

Carlsbad Watershed Management Area Water Quality Improvement Plan

**San Diego Regional Water Quality Control Board
Order R9-2013-0001
Provisions B.3.a. and B.3.b.**

December 24, 2014

**Prepared and Submitted by the
Carlsbad Watershed Management Area Responsible Agencies**

**City of Carlsbad
City of Encinitas
City of Escondido
City of Oceanside**

**City of San Marcos
City of Solana Beach
City of Vista
County of San Diego**

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December 15, 2014

**CARLSBAD WATERSHED MANAGEMENT AREA, WATER QUALITY IMPROVEMENT PLAN
PROVISION B.3 SUBMITTAL, STATEMENT OF CERTIFICATION**

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Patrick A. Thomas
Public Works Director

A handwritten date in blue ink that reads "12/15/2014".

Date

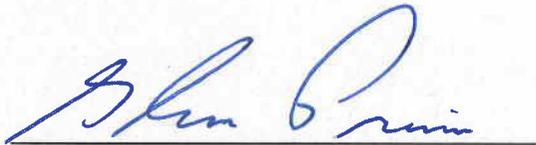


*City of
Encinitas*

December 8, 2014

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GLENN PRUIM, DIRECTOR OF PUBLIC WORKS

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December 8, 2014

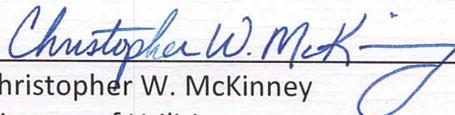


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December 11, 2014

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Christopher W. McKinney
Director of Utilities
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Date



CITY OF OCEANSIDE

WATER UTILITIES DEPARTMENT

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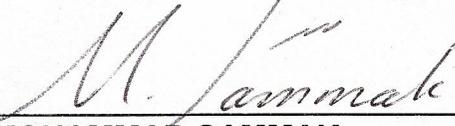
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CARLSBAD WATERSHED MANAGEMENT AREA, WATER QUALITY IMPROVEMENT PLAN PROVISION B.3 SUBMITTAL, STATEMENT OF CERTIFICATION

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City of Solana Beach

12/9/14

Date



December 17, 2014

**CARLSBAD WATERSHED MANAGEMENT AREA, WATER QUALITY IMPROVEMENT PLAN
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Greg Mayer
City Engineer

12/17/14

December 17, 2014



County of San Diego

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CARLSBAD WATERSHED MANAGEMENT AREA, WATER QUALITY IMPROVEMENT PLAN PROVISION B.3 CHAPTER, STATEMENT OF CERTIFICATION

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12/19/14
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Attachment 3 – Responses to Comments Received from Water Quality Improvement Consultation Panel

Attachment 4 – Watershed Management Area Analysis

Attachment 5 – Offsite Alternative Compliance Candidate Projects List

List of Acronyms and Abbreviations

303(d)	Clean Water Act Section 303(d) list of impaired waters
ASBS	Area of Special Biological Significance
Basin Plan	Water Quality Control Plan for the San Diego Basin
BIOL	Biological Habitats of Special Significance
BMP	Best Management Practice
Caltrans	California Department of Transportation
COD	Chemical Oxygen Demand
CWA	Clean Water Act
HA	Hydrologic Area
HPWQCs	Highest Priority Water Quality Conditions
HSA	Hydrologic Sub-Area
IBI	Index of Biological Integrity
JRMP	Jurisdictional Runoff Management Program
JURMP	Jurisdictional Urban Runoff Management Program/Plan
LTEA	Long-Term Effectiveness Assessment
MAR	Marine Habitat
MEP	Maximum Extent Practicable
MLOE	Multiple Lines of Evidence
MS4	Municipal Separate Storm Sewer System
MUN	Municipal and Domestic Supply
NNE	Nutrient Numeric Endpoint
O/E	Observed-to-Expected ratio
PWQC	Priority Water Quality Condition
REC-1	Recreation Contact Water
RWQCB	San Diego Regional Water Quality Control Board
SHELL	Shellfish Harvesting
TDS	Total Dissolved Solids
TMDL	Total Maximum Daily Load
TSS	Total Suspended Solids
WARM	Warm Freshwater Habitat
WMA	Watershed Management Area
WQICP	Water Quality Improvement Consultation Panel
WQIP	Water Quality Improvement Plan
WURMP	Watershed Urban Runoff Management Program

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James Wood	City of Carlsbad

1 Introduction

1.1 Background

The San Diego Regional Water Quality Control Board (RWQCB) adopted Order R9-2013-0001, a National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer Systems Permit (MS4 Permit or Permit) on May 8, 2013¹ (RWQCB, 2013). Provision B of the Permit requires Responsible Agencies, in each of the region's Watershed Management Areas (WMA)s to develop Water Quality Improvement Plans (WQIP)s. Through the WQIP approach, highest priority water quality conditions within the WMA are identified and strategies are implemented through the Responsible Agencies' Jurisdictional Runoff Management Programs (JRMP)s to progress toward improvements in water quality. The plans will contain an adaptive planning and management process and a public participation component.

The Responsible Agencies within the Carlsbad WMA include the following municipalities:

- City of Carlsbad
- City of Encinitas
- City of Escondido
- City of Oceanside
- City of San Marcos
- City of Solana Beach
- City of Vista
- County of San Diego

The Carlsbad WMA WQIP is required to be developed over a two-year period and submitted to the RWQCB no later than June 27, 2015. There are three primary phases in the WQIP development process that include the development and submittal to the RWQCB of the following items:

1) Phase 1 to be submitted no later than June 27, 2014:

In June 2014, the Carlsbad Watershed Management Area (WMA) Responsible Agencies (RA)s submitted a summary report fulfilling the requirements of Permit Provision B.2 (June 2014 B.2 Report). The summary report included the following:

- a. Priority water quality conditions (PWQC)s throughout the WMA
- b. Highest priority water quality conditions (HPWQC)s, a subset of the PWQC)s
- c. Sources of pollutants and/or stressors that potentially cause or contribute to the HPWQC)s
- d. Potential strategies to address the sources in an effort to improve the identified water quality conditions

2) Phase 2 to be submitted no later than December 27, 2014:

- a. Water Quality Improvement Goals and Schedules
- b. Water Quality Improvement Strategies and Schedules
 - i. Jurisdictional Strategies
 - ii. Watershed Management Area Strategies

3) Phase 3 (Complete WQIP) to be submitted no later than June 27, 2015:

- a. Final Priority Water Quality Conditions, including Highest Priority Conditions
- b. Final Goals and Schedules
- c. Final Strategies and Schedules

¹ See http://www.swrcb.ca.gov/rwqcb9/water_issues/programs/stormwater/

- d. Water Quality Improvement Monitoring and Assessment Program
- e. Iterative Approach and Adaptive Management Process

This document satisfies the submittal requirements of Phase 2 above, Provisions B.3 and F.1.a.(3)(c) of the MS4 Permit.

1.2 Purpose

The purpose of the Carlsbad WQIP is to guide Responsible Agencies' Jurisdictional Runoff Management Programs (JRMP)s toward achieving improved water quality in MS4 discharges and receiving waters. An important note for consideration throughout the development of the Carlsbad WQIP is the context in which the MS4 permit and ensuing WQIP operate within. The permit regulates discharges from the Copermitees' MS4 systems prior to discharge into receiving water bodies, therefore, some conditions may be outside of the Copermitees' purview.

The Permit's intent is to enable jurisdictions to focus their resources and efforts to "effectively prohibit non-storm water discharges to its MS4, reduce pollutants in storm water discharges from its MS4 to the Maximum Extent Practicable (MEP), and achieve the interim and final numeric goals..." (RWQCB, 2013). Furthermore, the Permit also states that "Where appropriate, Watershed Management Areas may be separated into subwatersheds to *focus water quality prioritization and jurisdictional runoff management program implementation efforts by receiving water*" (RWQCB, 2013). This approach represents a paradigm shift from previous permits that led to programs where jurisdictions essentially implemented the same activities throughout their jurisdictions with little or no regard for prioritizing water quality conditions, sources and pollutant generating activities that occurred within geographically based areas.

Although topographic features define watershed areas, characteristics of the watershed areas have direct influence on non-storm water discharges and pollutants in storm water discharges, and ultimately the water quality conditions in receiving waters. The Carlsbad WMA Responsible Agencies will consider the following characteristics when selecting and designing strategies to positively effect changes in water quality improvements:

- Population Demographics
- Infrastructure
- Land Uses
- Source Types
- Pollutant Generating Activities
- Soil Conditions
- Receiving Water Types and Features

The Carlsbad WQIP will serve to guide each Responsible Agency's JRMPs. JRMPs will contain the strategies, standards and protocols by which each Responsible Agency will implement their individual program in response to the priorities and goals established in the WQIP.

Included in the Permit is a greater emphasis on adaptive management, whereby information from program implementation and monitoring is to be used to adapt the WQIP to become more effective in achieving water quality improvements. A cycle of adaptive management includes planning, implementation and assessment phases that rely upon one another for information that improves the plan's efficiency and overall effectiveness.

During each planning process iteration, information from assessments and special studies will be used to inform the program planning process. As Responsible Agencies learn more about sources and strategies, and utilize water quality monitoring data and analyses, informed plan modifications may be made to the WQIP to:

- 1) Reprioritize water quality conditions;
- 2) Modify numeric goals and/or schedules;
- 3) Improve and/or expand the selection of water quality improvement strategies; and
- 4) Make general improvements to the plan.

The WQIP is intended to be a living planning document that, through established long-term cycles, is updated and revised² to reflect collected data and input. As each assessment process in a cycle concludes, the WQIPs will be re-evaluated, based on a minimum list of criteria from the Permit, and influence the next planning process. The potential WQIP modifications identified above will be evaluated on at least a five-year cycle. These cycles will allow for the critical step of monitoring potential sources, pollutant generating activities and the effectiveness of implemented strategies. The cycle is consistent with the Permit reissuance process and provides the appropriate duration for improvements to be observed, measured and assessed.

Provision B.3. of the Permit describes the requirements that further develop the WQIPs. These requirements include development of goals and associated schedules and selection of the strategies that RAs plan to implement in order to make measurable progress to address the HPWQCs.

Identifying goals and the means to achieve them is fundamental to improving water quality in the Carlsbad WMA. Goals define realistic water quality improvement outcomes and the strategies describe the means to achieve the goals. Current understanding of the effectiveness and efficiency of many strategies is unknown. It is anticipated that through the implementation of strategies under the WQIP paradigm, RAs will better understand the effectiveness and efficiency of implementing strategies. This process of improving the RAs' understanding as well as making adaptations to goals and strategies will be presented in the Monitoring and Assessment Program of the WQIP.

1.3 WQIP Development Process

During the first phase of the Water Quality Improvement Plan development process, the Responsible Agencies identified and prioritized water quality conditions; identified sources most likely to contribute to the highest priority water quality conditions; and, identified potential water quality improvement strategies that Responsible Agencies may select to implement with the goal of improving water quality. The first phase was completed and submitted for public review in June 2014.

The basic steps in the second phase of the Water Quality Improvement Plan development process are:

- 1) Identify areas of focus where numeric goals will be established and strategies implemented to improve water quality.
- 2) Identify numeric goals and schedules for improvements to water quality and water quality conditions.
- 3) Identify water quality improvement strategies and schedules for implementation. The identified strategies represent the activities the Responsible Agencies will implement in order to make

² Per Provision F.2.c.(1)(c) – Responsible Agencies must submit updates to the WQIP either in the WQIP Annual Reports, or as part of the Report of Waste Discharge.

water quality improvements that will have positive impacts on the identified highest and priority water quality conditions.

Identification of the numeric goals and strategies and associated schedules during these steps constitute the submittal requirements for the second phase of the WQIP development. Furthermore, a monitoring and assessment plan will be finalized in subsequent development phases to complete the Carlsbad WQIP.

To date, the Carlsbad WQIP Responsible Agencies have completed the following:

- 1) Developed a preliminary list of references for relevant data and information that may be used during the development of the Carlsbad WMA WQIP – see June 2014 document.
- 2) Established a Carlsbad WQIP clearinghouse of information at www.projectcleanwater.org. This clearinghouse will be the central location for notifying the public of key milestones throughout the WQIP development process.
- 3) Conducted two solicitation processes to request and receive public input for water quality conditions, sources contributing to water quality conditions and potential strategies to address the sources.
- 4) Held two facilitated public workshops (November 2013 and July 2014) to introduce the WQIP process and solicit input for: water quality conditions; sources contributing to water quality conditions; strategies to address the sources; numeric goals and associated schedules.
- 5) Established a Carlsbad WQIP Consultation Panel (WQICP) and selected WQICP members.
- 6) Reviewed and analyzed available data and information related to water quality conditions; sources contributing to water quality conditions and potential strategies to address the sources.
- 7) Identified priority and highest priority water quality conditions.
- 8) Identified MS4 sources of pollutants and/or stressors related to the priority and highest priority water quality conditions.
- 9) Developed summary memos to the WQICP for priority water quality conditions and potential strategies (January 2014), numeric goals and strategies (October 2014) as part of the WQIP development process to date. The January 2014 memo is included with the June 2014 document and the October 2014 memo is included as Attachment 2 to this document.
- 10) Held two facilitated briefings (January and October 2014) for the WQICP to explain summary memos.
- 11) Provided time for review and comment by the WQICP on the summary memos; comments received for the October summary memo are included as Attachment 3.
- 12) Provided responses to comments received from the WQICP for the two



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summary memos; responses for the October summary memo WQICP comments are included as Attachment 4.

1.4 Goals

Goals provide direction and purpose to program planning and are used to measure progress toward addressing the highest priority water quality conditions. Numeric goals are quantifiable and assist in measuring progress towards the identified goals. WQIPs include two types of goals, interim and final numeric goals.

Interim goals are intended to establish check points along the path towards achieving final numeric goals. Based on the programmatic efforts of the RAs and the water quality conditions prioritized for improvement, expected goals can be selected as benchmarks for program performance. Interim goals for each five-year period from WQIP approval to the anticipated final goal achievement date (including an interim goal for the current permit term) have been developed. The forthcoming Monitoring and Assessment Program will describe the mechanisms for utilizing the interim goals to measure progress and adapt program strategies, goals and schedules.

Final numeric goals selected by the RAs provide an end-point that marks achievement of desired water quality improvements. As final goals are achieved, RAs are anticipated to adapt their programs to maintain the status of the conditions they have achieved through reaching the final numeric goals.

In developing initial goal schedules, the RAs considered the following:

- Priority conditions within their jurisdictional portions of the WMA
- Potential sources of pollutants and/or stressors contributing to priority conditions
- Known effectiveness and efficiencies of strategies
- Resources required to implement strategies
- Balancing resources for competing priority areas throughout each RAs jurisdictional boundary – within a hydrologic area or across multiple hydrologic areas or watershed management areas

Responsible Agencies developed goals both collaboratively and individually to best address the sources and stressors within the watershed and individual jurisdictions. An individualized approach provides flexibility in selecting interim goals based on jurisdiction-specific strategies and schedules, and provides the framework for a more accurate assessment of progress towards achieving goals within each jurisdiction.

There are unknowns related to establishing goals and associated schedules, including: baseline MS4 discharge conditions; site specific source pollutant contributions; and strategy effectiveness. Based on these uncertainties, the initial established goals and schedules are expected to be dynamic. As the RAs establish baseline conditions, implement strategies and analyze assessment data, it is expected that the goals and schedules will change through an iterative and adaptive management process. The adaptive management process will be presented in the Final Carlsbad WMA WQIP in June 2015.

1.5 Strategies

Strategies are selected as the means to achieving the identified goals. The term *strategies* in the WQIP includes:

- Planning Efforts
- Structural Best Management Practices

- Programmatic Best Management Practices and/or Program Core Strategies³
- Requiring Best Management Practices of Regulated Entities
- Incentives

Implemented strategies are intended to achieve the following objectives:

- 1) Effectively prohibit non-storm water discharges to the MS4;
- 2) Reduce pollutants in storm water discharges from the MS4 to the Maximum Extent Practicable (MEP);
- 3) Protect the beneficial uses of receiving waters⁴ from MS4 discharges; and/or
- 4) Achieve the interim and final numeric goals identified by the RAs.

As part of the June 2014 B.2 Report, a list of potential strategies (nonstructural and structural) was developed by the RAs based on public input, Jurisdictional Runoff Management Program (JRMP) activities, enhancements to JRMP activities, and additional strategies anticipated to be effective at addressing priority water quality conditions. This list was used as a guide by RAs to identify strategies appropriate for their jurisdictions. From the potential strategies identified in the June 2014 B.2 Report, and included as Appendix A, the RAs selected strategies to implement through their JRMPs. The combination of strategies has been selected to achieve one or more of the objectives listed above.

RAs considered a combination of criteria during the final strategy selection process. The following is an example listing of some criteria the RAs considered:

- Preference to strategies that target HPWQCs, and those that provide multiple benefits, e.g., benefitting PWQCs and other pollutants
- Geographic focus areas, e.g., land-use, physical characteristics, demographics
- Anticipated effectiveness at addressing sources that may be impacting HPWQCs and PWQCs
- Anticipated social impacts, e.g., strategies that require perceived inconveniences to the general public may not be effective due to lacking participation
- Balancing resources for competing priority areas throughout each RAs jurisdictional boundary – within a hydrologic area or across multiple hydrologic areas or watershed management areas

The RAs evaluated their existing programs, the potential for incorporating enhancements and new administrative programs, and the types of structural BMPs that may be considered, if warranted and appropriate for the jurisdiction. All aspects of their JRMPs were evaluated, which provided the necessary baseline for existing nonstructural solutions and suggested areas where enhanced or restructured activities might be more successful.

It may take the RAs time to fully fund, develop and initiate implementation of the identified strategies. The proposed schedules reflect the anticipated time needed and a staggered approach to strategy implementation in order to accommodate uncertainties. At this stage of the WQIP process, the strategies list may not be comprehensive of all strategies that are currently being implemented by

³ Program core strategies are base strategies implemented by the RAs. These strategies generally prescribed in the MS4 Discharge Permits. The strategies include but are not limited to: administrative BMPs; inspections; enforcement; education; street sweeping; MS4 inspections/cleaning; and monitoring.

⁴ An important note for consideration throughout the development of the Carlsbad WQIP is the context in which the MS4 permit and ensuing WQIP operate within. The permit regulates discharges from the Copermittees' MS4 systems prior to discharge into receiving water bodies. Therefore, unless there is a quantifiable nexus between MS4 discharges and receiving water conditions, conditions may be outside of the Copermittees' purview.

jurisdictions or by other entities. However, the list does capture most strategies that jurisdictions are currently focusing efforts and resources.

It is important to note that the suite of strategies (i.e., program core strategies and other water quality improvement strategies) that will be implemented are generally not pollutant-specific. In other words, the collective strategies are expected to have positive impacts on many of the priority water quality conditions identified, not only the highest priority water quality conditions.

Similar to the goals, in the early stages of the WQIP process, the selected strategies and schedules are expected to be dynamic. As the RAs implement the strategies and analyze assessment data, it is expected that the strategies and schedules will change through an iterative and adaptive management process. These changes would be presented in future WQIP reports and updates.

1.1.1.1 Optional Strategies

The RAs have designated some of the selected strategies as optional. These strategies are considered optional for various reasons including:

- Funding or resources may not be available for implementation at this time
- Viewed as next steps in strategy implementation progression – may be implemented if other strategies are determined to be ineffective or inefficient
- Approval, by governing bodies, for implementation has yet to be confirmed

1.6 Geographic Characteristics

Although topographic features define watershed areas, characteristics of the watershed areas have direct influence on non-storm water discharges and pollutants in storm water discharges, and ultimately the water quality conditions in receiving waters. The Carlsbad WMA Responsible Agencies considered the following characteristics when selecting and designing strategies to improve water quality:

- Population Demographics
- Infrastructure
- Land Uses
- Potential Pollutant Sources – types and characteristics
- Pollutant Generating Activities
- Soil Conditions
- Receiving Water Types and Features

In the Carlsbad WMA there are six distinct hydrologic areas (HA)s each with its own unique features and characteristics, leading RAs to identify different PWQCs and associated strategies – see Figure 1 below. The new permit paradigm allows jurisdictions the flexibility and discretion to address water quality issues based on priority conditions. As jurisdictions determine the effectiveness of the various approaches, programs may change priorities and/or strategies in order to achieve water quality improvements most efficiently.

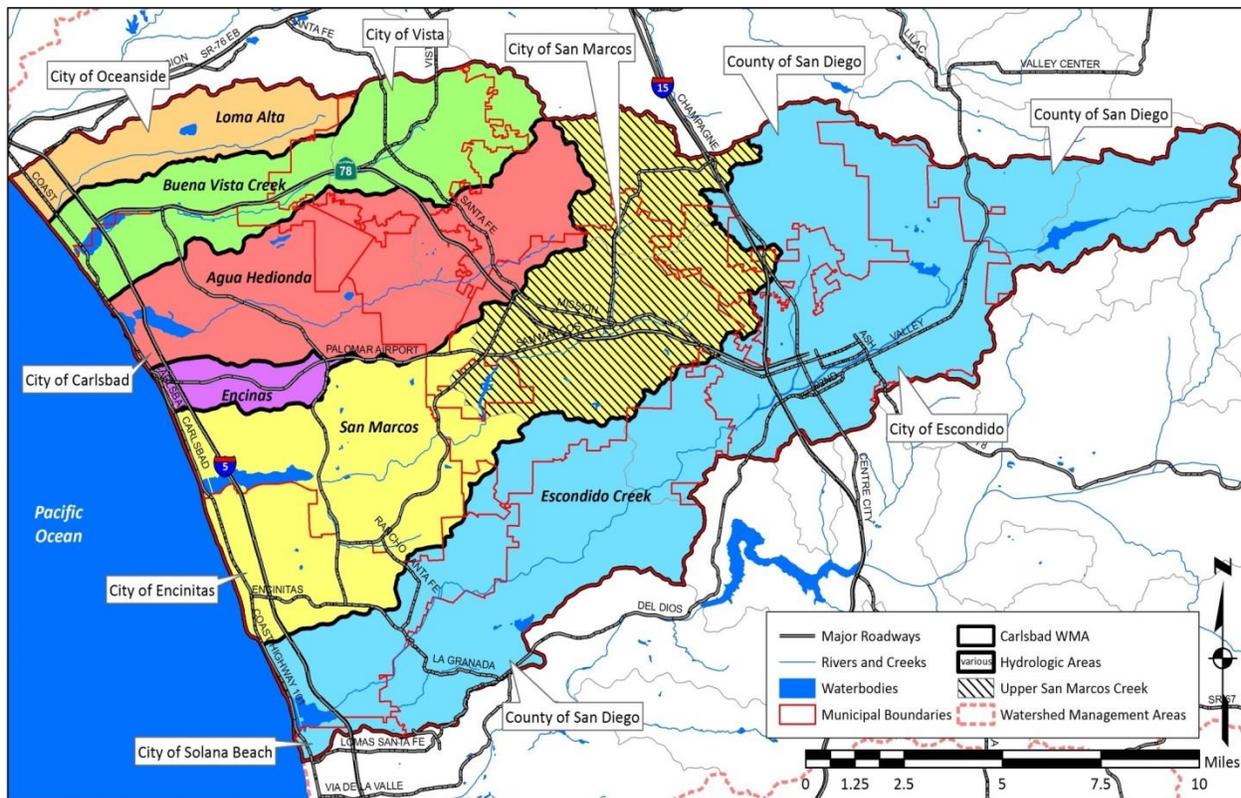


Figure 1: Carlsbad Watershed Management Area

1.7 Geographic Prioritization

The 2013 Permit states that “Where appropriate, Watershed Management Areas may be separated into subwatersheds to focus water quality prioritization and jurisdictional runoff management program implementation efforts by receiving water” (RWQCB, 2013). This represents a paradigm shift from previous permits where RAs implemented the same activities throughout their jurisdictions. The 2013 Permit allows jurisdictions to prioritize and focus program efforts based on geographic areas leading to more effective and efficient implementation of strategies to address priority conditions.

RAs may consider the following information when using the geographic prioritization approach. This list is not exclusive and includes examples of relevant information used in the prioritization process.

- Balancing resources for competing priority areas throughout each RAs jurisdictional boundary – within a hydrologic area or across multiple hydrologic areas or watershed management areas
- Historical issues with specific sources, manifested in terms of discharges, enforcement or poor BMP implementation may be an indicator of pollutant discharge sources that can be eliminated.
- Persistently flowing outfalls within specific areas may be caused by unauthorized non-storm water discharges.
- Historical monitoring data may show areas of concern where pollutant concentrations may be above action levels and can indicate source contributors that need abatement.
- Older areas may have infrastructure that allows more outdoor/exposed impacts than newer development areas where more activities are conducted indoors.
- Areas with existing Treatment Control BMPs may be less of a focus because it is implied that there is adequate treatment for dry weather runoff and smaller wet weather events.

- Housing developments with relatively large amounts of turf or vegetated areas (common areas, yards, vegetated slopes, etc.) may have higher rates of irrigation runoff than other areas.
- Multi-Family Residential areas have a relatively high intensity of use, for example, there are more vehicles, parking areas and more trash. These areas usually have shared trash areas and common landscaped areas. The higher concentration of people can create a higher concentration of trash and pollutants with the potential to enter the MS4.
- Industrial and Commercial Facilities have a variety of businesses and wastes creating different types of possible discharges. Some facilities may have areas outside where chemicals or wastes are stored, creating the potential for pollutants to be washed away into the MS4 during rain events.
- Municipal Properties may include open areas, parks or street medians. These areas may require irrigation, creating the potential for irrigation runoff.
- Ability to effectively measure progress towards established goals, e.g., safe and accessible monitoring locations.
- Amount and distribution of natural open space within each Hydrologic Area.

1.8 Watershed Management Area Analysis

The Carlsbad WMA Responsible Agencies have participated in the development of a Watershed Management Area Analysis (WMAA) – see Attachment 5. The purpose of the WMAA is to:

- 1) Characterize the WMA through identification of physical characteristics and compilation of the data into Geographical Information System (GIS) mapping;
- 2) Use the WMA characterization as a resource for identification of potential candidate projects for Offsite Alternative Compliance (OAC) options for fulfilling applicable Land Development requirements of the MS4 permit
- 3) Use the WMA characterization as a resource for identifying areas within the WMA where exemptions from hydromodification management requirements would be appropriate.

Characterization

The attached Carlsbad WMAA provides GIS mapping that characterizes the WMAs by providing the following:

- 1) Description of dominant hydrologic processes, such as areas where infiltration or overland flow likely dominates;
- 2) Description of existing streams in the watershed, including bed material and composition, and if they are perennial or ephemeral;
- 3) Current and anticipated future land uses;
- 4) Potential coarse sediment yield areas; and
- 5) Locations of existing flood control structures and channel structures, such as stream armoring, constrictions, grade control structures, and hydromodification or flood management basins.

Offsite Alternative Compliance

Completing a WMAA is one of the steps required of the Responsible Agencies prior to allowing OAC as an option for development/redevelopment projects. At this time, the WMAA has been completed, however, the Responsible Agencies have not developed OAC programs. It is anticipated that those RAs that elect to have OAC programs, will develop those programs in the coming years for implementation in 2016.

The Responsible Agencies are also required to develop a list of candidate projects that could potentially be used as alternative compliance options in lieu of land development onsite structural BMP

performance requirements. The current candidates list is provided as Attachment 6. Since the Responsible Agencies are not intending to implement OAC programs until 2016 at the earliest, the candidates list is currently not comprehensive and is anticipated to be amended in coming years.

Exemptions from Hydromodification Management Requirements

The WMAA includes a description of the recommended exemptions from hydromodification management requirements as summarized below. Future proposed HMP exemptions would need to be approved through the WQIP Annual Update process.

1) Exempt River Reaches

There are no river reaches currently recommended for exemption from hydromodification management requirements in the Carlsbad WMA. However, Escondido Creek is currently being evaluated to assess whether a hydromodification management exemption could apply to this waterbody. Based on the findings of the evaluation, the San Elijo Lagoon may also be evaluated. The results of these studies will be included in future Carlsbad WMAA updates.

2) Stabilized Conveyance Systems Draining to Exempt Water Bodies

There are no stabilized conveyance systems currently recommended for exemption from hydromodification management requirements in the Carlsbad WMA.

3) Highly Impervious/Highly Urbanized Watersheds and Urban Infill

No areas within the Carlsbad WMA are currently recommended for highly impervious/highly urbanized watershed or urban infill exemption.

4) Tidally Influenced Lagoons

Based on a City of Carlsbad study⁵, there are several tidally influenced areas recommended for exemption including:

- a. Areas tributary to Buena Vista Lagoon
- b. Several tributary areas to Agua Hedionda Lagoon
- c. One tributary area to Batiquitos Lagoon

The San Elijo Lagoon and other tidally influenced waterbodies may also be evaluated for exemption in future analyses.

⁵ Hydromodification Exemption Analyses for Select Carlsbad Watersheds, Chang Consultants (June 10, 2013)

2 Goals and Strategies by Hydrologic Area

The Carlsbad WMA Responsible Agencies (RA)s have identified highest priority water quality conditions (HPWQC)s and priority water quality conditions (PWQC)s to address through the development and implementation of the Carlsbad WQIP. The conditions are discussed and presented in the June 2014 B.2 Report.

Through the WQIP and adaptive management process, jurisdictions are expected to analyze decision making and resource allocation and adapt goals, strategies and associated schedules where needed to improve upon program effectiveness. Thus, the goals, strategies and schedules identified in this document will be dynamic through the early stages of the WQIP process. The concepts of adaptive management and iterative process will be explained in more detail in the Final WQIP.

The figure below shows the HPWQCs and focus areas the RAs have determined to concentrate their WQIP efforts through Jurisdictional Runoff Management Program (JRMP) implementation.

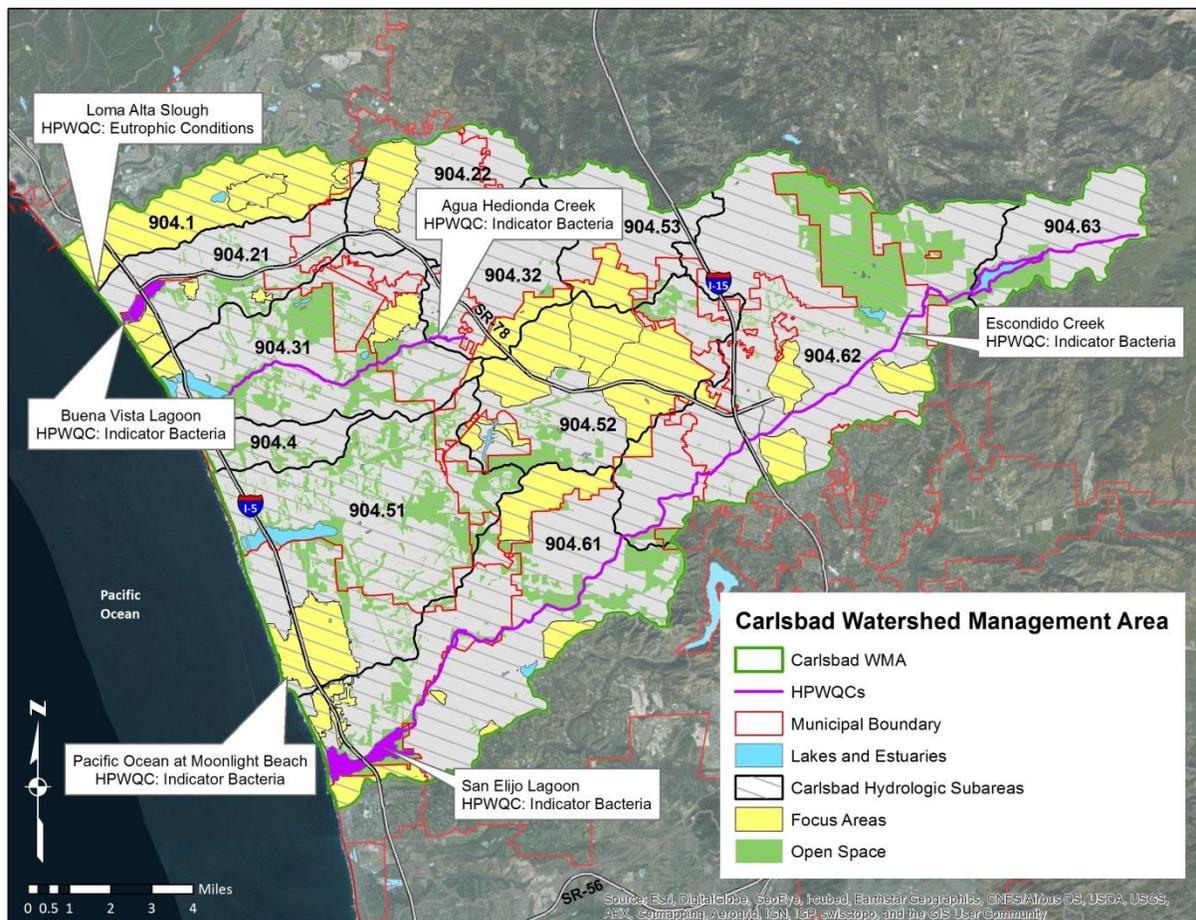


Figure 2: Carlsbad Watershed Management Area – Highest Priority Water Quality Conditions

The remainder of the document includes the interim and final numeric goals, strategies and schedules established by the RAs to address the HPWQCs and PWQCs. The document is separated by hydrologic areas (HA)s and presents the goals and strategies based on the HPWQC.

The following guide is presented to orient the reader to the structure of the remainder of the document. Each section introduces one of the six HAs. Included in the description is a listing of the HPWQCs and PWQCs for the particular HA. The reader is provided with a map of the HA that shows where program core strategies will be implemented and also focus areas where RAs will implement modified or additional strategies – see Figure 3 below for an example.

HYDROLOGIC AREA OVERVIEW

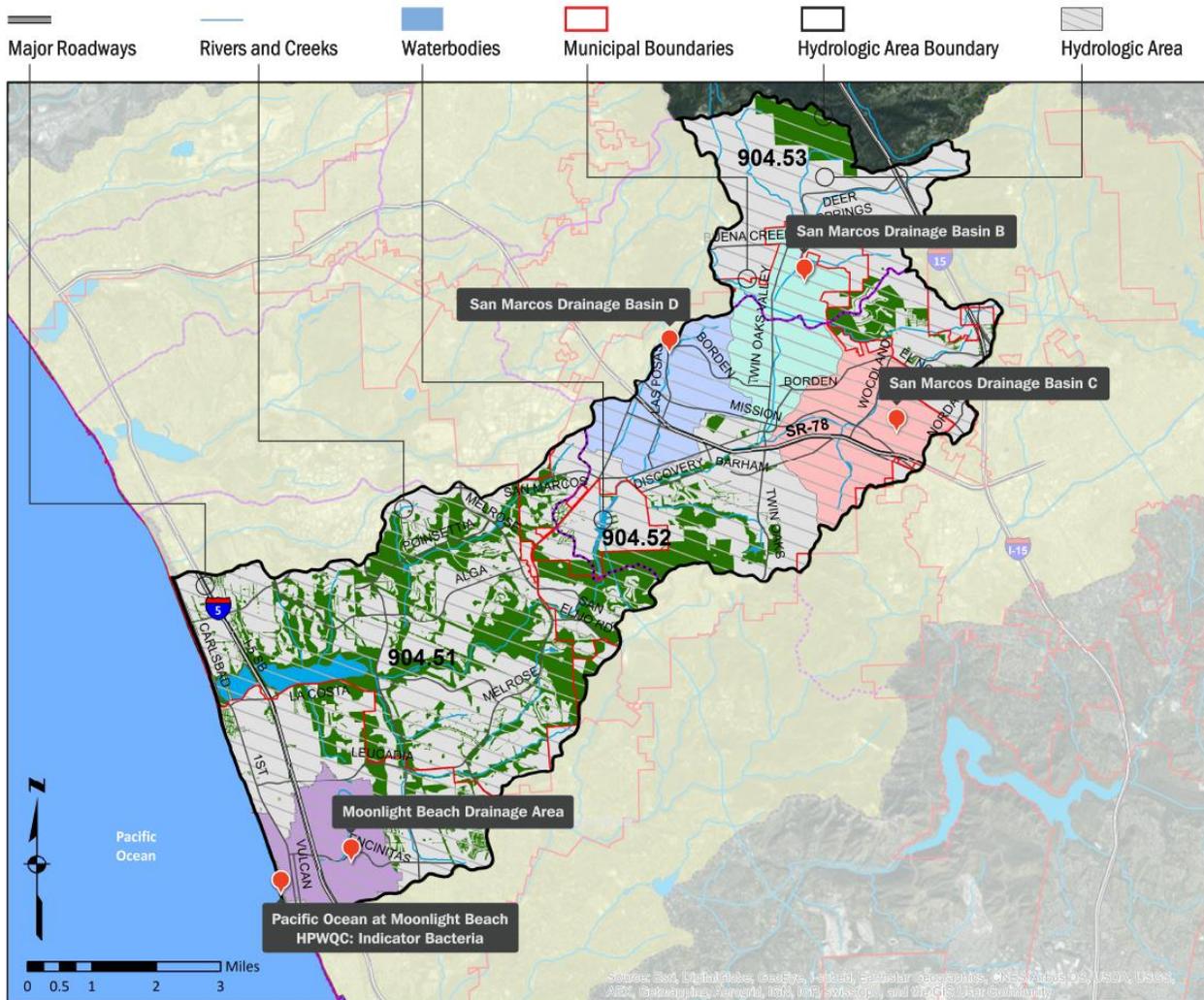


Figure 3: Example Hydrologic Area Map

A table of known potential sources of pollutants and stressors associated with the HPWQCs is provided as reference. Each table identifies the inventoried sites and facilities and their associated pollutant loading potential⁶. As a part of the iterative process, RAs will continue to conduct assessments of the sources and their pollutant loading potential and update these tables as data and information is available.

⁶ As determined in the 2005 and 2011 Long-Term Effectiveness Assessments (MOE)

Following the HA source inventory and pollutant loading table, applicable goals are presented in tabular format. Any interim and final numeric goals that are applicable to the entire HA are presented along with their associated schedules. See the example goals table below (this table could be applicable at the HA or focus area levels).

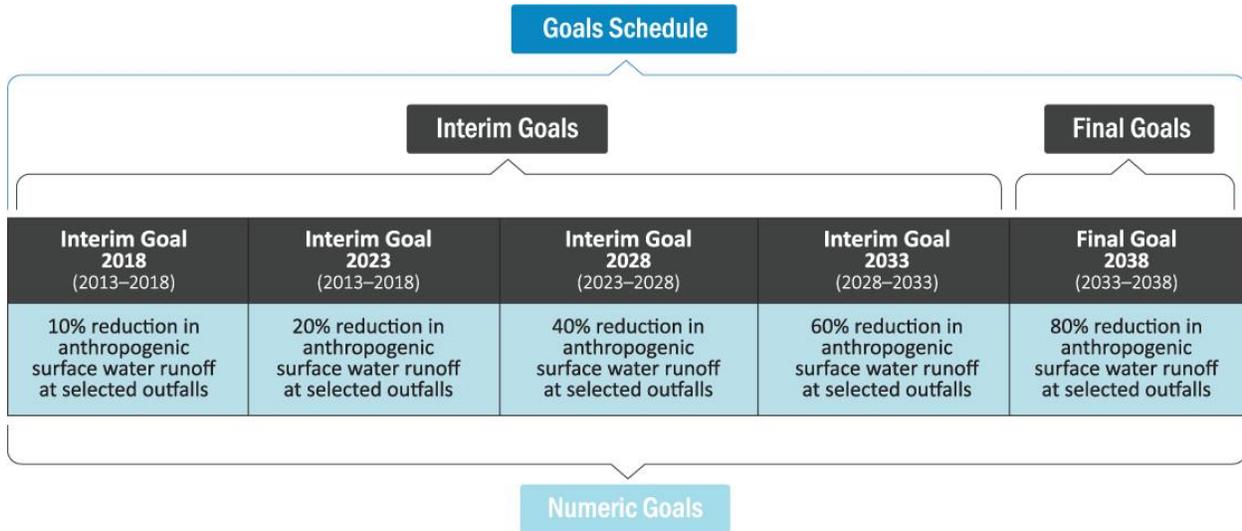


Figure 4: Example Goals Table

For each HA, the document presents strategies to be implemented throughout the HA in tabular format. These are strategies that the RAs will implement either on a hydrologic area-wide basis (within their respective jurisdiction) or within specific focus areas. Target pollutants, target sources and planned implementation schedules are included in the table as well. See Figure 5 below for an example strategy table.

WATER QUALITY IMPROVEMENT STRATEGIES

- 1 Strategies:** List of strategies to be implemented in Hydrologic Area
- 2 Jurisdictions:** Jurisdictions implementation strategy and location
- 3 Target Sources:** Identified sources addressed by strategies
- 4 Target Pollutants:** Pollutant categories addressed by strategies
- 5 Implementation Schedule:** When strategy will be implemented
- 6 Location Details:** More specific description of where strategies will be implemented – could be specific basins
- 7 Location Details:** More specific description of where strategies will be implemented – could be throughout the entire hydrologic area (HA)
- 8 Optional Strategies:** Strategies that may be implemented, but currently do not have specific timeframes for implementation

	Jurisdiction / Area					Target Sources							Target Pollutants					Implementation Schedule										
	Carlsbad	Encinitas	Escondido	San Marcos	County of San Diego	Municipal Fixed Facilities	Industrial and Commercial Facilities / Owners	Construction Sites and Personnel	Residential	General Public	Land Development & Redevelopment	Roads, Streets, Highways and Parking Facilities	MS4	Bacteria/Pathogens	Traffic	Heavy Metals	Nutrients	Oil and Grease	Sediment	Pesticides	Previous Fiscal Year(s)	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20	Future Fiscal Year(s)	
1 Water Quality Improvement Plan Strategies																												
1 Property Based Inspections	-	Moonlight Beach		SM-HA Basin	-	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
2 Patrolling Inspections	-	Moonlight Beach		SM-HA Basin	-	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
3 Irrigation Runoff Reduction	-	Moonlight Beach		SM-HA Basin	-	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
4 Administrative BMPs ¹	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
5 Outfall Monitoring	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
6 Investigations	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
7 Enforcement	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
8 Development and Redevelopment Requirements	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide					*			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
9 Construction Site Inspections	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide		*						*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
10 Municipal Facilities and Activities Inspections	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	*							*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
11 Residential Area Inspections	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide			*					*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
12 Commercial/ Industrial Inspections	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	*							*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
13 MS4 Inspections/ Cleaning	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide							*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
14 Street Sweeping	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide						*		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
15 Education and Outreach	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
16 Employee Training	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	*						*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
17 Inspections	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
18 Investigations	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
19 Enforcement	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Optional Strategies																												
20 Incentives	TBD	TBD	TBD	TBD	TBD	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Based on appropriate criteria for initiating							
21 Regulatory Revisions	TBD	TBD	TBD	TBD	TBD	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Based on appropriate criteria for initiating							
22 True Source Control	TBD	TBD	TBD	TBD	TBD	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Based on appropriate criteria for initiating							
22 Structural BMPs	TBD	TBD	TBD	TBD	TBD	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Based on appropriate criteria for initiating							
23 Offsite Alternative Compliance	TBD	TBD	TBD	TBD	TBD	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Based on appropriate criteria for initiating							

¹ Examples of Administrative BMPs include: Plan development, program standardization, maintaining and prioritizing inventories, updating education materials, etc.

Figure 5: Example Hydrologic Area Strategy Table

In each of the Hydrologic Area Strategy tables, the location detail “HA Wide” means that the Responsible Agency plans to implement that particular strategy throughout their own jurisdictional boundaries within the HA.

The document then moves into specific focus areas where each focus area within a hydrologic area is presented. Individual focus area maps are presented showing the boundaries of the identified area where focus area strategies will be implemented.

FOCUS AREA SPECIFIC INFORMATION

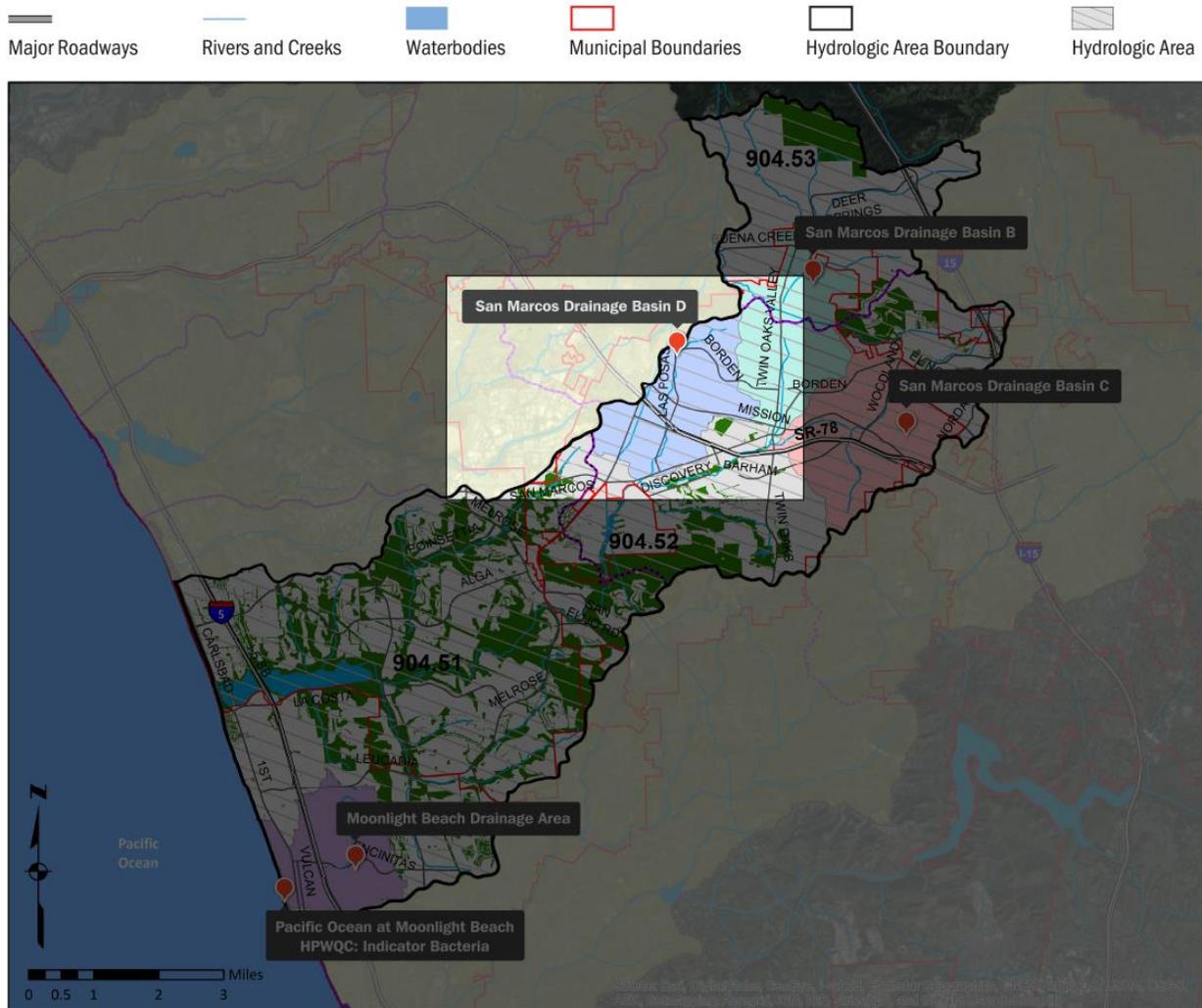


Figure 6: Example Focus Area

Numeric goals associated with the focus areas are then presented in a similar tabular format as shown in Figure 4 above. Lastly, brief descriptions of the focus area strategies are provided. More detailed strategy descriptions will be provided in the December 2014 submittal to the RWQCB for 30-day public comment period.

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2.1 Loma Alta HA (904.1)

The Loma Alta Hydrologic Area (HA) is the northernmost HA of the Carlsbad Watershed Management Area (WMA). It is approximately 6,300 acres in area, comprising 5% of the WMA. The HA extends inland about 7.3 miles and the highest elevation within the drainage area is 460 feet above mean sea level. The primary receiving waters in the HA are Loma Alta Creek which drains into the Loma Alta Slough and the Pacific Ocean. The HA is located almost entirely inside the City of Oceanside with less than 4% in the City of Vista and a portion of two parcels in the County of San Diego.

During the initial phase of the Water Quality Improvement Plan process, assessment of existing data determined that the priority water quality conditions (PWQCs) within the Loma Alta HA include: eutrophic conditions at the Loma Alta Slough; indicator bacteria in the Loma Alta Slough; Indicator bacteria at the Pacific Ocean shoreline at Loma Alta Creek Mouth; and Toxicity in Loma Alta Creek. Of these PWQCs, the *highest priority water quality condition* (HPWQC) in the Loma Alta HA was determined to be *eutrophic conditions* (dry weather conditions) at the Loma Alta Slough (June 2014 B.2 Report).

Figure 7 below, shows the Loma Alta HA, HPWQC and focus areas. The focus areas and their associated strategies and goals are described below.

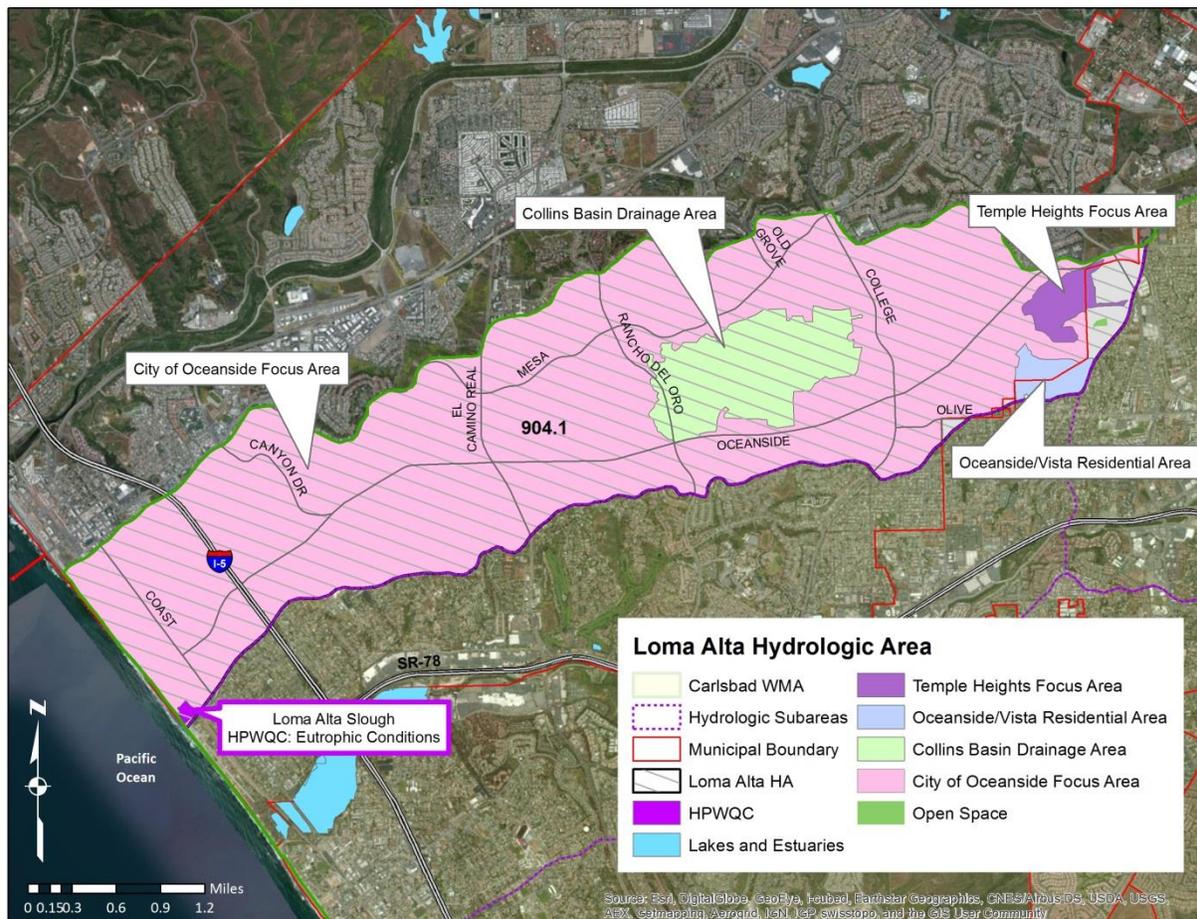


Figure 7: Loma Alta Hydrologic Area Highest Priority Water Quality Conditions and Focus Areas

2.1.1 Loma Alta HA Sources

The following table presents a list of inventoried sources their association with HPWQCs and PWQCs and pollutant loading potential (2011 LTEA).

