includes a portion of the Pelican Hill Community. This conclusion was consistent with the Groundwater Seepage Study, which concluded that a significant portion of the base flow was from groundwater seepage as a result of infiltration of imported irrigation waters. The dry weather flow in this drainage channel contained the highest nitrate and phosphate concentrations detected in the canyon watershed. Dry weather flows observed in Buck Gully, however, do not appear to stem from direct urban runoff, but rather from groundwater seepage into the stream channel from either alluvial deposits along the stream bed and/or from groundwater discharges where the channel cuts below the groundwater table. The residential area within this subdrainage had the highest water consumption within the entire watershed and the increased use of water for landscape irrigation was believed to be the primary source of groundwater seepage into Buck Gully Creek based on the findings of the Newport Coast Groundwater Seepage Study (Todd Engineers 2006).

Potential anthropogenic sources of metals in dry and wet weather urban runoff within the Newport Coast Watershed included direct runoff and aerial deposition from roadways that include automotive breakdown products, such as cadmium from tires; copper from brake pads

and tires; lead in brakes, tires, fuels, and oils; and zinc in tires, brakes, and auto frames. Possible natural sources of metals include forest fires, decaying vegetation, and sea spray (Lenntech, 2006). Fertilizer and pesticide applications intended for golf course and home lawn maintenance were believed to represent potential sources of cadmium, Diazinon, Malathion, and the synthetic pyrethroid bifenthrin. Although these sources were identified in the investigation, the statistical results of the water usage and the estimated loads for metals (cadmium, copper and zinc) and bacteria in Buck Gully indicated a strong relationship between the sub-drainage area water use and total loads. The conclusion from these results is that a relationship exists between high water usage within a sub-drainage area and the calculated loadings for constituents that were observed to exceed WQO in wet and dry weather samples.

Chronic toxicity testing on three marine species was conducted as part of the Coastal Canyon Creek Water Quality and Flow Assessment to assess the toxicity of storm flows to the ASBS using a mixing zone sample collected during the second of three storm events sampled at the outflow of Buck Gully and approximately 150 ft. from the Shorecliffs (018) MS4 outfall. Acute toxicity testing was performed on storm flow samples from Buck Gully. These results indicated no toxic response to all three marine species with the exception of giant kelp germination for the mixing zone sample. Further toxicity testing of mixing zone samples from this location conducted as part of the Public Use, Biological Surveys, Bioaccumulation and Restoration Monitoring for Newport Coast and Laguna Beach ASBS Protection and Restoration Program, indicated no toxicity response to giant kelp germination, and the likely cause of the initial study result was due to suspended sediment in the sample that was taken in the surf zone where wave action was re-suspending sediments (Weston, 2009). The results of bioaccumulation studies on mussels planted within the rocky inter-tidal area and above and below the outfall at Buck Gully, also did not indicate impacts from metals, polynuclear aromatic hydrocarbons (PAH), PCBs, orthophosphate pesticides, synthetic pyrethroids, and chlorinated pesticides loading on the biological community of the ASBS.

Working together, the Cities of Newport Beach and Laguna Beach, and the California State Parks embarked upon a comprehensive planning effort to investigate and assess the relative impact of sources on the ASBS, including stormwater flows, dry weather flows, and public use. The resulting data indicated that runoff draining into the ASBS was not the relative greatest impact to the biological resources of the ASBS, and that the most measurable impact was from public use associated with trampling, handing, and collecting of marine life within the easily accessible tide pool areas (Weston, 2009 & 2104).

The results of these scientific studies informed the planning, development, implementation and reassessment of the City's ASBS Protection and Restoration Program through the adaptive management process. Resources for the ASBS Program were prioritized to reducing urban runoff and conserving water to significantly reduce the dry weather loading from the coastal creeks and eliminate non-storm flows directly discharging from the high-priority coastal storm drain outfalls. Resources were also directed to reducing the impact of public use through a tide pool docent and public outreach program. Pilot restoration projects were also implemented in the impacted rocky inter-tidal areas. A summary of the ASBS Protection and Restoration Program that was

implemented as part of and in response to the finding of these historical studies is provided below. These management measures are further discussed in Section 4.

ASBS Protection and Restoration Program Phase I: 2004–2006

- Define and launch ASBS Protection and Restoration Program.
- Runoff reduction projects & tide pool restoration.
- Rocky Intertidal Baseline Biological and Toxicity Data Collection
- Bioaccumulation Study

ASBS Protection and Restoration Program Phase II: 2006–2013

- City of Newport Beach created the Central Orange County IRCWRP. (2006)
- Coordinated with the State Board, Northern California permittees and the South Coast on Bight ’08 and ’13 Regional Monitoring Program
- Bight Collaborative (a group of southern California agencies that includes LA County, the Navy, and Caltrans) to refine new ASBS regulatory requirements.
- Runoff Reduction Program
- Pesticide Management Program
- Buck Gully Erosion Control/Wetlands BMP
- Shorecliff Infiltration Gallery BMP
- Reef Point Parking Lot at Crystal Cove BMP
- Los Trancos Creek Improvement Project
- Little Corona Rocky Intertidal Restoration Pilot Program
- Little Corona Beach Subtidal Reef Survey
- ASBS Community Outreach & Public Impact Monitoring Program
- ASBS Intertidal Assessment Monitoring & Data Gaps Study

3.1.2 Southern California Bight 2008 Regional Monitoring

The Southern California Bight 2008 Regional Monitoring Report (Bight ’08) (Schiff et. al., 2011) details a study that was designed to determine the range of natural water quality and the state of the water quality near ASBS discharges. Because the reference site water quality was similar to the ASBS water quality, an 85th percentile of the reference site data distribution was selected as a primary threshold.

The City participated in the monitoring, which identified the concentration of several metals (cadmium, copper, and nickel) in the ocean samples taken at ASBS 32 to be above the 85th percentile benchmark in two or three of the three samples. Monitoring at ASBS 33 indicated concentrations of total suspended solids (TSS) and several metals (arsenic, chromium, and iron)

were above the 85th percentile benchmark in two or three of three samples. It is important to note that these results are based on a limited sample size (two to three samples). Table 3-2 presents the results of three water quality samples taken at ASBS 32 and 33 for the Bight '08 study.

TABLE 3-2
BIGHT '08 STUDY NUMBER OF EXCEEDANCES FOR ASBSS 32 AND 33

	Constituents with 2 or 3 out of 3 Exceedances of the 85% Reference							
	Total Suspended Solids	Arsenic Total	Cadmium Dissolved	Cadmium Total	Chromium Total	Copper Dissolved	Iron Total	Nickel Dissolved
ASBS 32	0	0	3	2	0	3	0	3
ASBS 33	3	2	0	0	2	1	2	0

The City conducted as part of the Regional Compliance Monitoring pre- and post-storm ocean mixing zone sampling and analysis for three storm events near the outfalls to Buck Gully, Shorecliffs storm drain (018) and El Morro Canyon. The monitoring program also included storm flow pollutagraph sampling and analysis at the outfalls to Buck Gully and the Shorecliffs storm drain outfall (018).

Buck Gully Outfall Sampling Location

Shorecliffs (018) Outfall Sampling Location

The results of the pre- and post-storm ocean sampling indicated an exceedance of the Ocean Plan daily maximum for cadmium in the mixing zone sample near the Shorecliffs storm drain outfall (018) that was above the pre-storm concentration. The results also indicated that for the second storm event, total copper, selenium, arsenic, nickel, cadmium, chromium and zinc concentrations were higher in the pre-storm sample than in the post-storm sample at the Buck Gully outfall. Pre-storm concentrations for arsenic, cadmium, chromium, nickel, and selenium were higher than the post-storm concentration for the Shorecliffs storm drain outfall ocean sample. These results indicate other sources of metals concentrations in ocean samples than the storm flows from these outfalls. No organophosphate and chlorinated pesticides and PCBs were detected in ocean samples. PAHs were detected in ocean samples, but the highest concentration (five times greater) was detected in the pre-storm sample for the Shorecliffs storm drain outfall (018).

The results of the sampling and monitoring of the outfalls during the three storms events indicated no exceedances of the CTR ratios for the average dissolved metals concentrations in Buck Gully. The CTR ratio for copper was exceeded for all three storm events at the Shorecliffs storm drain outfall, and for zinc for one of the three storm events. The results of the pollutagraph sampling at the Buck Gully and Shorecliffs (018) outfalls for total metals, indicate that total chromium and copper exceeded the CTR WQO in several outfall samples, and for total zinc in several outfall samples for Shorecliffs (018) (Weston, 2009). The ocean receiving water sample

concentration for copper at Shorecliffs (018) was above the instantaneous maximum WQO during all three storm events. These results indicate copper sources within this small drainage area. This drainage area is residential and potential source include copper architectural features, roof flashing, gutters and piping from residential homes and brake pads from cars.

The results of toxicity testing using purple urchin (Strongylocentrotus purpuratus) , echinoderm fertilization tests conducted on post-storm samples from Buck Gully Creek, Shorecliffs storm drain outfall and El Morro Canyon Creek indicated no toxic response (Weston, 2009). These results confirm previous study results that indicate no toxicity observed from storm event discharges to the ASBS and no evidence of bioaccumulation or impact to the biological community from these discharges.

3.1.3 Southern California Bight 2013 Regional Monitoring

Preliminary draft results for receiving water monitoring under the Bight '13 ASBS Regional Monitoring Program were released by the Southern California Coastal Water Research Project (SCCWRP) on August 21, 2014. The Bight '13 program included storm water monitoring results from reference site and receiving water sites. These reference site data are used to determine an 85th percentile of reference threshold of constituents of concern. These thresholds are considered to be above acceptable natural water quality within the Southern California Bight. The results from the program also include the findings from the rocky intertidal habitat surveys, bioaccumulation sampling, and a plume modeling study.

As shown in Table 3-3, certain constituents measured in the receiving water in ASBS 32 at the Shorecliffs monitoring location exceeded the recently revised 85th percentile. These constituents included several metals (e.g., copper, cadmium, and zinc), nutrients, PAHs, and organophosphate and pyrethroid pesticides. The overall exceedance rate in ASBS 32 was 28 percent. There were very few exceedances measured in the ASBS 33, which had an overall exceedance rate of 6 percent. Several constituents in ASBS 32 showed inconsistent exceedances of the 85th percentile, and many of these exceedances did not persist across all monitored storms (see Table 3-3).

TABLE 3-3
SUMMARY OF PRELIMINARY BIGHT 13 OCEAN SAMPLES POST-STORM RESULTS (NUMBER OF SAMPLES ABOVE THE THRESHOLD/TOTAL NUMBER OF SAMPLES)

ASBS/ Constituent	TSS	Ammon. as N	Ortho Phosphate as P	Nitrate as N	Cd	Cu	Cr	Pb	Ni	Se	Zn	Organo-phosphate Pesticides	PAH	Pyrethroid Pesticides
ASBS 32 - Shorecliffs	0/2	1/1	1/3*	2/3	2/3*	3/3*	1/3*	0/2	0/3	2/3	1/3*	1/1	3/3	2/2*
ASBS 33 – Irvine Coast	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	1/1	0/1	0/1	0/1	0/1

*Highest Concentration of 10 Southern Bight Sites

The exceedance of the 85th percentile threshold for copper, cadmium and zinc in post-storm receiving water samples is consistent with the Bight ’08 results. As summarized above, pre-storm sample concentrations for these metals were higher for one of the storm events for Bight ’08. Further evaluation of the Bight ’13 data is needed to compare the pre- and post-storm concentrations. In addition, as summarized above, several metals, such as copper, cadmium, and zinc, measured in the receiving waters of ASBS 32 have been measured in discharges from El Moro canyon, which is considered an ASBS reference site (Weston, 2009). Metals loading contributions from background sources were estimated to be between 46% and 92% of total annual loads (Weston, 2006). Results of the storm event pollutagraph sampling conducted as part of Bight ’08 on the discharges from the Shorecliffs (018) storm drain outfall indicated concentrations above the CTR WQOs for copper, cadmium and zinc from this small drainage area. Toxicity testing of storm flows from this outfall indicated however no toxic effects (Weston, 2009).