Table 1: Pollutant Generating Sources – 904.1 Loma Alta Hydrologic Area

Inventory Sites/Facilities ¹	Quantities ²	Pollutant Source Loading Potential ³									
		Metals	Oil & Grease	Sediment	Pesticides	Nutrients	Bacteria/Pathogens	Dissolved Minerals	Organics	Toxicity	
Animal Facilities	10	N	UL	L	UK	L	L	N	L	UK	
Auto Repair, Fueling, or Cleaning	92	L	L	UL	UL	UK	UL	L	L	UK	
Auto Parking Lots or Storage	6	L	L	L	UK	UK	UK	UL	L	UK	
Auto Body Repair or Painting	28	L	L	UL	UL	UL	UL	L	L	UK	
Nurseries/Greenhouses	4	L	UL	L	L	L	L	UL	UL	UK	
Building Materials Retail	2	L	L	L	UL	UL	UL	UL	L	UK	
Chemical and Allied Products	4	UK	UK	UK	UK	UK	UL	N	L	UK	
Concrete Manufacturing	6	L	L	L	UL	UL	UL	UL	L	UK	
Eating or Drinking Establishments	123	N	L	UL	UK	UK	L	UL	L	UK	
Equipment Repair or Fueling	14	L	L	UL	UL	UK	UL	UL	L	UK	
Fabricated Metal	17	L	L	UK	UK	UK	UL	UL	L	UK	
Food Manufacturing	8	UL	UL	UL	UL	UL	UL	UL	UL	UK	
General Contractors	54	UL	UL	L	UL	UL	UL	UL	UL	UK	
General Industrial	62	L	L	UK	UK	UK	UK	UK	L	UK	
General Retail	125	UL	UL	L	UL	UL	UL	UL	UL	UK	
Institutional	6	L	UK	UK	UK	UK	UL	UK	UK	UK	
Motor Freight	12	L	L	UK	UK	UK	UK	UL	L	UK	
Offices	70	UK	UK	UK	UK	UK	UK	UK	UK	UK	
Parks and Rec (incl. Golf, Cemetery)	1	UK	UK	UK	UK	L	UK	UL	UK	UK	
Pest Control Services	6	N	UK	N	L	N	UK	N	UK	UK	
Pool and Fountain Cleaning	2	N	N	N	N	UK	N	N	UK	UK	
Primary Metal	8	L	UK	UK	UK	UK	UL	N	UK	UK	
Stone/Glass Manufacturing	8	L	L	L	UL	UL	UL	UL	L	UK	
Storage/Warehousing	14	L	L	L	UL	UL	UL	UL	L	UK	
Municipal	34	N	N	L	N	N	UK	UL	N	UK	
Construction	Varies ⁴	UL	UL	L	UL	UL	UL	L	UL	UK	
Residential	2,025 acres	L	L	L	L	L	L	L	L	UK	

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQC are identified in the table (yellow highlight signifies HPWQC). The HPWQC is associated with the sources that are likely to generate those pollutants (blue highlight). The PWQP is highlighted in green and the associated sources that are likely to generate those pollutants are depicted with an "L".

1: Other sources are not reported in this table including: Land Development and Non-inventoried Businesses

2: Quantities based on the Responsible Agencies FY 2012 JURMP Annual Reports

3: Pollutant Source Loading Potential taken from LTEA 2011; N = None, UK = Unknown, UL = Unlikely, L = Likely

4: The quantity of construction sites is dynamic due to projects starting and completing at any given time.

2.1.2 Loma HA Area Goals and Strategies

2.1.2.1 Loma Alta HA Goals

Based on the objectives for improving water quality conditions in the Loma Alta HA, the Responsible Agencies have established the following goals for the Hydrologic Area:

Table 2: Loma Alta HA Interim and Final Numeric Goals

Interim Goal (2013-2018) 2018 ¹	Interim Goal (2018-2023) ¹	Final Goal 2023
10% reduction in anthropogenic persistent ² dry weather flows from three major MS4 outfalls discharging to Loma Alta Creek and/or tributary	<ol style="list-style-type: none"> 1) 50% reduction in anthropogenic persistent dry weather flows at the three outfalls addressed through 2018 2) 25% reduction in additional (other outfalls in watershed) anthropogenic persistent flows identified during dry weather monitoring program implemented in 2015 and in subsequent years 	<p>Loma Alta Slough Conditions Between May – October:</p> <ol style="list-style-type: none"> 1) Macroalgal Biomass less than 90g dry wt./m³ 2) Macroalgal cover less than 50%

¹ Flow reduction goals are currently based on best professional judgment as current flow data is not available. The goals may be adapted as monitoring data/information is gathered, analyzed and baselines are established.

² Persistent flows are defined in the Permit (Order No. R9-2013-0001) as: the presence of flowing, pooled, or ponded water more than 72 hours after a measurable rainfall event of 0.1 inch or greater during three consecutive monitoring and/or inspection events. All other flowing, pooled, or ponded water is considered transient.

The means for achieving these goals are identified in the strategies discussion below. Mechanisms for measuring progress towards and ultimately achieving these goals will be discussed in the Final Carlsbad WQIP to be completed in June 2015.

2.1.2.2 Loma Alta HA Strategies

The following table identifies the Water Quality Improvement Strategies to be implemented throughout the entire Loma Alta HA and in specific focus areas of the HA. In addition to the planned strategies, optional strategies are identified that may be implemented based on circumstances related to the progress RAs make towards numeric goals and funding. The strategies associated with the focus areas are described further in the sub-sections below.

As the RAs implement strategies and analyze assessment data, it is expected that these strategies and schedules may change through an iterative and adaptive management process. The adaptive management process will be presented in the Final Carlsbad WMA WQIP in June 2015.

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Table 3: Loma Alta HA Strategies

Water Quality Improvement Plan Strategies		Jurisdiction/Area			Target Source								Target Pollutants						Implementation Schedule						
		City of Oceanside	City of Vista	County of San Diego	Municipal Fixed Facilities	Industrial and Commercial Facilities / Owners	Construction Sites and Personnel	Residential	General Public	Land Development & Redevelopment	Roads, Streets, Highways and Parking Facilities	MS4	Bacteria/Pathogens	Trash	Heavy Metals	Nutrients	Oil and Grease	Sediment	Pesticides	Previous Fiscal Year(s)	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20
1	Community Based Social Marketing – Private Landscapers	Oceanside Jurisdiction within Loma Alta HA	-	-				•	•				•	•	•	•	•	•		•	•	•	•	•	
2	Runoff and Nutrients Source Reduction	Collins Basin, Temple Heights, Oceanside and Vista Residential Focus Area	Oceanside and Vista Residential Focus Area	-		•		•					•								•	•	•	•	•
3	Administrative BMPs ^{1,2}	HA Wide	HA Wide	HA Wide	•	•	•	•	•	•	•									•	•	•	•	•	•
4	Outfall Monitoring	HA Wide	HA Wide	-	•	•	•	•		•	•	•	•	•	•	•	•	•		•	•	•	•	•	•
5	Investigations ²	HA Wide	HA Wide	HA Wide	•	•	•	•	•	•	•	•	•	•	•	•	•	•		•	•	•	•	•	•
6	Development and Redevelopment Requirements ²	HA Wide	HA Wide	HA Wide						•			•	•	•	•	•	•		•	•	•	•	•	•
7	Construction Site Inspections ²	HA Wide	HA Wide	HA Wide			•						•				•			•	•	•	•	•	•
8	Existing Development Facilities, Areas and Activities Inspections ²	HA Wide	HA Wide	HA Wide	•	•		•			•		•	•	•	•	•	•		•	•	•	•	•	•
9	MS4 Inspections/ Cleaning ²	HA Wide	HA Wide	HA Wide							•	•	•				•			•	•	•	•	•	•
10	Street Sweeping ²	HA Wide	HA Wide	HA Wide						•		•	•	•		•	•			•	•	•	•	•	•
11	General Education and Outreach ²	HA Wide	HA Wide	HA Wide	•	•	•	•	•	•		•	•	•	•	•	•	•		•	•	•	•	•	•
12	Employee Training ²	HA Wide	HA Wide	HA Wide	•					•	•	•	•	•	•	•	•	•		•	•	•	•	•	•
13	Enforcement ²	HA Wide	HA Wide	HA Wide	•	•	•	•	•	•		•	•	•	•	•	•	•		•	•	•	•	•	•
14	Operation and Maintenance of Ultraviolet Bacteria Treatment Facility	HA Wide	-	-	•	•	•	•	•	•	•	•								•	•	•	•	•	•
15	Partnership Program(s) ²	HA Wide	HA Wide	-	•	•	•	•	•	•	•	•	•	•	•	•	•	•			•	•	•	•	•
16	Program for Retrofitting Areas of Existing Development ²	HA Wide	HA Wide	-	•	•	•	•	•	•	•	•	•	•	•	•	•	•			•	•	•	•	•

Table 3: Loma Alta HA Strategies

Water Quality Improvement Plan Strategies		Jurisdiction/Area			Target Source								Target Pollutants					Implementation Schedule								
		City of Oceanside	City of Vista	County of San Diego	Municipal Fixed Facilities	Industrial and Commercial Facilities / Owners	Construction Sites and Personnel	Residential	General Public	Land Development & Redevelopment	Roads, Streets, Highways and Parking Facilities	MS4	Bacteria/Pathogens	Trash	Heavy Metals	Nutrients	Oil and Grease	Sediment	Pesticides	Previous Fiscal Year(s)	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20	Future Fiscal Year(s)
17	Program for Stream, Channel and/or Habitat Restoration in Areas of Existing Development ²	HA Wide	HA Wide	-	•	•	•	•	•	•	•	•	•	•	•	•	•	•			•	•	•	•	•	
18	Develop List of Potential Structural or Retrofit Existing BMPs to Address Flow/Pollutant Issues ³	Collins Basin, Temple Heights, Oceanside/ Vista Residential	Oceanside and Vista Residential Focus area	-	•	•	•	•	•	•	•	•	•	•	•	•	•	•	Based on appropriate criteria for initiating							
19	Enhanced Treatment Control BMP Inspection Program ³	Collins Basin, Temple Heights	-	-	•	•	•	•	•	•	•	•	•	•	•	•	•	•	Based on appropriate criteria for initiating							

¹ Examples of Administrative BMPs include: Plan development, program standardization, maintaining and prioritizing inventories, updating education materials, etc.

² General descriptions provided in Appendix B

³ Optional Strategies

2.1.3 Loma Alta HA Focus Areas

Concentrating programmatic efforts in specific geographic areas to address known or suspected sources of discharges and pollutants is expected to improve the effectiveness of the strategies and activities.

Based on the RAs review of the characteristics of the Loma Alta HA, several areas of focus were selected for concentrated programmatic efforts. These focus areas include the Oceanside jurisdiction within the HA, the Collins Basin Drainage Area, the Temple Heights Business Park Drainage Area, and an Oceanside/Vista Residential Area. The goals and strategies for these focus areas are summarized below.

2.1.3.1 City of Oceanside

The City of Oceanside covers approximately 97% of the entire Loma Alta HA. Within the Oceanside jurisdictional boundaries, there are many areas where landscapers/gardeners provide landscape services, including fertilizer and pesticide applications, trimming and planting. Addressing this target audience on an HA basis will concentrate resources towards addressing practices associated with nutrients that may be contributing to eutrophic conditions at the Loma Alta Slough.

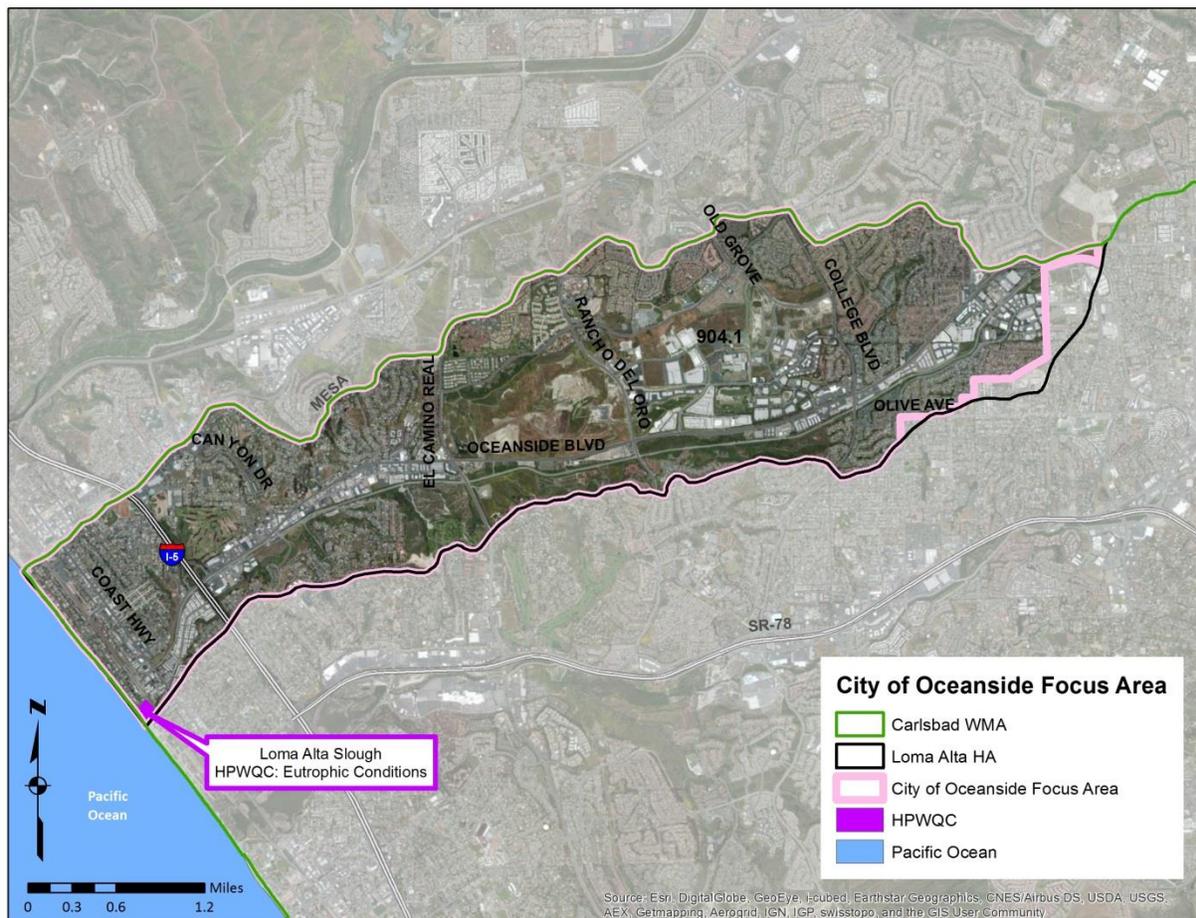


Figure 8: Oceanside Jurisdiction within Loma Alta HA

Oceanside Jurisdiction in Loma Alta HA Interim and Final Numeric Goals

Although there are not specific interim and final numeric goals established for this focus area, the strategies are anticipated to work towards the goals presented in Section 2.1.2.1. that are applicable to the entire Loma Alta HA.

Oceanside Jurisdiction in Loma Alta HA Strategies

The City of Oceanside will implement its program core strategies throughout its jurisdictional boundaries of the Loma Alta HA. In addition to the core jurisdictional strategies, the following summarizes supplemental or modified core strategies planned for implementation in the Loma Alta HA to target sources of pollutants and discharges.

The selected strategies are expected to have multi-pollutant benefits and intended to address non-stormwater flows and reducing the source loading of nutrients and other pollutants related to the priority water quality conditions. Reducing non-stormwater flows: (1) reduces the loading of pollutants discharged through the MS4 system; (2) reduces the amount of indicator bacteria regrowth and contributions that occurs with accumulated biofilm in MS4 systems that requires water; and (3) reduces the wet-weather contribution of indicator bacteria from scoured biofilm under higher velocity flows from storm discharges.

To accomplish the multi-benefit objectives, the City of Oceanside will supplement its core jurisdictional program by implementing the following strategies:

1) Community Based Social Marketing – Private Landscapers

Observation Research

This project would begin with observational research to identify target behaviors of landscape workers which may be linked to polluted non-storm water discharges and runoff from a selected MS4 draining a residential neighborhood in the Loma Alta watershed. The targeted neighborhood would be selected based on long-term water quality and observational monitoring where a persistently flowing outfall has been identified. The observations would focus on identifying concrete behaviors by observing what is happening in the target community. Examples of these behaviors could be fertilizer application practices and how green waste is gathered and disposed. Thirty observation visits are proposed which will provide minimum statistical validity and adequately represent all times of the day (AM/mid-day/PM) and weekdays/weekends. Enforcement actions will be implemented if an activity is an immediate threat to water quality and human health. If it is determined that the behaviors are not contributing to anthropogenic persistent flows, sources of the flows will be further researched to determine if the flows are a groundwater source or other permitted discharge allowed within that outfall drainage area.

Improvements in MS4 discharge water quality and/or reductions in pollutant loading at the outfall will be quantified using a combination of flow measurements and grab sample collections. Baseline measurements will be taken prior to implementing any outreach programs within the upstream drainage area. Samples will be analyzed by a qualified laboratory for constituents related to impairments in the receiving water. Measurements collected during and after the outreach implementation period will be used to assess the relative effectiveness of the program on reducing pollutant loadings and/or non-stormwater flows from the selected MS4 outfall. Both the baseline and post-implementation periods will require an adequate number of sampling points to ensure statistical significance in establishing whether the program implementation correlates with changes in discharge water quality.

Focus groups with landscape gardeners

Focus groups offer an additional opportunity to survey the target audience face-to-face and identify the barriers that impede those individuals from engaging in behaviors that protect water quality. This approach enhances the likelihood of developing programs that maximize behavior change among the target audience. This task would involve recruiting five landscape gardeners to conduct a 30-minute interview. To encourage participation in the focus groups, an incentive will be offered to the target audience such as a specific dollar amount to participate in the interview and/or a light lunch.

Landscape gardeners would be recruited in collaboration with the local compost facility Agri-Service. This facility accepts green waste from landscape gardeners in the City of Oceanside as well as other commercial landscape operators. When gardeners deliver their materials to the compost facility, they would be handed a recruitment piece requesting their participation in the focus group. All materials would be provided in Spanish and a Spanish speaker would conduct the interviews.

Implementation

Based on the results from the observation research and the focus group component, behavior change tools will be selected based on their fit with the identified barriers and benefits. This information will drive the development of the overall outreach campaign for pilot testing.

Once the appropriate methodologies for pilot testing the developed strategies are designed, the target audience will be provided with detailed protocols and instructions for pilot implementation. This information will be distributed by Agri-Service staff to the target audience during normal operating hours.

Based on the successful strategies identified during pilot testing a series of strategies or toolkits will be applied more broadly to groups that share similar barrier and benefit profiles for the target behavior. Improvements in MS4 discharge water quality and/or reductions in pollutant loading at the outfall will be quantified using a combination of flow measurements and grab sample collections as described above.

It will also be determined if the target audience can be a conduit to providing homeowners with water efficient landscape incentive programs being offered by Metropolitan Water District (MWD) and the San Diego County Water Authority.

2) Ultraviolet Bacteria Treatment Facility

The City of Oceanside will continue to operate the ultraviolet (UV) treatment system just upstream of Buccaneer Beach between May and September each year. The system actively eliminates 99% of the indicator bacteria passing through the system.

The treatment facility consists of piping flows from an existing diversion structure by gravity from the lagoon through a 2 micron fine screen to a wet well where the flow is pumped into two large sand filters followed by two UV disinfection units housed in a reinforced concrete building. The treated water is discharged through a pipe extended along the existing section of rip-rap that runs along the north side of the Loma Alta Creek outlet at Buccaneer Beach. During wet weather months (November through April), with increased flow in the creek, the lagoon is periodically open to the ocean and the UV system is bypassed.

2.1.3.2 Collins Basin and Temple Heights Drainage Areas

The City of Oceanside has identified two drainage basins as focus areas with similar planned strategies: Collins Basin Drainage Area and Temple Heights Drainage Area. Both are described in more detail below.

Collins Basin Drainage Area

The Collins Basin Drainage Area is located mid-watershed and conveys discharges from surrounding commercial and light industrial properties to a series of detention basins, prior to discharging to Loma Alta Creek. The Collins Basin drainage includes commercial and industrial land uses, streets, buildings, parking lots and landscaped areas – see Figure 9 below.



Figure 9: Collins Basin Drainage Area/Focus Area

Temple Heights Drainage Area

The Temple Heights Drainage Area is a commercial and industrial area located at the headwaters of the watershed that discharges to two MS4 outfalls prior to discharging to Loma Alta Creek. Temple Heights is primarily office buildings and light industrial land uses and includes streets, buildings, parking lots and landscaped areas, see Figure 10 below.

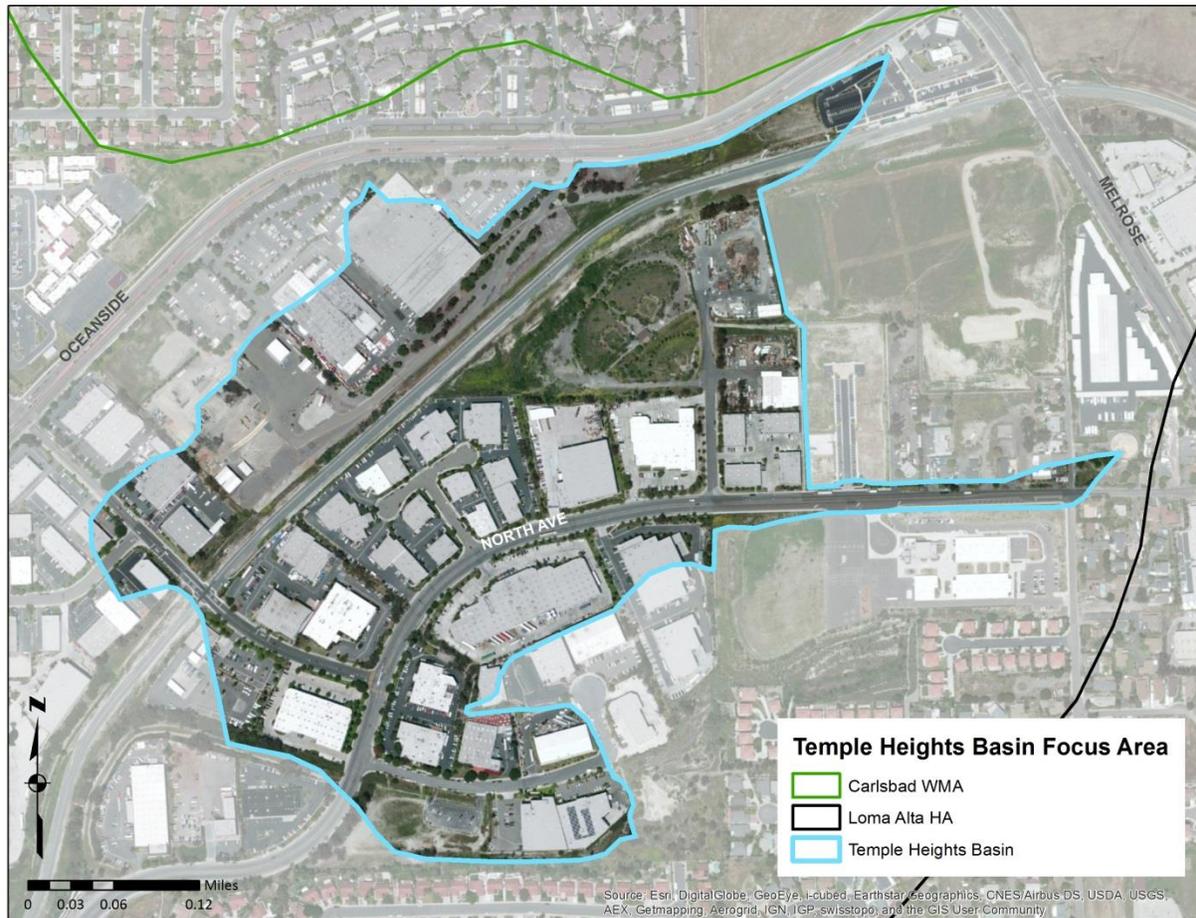


Figure 10: Temple Heights Drainage Area/Focus Area

Collins Basin and Temple Heights Drainage Area Interim and Final Numeric Goals

Although there are not specific interim and final numeric goals established for these focus areas, the strategies are anticipated to work towards the goals presented in Section 2.1.2.1. that are applicable to the entire Loma Alta HA.

Collins Basin and Temple Heights Drainage Area Strategies

The City of Oceanside will implement its program core strategies within the Collins Basin and Temple Heights Drainage Area. In addition to the core jurisdictional strategies, the following summarizes supplemental or modified core strategies planned for implementation in the Collins Basin and Temple Heights areas to address the sources of pollutants and discharges.

The selected strategies are expected to have multi-pollutant benefits and intended to address non-stormwater flows and reducing the source loading of nutrients. Reducing non-stormwater flows: (1) reduces the loading of pollutants such as nutrients, pesticides, bacteria and trash discharged through MS4 system; (2) reduces the amount of indicator bacteria regrowth and contributions that occurs with accumulated biofilm in MS4 systems that requires water; and (3) reduces the wet-weather contribution of indicator bacteria from scoured biofilm under higher velocity flows from storm discharges.

To accomplish the multi-benefit objectives in the two areas, the City of Oceanside will supplement its core jurisdictional program by implementing the following strategies in these focus areas:

1) Runoff and Nutrients Source Reduction

Preliminary Assessment

During Fiscal Years (FY)s 2015 and 2016, the City will:

- Conduct observations to confirm the flows from these focus areas are persistent – FY 2015 and FY 2016;
- Identify, through observations, the common categories of non-storm water discharges to the MS4 in the first year of assessment – FY 2015;
- Identify, through observations, the greatest dischargers of non-storm water within the focus area – FY 2015; and
- Categorize and prioritize the discharges to inform the education programs and/or enforcement mechanisms to focus on the specific problems or issues.

Source Reductions

Based on findings from the preliminary assessment, the City will make determinations of the most appropriate strategies to implement in subsequent years. The following strategies may be implemented to address identified issues:

- Irrigation runoff reduction strategies;
- Fertilizer use and application timing/frequency surveys;
- Water conservation rebate programs for commercial properties;
- Inspection of Treatment Control BMPs and verification of maintenance records from properties within this drainage that have these engineered BMPs installed.
- Incorporate detailed education information specific to nutrients and bacteria during commercial and industrial facility inspections to prevent illegal discharges to the MS4 based on non-storm water discharge findings. Potential outreach tasks and materials could include:
 - Potential outreach tasks and materials could include mailing lists, door-to-door handouts, collaboration with HOA board of directors or property management companies
 - Community meetings with City staff, presentations at regular HOA briefings
 - Offer irrigation incentive programs for homeowners within the focus area - Leverage existing rebates through San Diego County Water Authority (SDCWA), Metropolitan Water District (MWD), Vista Irrigation District (VID)
- Implement an enhanced inspection program within the commercial and industrial area to identify potential illegal discharges

2) Optional Strategies

- Develop a list of potential structural (engineered) BMPs or retrofitting existing structural BMPs to address flow and/or pollutant issues if the non-structural methods prove ineffective
- Implement an enhanced treatment control BMP inspection program for the properties within the assessment drainage area.
 - Increase inspection frequency to ensure proper operation and maintenance of BMPs

- Classify which BMPs specifically address the target pollutants (nutrients & bacteria) and ensure proper functioning.

2.1.3.3 Oceanside/Vista Residential Area Near North Avenue

The Oceanside/Vista Residential focus area is located near the headwaters of the watershed that discharges to an MS4 outfall prior to discharging to Loma Alta Creek. This residential area is primarily single family residential land uses and includes some common areas and recreational park areas that include landscaping and turf – see Figure 11 below.



Figure 11: Oceanside/Vista Residential Focus Area

Oceanside/Vista Residential Area Interim and Final Numeric Goals

Although there are not specific interim and final numeric goals established for this focus area, the strategies are anticipated to work towards the goals presented in Section 2.1.2.1. that are applicable to the entire Loma Alta HA.

Oceanside/Vista Residential Area Strategies

The Cities of Oceanside and Vista will implement their program core strategies within the residential focused area. In addition to the core jurisdictional strategies, the following summarizes supplemental or modified core strategies planned for implementation in the residential focus area to address the sources of pollutants and discharges.

The supplemental strategies are expected to have multi-pollutant benefits and are intended to address non-stormwater flows and reduce the source loading of nutrients. Reducing non-stormwater flows: (1) reduces the loading of pollutants such as nutrients, pesticides, bacteria and trash discharged through MS4 system; (2) reduces the amount of indicator bacteria regrowth and contributions that occurs with accumulated biofilm in MS4 systems that requires water; and (3) reduces the wet-weather contribution of indicator bacteria from scoured biofilm under higher velocity flows from storm discharges.

To accomplish the multi-benefit objectives in the focus area, the Cities of Oceanside and Vista will supplement their core jurisdictional program by implementing the following strategies in these focus areas:

1) Runoff and Nutrients Source Reduction

Preliminary Assessment

During Fiscal Years (FY)s 2015 and 2016, the Cities will:

- Conduct observations to confirm the flows from this focus area are persistent and from anthropogenic sources – FY 2015 and FY 2016;
- Identify, through observations, the common categories of non-storm water discharges to the MS4 in the first year of assessment – FY 2015;
- Identify, through observations, repeat non-storm water violators within the focus area – FY 2015; and
- Categorize and prioritize the discharges to inform the education programs and/or enforcement mechanisms to focus on the specific problems or issues.

Source Reductions

Based on findings from the preliminary assessment, the Cities will make determinations of the most appropriate strategies to implement in subsequent years. The following strategies may be implemented to address identified issues:

- Irrigation runoff reduction strategies;
- Water conservation rebates, free home irrigation conversion consultations
- Smart gardening practices, compost use, proper fertilizer applications
- Shared drainage outreach to identify measurable improvements
 - Focus on residential properties
 - Continue baseline monitoring at shared drainage area outfalls
 - Regular dry-season monitoring aligned with outreach strategies
- Implement educational activities within the upstream residential drainage to prevent illegal discharges to the MS4 based on non-storm water discharge findings
 - Potential outreach tasks and materials could include mailing lists, door-to-door handouts, collaboration with HOA board of directors or property management companies
 - Community meetings with City staff, presentations at regular HOA briefings
 - Offer irrigation incentive programs for homeowners within the focus area - Leverage existing rebates through San Diego County Water Authority (SDCWA), Metropolitan Water District (MWD), Vista Irrigation District (VID)
- Conduct routine code enforcement drive-by inspections of the drainage for other illegal discharges

2) Optional Strategies

- Develop a list of potential structural (engineered) BMPs or retrofitting existing structural BMPs to address flow and/or pollutant issues if the non-structural methods prove ineffective, e.g., catch basin filters or engineered infiltration devices.

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2.2 Buena Vista Creek HA (904.2)

The Buena Vista Creek HA is the fourth largest system within the WMA. The HA extends approximately 10.6 miles inland from the coast and totals approximately 14,400 acres in area, comprising 11% of the WMA. Buena Vista Creek originates on the western slopes of the San Marcos Mountains and discharges into the Pacific Ocean via Buena Vista Lagoon. The primary receiving waters in the HA are Buena Vista Creek, the Buena Vista Lagoon, and the Pacific Ocean. The largest portion of the HA is in the City of Vista (45%), with the remaining in Oceanside, Carlsbad, and San Diego County.

During the initial phase of the Water Quality Improvement Plan process, assessment of existing data determined that the priority water quality conditions (PWQCs) within the Buena Vista Creek HA include: indicator bacteria at the Buena Vista Lagoon; sediment/siltation in Buena Vista Lagoon; and nutrients in Buena Vista Lagoon. Of these PWQCs, the *highest priority water quality condition* (HPWQC) in the Buena Vista Creek HA was determined to be *indicator bacteria* (dry and wet weather conditions) at the Buena Vista Lagoon (June 2014 B.2 Report).

Figure 12 below, shows the Buena Vista Creek HA, HPWQC and focus areas. The focus areas and their associated strategies and goals are explained in more detail below.

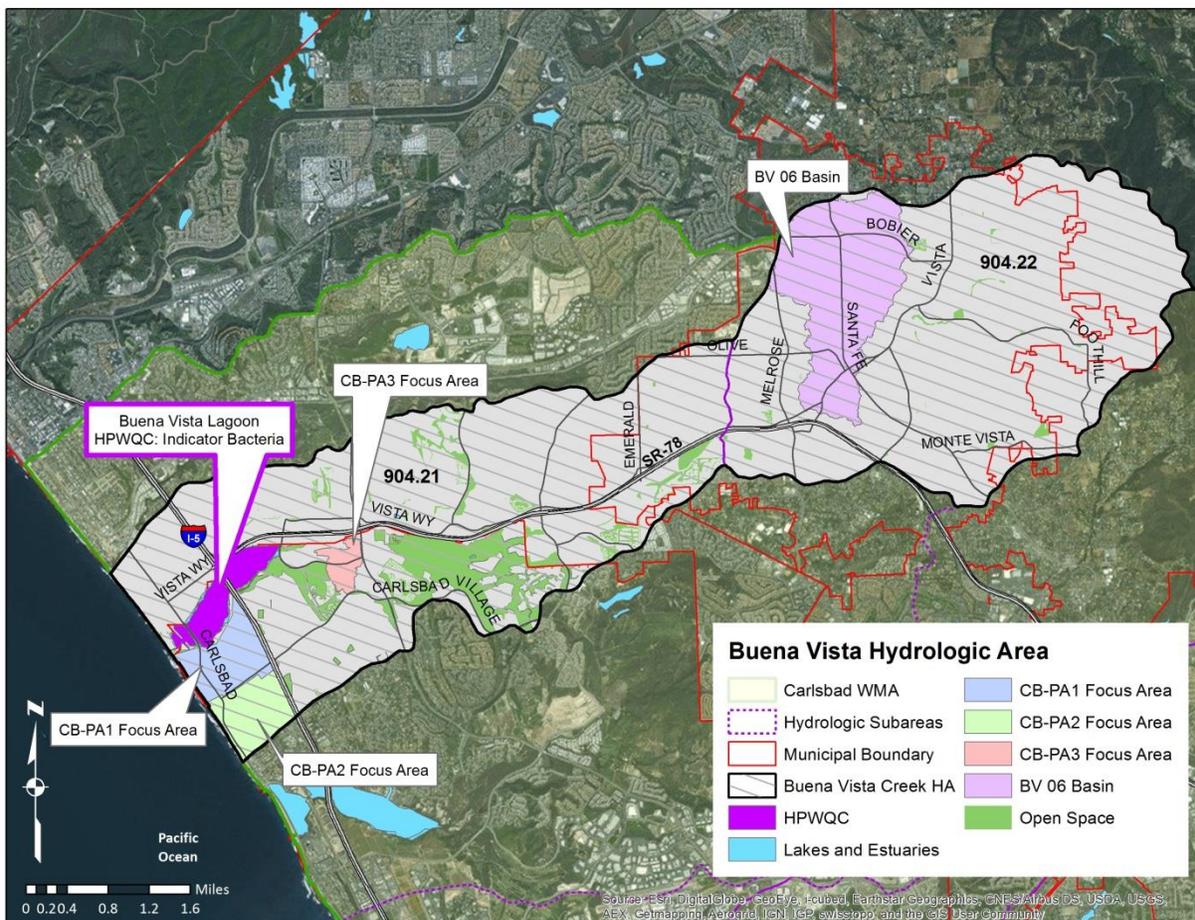


Figure 12: Buena Vista Creek Hydrologic Area Highest Priority Water Quality Conditions and Focus Areas

2.2.1 Buena Vista Creek HA Sources

The following table presents a listing of inventoried sources in the Buena Vista Creek HA and their association with HPWQCs and PWQCs based on source loading potential (2011 LTEA).

Table 4: Pollutant Generating Sources – 904.2 Buena Vista Creek Hydrologic Area

Inventory Sites/Facilities ¹	Quantities ²	Pollutant Source Loading Potential ³							
		Metals	Oil & Grease	Sediment	Pesticides	Nutrients	Bacteria/Pathogens	Dissolved Minerals	Organics
Aggregates/Mining	1	L	L	L	UL	UL	UL	UL	L
Agriculture	1	L	UL	L	L	L	L	UK	UL
Animal Facilities	5	N	UL	L	UK	L	L	N	L
Auto Repair, Fueling, or Cleaning	131	L	L	UL	UL	UK	UL	L	L
Auto Parking Lots or Storage	16	L	L	L	UK	UK	UK	UL	L
Auto Body Repair or Painting	19	L	L	UL	UL	UL	UL	L	L
Nurseries/Greenhouses	28	L	UL	L	L	L	L	UL	UL
Concrete Manufacturing	1	L	L	L	UL	UL	UL	UL	L
Eating or Drinking Establishments	391	N	L	UL	UK	UK	L	UL	L
Equipment Repair or Fueling	8	L	L	UL	UL	UK	UL	UL	L
Fabricated Metal	6	L	L	UK	UK	UK	UL	UL	L
Food Manufacturing	3	UL	UL	UL	UL	UL	UL	UL	UL
General Contractors	26	UL	UL	L	UL	UL	UL	UL	UL
General Industrial	10	L	L	UK	UK	UK	UK	UK	L
General Retail	94	UL	UL	L	UL	UL	UL	UL	UL
Health Services	2	N	UL	L	UK	L	UL	UK	L
Institutional	2	L	UK	UK	UK	UK	UL	UK	UK
Motor Freight	3	L	L	UK	UK	UK	UK	UL	L
Offices	36	UK	UK	UK	UK	UK	UK	UK	UK
Parks and Rec (incl. Golf, Cemetery)	3	UK	UK	UK	UK	L	UK	UL	UK
Pest Control Services	1	N	UK	N	L	N	UK	N	UK
Pool and Fountain Cleaning	1	N	N	N	N	UK	N	N	UK
Recycling & Junk Yards	2	L	L	L	UL	UL	UL	L	L
Stone/Glass Manufacturing	3	L	L	L	UL	UL	UL	UL	L
Storage/Warehousing	9	L	L	L	UL	UL	UL	UL	L
Municipal	81	N	N	L	N	N	UK	UL	N
Construction	Varies ⁴	UL	UL	L	UL	UL	UL	L	UL
Residential	7,345 acres	L	L	L	L	L	L	L	L

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQC are identified in the table (yellow highlight signifies HPWQC). The HPWQC is associated with the sources that are likely to generate those pollutants (blue highlight). The PWQP is highlighted in green and the associated sources that are likely to generate those pollutants are depicted with an "L".

1: Other sources are not reported in this table including: Land Development and Non-inventoried Businesses

2: Quantities based on the Responsible Agencies FY 2012 JURMP Annual Reports

3: Pollutant Source Loading Potential taken from LTEA 2011; N = None, UK = Unknown, UL = Unlikely, L = Likely

4: The quantity of construction sites is dynamic due to projects starting and completing at any given time.

2.2.2 Buena Vista Creek HA Goals and Strategies

2.2.2.1 Buena Vista Creek HA Goals

Goals have not been established that apply to the entire Buena Vista Creek HA. Separate goals have been established for each focus area and are presented in the sub-sections below.

2.2.2.2 Buena Vista Creek HA Strategies

The following table identifies the Water Quality Improvement Strategies to be implemented throughout the entire Buena Vista Creek HA and in specific focus areas of the HA. In addition to the planned strategies, optional strategies are identified that may be implemented based on circumstances related to the progress RAs make towards numeric goals and funding. The strategies associated with the focus areas are described further in the sub-sections below.

As the RAs implement strategies and analyze assessment data, it is expected that these strategies and schedules may change through an iterative and adaptive management process. The adaptive management process will be presented in the Final Carlsbad WMA WQIP in June 2015.

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Table 5: Buena Vista Creek HA Strategies

Water Quality Improvement Plan Strategies		Jurisdiction/Area				Target Sources										Target Pollutants						Implementation Schedule							
		City of Carlsbad	City of Vista	City of Oceanside	County of San Diego	Municipal Fixed Facilities	Industrial and Commercial Facilities/Owners	Construction Sites and Personnel	Residential	General Public	Land Development & Redevelopment	Roads, Streets, Highways and Parking Facilities	MS4	Bacteria/Pathogens	Trash	Heavy Metals	Nutrients	Oil and Grease	Sediment	Pesticides	Previous Fiscal Year(s)	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20	Future Fiscal Year(s)		
1	Targeted Increased Street Sweeping	CB-PA1, CB-PA2 & CB-PA3	-	-	-	•	•		•	•			•	•					•			•	•	•	•	•	•	•	
2	Perform Property Based Inspections/Patrol	CB-PA1, CB-PA2 & CB-PA3	Buena Vista 06 Basin	-	-	•	•		•	•					•	•	•	•	•	•		•	•	•	•	•	•	•	
3	Provide Maximum Response Time for Complaints Received via Storm Water Hotline	CB-PA1, CB-PA2 & CB-PA3	-	-	-	•	•	•	•	•					•	•	•	•	•	•		•	•	•	•	•	•	•	
4	Enhanced Education Program	CB-PA1, CB-PA2 & CB-PA3	-	-	-	•	•		•	•					•	•	•	•	•	•		•	•	•	•	•	•	•	
5	Implement Program Efficiencies	CB-PA1, CB-PA2 & CB-PA3	-	-	-	•	•	•	•						•	•	•	•	•	•		•	•	•	•	•	•	•	
6	Residential Areas	CB-PA1, CB-PA2 & CB-PA3	-	-	-				•	•					•	•	•	•	•	•		•	•	•	•	•	•	•	
7	Irrigation Runoff Reduction Program	-	Buena Vista 06 Basin	-	-	•	•		•	•			•	•					•			•	•	•	•	•	•	•	
8	Administrative BMPs ^{1,2}	HA Wide	HA Wide	HA Wide	HA Wide	•	•	•	•	•	•	•	•	•							•	•	•	•	•	•	•	•	
9	Outfall Monitoring	HA Wide	HA Wide	HA Wide	HA Wide	•	•	•	•		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
10	Investigations ²	HA Wide	HA Wide	HA Wide	HA Wide	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
11	Development and Redevelopment Requirements ²	HA Wide	HA Wide	HA Wide	HA Wide						•				•	•	•	•	•	•	•	•	•	•	•	•	•	•	
12	Construction Site Inspections ²	HA Wide	HA Wide	HA Wide	HA Wide			•								•					•	•	•	•	•	•	•	•	
13	Existing Development Facilities, Areas and Activities Inspections ²	HA Wide	HA Wide	HA Wide	HA Wide	•	•		•				•		•	•	•	•	•	•	•	•	•	•	•	•	•	•	
14	MS4 Inspections/Cleaning ²	HA Wide	HA Wide	HA Wide	HA Wide							•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
15	Street Sweeping ²	HA Wide	HA Wide	HA Wide	HA Wide							•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
16	General Education and Outreach ²	HA Wide	HA Wide	HA Wide	HA Wide	•	•	•	•	•	•				•	•	•	•	•	•	•	•	•	•	•	•	•	•	
17	Employee Training ²	HA Wide	HA Wide	HA Wide	HA Wide	•						•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
18	Enforcement ²	HA Wide	HA Wide	HA Wide	HA Wide	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	

Table 5: Buena Vista Creek HA Strategies

Water Quality Improvement Plan Strategies		Jurisdiction/Area				Target Sources										Target Pollutants						Implementation Schedule						
		City of Carlsbad	City of Vista	City of Oceanside	County of San Diego	Municipal Fixed Facilities	Industrial and Commercial Facilities/Owners	Construction Sites and Personnel	Residential	General Public	Land Development & Redevelopment	Roads, Streets, Highways and Parking Facilities	MS4	Bacteria/Pathogens	Trash	Heavy Metals	Nutrients	Oil and Grease	Sediment	Pesticides	Previous Fiscal Year(s)	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20	Future Fiscal Year(s)	
19	Partnership Program(s) ²	HA Wide	HA Wide	HA Wide	HA Wide	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
20	Program for Retrofitting Areas of Existing Development ²	HA Wide	HA Wide	HA Wide	HA Wide	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
21	Program for Stream, Channel and/or Habitat Restoration in Areas of Existing Development ²	HA Wide	HA Wide	HA Wide	HA Wide	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
22	Implement Structural or Retrofit BMPs ³	CB-PA1, CB-PA2 & CB-PA3	Buena Vista 06 Basin	HA Wide	HA Wide	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	Based on appropriate criteria for initiating							
23	Implement Offsite Alternative Compliance Program ³	CB-PA1, CB-PA2 & CB-PA3	Buena Vista 06 Basin	HA Wide	HA Wide	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	Based on appropriate criteria for initiating							

¹ Examples of Administrative BMPs include: Plan development, program standardization, maintaining and prioritizing inventories, updating education materials, etc.

² General descriptions provided in Appendix B

³ Optional Strategies

2.2.3 Buena Vista Creek HA Focus Areas

Concentrating programmatic efforts in specific geographic areas to address known or suspected sources of discharges and pollutants is expected to improve the effectiveness of the strategies and activities.

Based on the RAs review of the characteristics of the Buena Vista Creek HA, several focus areas were selected for concentrating programmatic efforts. These focus areas include CB-PA1, CB-PA2, CB-PA3, and Buena Vista Basin (BV06). The goals and strategies for these focus areas are summarized below.

2.2.3.1 CB-PA1 Focus Area

The CB-PA1 focus area is located immediately south of the Buena Vista Lagoon. This area is a mixture of single family residential, commercial and multi-family land uses and includes homes, commercial buildings, apartment complexes, common areas, a school and recreational park areas that include landscaping and turf, see Figure 13 below.



Figure 13: CB-PA1 Focus Area – Buena Vista Creek HA

CB-PA1 Interim and Final Numeric Goals

Goals associated with this focus area are summarized in the goals table below. These goals have been established as a part of the initial WQIP development process. As the Responsible Agencies progress through the first several years of implementation and learn through data collection and analysis, it is

expected that these goals and schedules will likely change. As goals and schedules are adapted, they will be presented in future WQIP annual reports or updates to the WQIP document.

Table 6: CB-PA1 Focus Area, Interim and Final Numeric Goals

Interim Goal (2013-2018) 2018 ¹	Interim Goal (2018-2023) 2023 ¹	Interim Goal (2023-2028) 2028 ¹	Interim Goal (2028-2033) 2033 ¹	Final Goal (2033-2038) 2038 ¹
10% reduction in anthropogenic surface water runoff	20% reduction in anthropogenic surface water runoff	40% reduction in anthropogenic surface water runoff	60% reduction in anthropogenic surface water runoff	80% reduction in anthropogenic surface water runoff

¹ Flow reduction goals are currently based on best professional judgment as current flow data is not available. The goals may be adapted as monitoring data/information is gathered, analyzed and baselines are established.

The means for achieving these goals are identified in the strategies discussion below. Mechanisms for measuring progress towards and ultimately achieving these goals will be discussed in the Final Carlsbad WQIP to be completed in June 2015.

CB-PA1 Focus Area Strategies

The City of Carlsbad will implement their program core strategies within the focus area. In addition to the core jurisdictional strategies, the following summarizes supplemental or modified core strategies planned for implementation in the focus area to address the sources of pollutants and discharges.

The selected strategies are expected to have multi-pollutant benefits and intended to address non-stormwater flows and reducing the source loading of bacteria. Reducing non-stormwater flows: (1) reduces the loading of pollutant constituent discharged through MS4 system; (2) reduces the amount of indicator bacteria regrowth and contributions that occurs with accumulated biofilm in MS4 systems that requires water; and (3) reduces the wet-weather contribution of indicator bacteria from scoured biofilm under higher velocity flows from storm discharges. Removing trash and sediment reduces the bacteria loading that is attached to the trash and sediment.

To accomplish the multi-benefit objectives in the CB-PA1, the City of Carlsbad will supplement its core jurisdictional program by implementing the following strategies:

- 1) Targeted street sweeping in the focus area will be a minimum frequency of every two weeks.
- 2) Perform property based inspections/patrol inspections of *each* property in the CB-PA1 at least once annually. These inspections will include:
 - a. Visual inspection of all public streets
 - b. Inspections of each existing development property:
 - i. Municipal facilities and areas
 - ii. Each commercial/industrial property
 - iii. Each residential property
- 3) Maintain a maximum response time to focus areas for complaints received via Storm Water Hotline, or other mechanism. The City will respond and arrive on-site *within* 45 minutes of notification to eliminate any unauthorized discharge, identify the responsible party and minimize impacts to receiving waters. This response time is expected to eliminate discharges

while they are occurring and provide an opportunity to immediately educate or enforce as necessary.

- 4) Enhancements to education program to include:
 - a. Bacteria and other priority pollutant specific education and outreach program to be conducted in the CB-PA1 for residents and commercial facilities related to bacteria and other priority pollutants. The materials will have an emphasis on discharges to the City's MS4 and the receiving waters impacts.
 - b. Developing and implementing a training/seminar for property managers and others that have direct responsibility for common areas within HOAs and commercial properties. Educational materials and information will be developed and provided to the managers for them to distribute to their residents and tenants.
 - c. As the CB-PA1 focus area is a high-tourist area, the City will develop outreach materials directed specifically to out-of-jurisdiction visitors, including materials for distribution through hotels, long-term rental properties and commercial businesses.
 - d. As part of the residential outreach program, the City of Carlsbad will work with residents and property owners to educate through various means, which may include school programs, block parties or one-on-one meetings.

- 5) Implement Technological Program Efficiencies – The City is implementing a new computer database which will allow for use with mobile devices which will increase the City's response time to IDDE reports, discoveries, complaints and monitoring investigations. This new computer database will also streamline inspections and allow for review of previous information while in the field. It is also anticipated to speed the enforcement process as well expedite the capture of data for field follow-up. These increases in the speed at which data is collected and assimilated will improve the efficiencies of the City's stormwater program.

- 6) Optional Strategies
 - Implement structural (engineered) BMPs or retrofitting existing structural BMPs to address flow and/or pollutant issues
 - Implement offsite alternative compliance program to place water quality improvement projects in the CB-PA1 focus area

2.2.3.2 CB-PA2 Focus Area

The CB-PA2 focus area is split into two drainage areas located south of Carlsbad Village Drive and CB-PA1. The northern portion of the focus area drains to the north towards Buena Vista Lagoon. The southern portion drains south towards Agua Hedionda Lagoon. This area is a mixture of single family residential properties, commercial and multi-family land uses and includes homes, commercial buildings, apartment complexes, common areas, a school and recreational park areas that include landscaping and turf, see Figure 14 below.



Figure 14: CB-PA2 Focus Area – Buena Vista Creek

CB-PA2 Focus Area Interim and Final Numeric Goals

Goals associated with this focus area are summarized in the goals table below. These goals have been established as a part of this initial WQIP development process. As the Responsible Agencies progress through the first several years of implementation and learn through data collection and analysis, it is expected that these goals and schedules will likely change. As goals and schedules are adapted, they will be presented in future WQIP annual reports or updates to the WQIP document.

Table 7: CB-PA2 Focus Area, Interim and Final Numeric Goals

Interim Goal (2013-2018) 2018 ¹	Interim Goal (2018-2023) 2023 ¹	Interim Goal (2023-2028) 2028 ¹	Interim Goal (2028-2033) 2033 ¹	Final Goal (2033-2038) 2038 ¹
10% reduction in anthropogenic surface water runoff	20% reduction in anthropogenic surface water runoff	40% reduction in anthropogenic surface water runoff	60% reduction in anthropogenic surface water runoff	80% reduction in anthropogenic surface water runoff

¹ Flow reduction goals are currently based on best professional judgment as current flow data is not available. The goals may be adapted as monitoring data/information is gathered, analyzed and baselines are established.

The means for achieving these goals are identified in the strategies discussion below. Mechanisms for measuring progress towards and ultimately achieving these goals will be discussed in the Final Carlsbad WQIP to be completed in June 2015.

CB-PA2 Focus Area Strategies

The City of Carlsbad will implement their program core strategies within the focus area. In addition to the core jurisdictional strategies, the following summarizes supplemental or modified core strategies planned for implementation in the focus area to address the sources of pollutants and discharges.

The selected strategies are expected to have multi-pollutant benefits and intended to address non-stormwater flows and reducing the source loading of bacteria. Reducing non-stormwater flows: (1) reduces the loading of pollutant constituent discharged through MS4 system; (2) reduces the amount of indicator bacteria regrowth and contributions that occurs with accumulated biofilm in MS4 systems that requires water; and (3) reduces the wet-weather contribution of indicator bacteria from scoured biofilm under higher velocity flows from storm discharges. Removing trash and sediment reduces the bacteria loading that is attached the trash and sediment.

To accomplish the multi-benefit objectives in the CB-PA2, the City of Carlsbad will supplement its core jurisdictional program by implementing the following strategies:

- 1) Targeted street sweeping in the focus area will be a minimum frequency of every two weeks.
- 2) Perform property based inspections/patrol inspections of each property in the CB-PA2 focus area at least once annually. These inspections will include:
 - a. Visual inspection of all public streets
 - b. Inspections of each existing development property:
 - i. Municipal facilities and areas
 - ii. Each commercial/industrial property
 - iii. Each residential property
- 3) Maintain a maximum response time for complaints received via Storm Water Hotline, or other mechanism. The City will respond and arrive on-site within 45 minutes of notification to eliminate any unauthorized discharge, identify the responsible party and minimize impacts to receiving waters. This response time is expected to eliminate discharges while they are occurring and provide an opportunity to immediately educate or enforce as necessary.
- 4) Enhancements to education program to include:
 - a. Bacteria and other priority pollutant specific education and outreach program to be conducted in the CB-PA2 focus area for residents and commercial facilities related to bacteria and other priority pollutants. The materials will have an emphasis on discharges to the City's MS4 and the receiving waters impacts.
 - b. Developing and implementing a training/seminar for property managers and others that have direct responsibility for common areas within HOAs and commercial properties. Educational materials and information will be developed and provided to the managers for them to distribute to their residents and tenants.
 - c. As part of the residential outreach program, the City of Carlsbad will work with residents and property owners to educate through various means, which may include school programs, block parties or one-on-one meetings.