The plume study conducted as part of Bight ’13 indicated that the entire areas of ASBS 32 and 33 may be impacted by discharge coming from Newport Bay and the prevalent current moving south into these two ASBS. Further study would be required to assess the magnitude of impact, but the results suggest Newport Bay may contribute to the frequency of exceedances measured in ASBS 32, in particular, as it is further north, closer to the mouth of Newport Bay. These findings support those reported by Weston (2009) that concentrations of pollutants from Newport Bay were likely to impact water quality in ASBS 32.

The biological surveys that were part of the Bight ’13 program indicate that reference and receiving water quality conditions were similar. The rocky intertidal habitat survey concluded that there was no discernible difference in species richness and community composition for mobile and sessile species among selected discharge and reference ASBS in southern California, including the Buck Gully South site in ASBS 32. There were deviations from expected species density and percent cover consistent with some level of disturbance at the Muddy Canyon site, which is in ASBS 33, and may be impacted by the influence of a high level of sand at this location. However, Muddy Canyon is in the southern portion of ASBS 33, approximately two miles away from the Pelican Point community. The Crystal Cove site is also in ASBS 33, just to the north of Muddy Canyon. This site showed a decrease in the difference from expected species density and percent cover when compared to Bight ‘08, and was approximately consistent with results from the nearby reference site at Dana Point.

Bioaccumulation monitoring results as a part of the Bight ’13 Program also found median concentrations of a suite of trace metals and organic compounds to be similar among selected discharge and reference ASBS in southern California, including Buck Gully South (the site representing the ASBS 32 for this particular assessment). Although Buck Gully South showed an exceedance frequency of approximately 40 percent (reference site exceedence frequency is 15 percent), principal components analyses indicated that Buck Gully South was similar to other monitored locations in metals and organics concentrations, including those at reference sites.

The goal of the General Exception, and the ASBS program as a whole, is to protect natural water quality to support sensitive and valued native biological communities present in these special areas. The results from the overall Bight ’13 program, and in particular the biological components

of the latest rocky intertidal habitat survey, highlight that although there are occasional exceedances in water chemistry, natural water quality conditions in ASBS 32 support biological communities that are consistent with reference sites, which are considered representative of natural water quality conditions.

Based on the timeline of receipt of Bight ’13 results and the submittal of this Draft ASBS Compliance Plan, further assessment of the receiving water quality condition will need to occur to gain a complete understanding of whether natural water quality is impacted or if the current level of management measures by the City are protective of natural water quality. The City continues to use an adaptive management strategy to assess the effectiveness of current management measures in order to determine if additional measures as part of the ASBS Protection and Restoration Program. Planned and future BMPs to address these most current results are presented in Section 5.

3.1.4 State of the ASBS Today

Already, the ASBS is showing positive improvements. Since 2007 there has been a notable increase in kelp beds in the ASBS along Newport Coast. Pink and green abalones have reappeared. The public is exhibiting more awareness and protective behavior in and around tide pools at Little Corona (Weston, 2014).

The City’s program to upgrade irrigation systems using smart irrigation controllers and high efficiency nozzles has been very popular and successful in reducing over-irrigation runoff to the ASBS. There has been a perceptible shift in landscapes toward native, drought-tolerant plants and a 15 percent reduction in water use. Water quality has improved as bacterial levels have fallen and there has been a notable decrease in beach postings due to bacterial concerns. This could be partially attributed to the stabilization of lower Buck Gully through the 2011 erosion control project (Weston, 2014).

No persistent dry weather non storm water flows are present at any of the three priority MS4 outfalls to ASBS 32. A low flow diversion is located at the one outfall for ASBS 33 that drains the Pelican Point HOA. Periodic observance of dry weather flows are identified and followed up with first outreach and education on the prohibition of these flows to the ASBS. Repeated violations are followed by fines and required corrective action. In addition, an infiltration gallery have been implemented upstream of the Shorecliffs outfall (018) to intercept 100% of the dry flows. Structural BMPs are also planned for the two remaining outfalls that drain the Cameo Shores development as discussed in Section 5 to directly address these periodic non-storm flows.

The results of the Phase II surveys and monitoring data continue to confirm that public impacts constitute a major concern for protection of the rocky intertidal areas. This includes activities such as trampling and scavenging in the tide pools (Weston, 2014). The City has an extensive docent program and numerous outreach and education programs to reduce these impacts as discussed in Section 4.

With regard to water quality, some of the canyons and storm drain outfalls do exhibit some elevated metal loading, specifically copper and cadmium. While elevated cadmium and selenium

concentrations may be associated with a naturally occurring source in cliff formations, elevated copper loading may be associated with building materials: copper roof, gutters, and downspouts. Synthetic pyrethroid and organophosphorus pesticides measured in the receiving waters of Buck Gully Creek and the storm drain at Shorecliffs (018) may be associated with residential use of pesticides within these drainage areas. The City has implemented a pesticide management program that is discussed in Section 4. Copper source management targeting residential sources is planned to reduce storm flow concentrations at the priority outfalls as discussed in Section 5. PAH concentrations in storm flows and in receiving ocean water samples are to be targeted through more aggressive street sweeping and possible future structural BMPs as discussed in Section 5.0.

3.2 SWRCB Program Final Environmental Impact Report

SWRCB staff issued a PFEIR (SWRCB, 2012a) that evaluated the potential environmental effects of the adoption and implementation of the proposed statewide General Exception to the Ocean Plan waste discharge prohibition. Appendix 5 of the PFEIR includes the results of an assessment of discharges to ASBS conducted by the Southern California Coastal Water Research Project (SCCWRP, 2003) between March 2001 and February 2003; discharges were documented within 100 meters (328 feet) of the high tide lines. The PFEIR Appendix 5 also includes the water quality threat levels designated for the surveyed discharges.

3.3 Evaluation of Discharges

SCCWRP, in their report *Discharges into State Water Quality Protection Areas*, identified 21 potential discharges into the Robert E. Badham State Marine Park (SCCWRP, 2003). Anthropogenic discharges occurring within the Marine Park have been identified and classified into one of the following categories: municipal/industrial stormwater point sources, small storm drain point sources, and non-point sources. Naturally occurring streams and gullies which enter into the refuge were also identified. Figure 3-1 presents the discharges to the Newport Beach ASBS and Table 3-4 presents the discharge categories. Each discharge and outlet classification was defined by SCCWRP personnel using their best professional judgment. Municipal/industrial stormwater point sources were defined as those appearing to serve multiple properties and that also appear to be maintained and/or operated by a municipality or other governmental entity.

Three municipal storm drains were identified. Additionally, seven small storm drains, defined as those drains that appear to serve individual residential or commercial properties (or small clusters of properties), small access/service roads, or developed landscaped areas, were identified within the Marine Park. Non-point source discharges were defined as agricultural discharges, sheet flow from roads, parking lots, stairways and ramps, and erosion/gully formation, with subsequent downstream sediment deposition due to roads or trails in parks or wild areas. Within the Marine Park, eight non-point sources, consisting exclusively of stairways and access ramps, were identified.

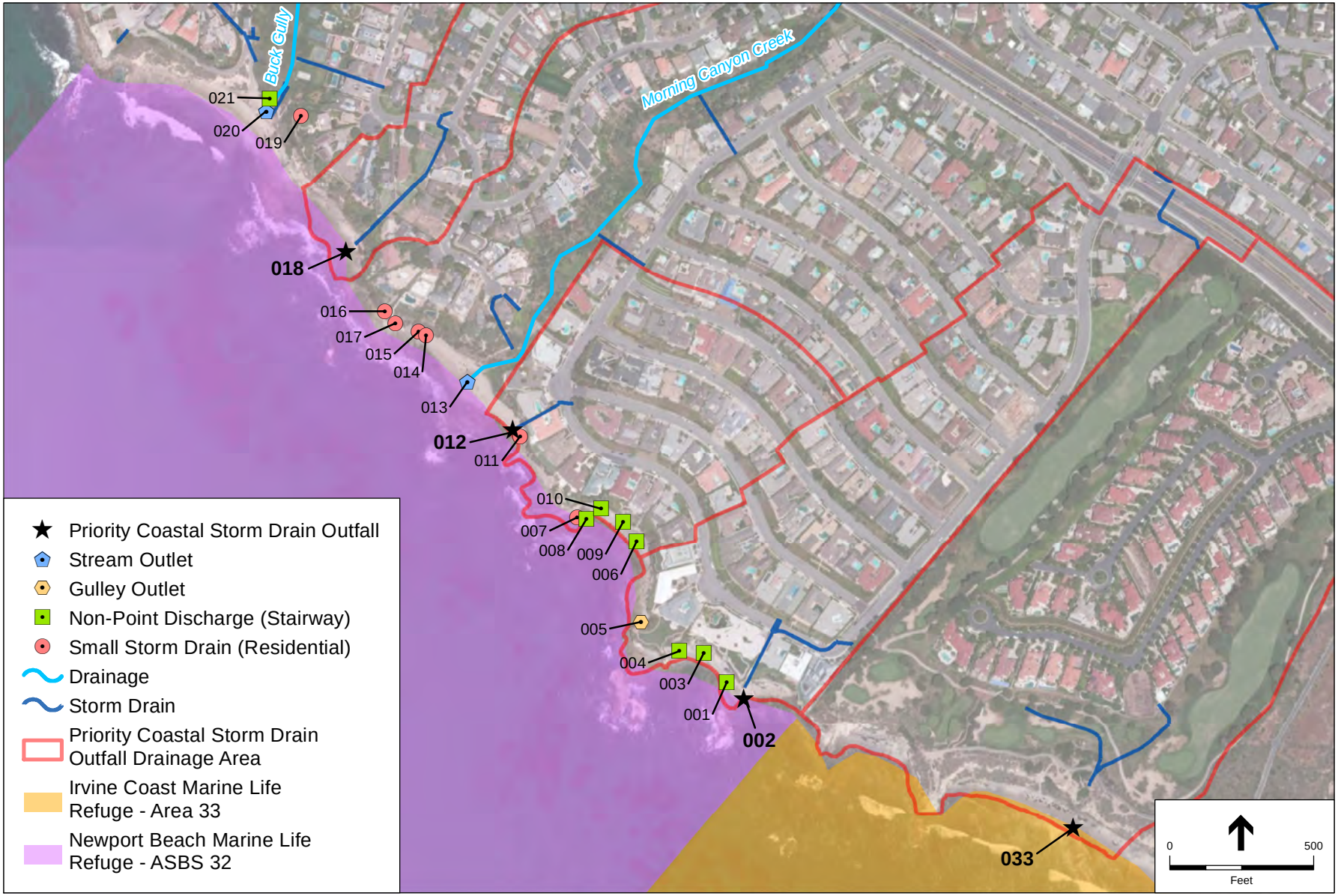
The small, residential storm drains and the non-point source stairways and ramps compose the majority of the outfalls to the Robert E. Badham ASBS; however, the two discharges with the

largest impacts to the ASBS are the two perennial streams, Buck Gully and Morning Canyon. The majority of the watershed is linked to MS4 infrastructure that flows to these two canyon streams. The three municipal storm drains identified are small, localized, residential drainage areas.

TABLE 3-4
HIGH- AND LOW-PRIORITY DISCHARGES AND OUTLETS TO ASBS 32 AND 33

Discharge or Outlet Classification	Number of Discharges/Outlets	Discharge or Outlet ID
Priority Outfalls – Municipal Storm Drains ASBS #32	3	002, 012, 018
Priority Outfalls – Municipal Storm Drains ASBS #33	1	033
Medium-/High-priority – Small Residential Drains	3	007, 015, 016
Low Priority – Small Residential Drains	4	011, 014, 017, 019
Low Priority – Non-Point Discharges (stairs)	8	001, 003, 004, 006, 008, 009, 010, 021
Low- Priority - Gully Outlet	1	005
Creek Outlet (1) – Buck Gully and Morning Canyon Creeks	2	013, 020

(1) Canyon Creek are regulated under Santa Ana Regional Board.



SOURCE: ESRI Imagery, State Water Resource Control Board, and Newport Beach GIS

Figure 3-1

SWRCB Identified Discharge - ASBS 32 and 33

SECTION 4
Implemented Best Management Measures and Practices

The overall strategy of the ASBS program is to protect and restore the marine life refuges by identifying and understanding potential impacts to the marine ecosystem, gauging which impacts are most important, and implementing highest priority measures to mitigate these impacts using an adaptive management approach. The City has taken proactive steps to preserve and enhance the ASBS through several special studies and projects to assess the most efficient and cost-effective ways to prevent pollution at local beaches, in bays, and in creeks. Previous studies include the Coastal Canyon Creeks Water Quality Assessment (Weston, 2007), the ASBS Regional Monitoring – Bight '08 (Weston, 2009), and the ASBS Impact Assessment/Metric Monitoring Program, which included the Public Use Impact Monitoring Program, and the Little Corona Beach Sub-tidal Reef Survey (Weston, 2014). As discussed in Section 3.1, the results of these studies identified potential impacts to ocean water quality from metals during dry and wet weather flows, sediment and pesticides during wet weather flows, and observed impacts to the rocky inter-tidal areas from trampling and scavenging activities.

Results from these studies have been used to develop integrated watershed management plans, which serve as planning documents to "bring together all water-related projects and programs in the region in a collaborative manner among watershed partners" (City, 2009) and to prioritize management measures in the coastal canyon creek watersheds, including those that drain to the ASBS. Watershed management plans, including the Integrated Regional Coastal Watershed Management Plan and ASBS Protection and Restoration Program framework, have been used to guide management measures and BMPs to address these impacts. As discussed in Section 3, the highest priorities identified by the SWRCB are the three storm drain outfalls identified as 018 (Shorecliffs v-ditch), 012 (Cameo Shores north discharge) and 002 (Cameo Shores south discharge). Additionally, measures to reduce potential impacts to the ASBS from the coastal canyon creek discharges (Buck Gully Creek and Morning Canyon Creek) are also part of the City's overall ASBS Protection and Restoration Program. Projects to address these priority outfalls and discharges include both structural and nonstructural BMPs. These projects and programs are summarized in Table 4-1.

TABLE 4-1
IMPLEMENTED AND PLANNED BMPs

Discharges Canyon Creeks and Other Sources	Potential Sources of Impacts	Implemented Nonstructural BMPs	Implemented Structural BMPs	Planned Structural BMPs
High-priority Outfalls BMPs				
ASBS #32				
Storm Drain Outfall 002 – Cameo Shores South	1. **Dry Weather Non-Storm Flows –** Prohibited Discharge 2. **Storm Flows** – priority constituents include metals	**1. Non Storm Flows** – Continue: *Inspections and Enforcements, Runoff Reduction Program* (runoff reduction ordinance enforcement; rebates on smart irrigation controllers, turf replacements, and drought tolerant plantings; tiered water rates; education/outreach efforts); and *Education and Outreach*. Frequent inspections of these outfalls have indicated no evidence of persistent dry weather flows. Periodic observance of dry weather flows are identified and followed up with first outreach and education on the prohibition of these flows to the ASBS. Repeated violations are followed by fines and required corrective action. **2. Storm Flows** – Continue: *Inspections and Enforcements; Education and Outreach; Street Sweeping and Basin Cleaning; Pesticide, Herbicide, and Fertilizer Management Program;* and *Trash. Management Program*	1. **Non-Storm Flows** – Frequent inspections of these outfalls have indicated no evidence of persistent dry weather flows. In addition, structural BMPs are planned for this storm drain outfall to capture periodic dry weather flows. Runoff Reduction Program continues to reduce the frequency of these periodic flows due to over-irrigation. 2. **Storm Flows -** Catch basin trash screens	1. **Non-Storm Flows** – *Cameo Shores Green Street LID Project* – This LID will retrofit a portion of the streets in the Cameo Shores HOA with porous pavement and subsurface gravel storage layers to infiltrate and filter both non-storm and stormwater flows prior to reaching the outfall. The project has already been designed and submitted to the OCTA for a grant. see Section 5.1 for more detail**.** 2. **Storm Flows -** *Cameo Shores Green Street LID Project* –see above and Section 5.1 for more detail. *Cameo Shores Road Dual State Hydrodynamic Separator* will be installed in September 2014.

TABLE 4-1
IMPLEMENTED AND PLANNED BMPs

Discharges Canyon Creeks and Other Sources	Potential Sources of Impacts	Implemented Nonstructural BMPs	Implemented Structural BMPs	Planned Structural BMPs
Storm Drain Outfall 012 – Cameo Shores North	1. **Dry Weather Non-Storm Flows –** Prohibited Discharge 2. **Storm Flows** – priority constituents include metals	*See above for the continued City-wide nonstructural BMPs.* Frequent inspections of these outfalls have indicated no evidence of persistent dry weather flows. Periodic observance of dry weather flows are identified and followed up with first outreach and education on the prohibition of these flows to the ASBS. Repeated violations are followed by fines and required corrective action.	1. **Non-Storm Flows** – Frequent inspections of these outfalls have indicated no evidence of persistent dry weather flows. In addition, structural BMPs are planned for this storm drain outfall to capture periodic dry weather flows. Runoff Reduction Program continues to reduce the frequency of these periodic flows due to over-irrigation. 2. **Storm Flows** – Catch basin trash screens	1. **Non-Storm Flows** – *Cameo Shores Green Street LID Project* – see above and Section 5.1 for more detail 2. **Storm Flows -** *Cameo Shores Green Street LID Project* –see above and Section 5.1 for more detail.
Storm Drain Outfall 018 – Shore Cliff V-Ditch	1. **Dry Weather Non-Storm Flows –** Prohibited Discharge 2. **Storm Flows** – priority constituents include metals	*See above for the continued City-wide nonstructural BMPs.*	1. **Non-Storm Flows –** *Infiltration Gallery at Shorecliff Road* – Catch basins were retrofitted with a pervious bottom to infiltrate 100% of remaining dry weather flows – sidewalk was replaced with pervious pavement to infiltrate dry weather flows. 2. **Storm Flows –** *Infiltration Gallery at Shorecliff Road* – Two Catch basins in series were retrofitted with biomedia filters and trash separators to reduce metals and bacteria loading. Retrofitted third catch basin and sidewalk with pervious material, also reducing pollutant loading to ASBS.	1. **Non-Storm Flows** – No additional structural BMPs planned, unless results of BMP effectiveness assessment monitoring, to be completed by the City in 2014/15, indicate additional control measures required. 2. **Storm Flows** – Based on results of Regional Monitoring under Bight '08 and '13 that includes storm event sampling in the ocean and at the outfall, copper loading to the ASBS will be addressed first with non-structural source control measures that includes restrictions on use of copper building materials and architectural features. To address total metals and PAHs, the City will investigate and employ more aggressive street sweeping methods such as vacuum sweepers. Based on planned further monitoring, additional structural BMPs may be implemented that would include additional LID and media filters.

TABLE 4-1
IMPLEMENTED AND PLANNED BMPs

Discharges Canyon Creeks and Other Sources	Potential Sources of Impacts	Implemented Nonstructural BMPs	Implemented Structural BMPs	Planned Structural BMPs
ASBS #33				
Storm Drain Outfall 033 – Pelican Point	1. **Dry Weather Non-Storm Flows** – Prohibited Discharge 2. **Storm Flows** – priority constituents include metals	*See above for the continued City-wide nonstructural BMPs*	1. **Non-Storm Flows** – *Low-Flow Diversion at Pelican Point* – The low-flow diversion is located at the outfall and diverts all non-storm flows and low-flow stormwater to the sanitary sewer. Diversion will continue to be maintained by the City. *Pelican Hills Golf Course Re-Sod* will reduce water required for irrigation. 2. **Storm Flows** – see above for *Low-Flow Diversion at Pelican Point*	1. **Non-Storm Flows** – No additional structural BMPs planned as 100% of non-storm flows are diverted from ASBS. 2. **Storm Flows -** No additional structural BMPs planned. Based on results of the Bight '13 Regional Monitoring, further assessment is required to determine specific BMP needs.
Canyon Creek BMPs and Restoration Projects (ASBS #32)				
Buck Gully, Outfall 020	1. **Dry Weather Non-Storm Flows –** priority constituents include metals 2. **Storm Flows** – priority constituents include metals, pesticides, sediment and bacteria	*See above for the continued City-wide nonstructural BMPs*	1. **Dry weather Flows** – *Aboveground Wetlands* installed in the upper Buck Gully (Poppy Lane) and the *underground flow-through wetland* constructed in the lower Buck Gully will be maintained. 2. **Storm Flows** - *Grade control structures and erosions controls/bank stabilization measures* implemented in upper (Poppy Lane) and Lower Buck Gully will be maintained to control sediment loading during wet weather events. *Aboveground Wetlands* installed in the upper Buck Gully (Poppy Lane) and the *underground flow-through wetland* constructed in the lower Buck Gully will be maintained.	1. **Dry Weather Flows** – *Dry weather flow infiltration gallery at the beach* - dry weather flows will be diverted at the creek mouth to an infiltration gallery along the sandy beach and infiltrated. The dry weather flows currently flow across the beach into the rocky inter-tidal area of ASBS 32. 2. **Storm Flows** - Based on results of the Bight '13 Regional Monitoring, further assessment is required to determine specific BMP needs.

TABLE 4-1
IMPLEMENTED AND PLANNED BMPs

Discharges Canyon Creeks and Other Sources	Potential Sources of Impacts	Implemented Nonstructural BMPs	Implemented Structural BMPs	Planned Structural BMPs
Morning Canyon, Outfall 013	1. **Dry Weather Non-Storm Flows** –priority constituents include metals 2. **Storm Flows** – priority constituents include metals, pesticides, sediment and bacteria	*See above for the continued City-wide nonstructural BMPs* • In addition to the City-wide nonstructural BMPs, the City is working with the *Pelican Point Golf Course on pesticide management and reduction in irrigation,* to reduce dry weather flows and pesticides in the creek.	1. **Dry weather Flows** – No structural BMPs are currently implemented. 2. **Wet Weather Flows** - *Grade control structures and erosions controls/bank stabilization measures* implemented in upper Morning Canyon will be maintained to control sediment loading during wet weather events.	1. **Dry Weather Flows** – No structural BMPs are currently planned pending further monitoring. 2. **Wet Weather Flows** – No additional structural BMPs are planned pending further monitoring. Based on results of the Bight '13 Regional Monitoring, further assessment is required to determine specific BMP needs
Rocky Intertidal Restoration Projects (ASBS #32)				
Tide pools	ASBS Impact Metric Study demonstrated significant impact from increased trampling and savaging in the rocky inter-tidal areas over last 40 years.	• Continued Docent program at Corona del Mar to provide outreach and education to school groups and general public on limiting heavy trampling, avoiding stepping in tide-pools, and leaving everything in-place. • Mobile tide pool education program to teach school age children and general public about tide pool resources and how to explore without damaging tide pool habitat and biological resources.	• *Little Corona Rocky Intertidal Restoration Program* and *Rockweed Re-Establishment Pilot Program* studied small scale habitat restoration techniques.	• No structural BMPs planned within tide pool area.
Cross –Constituent Migration (ASBS #32)				
Newport Harbor	Cross constituent migration modeling indicated potential impacts from the Harbor during certain tidal and current conditions	• Continued nonstructural programs in the harbor to use sustainable boating practices to reduce copper and bacteria loadings in accordance with TMDLs.	• Structural BMPs to reduce trash and sediment loadings to the harbor will continue to be maintained.	• Planning for additional BMPs is underway as part of TMDL process.