- 5) Implement Program Efficiencies – The City is implementing a new computer database which will allow for use with mobile devices which will increase the City’s response time to IDDE reports, discoveries, complaints and monitoring investigations. This new computer database will also streamline inspections and allow for review of previous information while in the field.
- 6) Optional Strategies
 - Implement structural (engineered) BMPs or retrofitting existing structural BMPs to address flow and/or pollutant issues
 - Implement offsite alternative compliance program to place water quality improvement projects in the CB-PA2 focus area

2.2.3.3 CB-PA3 Focus Area

The CB-PA3 focus area is located approximately one-third of the way up the Buena Vista Creek HA. This area is a mix of single family residential properties and a portion of the Carlsbad Mall with a single outfall, see Figure 15 below. Monitoring has identified persistent flow and bacteria exceedances from the outfall.

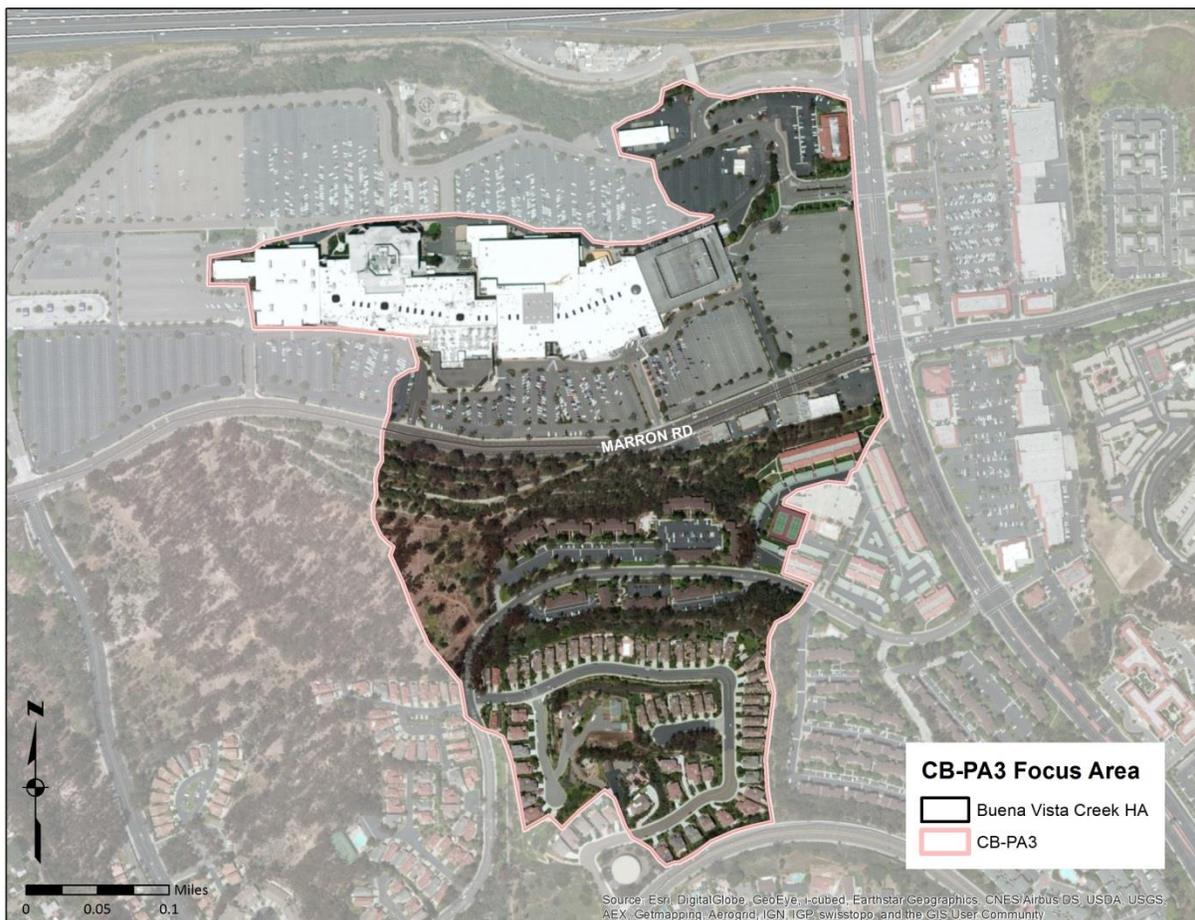


Figure 15: CB-PA3 Focus Area – Buena Vista Creek

CB-PA3 Focus Area Interim and Final Numeric Goals

Goals associated with this focus area are summarized in the goals table below. These goals have been established as a part of this initial WQIP development process. As the Responsible Agencies progress through the first several years of implementation and learn through data collection and analysis, it is expected that these goals and schedules will likely change. As goals and schedules are adapted, they will be presented in future WQIP annual reports or updates to the WQIP document.

Table 8: CB-PA3 Focus Area, Interim and Final Numeric Goals

Interim Goal (2013-2018) 2018 ¹	Interim Goal (2018-2023) 2023 ¹	Interim Goal (2023-2028) 2028 ¹	Interim Goal (2028-2033) 2033 ¹	Final Goal (2033-2038) 2038 ¹
10% reduction in anthropogenic surface water runoff	20% reduction in anthropogenic surface water runoff	40% reduction in anthropogenic surface water runoff	60% reduction in anthropogenic surface water runoff	80% reduction in anthropogenic surface water runoff

¹ Flow reduction goals are currently based on best professional judgment as current flow data is not available. The goals may be adapted as monitoring data/information is gathered, analyzed and baselines are established.

The means for achieving these goals are identified in the strategies discussion below. Mechanisms for measuring progress towards and ultimately achieving these goals will be discussed in the Final Carlsbad WQIP to be completed in June 2015.

CB-PA3 Focus Area Strategies

The City of Carlsbad will implement their program core strategies within the focus area. In addition to the core jurisdictional strategies, the following summarizes supplemental or modified core strategies planned for implementation in the focus area to address the sources of pollutants and discharges.

The selected strategies are expected to have multi-pollutant benefits and intended to address non-stormwater flows and reducing the source loading of bacteria. Reducing non-stormwater flows: (1) reduces the loading of pollutant constituent discharged through MS4 system; (2) reduces the amount of indicator bacteria regrowth and contributions that occurs with accumulated biofilm in MS4 systems that requires water; and (3) reduces the wet-weather contribution of indicator bacteria from scoured biofilm under higher velocity flows from storm discharges. Removing trash and sediment reduces the bacteria loading that is attached the trash and sediment.

To accomplish the multi-benefit objectives in the CB-PA3, the City of Carlsbad will supplement its core jurisdictional program by implementing the following strategies:

- 1) Targeted street sweeping in the focus area will be a minimum frequency of every two weeks.
- 2) Perform property based inspections/patrol inspections of each property in the CB-PA3 focus area at least once annually. These inspections will include:
 - c. Visual inspection of all public streets
 - d. Inspections of each existing development property:
 - i. Municipal facilities and areas
 - ii. Each commercial/industrial property
 - iii. Each residential property

- 3) Maintain a maximum response time for complaints received via Storm Water Hotline, or other mechanism. The City will respond and arrive on-site within 45 minutes of notification to eliminate any unauthorized discharge, identify the responsible party and minimize impacts to receiving waters. This response time is expected to eliminate discharges while they are occurring and provide an opportunity to immediately educate or enforce as necessary.
- 4) Enhancements to education program to include:
 - a. Bacteria and other priority pollutant specific education and outreach program to be conducted in the CB-PA3 focus area for residents and commercial facilities related to bacteria and other priority pollutants. The materials will have an emphasis on discharges to the City's MS4 and the receiving waters impacts.
 - b. Developing and implementing a training/seminar for property managers and others that have direct responsibility for common areas within HOAs and commercial properties. Educational materials and information will be developed and provided to the managers for them to distribute to their residents and tenants.
 - c. As part of the residential outreach program, the City of Carlsbad will work with residents and property owners to educate through various means, which may include school programs, block parties or one-on-one meetings.
- 5) Implement Program Efficiencies – The City is implementing a new computer database which will allow for use with mobile devices which will increase the City's response time to IDDE reports, discoveries, complaints and monitoring investigations. This new computer database will also streamline inspections and allow for review of previous information while in the field.
- 6) Optional Strategies
 - Implement structural (engineered) BMPs or retrofitting existing structural BMPs to address flow and/or pollutant issues
 - Implement offsite alternative compliance program to place water quality improvement projects in the CB-PA3 focus area

2.2.3.4 City of Vista –Buena Vista 06 (BV06) Basin

The Buena Vista 06 (BV06) Basin is a large sub-basin in the upper one-third of the Buena Vista Creek HA. The basin is completely within the City of Vista jurisdictional boundaries. The basin has high-density land use with a mixture of single family residential, commercial and multi-family land uses and includes homes, commercial buildings, apartment complexes, common areas, several schools and recreational park areas that include landscaping and turf, see Figure 16 below.

The majority of this basin was developed prior to implementation of the City's Standard Urban Stormwater Mitigation Plan (SUSMP); therefore there relatively few treatment control BMPs have been established.

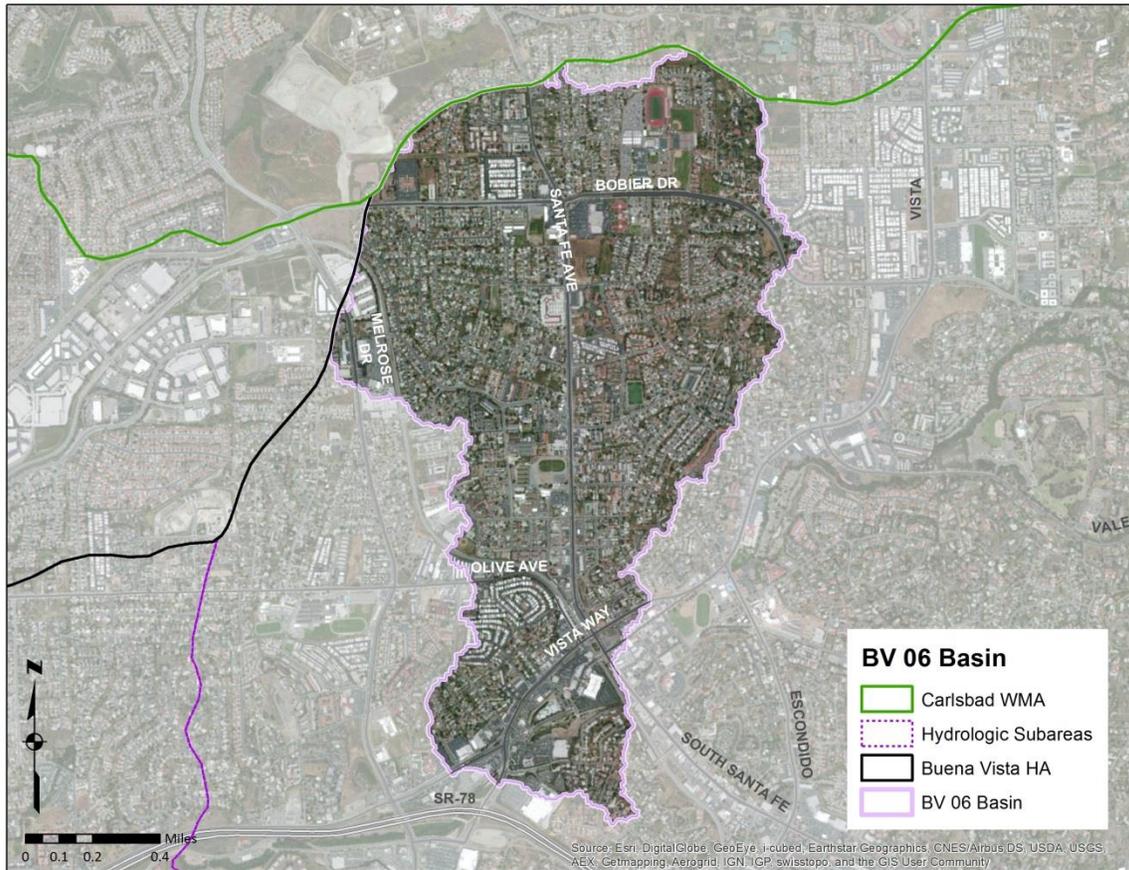


Figure 16: BV06 Basin Focus Area

BV06 Basin Focus Area Interim and Final Numeric Goals

Goals associated with this focus area are summarized in the goals table below. These goals have been established as a part of this initial WQIP development process. As the Responsible Agencies progress through the first several years of implementation and learn through data collection and analysis, it is expected that these goals and schedules will likely change. As goals and schedules are adapted, they will be presented in future WQIP annual reports or updates to the WQIP document.

Table 9: BV06 Basin Focus Area, Interim and Final Numeric Goals

Interim Goal (2013-2018) 2018	Interim Goal (2018-2023) 2023	Interim Goal (2023-2028) 2028	Interim Goal (2028-2033) 2033	Final Goal (2033-2038) 2038
5% reduction in anthropogenic dry-weather surface water runoff	10% reduction in anthropogenic dry-weather surface water runoff	35% reduction in anthropogenic dry-weather surface water runoff	60% reduction in anthropogenic dry-weather surface water runoff	80% reduction in anthropogenic dry-weather surface water runoff

¹ Flow reduction goals are currently based on best professional judgment as current flow data is not available. The goals may be adapted as monitoring data/information is gathered, analyzed and baselines are established.

The means for achieving these goals are identified in the strategies discussion below. Mechanisms for measuring progress towards and ultimately achieving these goals will be discussed in the Final Carlsbad WQIP to be completed in June 2015.

BV06 Basin Focus Area Strategies

In addition to the core jurisdictional strategies, the following summarizes supplemental or modified core strategies planned for implementation in the focus area to address the sources of pollutants and discharges.

The selected strategies are expected to have multi-pollutant benefits and intended to address non-stormwater flows and reduce the source loading of bacteria. Reducing non-stormwater flows: (1) reduces the loading of pollutant constituent discharged through MS4 system; (2) reduces the amount of indicator bacteria regrowth and contributions that occurs with accumulated biofilm in MS4 systems that requires water; and (3) reduces the wet-weather contribution of indicator bacteria from scoured biofilm under higher velocity flows from storm discharges.

To accomplish the multi-benefit objectives in the BV06 Basin, the City of Vista will supplement its core jurisdictional program by implementing the following strategies:

1) Irrigation Runoff Reduction Program

The objective of the Irrigation Runoff Reduction Program (IRRP) is to eliminate or reduce dry weather flow contributions coming from irrigation runoff, regardless of the time of day the discharges occur. Core program elements include:

- Developing municipal codes that prohibit irrigation runoff
- Developing educational materials and outreach program specific towards irrigation runoff
- Assessing dry weather flows at outfall(s)
- Identifying key times to perform site observations
- Perform site observations to identify sources of irrigation runoff
- Collaboration with City Public Works Department to address municipal property irrigation systems
- Collaboration with Vista Irrigation District (VID) to identify sources and coordinate programs/outreach
- Initiating contact and correspondence with property managers/owners
- Periodically assessing flows
- Optionally developing and implementing an incentive program

2) Property Based/Patrol Inspections

The objective of this program is to reduce discharges to the MS4 and provide inspection of existing development in a more cost-efficient and effective manner. Features include:

- Developing patrol and inspection protocols
- Developing and conducting staff training
- Conducting property based/patrol inspections

3) Optional Strategies

- Implement structural (engineered) BMPs or retrofitting existing structural BMPs to address flow and/or pollutant issues
- Implement offsite alternative compliance program to place water quality improvement projects in the BV06 Basin

2.3 Agua Hedionda HA (904.3)

The Agua Hedionda Hydrologic Area (HA) is the third largest within the Carlsbad WMA. The HA, dominated by Agua Hedionda Creek, extends approximately 10.6 miles inland from the coast and is about 18,800 acres in area, comprising 14% of the WMA. Agua Hedionda Creek originates on the southwestern slopes of the San Marcos Mountains in west central San Diego County and discharges into the Pacific Ocean via Agua Hedionda Lagoon. The primary water bodies in the HA include Agua Hedionda Creek, Buena Creek, Letterbox Canyon, Agua Hedionda Lagoon and the Pacific Ocean. Most of the HA is in the City of Carlsbad (41%); the remainder is in Vista (24%) and San Diego County (24%) and small amounts in Oceanside and San Marcos.

During the initial phase of the Water Quality Improvement Plan process, assessment of existing data determined that the priority water quality conditions (PWQCs) within the Agua Hedionda HA include: indicator bacteria in Agua Hedionda Creek; toxicity in Agua Hedionda Creek; nutrients in Agua Hedionda Creek; hydromodification impacts in Agua Hedionda Creek; and nitrate and nitrite in Buena Creek. Of these PWQCs, the *highest priority water quality condition* (HPWQC) in the Agua Hedionda HA was determined to be *indicator bacteria* (dry and wet weather conditions) in Agua Hedionda Creek (June 2014 Carlsbad WMA WQIP submittal to RWQCB).

Figure 17 below, shows the Agua Hedionda HA, HPWQC and focus areas. The focus areas and their associated strategies and goals are explained in more detail below.

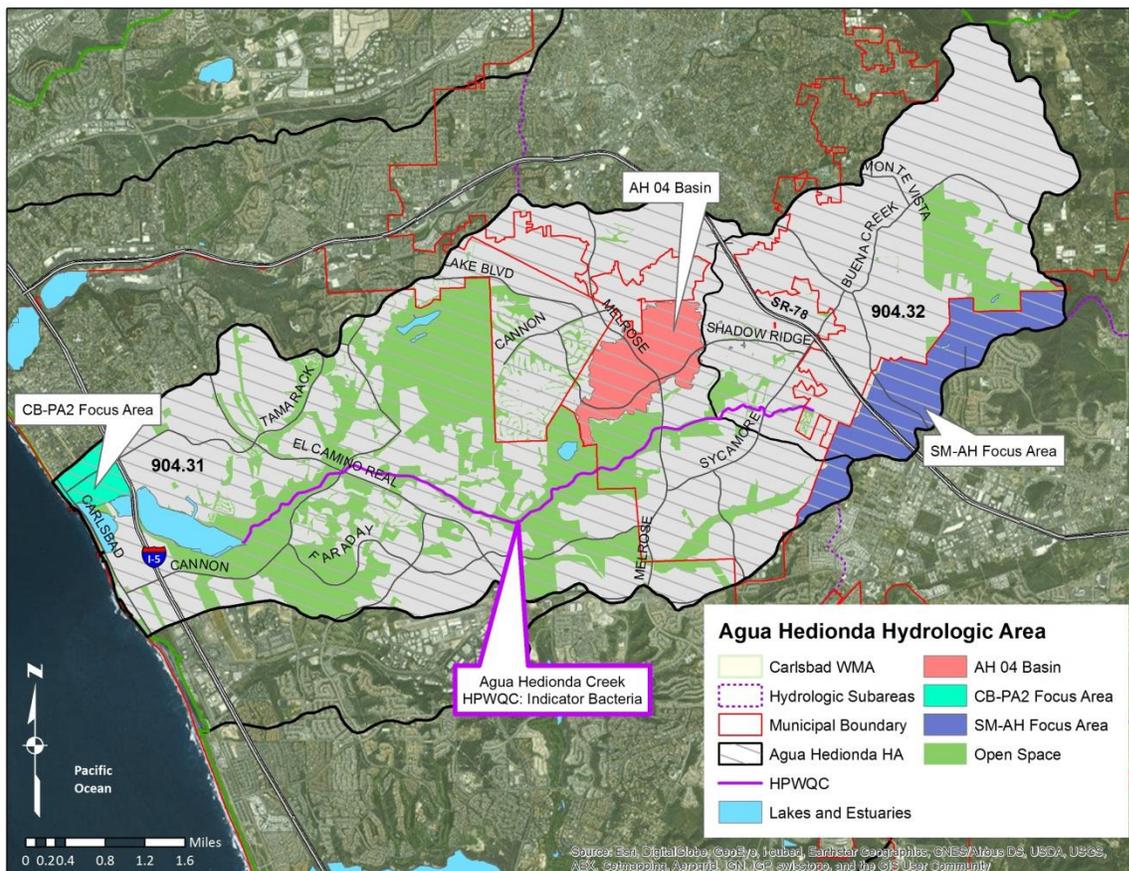


Figure 17: Agua Hedionda Hydrologic Area Highest Priority Water Quality Conditions and Focus Areas

2.3.1 Agua Hedionda HA Sources

The following table presents a listing of inventoried sources in the Agua Hedionda HA and their association with HPWQCs and PWQCs based on source loading potential (2011 LTEA). It is important to note that the PWQC hydromodification is not presented in the table below. Hydromodification impacts occur as a result of general land development and not specific sources.

Table 10: Pollutant Generating Sources – 904.3 Agua Hedionda Hydrologic Area

Inventory Sites/Facilities ¹	Quantities ²	Pollutant Source Loading Potential ³									
		Metals	Oil & Grease	Sediment	Pesticides	Nutrients	Bacteria/Pathogens	Dissolved Minerals	Organics	Toxicity	
Agriculture	4	L	UL	L	L	L	L	UK	UL	UK	
Animal Facilities	5	N	UL	L	UK	L	L	N	L	UK	
Auto Repair, Fueling, or Cleaning	67	L	L	UL	UL	UK	UL	L	L	UK	
Auto Parking Lots or Storage	27	L	L	L	UK	UK	UK	UL	L	UK	
Auto Body Repair or Painting	12	L	L	UL	UL	UL	UL	L	L	UK	
Nurseries/Greenhouses	59	L	UL	L	L	L	L	UL	UL	UK	
Building Materials Retail	2	L	L	L	UL	UL	UL	UL	L	UK	
Chemical and Allied Products	4	UK	UK	UK	UK	UK	UL	N	L	UK	
Eating or Drinking Establishments	162	N	L	UL	UK	UK	L	UL	L	UK	
Equipment Repair or Fueling	40	L	L	UL	UL	UK	UL	UL	L	UK	
Fabricated Metal	42	L	L	UK	UK	UK	UL	UL	L	UK	
Food Manufacturing	21	UL	UL	UL	UL	UL	UL	UL	UL	UK	
General Contractors	51	UL	UL	L	UL	UL	UL	UL	UL	UK	
General Industrial	98	L	L	UK	UK	UK	UK	UK	L	UK	
General Retail	58	UL	UL	L	UL	UL	UL	UL	UL	UK	
Motor Freight	10	L	L	UK	UK	UK	UK	UL	L	UK	
Parks and Rec (incl. Golf, Cemetery)	4	UK	UK	UK	UK	L	UK	UL	UK	UK	
Pest Control Services	4	N	UK	N	L	N	UK	N	UK	UK	
Publicly Owned Treatment Works	1	UK	UK	UK	N	UK	L	UL	UK	UK	
Primary Metal	5	L	UK	UK	UK	UK	UL	N	UK	UK	
Recycling & Junk Yards	6	L	L	L	UL	UL	UL	L	L	UK	
Stone/Glass Manufacturing	10	L	L	L	UL	UL	UL	UL	L	UK	
Storage/Warehousing	48	L	L	L	UL	UL	UL	UL	L	UK	
Municipal	69	N	N	L	N	N	UK	UL	N	UK	
Construction	Varies ⁴	UL	UL	L	UL	UL	UL	L	UL	UK	
Residential	6,613 acres	L	L	L	L	L	L	L	L	UK	

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQC are identified in the table (yellow highlight signifies HPWQC). The HPWQC is associated with the sources that are likely to generate those pollutants (blue highlight). The PWQP is highlighted in green and the associated sources that are likely to generate those pollutants are depicted with an "L".

1: Other sources are not reported in this table including: Land Development and Non-inventoried Businesses

2: Quantities based on the Responsible Agencies FY 2012 JURMP Annual Reports

3: Pollutant Source Loading Potential taken from LTEA 2011; N = None, UK = Unknown, UL = Unlikely, L = Likely

4: The quantity of construction sites is dynamic due to projects starting and completing at any given time.

2.3.2 Agua Hedionda HA Goals and Strategies

2.3.2.1 Agua Hedionda HA Goals

Goals have not been established that apply to the entire Agua Hedionda HA. Separate goals have been established for each focus area and are presented in the sub-sections below.

2.3.2.2 Agua Hedionda HA Strategies

The following table identifies the Water Quality Improvement Strategies to be implemented throughout the entire Agua Hedionda HA and in some specific focus areas of the HA. In addition to the planned strategies, optional strategies are identified that may be implemented based on circumstances related to the progress RAs make towards numeric goals and funding. The strategies associated with the focus areas are described further in the sub-sections below.

As the RAs implement strategies and analyze assessment data, it is expected that these strategies and schedules may change through an iterative and adaptive management process. The adaptive management process will be presented in the Final Carlsbad WMA WQIP in June 2015.

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Table 11: Agua Hedionda HA Strategies

Water Quality Improvement Plan Strategies		Jurisdiction/Area					Target Sources										Target Pollutants						Implementation Schedule					
		City of San Marcos	City of Vista	City of Carlsbad	County of San Diego	City of Oceanside	Municipal Fixed Facilities	Industrial and Commercial Facilities/Owners	Construction Sites and Personnel	Residential	General Public	Land Development & Redevelopment	Roads, Streets, Highways and Parking Facilities	MS4	Bacteria/Pathogens	Trash	Heavy Metals	Nutrients	Oil and Grease	Sediment	Pesticides	Previous Fiscal Year(s)	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20	Future Fiscal Year(s)
1	Irrigation Runoff Reduction Program	HA Wide	AH-04 Basin	-	-	-	•	•		•	•	•	•	•	•	•	•	•	•	•	•		•	•	•	•	•	•
2	Property Based/Patrol Inspections	HA Wide	AH-04 Basin	CB-PA2	-	-	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		•	•	•	•	•	•
3	Targeted Increased Street Sweeping	-	-	CB-PA2	-	-	•	•		•	•		•	•		•			•				•	•	•	•	•	•
4	Provide Maximum Response Time for Complaints Received via Storm Water Hotline	-	-	CB-PA2	-	-	•	•	•	•	•		•	•		•	•	•	•	•	•		•	•	•	•	•	•
5	Enhanced Education Program	-	-	CB-PA2	-	-	•	•		•	•					•	•	•	•	•	•		•	•	•	•	•	•
6	Implement Program Efficiencies	-	-	CB-PA2	-	-	•	•	•	•			•			•	•	•	•	•	•		•	•	•	•	•	•
7	City of San Marcos & Vallecitos Water District (VWD) Irrigation Runoff/Water Waster Program	HA Wide	-	-	-	-	•	•	•	•	•		•			•	•	•	•	•	•		•	•				
8	City of San Marcos and VWD Fats, Oils and Grease Program Collaboration	HA Wide	-	-	-	-		•		•	•							•					•	•				
9	Homeowners Association and Property Manger Outreach Program	HA Wide	-	-	-	-				•	•				•			•		•	•		•	•				
10	Enhancements to Education Program	HA Wide	-	-	-	-	•	•	•	•	•	•			•		•	•	•	•	•		•	•				
11	Filter Retrofit Program	HA Wide	-	-	-	-	•						•		•		•						•	•				
12	Administrative BMPs ^{1,2}	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	•	•	•	•	•	•	•	•									•	•	•	•	•	•
13	Outfall Monitoring	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		•	•	•	•	•	•
14	Investigations ²	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		•	•	•	•	•	•
15	Development and Redevelopment Requirements ²	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide					•					•	•	•	•	•	•		•	•	•	•	•	•
16	Construction Site Inspections ²	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide			•							•				•			•	•	•	•	•	•
17	Existing Development Facilities, Areas and Activities Inspections ²	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	•	•		•			•			•	•	•	•	•	•		•	•	•	•	•	•

Table 11: Agua Hedionda HA Strategies

Water Quality Improvement Plan Strategies		Jurisdiction/Area					Target Sources										Target Pollutants						Implementation Schedule					
		City of San Marcos	City of Vista	City of Carlsbad	County of San Diego	City of Oceanside	Municipal Fixed Facilities	Industrial and Commercial Facilities/Owners	Construction Sites and Personnel	Residential	General Public	Land Development & Redevelopment	Roads, Streets, Highways and Parking Facilities	MS4	Bacteria/Pathogens	Trash	Heavy Metals	Nutrients	Oil and Grease	Sediment	Pesticides	Previous Fiscal Year(s)	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20	Future Fiscal Year(s)
18	MS4 Inspections/ Cleaning ²	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide								•	•	•					•	•	•	•	•	•	•	•
19	Street Sweeping ²	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide								•	•	•					•	•	•	•	•	•	•	•
20	General Education and Outreach ²	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	•	•	•	•	•	•									•	•	•	•	•	•	•	•
21	Employee Training ²	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	•							•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
22	Enforcement ²	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	•	•	•	•	•	•									•	•	•	•	•	•	•	•
23	Partnership Program(s) ²	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	•	•	•	•	•	•									•	•	•	•	•	•	•	•
24	Program for Retrofitting Areas of Existing Development ²	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	•	•	•	•	•	•									•	•	•	•	•	•	•	•
25	Program for Stream, Channel and/or Habitat Restoration in Areas of Existing Development ²	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	•	•	•	•	•	•									•	•	•	•	•	•	•	•
26	Implement Structural or Retrofit Existing BMPs ³	HA Wide	AH-04 Basin	CB-PA2	-	-	•	•	•	•	•				•	•	•	•	•	•	Based on appropriate criteria for initiating							
27	Implement Offsite Alternative Compliance Program ³	HA Wide	AH-04 Basin	CB-PA2	HA Wide	-	•	•			•				•	•	•	•	•	•	Based on appropriate criteria for initiating							

¹ Examples of Administrative BMPs include: Plan development, program standardization, maintaining and prioritizing inventories, updating education materials, etc.

² General descriptions provided in Appendix B

³ Optional Strategies

2.3.3 Agua Hedionda HA Focus Areas

Concentrating programmatic efforts in specific geographic areas to address known or suspected sources of discharges and pollutants is expected to improve the effectiveness of the strategies and activities.

Based on the RAs review of the characteristics of the Agua Hedionda HA, several focus areas were selected for concentrated programmatic efforts. These focus areas include the AH04 Basin and San SM-AH Basin. The goals and strategies for these focus areas are summarized below.

2.3.3.1 City of Vista –Agua Hedionda 04 (AH04) Basin

The Agua Hedionda 04 (AH04) Basin is a large sub-basin located mid-watershed in the Agua Hedionda HA and discharges through a single outfall to a tributary channel approximately 2,000 feet upstream of Agua Hedionda Creek. The City identified the AH04 Basin as a focus area to concentrate strategy implementation. This focus area is completely within the City of Vista jurisdictional boundaries and has a mixture of single family residential, commercial and multi-family land uses. Land uses include homes, commercial buildings, apartment complexes, common areas, a high school and recreational park areas and a golf course that include landscaping and turf. The AH04 Basin is show in Figure 18 below.

The majority of this basin was developed prior to implementation of the City’s Standard Urban Stormwater Mitigation Plan (SUSMP); therefore relatively few treatment control BMPs have been established.

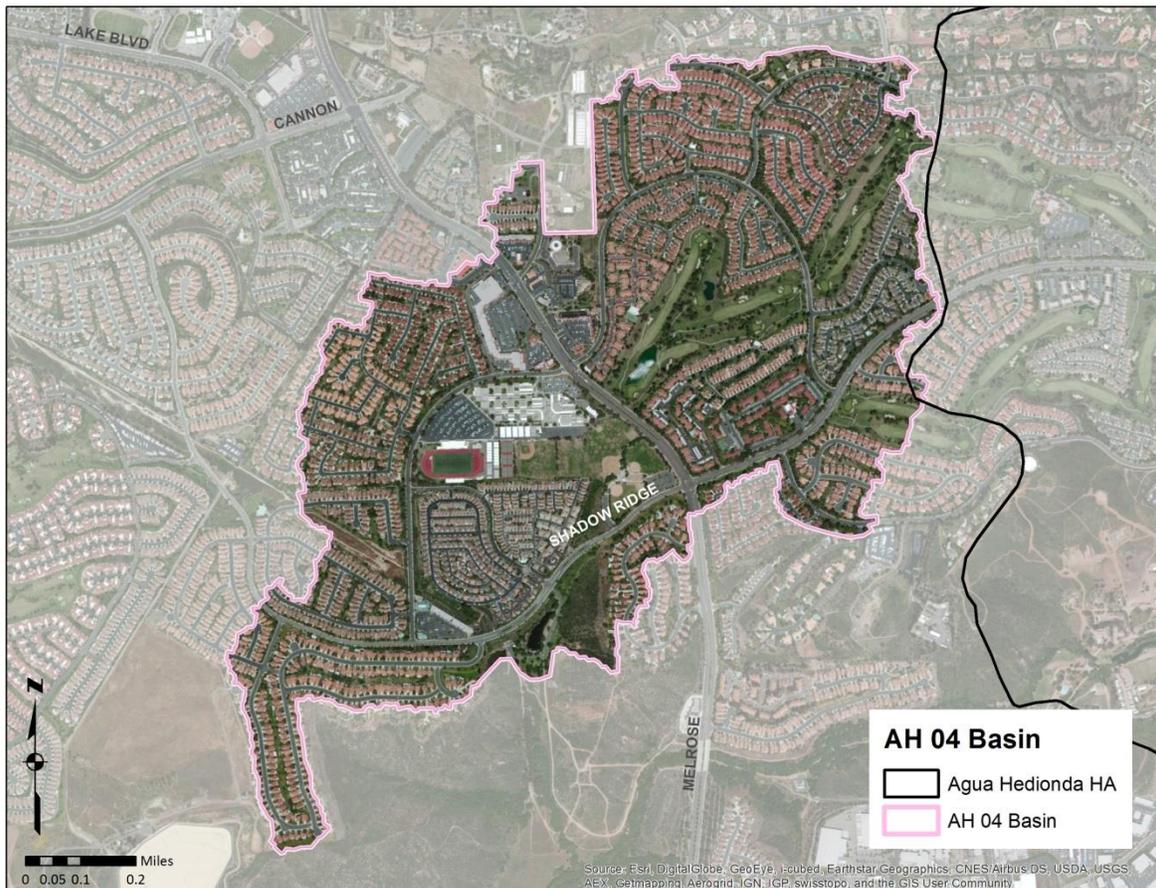


Figure 18: AH04 Basin Focus Area

AH04 Basin Focus Area Interim and Final Numeric Goals

Goals associated with this focus area are summarized in the goal table below. These goals have been established as a part of this initial WQIP development process. As the Responsible Agencies progress through the first several years of implementation and learn through data collection and analysis, it is expected that these goals and schedules will likely change. As goals and schedules are adapted, they will be presented in future WQIP annual reports or updates to the WQIP document.

Table 12: AH04 Basin Focus Area, Interim and Final Numeric Goals

Interim Goal (2013-2018) 2018 ¹	Interim Goal (2018-2023) 2023 ¹	Interim Goal (2023-2028) 2028 ¹	Interim Goal (2028-2033) 2033 ¹	Final Goal (2033-2038) 2038 ¹
10% reduction in anthropogenic dry-weather surface water runoff	20% reduction in anthropogenic dry-weather surface water runoff	40% reduction in anthropogenic dry-weather surface water runoff	60% reduction in anthropogenic dry-weather surface water runoff	80% reduction in anthropogenic dry-weather surface water runoff

¹ Flow reduction goals are currently based on best professional judgment as current flow data is not available. The goals may be adapted as monitoring data/information is gathered, analyzed and baselines are established.

The means for achieving these goals are identified in the strategies discussion below. Mechanisms for measuring progress towards and ultimately achieving these goals will be discussed in the Final Carlsbad WQIP to be completed in June 2015.

AH04 Basin Focus Area Strategies

In addition to the core jurisdictional strategies, the following summarizes supplemental or modified core strategies planned for implementation in the focus area to address the sources of pollutants and discharges.

The selected strategies are expected to have multi-pollutant benefits and intended to address non-stormwater flows and reducing the source loading of bacteria. Reducing non-stormwater flows: (1) reduces the loading of pollutant constituent discharged through MS4 system; (2) reduces the amount of indicator bacteria regrowth and contributions that occurs with accumulated biofilm in MS4 systems that requires water; and (3) reduces the wet-weather contribution of indicator bacteria from scoured biofilm under higher velocity flows from storm discharges.

To accomplish the multi-benefit objectives in the AH04 Basin, the City of Vista will supplement its core jurisdictional program by implementing the following strategies in this focus area:

1) Irrigation Runoff Reduction Program

The objective of the Irrigation Runoff Reduction Program (IRRP) is to eliminate or reduce dry weather flow contributions coming from irrigation runoff, regardless of the time of day the discharges occur. Core elements include:

- Developing educational materials and outreach program specific towards irrigation runoff
- Assessing dry weather flows at outfall(s)
- Identifying key times to perform site observations
- Perform site observations to identify sources of irrigation runoff
- Collaboration with City Public Works Department to address municipal property irrigation systems

- Initiating contact and correspondence with property managers/owners
- Periodically assessing flows
- Optionally developing and implementing an incentive program
- Developing municipal codes that prohibit irrigation runoff

2) Property Based/Patrol Inspections

The objective of this program is to reduce discharges to the MS4 and provide inspection of existing development in a more cost efficient and effective manner. Features include:

- Developing patrol and inspection protocols
- Developing and conducting staff training
- Conducting property based/patrol inspections

3) Optional Strategies

- Implement structural (engineered) BMPs or retrofitting existing structural BMPs to address flow and/or pollutant issues
- Implement offsite alternative compliance program to place water quality improvement projects in the AH04 Basin focus area

2.3.3.2 City of San Marcos – Agua Hedionda HA, SM-AH Focus Area

The Agua Hedionda HA extends into the western portion of the City of San Marcos. The City of San Marcos identified SM-AH focus area to concentrate strategy implementation. The SM-AH focus area has a mixture of single family residential, commercial, industrial and multi-family land uses and includes homes, commercial buildings, mobile home park, nurseries, common areas that include landscaping and turf – see Figure 19 below.

The majority of this basin was developed prior to implementation of the City’s Standard Urban Stormwater Mitigation Plan (SUSMP); therefore relatively few treatment control BMPs have been established.

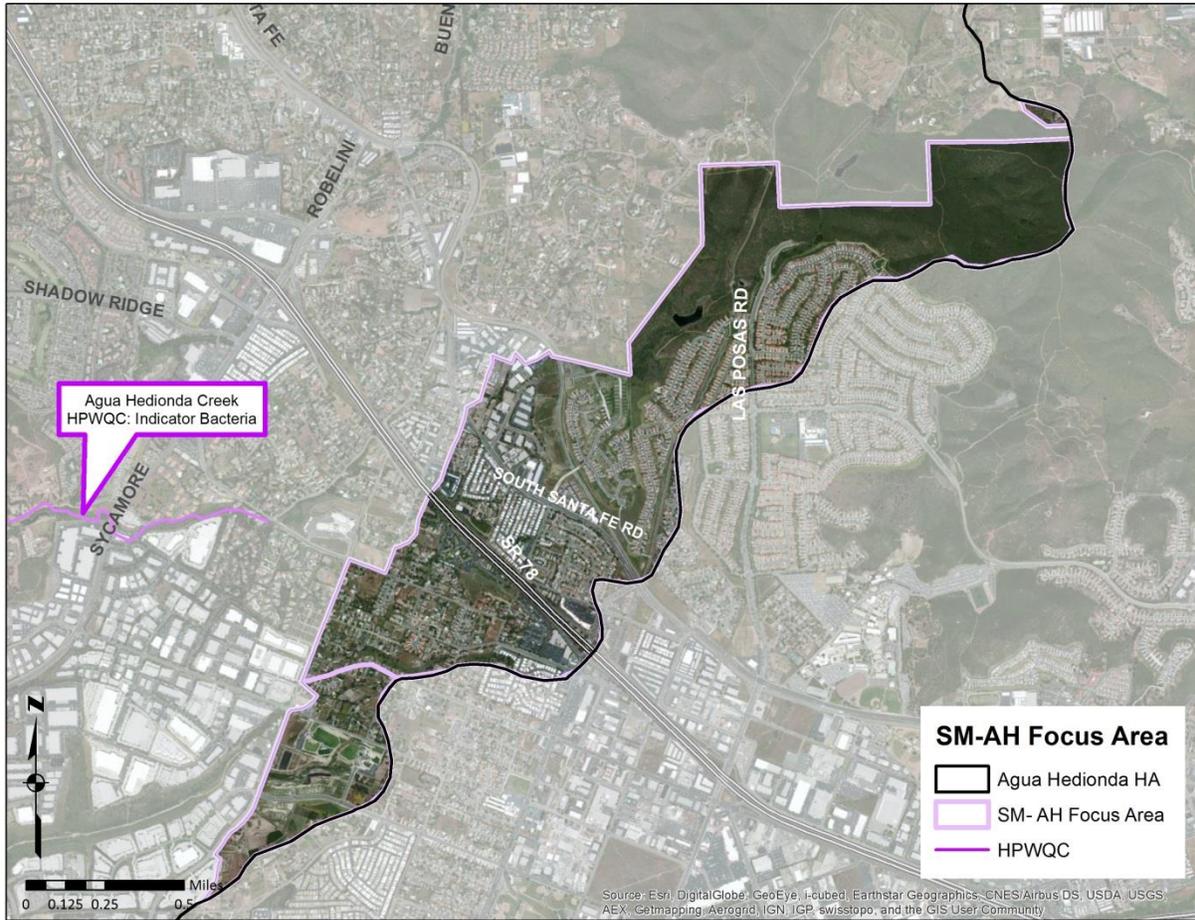


Figure 19: SM-AH Focus Area

SM-AH Focus Area Interim and Final Numeric Goals

Goals associated with this focus area are summarized in the goal table below. These goals have been established as a part of this initial WQIP development process. As the Responsible Agencies progress through the first several years of implementation and learn through data collection and analysis, it is expected that these goals and schedules will likely change. As goals and schedules are adapted, they will be presented in future WQIP annual reports or updates to the WQIP document.

Table 13: SM-AH Focus Area, Interim and Final Numeric Goals

Interim Goal (2013-2018) 2018 ¹	Interim Goal (2018-2023) 2023 ¹	Interim Goal (2023-2028) 2028 ¹	Interim Goal (2028-2033) 2033 ¹	Final Goal (2033-2038) 2038 ¹
10% reduction in anthropogenic dry-weather surface water runoff at selected outfalls	20% reduction in anthropogenic dry-weather surface water runoff at selected outfalls	40% reduction in anthropogenic dry-weather surface water runoff at selected outfalls	60% reduction in anthropogenic dry-weather surface water runoff at selected outfalls	80% reduction in anthropogenic dry-weather surface water runoff at selected outfalls

¹ Flow reduction goals are currently based on best professional judgment as current flow data is not available. The goals may be adapted as monitoring data/information is gathered, analyzed and baselines are established.

The means for achieving these goals are identified in the strategies discussion below. Mechanisms for measuring progress towards and ultimately achieving these goals will be discussed in the Final Carlsbad WQIP to be completed in June 2015.

SM-AH Focus Area Strategies

The City of San Marcos will implement their program core strategies within the focus area. In addition to the core jurisdictional strategies, the following summarizes supplemental or modified core strategies planned for implementation in the focus area to address the sources of pollutants and discharges.

The selected strategies are expected to have multi-pollutant benefits and intended to address non-stormwater flows and reducing the source loading of bacteria. Reducing non-stormwater flows: (1) reduces the loading of pollutant constituent discharged through MS4 system; (2) reduces the amount of indicator bacteria regrowth and contributions that occurs with accumulated biofilm in MS4 systems that requires water; and (3) reduces the wet-weather contribution of indicator bacteria from scoured biofilm under higher velocity flows from storm discharges.

To accomplish the multi-benefit objectives in the SM-AH focus area, the City of San Marcos will supplement its core jurisdictional program by implementing the following strategies:

1) Irrigation Runoff Reduction Program

The objective of the Irrigation Runoff Reduction Program (IRRP) is to eliminate or reduce dry weather flow contributions coming from irrigation runoff, regardless of the time of day the discharges occur. Core elements include:

- Developing municipal codes that prohibit irrigation runoff
- Developing educational materials and outreach program specific towards irrigation runoff
- Assessing dry weather flows at outfall(s)
- Identifying key times to perform site observations
- Perform site observations to identify sources of irrigation runoff
- Collaboration with City Public Works Department to address municipal property irrigation systems
- Initiating contact and correspondence with property managers/owners
- Periodically assessing flows
- Optionally developing and implementing an incentive program

2) Property Based/Patrol Inspections

The objective of this program is to reduce discharges to the MS4 and provide inspection of existing development in a more cost efficient and effective manner. Features include:

- Developing patrol and inspection protocols
- Developing and conducting staff training
- Conducting property based/patrol inspections

The City will perform these property based/patrol inspections multiple times per year at various times of the day to capture irrigation runoff and other non-authorized discharges as well as identify BMP issues.

- 3) City of San Marcos & Vallecitos Water District (VWD) Irrigation Runoff/Water Waster Program
 - City and VWD staff collaborate and communicate regularly to share information regarding reports and complaints
 - Public water waster reporting is available on both City and VWD websites
 - The City developed door hangers for field staff to distribute if water wasting is reported or observed at a property
 - The City developed template response letters identifying both City and VWD requirements
- 4) City of San Marcos & VWD Fats, Oils, and Grease (FOG) Program Collaboration
 - Continue coordination between City and VWD programs. The City anticipates a collaborative work effort between the City's inspection program and VWD's FOG program in order to reduce sewer backups and overflows that result from accumulation of FOG in the sewer system
 - VWD established an Ordinance to regulate FOG
 - VWD visited all of the Food Service Establishments (FSEs) within the City to provide an overview of the program and expectations
 - VWD created a guidance manual provided to each FSE that includes BMP information, maintenance requirements, and record keeping documents
 - VWD will inspect all FSEs at least once a year
- 5) Homeowners Association and Property Manger Outreach Program
 - The City will implement an education and outreach program that encourages and/or incentivizes Home Owners Associations (HOA)s and business property managers to implement measures to reduce dry weather and/or wet weather flows leaving their properties. Practices could include proper installation and maintenance of irrigation systems, conversion to drought tolerant landscaping, downspout disconnection, etc.
- 6) Enhancements to Education Program
 - Bacteria and other priority pollutant specific education and outreach program to be conducted in the SM-AH focus area for residents and commercial facilities related to bacteria and other priority pollutants. The materials will have an emphasis on discharges to the City's MS4 and the receiving waters impacts.
 - Developing and implementing a training/seminar for property managers and others that have direct responsibility for common areas within HOAs and commercial properties. Educational materials and information will be developed and provided to the managers for them to distribute to their residents and tenants.
 - As part of the residential outreach program, the City of San Marcos will work with residents and property owners to educate through various means, which may include school programs, block parties or one-on-one meetings.
- 7) Filter Retrofit Program
 - The City will continue to implement the filter upgrade program provided through a grant program.
 - Aging filters located within public facilities in need repair are retrofitted with new proprietary filter systems that contain media filters to treat dissolvable pollutants including nutrients and bacteria.

8) Optional Strategies

- Implement structural (engineered) BMPs or retrofitting existing structural BMPs to address flow and/or pollutant issues
- Implement offsite alternative compliance program to place water quality improvement projects in the SM-AH Basins

2.3.3.3 CB-PA2 Focus Area

The CB-PA2 focus area is split into two drainage areas located south of Carlsbad Village Drive and CB-PA1. The northern portion of the focus area drains to the north towards Buena Vista Lagoon. The southern portion drains south towards Agua Hedionda Lagoon. This area is a mixture of single family residential, commercial and multi-family land uses and includes homes, commercial buildings, apartment complexes, common areas, a school and recreational park areas that include landscaping and turf – see Figure 20 below.



Figure 20: CB-PA2 Focus Area

CB-PA2 Focus Area Interim and Final Numeric Goals

Goals associated with this focus area are summarized in the goals table below. These goals have been established as a part of this initial WQIP development process. As the Responsible Agencies progress through the first several years of implementation and learn through data collection and analysis, it is

expected that these goals and schedules will likely change. As goals and schedules are adapted, they will be presented in future WQIP annual reports or updates to the WQIP document.

Table 14: CB-PA2 Focus Area, Interim and Final Numeric Goals

Interim Goal (2013-2018) 2018 ¹	Interim Goal (2018-2023) 2023 ¹	Interim Goal (2023-2028) 2028 ¹	Interim Goal (2028-2033) 2033 ¹	Final Goal (2033-2038) 2038 ¹
10% reduction in anthropogenic surface water runoff	20% reduction in anthropogenic surface water runoff	40% reduction in anthropogenic surface water runoff	60% reduction in anthropogenic surface water runoff	80% reduction in anthropogenic surface water runoff

¹ Flow reduction goals are currently based on best professional judgment as current flow data is not available. The goals may be adapted as monitoring data/information is gathered, analyzed and baselines are established.

The means for achieving these goals are identified in the strategies discussion below. Mechanisms for measuring progress towards and ultimately achieving these goals will be discussed in the Final Carlsbad WQIP to be completed in June 2015.

CB-PA2 Focus Area Strategies

The City of Carlsbad will implement their program core strategies within the focus area. In addition to the core jurisdictional strategies, the following summarizes supplemental or modified core strategies planned for implementation in the focus area to address the sources of pollutants and discharges.

The selected strategies are expected to have multi-pollutant benefits and intended to address non-stormwater flows and reducing the source loading of bacteria. Reducing non-stormwater flows: (1) reduces the loading of pollutant constituent discharged through MS4 system; (2) reduces the amount of indicator bacteria regrowth and contributions that occurs with accumulated biofilm in MS4 systems that requires water; and (3) reduces the wet-weather contribution of indicator bacteria from scoured biofilm under higher velocity flows from storm discharges. Removing trash and sediment reduces the bacteria loading that is attached the trash and sediment.

To accomplish the multi-benefit objectives in the CB-PA2, the City of Carlsbad will augment its core jurisdictional program by making the following changes to its core program in this focus area:

- 1) Targeted street sweeping in the focus area will be a minimum frequency of every two weeks.
- 2) Perform property based inspections/patrol inspections of *each* property in the CB-PA2 at least once annually. These inspections will include:
 - a. Visual inspection of all public streets
 - b. Inspections of each existing development property:
 - i. Municipal facilities and areas
 - ii. Each commercial/industrial property
 - iii. Each residential property
- 3) Maintain a maximum response time for complaints received via Storm Water Hotline, or other mechanism. The City will have an Environmental Specialist respond and arrive on-site *within* 45 minutes of notification to eliminate any unauthorized discharge, identify the responsible party and minimize impacts to receiving waters. This response time is expected to eliminate

discharges while they are occurring and provide an opportunity to immediately educate or enforce as necessary.

- 4) Enhancements to education program to include:
 - a. Bacteria and other priority pollutant specific education and outreach program to be conducted in the CB-PA2 for residents and commercial facilities related to bacteria and other priority pollutants. The materials will have an emphasis on discharges to the City's MS4 and the receiving waters impacts.
 - b. Developing and implementing a training/seminar for property managers and others that have direct responsibility for common areas within HOAs and commercial properties. Educational materials and information will be developed and provided to the managers for them to distribute to their residents and tenants.
 - c. As CB-PA2 has a high concentration of Spanish speaking residents, the City will focus on distributing Spanish language outreach materials.
 - d. As part of the residential outreach program, the City of Carlsbad will work with residents and property owners to educate through various means, which may include school programs, block parties or one-on-one meetings.

- 5) Implement Program Efficiencies – The City's new computer database allows for use with mobile devices which will increase the City's response time to IDDE reports, discoveries, complaints and monitoring investigations. This new computer database will also streamline inspections and allow for review of previous information while in the field.

- 6) Residential Area Strategies:
 - a. At a minimum, biannual inspections will be conducted across the entire focus area
 - b. Increased proactive monitoring of the area
 - c. More focused education materials and outreach events

- 7) Optional Strategies
 - Implement structural (engineered) BMPs or retrofitting existing structural BMPs to address flow and/or pollutant issues
 - Implement offsite alternative compliance program to place water quality improvement projects in the CB-PA2 focus area

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2.4 Encinas HA (904.4)

The Encinas HA is 3,400 acres in size, making it the second smallest within the WMA. The HA extends inland from the coast 2.4 miles and the highest elevation within the drainage is approximately 430 feet above mean sea level. The HA begins as a small drainage behind an industrial area where it is immediately channelized. The Encinas Creek continues down through industrial and office parks associated with Palomar Airport until it reaches the lower valley area. It then makes its way to the Pacific Ocean after crossing Interstate 5 and Pacific Coast Highway. The Encinas HA is entirely within the City of Carlsbad and is located between the Agua Hedionda and San Marcos HAs. The only significant receiving water body within Encinas HA is the Pacific Ocean.

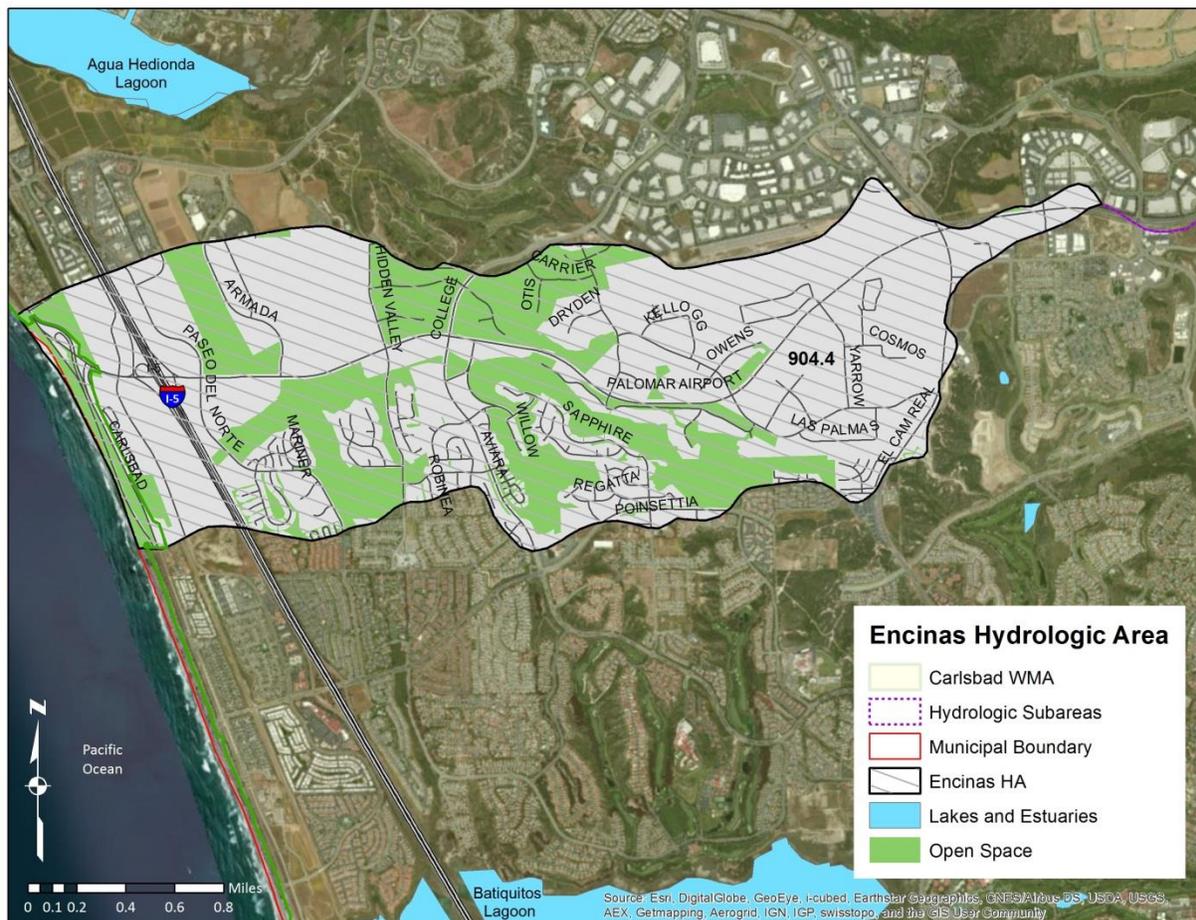


Figure 21: Encinas Hydrologic Area

2.4.1 Encinas HA Sources

The sources listing for Encinas HA is currently under development and will be included in the December 2014 submittal to the RWQCB for public review.

2.4.2 Encinas HA Goals and Strategies

2.4.2.1 Encinas HA Goals

Goals have not been established that apply throughout the entire Encinas HA.

2.4.2.2 Encinas HA Strategies

The following table identifies the Water Quality Improvement Strategies to be implemented throughout the entire Encinas HA.

As the RAs implement strategies and analyze data, it is expected that these strategies and schedules may change through an iterative and adaptive management process. The adaptive management process will be presented in the Final Carlsbad WMA WQIP in June 2015.

Table 15: Encinas HA Strategies

Water Quality Improvement Plan Strategies		Jurisdiction/ Area	Target Sources								Target Pollutants						Implementation Schedule							
		City of Carlsbad	Municipal Fixed Facilities	Industrial and Commercial Facilities / Owners	Construction Sites and Personnel	Residential	General Public	Land Development & Redevelopment	Roads, Streets, Highways and Parking Facilities	MS4	Bacteria/Pathogens	Trash	Heavy Metals	Nutrients	Oil and Grease	Sediment	Pesticides	Previous Fiscal Year(s)	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20	Future Fiscal Year(s)
1	Administrative BMPs ^{1,2}	HA Wide	•	•	•	•	•	•	•	•							•	•	•	•	•	•	•	
2	Outfall Monitoring	HA Wide	•	•	•	•		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
3	Investigations ²	HA Wide	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
4	Development and Redevelopment Requirements ²	HA Wide						•			•	•	•	•	•	•	•	•	•	•	•	•	•	•
5	Construction Site Inspections ²	HA Wide			•						•				•		•	•	•	•	•	•	•	•
6	Existing Development Facilities, Areas and Activities Inspections ²	HA Wide	•	•		•			•		•	•	•	•	•	•	•	•	•	•	•	•	•	•
7	MS4 Inspections/ Cleaning ²	HA Wide							•	•	•				•		•	•	•	•	•	•	•	•
8	Street Sweeping ²	HA Wide							•		•	•		•	•		•	•	•	•	•	•	•	•
9	Education and Outreach ²	HA Wide	•	•	•	•	•	•		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
10	Employee Training ²	HA Wide	•						•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
11	Inspections ²	HA Wide	•	•	•	•			•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
12	Investigations ²	HA Wide	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
13	Enforcement ²	HA Wide	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

¹ Examples of Administrative BMPs include: Plan development, program standardization, maintaining and prioritizing inventories, updating education materials, etc.

² General descriptions provided in Appendix B

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2.5 San Marcos HA (904.5)

The San Marcos Hydrologic Area is the second largest within the WMA. The HA is about 36,000 acres in area and comprises approximately 28% of the Carlsbad WMA. The major receiving waters within the HA are San Marcos Creek, Encinitas Creek, Batiquitos Lagoon, and the Pacific Ocean. San Marcos Creek originates on the western slopes of the Merriam Mountains in west central San Diego County and discharges in to the Pacific Ocean, 14.6 miles away, via Batiquitos Lagoon. Encinitas Creek is another one of the major tributaries in the HA, originating in the hills southwest of Questhaven Road and paralleling El Camino Real before it converges with San Marcos Creek at the southeastern corner of Batiquitos Lagoon. The highest elevation within the HA is approximately 1,540 feet above mean sea level. Lake San Marcos is the largest impoundment within the HA. The Cottonwood Creek sub-basin is also located in this HA which drains a portion of Encinitas directly into the Pacific Ocean. The San Marcos HA is primarily located in San Marcos, Carlsbad, Encinitas, and the County of San Diego, with a small portion in Escondido.

The San Marcos HA has two distinctive areas separated by the Lake San Marcos impoundment – the Upper and Lower San Marcos HA areas. The Upper Hydrologic Area includes drainage areas in the County of San Diego, and the cities of San Marcos and Escondido, that runoff through Upper San Marcos Creek to Lake San Marcos. The Lower Hydrologic Area consists of portions of the cities of Carlsbad, Encinitas, San Marcos and Vista.

During the initial phase of the Water Quality Improvement Plan process, assessment of existing data determined that the priority water quality conditions (PWQCs) within the San Marcos HA include: indicator bacteria at the Pacific Ocean Shoreline at Moonlight Beach; phosphorous in San Marcos Creek; toxicity in San Marcos Creek; and nutrients in San Marcos Lake. Of these PWQC, the *highest priority water quality condition* (HPWQC) in the San Marcos HA was determined to be *indicator bacteria* (dry and wet weather conditions) at the Pacific Ocean Shoreline at Moonlight Beach (June 2014 Carlsbad WMA WQIP submittal to RWQCB).

Figure 22 below, shows the San Marcos HA, HPWQC and focus areas. The focus areas and their associated strategies and goals are explained in more detail below.

Regulatory Drivers

The Pacific Ocean Shoreline of the San Marcos HA has been identified as a waterbody subject to the requirements of San Diego Beaches and Creeks Project I Bacteria Total Maximum Daily Load (TMDL). The TMDL is for REC-1 beneficial use impairments of waterbodies throughout San Diego County. Based on analysis conducted in 2012⁷, it was determined that the Pacific Ocean shoreline at San Marcos HA would not have qualified for REC-1 beneficial use impairment at any time. Therefore, the HA was inappropriately included in the TMDL. The San Marcos HA Responsible Parties are not responsible for any further Bacteria TMDL action, including preparation and submittal of a Load Reduction Plan or Monitoring Plan, as long as monitoring data continues to support compliance with water quality standards. However, if at any time, the Pacific Ocean Shoreline becomes impaired under the Listing Policy⁸, the Responsible Parties will make appropriate modifications to the WQIP to meet the requirements of the Bacteria TMDL. The Responsible Parties will monitor the Pacific Ocean receiving waters and assess the potential for further TMDL actions.

⁷ San Marcos Hydrologic Area Responsible Parties analyzed available monitoring data in 2012 and presented to RWQCB

⁸ California Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List

The agencies in the upper portion of the San Marcos HA, tributary to Lake San Marcos, are currently involved in participation agreements with the RWQCB⁹. The intent of the participation agreements is to develop solutions to water quality impairments in Lake San Marcos. The process is currently on-going and when results are finalized, they will be appropriately incorporated into the Carlsbad WQIP.

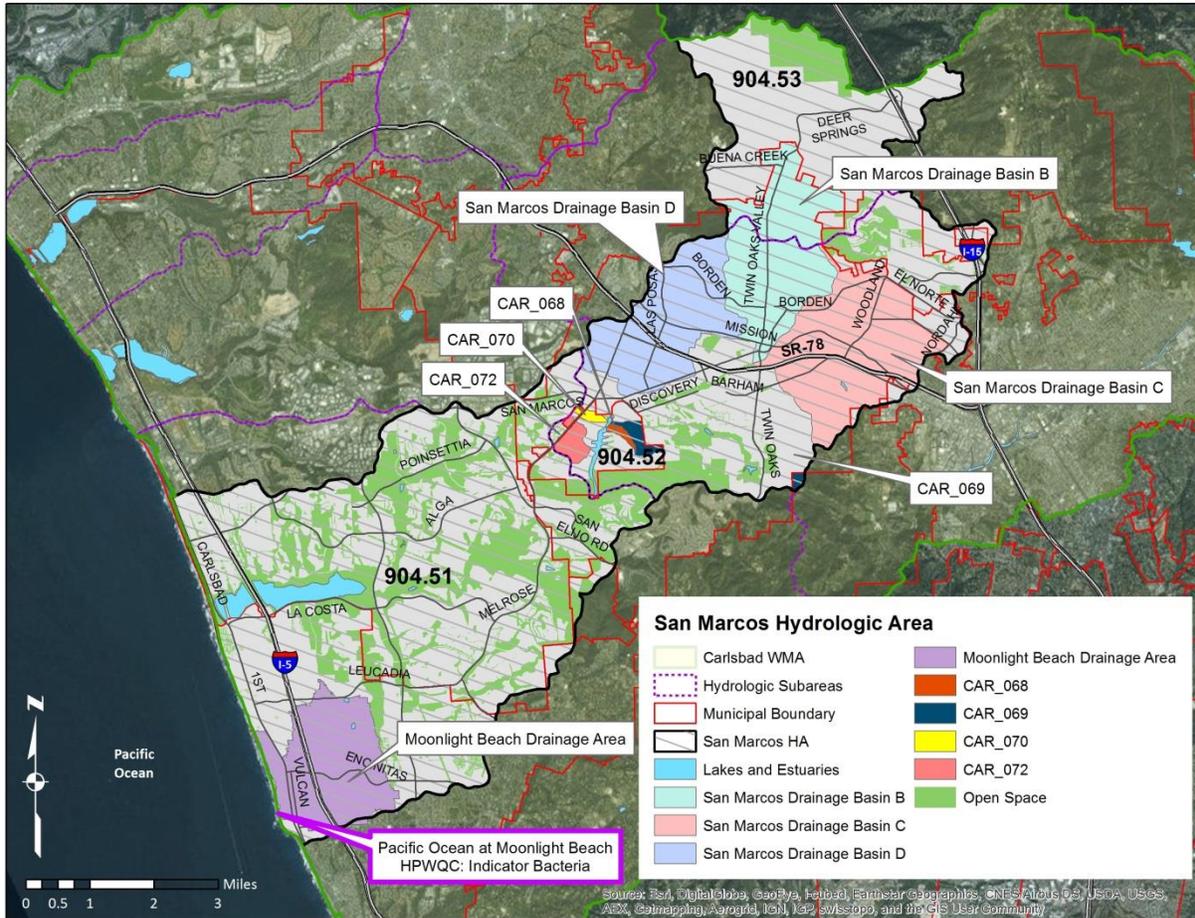


Figure 22: San Marcos Hydrologic Area Highest Priority Water Quality Conditions and Focus Areas

2.5.1 San Marcos HA Sources

The following table presents a listing of inventoried sources in the San Marcos HA and their association with HPWQCs and PWQCs based on source loading potential (2011 LTEA).

⁹ Lake San Marcos voluntary participation agreement: for more information see <http://www.ci-san-marcos.ca.us/index.aspx?page=529>

Table 16: Pollutant Generating Sources – 904.5 San Marcos Hydrologic Area

Inventory Sites/Facilities ¹	Quantities ²	Pollutant Source Loading Potential ³								
		Metals	Oil & Grease	Sediment	Pesticides	Nutrients	Bacteria/Pathogens	Dissolved Minerals	Organics	Toxicity
Aggregates/Mining	1	L	L	L	UL	UL	UL	UL	L	UK
Animal Facilities	45	N	UL	L	UK	L	L	N	L	UK
Auto Repair, Fueling, or Cleaning	136	L	L	UL	UL	UK	UL	L	L	UK
Auto Parking Lots or Storage	4	L	L	L	UK	UK	UK	UL	L	UK
Auto Body Repair or Painting	48	L	L	UL	UL	UL	UL	L	L	UK
Nurseries/Greenhouses	96	L	UL	L	L	L	L	UL	UL	UK
Building Materials Retail	30	L	L	L	UL	UL	UL	UL	L	UK
Chemical and Allied Products	4	UK	UK	UK	UK	UK	UL	N	L	UK
Concrete Manufacturing	4	L	L	L	UL	UL	UL	UL	L	UK
Eating or Drinking Establishments	501	N	L	UL	UK	UK	L	UL	L	UK
Equipment Repair or Fueling	87	L	L	UL	UL	UK	UL	UL	L	UK
Fabricated Metal	39	L	L	UK	UK	UK	UL	UL	L	UK
Food Manufacturing	30	UL	UL	UL	UL	UL	UL	UL	UL	UK
General Contractors	129	UL	UL	L	UL	UL	UL	UL	UL	UK
General Industrial	76	L	L	UK	UK	UK	UK	UK	L	UK
General Retail	65	UL	UL	L	UL	UL	UL	UL	UL	UK
Health Services	1	N	UL	L	UK	L	UL	UK	L	UK
Motor Freight	23	L	L	UK	UK	UK	UK	UL	L	UK
Offices	2	UK	UK	UK	UK	UK	UK	UK	UK	UK
Parks and Rec (incl. Golf, Cemetery)	9	UK	UK	UK	UK	L	UK	UL	UK	UK
Pest Control Services	1	N	UK	N	L	N	UK	N	UK	UK
Pool and Fountain Cleaning	5	N	N	N	N	UK	N	N	UK	UK
Publicly Owned Treatment Works	3	UK	UK	UK	N	UK	L	UL	UK	UK
Primary Metal	1	L	UK	UK	UK	UK	UL	N	UK	UK
Recycling & Junk Yards	4	L	L	L	UL	UL	UL	L	L	UK
Roads, Streets & Parking	1	L	L	L	UL	L	L	L	L	UK
Stone/Glass Manufacturing	10	L	L	L	UL	UL	UL	UL	L	UK
Storage/Warehousing	108	L	L	L	UL	UL	UL	UL	L	UK
Municipal	119	N	N	L	N	N	UK	UL	N	UK
Construction	Varies ⁴	UL	UL	L	UL	UL	UL	L	UL	UK
Residential	12,977 acres	L	L	L	L	L	L	L	L	UK

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQC are identified in the table (yellow highlight signifies HPWQC). The HPWQC is associated with the sources that are likely to generate those pollutants (blue highlight). The PWQC is highlighted in green and the associated sources that are likely to generate those pollutants are depicted with an "L".

1: Other sources are not reported in this table including: Land Development and Non-inventoried Businesses

2: Quantities based on the Responsible Agencies FY 2012 JURMP Annual Reports

3: Pollutant Source Loading Potential taken from LTEA 2011; N = None, UK = Unknown, UL = Unlikely, L = Likely

4: The quantity of construction sites is dynamic due to projects starting and completing at any given time.

2.5.2 San Marcos HA Goals and Strategies

2.5.2.1 San Marcos HA Goals

While the San Marcos HA is not currently impaired for REC-1 beneficial uses along the Pacific Ocean Shoreline, the area is still included as part of the TMDL requirements of the MS4 Permit Attachment E, Section 6. As a result, the Responsible Agencies have established both interim and final goals for wet and dry weather in the Hydrologic Area that are consistent with the TMDL requirements for indicator bacteria. The goals identify both receiving water and MS4 targets in order to provide opportunities to demonstrate progress toward or achievement of the goals. The goals, although technically required of the entire HA that ultimately drains to the Pacific Ocean Shoreline, are primarily related to the Lower Hydrologic Area (downstream of Lake San Marcos).

There are proposed changes to the interim goals, as allowed in the Permit. These changes are justified by the RAs having not been required to develop and implement a Load Reduction Plan (LRP) to date – see discussion in Section 2.5 Regulatory Drivers above. Since the RAs have not had to develop and implement a LRP, the WQIP will act as the planning and implementation document to address the TMDL in this HA. The WQIP will not become effective until years after the original LRP would have been developed and implemented, therefore creating a time gap and justification for differing interim compliance schedules.

The means for achieving the goals are identified in the strategies discussion below. Mechanisms (i.e. monitoring and assessment) for measuring progress toward and ultimately achieving these goals will be discussed in the Final Carlsbad WQIP to be completed in June 2015.

Table 17: San Marcos HA Dry Weather Interim and Final Goals

Interim Goal (2013-2018) 2018	Interim Goal (2018-2023) 2020	Final Goal (2033-2038) 2021
Reduce the anthropogenic surface water runoff at selected MS4 outfall(s) by 10% ¹	Meet TMDL Interim Compliance Requirements (See Note A below)	Meet TMDL Final Compliance Requirements (See Note B below)

¹ Flow reduction goals are currently based on best professional judgment as current flow data is not available. The goals may be adapted as monitoring data/information is gathered, analyzed and baselines are established.

Note A:

Meet TMDL Interim Compliance Requirements [Attachment E, 6.c(3)], which are:

- (a) No direct or indirect discharge from the Moonlight Beach MS4 outfall to the Pacific Ocean; or
- (b) No exceedances of final receiving water limitations for bacteria (i.e., 30-day geometric mean and single sample maximum for TC [1,000 MPN/100 mL, 10,000 MPN/100 mL], FC [200 MPN/100 mL, 400 MPN/100 mL] and ENT [35 MPN/100 mL, 104 MPN/100 mL]) in the Pacific Ocean, at or downstream of the Moonlight Beach MS4 outfall; or
- (c) No exceedances of the final effluent limitations for bacteria (30-day geometric mean and single sample maximum for TC [1,000 MPN/100 mL, 10,000 MPN/100 mL], FC [200 MPN/100 mL, 400 MPN/100 mL] and ENT [35 MPN/100 mL, 104 MPN/100 mL]) at the Moonlight Beach MS4 outfall; or
- (d) Reduce the load of bacteria from MS4 discharges to the Pacific Ocean downstream of Moonlight Beach MS4 outfall by at least 82.82% for TC, 82.55% for FC and 96.03% for ENT for dry weather; or
- (e) Demonstrate that exceedances of the final receiving water limitations in the receiving water are due to loads from natural sources, and pollutant loads from the Moonlight Beach MS4 outfall are not causing or contributing to the exceedances; or
- (f) No exceedances of interim receiving water limitations for bacteria (i.e., reduce the “existing” (2002) exceedance frequency of the 30-day geometric mean by 50%) in the Pacific Ocean downstream of the Moonlight Beach MS4 outfall; or
- (g) Pollutant load reductions for discharges of bacteria from the Moonlight Beach MS4 outfall are greater than or equal to the interim effluent limitations of 41.41% for TC, 41.28% for FC and 48.02% for ENT for dry weather; or
- (h) Implement a WQIP that is accepted by the Regional Board and that provides reasonable assurance that the interim TMDL compliance requirements (i.e., 6.c.(3)(a) through 6.b.(3)(h)) will be achieved.

Note B:

Meet TMDL Final Compliance Requirements [Attachment E, 6.b(3)], which are:

- (a) No direct or indirect discharge from the Moonlight Beach MS4 outfall to the Pacific Ocean; or
- (b) No exceedances of final receiving water limitations for bacteria (i.e., 30-day geometric mean and single sample maximum for TC [1,000 MPN/100 mL, 10,000 MPN/100 mL], FC [200 MPN/100 mL, 400 MPN/100 mL] and ENT [35 MPN/100 mL, 104 MPN/100 mL]) in the Pacific Ocean, at or downstream of the Moonlight Beach MS4 outfall; or
- (c) No exceedances of the final effluent limitations for bacteria (30-day geometric mean and single sample maximum for TC [1,000 MPN/100 mL, 10,000 MPN/100 mL], FC [200 MPN/100 mL, 400 MPN/100 mL] and ENT [35 MPN/100 mL, 104 MPN/100 mL]) at the Moonlight Beach MS4 outfall; or
- (d) Reduce the load of bacteria from Moonlight Beach MS4 outfall by at least 82.82% for TC, 82.55% for FC and 96.03% for ENT for dry weather; or
- (e) Demonstrate that exceedances of the final receiving water limitations in the receiving water are due to loads from natural sources, and pollutant loads from the Moonlight Beach MS4 outfall are not causing or contributing to the exceedances; or
- (f) Implement a WQIP that is accepted by the Regional Board and that provides reasonable assurance that the final TMDL compliance requirements (i.e., 6.b.(3)(a) through 6.b.(3)(e)) will be achieved.

Table 18: San Marcos HA Wet Weather Interim and Final Goals

Interim Goal (2013-2018) 2017	Interim Goal (2018-2023) 2021	Interim Goal (2023-2028) 2028	Final Goal (2028-2033) 2031
10% reduction in anthropogenic surface water runoff at selected outfalls ¹	20% reduction in anthropogenic surface water runoff at selected outfalls ¹	Meet TMDL Interim Compliance Requirements (See Note A below)	Meet TMDL Final Compliance Requirements (See Note B below)

¹ Flow reduction goals are currently based on best professional judgment as current flow data is not available. The goals may be adapted as monitoring data/information is gathered, analyzed and baselines are established.

Note A:

Meet TMDL Interim Compliance Requirements [Attachment E, 6.c(3)], which are:

- (a) No direct or indirect discharge from the Moonlight Beach MS4 outfall to the Pacific Ocean; or
- (b) No exceedances of final receiving water limitations for bacteria (i.e., 30-day geometric mean and single sample maximum for TC [1,000 MPN/100 mL, 10,000 MPN/100 mL], FC [200 MPN/100 mL, 400 MPN/100 mL] and ENT [35 MPN/100 mL, 104 MPN/100 mL]) in the Pacific Ocean, at or downstream of the Moonlight Beach MS4 outfall; or
- (c) No exceedances of the final effluent limitations for bacteria (30-day geometric mean and single sample maximum for TC [1,000 MPN/100 mL, 10,000 MPN/100 mL], FC [200 MPN/100 mL, 400 MPN/100 mL] and ENT [35 MPN/100 mL, 104 MPN/100 mL]) at the Moonlight Beach MS4 outfall; or
- (d) Reduce the load of bacteria from MS4 discharges to the Pacific Ocean Shoreline downstream of Moonlight Beach MS4 outfall by at least 18.47% for TC, 18.89% for FC and 20.19% for ENT for wet weather; or
- (e) Demonstrate that exceedances of the final receiving water limitations in the receiving water are due to loads from natural sources, and pollutant loads from the Moonlight Beach MS4 outfall are not causing or contributing to the exceedances; or
- (f) No exceedances of interim receiving water limitations for bacteria (i.e., reduce the “existing” (2002) exceedance frequency of the 30-day geometric mean by 50%) in the Pacific Ocean downstream of the Moonlight Beach MS4 outfall; or
- (g) Pollutant load reductions for discharges of bacteria from the Moonlight Beach MS4 outfall are greater than or equal to the interim effluent limitations of 9.24% for TC, 9.49% for FC and 10.10% for ENT for wet weather; or
- (h) Implement a WQIP that is accepted by the Regional Board and that provides reasonable assurance that the interim TMDL compliance requirements (i.e., 6.c.(3)(a) through 6.b.(3)(h)) will be achieved.

Note B:

Meet TMDL Final Compliance Requirements [Attachment E, 6.b(3)], which are:

- (a) No direct or indirect discharge the Moonlight Beach MS4 outfall to the Pacific Ocean; or
- (b) No exceedances of final receiving water limitations for bacteria (i.e., 30-day geometric mean and single sample maximum for TC [1,000 MPN/100 mL, 10,000 MPN/100 mL], FC [200 MPN/100 mL, 400 MPN/100 mL] and ENT [35 MPN/100 mL, 104 MPN/100 mL]) in the Pacific Ocean, at or downstream of the Moonlight Beach MS4 outfall; or
- (c) No exceedances of the final effluent limitations for bacteria (30-day geometric mean and single sample maximum for TC [1,000 MPN/100 mL, 10,000 MPN/100 mL], FC [200 MPN/100 mL, 400 MPN/100 mL] and ENT [35 MPN/100 mL, 104 MPN/100 mL]) at the MS4 outfalls; or
- (d) Reduce the load of bacteria from Moonlight Beach MS4 outfall by at least 18.47% for TC, 18.89% for FC and 20.19% for ENT for wet weather; or
- (e) Demonstrate that exceedances of the final receiving water limitations in the receiving water are due to loads from natural sources, and pollutant loads from the Moonlight Beach MS4 outfall are not causing or contributing to the exceedances; or
- (f) Implement a WQIP that is accepted by the Regional Board and that provides reasonable assurance that the final TMDL compliance requirements (i.e., 6.b.(3)(a) through 6.b.(3)(e)) will be achieved.

2.5.2.2 San Marcos HA Strategies

The following table identifies the Water Quality Improvement Strategies to be implemented throughout the entire San Marcos HA and in some specific focus areas of the HA. In addition to the planned strategies, optional strategies are identified that may be implemented based on circumstances related to the progress RAs make towards numeric goals and funding. The strategies associated with the focus areas are described further in the sub-sections below.

As the RAs implement strategies and analyze data, it is expected that these strategies and schedules may change through an iterative and adaptive management process. The adaptive management process will be presented in the Final Carlsbad WMA WQIP in June 2015.

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Table 19: San Marcos HA Strategies

Water Quality Improvement Plan Strategies		Jurisdiction/Area					Target Sources										Target Pollutants						Implementation Schedule					
		City of Encinitas	City of San Marcos	City of Carlsbad	City of Escondido	County of San Diego	Municipal Fixed Facilities	Industrial and Commercial Facilities/Owners	Construction Sites and Personnel	Residential	General Public	Land Development & Redevelopment	Roads, Streets, Highways and Parking Facilities	MS4	Bacteria/Pathogens	Trash	Heavy Metals	Nutrients	Oil and Grease	Sediment	Pesticides	Previous Fiscal Year(s)	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20	Future Fiscal Year(s)
1	Ultraviolet Bacteria Treatment Facility Operation	Cottonwood Creek Basin	-	-	-	-	•			•	•		•	•	•						•	•	•	•	•	•	•	
2	Ultraviolet Bacteria Treatment Facility Upgrade Feasibility Study	Cottonwood Creek Basin	-	-	-	-	•			•	•		•	•										•	•	•	•	
3	Low Impact Development Retrofit Program	Cottonwood Creek Basin	-	-	-	-				•	•	•			•	•	•	•	•	•	•	•	•	•	•	•	•	
4	Evaluate Sanitary Sewer Maintenance and Overflow Prevention	Cottonwood Creek Basin	-	-	-	-				•	•				•							•	•	•	•	•	•	
5	Homeowners Association and Property Manager Outreach Program	Cottonwood Creek Basin	HA Wide	-	-	-				•	•				•	•	•	•	•	•				•	•	•	•	
6	Plastic Bag Ban	HA Wide	-	-	-	-				•					•						•	•	•	•	•	•	•	
7	Increased Inspection Frequency for Select Commercial Sources	2nd Street Sub-Basin	-	-	-	-				•	•				•	•		•					•					
8	Property Based/Patrol Inspections	-	B, C & D Basins	-	-	-	•	•	•	•	•	•	•	•	•	•	•	•	•	•		•	•	•	•	•	•	
9	Active Field Program to Identify and Address Dry Weather Flows	-	-	-	-	CAR 068, CAR 069, CAR 070, CAR 072	•	•		•	•		•	•	•	•	•	•	•	•		•	•	•	•	•	•	
10	Irrigation Runoff Reduction	-	HA Wide	-	HA Wide	-	•	•		•	•		•	•	•	•	•	•	•	•		•	•	•	•	•	•	
11	San Marcos & VWD Irrigation Runoff/Water Waster Program	-	HA Wide	-	-	-	•	•	•	•	•		•		•	•	•	•	•	•		•	•					
12	City of San Marcos and VWD Fats, Oils and Grease Program Collaboration	-	HA Wide	-	-	-		•		•	•							•				•	•					
13	Enhancements to Education Program	-	B, C & D Basins	-	-	HA Wide	•	•	•	•	•			•		•	•	•	•	•		•	•					
14	Civic Center Landscape Conversion Demonstration Project	-	B Basin	-	-	-				•	•	•			•					•		•	•					
15	Filter Retrofit Program	-	HA Wide	-	-	-	•						•		•							•	•					
16	BMP Manual Training – External	-	-	-	-	HA Wide					•			•	•	•	•	•	•	•	•	•	•	•	•	•	•	

Table 19: San Marcos HA Strategies

Water Quality Improvement Plan Strategies		Jurisdiction/Area					Target Sources										Target Pollutants						Implementation Schedule					
		City of Encinitas	City of San Marcos	City of Carlsbad	City of Escondido	County of San Diego	Municipal Fixed Facilities	Industrial and Commercial Facilities/Owners	Construction Sites and Personnel	Residential	General Public	Land Development & Redevelopment	Roads, Streets, Highways and Parking Facilities	MS4	Bacteria/Pathogens	Trash	Heavy Metals	Nutrients	Oil and Grease	Sediment	Pesticides	Previous Fiscal Year(s)	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20	Future Fiscal Year(s)
17	Promote Incentive Programs: Rain Barrel, Live Turf Replacement & Outdoor Water Efficiency	-	-	-	HA Wide	HA Wide	•	•	•	•		•		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
18	Administrative BMPs ^{1,2}	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	•	•	•	•	•	•	•								•	•	•	•	•	•	•	•
19	Outfall Monitoring	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
20	Investigations ²	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
21	Development and Redevelopment Requirements ²	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide					•			•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
22	Construction Site Inspections ²	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide			•						•				•		•	•	•	•	•	•	•	•
23	Existing Development Facilities, Areas and Activities Inspections ²	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	•	•		•				•		•	•	•	•	•	•	•	•	•	•	•	•	•
24	MS4 Inspections/Cleaning ²	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide							•	•	•				•		•	•	•	•	•	•	•	•
25	Street Sweeping ²	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide						•		•	•	•			•		•	•	•	•	•	•	•	•
26	General Education and Outreach ²	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	•	•	•	•	•			•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
27	Employee Training ² /Focused Training	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	•					•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
28	Enforcement ²	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
29	Partnership Program(s) ²	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
30	Program for Retrofitting Areas of Existing Development ²	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
31	Program for Stream, Channel and/or Habitat Restoration in Areas of Existing Development ²	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
32	Implement Offsite Alternative Compliance Program ³	-	B, C & D Basins	-	HA Wide	HA Wide			•		•			•	•	•	•	•	•	•	Based on appropriate criteria for initiating							
33	County of San Diego Optional Strategies Listing – See Section 2.5.3.3 below³																			Based on appropriate criteria for initiating								

¹ Examples of Administrative BMPs include: Plan development, program standardization, maintaining and prioritizing inventories, updating education materials, etc.

² General descriptions provided in Appendix B

³ Optional Strategies

2.5.3 San Marcos HA Focus Areas

Concentrating programmatic efforts in specific geographic areas to address known or suspected sources of discharges and pollutants is expected to improve the effectiveness of the strategies and activities.

Based on the RAs review of the characteristics of the San Marcos HA, several areas of focus were selected for concentrated programmatic efforts. The focus areas in the Lower HA include the Cottonwood Creek Drainage Area and Second Street Drainage Area (within the Cottonwood Creek Drainage Area). In the Upper HA the focus areas include the City of San Marcos jurisdiction within the San Marcos HA and the County's Lake San Marcos drainage areas: CAR 068, CAR 069, CAR 070 and CAR 072. The goals and strategies for these focus areas are summarized below.

2.5.3.1 Cottonwood Creek Drainage Area

The Cottonwood Creek Drainage Area is located in the lower San Marcos HA. The City has identified this drainage area and a sub-area, the 2nd Street Drainage Areas to focus additional strategies. Both focus areas are completely within the City of Encinitas jurisdictional boundaries and have a variety of land uses including a mixture of single family residential, commercial and multi-family, commercial buildings, apartment complexes, nurseries, common areas and recreational park areas that include landscaping and turf. The focus areas are show in Figure 23 below.



Figure 23: Cottonwood Creek and 2nd Street Drainage Areas

Cottonwood Creek Drainage Basin Interim and Final Numeric Goals

Goals have not been established separately for Cottonwood Creek and Second Street Drainage Basins. The goals associated with these focus areas are the same goals that apply throughout the entire San Marcos Hydrologic Area, as shown in Table 17 and 18 above.

Cottonwood Creek and 2nd Street Drainage Basin Strategies

The City of Encinitas has been implementing programmatic strategies throughout its City, to control pollutants and non-stormwater discharges from its MS4 system, including the Cottonwood Creek drainage basin.

The City of Encinitas will implement their program core strategies within the focus area. In addition to the core jurisdictional strategies, the following summarizes supplemental or modified core strategies planned for implementation in the focus area to address the sources of pollutants and discharges.

The selected strategies are specifically intended to address non-stormwater flows and thereby expected to have multi-pollutant benefits as well as reduce the source loading of bacteria. Reducing non-stormwater flows: (1) reduces the loading of pollutant constituents discharged through the MS4 system; (2) reduces the amount of indicator bacteria regrowth in the enclosed portion of the MS4 system; and (3) reduces the wet-weather contribution of indicator bacteria from scoured biofilm during high velocity storm flows.

To accomplish the multi-benefit objectives in the Cottonwood Creek Basin, the City of Encinitas will supplement its core jurisdictional program by implementing the following strategies in the focus areas:

1) Operation of the Ultraviolet Bacteria Treatment Facility

The City has operated an ultraviolet (UV) treatment system just upstream of Cottonwood Creek since 2005. The City will continue to operate and maintain the treatment facility during dry weather conditions. The system effectively eliminates 99% of the indicator bacteria passing through the system.

2) Ultraviolet Bacteria Treatment Facility Upgrade Feasibility Study

The City of Encinitas will perform a feasibility study to determine if modifications to the operations of the treatment facility would yield beneficial results from wet weather operation. The study will evaluate whether operating the UV facility outside the typical dry season would affect water quality downstream. The results of this study will be used in conjunction with a bacteria monitoring study to assess compliance with current water quality standards. The resulting analysis will inform the City of options for modifying treatment facility operations to improve effectiveness. After evaluating the feasibility and monitoring studies, the City may initiate changed operations at its UV treatment facility as an optional strategy.

3) Low Impact Development Retrofit Program

The City is currently preparing a Low Impact Development (LID) Retrofit program specific to the Cottonwood Creek Drainage Basin. The LID Retrofit program consists of a two pronged implementation approach with a goal of improved source control and treatment control throughout the watershed. The program will include a) concept designs for proposed LID retrofit projects, and b) public education designed to compel residents to become watershed stewards by installing LID features in their yards.

The City is siting and preparing conceptual designs for four (4) LID retrofit projects. One of the criterion for site selection is the opportunity to intercept and redirect non-storm water flows from the City's MS4 system. Once the designs have been completed, the City will seek funding opportunities to construct these optional strategies in this basin.

To further the public's understanding and knowledge of LID as an effective mechanism for water quality improvements, the City will implement a pilot project to educate and motivate homeowners to reduce irrigation runoff and/or wet weather flows by implementing:

- Landscape water conservation practices (drip irrigation, turf reduction, etc.)
- Small-scale LID features (downspout disconnects, bioretention basins, etc.).

Existing water conservation incentives will be promoted through the program. Existing incentives include rebates for turf removal and installation of drip irrigation, both of which reduce overall water use and irrigation runoff. The pilot project will focus on the neighborhoods along Pacific View Lane and Sea View Court within the Cottonwood Creek Drainage Basin. This neighborhood was targeted due to observed presence of irrigation runoff. Based on lessons learned from the pilot project, the City may choose to expand the program to cover additional neighborhoods within the Cottonwood Creek Drainage Area.

4) Evaluate Sanitary Sewer Maintenance and Overflow Prevention

The City will evaluate sewer system maintenance frequencies and Fats Oil and Grease program policies, including procedures targeted at private laterals, to protect the Moonlight Beach Shoreline. While the City has not had sanitary sewer overflows (SSOs) recently, evaluating the City's SSMP is important as a proactive step. Based on the findings of the evaluation, the City may make modifications to its maintenance program to prevent SSOs.

5) Homeowners Association and Property Manager Outreach Program

The City will implement an education and outreach program that encourages and/or incentivizes Home Owners Associations (HOA)s and business property managers to implement measures to reduce dry weather and/or wet weather flows leaving their properties. Practices could include proper installation and maintenance of irrigation systems, conversion to drought tolerant landscaping, downspout disconnection, etc.

6) Plastic Bag Ban

The City of Encinitas passed an ordinance banning distribution of single use plastic bags on August 20, 2014. The ban applies to large retailers, grocery stores, drug stores, convenience stores, and mini-markets in spring 2015 and to farmers markets and all other retailers in fall 2015.

2nd Street Sub-Basin

In the 2nd Street sub-basin, where there is a relatively higher concentration of commercial businesses including restaurants. In addition to the strategies listed above, the City will implement the following:

Increased Inspection Frequency for Highest Pollutant Potential Commercial Sources

More frequent inspections will be targeted at specific high-threat areas or activities in the 2nd Street sub-basin. High priority sites will be inspected twice per year, which is two times more than the minimum commercial inspection requirements mandated in the Municipal Permit.

2.5.3.2 City of San Marcos – San Marcos HA Focus Area

The San Marcos HA extends into the center portion of the City of San Marcos near the upper portion of the HA. Within the City of San Marcos there are four sub-basins that are a part of the San Marcos HA. The basins have a mixture of commercial, industrial, single family residential, and multi-family land uses. Nearly all of the four sub-basins drain through Upper San Marcos Creek to Lake San Marcos.

Within the four sub-basins, the City has identified B, C, and D Drainage Areas as their focus areas. These focus areas are considered a higher threat to water quality due to their proximity to tributary channels to San Marcos Creek and the business nature of the land uses (commercial and industrial). The focus areas are shown below in Figures 24, 25, and 26 below. These focus areas were selected to specifically address the PWQCs of nutrients and phosphorous in San Marcos Creek and Lake San Marcos.

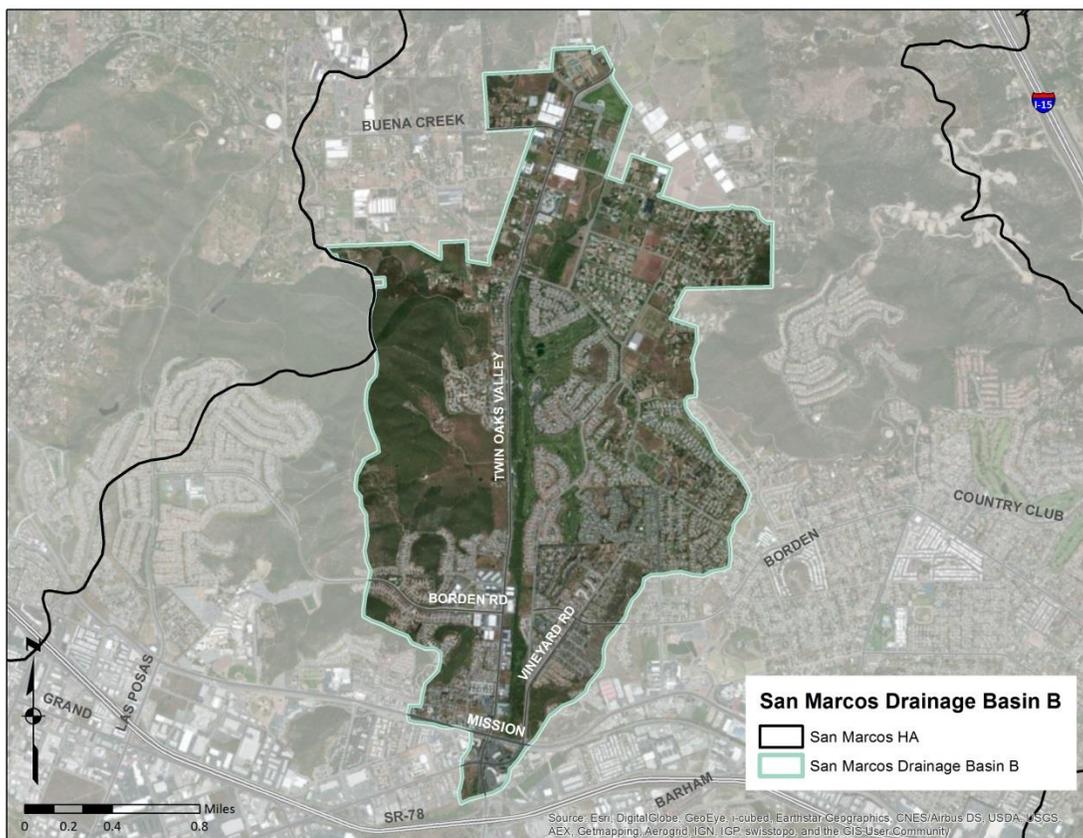


Figure 24: San Marcos Drainage Basin B

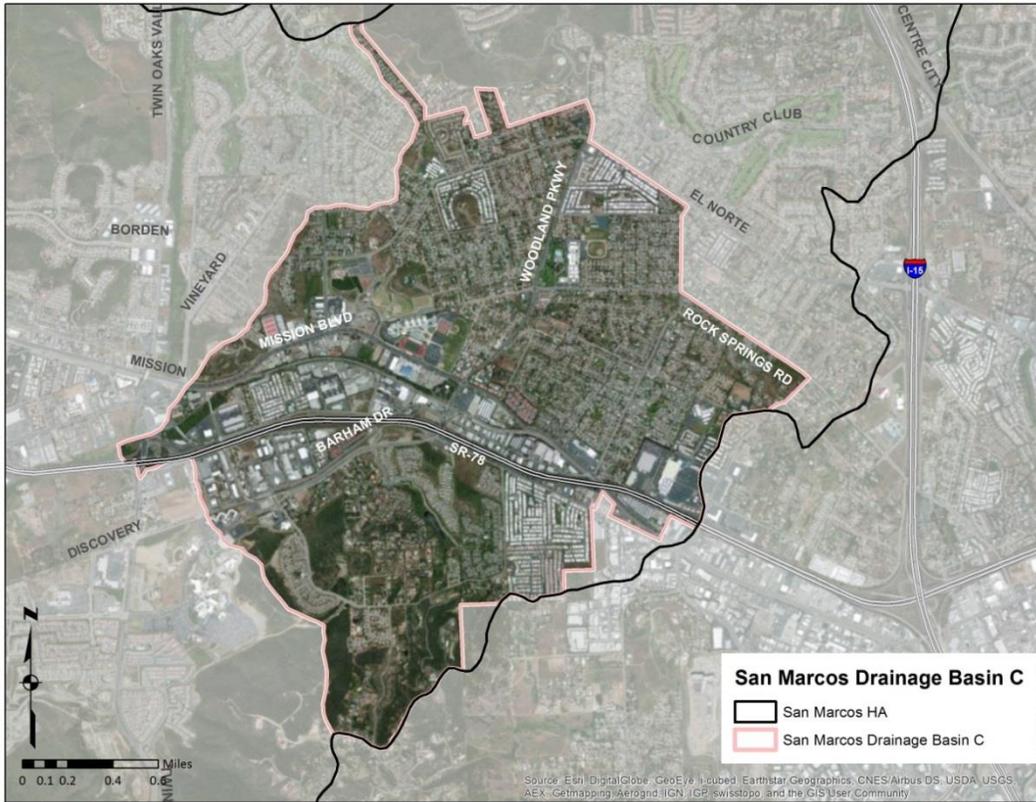


Figure 25: San Marcos Drainage Basin C



Figure 26: San Marcos Drainage Basin D

San Marcos B, C and D Drainage Basin Interim and Final Numeric Goals

Numeric goals have not been established separately for San Marcos B, C and D Drainage Basins. However, the City is focused on targeted outcomes in the four focused areas. For each of the focus areas, the City has developed the following targeted outcomes:

Table 20: Basins B, C & D Focus Areas, Interim and Final Targeted Outcomes

Interim Targeted Outcome (2013-2018) 2018 ¹	Interim Targeted Outcome (2018-2023) 2023 ¹	Interim Targeted Outcome (2023-2028) 2028 ¹	Interim Targeted Outcome (2028-2033) 2033 ¹	Final Targeted Outcome (2033-2038) 2038 ¹
10% reduction in anthropogenic dry-weather surface water runoff at selected outfalls	20% reduction in anthropogenic dry-weather surface water runoff at selected outfalls	40% reduction in anthropogenic dry-weather surface water runoff at selected outfalls	60% reduction in anthropogenic dry-weather surface water runoff at selected outfalls	80% reduction in anthropogenic dry-weather surface water runoff at selected outfalls

¹ Flow reduction goals are currently based on best professional judgment as current flow data is not available. The goals may be adapted as monitoring data/information is gathered, analyzed and baselines are established.

San Marcos B, C and D Drainage Basin Strategies

The City of San Marcos will implement its program core strategies within these focus areas. In addition to the core jurisdictional strategies, the following summarizes supplemental or modified core strategies planned for implementation in the focus area to address the sources of pollutants and discharges.

The selected strategies are expected to have multi-pollutant benefits and intended to address non-stormwater flows and reducing the source loading of nutrients. Reducing non-stormwater flows: (1) reduces the loading of pollutant constituent discharged through MS4 system; (2) reduces the amount of indicator bacteria regrowth and contributions that occurs with accumulated biofilm in MS4 systems that requires water; and (3) reduces the wet-weather contribution of indicator bacteria from scoured biofilm under higher velocity flows from storm discharges.

To accomplish the multi-benefit objectives in the San Marcos B, C and D Basins, the City of San Marcos will supplement its core jurisdictional program by implementing the following strategies in this focus area:

1) Irrigation Runoff Reduction Program

The objective of the Irrigation Runoff Reduction Program (IRRP) is to eliminate or reduce dry weather flow contributions coming from irrigation runoff, regardless of the time of day the discharges occur. Core elements include:

- Developing municipal codes that prohibit irrigation runoff
- Developing educational materials and outreach program specific towards irrigation runoff
- Assessing dry weather flows at outfall(s)
- Identifying key times to perform site observations
- Perform site observations to identify sources of irrigation runoff
- Collaboration with City Public Works Department to address municipal property irrigation systems
- Initiating contact and correspondence with property managers/owners
- Periodically assessing flows
- Optionally developing and implementing an incentive program

2) Property Based/Patrol Inspections

The objective of this program is to reduce discharges to the MS4 and provide inspection of existing development in a more cost efficient and effective manner. Features include:

- Developing patrol and inspection protocols
- Developing and conducting staff training
- Conducting property based/patrol inspections

The City will perform these property based/patrol inspections multiple times per year at various times of the day to capture irrigation runoff and other non-authorized discharges as well as identify BMP issues.

3) City of San Marcos & Vallecitos Water District (VWD) Irrigation Runoff/Water Waster Program

- City and VWD staff collaborate and communicate regularly to share information regarding reports and complaints
- Public water waster reporting is available on both City and VWD websites
- The City developed door hangers for field staff to distribute if water wasting is reported or observed at a property
- The City developed template response letters identifying both City and VWD requirements

4) City of San Marcos & VWD Fats, Oils, and Grease (FOG) Program Collaboration

- Continue coordination between City and VWD programs. The City anticipates a collaborative work effort between the City's inspection program and VWD's FOG program in order to reduce sewer backups and overflows that result from accumulation of FOG in the sewer system
- VWD established an Ordinance to regulate FOG
- VWD visited all of the Food Service Establishments (FSEs) within the City to provide an overview of the program and expectations
- VWD created a guidance manual provided to each FSE that includes BMP information, maintenance requirements, and record keeping documents
- VWD will inspect all FSEs at least once a year

5) Homeowners Association and Property Manger Outreach Program

- The City will implement an education and outreach program that encourages and/or incentivizes Home Owners Associations (HOA)s and business property managers to implement measures to reduce dry weather and/or wet weather flows leaving their properties. Practices could include proper installation and maintenance of irrigation systems, conversion to drought tolerant landscaping, downspout disconnection, etc.

6) Enhancements to Education Program

- Bacteria and other priority pollutant specific education and outreach program to be conducted in the B, C and D focus areas for residents and commercial facilities related to bacteria and other priority pollutants. The materials will have an emphasis on discharges to the City's MS4 and the receiving waters impacts.
- Developing and implementing a training/seminar for property managers and others that have direct responsibility for common areas within HOAs and commercial properties. Educational materials and information will be developed and provided to the managers for them to distribute to their residents and tenants.

- As part of the residential outreach program, the City of San Marcos will work with residents and property owners to educate through various means, which may include school programs, block parties or one-on-one meetings.

7) Civic Center Landscape Conversion Demonstration Project

- This program's objectives are to:
 - Provide measurable water use efficiency and water quality benefits in receiving waters.
 - Demonstrate the link between irrigation runoff reduction and associated reductions in pollutant concentrations and loading.
- To meet the objectives, this program will use landscape renovation, advances in irrigation technology, flow and water quality monitoring prior to and post renovation, and an education/outreach program.

8) Filter Retrofit Program

- The City will continue to implement the filter upgrade program provided through a grant program.
- Aging filters located within public facilities in need repair are retrofitted with new proprietary filter systems that contain media filters to treat dissolvable pollutants including nutrients and bacteria.

9) Optional Strategies

- Implement structural (engineered) BMPs or retrofitting existing structural BMPs to address flow and/or pollutant issues
- Implement offsite alternative compliance program to place water quality improvement projects in the San Marcos B, C and D Drainage Basins

2.5.3.3 County of San Diego –San Marcos HA Focus Areas

Four of the County of San Diego's major storm drain outfalls in the San Marcos HA have persistent flows and are tributary to Lake San Marcos. The unincorporated area that makes up the four drainage areas have a range of land use types (residential, residential with some agriculture, commercial businesses, roads, etc.) which includes activities with likely potential for pollutant source loading. The focus areas are shown below in Figures 27 below.