4.1 Implemented Nonstructural BMPS

The City has an extensive nonstructural BMP program, which is implemented City-wide in accordance with the Stormwater MS4 Permit issued by the Santa Ana Region Board. The nonstructural BMPs, which reduce and eliminate non-storm flows, control soil erosion, prevent pesticide discharges, control trash, and include an outreach program designed to educate and change the existing behaviors and attitudes of residents and business operators, address specific sources of impacts to the ASBS identified through source investigations and monitoring programs. These ongoing, nonstructural programs include:

- Inspections and Enforcement (City-wide)
- Runoff Reduction Program (City-wide)
- Education and Outreach (City-wide)
    - Water Conservation/Runoff Reduction Program
    - ASBS Tide Pool Program
    - Pet Waste Management Program
    - High School Education
- Street Sweeping and Basin Cleaning (City-wide)
- Pesticide, Herbicide, and Fertilizer Management Program (City-wide)
- Trash Management Program (City-wide)

The following sections provide a brief description of each of these nonstructural programs, the current level of effort, and a summary of available data on the effectiveness of the programs in addressing the goals of the General Exception for non-storm water flow and pollutant reductions in stormwater.

4.1.1 Inspections and Enforcement Program

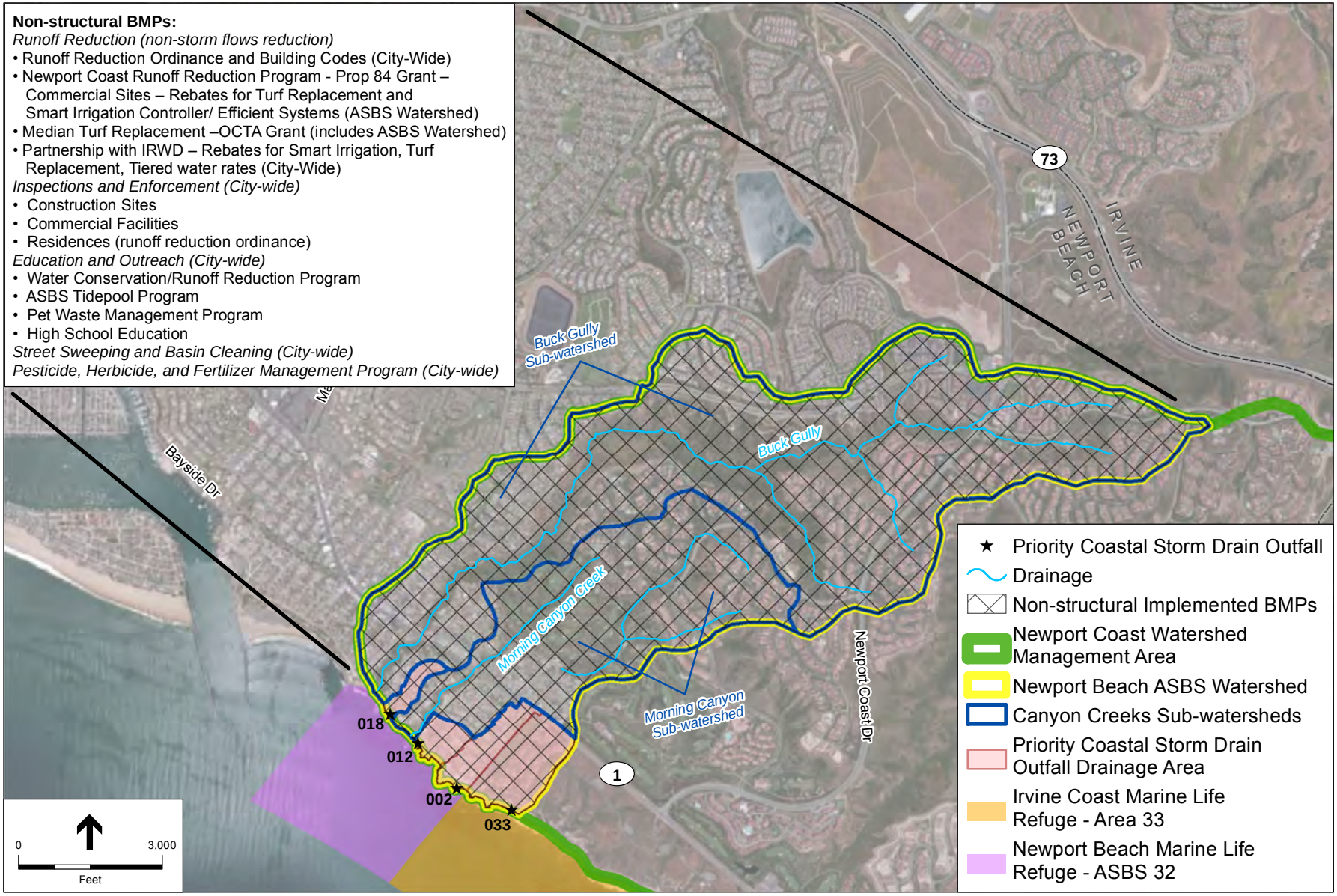
The City conducts routine inspections in accordance with the requirements of the 2010 MS4 Permit (Order No. R8-2010-0033, NPDES No. CAS 618033) and the 2003 DAMP for the Santa Ana Region (SAR) (County of Orange, 2003) to achieve measurable improvements in water quality. The DAMP documents the SAR MS4 Permit compliance programs and provides guidance to the Permittees in the development and implementation of the LIPs, which contain the enforceable elements of the Permittee compliance programs. The LIPs describe the specific Urban Runoff management programs and activities implemented by each Permittee to comply with the MS4 Permit. The DAMP describes a wide range of continuing and enhanced BMPs and control techniques, which are being implemented during the five-year term of the SAR MS4 Permit and which describe the overall Urban Runoff management strategies implemented by the Permittees.

In accordance with the City's LIP (City, 2010), inspections are completed for the following facilities and frequencies listed in Table 4-2. Also provided in Table 4-2 is the percentage of the required inspection frequencies achieved in the most current reporting year (2012-2013). The City has and continues to meet 100% of required inspections. Within the ASBS drainage areas, the predominant facilities inspected are residential, followed by commercial and construction. There are several municipal facilities that are also within the ASBS drainage areas. The inspection program also includes the inspection of the Water Quality Management Plan (WQMP) treatment BMPs for new construction. The City uses its inspection program as part of a three prong approach, including inspection, enforcement, and education, to reduce non-storm runoff, sources of pollutants in stormwater, and illicit discharges. Through monitoring, the City has learned that these programs are essential to achieve measurable change. Education and outreach efforts are further discussed in Section 4.1.3. Additional information on the City's inspection and enforcement program can be found in the LIP (http://www.newportbeachca.gov/index.aspx?page=429).

TABLE 4-2
SUMMARY OF INSPECTION AND ENFORCEMENT PROGRAM

Inspection Program	Frequency Required per General Exception	Frequency Required per LIP	Percent Frequency of Required Inspections Achieved (2012-2013)	Number of Enforcement Actions
Construction Sites	Weekly during the wet season	*Wet Season:* High priority – once per month Medium priority – twice during the season Low priority – once during the season *Dry Season:* As needed	100%	Conducted 798 "Knock & Talks", issued 34 Notices of Violation and 37 Administration Citations (monetary penalties for water quality prohibited discharges) for water quality violations. Programs have led to a 40% reduction in residential violations and a 60% reduction in restaurant water quality violations.
Industrial	Monthly during the wet season	High priority – annually Medium priority – biennially Low priority – once per permit cycle	100%	
Commercial	Twice during the wet season	High-priority – once per permit cycle Medium/Low priority – N/A	100%	
Municipal	Once prior to and once during the wet season	High priority – annually Medium/Low priority – once per permit cycle	100%	
Residential	HOAs inspected annually	Annually	100%	
Restaurants	Restaurants- quarterly Grease traps/interceptors-annually	Annually	100%	
Outfalls >= 18 inches in diameter	Once prior to and once during the wet season; routine maintenance to remove trash and other anthropogenic debris.	Clean and inspect 100% of outfalls annually	100%	
Water Quality Management Plan (WQMP) Treatment Control BMP Inspections		Goal to perform verifications at 100% of developments with approved Project WQMP during the Fourth Term Permit period.	100%	

N/A=not applicable



SOURCE: ESRI Imagery, State Water Resource Control Board, and Newport Beach GIS

Newport ASBS Compliance Plan . 140588

Figure 4-1

Summary of Non-Structural BMPs within Newport ASBS Watershed

Additional inspections and enforcement are noted in the ASBS Protection and Restoration Program framework (City and Weston, 2006) and include:

- Inspection for evidence of over-watering in City landscaped areas, HOA common areas, and private property (irrigation audits). Inspectors identify locations where City and private lands drain into the canyons and take measurements for flow and constituents of concern. This information is used in the public outreach program.
- Monitoring at regular intervals during the course of the runoff reduction program to gauge changes in water discharge to the canyon.
- Issue violations for irrigation runoff and car washing that contain elevated pollutant concentrations as part of the Storm Water Municipal Code.
- Monitoring and identification of sources of illicit discharge to the MS4 system. In addition, the City has a code enforcement program that conducts inspections and follows up on reports of noncompliance with the municipal NPDES permit and water conservation and water quality ordinances.
- Inspection of the outlets presented in Table 3-2. The City has contacted each property owner and a copy of the letter is provided in Attachment A. Site meetings have been conducted to inventory and inspect for runoff/discharge on each property and site audits have been performed on all the identified outlets. Each property has or is in the process of eliminating runoff to the ASBS. Copies of the site visit reports are also included in Attachment B.

4.1.2 Runoff Reduction Program

In addition to participation in the county-wide program, the City has undertaken an aggressive runoff reduction program that includes a multi-media education/outreach program, local runoff ordinance and enforcement program, and an incentives (rebates) program to encourage water conservation and runoff reduction. Combining these programs in a single overall runoff reduction program has resulted in measurable changes in behavior and significantly reduced non-stormwater flows. The runoff reduction program that encompasses the ASBS drainage areas has been implemented in combination with targeted structural BMPs (see Section 4.2) as part of the City's ASBS Protection and Restoration Program. These measures are successfully reaching the target of eliminating non-stormwater flow discharge to the ASBS for the high-priority outfalls (see Section 3.3). Table 4-3 summarizes the elements of the non-stormwater flow runoff reduction program being implemented throughout the City including the ASBS drainage areas.