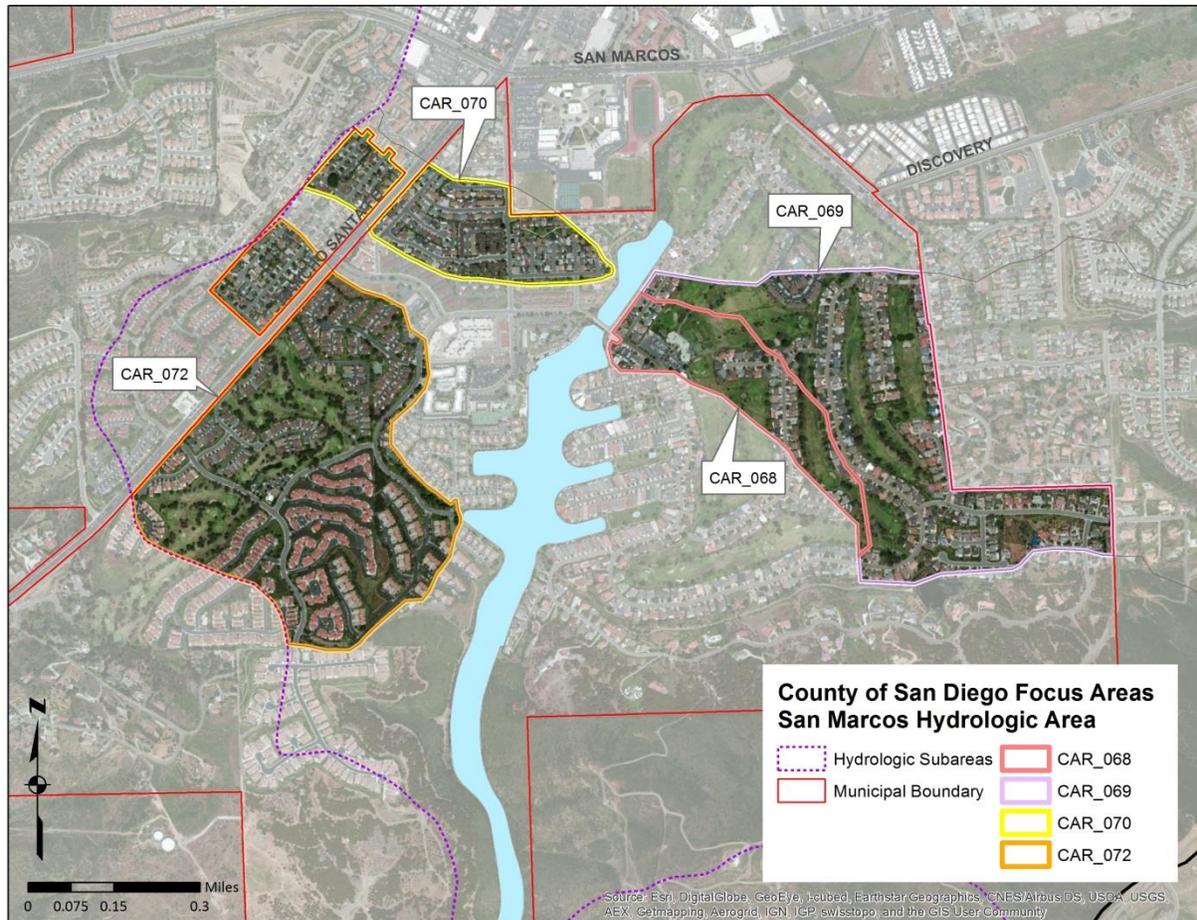


Figure 27: County of San Diego San Marcos HA Focus Areas

County of San Diego CAR 068, CAR 069, CAR 070 and CAR 072 Interim and Final Targeted Outcomes

These targeted outcomes are in conjunction with the numeric goals established in the County’s focus areas within the Escondido Creek HA. Numeric goals have not been established separately for the County’s San Marcos HA Focus Areas. However, the County is focused on targeted outcomes in the four focused areas. These targeted outcomes have been established as a part of this initial WQIP development process. As the County of San Diego progresses through the first several years of implementation and learns through data collection and analysis, it is expected that these targeted outcomes and schedules will likely change. As targeted outcomes and schedules are adapted, they will be presented in future WQIP annual reports or updates to the WQIP document.

The dry weather targeted outcomes were established to reduce dry weather flow in storm drains, in order to reduce pollutant loading to water bodies during dry weather. This will be accomplished through the implementation of JRMP strategies to reduce dry weather runoff, as described in the County of San Diego JRMP.

For the grouping of seven identified persistently flowing major MS4 outfalls in the County’s jurisdiction within the entire Carlsbad WMA, the County has set targeted outcomes of eliminating anthropogenic flows from one major storm drain outfall that discharges to receiving waters, during each Permit term,

until all anthropogenic flows have been effectively eliminated. Targeted outcomes are expressed in Table 21 below.

Table 21: County of San Diego San Marcos HA Focus Areas, Interim and Final Targeted Outcomes

Interim Targeted Outcome (2013-2018) 2018 ¹	Interim Targeted Outcomes (2018-2043) 2023 ¹ and each subsequent five year period	Final Targeted Outcome (2043-2048) 2048 ¹
Effectively eliminate anthropogenic dry weather flows ^{1,2} from one persistently flowing outfall ³	Effectively eliminate anthropogenic dry weather flows ^{1,2} from one additional persistently flowing outfall ³	Effectively eliminate anthropogenic dry weather flows ^{1,2} from one additional persistently flowing outfall ³ , each subsequent permit term, until all flows have been effectively eliminated

¹ Targeted outcomes are based on current information that 7 of the 14 County major outfalls within the Carlsbad WMA have persistent flow. The targeted outcomes may be adapted as monitoring data is collected and analyzed.

² Here and throughout this table, the term “dry weather flows” excludes groundwater, other exempt or permitted non-stormwater flows, and sanitary sewer overflows.

³ The County of San Diego is concerned that a long-term funding source is not identified for constructing and maintaining structural BMPs, if structural BMPs are needed to meet compliance. The implementation of strategies to achieve goals will depend upon approval of funding in future annual budgets.

County of San Diego CAR 068, CAR 069, CAR 070 and CAR 072 Drainage Basin Strategies

The County of San Diego Watershed Protection Program (WPP) will shift to a more active field program to better locate and abate dry weather flow. WPP Stormwater Staff will increase the amount of time spent in unincorporated communities, identifying nuisance anthropogenic flows and addressing them through appropriate education and enforcement strategies. County of San Diego staff will continue to be trained to identify and report illicit discharges and illicit connections during required annual stormwater training. This training has been updated to reflect recent Permit changes.

In addition to the increase in County staff field surveillance, WPP will also implement a focused program to reduce flows at targeted MS4 outfalls that have demonstrated persistent dry weather flow conditions. Using collected dry weather monitoring data collected, the County of San Diego has identified priority outfalls in the Carlsbad Watershed that will be monitored regularly for dry weather flow. If dry weather flows are detected, staff will initiate a field investigation to seek out and abate the source of flow.

The County of San Diego will implement their core jurisdictional program strategies within the focus area. In addition to the core jurisdictional strategies, the following summarizes supplemental or modified core strategies planned for implementation in the focus area to address the sources of pollutants and discharges.

The selected strategies are expected to have multi-pollutant benefits and intended to address non-stormwater flows and reducing the source loading of bacteria. Addressing non-stormwater flows: (1) reduces the loading of pollutant constituent discharged through MS4 system; (2) reduces the amount of indicator bacteria regrowth and contributions that occurs with accumulated biofilm in MS4 systems that requires water; and (3) reduces the wet-weather contribution of indicator bacteria from scoured biofilm under higher velocity flows from storm discharges.

To accomplish the multi-benefit objectives, the County of San Diego will supplement its core jurisdictional program by implementing the following strategies in this focus area:

- 1) Active Field Program to Identify and Address Dry Weather Flows – The focused area was selected based on strategic assessments, including review of 303(d) listings, monitoring data, and persistent flows. Field staff will conduct surveillance and may employ various tools to reduce pollutant loads and non-stormwater flows, including outreach efforts including over-irrigation focus, pet waste, HOA, and landscaper outreach. New outreach materials will be developed for use in focused inspections.
- 2) Updated Focused Training for County Field Staff - Field Staff training to be updated with information on Highest Priority Water Quality Conditions identified in WQIP and the pollutant sources and pollutant generating activities that may be associated with the HPWQCs.
- 3) BMP Manual Training - External – The BMP Manual for new and redevelopment will be updated and training/outreach will be provided to the development industry.
- 4) Promote Rain Barrel Incentive Programs – Promoting partners programs for rainwater harvesting rebates. Partner agencies including the Metropolitan Water District of Southern California (MWD), local water districts, and the San Diego County Water Authority. Example: MWD - www.socalwatersmart.com
- 5) Collaborate with Partner Agencies to Promote Incentive Programs for BMP Retrofits – Promoting incentives for water conservation and landscape retrofits through partner agencies (same as above) such as turf replacement, sprinkler head nozzle replacements, smart irrigation controllers, etc. Incentive programs may be developed for this program if funding is available.
- 6) Promote Live Turf Replacement Incentive Program – Promote turf replacement programs for replacement with California Friendly plants.
- 7) Promote Water Smart Incentive for Outdoor Water Efficiency as part of the public-private partnership – Development of Sustainable Landscape Program is underway with partners including: San Diego County Water Authority, City of San Diego, Surfrider Foundation, the Association of Compost Producers, and the County of San Diego. Guidelines are being developed and will promote water conservation, building healthy soils, and sustainable practices.
- 8) Develop, Improve, Distribute Outreach Materials for Existing Development - Develop outreach materials to raise awareness of stormwater and urban runoff concerns and encourage behaviors that will improve water quality downstream.
- 9) Educational Workshops (e.g., IPM, manure management) – Continue to sponsor workshops for specific target audiences and pollutants of concern, including manure management and composting workshops for horse owners, Integrated pest management and gardening workshops for residents interested in gardening and more sustainable landscape practices, and rain water harvesting classes to encourage capturing rain from roofs and subsequent use on the landscape.

10) Education & Outreach Effectiveness Survey – We have completed our County baseline survey of residents (registered voters) in the unincorporated area, to establish a baseline for knowledge and awareness of residents. Additionally, pre and post surveys will be conducted during educational workshops to ensure that the programs are effectively reaching the attendees, showing an improvement in knowledge, awareness, and likely-hood of changing behaviors to be less polluting.

11) Optional Strategies

- Consider feasibility of developing an alternative compliance program, and if developed consider constructing structural controls to reduce priority water pollutants.
- Investigate feasibility of developing a Green Streets Program
- Consider improvements to tracking watershed based inventories via consolidated database
- Develop an Equestrian BMP Handbook
- Investigate the feasibility of an inspections tracking program via mobile platform - miles, violations, etc.
- Investigate the feasibility of improvements to inspections data tracking through mobile phone
- Investigate the feasibility of developing and implementing an incentive program for BMP Retrofits in areas of existing development
- Develop Sustainable Landscapes Outreach Program based on available grant funding
- Investigate feasibility of stream, channel, and/or habitat rehabilitation projects and identify project partners
- Consider development of incentive programs for water conservation (turf replacement, smart irrigation controllers, irrigation modifications, sustainable landscapes, rain barrels), in collaboration with water agencies and others, to reduce priority pollutants
- Consider development of incentive programs, in collaboration with the Department of Environmental Health, for pumping septic systems in high risk areas adjacent to waterways (within 600 ft.) or stormwater system; subject to grant funding availability
- Consider partnerships with Master Gardeners to provide education opportunities on water use and practices for gardening
- Consider collaboration with community groups to provide “boots on the ground” local information to focus implementation efforts on reducing bacteria and other pollutants, close to the source
- Consider collaboration with County of San Diego (COSD) internal departments to leverage mutually beneficial projects to promote retrofits to include installation of controls to address priority pollutants, or land acquisition efforts to preserve open space, if feasible
- Consider collaboration with watershed partners to encourage consistent messaging to specific targeted audiences (commercial, residents, and others) to conserve water and mitigate dry weather flows
- Consider collaboration with watershed partners on Round 4 of Proposition 84 Integrated Regional Water Management (IRWM) grant opportunities to fund targeted educational programs, building of structural controls (brick and mortar projects), or incentive programs to reduce runoff from the stormwater conveyance system
- Consider collaboration with watershed partners and Regional Water Quality Control Board on effective measures to reduce potential impact of pollutant loads to waterways from unauthorized encampments

- Consider collaboration with wastewater agencies to identify where sewer and stormwater infrastructure are in close proximity and confirm the absence of flow at nearby stormwater conveyance outfalls during dry weather, conduct additional investigations to identify and mitigate flow if present
- Consider collaboration with watershed partners to remove invasive non-native plants (Arundo) upstream areas of rivers or tributaries to increase flood and fire protection and reduce the number of unauthorized encampments on the river bottom
- In collaboration with the Department of Environmental Health, consider developing program for on-site wastewater treatment (septic) systems. May include mapping and risk assessment, inspection, or maintenance practices.
- Consider the implementation of focused pet waste projects to reduce bacteria pollution
- Consider investigating diverting persistent dry weather flows from storm drains to sanitary sewer, where feasible
- Consider the design of structural controls for persistent unpermitted dry weather flows where outreach has been unsuccessful and groundwater or other non-MS4 sources has been ruled out
- Consider developing a strategy to evaluate opportunities to naturalize concrete stormwater conveyances, and identify potential funding sources (such as grants) for design and implementation
- Consider collaboration with the Department of Agriculture, Weights and Measures (AWM) to evaluate and reprioritize the AWM's stormwater program to determine inspection priorities.

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2.6 Escondido Creek HA (904.6)

The Escondido Creek Hydrologic Area is the largest and most complex system within the WMA. The HA extends approximately 24.6 miles inland from the coast and totals 54,100 acres in the area, comprising 40% of the WMA. Escondido Creek watershed originates in Bear Valley in north central San Diego County and discharges into the Pacific Ocean via San Elijo Lagoon. Elevations within the HA range from sea level to 2,420 feet on the ridges above Bear Valley in the vicinity of Daley Ranch, a 3,000 acre conservation area managed by the City of Escondido. There are two reservoirs within the watershed: Lake Wohlford and Dixon Lake. Most of the HA is in unincorporated areas of the County (55%). The remaining is in the cities of Escondido and Encinitas, with a small portion in San Marcos and Solana Beach. The primary receiving waters are Escondido Creek, Lake Wohlford, Lake Dixon, Reidy Creek, San Elijo Lagoon, and the Pacific Ocean.

During the initial phase of the Water Quality Improvement Plan process, assessment of existing data determined that the priority water quality conditions (PWQCs) within the Escondido Creek HA include: indicator bacteria in Escondido Creek and San Elijo Lagoon; toxicity in Escondido Creek; nutrients in Escondido Creek; sediment/siltation in San Elijo Lagoon; and eutrophic condition in San Elijo Lagoon. Of these PWQC, the *highest priority water quality condition* (HPWQC) in the Escondido Creek HA was determined to be *indicator bacteria* in Escondido Creek (wet weather conditions) and San Elijo Lagoon (dry weather conditions) (June 2014 Carlsbad WMA WQIP submittal to RWQCB).

Figure 28 below, shows the Escondido Creek HA, HPWQC and focus areas. The focus areas and their associated strategies and goals are explained in more detail below.

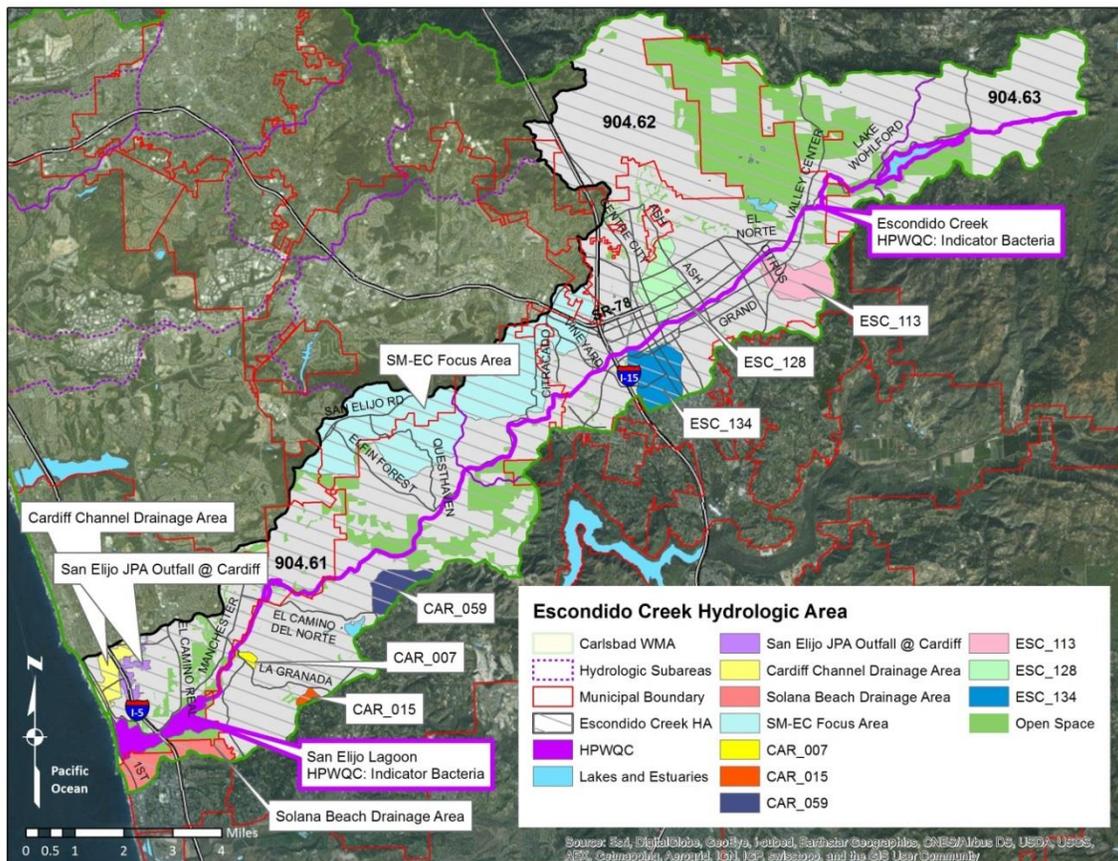


Figure 28: Escondido Creek HA Highest Priority Water Quality Conditions and Focus Areas

2.6.1 Escondido Creek HA Sources

The following table presents a listing of inventoried sources in the Escondido Creek HA and their association with HPWQCs and PWQCs based on source loading potential (2011 LTEA). The PWQC, eutrophic condition, is included in the “nutrients” category in the table below.

Table 22: Pollutant Generating Sources – 904.6 Escondido Creek Hydrologic Area

Inventory Sites/Facilities ¹	Quantities ²	Pollutant Source Loading Potential ³									
		Metals	Oil & Grease	Sediment	Pesticides	Nutrients	Bacteria/Pa thogens	Dissolved Minerals	Organics	Toxicity	
Animal Facilities	25	N	UL	L	UK	L	L	N	L	UK	
Auto Repair, Fueling, or Cleaning	306	L	L	UL	UL	UK	UL	L	L	UK	
Auto Parking Lots or Storage	97	L	L	L	UK	UK	UK	UL	L	UK	
Auto Body Repair or Painting	38	L	L	UL	UL	UL	UL	L	L	UK	
Nurseries/Greenhouses	29	L	UL	L	L	L	L	UL	UL	UK	
Building Materials Retail	24	L	L	L	UL	UL	UL	UL	L	UK	
Concrete Manufacturing	5	L	L	L	UL	UL	UL	UL	L	UK	
Eating or Drinking Establishments	410	N	L	UL	UK	UK	L	UL	L	UK	
Equipment Repair or Fueling	40	L	L	UL	UL	UK	UL	UL	L	UK	
Fabricated Metal	53	L	L	UK	UK	UK	UL	UL	L	UK	
Food Manufacturing	11	UL	UL	UL	UL	UL	UL	UL	UL	UK	
General Contractors	155	UL	UL	L	UL	UL	UL	UL	UL	UK	
General Industrial	53	L	L	UK	UK	UK	UK	UK	L	UK	
General Retail	156	UL	UL	L	UL	UL	UL	UL	UL	UK	
Health Services	8	N	UL	L	UK	L	UL	UK	L	UK	
Motor Freight	17	L	L	UK	UK	UK	UK	UL	L	UK	
Offices	8	UK	UK	UK	UK	UK	UK	UK	UK	UK	
Parks and Rec	7	UK	UK	UK	UK	L	UK	UL	UK	UK	
Pest Control Services	15	N	UK	N	L	N	UK	N	UK	UK	
Publicly Owned Treatment Works	1	UK	UK	UK	N	UK	L	UL	UK	UK	
Primary Metal	4	L	UK	UK	UK	UK	UL	N	UK	UK	
Recycling & Junk Yards	10	L	L	L	UL	UL	UL	L	L	UK	
Roads, Streets & Parking	1	L	L	L	UL	L	L	L	L	UK	
Stone/Glass Manufacturing	21	L	L	L	UL	UL	UL	UL	L	UK	
Storage/Warehousing	30	L	L	L	UL	UL	UL	UL	L	UK	
Municipal	100	N	N	L	N	N	UK	UL	N	UK	
Construction	Varies ⁴	UL	UL	L	UL	UL	UL	L	UL	UK	
Residential	18,910 acres	L	L	L	L	L	L	L	L	UK	

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQC are identified in the table (yellow highlight signifies HPWQC). The HPWQC is associated with the sources that are likely to generate those pollutants (blue highlight). The PWQP is highlighted in green and the associated sources that are likely to generate those pollutants are depicted with an “L”.

1: Other sources are not reported in this table including: Land Development and Non-inventoried Businesses

2: Quantities based on the Responsible Agencies FY 2012 JURMP Annual Reports

3: Pollutant Source Loading Potential taken from LTEA 2011; N = None, UK = Unknown, UL = Unlikely, L = Likely

4: The quantity of construction sites is dynamic due to projects starting and completing at any given time.

2.6.2 Escondido Creek HA Goals and Strategies

2.6.2.1 Escondido Creek HA Goals

Goals have not been established that apply to the entire Escondido Creek Hydrologic Area. Separate goals have been established for each focus area and are presented in the sub-sections below.

2.6.2.2 Escondido Creek HA Strategies

The following table identifies the Water Quality Improvement Strategies to be implemented throughout the entire Escondido Creek HA and in some specific focus areas of the HA. In addition to the planned strategies, optional strategies are identified that may be implemented based on circumstances related to the progress RAs make towards numeric goals and funding. The strategies associated with the focus areas are described further in the sub-sections below.

As the RAs implement strategies and analyze data, it is expected that these strategies and schedules may change through an iterative and adaptive management process. The adaptive management process will be presented in the Final Carlsbad WMA WQIP in June 2015.

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Table 23: Escondido Creek Strategies

Water Quality Improvement Plan Strategies		Jurisdiction/Area					Target Source										Target Pollutants						Implementation Schedule					
		City of Encinitas	City of Escondido	City of Solana Beach	City of San Marcos	County of San Diego	Municipal Fixed Facilities	Industrial and Commercial Facilities/Owners	Construction Sites and Personnel	Residential	General Public	Land Development & Redevelopment	Roads, Streets, Highways and Parking Facilities	MS4	Bacteria/Pathogens	Trash	Heavy Metals	Nutrients	Oil and Grease	Sediment	Pesticides	Previous Fiscal Year(s)	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20	Future Fiscal Year(s)
15	Enhancements to Education Program	-	-	-	HA Wide	HA Wide	•	•	•	•	•			•		•	•	•	•	•		•	•					
16	Filter Retrofit Program	-	-	-	HA Wide	-	•							•			•						•	•				
17	BMP Manual Training - External	-	-	-	-	HA Wide								•	•	•	•	•	•	•		•						
18	Promote Incentive Programs: Rain Barrel, Live Turf Replacement & Outdoor Water Efficiency	-	HA Wide	-	-	HA Wide	•	•		•	•			•		•	•	•	•	•		•	•	•	•	•	•	•
19	Administrative BMPs ^{1,2}	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	•	•	•	•	•											•	•	•	•	•	•	•
20	Outfall Monitoring	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	•	•	•	•				•	•	•	•	•	•	•		•	•	•	•	•	•	•
21	Investigations ²	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	•	•	•	•				•	•	•	•	•	•	•		•	•	•	•	•	•	•
22	Development and Redevelopment Requirements ²	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide								•	•	•	•	•	•	•		•	•	•	•	•	•	•
23	Construction Site Inspections ²	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide			•						•				•			•	•	•	•	•	•	•
24	Existing Development Facilities, Areas and Activities Inspections ²	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	•	•		•				•		•	•	•	•	•		•	•	•	•	•	•	•
25	MS4 Inspections/ Cleaning ²	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide								•	•	•			•			•	•	•	•	•	•	•
26	Street Sweeping ²	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide								•	•	•			•	•		•	•	•	•	•	•	•
27	General Education and Outreach ²	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	•	•	•	•	•			•	•	•	•	•	•	•		•	•	•	•	•	•	•
28	Employee Training ² / Focused Training	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	•							•	•	•	•	•	•	•		•	•	•	•	•	•	•

Table 23: Escondido Creek Strategies

Water Quality Improvement Plan Strategies		Jurisdiction/Area					Target Source										Target Pollutants						Implementation Schedule						
		City of Encinitas	City of Escondido	City of Solana Beach	City of San Marcos	County of San Diego	Municipal Fixed Facilities	Industrial and Commercial Facilities/Owners	Construction Sites and Personnel	Residential	General Public	Land Development	& Redevelopment	Roads, Streets, Highways and Parking Facilities	MS4	Bacteria/Pathogens	Trash	Heavy Metals	Nutrients	Oil and Grease	Sediment	Pesticides	Previous Fiscal Year(s)	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20	Future Fiscal Year(s)
29	Enforcement ²	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
30	Partnership Program(s) ²	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
31	Program for Retrofitting Areas of Existing Development ²	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
32	Program for Stream, Channel and/or Habitat Restoration in Areas of Existing Development ²	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
33	Sewer Infrastructure Improvement Project ³	Cardiff Channel & San Elijo JPA Outfall Areas	-	-	-	-	•																						Based on appropriate criteria for initiating
34	Rehabilitation of the Olivenhain Trunk Sewer Line ³	Cardiff Channel & San Elijo JPA Outfall Areas	-	-	-	-	•																						Based on appropriate criteria for initiating
35	Spruce Street Channel – Phase I ³	-	ESC134	-	-	-									•	•	•	•	•	•	•	•	•	•	•	•	•	•	Currently under development. Future implementation will depend on funding.
36	Implementation of Offsite Alternative Compliance Program ³	-	HA Wide	HA Wide	HA Wide	HA Wide		•							•	•	•	•	•	•	•	•	•	•	•	•	•	•	Based on appropriate criteria for initiating
37	Implement Structural BMPs or Retrofitting to Address Flow and/or Pollutant Issues ³	-	-	HA Wide	HA Wide	-	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	Based on appropriate criteria for initiating
38	Support Partnerships with Social Service Providers to Provide Sanitation & Trash Management for Persons Experiencing Homelessness ³	Cardiff Channel & San Elijo JPA Outfall Areas	HA Wide	HA Wide	-	-									•	•													Based on appropriate criteria for initiating
39	County of San Diego Optional Strategies Listing – See Section 2.6.3.3³																												

¹ Examples of Administrative BMPs include: Plan development, program standardization, maintaining and prioritizing inventories, updating education materials, etc.

² General descriptions provided in Appendix B

³ Optional Strategies

2.6.3 Escondido Creek HA Focus Areas

Concentrating programmatic efforts in specific geographic areas to address known or suspected sources of discharges and pollutants is expected to improve the effectiveness of the strategies and activities.

Based on the RAs review of the characteristics of the Escondido Creek HA, several areas of focus were selected for concentrated programmatic efforts. These focus areas include the City of Solana Beach within the Escondido HA, two drainage basins in the City of Encinitas (Cardiff Channel Drainage Area and San Elijo JPA Outfall at Cardiff) and three basins in the City of Escondido (ESC 113, ESC 128, and ESC 134). The goals and strategies for these focus areas are summarized below.

2.6.3.1 Solana Beach Drainage Area

The San Elijo Lagoon is on the northern border of the City of Solana Beach. The City has identified the entire portion of the City that discharges towards the lagoon as its focus area, shown in Figure 29 below. The area is primarily single family residential land use with some commercial areas, multi-family residential, an elementary school, a portion of a golf course., common areas and recreational park areas that include landscaping and turf. The majority of this basin was developed prior to implementation of the City's Standard Urban Stormwater Mitigation Plan (SUSMP) therefore relatively few treatment control BMPs have been established.

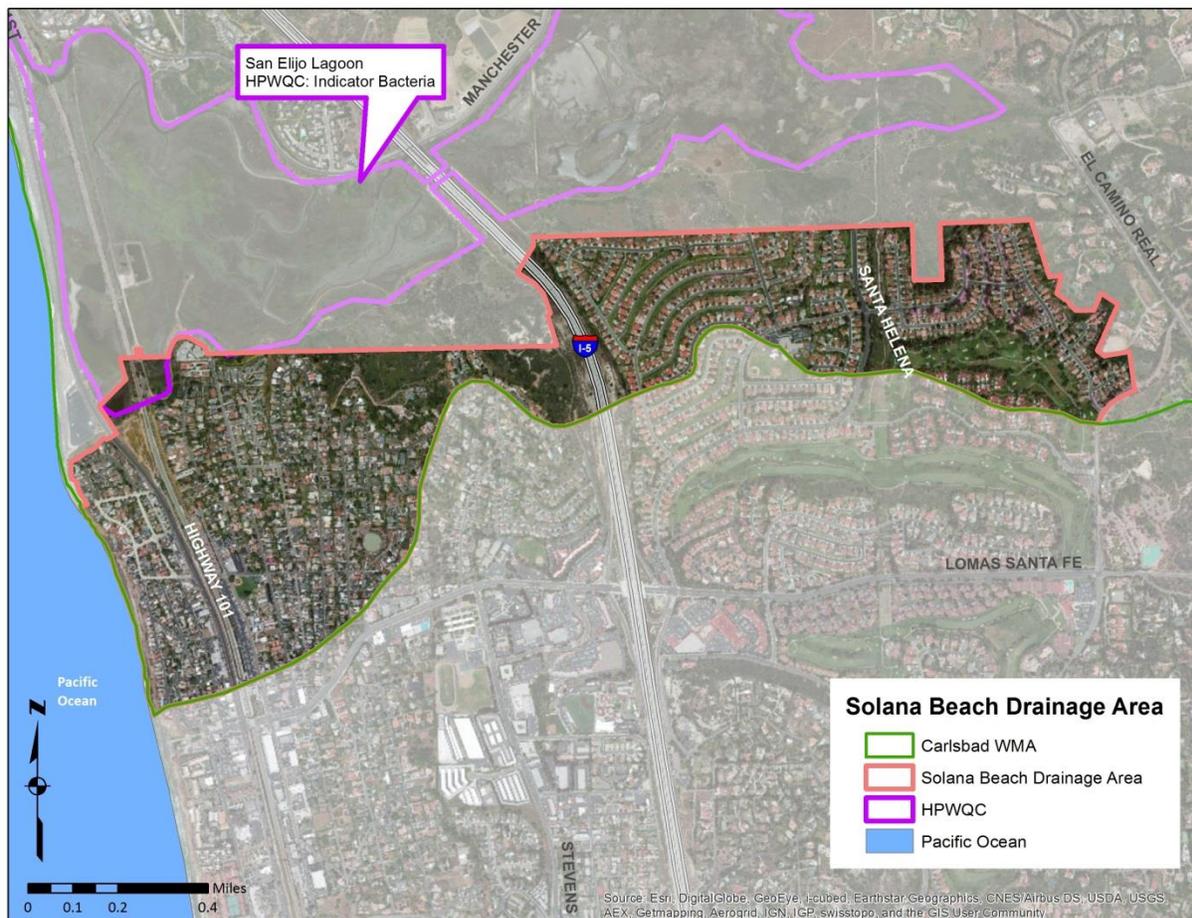


Figure 29: Solana Beach Drainage Area/Focus Area

Solana Beach Drainage Area Interim and Final Numeric Goals

Goals associated with this focus areas are summarized in the goals tables below. These goals have been established as a part of this initial WQIP development process. As the City of Solana Beach progresses through the first several years of implementation and learns through data collection and analysis, it is expected that these goals and schedules will likely change. As goals and schedules are adapted, they will be presented in future WQIP annual reports or updates to the WQIP document.

Table 24: Solana Beach Drainage Area, Interim and Final Numeric Goals

Interim Goal (2013-2018) 2018 ¹	Interim Goal (2018-2023) 2023 ¹	Interim Goal (2023-2028) 2028 ¹	Interim Goal (2028-2033) 2033 ¹	Final Goal (2033-2038) 2038 ¹
10% reduction in anthropogenic surface water runoff at selected outfalls	20% reduction in anthropogenic surface water runoff at selected outfalls	40% reduction in anthropogenic surface water runoff at selected outfalls	60% reduction in anthropogenic surface water runoff at selected outfalls	80% reduction in anthropogenic surface water runoff at selected outfalls

¹ Flow reduction goals are currently based on best professional judgment as current flow data is not available. The goals may be adapted as monitoring data/information is gathered, analyzed and baselines are established.

The means for achieving these goals are identified in the strategies discussion below. Mechanisms for measuring progress towards and ultimately achieving these goals will be discussed in the Final Carlsbad WQIP to be completed in June 2015.

City of Solana Beach Drainage Area Strategies

The City of Solana Beach will implement their program core strategies within the focus area. In addition to the core jurisdictional strategies, the following summarizes supplemental or modified core strategies planned for implementation in the focus area to address the sources of pollutants and discharges.

The selected strategies are expected to have multi-pollutant benefits and intended to address non-stormwater flows and reducing the source loading of bacteria. Reducing non-stormwater flows: (1) reduces the loading of pollutant constituent discharged through MS4 system; (2) reduces the amount of indicator bacteria regrowth and contributions that occurs with accumulated biofilm in MS4 systems that requires water; and (3) reduces the wet-weather contribution of indicator bacteria from scoured biofilm under higher velocity flows from storm discharges.

To accomplish the multi-benefit objectives, the City of Solana Beach will supplement its core jurisdictional program by implementing the following strategies in this focus area:

1) Irrigation Runoff Reduction Program

The objective of the Irrigation Runoff Reduction Program (IRRP) is to eliminate or reduce dry weather flow contributions coming from irrigation runoff, regardless of the time of day the discharges occur. Core elements include:

- Developing municipal codes that prohibit irrigation runoff
- Developing educational materials and outreach program specific towards irrigation runoff
- Assessing dry weather flows at outfall(s)
- Identifying key times to perform site observations
- Perform site observations to identify sources of irrigation runoff
- Collaboration with City Public Works Department to address municipal property irrigation systems

- Initiating contact and correspondence with property managers/owners
- Periodically assessing flows
- Optionally developing and implementing an incentive program

2) Property Based/Patrol Inspections

The objective of this program is to reduce discharges to the MS4 and provide inspection of existing development in a more cost efficient and effective manner. Features include:

- Developing patrol and inspection protocols
- Developing and conducting staff training
- Conducting property based/patrol inspections

The City will perform these property based/patrol inspections multiple times per year at various times of the day to capture irrigation runoff and other non-authorized discharges as well as identify BMP issues. At this time the City has not determined the frequency at which the property based/patrol inspections will occur, but will have finalized in the Final Carlsbad WQIP in June 2015.

3) Plastic Bag Ban

The City of Solana Beach passed an ordinance banning distribution of single use plastic bags. The ban became effective for all grocery stores and pharmacies on August 9, 2012 and for all other retail stores on November 9, 2012.

4) Santa Rosita and Santa Florencia Slope Drainage Collection

In January 2014, the City approved plans for a slope drain diversion structure that diverts water collected in subdrains along the slopes of Santa Rosita and diverts it in the sewer manhole located at the intersection of Santa Rosita and Santa Florencia. This project was constructed in August 2014 and helps prevent dry weather flows caused from over irrigation from entering the MS4.

5) Stormwater Treatment CDS Unit

In 2002, the City approved plans for improvements along North Cedros Avenue, north of Cliff Street. These improvements included installation of a stormwater treatment CDS unit. This unit was installed in 2004 and has been in operation ever since. The CDS unit screens, separates, and traps debris in runoff from a 42" pipe.

6) Optional Strategies

- Implement structural (engineered) BMPs or retrofitting existing structural BMPs to address flow and/or pollutant issues
- Implement offsite alternative compliance program to place water quality improvement projects in the portion of the City that discharges to San Elijo Lagoon
- Support partnership effort by social service providers to provide sanitation and trash management for persons experiencing homelessness

2.6.3.2 City of Encinitas – Cardiff Channel and San Elijo JPA Outfall

The San Elijo Lagoon is on the southern border of the City of Encinitas. The City has identified two basins that discharge to the lagoon to focus their programmatic strategies. The basins have a variety of land uses with a mixture of single family residential, commercial and multi-family land uses and includes homes, commercial buildings, apartment complexes, nurseries, common areas and recreational park areas that include landscaping and turf. The majority of these basins were developed prior to

implementation of the City's Standard Urban Stormwater Mitigation Plan (SUSMP) and therefore relatively few treatment control BMPs are in place.

The City of Encinitas will concentrate strategy implementation in two focus areas, identified as Cardiff Channel Drainage Area and San Elijo JPA Outfall at - see Figures 30 and 31 below.

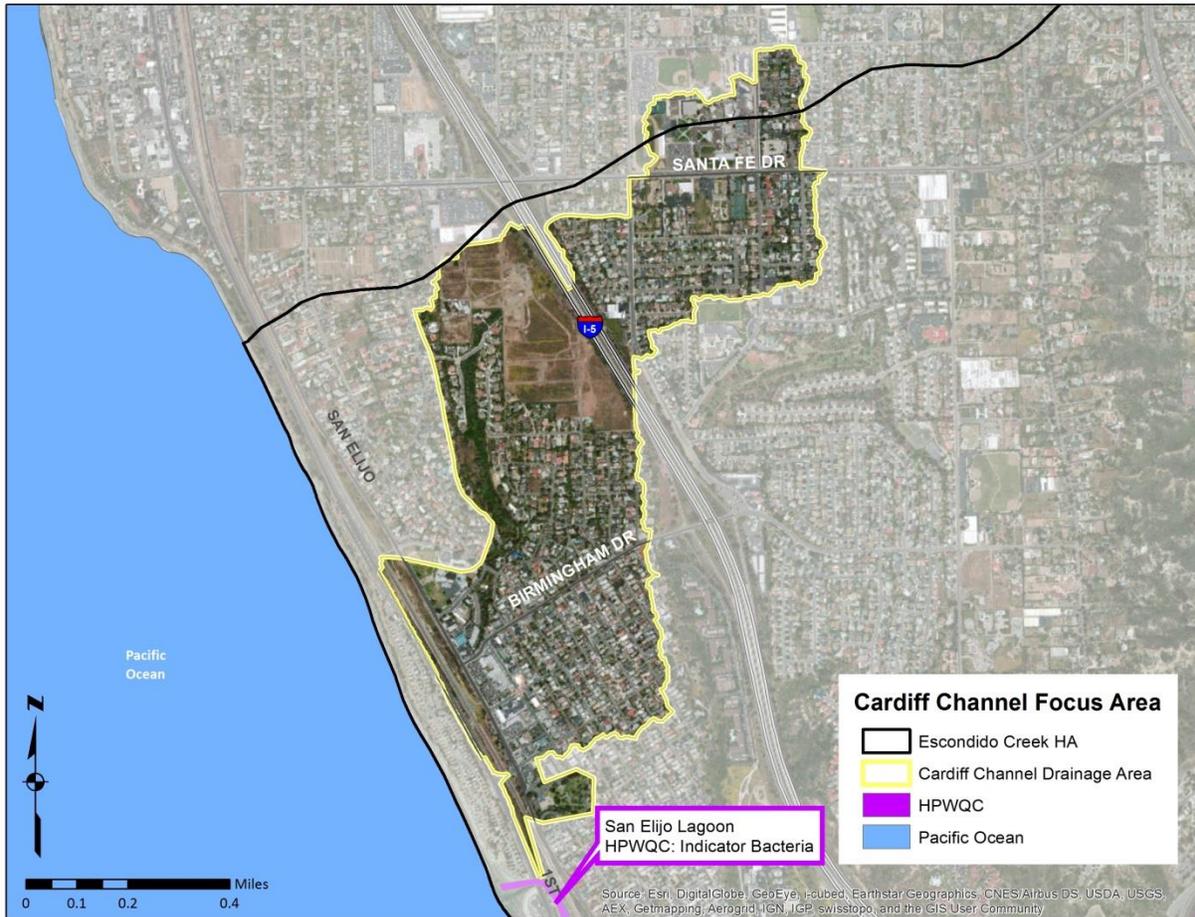


Figure 30: Cardiff Channel Drainage Area, City of Encinitas Focus Area

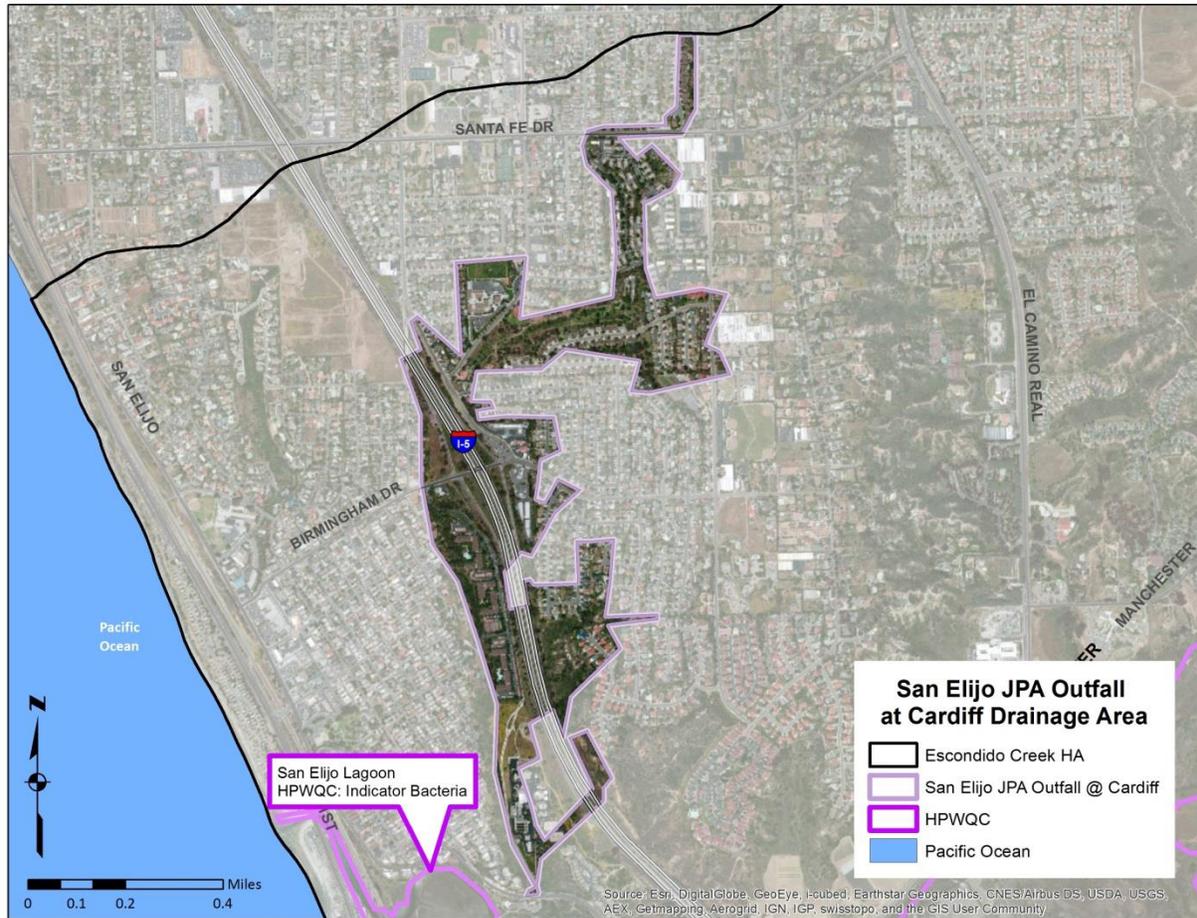


Figure 31: San Elijo JPA Outfall at Cardiff Drainage Area, City of Encinitas Focus Area

Cardiff Channel and San Elijo JPA Outfall Drainage Areas Interim and Final Numeric Goals

Goals associated with these focus areas are summarized in the goals tables below. These goals have been established as a part of this initial WQIP development process. As the City of Encinitas progresses through the first several years of implementation and learns through data collection and analysis, it is expected that these goals and schedules will likely change. As goals and schedules are adapted, they will be presented in future WQIP annual reports or updates to the WQIP document.

Table 25: Cardiff Channel and San Elijo JPA Outfall Drainage Areas, Interim and Final Numeric Goals

Interim Goal (2013-2018) 2018	Interim Goal (2018-2023) 2023	Interim Goal (2023-2028) 2028	Final Goal (2028-2033) 2033
<ul style="list-style-type: none"> 100% of dry weather flow to San Elijo JPA outfall at Cardiff diverted to the sanitary sewer system 10% reduction in anthropogenic dry weather flows within the Cardiff Channel drainage area¹ 	<ul style="list-style-type: none"> San Elijo Lagoon Restoration Completed² OR 50% reduction in anthropogenic dry weather flows within the Cardiff Channel drainage area¹ 	<ul style="list-style-type: none"> San Elijo Lagoon Restoration Completed² OR 65% reduction in anthropogenic dry weather flows within the Cardiff Channel drainage area¹ 	<ul style="list-style-type: none"> San Elijo Lagoon Restoration Completed² OR 80% reduction in anthropogenic dry weather flows within the Cardiff Channel drainage area¹

¹ Flow reduction goals are currently based on best professional judgment as current flow data is not available. The goals may be adapted as monitoring data/information is gathered, analyzed and baselines are established.

² The San Elijo Lagoon Conservancy is leading the lagoon restoration effort. The City of Encinitas anticipates providing public support for the restoration work and making some infrastructure improvements close to the lagoon that are necessary to complement the restoration work.

The means for achieving these goals are identified in the strategies discussion below. Mechanisms for measuring progress towards and ultimately achieving these goals will be discussed in the Final Carlsbad WQIP to be completed in June 2015.

San Elijo JPA Outfall and Cardiff Channel Drainage Area Strategies

The City of Encinitas will implement their program core strategies within the focus area. In addition to the core jurisdictional strategies, the following summarizes supplemental or modified core strategies planned for implementation in the focus area to address the sources of pollutants and discharges.

The selected strategies are expected to have multi-pollutant benefits and intended to address non-stormwater flows and reducing the source loading of bacteria. Reducing non-stormwater flows: (1) reduces the loading of pollutant constituent discharged through MS4 system; (2) reduces the amount of indicator bacteria regrowth and contributions that occurs with accumulated biofilm in MS4 systems that requires water; and (3) reduces the wet-weather contribution of indicator bacteria from scoured biofilm under higher velocity flows from storm discharges.

To accomplish the multi-benefit objectives in the two drainage areas, the City of Encinitas will supplement its core jurisdictional program by implementing the following strategies in this focus area:

1) San Elijo Lagoon Restoration

The planned restoration project will directly improve beneficial uses in the impacted receiving waters. The City identifies this as one of the most effective strategies to meet identified goals. The City will support the multi-agency efforts to restore San Elijo Lagoon in coming years. Part of the participation will come through supporting public infrastructure improvements.

2) Plastic Bag Ban

The City of Encinitas passed an ordinance banning distribution of single use plastic bags. The ban applies to large retailers, grocery stores, drug stores, convenience stores, and mini-markets in spring 2015 and to farmers markets and all other retailers in fall 2015.

3) San Elijo JPA Dry Weather Diversion

In FY 2012-2013, a dry weather diversion was installed at the San Elijo JPA outfall in Cardiff. The diversion redirects dry weather flows to the sanitary sewer system for treatment prior to discharging to an ocean outfall. The City continues to operate and maintain this diversion.

4) Dry Weather Flow Abatement Program

Upon completion of the Dry Weather Flow Source Investigation Study, the city will focus on eliminating identified anthropogenic sources of non-stormwater dry weather flows.

5) Optional Strategies

Sewer Infrastructure Improvement Project

The Olivenhain Trunk Sewer line runs adjacent to the lagoon and is planned to be rehabilitated upon approval of funding. Rehabilitation would address the sewer line which is reaching the end of its service life and reduce the risk of sewer overflows potentially discharging into the San Elijo Lagoon.

2.6.3.3 County of San Diego – Escondido Creek HA Focus Areas

Three of the County of San Diego's major storm drain outfalls in the Escondido Creek HA have persistent flows. The unincorporated area that makes up the three drainage areas have a range of land use types (residential, residential with some agriculture, commercial businesses, schools, roads, etc.) which includes activities with likely potential for pollutant source loading. The focus areas are shown below in Figures 32, 33 and 34 below.

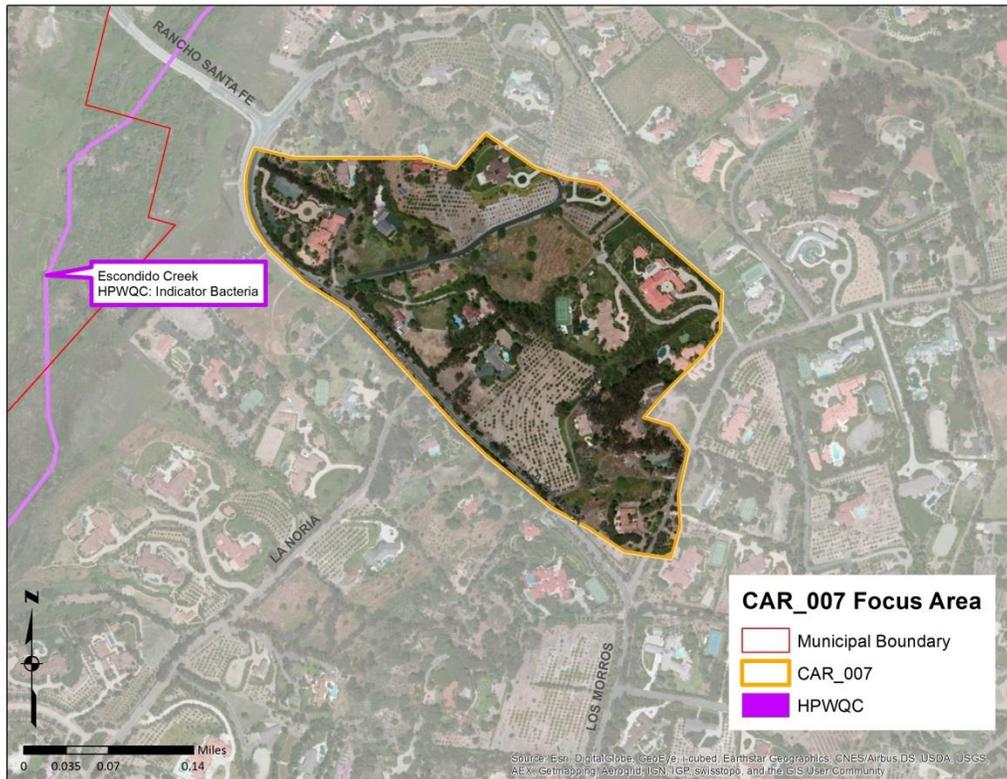


Figure 32: County of San Diego CAR 007 Focus Areas

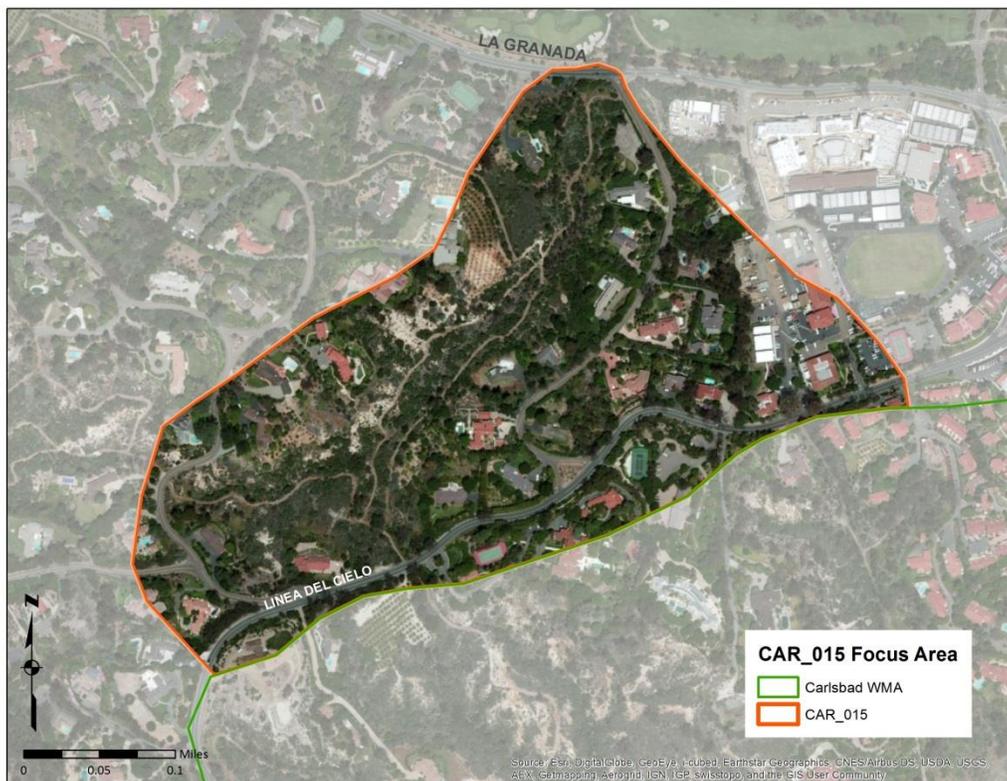


Figure 33: County of San Diego CAR 015 Focus Areas

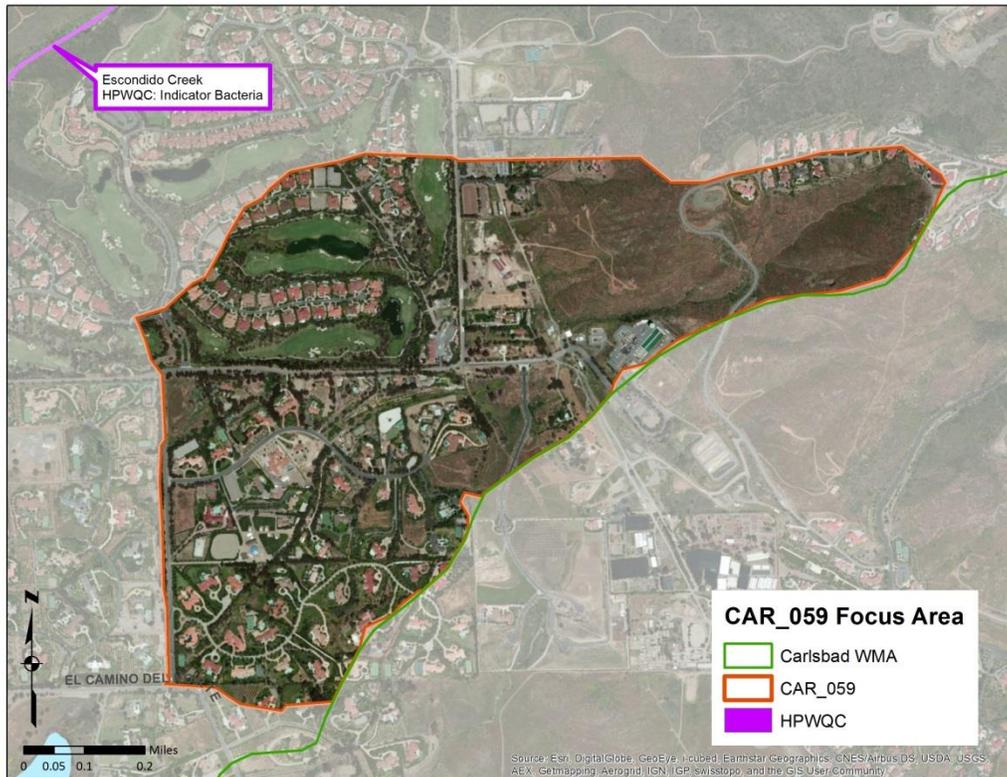


Figure 34: County of San Diego CAR 059 Focus Areas

County of San Diego CAR 007, CAR 015 and CAR 059 Interim and Final Numeric Goals

Goals associated with these focus areas are in conjunction with the targeted outcomes identified in the County’s San Marcos HA focus areas. These goals have been established as a part of this initial WQIP development process. As the County of San Diego progresses through the first several years of implementation and learns through data collection and analysis, it is expected that these goals and schedules will likely change. As goals and schedules are adapted, they will be presented in future WQIP annual reports or updates to the WQIP document.