TABLE 4-3
RUNOFF REDUCTION PROGRAM

Program Element	Element Description and Goals	Date Begun
Runoff Reduction Ordinance – City Code - Enforcement Program	• City Ordinance on Runoff Reduction prohibiting activities that include over-irrigation, washing down streets/driveways with a hose • Enforcement of Ordinance is conducted by Inspectors with Public Works and Code Compliance Officers within Community Development • Building permits and new land development requirements have been revised to include water conservation	2009
Newport Coast Runoff Reduction Program – Prop 84 Grant – Landscape Program – Targeting Commercial Properties	• Provides incentives (rebates) to publically-owned and commercial landscape owners to implement water efficient improvement projects • Program grants up to $2.00/sq. ft. or 35% of total project cost • Promotes installation of weather-based irrigation controllers • Provides information on drought-resistant wildflowers, shrubs, and trees, as well as recommendations for appropriate plant food, fertilizers, and herbicides on the website • Rewards “5-Star” behavior by finding gardens and technologies and highlighting them in ads and inserts • Goal is to reduce non-storm water runoff and water use	2010
IRWM Water Smart Landscape Program and City Runoff Reduction Program – Targeting Residences	• Uses tiered water rates to incentivize water conservation • Provides incentives (rebates) to residences to implement water efficient improvement projects • Promotes installation of weather-based irrigation controllers • Provides information on drought-resistant wildflowers, shrubs, and trees, as well as recommendations for appropriate plant food, fertilizers, and herbicides on the website • Sponsors residential “drought tolerant” landscaping contest • Goal is to reduce non-storm water runoff and water use	2009
Median Turf Replacement - Orange County Transit Authority (OCTA) Water Quality Grant	• OCTA Grant used to replace existing turf grass media landscape with drought tolerant plants along 3 mile stretch between San Joaquin Hill Rd. and Jamboree Rd. – a portion drains to Buck Gully and ASBS • Goal is to reduce water use and non-storm flows	2014
Education/ Outreach Partnerships Targeting Runoff Reduction – Water Quality and Ocean Resource Protection	• City has partnered with the following organizations: o Inside the Outdoors o Department of Education o Surfrider o MiOcean o Zero Trash Newport o Irvine Ranch Conservancy • Community Events o Earth Day 2103 -1,700 attended o World Water Day o Coastal Cleanup -559 volunteers removed 12,270 lbs. of trash and 300 lbs of recyclables o Corona del Mar Association Expo o Civic Center Grand Opening -City showcased water conservation landscaping and water quality projects o Race for Cure – provided information on environmental protection and restoration project to 24,000 in attendance	2003

Program Element	Element Description and Goals	Date Begun
Education/ Outreach	• Creates water usage maps using water usage records from the City, IRWD, and the Irvine Company to direct the public outreach program at target areas • Tracks progress on water reduction • Encourages a competitive spirit by tracking water usage by HOA and posting to the City website • Approximately 3-4 individual "impressions" have been made on 80% of the residents living in the watershed, and public awareness has increased dramatically. The program is effective due to the continued impressions	2003

Frequent inspections of the priority storm drain outfalls have indicated no evidence of persistent dry weather flows. Periodic observance of dry weather flows are identified and followed up with first outreach and education on the prohibition of these flows to the ASBS. Repeated violations are followed by fines and required corrective action. In addition, structural BMPs have been implemented and are planned for these storm drain outfalls as discussed in this section and in Section 5 to directly address these periodic non-storm flows. **No persistent dry weather non storm water flows are present at any of the three priority MS4 outfalls to ASBS #32.** There is low flow diversion upstream of the storm drain outfall for the Pelican Point HOA outfall to ASBS #33 that diverts 100% of non-storm flows.

4.1.2.1 Water Smart Program

To reduce the groundwater mound and resulting seeps (i.e., dry weather flows), the City has partnered with the Irvine Ranch Water District (IRWM) to promote water conservation and water-use reduction measures as part of the IRWM Water Smart Program and the City's overall Runoff Reduction Program. These water conservation and water-use reduction measures that result in a decrease in non-storm flows in both the canyon creeks and storm drain outfalls include a tiered water-use rate structure and rebates for installation of smart irrigation controllers, more efficient irrigation drip systems, turf replacement, and use of drought-tolerant plantings. These water conservation measures have been implemented in combination with the City Runoff Reduction Ordinance and revised City Building Codes that promotes these measures and prohibit wasteful water behavior that results in non-stormwater flows. These measures are further promoted through an extensive public outreach and education program conducted in coordination with a number of local and regional nongovernmental organizations. The City, through a Proposition 84 grant, is also targeting commercial properties to reduce over-irrigation.

4.1.3 Education and Outreach

Public education is an essential part of the City's municipal stormwater program and ASBS Protection and Restoration Plan. Developing programs to inform and involve the public can be an effective method for controlling urban runoff and stormwater pollution. Emphasizing the relevant impacts of urban runoff and stormwater pollution to each particular target audience increases the likelihood that the messages will be noticed and that the audience will support and participate in

the program implementation. The City participates in the county-wide education and outreach program in accordance with the DAMP. The county-wide program is currently undertaking the following types of public education activities:

- Revising existing materials and developing new materials as necessary to communicate with audiences about urban runoff, how their actions affect water quality and BMPs to help solve the problem.
- Placing advertisements in local publications, on bus backs, on municipal vehicles, in theaters and/or on television and radio.
- Submitting information for city newsletters and websites.
- Implementing point-of-purchase campaigns with stores such as home improvement and pet stores.
- Building relationships with community organizations and chambers of commerce.
- Using utility bill inserts to communicate with residents and businesses.
- Employing targeted outreach to specific industries, especially the food service industry.
- Reviewing school education opportunities including Project Wet Workshops (teacher training workshops) that are endorsed by the SWRCB and the new Unified Environmental Education Program of California EPA (CalEPA) that focuses on waste reduction and on-campus storm water activities.

4.1.3.1 Water Conservation/Runoff Reduction Program

The City has partnered with the Irvine Ranch Water District to promote water conservation and water-use reduction measures as part of an overall Runoff Reduction Program. These water conservation and water-use reduction measures that result in a decrease in non-storm flows in both the canyon creeks and storm drain outfalls. The Water Smart Program in tandem with the City's Runoff Reduction Program focuses on irrigation reduction that targets homeowner association common areas in watersheds that drain to, or are adjacent to, the ASBS. A review of City and IRWD water usage records was performed, and based on the results of the review, a marketing campaign was designed and implemented to target reducing residential water usage throughout the Newport Coast Watershed. Irrigation system evaluations of residential properties and homeowner association common areas were performed and data from these evaluations were used to identify, prioritize and implement types of runoff reduction. Additionally, public workshops discussed the benefits of switching existing water intensive landscapes to more native landscapes which are water-thrifty in nature.

The Runoff Reduction Program has been very effective and well received throughout the targeted watershed. As a result of the City's runoff reduction program, about 15 percent of houses in the Newport Coast Watershed have been outfitted with the weather-based irrigation controllers with over 86,000 high efficiency nozzles also installed. Preliminary calculations show a decrease in water use by 15 percent with a corresponding reduction in irrigation runoff by approximately 30 percent.

Public Notice/Invitation for Runoff Reduction Program Rebates for Smart Irrigation Controllers and High Efficiency Nozzles to Promote Water Conservation and Reduce Non-Storm Flows – Cameo Shores HOA Discharges to ASBS

4.1.3.2 ASBS Tide Pool Ranger Program

The City has hired a Tide Pool Ranger that provides educational outreach to school and community groups that visit the ASBS. The Ranger's responsibilities include oversight of the tide pool areas. The main objectives of the position are to ensure the tide pool rules are followed and to educate and enforce regulations and issue citations when necessary. In addition, the officer offers public education and outreach activities.

4.1.3.3 Pet Waste Management Program

To reduce nutrient and bacteria loads to receiving waters, the City has implemented an extensive public education program for pet waste management that includes the development and distribution of brochures, signage and available plastic bags. The Enforcement branch has the power of citation for violation of the pet waste management codes.

4.1.3.4 High School Education

Surfrider Foundation and the City of Newport Beach have teamed up with Corona del Mar High School to sponsor supplementary reference materials, site visits, guest speakers and field visits for an Advanced Placement Environmental Sciences class.

4.1.4 Street Sweeping and Basin Cleaning

The City conducts weekly street sweeping to remove debris and grit from street and reduce the potential loading of pollutants that are carried by runoff into the storm sewer system. The City also maintains and cleans 100 percent of the City's catch basins every year. Figure 4-2 presents the weekly street sweeping routes within the ASBS Watershed and priority storm drain outfall drainage areas.

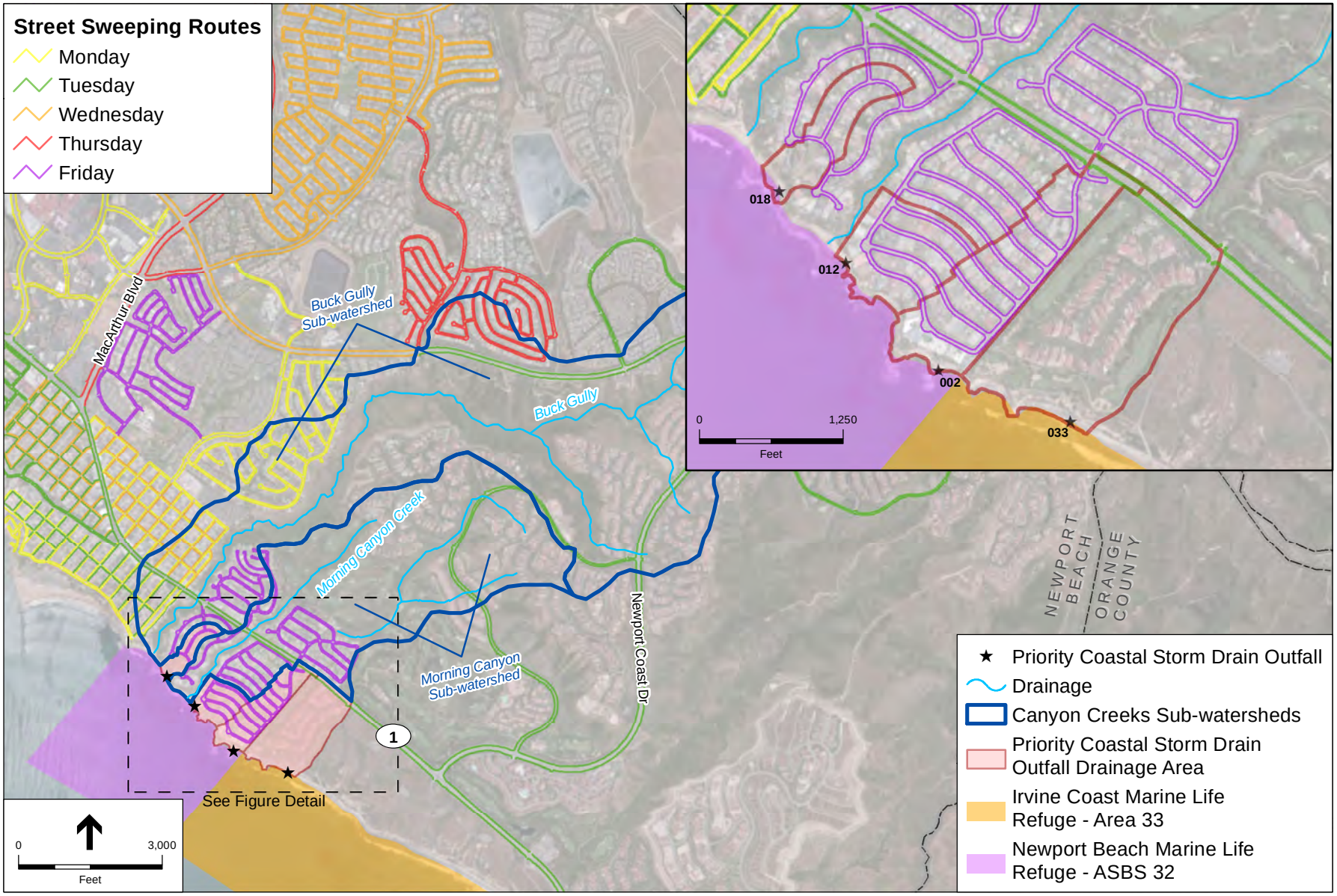
4.1.5 Pesticide, Herbicide, and Fertilizer Management Program

The City has adopted an Integrated Pesticide Management (IPM) Plan that requires training of applicators, submittal of reports on the amount and type of pesticide/herbicide and fertilizer used, specific protocols for application, and mandates a defined list of chemicals be used. The City has a point of contact for the IPM program.

An educational program was developed to promote good pesticide management practices within the surrounding watersheds that drain to the Newport Coast ASBS. The program targeted both residential property owners and commercial sectors (e.g., landscapers, golf courses, garden centers) that apply or sell pesticides. The use of pesticide BMPs and integrated pest management practices were promoted via public workshops and informational mailers with the goal of reducing pesticide loads to the ASBS, improving recreational quality of public beaches, and raising awareness and promoting environmental stewardship. As part of the Pesticide Management Program, the City of Newport Beach participated in the California Stormwater Quality Association pesticide subcommittee.