The dry weather goals were established to reduce dry weather flow in storm drains, in order to reduce pollutant loading to water bodies during dry weather. This will be accomplished through the implementation of JRMP strategies to reduce dry weather runoff, as described in the County of San Diego JRMP.

For the grouping of seven identified persistently flowing major MS4 outfalls in the County’s jurisdiction within the entire Carlsbad WMA, the County has set targeted outcomes (in San Marcos HA) and goals of eliminating anthropogenic flows from one major storm drain outfall that discharges to receiving waters, during each Permit term, until all anthropogenic flows have been effectively eliminated. Goals are expressed in Table 26 below.

Table 26: County of San Diego Escondido Creek HA Focus Areas, Interim and Final Goals

Interim Goal (2013-2018) 2018 ¹	Interim Goals (2018-2043) 2023 ¹ and each subsequent five year period	Final Goal (2043-2048) 2048 ¹
Effectively eliminate anthropogenic dry weather flows ^{1,2} from one persistently flowing outfall ³	Effectively eliminate anthropogenic dry weather flows ^{1,2} from one additional persistently flowing outfall ³	Effectively eliminate anthropogenic dry weather flows ^{1,2} from one additional persistently flowing outfall ³ , each subsequent permit term, until all flows have been effectively eliminated

¹ Goals are based on current information that 7 of the 14 County major outfalls within the Carlsbad WMA have persistent flow. The goals may be adapted as monitoring data is collected and analyzed.

² Here and throughout this table, the term “dry weather flows” excludes groundwater, other exempt or permitted non-stormwater flows, and sanitary sewer overflows.

³ The County of San Diego is concerned that a long-term funding source is not identified for constructing and maintaining structural BMPs, if structural BMPs are needed to meet compliance. The implementation of strategies to achieve goals will depend upon approval of funding in future annual budgets.

County of San Diego CAR 007, CAR 015 and CAR 059 Drainage Basin Strategies

The County of San Diego Watershed Protection Program (WPP) will shift to a more active field program to better locate and abate dry weather flow. WPP Stormwater Staff will increase the amount of time spent in unincorporated communities, identifying nuisance anthropogenic flows and addressing them through appropriate education and enforcement strategies. County of San Diego staff will continue to be trained to identify and report illicit discharges and illicit connections during required annual stormwater training. This training has been updated to reflect recent Permit changes.

In addition to the increase in County staff field surveillance, WPP will also implement a focused program to reduce flows at targeted MS4 outfalls that have demonstrated persistent dry weather flow conditions. Using collected dry weather monitoring data collected, the County of San Diego has identified priority outfalls in the Carlsbad Watershed that will be monitored regularly for dry weather flow. If dry weather flows are detected, staff will initiate a field investigation to seek out and abate the source of flow.

The County of San Diego will implement their core jurisdictional program strategies within the focus area. In addition to the core jurisdictional strategies, the following summarizes supplemental or modified core strategies planned for implementation in the focus area to address the sources of pollutants and discharges.

The selected strategies are expected to have multi-pollutant benefits and intended to address non-stormwater flows and reducing the source loading of bacteria. Addressing non-stormwater flows: (1) reduces the loading of pollutant constituent discharged through MS4 system; (2) reduces the amount of indicator bacteria regrowth and contributions that occurs with accumulated biofilm in MS4 systems that requires water; and (3) reduces the wet-weather contribution of indicator bacteria from scoured biofilm under higher velocity flows from storm discharges.

To accomplish the multi-benefit objectives, the County of San Diego will supplement its core jurisdictional program by implementing the following strategies in this focus area:

- 1) Active Field Program to Identify and Address Dry Weather Flows – The focused area was selected based on strategic assessments, including review of 303(d) listings, monitoring data, and persistent flows. Field staff will conduct surveillance and may employ various tools to reduce pollutant loads and non-stormwater flows, including outreach efforts including over-irrigation focus, pet waste, HOA, and landscaper outreach. New outreach materials will be developed for use in focused inspections.
- 2) Updated Focused Training for County Field Staff - Field Staff training to be updated with information on Highest Priority Water Quality Conditions identified in WQIP and the pollutant sources and pollutant generating activities that may be associated with the HPWQCs.
- 3) BMP Manual Training - External – The BMP Manual for new and redevelopment will be updated and training/outreach will be provided to the development industry.
- 4) Promote Rain Barrel Incentive Programs – Promoting partners programs for rainwater harvesting rebates. Partner agencies including the Metropolitan Water District of Southern California (MWD), local water districts, and the San Diego County Water Authority. Example: MWD - www.socalwatersmart.com
- 5) Collaborate with Partner Agencies to Promote Incentive Programs for BMP Retrofits – Promoting incentives for water conservation and landscape retrofits through partner agencies (same as above) such as turf replacement, sprinkler head nozzle replacements, smart irrigation controllers, etc. Incentive programs may be developed for this program if funding is available.
- 6) Promote Live Turf Replacement Incentive Program – Promote turf replacement programs for replacement with California Friendly plants.
- 7) Promote Water Smart Incentive for Outdoor Water Efficiency as part of the public-private partnership – Development of Sustainable Landscape Program is underway with partners including: San Diego County Water Authority, City of San Diego, Surfrider Foundation, the Association of Compost Producers, and the County of San Diego. Guidelines are being developed and will promote water conservation, building healthy soils, and sustainable practices.
- 8) Develop, Improve, Distribute Outreach Materials for Existing Development - Develop outreach materials to raise awareness of stormwater and urban runoff concerns and encourage behaviors that will improve water quality downstream.
- 9) Educational Workshops (e.g., IPM, manure management) – Continue to sponsor workshops for specific target audiences and pollutants of concern, including manure management and composting workshops for horse owners, Integrated pest management and gardening workshops for residents interested in gardening and more sustainable landscape practices, and rain water harvesting classes to encourage capturing rain from roofs and subsequent use on the landscape.
- 10) Education & Outreach Effectiveness Survey – We have completed our County baseline survey of residents (registered voters) in the unincorporated area, to establish a baseline for knowledge and awareness of residents. Additionally, pre and post surveys will be conducted during

educational workshops to ensure that the programs are effectively reaching the attendees, showing an improvement in knowledge, awareness, and likely-hood of changing behaviors to be less polluting.

11) Optional Strategies

- Consider feasibility of developing an alternative compliance program, and if developed consider constructing structural controls to reduce priority water pollutants.
- Investigate feasibility of developing a Green Streets Program
- Consider improvements to tracking watershed based inventories via consolidated database
- Develop an Equestrian BMP Handbook
- Investigate the feasibility of an inspections tracking program via mobile platform - miles, violations, etc.
- Investigate the feasibility of improvements to inspections data tracking through mobile phone
- Investigate the feasibility of developing and implementing an incentive program for BMP Retrofits in areas of existing development
- Develop Sustainable Landscapes Outreach Program based on available grant funding
- Investigate feasibility of stream, channel, and/or habitat rehabilitation projects and identify project partners
- Consider development of incentive programs for water conservation (turf replacement, smart irrigation controllers, irrigation modifications, sustainable landscapes, rain barrels), in collaboration with water agencies and others, to reduce priority pollutants
- Consider development of incentive programs, in collaboration with the Department of Environmental Health, for pumping septic systems in high risk areas adjacent to waterways (within 600 ft.) or stormwater system; subject to grant funding availability
- Consider partnerships with Master Gardeners to provide education opportunities on water use and practices for gardening
- Consider collaboration with community groups to provide “boots on the ground” local information to focus implementation efforts on reducing bacteria and other pollutants, close to the source
- Consider collaboration with COSD internal departments to leverage mutually beneficial projects to promote retrofits to include installation of controls to address priority pollutants, or land acquisition efforts to preserve open space, if feasible
- Consider collaboration with watershed partners to encourage consistent messaging to specific targeted audiences (commercial, residents, and others) to conserve water and mitigate dry weather flows
- Consider collaboration with watershed partners on Round 4 of Proposition 84 IRWM grant opportunities to fund targeted educational programs, building of structural controls (brick and mortar projects), or incentive programs to reduce runoff from the stormwater conveyance system
- Consider collaboration with watershed partners and Regional Water Quality Control Board on effective measures to reduce potential impact of pollutant loads to waterways from unauthorized encampments
- Consider collaboration with wastewater agencies to identify where sewer and stormwater infrastructure are in close proximity and confirm the absence of flow at nearby stormwater conveyance outfalls during dry weather, conduct additional investigations to identify and mitigate flow if present

- Consider collaboration with watershed partners to remove invasive non-native plants (Arundo) upstream areas of rivers or tributaries to increase flood and fire protection and reduce the number of unauthorized encampments on the river bottom
- In collaboration with the Department of Environmental Health, consider developing program for on-site wastewater treatment (septic) systems. May include mapping and risk assessment, inspection, or maintenance practices.
- Consider the implementation of focused pet waste projects to reduce bacteria pollution
- Consider investigating diverting persistent dry weather flows from storm drains to sanitary sewer, where feasible
- Consider the design of structural controls for persistent unpermitted dry weather flows where outreach has been unsuccessful and groundwater or other non-MS4 sources has been ruled out
- Consider developing a strategy to evaluate opportunities to naturalize concrete stormwater conveyances, and identify potential funding sources (such as grants) for design and implementation
- Consider collaboration with the Department of Agriculture, Weights and Measures (AWM) to evaluate and reprioritize the AWM's stormwater program to determine inspection priorities.

2.6.3.4 ESC 113, ESC 128, and ESC 134

The Escondido Creek HA extends through a significant portion of the City of Escondido near the upper portion of the HA. The City has identified three focus areas in the HA to focus their programmatic strategies. The basins have a mixture of single family residential, commercial, industrial and multi-family land uses and includes homes, commercial buildings, mobile home parks, nurseries, and common areas that include landscaping and turf.

The rationale for selecting these three focus areas is based on several key factors distinguishing them from other drainage basins. All three focus areas have:

- 1) Persistently flowing major MS4 outfalls directly into Escondido Creek
- 2) Jurisdictional basis in the City of Escondido, with minimal surface water influence from adjacent jurisdictions
- 3) Sizeable tributary areas
- 4) Recorded historical exceedances in indicator bacteria, the Highest Priority Water Quality Condition
- 5) Residential Areas which will be addressed by the City's residential JRMP component

The City of Escondido will implement special strategies in three focus areas, identified as ESC 113, ESC 128, and ESC 134 – shown in Figures 35, 36 and 37 below.

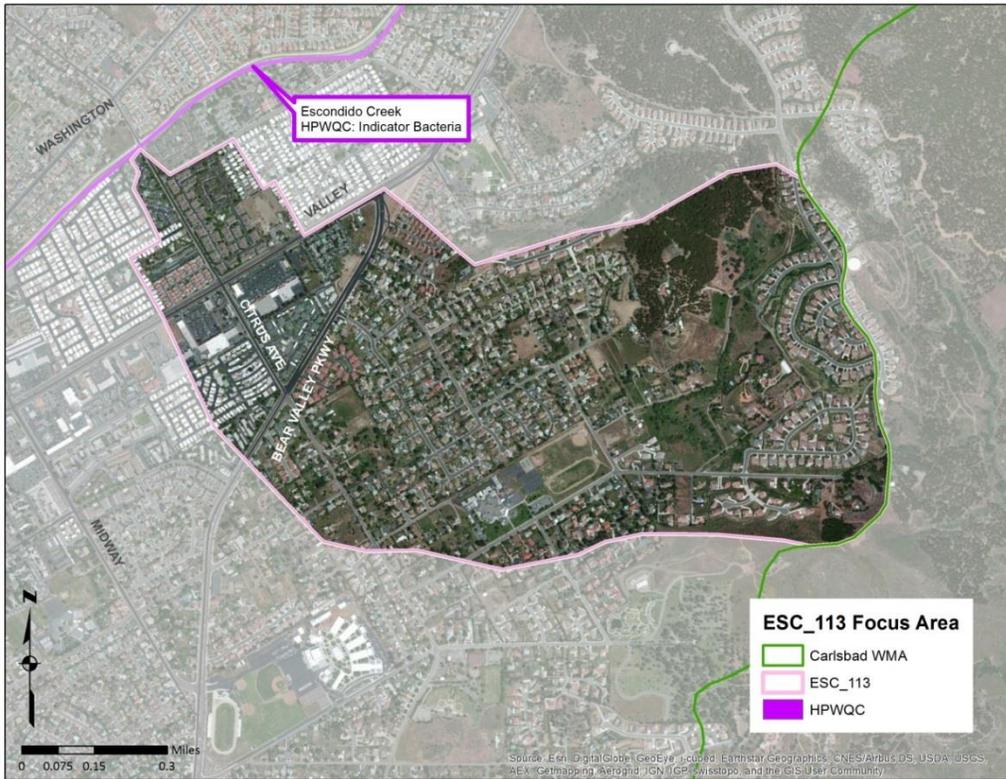


Figure 35: Escondido ESC 113 Focus Area

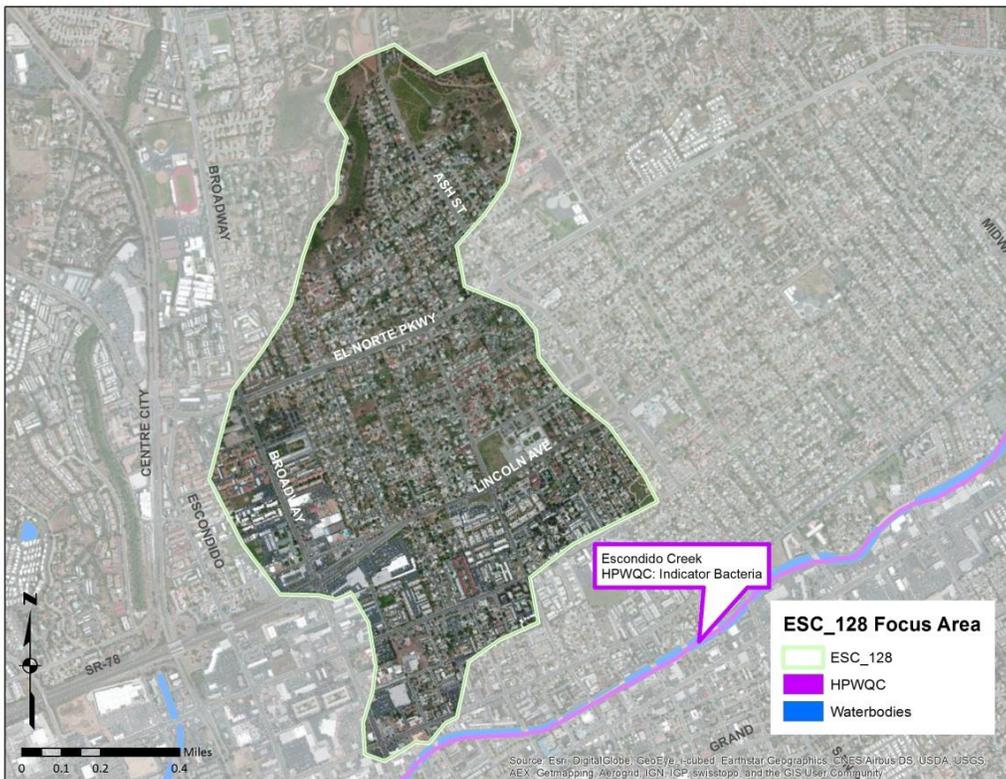


Figure 36: Escondido ESC 128 Focus Area

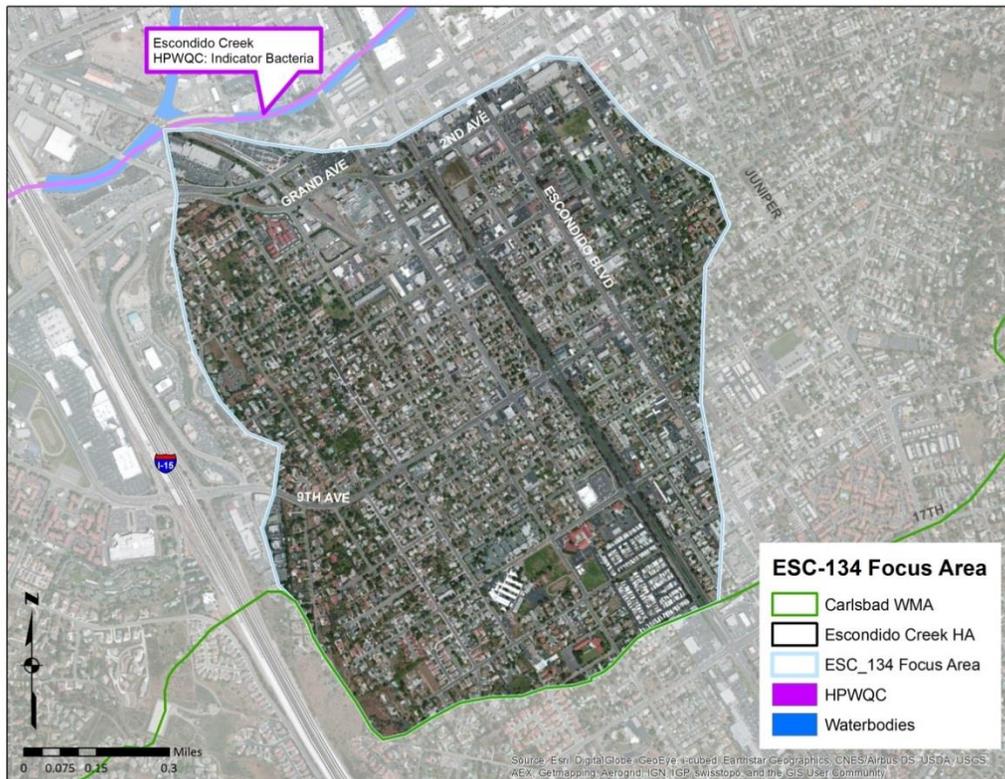


Figure 37: Escondido ESC 134 Focus Area

ESC 113, ESC 128, ESC 134 Focus Area Goals

Goals associated with this focus area are summarized in the goals table below. These goals have been established as a part of this initial WQIP development process. As the Responsible Agencies progress through the first several years of implementation and learn through data collection and analysis, it is expected that these goals and schedules will change. As goals and schedules are adapted, they will be presented in future WQIP annual reports or updates to the WQIP document.

Table 27: ESC 113, ESC 128, ESC 143 Focus Areas, Interim and Final Numeric Goals

Interim Goal (2013-2018) 2018 ¹	Interim Goal (2018-2023) 2023 ¹	Interim Goal (2023-2028) 2028 ¹	Interim Goal (2028-2033) 2033 ¹	Final Goal (2033-2038) 2038 ¹
10% reduction in anthropogenic dry-weather surface water runoff at selected outfalls	20% reduction in anthropogenic dry-weather surface water runoff at selected outfalls	40% reduction in anthropogenic dry-weather surface water runoff at selected outfalls	60% reduction in anthropogenic dry-weather surface water runoff at selected outfalls	80% reduction in anthropogenic dry-weather surface water runoff at selected outfalls

¹ Flow reduction goals are currently based on best professional judgment as current flow data is not available. The goals may be adapted as monitoring data/information is gathered, analyzed and baselines are established.

The means for achieving these goals are identified in the strategies discussion below. Mechanisms for measuring progress towards and ultimately achieving these goals will be discussed in the Final Carlsbad WQIP to be completed in June 2015.

ESC 113, ESC 128, ESC 134 Focus Area Strategies

The City of Escondido will implement their program core strategies throughout the City and within the three focus areas. The following summarizes supplemental or modified strategies planned for implementation in the focus areas to address the sources of pollutants, discharges, and dry weather anthropogenic flows.

The selected strategies are expected to have multi-pollutant benefits and intended to address non-stormwater flows and reducing the source loading of bacteria. Reducing non-stormwater flows: (1) reduces the loading of pollutant constituent discharged through MS4 system; (2) reduces the amount of indicator bacteria regrowth and contributions that occurs with accumulated biofilm in MS4 systems that requires water; and (3) reduces the wet-weather contribution of indicator bacteria from scoured biofilm under higher velocity flows from storm discharges.

To accomplish the multi-benefit objectives in the three focus areas, the City of Escondido will supplement its core jurisdictional program by implementing the following strategies in this focus area:

1) Property Based/Patrol Inspections

The objective of this program is to reduce discharges to the MS4 and provide inspection of existing development in a more cost efficient and effective manner. Inspections will address properties which have not previously been inspected by Environmental Programs staff, including residential properties, office parks, retail centers, and more. Features of this strategy include:

- Developing patrol and inspection protocols
- Developing and conducting staff training
- Conducting property based/patrol inspections of 100% of commercial, municipal and residential properties in focus areas at least once per year
- Recording observed violations and performing follow-up inspections as appropriate, through outreach/education or enforcement as determined to be appropriate by City staff.

2) Storm Drain Videos

On an as-needed basis, the City will use downhole video technology to assess where dry weather flows enter the storm drain system. The objective of the use of video is to identify groundwater intrusion and to facilitate a better understanding of the City's MS4 network through collaboration with the sewer and water utilities field staff.

3) Irrigation Runoff Reduction

The City's water supply/conservation and storm water programs are housed in the same department and will continue to work together to perform outreach to businesses and residents on irrigation reduction programs. The City hosts landscaping workshops and regularly promotes water conservation to residents as described in the JRMP. The City has a goal to increase the number of residents in Escondido who take advantage of rebates, incentives, and water audit programs by 10% by the next permit cycle. It is anticipated that interactions during the property-based patrol inspections will increase participation in such programs in the three focus areas.

4) Enhanced FOG Inspection Program

The City's Fats, Oil, and Grease inspection program addresses businesses with grease traps or separators, including restaurants, automotive repair facilities, and others. As operator of a Publicly Owned Treatment Works (POTW), the City implements an enhanced inspection schedule city-wide, inspecting said businesses twice each year as opposed to the required once/year inspection

schedule for FOG and stormwater compliance. This enhanced inspection program mitigates the potential causes for sewer overflows, and also address stormwater BMPs.

5) Promote Incentive Programs – The City will promote programs such as rain barrel implementation; live turf replacement; and water smart incentives.

6) Optional Strategies

- Spruce Street Channel-Phase I: The major channel in Focus Area ESC 134 has been identified as a high priority for rehabilitation and engineering improvements. The City has secured a County of San Diego Vector Control grant for planning improvements to the channel and expects resource agency permit applications will be submitted within the municipal permit cycle. This project will be completed based on funding availability.
- Upon City Council approval, implement an offsite alternative compliance program to place water quality improvement projects throughout the City of Escondido, including Focus Areas.

2.6.3.5 City of San Marcos – Escondido Creek HA SM-EC Focus Area

The Escondido Creek HA extends into the western portion of the City of San Marcos. The City of San Marcos identified SM-EC focus area to concentrate strategy implementation. The SM-EC focus area is predominantly single family residential with small pockets of commercial and multi-family land uses and includes homes, commercial buildings, common areas that include landscaping and turf – see Figure 38 below.

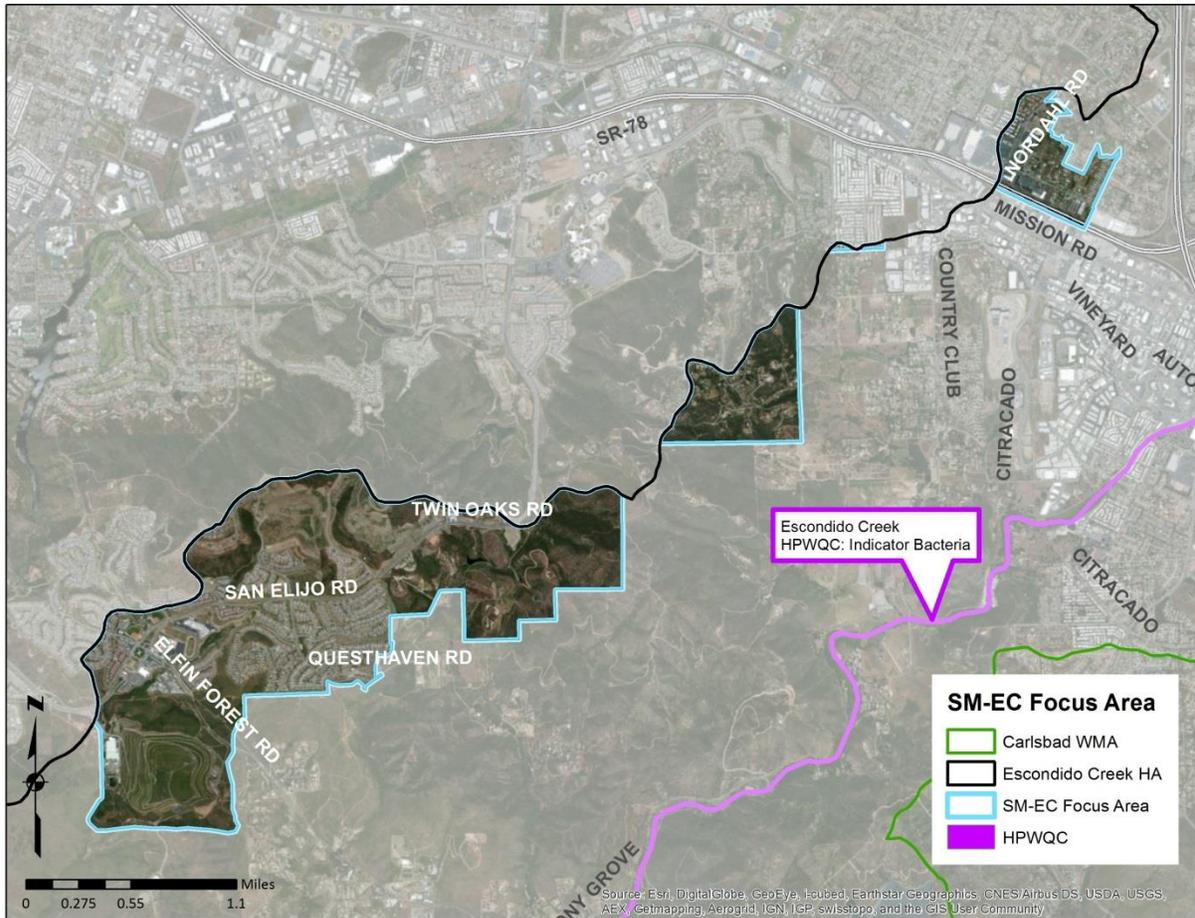


Figure 38: San Marcos SM-EC Focus Area

SM-EC Focus Area Interim and Final Numeric Goals

Goals associated with this focus area are summarized in the goal table below. These goals have been established as a part of this initial WQIP development process. As the Responsible Agencies progress through the first several years of implementation and learn through data collection and analysis, it is expected that these goals and schedules will likely change. As goals and schedules are adapted, they will be presented in future WQIP annual reports or updates to the WQIP document.

Table 28: City of San Marcos, SM-EC Focus Area, Interim and Final Numeric Goals

Interim Goal (2013-2018) 2018 ¹	Interim Goal (2018-2023) 2023 ¹	Interim Goal (2023-2028) 2028 ¹	Interim Goal (2028-2033) 2033 ¹	Final Goal (2033-2038) 2038 ¹
10% reduction in anthropogenic dry-weather surface water runoff at selected outfalls	20% reduction in anthropogenic dry-weather surface water runoff at selected outfalls	40% reduction in anthropogenic dry-weather surface water runoff at selected outfalls	60% reduction in anthropogenic dry-weather surface water runoff at selected outfalls	80% reduction in anthropogenic dry-weather surface water runoff at selected outfalls

¹ Flow reduction goals are currently based on best professional judgment as current flow data is not available. The goals may be adapted as monitoring data/information is gathered, analyzed and baselines are established.

The means for achieving these goals are identified in the strategies discussion below. Mechanisms for measuring progress towards and ultimately achieving these goals will be discussed in the Final Carlsbad WQIP to be completed in June 2015.

SM-EC Focus Area Strategies

The City of San Marcos will implement their program core strategies within the focus area. In addition to the core jurisdictional strategies, the following summarizes supplemental or modified core strategies planned for implementation in the focus area to address the sources of pollutants and discharges.

The selected strategies are expected to have multi-pollutant benefits and intended to address non-stormwater flows and reducing the source loading of bacteria. Reducing non-stormwater flows: (1) reduces the loading of pollutant constituent discharged through MS4 system; (2) reduces the amount of indicator bacteria regrowth and contributions that occurs with accumulated biofilm in MS4 systems that requires water; and (3) reduces the wet-weather contribution of indicator bacteria from scoured biofilm under higher velocity flows from storm discharges.

To accomplish the multi-benefit objectives in the SM-AH focus area, the City of San Marcos will supplement its core jurisdictional program by implementing the following strategies:

1) Irrigation Runoff Reduction Program

The objective of the Irrigation Runoff Reduction Program (IRRP) is to eliminate or reduce dry weather flow contributions coming from irrigation runoff, regardless of the time of day the discharges occur. Core elements include:

- Developing municipal codes that prohibit irrigation runoff
- Developing educational materials and outreach program specific towards irrigation runoff
- Assessing dry weather flows at outfall(s)
- Identifying key times to perform site observations
- Perform site observations to identify sources of irrigation runoff
- Collaboration with City Public Works Department to address municipal property irrigation systems
- Initiating contact and correspondence with property managers/owners
- Periodically assessing flows
- Optionally developing and implementing an incentive program

2) Property Based/Patrol Inspections

The objective of this program is to reduce discharges to the MS4 and provide inspection of existing development in a more cost efficient and effective manner. Features include:

- Developing patrol and inspection protocols
- Developing and conducting staff training
- Conducting property based/patrol inspections

The City will perform these property based/patrol inspections multiple times per year at various times of the day to capture irrigation runoff and other non-authorized discharges as well as identify BMP issues.

3) City of San Marcos & Vallecitos Water District (VWD) Irrigation Runoff/Water Waster Program

- City and VWD staff collaborate and communicate regularly to share information regarding reports and complaints
- Public water waster reporting is available on both City and VWD websites

- The City developed door hangers for field staff to distribute if water wasting is reported or observed at a property
 - The City developed template response letters identifying both City and VWD requirements
- 4) City of San Marcos & VWD Fats, Oils, and Grease (FOG) Program Collaboration
- Continue coordination between City and VWD programs. The City anticipates a collaborative work effort between the City's inspection program and VWD's FOG program in order to reduce sewer backups and overflows that result from accumulation of FOG in the sewer system
 - VWD established an Ordinance to regulate FOG
 - VWD visited all of the Food Service Establishments (FSEs) within the City to provide an overview of the program and expectations
 - VWD created a guidance manual provided to each FSE that includes BMP information, maintenance requirements, and record keeping documents
 - VWD will inspect all FSEs at least once a year
- 5) Homeowners Association and Property Manger Outreach Program
- The City will implement an education and outreach program that encourages and/or incentivizes Home Owners Associations (HOA)s and business property managers to implement measures to reduce dry weather and/or wet weather flows leaving their properties. Practices could include proper installation and maintenance of irrigation systems, conversion to drought tolerant landscaping, downspout disconnection, etc.
- 6) Enhancements to Education Program
- Bacteria and other priority pollutant specific education and outreach program to be conducted in the SM-AH focus area for residents and commercial facilities related to bacteria and other priority pollutants. The materials will have an emphasis on discharges to the City's MS4 and the receiving waters impacts.
 - Developing and implementing a training/seminar for property managers and others that have direct responsibility for common areas within HOAs and commercial properties. Educational materials and information will be developed and provided to the managers for them to distribute to their residents and tenants.
 - As part of the residential outreach program, the City of San Marcos will work with residents and property owners to educate through various means, which may include school programs, block parties or one-on-one meetings.
- 7) Filter Retrofit Program
- The City will continue to implement the filter upgrade program provided through a grant program.
 - Aging filters located within public facilities in need repair are retrofitted with new proprietary filter systems that contain media filters to treat dissolvable pollutants including nutrients and bacteria.
- 8) Optional Strategies
- Implement structural (engineered) BMPs or retrofitting existing structural BMPs to address flow and/or pollutant issues
 - Implement offsite alternative compliance program to place water quality improvement projects in the SM-EC Basins

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Appendix A

Potential Water Quality Improvement Strategies

The Responsible Agencies have developed a catalog of strategies that may be used to reduce pollutant loading and/or stressors from sources within MS4 jurisdictions. Strategies are activities and Best Management Practices (BMP)s that Responsible Agencies and target audiences implement to address urban runoff pollutants, pollutant generating activities and sources. The basis of the information comes from:

- 1) RWQCB Municipal MS4 Discharge Permits
- 2) Individual Responsible Agency's Jurisdictional Urban Runoff Management Programs (JURMPs) and Annual Reports
- 3) Carlsbad Watershed Urban Runoff Management Program (WURMP) and Annual Reports
- 4) 2005 and 2011 San Diego County Regional Responsible Agencies Long-Term Effectiveness Assessments (LTEAs)

During the public process, additional strategies were suggested as potential strategies for addressing pollutants, PGAs and sources. – see the complete listing of potential strategies for consideration during the WQIP development process below. Some strategies have examples provided below them, identified in italics.

It is noted that the County of San Diego is concerned that specific funding has not been identified for the implementation of structural BMPs.

Potential Strategies for Consideration during WQIP Development Process

Potential Strategies from Responsible Agencies

Bulleted items are *example* strategies and not intended to be comprehensive listings of sub-strategies

1. **MS4 Inspections and Cleanings**
2. **Street Sweeping**
3. **Investigations (IC/ID)**
4. **Enforcement**
5. **True Source Control**
6. **Homelessness/encampment reduction program**
7. **Sanitary Sewer/Septic Source Reduction**
8. **MS4 Staff Training**
9. **Administrative Strategies**
 - Review/update source inventories and priorities (TCBMPs, construction, industrial and commercial, municipal, etc.)
 - Review/update BMP requirements
 - Develop/review/update standard operating procedures (SOPs), Storm Water Pollution Prevention Plans (SWPPPs), Storm Water Management Plans (SWMPs), manuals etc.
 - Review/update ordinances, municipal code, etc.
 - Review/update educational materials
 - Review/update approval process
10. **Activity BMPs**
 - Cover activity/material
 - Clean floor mats, etc. indoors
 - Wash vehicles and equipment in designated areas
 - Properly manage pesticide/fertilizer use
 - Protect storm drains
 - Clean up regularly with dry methods
 - Develop and implement spill prevention plan
 - Pet waste management
 - Trash management
 - Irrigation Runoff Reduction
11. **Inspections**
 - Development Planning
 - Construction
 - Industrial and Commercial
 - Municipal Areas and Activities
 - Residential Areas and Activities
12. **Structural BMPs**
 - Infiltration devices
 - Sediment basins
 - Treatment facilities (ozone, UV)
 - Bioretention
 - Detention ponds
 - Pervious pavement
 - Storm water wetlands

- Filters
13. **Education and Outreach**
 - Mass media
 - Mailers
 - Door hangers
 - Booths at public events
 - Workshops
 - Focus groups
 - Classroom education
 - Field trips
 - Websites
 14. **Incentives**
 - Water conservation related rebates
 - Storm Water Fee Credits
 15. **Regulatory Revisions**
 - 303(d) list changes
 - Beneficial Use modifications
 - Water Quality Objective adjustments
 - Program modifications
 - TMDL amendments
 16. **Retrofitting projects in areas of existing development within the WMA**
 - Land Development Alternative Compliance
 17. **Stream, channel, and/or habitat rehabilitation projects within the WMA**
 - Land Development Alternative Compliance
- ### Potential Strategies from Public Input Process
18. **Preserve remaining open space lands**
 19. **Opening up lagoon mouth (Buena Vista Creek)**
 20. **Reduce impervious surfaces along an existing concrete flood control channel**
 21. **Improve earthen-lined drainage ditches**
 22. **Invasive plant control**
 23. **Habitat restoration of riparian habitat**
 24. **More robust outreach**
 25. **Over-irrigation auditing**
 26. **Limit disturbance of native habitats**
 27. **Support water rate increases**
 28. **Voluntary reduction in fertilizer**
 29. **Increase inspections of nurseries**
 30. **Increase city led inspections**
 31. **Increase inspections and requirements of BMPs**
 32. **Increase inspections of catch basin inlets**
 33. **Routine maintenance of Second Street outfall structure (Cottonwood Creek - San Marcos)**
 34. **Citizen scientists to develop monitoring methodologies**
 35. **Citizen reporting**

- 36. Storm water as a resource
- 37. Acquisition and restoration of streams, their headwaters, riparian corridors, and buffers
- 38. Develop and implement a stream buffer zoning policy
- 39. Develop exotic species management plans
- 40. Proprietary BMPs*
- 41. Large scale BMPs associated with widening of I-5*
- 42. Alternative compliance*
- 43. Reduce impervious surfaces*
- 44. Small and big scale infiltration*
- 45. Stormwater retention*

- 46. Stormwater diversion to sanitary sewer*
- 47. Water rate increases*
- 48. Alignment of all water quality control permits*
- 49. App for reporting*
- 50. Collaborations with water organizations*
- 51. Rain water harvesting*
- 52. Coordinate agriculture programs*
- 53. Unification of agencies/ordinances*
- 54. Groundwater recharge*

*Discussed at November 4th 2013 Public Workshop

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Appendix B

General Descriptions for Select Strategies

Administrative BMPs

Administrative BMPs are essential Core Strategies for implementation. Program administration is fundamental in achieving effective outcome and confirmation is often used to track plan implementation. Administrative BMP activities include:

1. Review/update source inventories and priorities (Storm Water Pollutant Control BMPs, construction, industrial and commercial, municipal, etc.)
2. Establishing/review/update BMP requirements
3. Develop/review/update standard operating procedures (SOPs), Storm Water Pollution Prevention Plans (SWPPPs), Storm Water Management Plans (SWMPs), manuals etc.
4. Review/update General Plans,
5. Review/update ordinances, municipal code, etc.
6. Maintain appropriate contracts
7. Review/update educational materials
8. Review/update approval process
9. Establish and maintain adequate legal authority

These activities are important for establishing the foundation of a storm water program, and are key for obtaining compliance with the requirements of the Jurisdictional Runoff Management Programs.

Administrative BMPs include establishing BMP requirements. In many cases, this means developing Activity BMPs for implementation by target audiences. Activity BMPs include: cover, contain, prevent, good housekeeping and administrative BMPs. Some examples of activity BMPs include:

1. Cover activity/material
2. Clean floor mats, etc. indoors
3. Wash vehicles and equipment in designated areas
4. Properly manage pesticide/fertilizer use
5. Protect storm drains
6. Clean up regularly with dry methods
7. Develop and implement spill prevention plan

Minimum Activity BMPs may vary between Responsible Agencies due to each jurisdiction's requirements, but each jurisdiction strives to require and enforce all minimum BMPs for the appropriate source. Jurisdiction-specific minimum activity BMPs are included in each Jurisdictional Runoff Management Program.

The requirement and enforcement of Activity BMPs is a facilitation activity by the Responsible Agencies that, when implemented by the target audience, can assist in achieving behavior change and in some cases load reductions.

Investigations

Investigations are conducted to identify illegal discharges and illicit connections as a result of public reporting (hotline, website, etc.), inspection findings, staff referrals, and/or monitoring results. Investigations may include visual observations, closed circuit television (CCTV) often used for the MS4, or additional monitoring. Investigations can occur in municipal, land development, construction, industrial, commercial, or residential areas. Investigations may also address a wide range of pollutants and pollutant generating activities based upon the type of illegal discharge, illicit connection, or possibly natural source discovered. The purpose of investigations is to identify and eliminate any illegal discharges or illicit connections to the MS4. Typical illegal discharges identified through investigations include:

1. Motor oil or antifreeze from automobiles
2. Sanitary wastewater
3. Runoff from excess irrigation
4. Household toxic substances
5. Sediment
6. Trash

Investigations are a common tool used to respond to reports of potential violations, and this data gathering activity can be effective in finding and eliminating illegal discharges and illicit connections.

Development and Redevelopment Requirements

Development and redevelopment project proponents submit project applications to the Responsible Agencies to obtain permits to construct their projects. In general, project types include those that have ground disturbing activities and create or replace impervious surfaces. Responsible agencies, through their administrative BMPs, have established requirements of development and redevelopment projects to incorporate Low Impact Development, source control, pollutant control and hydromodification management BMPs into the project design.

In general, Responsible Agencies utilize their land development processes as the mechanism to place conditions on projects to fulfill the water quality related project requirements. Project proponents submit their plans and reports to demonstrate compliance with the Responsible Agencies' requirements. Those plans and reports are reviewed and evaluated for accuracy.

The implementation and enforcement of development and redevelopment requirements is an effective BMP in the sense that it can mitigate for potential water quality impacts from development land-use. Furthermore, as redevelopment continues to occur, previously unmitigated land uses will have controls in place that alleviate historical land uses and their water quality impacts.

Inspections

Inspections are conducted to examine facilities or sites for storm water requirements and BMP implementation and are often utilized as an opportunity to educate facility operators or owners regarding storm water and BMPs. Typically, inspections consist of two primary components: a visual/observational assessment of the conditions and operations at facility or site; and, verbal interviewing of the facility or site representative. The purpose of the inspections is to identify issues or potential issues and initiate a course of action to correct identified issues. Typical issues include:

1. Active discharges
2. Presence of evidence identifying previous discharges
3. Required BMPs not implemented
4. Lack of required documentation or paperwork
5. Required operation and maintenance not conducted

As part of the inspection program inventories for facilities, residential management areas and other activities and areas are maintained and prioritized. In general, an inspection frequency is determined based upon priority, and inspection and enforcement information, along with any applicable follow-up, is retained in a database.

There are a variety of inspection types used to complete inspections including:

1. Conventional inspections that include interviews with onsite personnel
2. Drive-by inspections
3. Property-based inspections
4. Patrol inspections

When inspections are conducted, either by Municipal staff or contracted staff, the inspector typically has a checklist or inspection form that is utilized to assist in determining compliance. Some of the items inspectors will look for during inspections are included below.

Development Planning:

- Verifying effective operation and maintenance of Storm Water Pollutant Control BMPs
- Verifying Storm Water Pollutant Control BMPs compliance with all ordinances, permits, codes, etc.
- Prior to occupancy of each Priority Development Project subject to SUSMP requirements, verifying that the constructed LID, source control, and Storm Water Pollutant Control BMPs have been constructed in compliance with all specifications, plans, permits, ordinances, etc.

Construction Sites:

- Check for coverage under the General Construction Permit (Notice of Intent (NOI) and/or Waste Discharge Identification No.) during initial inspections;
- Assessment of Compliance with Permittee ordinances and permits related to urban runoff, including the implementation and maintenance of designated minimum BMPs;

- Assessment of BMP effectiveness;
- Visual observations for non-storm water discharges, potential illicit connections, and potential discharge of pollutants in storm water runoff;
- Education and outreach on storm water pollution prevention, as needed; and
- Creation of a written or electronic inspection report.

Existing Development Facilities, Areas and Activities

Industrial and Commercial:

- Review of BMP implementation plans, if the site uses or is required to use such a plan;
- Review of facility monitoring data, if the site monitors its runoff;
- Check for coverage under the General Industrial Permit (Notice of Intent (NOI) and/or Waste Discharge Identification No.), if applicable;
- Assessment of compliance with Responsible Agency ordinances and permits related to urban runoff;
- Assessment of BMP implementation, maintenance and effectiveness;
- Visual observations for non-storm water discharges, potential illicit connections, and potential discharge of pollutants in storm water runoff; and
- Education and training on storm water pollution prevention, as conditions warrant.

Municipal Areas and Activities

- Review of BMP implementation plans, if the site uses or is required to use such a plan;
- Assessment of compliance with jurisdiction’s ordinances and permits related to urban runoff;
- Assessment of BMP implementation, maintenance and effectiveness;
- Visual observations for non-storm water discharges, potential illicit connections, and potential discharge of pollutants in storm water runoff.

Residential Areas and Activities

- Assessment of compliance with jurisdiction’s ordinances and permits related to urban runoff;
- Assessment of BMP implementation, maintenance and effectiveness;
- Visual observations for non-storm water discharges, potential illicit connections, and potential discharge of pollutants in storm water runoff.

Based upon inspection findings, each jurisdiction should implement follow-up actions necessary to comply with the Municipal Permit and any applicable ordinances, permits, etc.

Inspections can target land development, construction, industrial, commercial, and municipal audiences in order to gather the necessary data for program evaluations and effectiveness assessments. Additionally, inspections can address single or multiple pollutants such as bacteria, trash, heavy metals, nutrients, oil and grease, organics, sediment, and pesticides, depending upon the facility type being inspected. However, the effectiveness of inspections in reducing runoff pollutants and discharges is highly variable and dependent upon site-specific conditions, including but not limited to: motivation of

facility or site representative/owner; level of difficulty in making required corrections; BMP complexity and others.

MS4 Inspections / Cleaning

Operating and maintaining the MS4 infrastructure which includes storm drain pipes, catch basins, inlets, open channels, etc., encompasses a large variety of activities performed by the Responsible Agencies' municipal or contract staff. Each Responsible Agency implements a schedule of inspection and maintenance activities for the MS4 and MS4 facilities. The maintenance activities that may be conducted include:

- Inventory and prioritization
- Inspection
- Cleaning and proper disposal of any wastes removed
- Record keeping of maintenance and cleaning including amounts removed.

Additionally, each Responsible Agency implements controls and measures to prevent and eliminate infiltration of seepage from municipal sanitary sewers to MS4s through thorough, routine preventive maintenance of the MS4.

Each jurisdiction's MS4 inventory and MS4 inspection and cleaning details are included in their Jurisdictional Runoff Management Program.

The facilitation of the MS4 inspection and cleaning program can provide knowledge and awareness and behavior changes through municipal staff implementing the MS4 inspection and cleaning at the proper frequency and within the proper cleaning guidelines. MS4 cleaning can also achieve source load reductions when the amount of debris removed from the MS4 and MS4 facility cleaning is measured.

Street Sweeping

Street Sweeping is conducted to remove debris, trash, or particles from improved (possessing a curb and gutter) municipal roads, streets, highways, and parking facilities. Street sweeping can be effective in removing trash, debris and other constituents of concern, such as metals, from roadways and parking facilities before entering the storm drain system and has the potential to reach receiving waters. In addition street sweeping helps prevent blockages in storm drains caused from trash and debris that can create flooding issues during periods of heavy rainfall.

Street sweeping implementation will vary by jurisdiction and may vary based on location in the watershed. Street sweeping program information is contained in each Jurisdictional Runoff Management Program. The measurement of the amount of trash, debris, and constituents of concern removed through street sweeping provides information on the source load reduction.

General Education and Outreach

Education and outreach activities are Core Strategies conducted to increase the knowledge and awareness of a target community regarding stormwater, change the behavior of the target community, and/or ultimately reduce pollutants and runoff into the MS4 and receiving waters. In general, an education and outreach strategy is developed and the programs typically address high priority pollutants, pollutant-generating activities, and the following target communities, as applicable and appropriate:

- Municipal Departments and Personnel (described in employee training)
- Construction Site Owners and Developers
- Industrial Owners and Operators
- Commercial Owners and Operators
- Residential Community

Methods utilized for education and outreach vary and may include mass media, mailers, door hangers, booths at public events, workshops, focus groups, classroom education, field trips, hands-on experiences, clean-up events, websites, etc. Education and outreach can be conducted by a single Responsible Agency or several Responsible Agencies may combine funds and efforts to conduct activities or develop materials. Education and outreach activities are included in each Jurisdictional Runoff Management Program.

Education and outreach activities can be facilitation and/or data gathering activities with targeted outcomes focused primarily on knowledge and awareness, and behavior change. Education and outreach effectiveness can be measured and assessed through surveys (i.e. web-based, at events, or on the phone) BMP implementation rates, focus groups, observations, participation in events or workshops, hotline calls, and questionnaires.

Employee Training

Municipal employee storm water training is conducted to increase the knowledge of the target audience in regards to laws, regulations, permits and requirements; BMPs; general urban runoff concepts; and any other relevant topics as deemed appropriate. Trainings may be job specific (i.e. MS4 cleaning procedures) or may be more general but ultimately provides a mechanism to communicate jurisdictional requirements to the appropriate employees. Training methods that may be utilized could be computer based interactive tutorials, classroom style trainings, audiovisual methods (i.e. DVD) or on-the-job training (i.e. training on how to use a street sweeper). Employee training may vary by jurisdiction and training details are included in each Jurisdictional Runoff Management Program.

Municipal employee training can provide important information on whether training conducted is effective at increasing employees general and/or job specific knowledge regarding stormwater. This type of assessment is often measured and assessed utilizing pre-and post-test questionnaires/surveys. In addition, BMP implementation or changes in behavior may be assessed through employee activity. For example, if training for street sweeper operators was conducted to provide routes, sweeping

priorities, and frequency of street sweeping and at the end of the year it was implemented properly, then it can be deduced that the training was successful and the operation and maintenance BMPs were implemented. Additionally, if general storm water training was conducted for municipal staff to provide them the tools to identify potential illegal discharges, and then the program receives an increase in the municipal staff reporting of illegal discharges, then it would indicate that there was a change in behavior based upon the training provided.

Enforcement

Each jurisdiction implements and enforces its ordinances, codes, or other legal authority to prevent illegal discharges and connections to its MS4. Enforcement methods are utilized to affect a return to compliance at either a construction, municipal, industrial, commercial, or residential area. Some enforcement methods utilized include verbal warning, letters, educational materials, citations, notices of violation, stop work orders, or civil penalties. Each jurisdiction also implements all follow-up actions necessary to achieve the return to compliance for a particular site. Enforcement procedures vary by jurisdiction and are included in each Jurisdictional Runoff Management Program.

Enforcement is a common tool used to not only return violators to compliance but also to educate and promote compliance. Enforcement is a facilitation activity where the tabulation of enforcement data can be associated with a load reduction. If a site or residence where a pollutant is leaving, or has the potential to leave, the site has been stopped or mitigated through enforcement efforts there is an implied load reduction. The tabulation of enforcement data may also provide information on behavior change.

Partnership Program(s)

Responsible Agencies may partner with entities to coordinate, share, or back projects and programs that have the potential to support overall water quality objectives. These partnerships may come in various forms including, but not limited to:

- Coordination/information sharing meetings
- Review of projects
- Joint grant applications
- Private or joint funding
- Generating letters of support for projects

It is vital for Responsible Agencies to partner with outside entities in order to achieve overarching water quality improvement objectives. Based on the MS4 discharge permit, Responsible Agencies have a direct responsibility for the discharges generated from their MS4 systems. Outside entities have a significant interest in downstream waterways. Partnerships may offer a synergistic pathway to achieving overall outcomes in both MS4 discharges and in waters.

Program for Retrofitting Areas of Existing Development

As a new program requirement, Responsible Agencies will be developing retrofit programs to be included in their Jurisdictional Runoff Management Programs. The retrofit programs are intended to implement retrofit projects in jurisdictional areas of existing development (presumably currently unmitigated land uses) to address identified sources of pollutants and/or stressors that contribute to the identified Priority Water Quality Conditions and Highest Priority Water Quality Conditions.