4.1.6 Trash Management

The General Exception prohibits discharging trash to the ASBS. To comply with this prohibition, the City has multiple measures to address trash discharges including continuous deflection separation (CDS) units, catch basin trash screens, aggressive street sweeping (see Section 4.1.4), a full service city refuse program, beach cleanups, and an Adopt a Beach program.



SOURCE: ESRI Imagery, State Water Resource Control Board, and Newport Beach GIS

Newport ASBS Compliance Plan . 140588

Figure 4-2

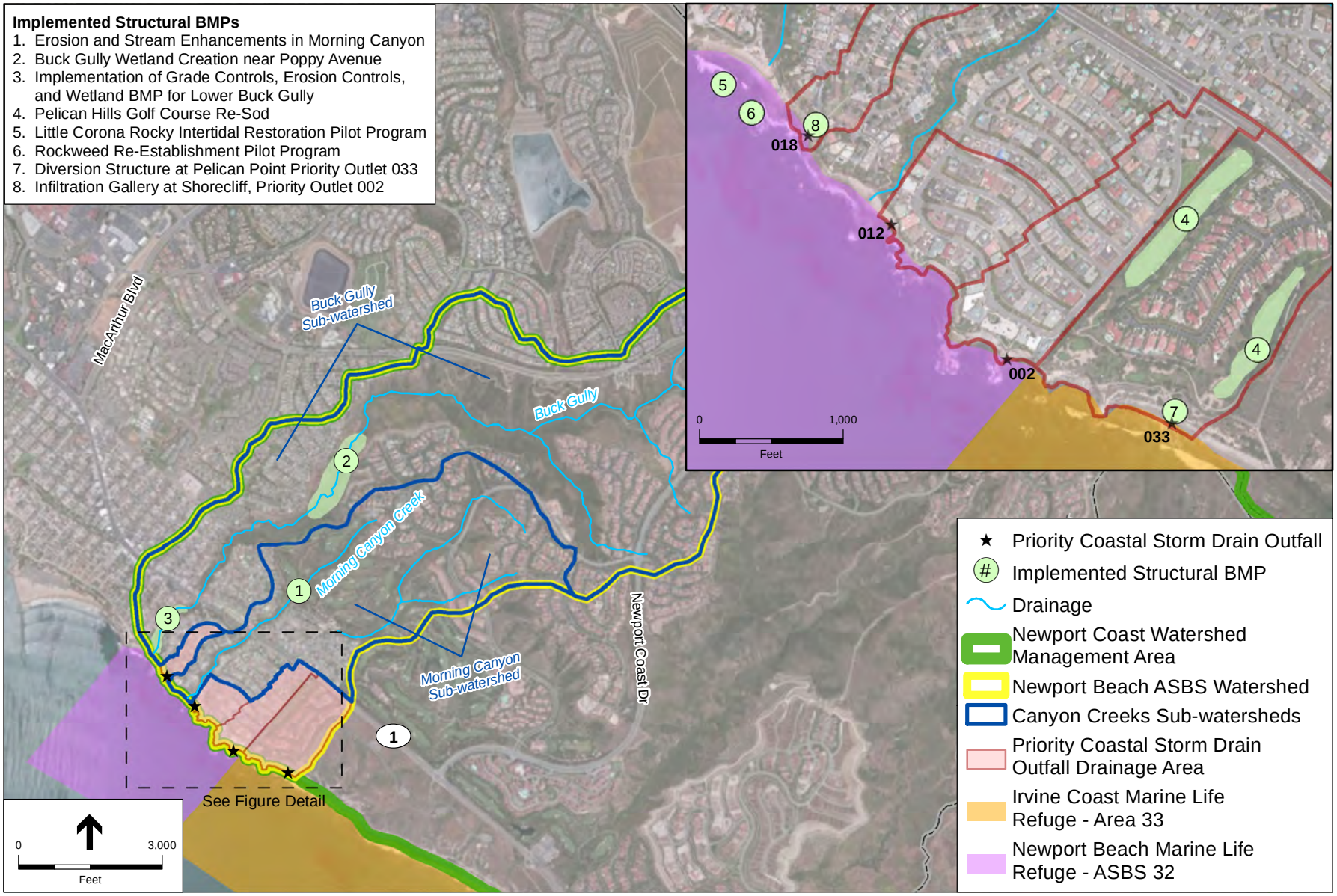
Weekly Street Sweeping Routes within Newport ASBS Watershed

4.2 Implemented Structural BMPs

The City's ASBS Protection and Restoration Program for the Newport Coast Watershed used the results of previous studies (see Section 3) to implement BMP projects that address the 21 points of discharge identified by the SWRCB (shown in Figure 3-1 and listed in Table 3-2). As discussed in Section 3, the highest priorities are the three storm drain outfalls identified as 002 (Shorecliffs v-ditch), 012 (Cameo Shores north discharge), and 018 (Cameo Shores south discharge) and two canyon creeks (Buck Gully and Morning Canyon Creeks). The implemented projects are shown in Figure 4-3 and include:

- High-Priority Outfalls BMPs
  - Infiltration Gallery at Shorecliff Road (Outfall 018)
  - Low-Flow Diversion at Pelican Point (Outfall 033)
  - Pelican Hills Golf Course Re-Sod (Outfall 033)
- Canyon Creek BMPs and Restoration Projects
  - Buck Gully Canyon
    - Aboveground Wetlands and Grade Control in Upper Canyon
    - Underground Flow-Through Wetland and Grade Control in Lower Canyon
  - Morning Canyon Grade Control and Stream Enhancements
- Rocky Intertidal Restoration Projects
  - Little Corona Rocky Intertidal Restoration Pilot Program
  - Rockweed Re-Establishment Pilot Program
- Cross-Constituent Migration
  - Newport Harbor

The runoff reduction program, as described in Section 4.1, is also an integral part of the overall non-storm flow elimination program. Additional structural BMPs are also as presented in Section 5.



SOURCE: ESRI Imagery, State Water Resource Control Board, and Newport Beach GIS

Figure 4-3

Implemented Structural BMPs within Newport ASBS Watershed

4.2.1 High-Priority Outfalls BMPs

- **Infiltration Gallery at Shorecliff Road, Outfall 018** – An infiltration gallery was constructed along the coastal bluff at Shorecliff Road to reduce pollutant loading during dry weather by infiltrating runoff before it reaches a storm drain outfall (Figure 4-4). Three catch basins were connected in series and included a biomedia basin filter to prevent trash from entering the drain and to provide pollutant load reduction in wet weather. Another catch basin with a pervious concrete bottom was constructed between the other basins and the pipe. Additionally, pervious concrete sidewalks were installed to encourage infiltration between the catch basins and the storm drain.

- **Low-Flow Diversion at Pelican Point, Outfall 033 –** A low-flow diversion was installed at the Pelican Point outfall and diverts all non-stormwater flows and low stormwater flows to the sanitary sewer.

- **Pelican Hills Golf Course Re-Sod, Outfall 033** – The Irvine Company has recently completed a major 2-year project to re-sod the Pelican Hills Golf Course with more water-thrifty fairways, and to plant native plants around the fairways. This will lower the amount of water required for irrigation.

- **Water Quality Management Program (WQMP) BMPs** – WQMP have been implemented throughout the ASBS Watershed including the drainage areas for the priority storm drain outfalls. These WQMP are required in accordance with the LID for new and re-development to address water quality in the watershed. The implemented WQMP BMPs are shown on Figure 4-5. These BMPs include bioswales, media filters, hydrodynamic separators and trash collection devices.

SOURCE: Weston, 2014

Figure 4-4

Infiltration Gallery at Shorecliff Road, Outfall 018

SOURCE: ESRI Imagery, State Water Resource Control Board, and Newport Beach GIS

Figure 4-5

WQMP BMPs Implemented on Private Property

4.2.2 Canyon Creek BMPs and Restoration Projects

- **Buck Gully Canyon**
  - **Aboveground Wetlands and Grade Control in Upper Canyon** – At the creek crossing of the fire road off of Poppy Lane, the upstream and downstream areas of the creek have been stabilized using grade control structures and flexible gabions to address further erosion and sediment loading. The area was then re-vegetated with native wetland and riparian plantings to restore the creek habitat. This project has contributed toward water quality improvements and served as a building block for additional renovations in lower Buck Gully, as per the Buck Gully Reserve Resource and Recreation Management Plan (City of Newport and Dudek 2009).
  - **Underground Flow-Through Wetland and Grade Control in Lower Canyon** – In accordance with the recommendation and priorities of the Buck Gully Erosion and Sediment Control Plan, the design and permitting of BMPs to address erosion and improve water quality in Buck Gully were completed in 2007. A series of three stepped-gabion structures were installed in the lower reach of Buck Gully, and bend-way weirs were installed along the upper bend of lower Buck Gully in 2011-2012 (Figure 4-6). These BMPS were implemented to control grade and reduce downstream channel and bank erosion. Additionally, two subsurface flow wetlands were constructed immediately upstream of the gabion structures to enhance the creek habitat and improve water quality.
- **Morning Canyon Grade Control and Stream Enhancements** – The City completed erosion controls and stream enhancements in Morning Canyon in 2008, which significantly reduce fine-grained sediment loading to the ASBS and associated constituents. Seven drop structures were installed in the upper reach of Morning Canyon, which have halted the downcutting in this reach (Figure 4-7). The canyon was also been revegetated with native plants, including restoration of riparian habitat, which has resulted in water quality improvements. The project was monitored for 5 years after construction.

SOURCE: City of Newport Beach 2009 and Weston, 2014

Figure 4-6
Buck Gully Underground Flow-Through Wetland
and Grade Control in Lower Canyon

Before

After

SOURCE: City of Newport Beach, 2007

Figure 4-7
Morning Canyon Grade Control and Stream Enhancements, Before and After

4.2.3 Rocky Inter-Tidal Areas—Restoration Projects

- **Little Corona Rocky Intertidal Restoration Pilot Program** – A study was done to evaluate the effectiveness of non-native seaweed removal in the rocky intertidal ecosystem of the ASBS at Little Corona del Mar. The feasibility of eradicating two non-native species, *Sargassum muticum* and *Caulacanthus ustulatus*, was experimentally tested by removing one of the species from a tide pool and comparing recovery rates to unmanipulated pools. The study found that fast recovery rates would require systematic and sustained eradication efforts several times per year with high effort and costs required. It was recommended that efforts be directed toward monitoring of new occurrences of non-natives in order to facilitate rapid detection and response.
- **Rockweed Re-Establishment Pilot Program –** A study was done to evaluate several methods of reestablishing rockweed including transporting juveniles, relocating fertile reproductive structures, transplanting fertile adults on horizontal and vertical surfaces, and transplanting fertile adults on vertical surfaces. Although monitoring needs to be continued, it is likely that the trial successfully reestablished a self-sustaining rockweed population at the site, given the survival rates of transplanted materials and the presence of more than a dozen "naturally" recruited individuals that likely originated from the transplanted rockweed adult samples.

4.2.4 Cross-Constituent Migration

- **Newport Harbor –**The results of cross contamination studies to date have indicated that under certain tidal and tidal current conditions transport constituents that may include metals, PAH and pesticides from the harbor to the ASBSs downshore (Weston, 2009b). The implementation of structural BMPs to address these constituents is begin addressed through the TMDLS.

4.3 BMP Effectiveness

Table 4-4 provides an overall summary of the implemented BMPs within the ASBS watershed. The summary includes the constituents that are addressed and the results of BMP effectiveness assessment monitoring.

TABLE 4-4
IMPLEMENTED BMPs AND THEIR EFFECTIVENESS

BMP	Constituents Addressed	Wet or Dry Runoff	Effectiveness
Inspections and Enforcement Program	Water flow, metals, bacteria	Dry, Wet	Conducted 798 "Knock & Talks", issued 34 Notices of Violation and 37 Administration Citations (monetary penalties for water quality prohibited discharges) Programs have led to a 40% reduction in residential violations and a 60% reduction in restaurant water quality violations.
Runoff Reduction Program	Water flow	Dry	Through a State Proposition 84 grant award, the program has assisted over 2,000 customers and installed over 51,900 high-efficiency nozzles, and 1,048 weather based irrigation controllers. According the Metropolitan Water District's numbers, the estimated annual water saved is over 34 acre-ft (110 million gallons). Irrigation runoff has been reduced by about 4,000 gallons per day. Runoff Reduction Program has been very effective and well received throughout the targeted watershed. As a result of the City's runoff reduction program, about 15 percent of houses in the Newport Coast Watershed have been outfitted with the weather-based irrigation controllers with over 86,000 high efficiency nozzles also installed. Preliminary calculations show a decrease in water use by 15 percent with a corresponding reduction in irrigation runoff by approximately 30 percent.
Education and Outreach- Water Conservation/Runoff Reduction	Water flow	Dry, Wet	Approximately 3-4 individual "impressions" have been made on 80% of the residents living in the watershed, and public awareness has increased dramatically. The program is effective due to the continued impressions.
Education and Outreach- ASBS Tide Pool Program	Non-natives	N/A	Increase in public awareness of trampling and scavenging impact
Education and Outreach- Pet Waste Management Program	Bacteria	Wet	Increased participation in pet waste management
Education and Outreach- High School Education	N/A	Dry, Wet	Increase awareness of water quality issues and biological resources of ASBS
Street Sweeping and Basin Cleaning	Trash	Wet	39,495 curb miles were swept removing 5,698 tons (dry) of debris
Pesticide, Herbicide, and Fertilizer Management Program	Chemicals	Dry, Wet	Applied amounts were reduced by 29% (22,000 lbs.) in FY 12 -13 compared to the previous year's usage.
Trash Management Program	Trash	Wet	Measured reductions in trash entering receiving waters
Infiltration Gallery at Shorecliff, Outfall 018	Water flow, metals	Dry	Significant dry weather metal load reduction
Low Flow Diversion at Pelican Point, Outfall 033	Water flow, metals	Dry, Wet	100% of non-storm flows diverted.
Pelican Hills Golf Course Re-Sod, Outfall 033	Water flow	Dry	Reductions in water used and runoff
Buck Gully Aboveground Wetlands and Grade Control in Upper Canyon	Metals, sediment, bacteria	Dry, Wet	The project is monitored through quarterly inspections and is performing well.
Buck Gully Underground Flow-Through Wetland and Grade Control in Lower Canyon	Metals, sediment, bacteria	Dry, Wet	Sediment load reduction of 1,086 kg during dry weather; mixed results on effectiveness of bacteria removal; effectiveness during wet weather unclear; sustainable bank armoring achieved. Water quality monitoring results show an 80% decrease in fecal coliform and other lower constituent levels

BMP	Constituents Addressed	Wet or Dry Runoff	Effectiveness
Morning Canyon Grade Control and Stream Enhancements	Metals, sediment, bacteria	Wet	Measured reductions in erosion and sediment transport
Little Corona Rocky Intertidal Restoration Pilot Program	Non-native species	N/A	Removal of non-natives would require high effort and costs
Rockweed Re-Establishment Pilot Program	Non-native species	N/A	The trial successfully re-established a self-sustaining rockweed population at the site
Cross-Constituent Migration- Newport Harbor	Bacteria	N/A	Further study needed as part of TMDL monitoring

SECTION 5
Planned Best Management Measures and Practices

The City has taken a proactive approach to addressing discharges to the ASBS through the City's ASBS Protection and Restoration Program that was initiated in 2005/2006. An adaptive management approach was embarked upon by the City; this approach includes the iterative process of investigation/study, implementation, and assessment/reassessment. The City used the results of several studies, which are highlighted in Section 3, to prioritize the implementation of both nonstructural and structural BMPs to reduce potential impacts to the ASBS. These studies include the Coastal Canyon Creek Water Quality Assessment, ASBS Impact Metric Monitoring, BMP Effectiveness Assessment Monitoring, and the Bight '08 and Bight '13 Regional ASBS Monitoring. Planned BMPs have been identified based on these studies/monitoring results and the implementation of numerous BMPs have followed as discussed in Section 4.

The Planned BMPs are based on the historical data, including Bight '08, preliminary Bight '13 data, and the requirement of the General Exception that prohibits the discharge of non-storm flows into the ASBS. In addition, the City has planned BMPs to address priority constituent loading from storm flows at the priority outfalls and coastal canyon creeks. The City plans to continue the nonstructural BMPs that further address non-storm water flow prohibition through the City's runoff reduction program and residential and commercial inspection and enforcement program.

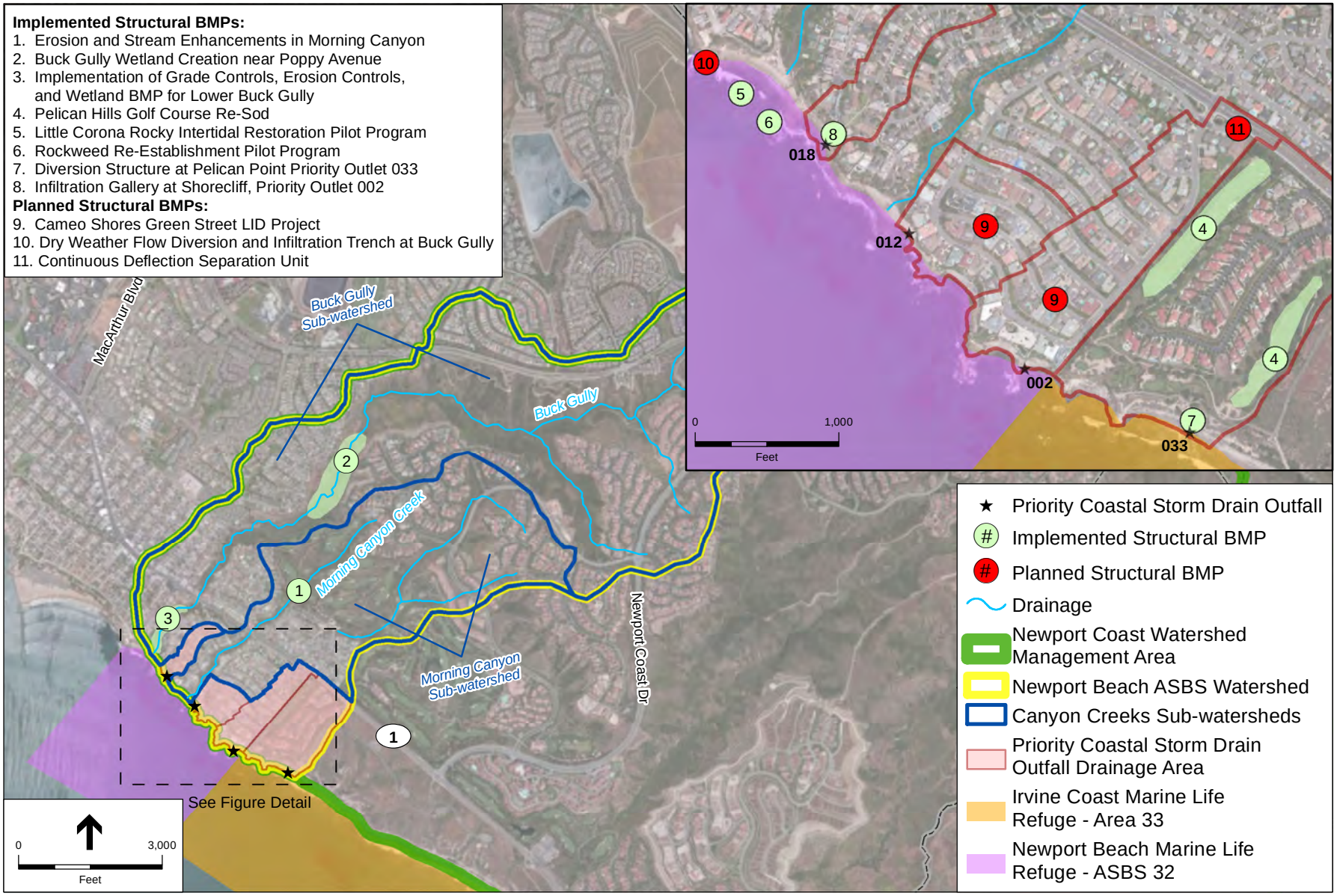
The Bight '08 results with other historical data have been used to design and implement the existing BMPs and the planned structural BMPs presented in this section. For example, the priority constituents that have been identified based on the Bight '08 monitoring have been used in the design of implemented and planned BMPs to address metals loading in storm flows (Table 4-1). Future BMPs will be based on further assessment of the final results of the Bight '13 monitoring and ongoing assessments within the ASBS Watershed to determine cost-effective approaches to addressing any priority constituents. Monitoring results will be compared to published reference data and used with the flowchart in the General Exception (see Section 6) to determine compliance with natural water quality. Furthermore, assessments of the results of biological monitoring during Bight '13 (rocky inter-tidal habitat assessment, toxicity testing, and bioaccumulation testing) will be considered when assessing the frequency and magnitude of water chemistry exceedances. If these results indicate noncompliance with the natural water quality benchmark and goals of the General Exception, then additional future BMPs will be implemented as discussed in the next subsection.

5.1 Planned Structural BMPs

Figure 5-1 presents the location of the ongoing and planned structural BMPs for the Newport Beach ASBS Watershed. The planned structural BMPs include:

- **Cameo Shores Green Street LID Project (Priority Storm Drains 002 and 012)**– This LID will retrofit a portion of the streets in the Cameo Shores HOA, and has already been designed and submitted to the Orange County Transit Authority for a grant. The project will replace impervious pavement with porous pavement and subsurface gravel storage layers to infiltrate and filter both non-storm and stormwater flows prior to reaching the two priority storm drain outfalls. The City investigated the feasibility of installing low flow diversions at the two outfalls that drain the Cameo Shores Development (002 and 012). Because of the locations and elevations of the outfalls and the nearest sanitary sewer, it was determined infeasible. New pumping stations and infrastructure would have been required that would be very difficult to construct with the limited City-owned property within the required location of these facilities. Other alternatives were investigated. These alternatives include the implementation of a LID BMP that would be retrofitted to existing streets within the Cameo Shores Development. The implementation of this BMP is dependent on funding. The anticipated implementation period is from 2016-2017.
- **Shorecliffs Copper Reduction Program (Priority Storm Drain 018)** - Based on results of Regional Monitoring under Bight ’08 and ‘013 that includes storm event sampling in the ocean and at the outfall, copper loading to the ASBS will be addressed first with non-structural source control measures that includes restrictions on use of copper building materials and architectural features. To address total metals and PAHs, the City will investigate and employ more aggressive street sweeping methods such as vacuum sweepers. Based on planned continued monitoring of this outfall, additional structural BMPs may be implemented that would include additional LID and media filters. The already implemented LID infiltration gallery at Shorecliffs will capture and infiltrate low flows and the biofilters installed on the catchment basin inserts will reduce trash and debris loading.

- **Buck Gully Dry Weather Flow Infiltration Gallery at the Beach** – The City has plans to design and construct a dry weather flow diversion at the base of Buck Gully that will divert dry seasonal flows to an infiltration gallery in the sandy beach. The dry weather flows currently flow over a weir at the base of Buck Gully in a scour pond and then flow into the rocky-intertidal area. This planned infiltration gallery for dry weather flows will significantly reduce the metals and bacteria loading to ASBS 32. The implementation of this BMP is dependent on funding. The anticipated implementation period is from 2016-2018.



SOURCE: ESRI Imagery, State Water Resource Control Board, and Newport Beach GIS

Figure 5-1

Planned BMPs within Newport ASBS Watershed

5.2 Future Structural BMPs

The implementation of additional BMPs in the future will be based on the final results of the Bight '13 monitoring, historical data, and assessment of conditions and sources in the ASBS Watershed. These results will be used with the compliance flowchart in the General Exception (Attachment 1) and assessed in conjunction with biological monitoring results to determine compliance with natural water quality. If these results indicate noncompliance with the natural water quality benchmark, then additional BMPs will be implemented. The type of BMPs will depend on the constituent type and concentration. Structural BMP design will be based on Attachment B A.2.d of the General Exception.