Programs will include:

- Identification of areas that are candidates for retrofitting
- Development of a strategy to facilitate implementation of retrofit projects in the candidate areas
- Identify areas where development project proponents may use offsite alternative compliance (if allowed by the Responsible Agency(ies)) to implement retrofits
- Opportunities to collaborate with other Responsible Agencies for regional retrofit projects.

Program for Stream, Channel and/or Existing Habitat Rehabilitation in Areas of Existing Development

As a new program requirement, Responsible Agencies will be developing rehabilitation programs to be included in their Jurisdictional Runoff Management Programs. The rehabilitation programs are intended to implement rehabilitation projects in jurisdictional areas of existing development (presumably currently unmitigated land uses) to address identified sources of pollutants and/or stressors that contribute to the identified Priority Water Quality Conditions and Highest Priority Water Quality Conditions.

Programs will include:

- Identification of streams, channels and/or habitats that are candidates for rehabilitation
- Development of a strategy to facilitate implementation of stream, channel and/or habitat rehabilitation projects in the candidate areas
- Identify areas where development project proponents may use offsite alternative compliance (if allowed by the Responsible Agency(ies)) to implement rehabilitation
- Opportunities to collaborate with other Responsible Agencies for regional rehabilitation projects.

Offsite Alternative Compliance

Responsible Agencies have the opportunity to develop and implement Offsite Alternative Compliance (OAC) programs that are intended to allow development project proponents to trade onsite mitigation for water quality impacts for offsite mitigation. Offsite mitigation may come in many forms but must always be of greater overall water quality benefit to the watershed than what would have been required to be implemented onsite.

OAC projects may include, but are not limited to:

- Stream restoration projects
- Retrofits in existing development
- Receiving waters restoration
- Land purchases/preservation
- Treatment Control BMPs
 - Proprietary
 - Basins
 - Bioretention
 - Filtration

On an individual basis, Responsible Agencies are currently evaluating whether they will be implementing OAC programs. If and when implemented, Responsible Agencies will develop programs that:

- Evaluate Priority Development Projects for applicability for OAC
- Evaluate proposed OAC project benefits for equivalency or greater water quality benefit to the watershed
- Potentially coordinate and through agreement, allow OAC in jurisdictions outside of where the proposed project will be located

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Attachment 1

October 28, 2014 Memorandum to
Water Quality Improvement Consultation Panel

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DATE: October 24, 2014

TO: Carlsbad Watershed Management Area Water Quality Improvement Consultation Panel Members

SUBJECT: Carlsbad Watershed Management Area Water Quality Improvement Plan Interim and Final Numeric Goals, Final Strategies, and Schedules

The San Diego Regional Water Quality Control Board (RWQCB) adopted Order R9-2013-0001, a National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer Systems Permit (MS4 Permit or Permit) on May 8th, 2013¹. Provision B of the Permit requires Responsible Agencies² (RA)s, in each of the region's Watershed Management Areas (WMA)s to develop Water Quality Improvement Plans (WQIP)s. The purpose of the Carlsbad WQIP is to guide Responsible Agencies' jurisdictional runoff management programs towards achieving improved water quality in MS4 discharges³ and receiving waters. The plan will contain an adaptive planning and management process that guides RAs through iterative processes intended to improve progress towards water quality improvements. Through this approach, highest priority water quality conditions within the WMA are identified and strategies implemented through jurisdictional runoff management programs to work towards improvements in water quality.

This memo contains a technical summary of the work Carlsbad WQIP Responsible Agencies have performed related to the identification of 1) interim and final numeric goals and schedules and 2) final strategies and schedules. We ask that the Consultation Panel members review the document and as described in the Permit, provide recommendations on:

- 1) Numeric goals and schedules proposed, and
- 2) Water quality improvement strategies and schedules proposed.

Written comments will be accepted from Consultation Panel members through November 10th, 2014 and should be addressed to Mikhail Ogawa @ mikhail@mogawaeng.com.

¹ See http://www.swrcb.ca.gov/rwqcb9/water_issues/programs/stormwater/

² Carlsbad WMA Responsible Agencies are: Cities of Carlsbad, Encinitas, Escondido, Oceanside, San Marcos, Solana Beach, Vista and the County of San Diego

³ An important note for consideration throughout the development of the Carlsbad WQIP is the context in which the MS4 permit and ensuing WQIP operate within. The permit regulates discharges from the Copermitees' MS4 systems prior to discharge into receiving water bodies. Therefore, unless there is a quantifiable nexus between MS4 discharges and receiving water conditions, conditions may be outside of the Copermitees' purview.

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1 Introduction

1.1 Purpose

In May 2013, the San Diego Regional Water Quality Control Board adopted Order R9-2013-0001, the Municipal Separate Storm Sewer System (MS4) Permit, for the San Diego Region. The Permit established a new paradigm by which the regulated jurisdictions plan and implement storm water programs. The new paradigm requires jurisdictions to identify priority water quality conditions (receiving water conditions) that guide planning and implementation of the jurisdictional programs, focusing efforts on measureable improvements in receiving water conditions. Provision B of the Permit requires Responsible Agencies, in each of the region's Watershed Management Areas (WMA)s to develop Water Quality Improvement Plans (WQIP)s. Through the WQIP approach, highest priority water quality conditions within the WMA are identified and strategies are implemented through the Responsible Agencies' Jurisdictional Runoff Management Programs (JRMP)s to progressively improve water quality.

In June 2014, the Carlsbad Watershed Management Area (WMA) Responsible Agencies (RA)s submitted a summary report fulfilling the requirements of Permit Provision B.2 (June 2014 B.2 Report). The summary report included the following:

- 1) Priority water quality conditions (PWQC)s throughout the WMA
- 2) Highest priority water quality conditions (HPWQC)s, a subset of the PWQC)s
- 3) Sources of pollutants and/or stressors that potentially cause or contribute to the HPWQC)s
- 4) Potential strategies to address the sources in an effort to improve the identified water quality conditions

Provision B.3. of the Permit describes the requirements that further develop the WQIPs. These requirements include development of goals and associated schedules and selection of the strategies that RAs plan to implement in order to make measureable progress to address the HPWQC)s.

Identifying goals and the means to achieve them is fundamental to improving water quality in the Carlsbad WMA. Goals define realistic water quality improvement outcomes and the strategies describe the means to achieve the goals. Current understanding of the effectiveness and efficiency of many strategies is unknown. It is anticipated that through the implementation of strategies under the WQIP paradigm, RAs will better understand the effectiveness and efficiency of implementing strategies. This process of improving the RAs' understanding as well as making adaptations to goals and strategies will be presented in the Monitoring and Assessment Program of the WQIP.

1.2 Goals

Goals provide direction and purpose to program planning and are used to measure progress toward addressing the highest priority water quality conditions. Numeric goals are quantifiable and assist in measuring progress towards the identified goals. WQIPs include two types of goals, interim and final numeric goals.

Interim goals are intended to establish check points along the path towards achieving final numeric goals. Based on the programmatic efforts of the RAs and the water quality conditions prioritized for improvement, expected goals can be selected as benchmarks for program performance. Interim goals for each five-year period from WQIP approval to the anticipated final goal achievement date (including an interim goal for the current permit term) have been developed. The forthcoming Monitoring and Assessment Program will describe the mechanisms for utilizing the interim goals to measure progress and adapt program strategies, goals and schedules.

Final numeric goals selected by the RAs provide an end-point that marks achievement of desired water quality improvements. Once a final goal has been achieved, RAs can reassess their programmatic objectives and adapt their program so as to focus on new HPWQCs and maintain the status of the conditions they have achieved.

In developing initial goal schedules, the RAs considered the following:

- Priority conditions within their jurisdictional portions of the WMA
- Potential sources of pollutants and/or stressors contributing to priority conditions
- Known effectiveness and efficiencies of strategies
- Resources required to implement strategies
- Balancing resources for competing priority areas throughout each RAs jurisdictional boundary – within a hydrologic area or across multiple hydrologic areas or watershed management areas

Responsible Agencies developed goals both collaboratively and individually to best address the sources and stressors within the watershed and individual jurisdictions. An individualized approach provides flexibility in selecting interim goals based on jurisdiction-specific strategies and schedules, and provides the framework for a more accurate assessment of progress towards achieving goals within each jurisdiction.

In the early stages of the WQIP process, the established goals and schedules are expected to be dynamic. As the RAs implement strategies and analyze assessment data, it is expected that the goals and schedules will change through an iterative and adaptive management process. The adaptive management process will be presented in the Final Carlsbad WMA WQIP in June 2015.

1.3 Strategies

Strategies are selected as the means to achieving the identified goals. The term *strategies* in the WQIP includes:

- Planning Efforts
- Structural Best Management Practices
- Programmatic Best Management Practices
- Requiring Best Management Practices of Regulated Entities
- Incentives
- Activities
- Program Core Strategies

Implemented strategies are intended to achieve the following objectives:

- 1) Effectively prohibit non-storm water discharges to the MS4
- 2) Reduce pollutants in storm water discharges from the MS4 to the Maximum Extent Practicable (MEP)
- 3) Protect the beneficial uses of receiving waters from MS4 discharges, and/or
- 4) Achieve the interim and final numeric goals identified by the RAs

As part of the June 2014 B.2 Report, a list of potential strategies (nonstructural and structural) was developed by the RAs based on public input, Jurisdictional Runoff Management Program (JRMP) activities, enhancements to JRMP activities, and additional strategies anticipated to be effective at addressing priority water quality conditions. This list was used as a guide by RAs to identify strategies appropriate for their jurisdictions. From the potential strategies identified in the June 2014 B.2 Report,

the RAs selected strategies to implement through their JRMPs. The combination of strategies has been selected to achieve one or more of the objectives listed above.

RAs considered a combination of criteria during the final strategy selection process. The following is an example listing of some criteria the RAs considered:

- Preference to strategies that target HPWQCs, and those that provide multiple benefits, e.g., benefitting PWQCs and other pollutants
- Geographic focus areas, e.g., land-use, physical characteristics, demographics
- Anticipated effectiveness at addressing sources that may be impacting HPWQCs and PWQCs
- Anticipated social impacts, e.g., strategies that require perceived inconveniences to the general public may not be effective due to lacking participation
- Resource impacts considerations as RAs balance geographic

The RAs evaluated their existing programs, the potential for incorporating enhancements and new administrative programs, and the types of structural BMPs that may be considered, if warranted and appropriate for the jurisdiction. All aspects of their JRMPs were evaluated, which provided the necessary baseline for existing nonstructural solutions and suggested areas where enhanced or restructured activities might be more successful.

It may take the RAs time to fully fund, develop and initiate implementation of the identified strategies. The proposed schedules reflect the anticipated time needed and a staggered approach to strategy implementation in order to accommodate uncertainties. At this stage of the WQIP process, the strategies list may not be comprehensive of all strategies that are currently being implemented by jurisdictions. However, the list does capture most strategies that jurisdictions are currently focusing efforts and resources.

It is important to note that the suite of strategies (i.e., program core strategies and other water quality improvement strategies) that will be implemented are generally not pollutant-specific. In other words, the collective strategies are expected to have positive impacts on many of the priority water quality conditions identified, not only the highest priority water quality conditions.

Similar to the goals, in the early stages of the WQIP process, the selected strategies and schedules are expected to be dynamic. As the RAs implement the strategies and analyze assessment data, it is expected that the strategies and schedules will change through an iterative and adaptive management process. These changes would be presented in future WQIP reports and updates.

1.4 Geographic Characteristics

Although topographic features define watershed areas, characteristics of the watershed areas have direct influence on non-storm water discharges and pollutants in storm water discharges, and ultimately the water quality conditions in receiving waters. The Carlsbad WMA Responsible Agencies considered the following characteristics when selecting and designing strategies to improve water quality:

- Population Demographics
- Infrastructure
- Land Uses
- Potential Pollutant Sources – types and characteristics
- Pollutant Generating Activities
- Soil Conditions
- Receiving Water Types and Features

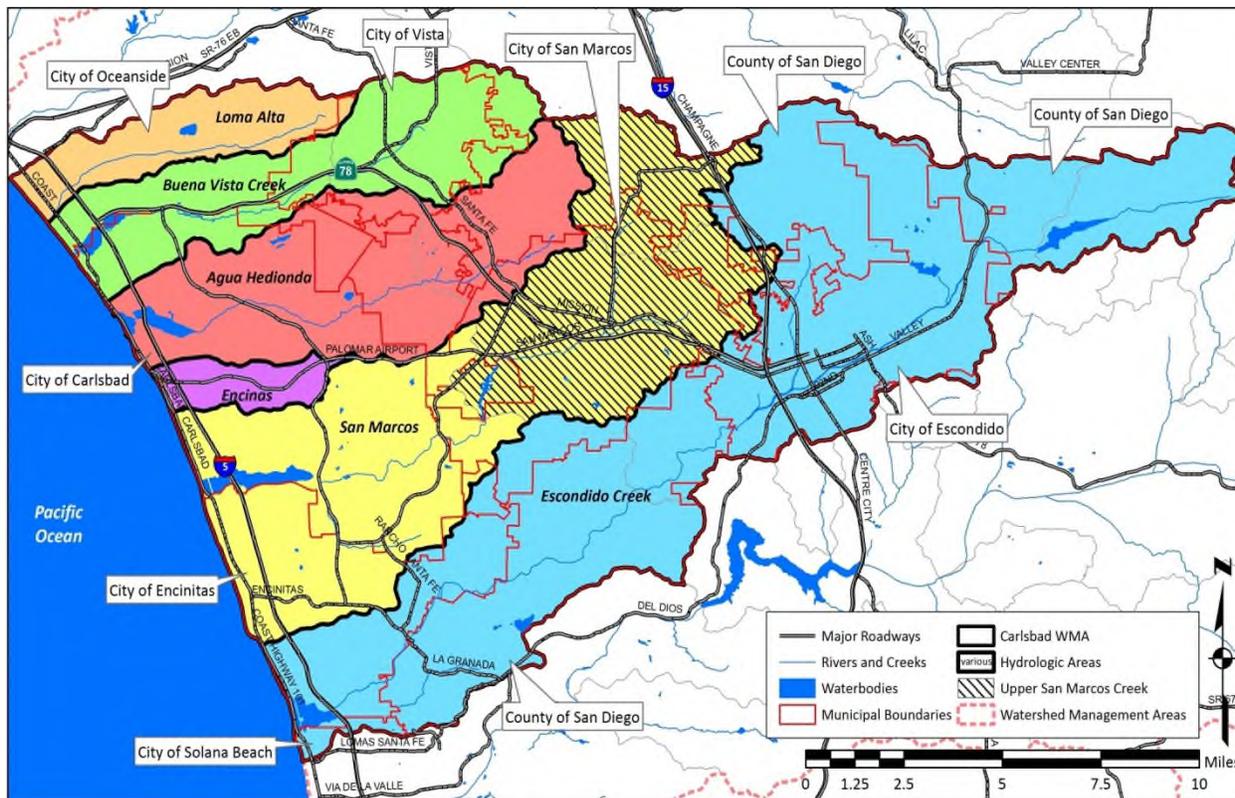


Figure 1: Carlsbad Watershed Management Area

In the Carlsbad WMA there are six distinct hydrologic areas (HA)s each with its own unique features and characteristics, leading RAs to identify different PWQCs and associated strategies – see Figure 1 above. The new permit paradigm allows jurisdictions the flexibility and discretion to address water quality issues based on priority conditions. As jurisdictions determine the effectiveness of the various approaches, programs may change priorities and/or strategies in order to achieve water quality improvements most efficiently.

1.5 Geographic Prioritization

The 2013 Permit states that “Where appropriate, Watershed Management Areas may be separated into subwatersheds to focus water quality prioritization and jurisdictional runoff management program implementation efforts by receiving water” (RWQCB, 2013). This represents a paradigm shift from previous permits where RAs implemented the same activities throughout their jurisdictions. The 2013 Permit allows jurisdictions to prioritize and focus program efforts based on geographic areas leading to more effective and efficient implementation of strategies to address priority conditions.

RAs may consider the following information when using the geographic prioritization approach. This list is not exclusive and includes examples of relevant information used in the prioritization process.

- Balancing resources for competing priority areas throughout each RAs jurisdictional boundary – within a hydrologic area or across multiple hydrologic areas or watershed management areas
- Historical issues with specific sources, manifested in terms of discharges, enforcement or poor BMP implementation may be an indicator of pollutant discharge sources that can be eliminated.
- Persistently flowing outfalls within specific areas may be caused by unauthorized non-storm water discharges.
- Historical monitoring data may show areas of concern where pollutant concentrations may be above action levels and can indicate source contributors that need abatement.

- Vintage areas may have older infrastructure that may have more outdoor impacts than newer development areas where more activities are conducted indoors.
- Areas with existing Treatment Control BMPs may be less of a focus because it is implied that there is adequate treatment for dry weather runoff and smaller wet weather events.
- Housing developments with relatively large amounts of turf or vegetated areas (common areas, yards, vegetated slopes, etc.) may have higher rates of irrigation runoff than other areas.
- Multi-Family Residential areas have a relatively high intensity of use, for example, there are more vehicles, parking areas and more trash. These areas usually have shared trash areas and common landscaped areas. The higher concentration of people can create a higher concentration of trash and pollutants with the potential to enter the MS4.
- Industrial and Commercial Facilities have a variety of businesses and wastes creating different types of possible discharges. Some facilities may have areas outside where chemicals or wastes are stored, creating the potential for pollutants to be washed away into the MS4 during rain events.
- Municipal Properties may include open areas, parks or street medians. These areas may require irrigation, creating the potential for irrigation runoff.
- Ability to effectively measure progress towards established goals, e.g., safe and accessible monitoring locations.

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2 Goals and Strategies by Hydrologic Area

The Carlsbad WMA Responsible Agencies (RA)s have identified highest priority water quality conditions (HPWQC)s and priority water quality conditions (PWQC)s to address through the development and implementation of the Carlsbad WQIP. The conditions are discussed and presented in the June 2014 B.2 Report.

Through the WQIP and adaptive management process, jurisdictions are expected to analyze decision making and resource allocation and adapt goals, strategies and associated schedules where needed to improve upon program effectiveness. Thus, the goals, strategies and schedules identified in this document will be dynamic through the early stages of the WQIP process. The concepts of adaptive management and iterative process will be explained in more detail in the Final WQIP.

The figure below shows the HPWQCs and focus areas the RAs have determined to concentrate their WQIP efforts through Jurisdictional Runoff Management Program (JRMP) implementation.

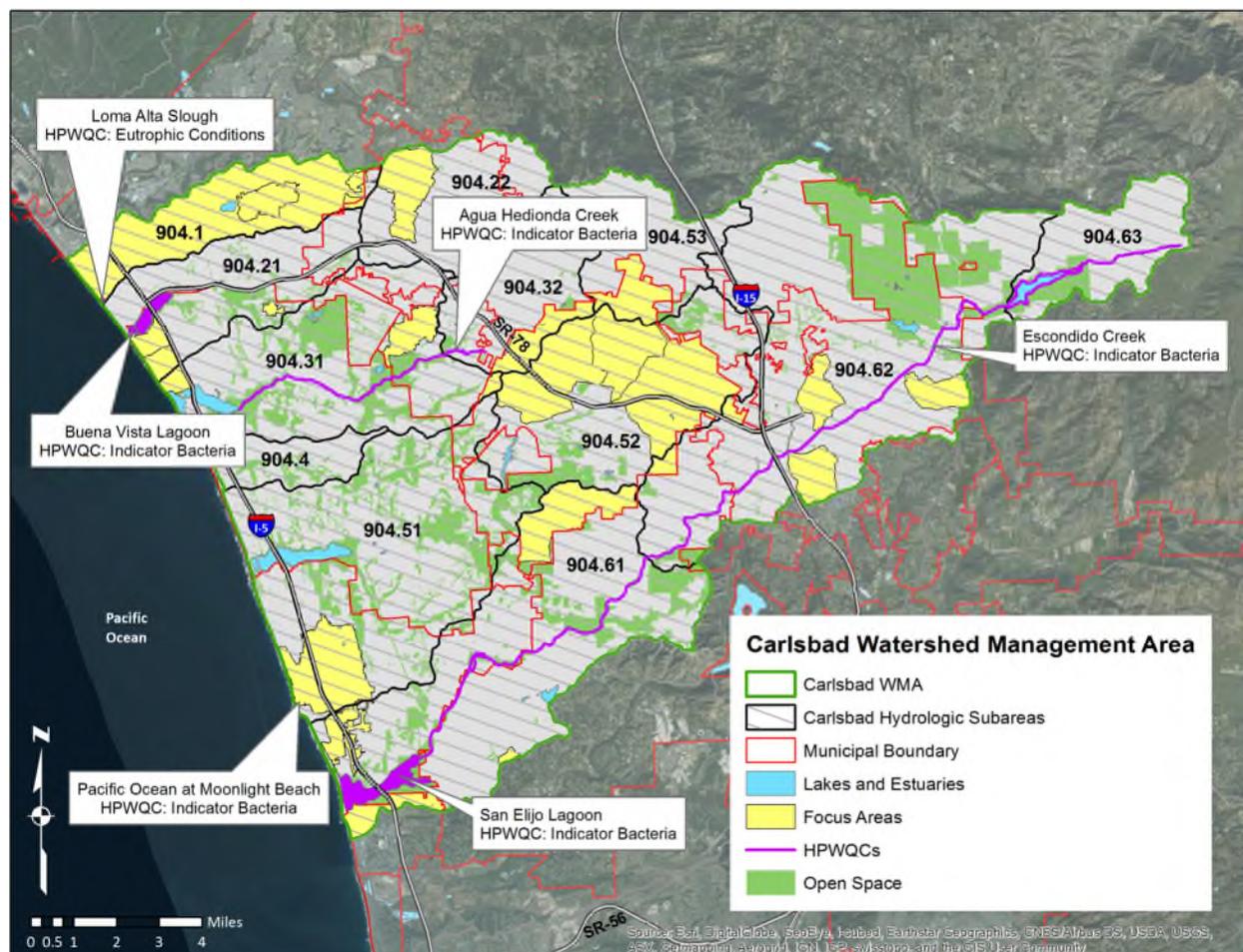


Figure 2: Carlsbad Watershed Management Area – Highest Priority Water Quality Conditions

The remainder of the document includes the interim and final numeric goals, strategies and schedules established by the RAs to address the HPWQCs and PWQCs. The document is separated by hydrologic areas (HA)s and presents the goals and strategies based on the HPWQC.

The following guide is presented to orient the reader to the structure of the remainder of the document.

Each section introduces one of the six HAs. Included in the description is a listing of the HPWQCs and PWQCs for the particular HA. The reader is provided with a map of the HA that shows where program core strategies will be implemented and also focus areas where RAs will implement modified or additional strategies – see Figure 3 below for an example.

HYDROLOGIC AREA OVERVIEW

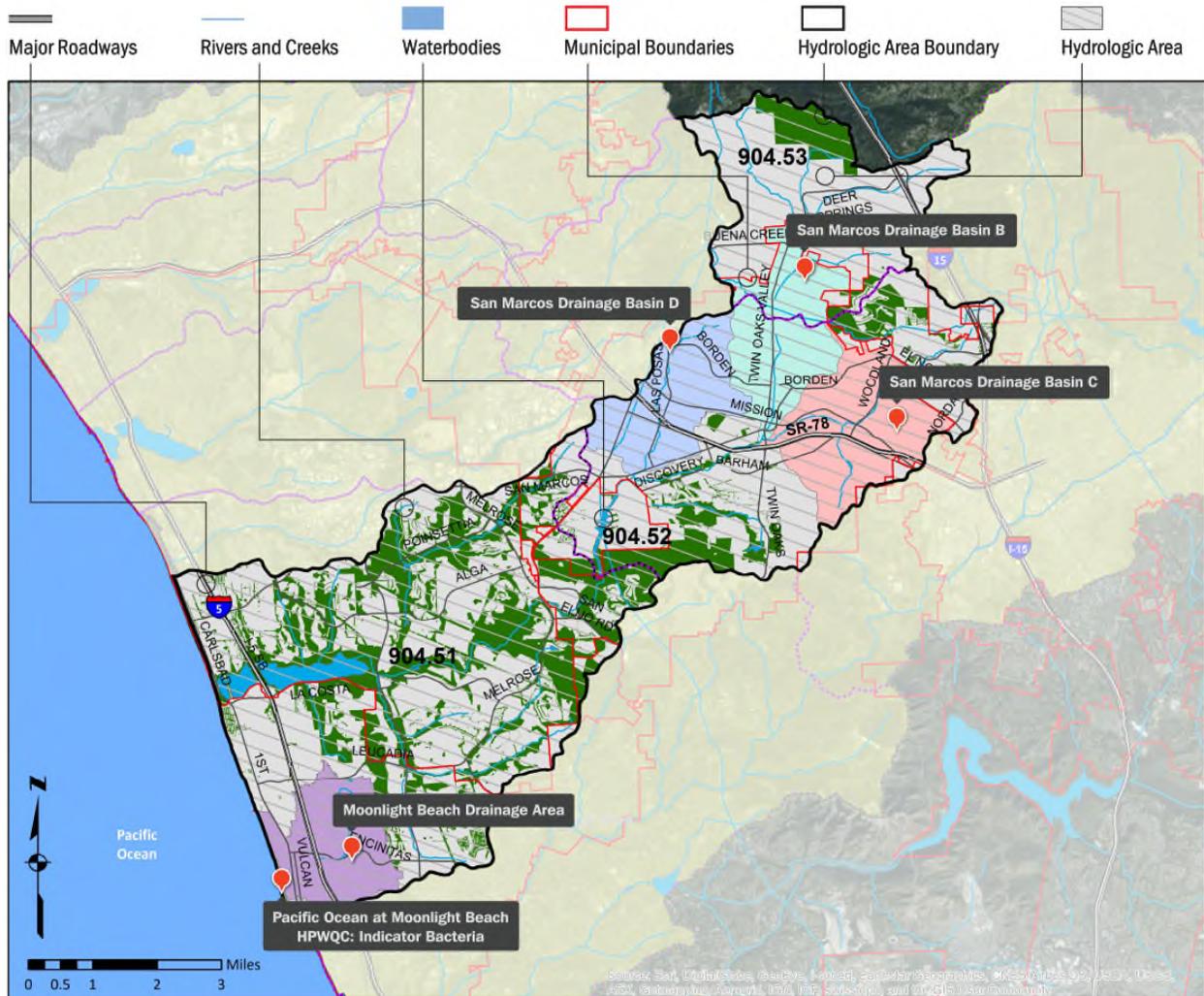


Figure 3: Example Hydrologic Area Map

A table of known potential sources of pollutants and stressors associated with the HPWQCs is provided as reference. Each table identifies the inventoried sites and facilities and their associated pollutant loading potential⁴. As a part of the iterative process, RAs will continue to conduct assessments of the sources and their pollutant loading potential and update these tables as data and information is available.

Following the HA source inventory and pollutant loading table, applicable goals are presented in tabular format. Any interim and final numeric goals that are applicable to the entire HA are presented along

⁴ As determined in the 2005 and 2011 Long-Term Effectiveness Assessments (MOE)

with their associated schedules. See the example goals table below (this table could be applicable at the HA or focus area levels).

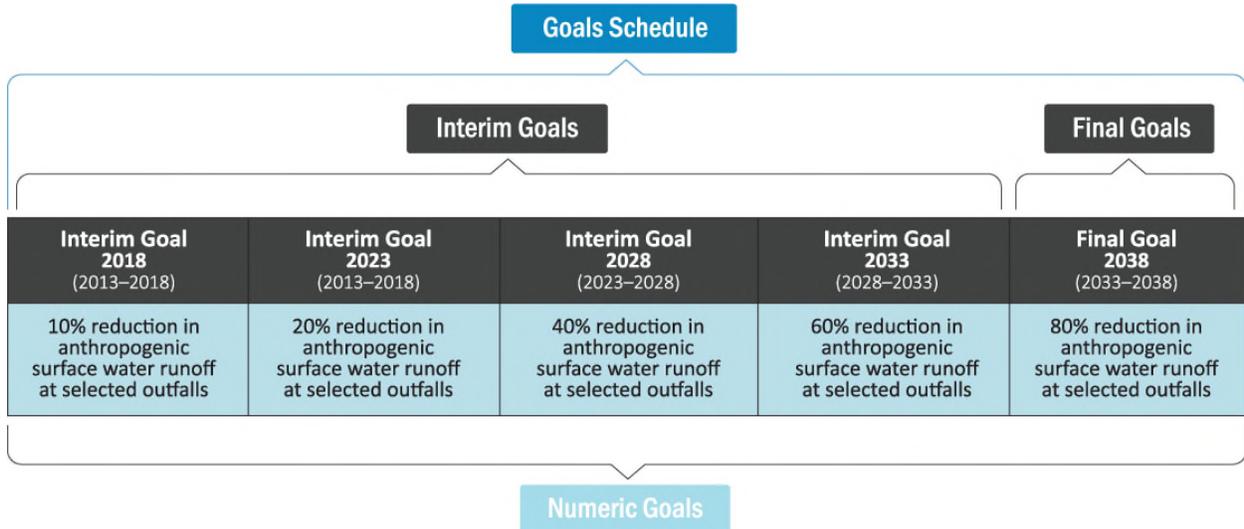


Figure 4: Example Goals Table

For each HA, the document presents strategies to be implemented throughout the HA in tabular format. These are strategies that the RAs will implement either on a hydrologic area-wide basis (within their respective jurisdiction) or within specific focus areas. Target pollutants, target sources and planned implementation schedules are included in the table as well. See Figure 5 below for an example strategy table.

WATER QUALITY IMPROVEMENT STRATEGIES

- 1 **Strategies:** List of strategies to be implemented in Hydrologic Area
- 2 **Jurisdictions:** Jurisdictions implementation strategy and location
- 3 **Target Sources:** Identified sources addressed by strategies
- 4 **Target Pollutants:** Pollutant categories addressed by strategies
- 5 **Implementation Schedule:** When strategy will be implemented
- 6 **Location Details:** More specific description of where strategies will be implemented – could be specific basins
- 7 **Location Details:** More specific description of where strategies will be implemented – could be throughout the entire hydrologic area (HA)
- 8 **Optional Strategies:** Strategies that may be implemented, but currently do not have specific timeframes for implementation

1 Water Quality Improvement Plan Strategies	2 Jurisdiction / Area					3 Target Sources							4 Target Pollutants					5 Implementation Schedule									
	Carlsbad	Encinitas	Escondido	San Marcos	County of San Diego	Municipal Fixed Facilities	Industrial and Commercial Facilities / Owners	Construction Sites and Personnel	Residential	General Public	Land Development & Redevelopment	Roads, Streets, Highways and Parking Facilities	MS4	Bacteria/Pathogens	Trash	Heavy Metals	Nutrients	Oil and Grease	Sediment	Plasticides	Previous Fiscal Year(s)	PY 15-16	PY 16-17	PY 17-18	PY 18-19	PY 19-20	Future Fiscal Year(s)
1 Property Based Inspections	-	Moonlight Beach		SM-HA Basin	-	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
2 Patrolling Inspections	-	Moonlight Beach		SM-HA Basin	-	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
3 Irrigation Runoff Reduction	-	Moonlight Beach		SM-HA Basin	-	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
4 Administrative BMPs ¹	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
5 Outfall Monitoring	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
6 Investigations	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
7 Enforcement	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
8 Development and Redevelopment Requirements	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
9 Construction Site Inspections	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
10 Municipal Facilities and Activities Inspections	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
11 Residential Area Inspections	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
12 Commercial/ Industrial Inspections	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
13 MS4 Inspections/ Cleaning	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
14 Street Sweeping	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
15 Education and Outreach	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
16 Employee Training	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
17 Inspections	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
18 Investigations	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
19 Enforcement	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Optional Strategies																											
20 Incentives	TBD	TBD	TBD	TBD	TBD	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Based on appropriate criteria for initiating.
21 Regulatory Revisions	TBD	TBD	TBD	TBD	TBD	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Based on appropriate criteria for initiating.
22 True Source Control	TBD	TBD	TBD	TBD	TBD	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Based on appropriate criteria for initiating.
22 Structural BMPs	TBD	TBD	TBD	TBD	TBD	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Based on appropriate criteria for initiating.
23 Offsite Alternative Compliance	TBD	TBD	TBD	TBD	TBD	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Based on appropriate criteria for initiating.

Figure 5: Example Hydrologic Area Strategy Table

The document then moves into specific focus areas where each focus area within a hydrologic area is presented. Individual focus area maps are presented showing the boundaries of the identified criteria area where focus area strategies will be implemented.

FOCUS AREA SPECIFIC INFORMATION

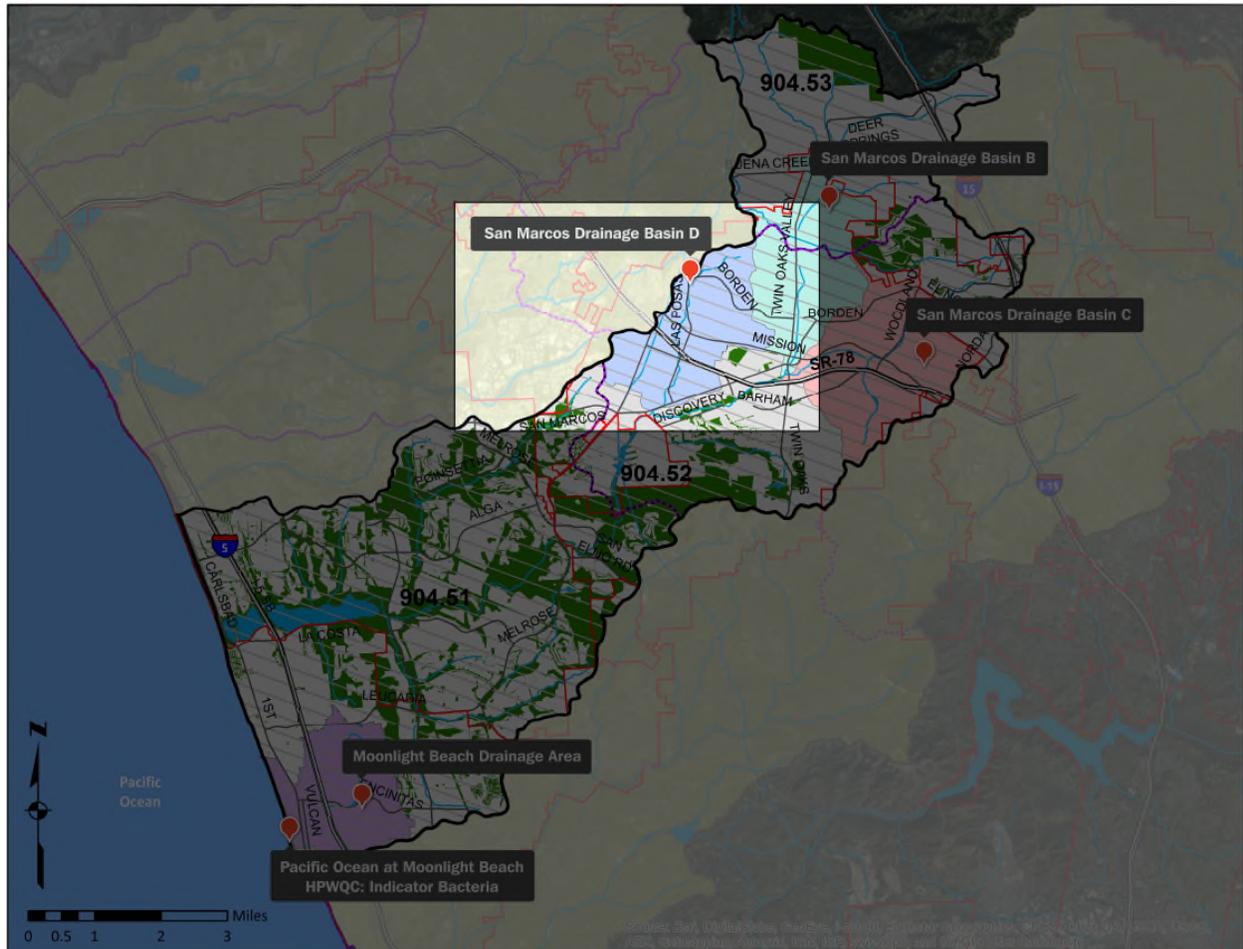


Figure 6: Example Focus Area

Numeric goals associated with the focus areas are then presented in a similar tabular format as shown in Figure 4 above. Lastly, brief descriptions of the focus area strategies are provided. More detailed strategy descriptions will be provided in the December 2014 submittal to the RWQCB for 30-day public comment period.

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2.1 Loma Alta HA (904.1)

The Loma Alta Hydrologic Area (HA) is the northernmost HA of the Carlsbad Watershed Management Area (WMA). It is approximately 6,300 acres in area, comprising 5% of the WMA. The HA extends inland about 7.3 miles and the highest elevation within the drainage area is 460 feet above mean sea level. The primary receiving waters in the HA are Loma Alta Creek which drains into the Loma Alta Slough and the Pacific Ocean. The HA is located almost entirely inside the City of Oceanside with less than 4% in the City of Vista and a portion of two parcels in the County of San Diego.

During the initial phase of the Water Quality Improvement Plan process, assessment of existing data determined that the priority water quality conditions (PWQCs) within the Loma Alta HA include: eutrophic conditions at the Loma Alta Slough; indicator bacteria in the Loma Alta Slough; Indicator bacteria at the Pacific Ocean shoreline at Loma Alta Creek Mouth; and Toxicity in Loma Alta Creek. Of these PWQCs, the *highest priority water quality condition* (HPWQC) in the Loma Alta HA was determined to be *eutrophic conditions* (dry weather conditions) at the Loma Alta Slough (June 2014 B.2 Report).

Figure 7 below, shows the Loma Alta HA, HPWQC and focus areas. The focus areas and their associated strategies and goals are described below.

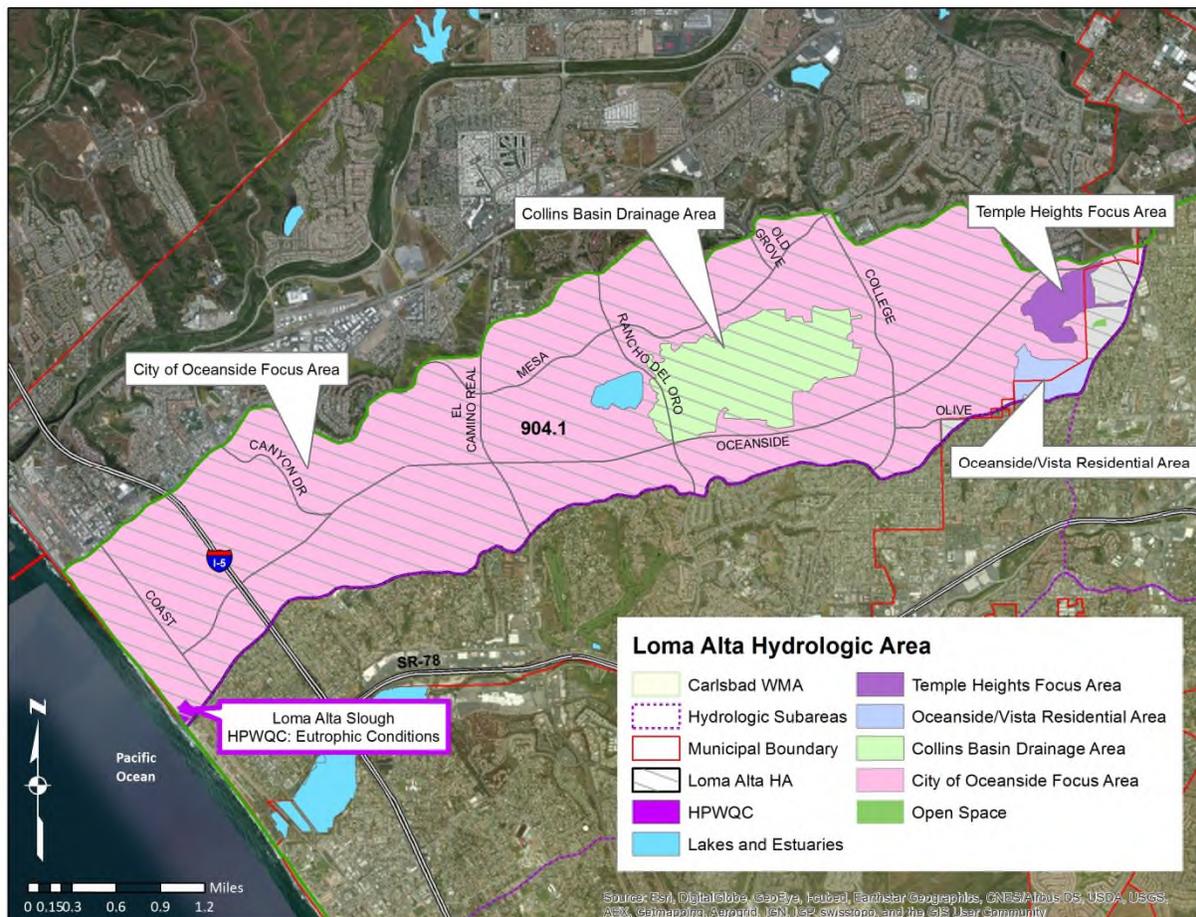


Figure 7: Loma Alta Hydrologic Area Highest Priority Water Quality Conditions and Focus Areas

2.1.1 Loma Alta HA Sources

The following table presents a list of inventoried sources their association with HPWQCs and PWQCs and pollutant loading potential (2011 LTEA). It is important to note that the PWQC, toxicity, is not presented in Table 1 below because in this HA it is not attributable to specific sources and may be caused by a variety of sources.

Table 1: Pollutant Generating Sources – 904.1 Loma Alta Hydrologic Area

Inventory Sites/Facilities ¹	Quantities ²	Pollutant Source Loading Potential ³								
		Metals	Oil & Grease	Sediment	Pesticides	Nutrients	Bacteria/Pathogens	Dissolved Minerals	Organics	
Animal Facilities	10	N	UL	L	UK	L	L	N	L	
Auto Repair, Fueling, or Cleaning	92	L	L	UL	UL	UK	UL	L	L	
Auto Parking Lots or Storage	6	L	L	L	UK	UK	UK	UL	L	
Auto Body Repair or Painting	28	L	L	UL	UL	UL	UL	L	L	
Nurseries/Greenhouses	4	L	UL	L	L	L	L	UL	UL	
Building Materials Retail	2	L	L	L	UL	UL	UL	UL	L	
Chemical and Allied Products	4	UK	UK	UK	UK	UK	UL	N	L	
Concrete Manufacturing	6	L	L	L	UL	UL	UL	UL	L	
Eating or Drinking Establishments	123	N	L	UL	UK	UK	L	UL	L	
Equipment Repair or Fueling	14	L	L	UL	UL	UK	UL	UL	L	
Fabricated Metal	17	L	L	UK	UK	UK	UL	UL	L	
Food Manufacturing	8	UL	UL	UL	UL	UL	UL	UL	UL	
General Contractors	54	UL	UL	L	UL	UL	UL	UL	UL	
General Industrial	62	L	L	UK	UK	UK	UK	UK	L	
General Retail	125	UL	UL	L	UL	UL	UL	UL	UL	
Institutional	6	L	UK	UK	UK	UK	UL	UK	UK	
Motor Freight	12	L	L	UK	UK	UK	UK	UL	L	
Offices	70	UK	UK	UK	UK	UK	UK	UK	UK	
Parks and Rec (incl. Golf, Cemetery)	1	UK	UK	UK	UK	L	UK	UL	UK	
Pest Control Services	6	N	UK	N	L	N	UK	N	UK	
Pool and Fountain Cleaning	2	N	N	N	N	UK	N	N	UK	
Primary Metal	8	L	UK	UK	UK	UK	UL	N	UK	
Stone/Glass Manufacturing	8	L	L	L	UL	UL	UL	UL	L	
Storage/Warehousing	14	L	L	L	UL	UL	UL	UL	L	
Municipal	34	N	N	L	N	N	UK	UL	N	
Construction	Varies ⁴	UL	UL	L	UL	UL	UL	L	UL	
Residential	2,025 acres	L	L	L	L	L	L	L	L	

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQC are identified in the table (yellow highlight signifies HPWQC). The HPWQC is associated with the sources that are likely to generate those pollutants (blue highlight). The PWQP is highlighted in green and the associated sources that are likely to generate those pollutants are depicted with an "L".

1: Other sources are not reported in this table including: Land Development and Non-inventoried Businesses

2: Quantities based on the Responsible Agencies FY 2012 JURMP Annual Reports

3: Pollutant Source Loading Potential taken from LTEA 2011; N = None, UK = Unknown, UL = Unlikely, L = Likely

4: The quantity of construction sites is dynamic due to projects starting and completing at any given time.

2.1.2 Loma HA Area Goals and Strategies

2.1.2.1 Loma Alta HA Goals

Based on the objectives for improving water quality conditions in the Loma Alta HA, the Responsible Agencies have established the following goals for the Hydrologic Area:

Table 2: Loma Alta HA Interim and Final Numeric Goals

Interim Goal (2013-2018) 2018 ¹	Interim Goal (2018-2023) 2023 ¹	Final Goal (2023-2028) 2028
10% reduction in anthropogenic persistent ² dry weather flows from three major MS4 outfalls discharging to Loma Alta Creek and/or tributary	<ol style="list-style-type: none"> 1) 50% reduction in anthropogenic persistent dry weather flows at the three outfalls addressed through 2018 2) 25% reduction in additional anthropogenic persistent flows identified during dry weather monitoring program implemented in 2015 and in subsequent years 	<p>Loma Alta Slough Conditions Between May – October:</p> <ol style="list-style-type: none"> 1) Macroalgal Biomass less than 90g dry wt./m³ 2) Macroalgal cover less than 50%

¹ Flow reduction goals are currently based on best professional judgment as current flow data is not available. The goals may be adapted as monitoring data/information is gathered, analyzed and baselines are established.

² Persistent flows are defined in the Permit (Order No. R9-2013-0001) as: the presence of flowing, pooled, or ponded water more than 72 hours after a measurable rainfall event of 0.1 inch or greater during three consecutive monitoring and/or inspection events. All other flowing, pooled, or ponded water is considered transient.

The means for achieving these goals are identified in the strategies discussion below. Mechanisms for measuring progress towards and ultimately achieving these goals will be discussed in the Final Carlsbad WQIP to be completed in June 2015.

2.1.2.2 Loma Alta HA Strategies

The following table identifies the Water Quality Improvement Strategies to be implemented throughout the entire Loma Alta HA and in specific focus areas of the HA. In addition to the planned strategies, optional strategies are identified that may be implemented based on circumstances related to the progress RAs make towards numeric goals and funding. The strategies associated with the focus areas are described further in the sub-sections below.

As the RAs implement strategies and analyze assessment data, it is expected that these strategies and schedules may change through an iterative and adaptive management process. The adaptive management process will be presented in the Final Carlsbad WMA WQIP in June 2015.

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Table 3: Loma Alta HA Strategies

Water Quality Improvement Plan Strategies		Jurisdiction/Area			Target Source								Target Pollutants						Implementation Schedule							
		City of Oceanside	City of Vista	County of San Diego	Municipal Fixed Facilities	Industrial and Commercial Facilities / Owners	Construction Sites and Personnel	Residential	General Public	Land Development & Redevelopment	Roads, Streets, Highways and Parking Facilities	MS4	Bacteria/Pathogens	Trash	Heavy Metals	Nutrients	Oil and Grease	Sediment	Pesticides	Previous Fiscal Year(s)	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20	Future Fiscal Year(s)
1	Community Based Social Marketing – Private Landscapers	Oceanside Jurisdiction within Loma Alta HA	-	-				•	•				•	•	•	•	•	•			•	•	•	•	•	•
2	Runoff and Nutrients Source Reduction	Collins Basin, Temple Heights, Oceanside and Vista Residential Focus Area	Oceanside and Vista Residential Focus Area	-		•		•													•	•	•	•	•	•
3	County of San Diego Enhanced Program Strategies Listing – See Appendix A	-	-	HA Wide	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
4	Administrative BMPs ¹	HA Wide	HA Wide	HA Wide	•	•	•	•	•	•	•										•	•	•	•	•	•
5	Outfall Monitoring	HA Wide	HA Wide	HA Wide	•	•	•	•		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
6	Investigations	HA Wide	HA Wide	HA Wide	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
7	Development and Redevelopment Requirements	HA Wide	HA Wide	HA Wide						•											•	•	•	•	•	•
8	Construction Site Inspections	HA Wide	HA Wide	HA Wide			•							•							•	•	•	•	•	•
9	Municipal Facilities and Activities Inspections	HA Wide	HA Wide	HA Wide	•									•	•	•	•	•	•	•	•	•	•	•	•	•
10	Residential Area Inspections	HA Wide	HA Wide	HA Wide				•						•	•		•	•	•	•	•	•	•	•	•	•
11	Commercial/ Industrial Inspections	HA Wide	HA Wide	HA Wide		•								•	•	•	•	•	•	•	•	•	•	•	•	•
12	MS4 Inspections/ Cleaning	HA Wide	HA Wide	HA Wide								•	•	•							•	•	•	•	•	•
13	Street Sweeping	HA Wide	HA Wide	HA Wide										•	•	•					•	•	•	•	•	•
14	General Education and Outreach	HA Wide	HA Wide	HA Wide	•	•	•	•	•	•				•	•	•	•	•	•	•	•	•	•	•	•	•
15	Employee Training	HA Wide	HA Wide	HA Wide	•							•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
16	Inspections	HA Wide	HA Wide	HA Wide	•	•	•	•				•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

Table 3: Loma Alta HA Strategies

Water Quality Improvement Plan Strategies		Jurisdiction/Area			Target Source								Target Pollutants						Implementation Schedule								
		City of Oceanside	City of Vista	County of San Diego	Municipal Fixed Facilities	Industrial and Commercial Facilities / Owners	Construction Sites and Personnel	Residential	General Public	Land Development & Redevelopment	Roads, Streets, Highways and Parking Facilities	MS4	Bacteria/Pathogens	Trash	Heavy Metals	Nutrients	Oil and Grease	Sediment	Pesticides	Previous Fiscal Year(s)	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20	Future Fiscal Year(s)	
17	Investigations	HA Wide	HA Wide	HA Wide	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
18	Enforcement	HA Wide	HA Wide	HA Wide	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
19	Operation and Maintenance of Ultraviolet Bacteria Treatment Facility	HA Wide	-	-	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Optional Strategies																											
20	Develop List of Potential Structural or Retrofit Existing BMPs to Address Flow/Pollutant Issues	Collins Basin, Temple Heights, Oceanside/Vista Residential	Oceanside and Vista Residential Focus area	-	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	Based on appropriate criteria for initiating							
21	Treatment Control BMP Inspection Program	Collins Basin, Temple Heights	-	-	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	Based on appropriate criteria for initiating							
22	County of San Diego Optional Strategies Listing – See Appendix B																										

¹ Examples of Administrative BMPs include: Plan development, program standardization, maintaining and prioritizing inventories, updating education materials, etc.

2.1.3 Loma Alta HA Focus Areas

Concentrating programmatic efforts in specific geographic areas to address known or suspected sources of discharges and pollutants is expected to improve the effectiveness of the strategies and activities.

Based on the RAs review of the characteristics of the Loma Alta HA, several areas of focus were selected for concentrated programmatic efforts. These focus areas include the Oceanside jurisdiction within the HA, the Collins Basin Drainage Area, the Temple Heights Business Park Drainage Area, and an Oceanside/Vista Residential Area. The goals and strategies for these focus areas are summarized below.

2.1.3.1 City of Oceanside

The City of Oceanside covers approximately 97% of the entire Loma Alta HA. Within the Oceanside jurisdictional boundaries, there are many areas where landscapers/gardeners provide landscape services, including fertilizer and pesticide applications, trimming and planting. Addressing this target audience on an HA basis will concentrate resources towards addressing practices associated with nutrients that may be contributing to eutrophic conditions at the Loma Alta Slough.