The type of future structural BMPs that will be implemented based on the Bight '13 Regional Monitoring results and BMP effectiveness assessment monitoring may include:

- Centralized BMP on public land (stormwater collected from multiple parcels)
  - Infiltration Gallery
  - Bioretenion Area
  - Treatment Wetland
- Distributed BMPs on public land/right of way (stormwater collected from single or limited number of parcels)
  - Bioretention
  - Permeable pavement
  - Green streets
- Restoration Projects
  - Creek Restoration
  - Rocky Inter-Tidal Restoration

Selection of the above BMPs and dates of implementation of those BMPs is not known at this time pending additional data evaluation as detailed in Section 3. Data comparison for potential alteration to natural water will be performed in 2015 and the appropriate selection and design of structural BMPs made, as necessary.

Any proposed structural BMPs and tentative implementation schedule will be submitted for SWRCB comment in the Final compliance plan update by September 20, 2015, including comments to this Draft. The implementation and construction schedule will target 2016-2017, with full implementation of structural BMPs prior to the March 20, 2018 operational deadline.

SECTION 6
Compliance and BMP Implementation Schedule

6.1 Compliance and Implementation Schedule

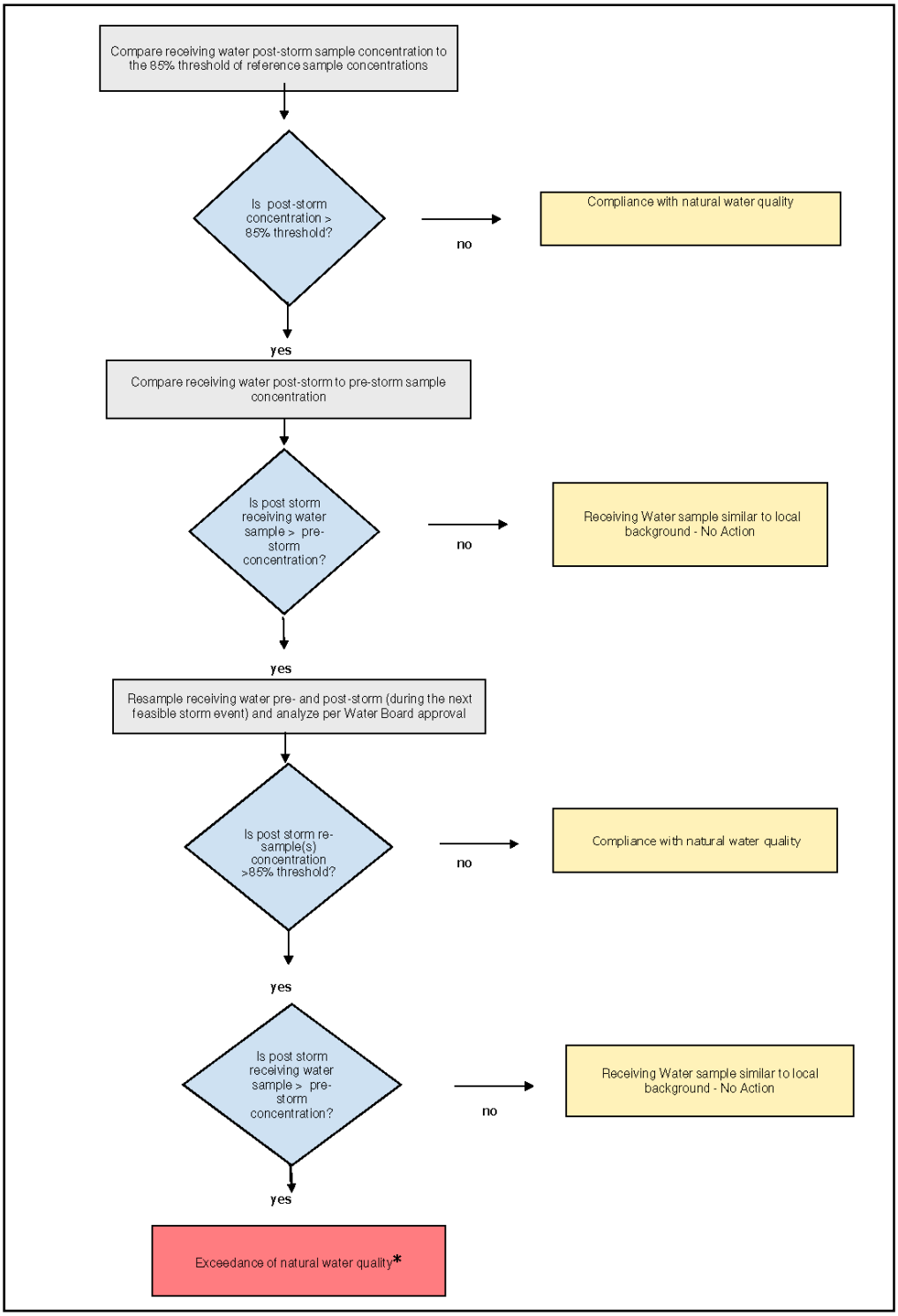
Based on data collected under the Bight '08 and Bight '13 Regional Monitoring Surveys (SCCWRP 2008 and 2013, respectively), discussed in Section 4.0, the City's current level of nonstructural and structural BMP implementation is contributing to improved conditions in ASBS 32 and 33. The City has prioritized protection of the ASBS for many years and continues to do so. Despite some water chemistry exceedances, biological testing in the area is comparable to reference sites, which indicates that the City is successfully working to achieve compliance with the General Exception requirement to protect natural water quality. Future BMP requirements will be based on monitoring results and further assessments of key source areas within the watershed. A low-flow diversion at Pelican Point HOA and the LID infiltration gallery at Shorecliffs storm drain outfalls capture and divert 100% of the dry weather flows at these locations. The remaining two priority storm drain outfalls that drain the Cameo Shores development do not have observed persistent dry weather flows. The comprehensive Runoff Reduction Program is making measurable reductions in these flows throughout the ASBS Watershed. The implementation schedule deadlines for the City, in accordance with the General Exception, are as follows:

- **March 20, 2012:**
  - Non-authorized discharges to ASBS 32 and 33 were effectively prohibited.
- **September 20, 2013:**
  - Nonstructural controls were continued.
- **September 20, 2014:**
  - The City submitted a Draft ASBS compliance plan for ASBS 32 and 33 to the SWRCB Executive Director and the SDRWQCB Executive Officer.
- **September 20, 2015:**
  - The City shall submit the Final ASBS compliance plan for ASBS 32 and 33 with a schedule for structural controls based on the results of monitoring runoff and receiving water.

- **March 20, 2018:**
  - Dischargers must comply with the requirement that their discharges into the affected ASBS maintain natural ocean water quality (within the 85th percentile threshold of reference water quality data and pre-storm levels). If results exceed this threshold, see the flowchart in Figure 6-1 for appropriate actions.

The City has met the compliance dates for prohibiting non-authorized discharges to ASBS 32 and 33 and implementing nonstructural controls. To continue compliance with the General Exception, the City plans to maintain and implement existing and planned BMPs as described in Sections 4 and 5, and to continue monitoring in the ASBS per the General Exception. Should the operational deadline not be met for financial or other implementation limitations, additional information to support an extension will be provided to the SWRCB prior to December 31, 2017 for regulatory input and approval.

According to Section I.A.2 of the General Exception, the Compliance Plan is to be included in the discharger's LIP (equivalent to a SWMP or SWPPP).



*Note: When an exceedance of natural water quality occurs, the discharger must comply with Section I.A.2.h (for permitted storm water) or Section I.B.2.C (for non-point sources). Note, when sampling data are available, end-of-pipe effluent concentrations will be considered by the Water Boards in making this determination.

SOURCE: General Exception, Attachment 1

Figure 6-1: Flowchart to Determine Compliance with Natural Water Quality

6.2 Required Reporting of Water Quality Exceedances

If the results of receiving water monitoring (described in Section IV.B of the General Exception) indicate that wet weather discharges that include storm water are causing or contributing to an alteration of natural water quality in the ASBS, the City must submit a report to the SARWQCB within 30 days of receiving the analytical results. (See Figure 6-1 for determining compliance.)

The report must:

- Identify the constituents in stormwater that alter natural water quality and the potential sources of those constituents.
- Describe BMPs that are currently being implemented, BMPs that are identified in the ASBS compliance plan for future implementation, and any additional BMPs that may be added to the ASBS compliance plan to address the alteration of natural water quality.
- Include a new or modified implementation schedule.

Within 30 days of approval of the report by the SARWQCB, the City must revise its ASBS compliance plan to incorporate any new or modified BMPs that have been or will be implemented, the implementation schedule, and any additional monitoring required. Nonstructural BMPs must be implemented within one year of the approval (by the State or Regional Board) of the revised ASBS compliance plan. Structural BMPs must be implemented as soon as practicable.

As long as the City has complied with the procedures described above and is implementing the revised ASBS compliance plan, the City is not required to repeat the same reporting procedure for continuing or recurring exceedances of natural ocean water quality conditions that are due to the same constituent.

6.3 Modifications of This Compliance Plan

The ASBS compliance plan is a dynamic document that may be edited or updated as needed. Any updates, alterations, modifications, or amendments to the document must be submitted to the SARWQCB for its approval. The plan will be modified when changes occur that directly affect the purpose (Section 1.2), receiving water quality conditions (Section 6.2), or activities of this ASBS compliance plan.

This section provides the procedure for notifying the SARWQCB of any technical changes that the City seeks to make and for seeking a formal modification. This section is not intended to be an exhaustive review of all aspects of modification, but is meant to provide a basis for updating or modifying this plan in a manner that recognizes the plan's objective of protecting natural water quality in ASBS 32 and 33. A modification is intended to be an efficient mechanism for notifying the SARWQCB of a proposed change and for providing data to support the modification.

A proposed modification shall include:

- A narrative justification with a detailed description of all changes and the reasons they are necessary
- A form that includes, at a minimum, a summary of or an excerpt from the modified text and information, and the previous text and information, with their location in the document.

With the narrative justification, the City shall:

- Submit a cover letter on the agency's letterhead, signed by a City representative.
- Address the changes.
- Discuss and justify the necessity for the change(s).
- Identify and explain how the implications of the modification will affect components of the ASBS compliance plan.

The City must submit one signed original copy of the modification documents to the SARWQCB Executive Offer to maintain its compliance status.

6.3.1 Nonsubstantive Revisions

Nonsubstantive revisions are changes that do not affect the purpose of the ASBS compliance plan but relate to matters addressed in the requirements of Section 1.A.2 of the General Exception. Examples of such nonsubstantive changes include, but are not limited to:

- Typographical errors in the ASBS compliance plan or underlying documentation
- Department change of name, where there is no change in ownership or responsibility

The City shall give the SARWQCB notice of such non-substantive changes promptly in writing whenever the need for a typographical correction is recognized. An addendum sheet to the document shall summarize all updates to the ASBS compliance plan and shall be provided to the SARWQCB. Although non-substantive revisions do not require approval of the SARWQCB, it may reply, indicating agreement or disagreement that the change is non-substantive. All non-substantive modifications will be included as part of the modification summary for the next following formal modification.

6.3.2 Alteration of Natural Water Quality and Non-Stormwater Flows

As discussed in Section 6.2, monitoring results indicating that wet weather MS4 discharges cause or contribute to an alteration of natural water quality shall be reported to the SARWQCB within 30 days. Within 30 days of approval of the report by the SARWQCB, the City shall revise its ASBS compliance plan, as described in Section 6.3.

If applicable, the revised ASBS compliance plan shall describe the measures by which non-stormwater discharges will be eliminated and any interim measures that will be employed to reduce non-stormwater flows until the final measures have been implemented.

SECTION 7
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