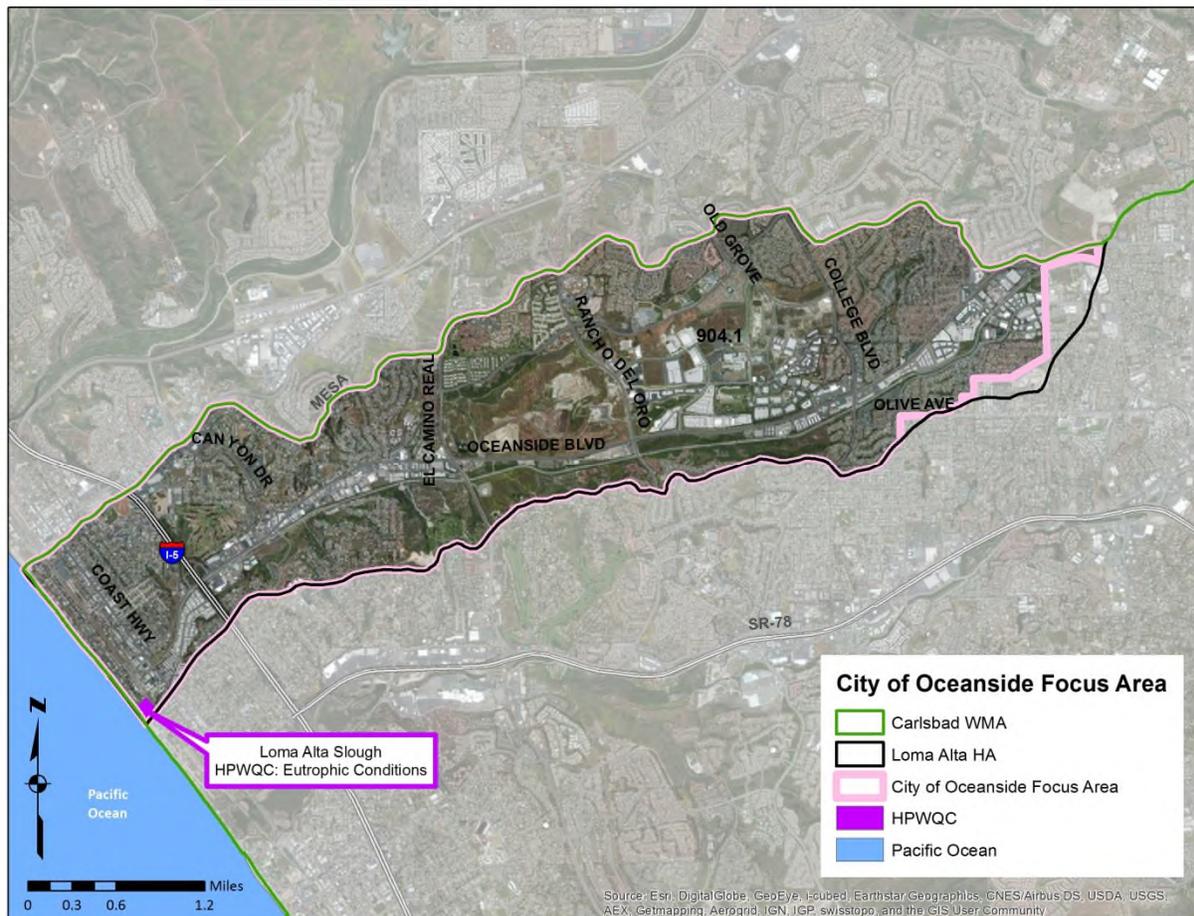


Figure 8: Oceanside Jurisdiction within Loma Alta HA

Oceanside Jurisdiction in Loma Alta HA Interim and Final Numeric Goals

Although there are not specific interim and final numeric goals established for this focus area, the strategies are anticipated to work towards the goals presented in Section 2.1.2.1. that are applicable to the entire Loma Alta HA.

Oceanside Jurisdiction in Loma Alta HA Strategies

The City of Oceanside will implement its program core strategies throughout its jurisdictional boundaries of the Loma Alta HA. In addition to the core jurisdictional strategies, the following summarizes supplemental or modified core strategies planned for implementation in the Loma Alta HA to target sources of pollutants and discharges.

The selected strategies are expected to have multi-pollutant benefits and intended to address non-stormwater flows and reducing the source loading of nutrients and other pollutants related to the priority water quality conditions. Reducing non-stormwater flows: (1) reduces the loading of pollutants discharged through the MS4 system; (2) reduces the amount of indicator bacteria regrowth and contributions that occurs with accumulated biofilm in MS4 systems that requires water; and (3) reduces the wet-weather contribution of indicator bacteria from scoured biofilm under higher velocity flows from storm discharges.

To accomplish the multi-benefit objectives, the City of Oceanside will supplement its core jurisdictional program by implementing the following strategies:

1) Community Based Social Marketing – Private Landscapers

Observation Research

This project would begin with observational research to identify target behaviors of landscape workers which may be linked to polluted non-storm water discharges and runoff from a selected MS4 draining a residential neighborhood in the Loma Alta watershed. The targeted neighborhood would be selected based on long-term water quality and observational monitoring where a persistently flowing outfall has been identified. The observations would focus on identifying concrete behaviors by observing what is happening in the target community. Examples of these behaviors could be fertilizer application practices and how green waste is gathered and disposed. Thirty observation visits are proposed which will provide minimum statistical validity and adequately represent all times of the day (AM/mid-day/PM) and weekdays/weekends. Enforcement actions will be implemented if an activity is an immediate threat to water quality and human health. If it is determined that the behaviors are not contributing to anthropogenic persistent flows, sources of the flows will be further researched to determine if the flows are a groundwater source or other permitted discharge allowed within that outfall drainage area.

Improvements in MS4 discharge water quality and/or reductions in pollutant loading at the outfall will be quantified using a combination of flow measurements and grab sample collections. Baseline measurements will be taken prior to implementing any outreach programs within the upstream drainage area. Samples will be analyzed by a qualified laboratory for constituents related to impairments in the receiving water. Measurements collected during and after the outreach implementation period will be used to assess the relative effectiveness of the program on reducing pollutant loadings and/or non-stormwater flows from the selected MS4 outfall. Both the baseline and post-implementation periods will require an adequate number of sampling points to ensure statistical significance in establishing whether the program implementation correlates with changes in discharge water quality.

Focus groups with landscape gardeners

Focus groups offer an additional opportunity to survey the target audience face-to-face and identify the barriers that impede those individuals from engaging in behaviors that protect water quality. This approach enhances the likelihood of developing programs that maximize behavior change among the target audience. This task would involve recruiting five landscape gardeners to conduct a 30-minute interview. To encourage participation in the focus groups, an incentive will be offered to the target audience such as a specific dollar amount to participate in the interview and/or a light lunch.

Landscape gardeners would be recruited in collaboration with the local compost facility Agri-Service. This facility accepts green waste from landscape gardeners in the City of Oceanside as well as other commercial landscape operators. When gardeners deliver their materials to the compost facility, they would be handed a recruitment piece requesting their participation in the focus group. All materials would be provided in Spanish and a Spanish speaker would conduct the interviews.

Implementation

Based on the results from the observation research and the focus group component, behavior change tools will be selected based on their fit with the identified barriers and benefits. This information will drive the development of the overall outreach campaign for pilot testing.

Once the appropriate methodologies for pilot testing the developed strategies are designed, the target audience will be provided with detailed protocols and instructions for pilot implementation. This information will be distributed by Agri-Service staff to the target audience during normal operating hours.

Based on the successful strategies identified during pilot testing a series of strategies or toolkits will be applied more broadly to groups that share similar barrier and benefit profiles for the target behavior. Improvements in MS4 discharge water quality and/or reductions in pollutant loading at the outfall will be quantified using a combination of flow measurements and grab sample collections as described above.

It will also be determined if the target audience can be a conduit to providing homeowners with water efficient landscape incentive programs being offered by Metropolitan Water District (MWD) and the San Diego County Water Authority.

2) Ultraviolet Bacteria Treatment Facility

The City of Oceanside will continue to operate the ultraviolet (UV) treatment system just upstream of Buccaneer Beach between May and September each year.. The system actively eliminates 99% of the indicator bacteria passing through the system.

The treatment facility consists of piping flows from an exiting diversion structure by gravity from the lagoon through a 2 micron fine screen to a wet well where the flow is pumped into two large sand filters followed by two UV disinfection units housed in a reinforced concrete building. The treated water is discharged through a pipe extended along the existing section of rip-rap that runs along the north side of the Loma Alta Creek outlet at Buccaneer Beach. During wet weather months (November through April), with increased flow in the creek, the lagoon is periodically open to the ocean and the UV system is bypassed.

2.1.3.2 Collins Basin and Temple Heights Drainage Areas

The City of Oceanside has identified two drainage basins as focus areas with similar planned strategies: Collins Basin Drainage Area and Temple Heights Drainage Area. Both are described in more detail below.

Collins Basin Drainage Area

The Collins Basin Drainage Area is located mid-watershed and conveys discharges from surrounding commercial and light industrial properties to a series of detention basins, prior to discharging to Loma Alta Creek. The Collins Basin drainage includes commercial and industrial land uses, streets, buildings, parking lots and landscaped areas – see Figure 9 below.



Figure 9: Collins Basin Drainage Area/Focus Area

Temple Heights Drainage Area

The Temple Heights Drainage Area is a commercial and industrial area located at the headwaters of the watershed that discharges to two MS4 outfalls prior to discharging to Loma Alta Creek. Temple Heights is primarily office buildings and light industrial land uses and includes streets, buildings, parking lots and landscaped areas, see Figure 10 below.

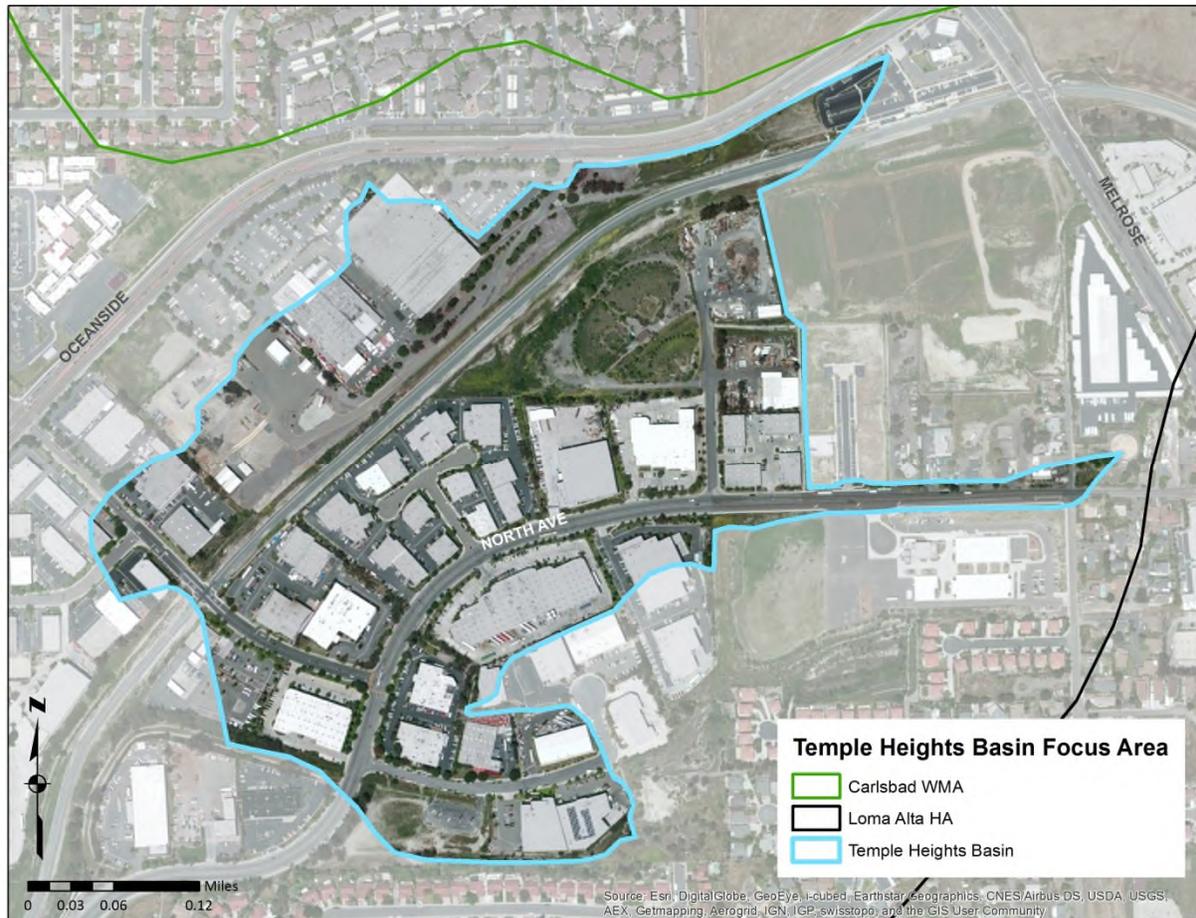


Figure 10: Temple Heights Drainage Area/Focus Area

Collins Basin and Temple Heights Drainage Area Interim and Final Numeric Goals

Although there are not specific interim and final numeric goals established for these focus areas, the strategies are anticipated to work towards the goals presented in Section 2.1.2.1. that are applicable to the entire Loma Alta HA.

Collins Basin and Temple Heights Drainage Area Strategies

The City of Oceanside will implement its program core strategies within the Collins Basin and Temple Heights Drainage Area. In addition to the core jurisdictional strategies, the following summarizes supplemental or modified core strategies planned for implementation in the Collins Basin and Temple Heights areas to address the sources of pollutants and discharges.

The selected strategies are expected to have multi-pollutant benefits and intended to address non-stormwater flows and reducing the source loading of nutrients. Reducing non-stormwater flows: (1) reduces the loading of pollutants such as nutrients, pesticides, bacteria and trash discharged through MS4 system; (2) reduces the amount of indicator bacteria regrowth and contributions that occurs with accumulated biofilm in MS4 systems that requires water; and (3) reduces the wet-weather contribution of indicator bacteria from scoured biofilm under higher velocity flows from storm discharges.

To accomplish the multi-benefit objectives in the two areas, the City of Oceanside will supplement its core jurisdictional program by implementing the following strategies in these focus areas:

1) Runoff and Nutrients Source Reduction

Preliminary Assessment

During Fiscal Years (FY)s 2015 and 2016, the City will:

- Conduct observations to confirm the flows from these focus areas are persistent – FY 2015 and FY 2016;
- Identify, through observations, the common categories of non-storm water discharges to the MS4 in the first year of assessment – FY 2015;
- Identify, through observations, the greatest dischargers of non-storm water within the focus area – FY 2015; and
- Categorize and prioritize the discharges to inform the education programs and/or enforcement mechanisms to focus on the specific problems or issues.

Source Reductions

Based on findings from the preliminary assessment, the City will make determinations of the most appropriate strategies to implement in subsequent years. The following strategies may be implemented to address identified issues:

- Irrigation runoff reduction strategies;
- Fertilizer use and application timing/frequency surveys;
- Water conservation rebate programs for commercial properties;
- Inspection of Treatment Control BMPs and verification of maintenance records from properties within this drainage that have these engineered BMPs installed.
- Incorporate detailed education information specific to nutrients and bacteria during commercial and industrial facility inspections to prevent illegal discharges to the MS4 based on non-storm water discharge findings. Potential outreach tasks and materials could include:
 - Potential outreach tasks and materials could include mailing lists, door-to-door handouts, collaboration with HOA board of directors or property management companies
 - Community meetings with City staff, presentations at regular HOA briefings
 - Offer irrigation incentive programs for homeowners within the focus area - Leverage existing rebates through San Diego County Water Authority (SDCWA), Metropolitan Water District (MWD), Vista Irrigation District (VID)
- Implement an enhanced inspection program within the commercial and industrial area to identify potential illegal discharges

2) Optional Strategies

- Develop a list of potential structural (engineered) BMPs or retrofitting existing structural BMPs to address flow and/or pollutant issues if the non-structural methods prove ineffective
- Implement an enhanced treatment control BMP inspection program for the properties within the assessment drainage area.
 - Increase inspection frequency to ensure proper operation and maintenance of BMPs
 - Classify which BMPs specifically address the target pollutants (nutrients & bacteria) and ensure proper functioning.

2.1.3.3 Oceanside/Vista Residential Area Near North Avenue

The Oceanside/Vista Residential focus area is located near the headwaters of the watershed that discharges to an MS4 outfall prior to discharging to Loma Alta Creek. This residential area is primarily single family residential land uses and includes some common areas and recreational park areas that include landscaping and turf – see Figure 11 below.



Figure 11: Oceanside/Vista Residential Focus Area

Oceanside/Vista Residential Area Interim and Final Numeric Goals

Although there are not specific interim and final numeric goals established for this focus area, the strategies are anticipated to work towards the goals presented in Section 2.1.2.1. that are applicable to the entire Loma Alta HA.

Oceanside/Vista Residential Area Strategies

The Cities of Oceanside and Vista will implement their program core strategies within the residential focused area. In addition to the core jurisdictional strategies, the following summarizes supplemental or modified core strategies planned for implementation in the residential focus area to address the sources of pollutants and discharges.

The supplemental strategies are expected to have multi-pollutant benefits and are intended to address non-stormwater flows and reduce the source loading of nutrients. Reducing non-stormwater flows: (1)

reduces the loading of pollutants such as nutrients, pesticides, bacteria and trash discharged through MS4 system; (2) reduces the amount of indicator bacteria regrowth and contributions that occurs with accumulated biofilm in MS4 systems that requires water; and (3) reduces the wet-weather contribution of indicator bacteria from scoured biofilm under higher velocity flows from storm discharges.

To accomplish the multi-benefit objectives in the focus area, the Cities of Oceanside and Vista will supplement their core jurisdictional program by implementing the following strategies in these focus areas:

1) Runoff and Nutrients Source Reduction

Preliminary Assessment

During Fiscal Years (FY)s 2015 and 2016, the Cities will:

- Conduct observations to confirm the flows from this focus area are persistent and from anthropogenic sources – FY 2015 and FY 2016;
- Identify, through observations, the common categories of non-storm water discharges to the MS4 in the first year of assessment – FY 2015;
- Identify, through observations, repeat non-storm water violators within the focus area – FY 2015; and
- Categorize and prioritize the discharges to inform the education programs and/or enforcement mechanisms to focus on the specific problems or issues.

Source Reductions

Based on findings from the preliminary assessment, the Cities will make determinations of the most appropriate strategies to implement in subsequent years. The following strategies may be implemented to address identified issues:

- Irrigation runoff reduction strategies;
- Water conservation rebates, free home irrigation conversion consultations
- Smart gardening practices, compost use, proper fertilizer applications
- Shared drainage outreach to identify measurable improvements
 - Focus on residential properties
 - Continue baseline monitoring at shared drainage area outfalls
 - Regular dry-season monitoring aligned with outreach strategies
- Implement educational activities within the upstream residential drainage to prevent illegal discharges to the MS4 based on non-storm water discharge findings
 - Potential outreach tasks and materials could include mailing lists, door-to-door handouts, collaboration with HOA board of directors or property management companies
 - Community meetings with City staff, presentations at regular HOA briefings
 - Offer irrigation incentive programs for homeowners within the focus area - Leverage existing rebates through San Diego County Water Authority (SDCWA), Metropolitan Water District (MWD), Vista Irrigation District (VID)
- Conduct routine code enforcement drive-by inspections of the drainage for other illegal discharges

2) Optional Strategies

- Develop a list of potential structural (engineered) BMPs or retrofitting existing structural BMPs to address flow and/or pollutant issues if the non-structural methods prove ineffective, e.g., catch basin filters or engineered infiltration devices.

2.2 Buena Vista Creek HA (904.2)

The Buena Vista Creek HA is the fourth largest system within the WMA. The HA extends approximately 10.6 miles inland from the coast and totals approximately 14,400 acres in area, comprising 11% of the WMA. Buena Vista Creek originates on the western slopes of the San Marcos Mountains and discharges into the Pacific Ocean via Buena Vista Lagoon. The primary receiving waters in the HA are Buena Vista Creek, the Buena Vista Lagoon, and the Pacific Ocean. The largest portion of the HA is in the City of Vista (45%), with the remaining in Oceanside, Carlsbad, and San Diego County.

During the initial phase of the Water Quality Improvement Plan process, assessment of existing data determined that the priority water quality conditions (PWQCs) within the Buena Vista Creek HA include: indicator bacteria at the Buena Vista Lagoon; sediment/siltation in Buena Vista Lagoon; and nutrients in Buena Vista Lagoon. Of these PWQCs, the *highest priority water quality condition* (HPWQC) in the Buena Vista Creek HA was determined to be *indicator bacteria* (dry and wet weather conditions) at the Buena Vista Lagoon (June 2014 B.2 Report).

Figure 12 below, shows the Buena Vista Creek HA, HPWQC and focus areas. The focus areas and their associated strategies and goals are explained in more detail below.

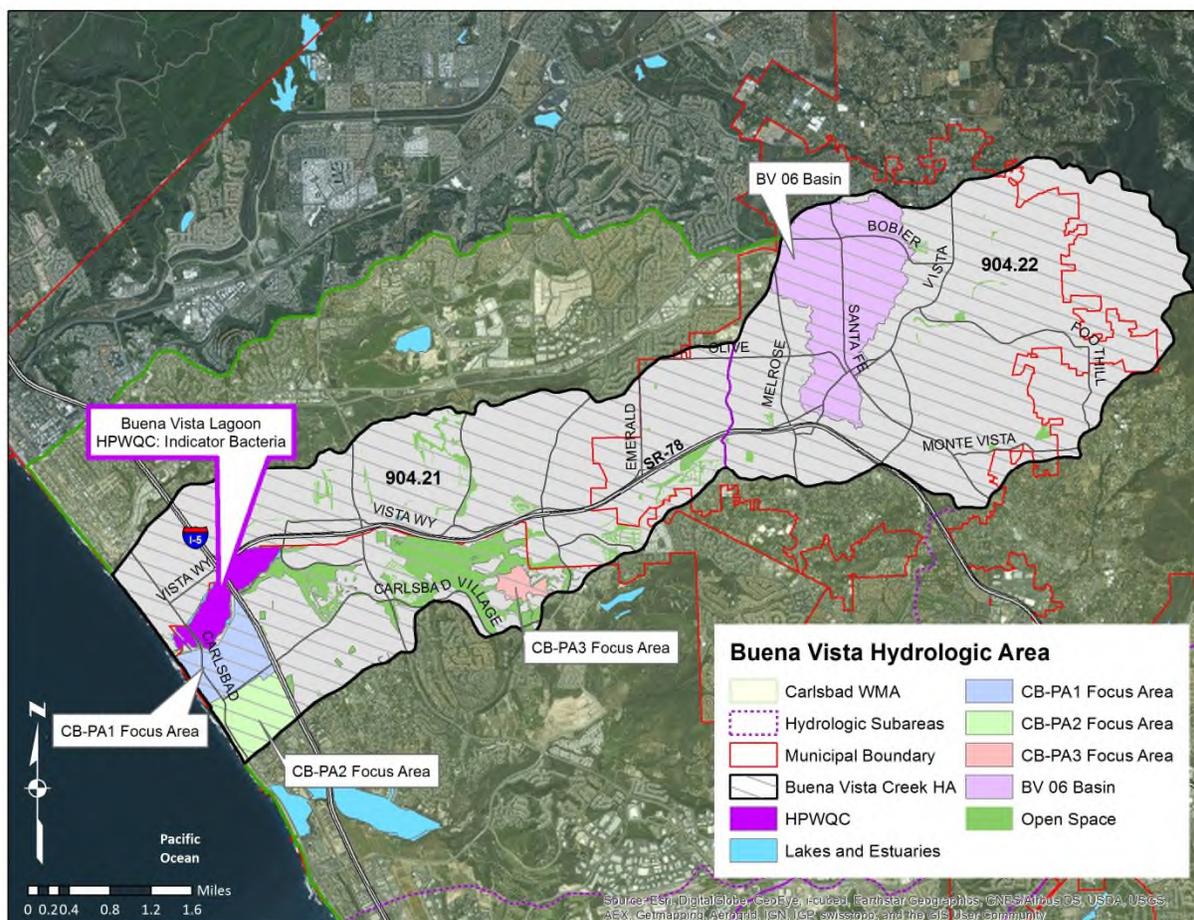


Figure 12: Buena Vista Creek Hydrologic Area Highest Priority Water Quality Conditions and Focus Areas

2.2.1 Buena Vista Creek HA Sources

The following table presents a listing of inventoried sources in the Buena Vista Creek HA and their association with HPWQCs and PWQCs based on source loading potential (2011 LTEA).

Table 4: Pollutant Generating Sources – 904.2 Buena Vista Creek Hydrologic Area

Inventory Sites/Facilities ¹	Quantities ²	Pollutant Source Loading Potential ³							
		Metals	Oil & Grease	Sediment	Pesticides	Nutrients	Bacteria/Pathogens	Dissolved Minerals	Organics
Aggregates/Mining	1	L	L	L	UL	UL	UL	UL	L
Agriculture	1	L	UL	L	L	L	L	UK	UL
Animal Facilities	5	N	UL	L	UK	L	L	N	L
Auto Repair, Fueling, or Cleaning	131	L	L	UL	UL	UK	UL	L	L
Auto Parking Lots or Storage	16	L	L	L	UK	UK	UK	UL	L
Auto Body Repair or Painting	19	L	L	UL	UL	UL	UL	L	L
Nurseries/Greenhouses	28	L	UL	L	L	L	L	UL	UL
Concrete Manufacturing	1	L	L	L	UL	UL	UL	UL	L
Eating or Drinking Establishments	391	N	L	UL	UK	UK	L	UL	L
Equipment Repair or Fueling	8	L	L	UL	UL	UK	UL	UL	L
Fabricated Metal	6	L	L	UK	UK	UK	UL	UL	L
Food Manufacturing	3	UL	UL	UL	UL	UL	UL	UL	UL
General Contractors	26	UL	UL	L	UL	UL	UL	UL	UL
General Industrial	10	L	L	UK	UK	UK	UK	UK	L
General Retail	94	UL	UL	L	UL	UL	UL	UL	UL
Health Services	2	N	UL	L	UK	L	UL	UK	L
Institutional	2	L	UK	UK	UK	UK	UL	UK	UK
Motor Freight	3	L	L	UK	UK	UK	UK	UL	L
Offices	36	UK	UK	UK	UK	UK	UK	UK	UK
Parks and Rec (incl. Golf, Cemetery)	3	UK	UK	UK	UK	L	UK	UL	UK
Pest Control Services	1	N	UK	N	L	N	UK	N	UK
Pool and Fountain Cleaning	1	N	N	N	N	UK	N	N	UK
Recycling & Junk Yards	2	L	L	L	UL	UL	UL	L	L
Stone/Glass Manufacturing	3	L	L	L	UL	UL	UL	UL	L
Storage/Warehousing	9	L	L	L	UL	UL	UL	UL	L
Municipal	81	N	N	L	N	N	UK	UL	N
Construction	Varies ⁴	UL	UL	L	UL	UL	UL	L	UL
Residential	7,345 acres	L	L	L	L	L	L	L	L

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQC are identified in the table (yellow highlight signifies HPWQC). The HPWQC is associated with the sources that are likely to generate those pollutants (blue highlight). The PWQP is highlighted in green and the associated sources that are likely to generate those pollutants are depicted with an "L".

1: Other sources are not reported in this table including: Land Development and Non-inventoried Businesses

2: Quantities based on the Responsible Agencies FY 2012 JURMP Annual Reports

3: Pollutant Source Loading Potential taken from LTEA 2011; N = None, UK = Unknown, UL = Unlikely, L = Likely

4: The quantity of construction sites is dynamic due to projects starting and completing at any given time.

2.2.2 Buena Vista Creek HA Goals and Strategies

2.2.2.1 Buena Vista Creek HA Goals

Goals have not been established that apply to the entire Buena Vista Creek HA. Separate goals have been established for each focus area and are presented in the sub-sections below.

2.2.2.2 Buena Vista Creek HA Strategies

The following table identifies the Water Quality Improvement Strategies to be implemented throughout the entire Buena Vista Creek HA and in specific focus areas of the HA. In addition to the planned strategies, optional strategies are identified that may be implemented based on circumstances related to the progress RAs make towards numeric goals and funding. The strategies associated with the focus areas are described further in the sub-sections below.

As the RAs implement strategies and analyze assessment data, it is expected that these strategies and schedules may change through an iterative and adaptive management process. The adaptive management process will be presented in the Final Carlsbad WMA WQIP in June 2015.

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Table 5: Buena Vista Creek HA Strategies

Water Quality Improvement Plan Strategies		Jurisdiction/Area				Target Sources								Target Pollutants						Implementation Schedule							
		City of Carlsbad	City of Vista	City of Oceanside	County of San Diego	Municipal Fixed Facilities	Industrial and Commercial Facilities/Owners	Construction Sites and Personnel	Residential	General Public	Land Development & Redevelopment	Roads, Streets, Highways and Parking Facilities	MS4	Bacteria/Pathogens	Trash	Heavy Metals	Nutrients	Oil and Grease	Sediment	Pesticides	Previous Fiscal Year(s)	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20	Future Fiscal Year(s)
1	Targeted Increased Street Sweeping	CB-PA1, CB-PA2 & CB-PA3	-	-	-	•	•		•	•		•	•		•				•			•	•	•	•	•	•
2	Perform Property Based Inspections/Patrol	CB-PA1, CB-PA2 & CB-PA3	Buena Vista 06 Basin	-	-	•	•		•	•	•			•	•	•	•	•	•	•		•	•	•	•	•	•
3	Provide Maximum Response Time for Complaints Received via Storm Water Hotline	CB-PA1, CB-PA2 & CB-PA3	-	-	-	•	•	•	•	•		•	•	•	•	•	•	•	•	•		•	•	•	•	•	•
4	Enhanced Education Program	CB-PA1, CB-PA2 & CB-PA3	-	-	-	•	•		•	•				•	•	•	•	•	•	•		•	•	•	•	•	•
5	Implement Program Efficiencies	CB-PA1, CB-PA2 & CB-PA3	-	-	-	•	•	•	•			•	•	•	•	•	•	•	•	•		•	•	•	•	•	•
6	Residential Areas	CB-PA1, CB-PA2 & CB-PA3	-	-	-				•	•			•	•	•	•	•	•	•	•		•	•	•	•	•	•
7	Irrigation Runoff Reduction Program	-	Buena Vista 06 Basin	-	-	•	•		•	•		•	•		•				•			•	•	•	•	•	•
8	Septic System Maintenance Program	-	Buena Vista 06 Basin	-	-	•	•		•	•	•			•	•	•	•	•	•	•		•	•	•	•	•	•
9	County of San Diego Enhanced Program Strategies Listing – See Appendix A	-	-	-	HA Wide	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		•	•	•	•	•	•
10	Administrative BMPs ¹	HA Wide	HA Wide	HA Wide	HA Wide	•	•	•	•	•	•	•	•									•	•	•	•	•	•
11	Outfall Monitoring	HA Wide	HA Wide	HA Wide	HA Wide	•	•	•	•		•	•	•	•	•	•	•	•	•	•		•	•	•	•	•	•
12	Investigations	HA Wide	HA Wide	HA Wide	HA Wide	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		•	•	•	•	•	•
13	Development and Redevelopment Requirements	HA Wide	HA Wide	HA Wide	HA Wide						•			•	•	•	•	•	•	•		•	•	•	•	•	•
14	Construction Site Inspections	HA Wide	HA Wide	HA Wide	HA Wide			•							•				•			•	•	•	•	•	•
15	Municipal Facilities and Activities Inspections	HA Wide	HA Wide	HA Wide	HA Wide	•									•	•	•	•	•	•		•	•	•	•	•	•

Table 5: Buena Vista Creek HA Strategies

Water Quality Improvement Plan Strategies		Jurisdiction/Area				Target Sources								Target Pollutants						Implementation Schedule								
		City of Carlsbad	City of Vista	City of Oceanside	County of San Diego	Municipal Fixed Facilities	Industrial and Commercial Facilities/Owners	Construction Sites and Personnel	Residential	General Public	Land Development & Redevelopment	Roads, Streets, Highways and Parking Facilities	MS4	Bacteria/Pathogens	Trash	Heavy Metals	Nutrients	Oil and Grease	Sediment	Pesticides	Previous Fiscal Year(s)	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20	Future Fiscal Year(s)	
16	Residential Area Inspections	HA Wide	HA Wide	HA Wide	HA Wide				•					•	•		•	•	•	•	•	•	•	•	•	•	•	•
17	Commercial/Industrial Inspections	HA Wide	HA Wide	HA Wide	HA Wide		•							•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
18	MS4 Inspections/Cleaning	HA Wide	HA Wide	HA Wide	HA Wide							•		•	•				•		•	•	•	•	•	•	•	•
19	Street Sweeping	HA Wide	HA Wide	HA Wide	HA Wide						•			•	•	•		•	•		•	•	•	•	•	•	•	•
20	Education and Outreach	HA Wide	HA Wide	HA Wide	HA Wide	•	•	•	•	•	•			•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
21	Employee Training	HA Wide	HA Wide	HA Wide	HA Wide	•					•	•		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
22	Inspections	HA Wide	HA Wide	HA Wide	HA Wide	•	•	•	•		•	•		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
23	Investigations	HA Wide	HA Wide	HA Wide	HA Wide	•	•	•	•	•	•	•		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
24	Enforcement	HA Wide	HA Wide	HA Wide	HA Wide	•	•	•	•	•	•	•		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Optional Strategies																												
25	Implement Structural or Retrofit BMPs	CB-PA1, CB-PA2 & CB-PA3	Buena Vista 06 Basin	HA Wide	HA Wide	•	•	•	•		•			•	•	•	•	•	•	•	Based on appropriate criteria for initiating							
26	Implement Offsite Alternative Compliance Program	CB-PA1, CB-PA2 & CB-PA3	Buena Vista 06 Basin	HA Wide	HA Wide		•	•			•			•	•	•	•	•	•	•	Based on appropriate criteria for initiating							
27	County of San Diego Optional Strategies Listing – See Appendix B																											

¹Examples of Administrative BMPs include: Plan development, program standardization, maintaining and prioritizing inventories, updating education materials, etc.

2.2.3 Buena Vista Creek HA Focus Areas

Concentrating programmatic efforts in specific geographic areas to address known or suspected sources of discharges and pollutants is expected to improve the effectiveness of the strategies and activities.

Based on the RAs review of the characteristics of the Buena Vista Creek HA, several focus areas were selected for concentrating programmatic efforts. These focus areas include CB-PA1, CB-PA2, CB-PA3, and Buena Vista Basin (BV06). The goals and strategies for these focus areas are summarized below.

2.2.3.1 CB-PA1 Focus Area

The CB-PA1 focus area is located immediately south of the Buena Vista Lagoon. This area is a mixture of single family residential, commercial and multi-family land uses and includes homes, commercial buildings, apartment complexes, common areas, a school and recreational park areas that include landscaping and turf, see Figure 13 below.



Figure 13: CB-PA1 Focus Area – Buena Vista Creek HA

CB-PA1 Interim and Final Numeric Goals

Goals associated with this focus area are summarized in the goals table below. These goals have been established as a part of the initial WQIP development process. As the Responsible Agencies progress through the first several years of implementation and learn through data collection and analysis, it is

expected that these goals and schedules will likely change. As goals and schedules are adapted, they will be presented in future WQIP annual reports or updates to the WQIP document.

Table 6: CB-PA1 Focus Area, Interim and Final Numeric Goals

Interim Goal (2013-2018) 2018 ¹	Interim Goal (2018-2023) 2023 ¹	Interim Goal (2023-2028) 2028 ¹	Interim Goal (2028-2033) 2033 ¹	Final Goal (2033-2038) 2038 ¹
10% reduction in anthropogenic surface water runoff	20% reduction in anthropogenic surface water runoff	40% reduction in anthropogenic surface water runoff	60% reduction in anthropogenic surface water runoff	80% reduction in anthropogenic surface water runoff

¹ Flow reduction goals are currently based on best professional judgment as current flow data is not available. The goals may be adapted as monitoring data/information is gathered, analyzed and baselines are established.

The means for achieving these goals are identified in the strategies discussion below. Mechanisms for measuring progress towards and ultimately achieving these goals will be discussed in the Final Carlsbad WQIP to be completed in June 2015.

CB-PA1 Focus Area Strategies

The City of Carlsbad will implement their program core strategies within the focus area. In addition to the core jurisdictional strategies, the following summarizes supplemental or modified core strategies planned for implementation in the focus area to address the sources of pollutants and discharges.

The selected strategies are expected to have multi-pollutant benefits and intended to address non-stormwater flows and reducing the source loading of bacteria. Reducing non-stormwater flows: (1) reduces the loading of pollutant constituent discharged through MS4 system; (2) reduces the amount of indicator bacteria regrowth and contributions that occurs with accumulated biofilm in MS4 systems that requires water; and (3) reduces the wet-weather contribution of indicator bacteria from scoured biofilm under higher velocity flows from storm discharges. Removing trash and sediment reduces the bacteria loading that is attached to the trash and sediment.

To accomplish the multi-benefit objectives in the CB-PA1, the City of Carlsbad will supplement its core jurisdictional program by implementing the following strategies:

- 1) Targeted street sweeping in the focus area will be a minimum frequency of every two weeks.
- 2) Perform property based inspections/patrol inspections of *each* property in the CB-PA1 at least once annually. These inspections will include:
 - a. Visual inspection of all public streets
 - b. Inspections of each existing development property:
 - i. Municipal facilities and areas
 - ii. Each commercial/industrial property
 - iii. Each residential property
- 3) Maintain a maximum response time to focus areas for complaints received via Storm Water Hotline, or other mechanism. The City will respond and arrive on-site *within* 45 minutes of notification to eliminate any unauthorized discharge, identify the responsible party and minimize impacts to receiving waters. This response time is expected to eliminate discharges

while they are occurring and provide an opportunity to immediately educate or enforce as necessary.

- 4) Enhancements to education program to include:
 - a. Bacteria and other priority pollutant specific education and outreach program to be conducted in the CB-PA1 for residents and commercial facilities related to bacteria and other priority pollutants. The materials will have an emphasis on discharges to the City's MS4 and the receiving waters impacts.
 - b. Developing and implementing a training/seminar for property managers and others that have direct responsibility for common areas within HOAs and commercial properties. Educational materials and information will be developed and provided to the managers for them to distribute to their residents and tenants.
 - c. As the CB-PA1 focus area is a high-tourist area, the City will develop outreach materials directed specifically to out-of-jurisdiction visitors, including materials for distribution through hotels, long-term rental properties and commercial businesses.
 - d. As part of the residential outreach program, the City of Carlsbad will work with residents and property owners to educate through various means, which may include school programs, block parties or one-on-one meetings.

- 5) Implement Technological Program Efficiencies – The City is implementing a new computer database which will allow for use with mobile devices which will increase the City's response time to IDDE reports, discoveries, complaints and monitoring investigations. This new computer database will also streamline inspections and allow for review of previous information while in the field. It is also anticipated to speed the enforcement process as well expedite the capture of data for field follow-up. These increases in the speed at which data is collected and assimilated will improve the efficiencies of the City's stormwater program.

- 6) Optional Strategies
 - Implement structural (engineered) BMPs or retrofitting existing structural BMPs to address flow and/or pollutant issues
 - Implement offsite alternative compliance program to place water quality improvement projects in the CB-PA1 focus area

2.2.3.2 CB-PA2 Focus Area

The CB-PA2 focus area is split into two drainage areas located south of Carlsbad Village Drive and CB-PA1. The northern portion of the focus area drains to the north towards Buena Vista Lagoon. The southern portion drains south towards Agua Hedionda Lagoon. This area is a mixture of single family residential properties, commercial and multi-family land uses and includes homes, commercial buildings, apartment complexes, common areas, a school and recreational park areas that include landscaping and turf, see Figure 14 below.



Figure 14: CB-PA2 Focus Area – Buena Vista Creek

CB-PA2 Focus Area Interim and Final Numeric Goals

Goals associated with this focus area are summarized in the goals table below. These goals have been established as a part of this initial WQIP development process. As the Responsible Agencies progress through the first several years of implementation and learn through data collection and analysis, it is expected that these goals and schedules will likely change. As goals and schedules are adapted, they will be presented in future WQIP annual reports or updates to the WQIP document.

Table 7: CB-PA2 Focus Area, Interim and Final Numeric Goals

Interim Goal (2013-2018) 2018 ¹	Interim Goal (2018-2023) 2023 ¹	Interim Goal (2023-2028) 2028 ¹	Interim Goal (2028-2033) 2033 ¹	Final Goal (2033-2038) 2038 ¹
10% reduction in anthropogenic surface water runoff	20% reduction in anthropogenic surface water runoff	40% reduction in anthropogenic surface water runoff	60% reduction in anthropogenic surface water runoff	80% reduction in anthropogenic surface water runoff

¹ Flow reduction goals are currently based on best professional judgment as current flow data is not available. The goals may be adapted as monitoring data/information is gathered, analyzed and baselines are established.

The means for achieving these goals are identified in the strategies discussion below. Mechanisms for measuring progress towards and ultimately achieving these goals will be discussed in the Final Carlsbad WQIP to be completed in June 2015.

CB-PA2 Focus Area Strategies

The City of Carlsbad will implement their program core strategies within the focus area. In addition to the core jurisdictional strategies, the following summarizes supplemental or modified core strategies planned for implementation in the focus area to address the sources of pollutants and discharges.

The selected strategies are expected to have multi-pollutant benefits and intended to address non-stormwater flows and reducing the source loading of bacteria. Reducing non-stormwater flows: (1) reduces the loading of pollutant constituent discharged through MS4 system; (2) reduces the amount of indicator bacteria regrowth and contributions that occurs with accumulated biofilm in MS4 systems that requires water; and (3) reduces the wet-weather contribution of indicator bacteria from scoured biofilm under higher velocity flows from storm discharges. Removing trash and sediment reduces the bacteria loading that is attached the trash and sediment.

To accomplish the multi-benefit objectives in the CB-PA2, the City of Carlsbad will supplement its core jurisdictional program by implementing the following strategies:

- 1) Targeted street sweeping in the focus area will be a minimum frequency of every two weeks.
- 2) Perform property based inspections/patrol inspections of each property in the CB-PA2 focus area at least once annually. These inspections will include:
 - a. Visual inspection of all public streets
 - b. Inspections of each existing development property:
 - i. Municipal facilities and areas
 - ii. Each commercial/industrial property
 - iii. Each residential property
- 3) Maintain a maximum response time for complaints received via Storm Water Hotline, or other mechanism. The City will respond and arrive on-site within 45 minutes of notification to eliminate any unauthorized discharge, identify the responsible party and minimize impacts to receiving waters. This response time is expected to eliminate discharges while they are occurring and provide an opportunity to immediately educate or enforce as necessary.
- 4) Enhancements to education program to include:
 - a. Bacteria and other priority pollutant specific education and outreach program to be conducted in the CB-PA2 focus area for residents and commercial facilities related to bacteria and other priority pollutants. The materials will have an emphasis on discharges to the City's MS4 and the receiving waters impacts.
 - b. Developing and implementing a training/seminar for property managers and others that have direct responsibility for common areas within HOAs and commercial properties. Educational materials and information will be developed and provided to the managers for them to distribute to their residents and tenants.
 - c. As part of the residential outreach program, the City of Carlsbad will work with residents and property owners to educate through various means, which may include school programs, block parties or one-on-one meetings.

- 5) Implement Program Efficiencies – The City is implementing a new computer database which will allow for use with mobile devices which will increase the City’s response time to IDDE reports, discoveries, complaints and monitoring investigations. This new computer database will also streamline inspections and allow for review of previous information while in the field.
- 6) Optional Strategies
 - Implement structural (engineered) BMPs or retrofitting existing structural BMPs to address flow and/or pollutant issues
 - Implement offsite alternative compliance program to place water quality improvement projects in the CB-PA2 focus area

2.2.3.3 CB-PA3 Focus Area

The CB-PA3 focus area is located approximately one-third of the way up the Buena Vista Creek HA. This area is a homogenous area of single family residential properties with a single outfall, see Figure 15 below. Although no water quality data has been collected from this area to date, there has been outfall flow observed each time it has been visited.



Figure 15: CB-PA3 Focus Area – Buena Vista Creek

CB-PA3 Focus Area Interim and Final Numeric Goals

Goals associated with this focus area are summarized in the goals table below. These goals have been established as a part of this initial WQIP development process. As the Responsible Agencies progress through the first several years of implementation and learn through data collection and analysis, it is expected that these goals and schedules will likely change. As goals and schedules are adapted, they will be presented in future WQIP annual reports or updates to the WQIP document.

Table 8: CB-PA3 Focus Area, Interim and Final Numeric Goals

Interim Goal (2013-2018) 2018 ¹	Interim Goal (2018-2023) 2023 ¹	Interim Goal (2023-2028) 2028 ¹	Interim Goal (2028-2033) 2033 ¹	Final Goal (2033-2038) 2038 ¹
10% reduction in anthropogenic surface water runoff	20% reduction in anthropogenic surface water runoff	40% reduction in anthropogenic surface water runoff	60% reduction in anthropogenic surface water runoff	80% reduction in anthropogenic surface water runoff

¹ Flow reduction goals are currently based on best professional judgment as current flow data is not available. The goals may be adapted as monitoring data/information is gathered, analyzed and baselines are established.

The means for achieving these goals are identified in the strategies discussion below. Mechanisms for measuring progress towards and ultimately achieving these goals will be discussed in the Final Carlsbad WQIP to be completed in June 2015.

CB-PA3 Focus Area Strategies

The City of Carlsbad will implement their program core strategies within the focus area. In addition to the core jurisdictional strategies, the following summarizes supplemental or modified core strategies planned for implementation in the focus area to address the sources of pollutants and discharges.

The selected strategies are expected to have multi-pollutant benefits and intended to address non-stormwater flows and reducing the source loading of bacteria. Reducing non-stormwater flows: (1) reduces the loading of pollutant constituent discharged through MS4 system; (2) reduces the amount of indicator bacteria regrowth and contributions that occurs with accumulated biofilm in MS4 systems that requires water; and (3) reduces the wet-weather contribution of indicator bacteria from scoured biofilm under higher velocity flows from storm discharges. Removing trash and sediment reduces the bacteria loading that is attached the trash and sediment.

To accomplish the multi-benefit objectives in the CB-PA3, the City of Carlsbad will supplement its core jurisdictional program by implementing the following strategies:

- 1) Targeted street sweeping in the focus area will be a minimum frequency of every two weeks.
- 2) Perform patrol inspections of each property in the CB-PA3 focus area at least annually. These inspections will include a visual inspection of all public streets
- 3) Increased monitoring activity at the outfall in this focus area
- 4) Maintain a maximum response time for complaints received via Storm Water Hotline, or other mechanism. The City will respond and arrive on-site within 45 minutes of notification to eliminate any unauthorized discharge, identify the responsible party and minimize impacts to

receiving waters. This response time is expected to eliminate discharges while they are occurring and provide an opportunity to immediately educate or enforce as necessary.

- 5) Enhancements to education program to include:
 - a. Bacteria and other priority pollutant specific education and outreach program to be conducted in the CB-PA3 focus area for residents related to bacteria and other priority pollutants. The materials will have an emphasis on discharges to the City's MS4 and the receiving waters impacts.
 - b. Developing and implementing a training/seminar for property managers and others that have direct responsibility for common areas within existing HOA. Educational materials and information will be developed and provided to the managers for them to distribute to their residents and tenants.
 - c. As part of the residential outreach program, the City of Carlsbad will work with residents and property owners to educate through various means, which may include school programs, block parties or one-on-one meetings.

- 6) Implement Program Efficiencies – The City is implementing a new computer database which will allow for use with mobile devices which will increase the City's response time to IDDE reports, discoveries, complaints and monitoring investigations. This new computer database will also streamline inspections and allow for review of previous information while in the field.

2.2.3.4 City of Vista –Buena Vista 06 (BV06) Basin

The Buena Vista 06 (BV06) Basin is a large sub-basin in the upper one-third of the Buena Vista Creek HA. The basin is completely within the City of Vista jurisdictional boundaries. The basin has high-density land use with a mixture of single family residential, commercial and multi-family land uses and includes homes, commercial buildings, apartment complexes, common areas, several schools and recreational park areas that include landscaping and turf, see Figure 16 below.

The majority of this basin was developed prior to implementation of the City's Standard Urban Stormwater Mitigation Plan (SUSMP); therefore there relatively few treatment control BMPs have been established.

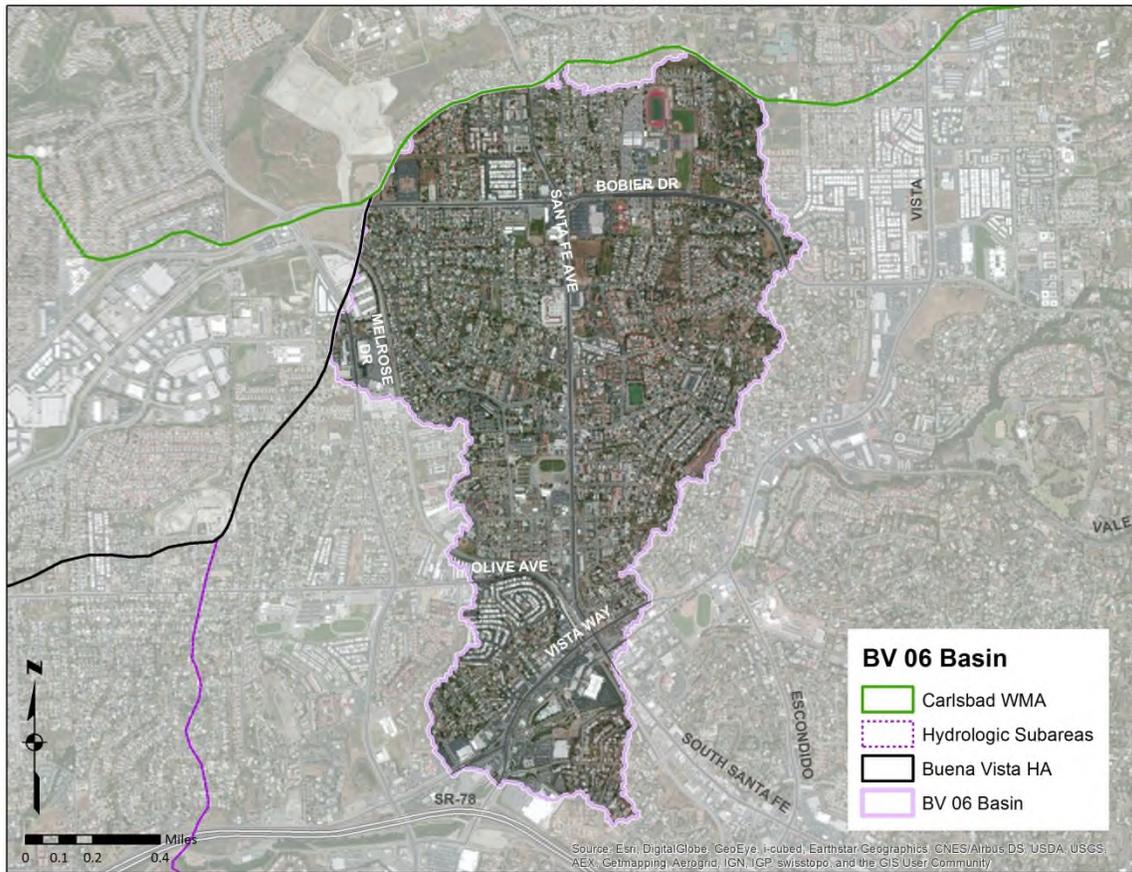


Figure 16: BV06 Basin Focus Area

BV06 Basin Focus Area Interim and Final Numeric Goals

Goals associated with this focus area are summarized in the goals table below. These goals have been established as a part of this initial WQIP development process. As the Responsible Agencies progress through the first several years of implementation and learn through data collection and analysis, it is expected that these goals and schedules will likely change. As goals and schedules are adapted, they will be presented in future WQIP annual reports or updates to the WQIP document.

Table 9: BV06 Basin Focus Area, Interim and Final Numeric Goals

Interim Goal (2013-2018) 2018	Interim Goal (2018-2023) 2023	Interim Goal (2023-2028) 2028	Interim Goal (2028-2033) 2033	Final Goal (2033-2038) 2038
5% reduction in anthropogenic dry-weather surface water runoff	10% reduction in anthropogenic dry-weather surface water runoff	35% reduction in anthropogenic dry-weather surface water runoff	60% reduction in anthropogenic dry-weather surface water runoff	80% reduction in anthropogenic dry-weather surface water runoff
5% enrollment of septic system owners in maintenance certification program	20% enrollment of septic system owners in maintenance certification program	50% enrollment of septic system owners in maintenance certification program	60% enrollment of septic system owners in maintenance certification program	75% enrollment of septic system owners in maintenance certification program

¹ Flow reduction goals are currently based on best professional judgment as current flow data is not available. The goals may be adapted as monitoring data/information is gathered, analyzed and baselines are established.

The means for achieving these goals are identified in the strategies discussion below. Mechanisms for measuring progress towards and ultimately achieving these goals will be discussed in the Final Carlsbad WQIP to be completed in June 2015.

BV06 Basin Focus Area Strategies

In addition to the core jurisdictional strategies, the following summarizes supplemental or modified core strategies planned for implementation in the focus area to address the sources of pollutants and discharges.

The selected strategies are expected to have multi-pollutant benefits and intended to address non-stormwater flows and reduce the source loading of bacteria. Reducing non-stormwater flows: (1) reduces the loading of pollutant constituent discharged through MS4 system; (2) reduces the amount of indicator bacteria regrowth and contributions that occurs with accumulated biofilm in MS4 systems that requires water; and (3) reduces the wet-weather contribution of indicator bacteria from scoured biofilm under higher velocity flows from storm discharges.

To accomplish the multi-benefit objectives in the BV06 Basin, the City of Vista will supplement its core jurisdictional program by implementing the following strategies:

1) Irrigation Runoff Reduction Program

The objective of the Irrigation Runoff Reduction Program (IRRP) is to eliminate or reduce dry weather flow contributions coming from irrigation runoff, regardless of the time of day the discharges occur. Core program elements include:

- Developing municipal codes that prohibit irrigation runoff
- Developing educational materials and outreach program specific towards irrigation runoff
- Assessing dry weather flows at outfall(s)
- Identifying key times to perform site observations
- Perform site observations to identify sources of irrigation runoff
- Collaboration with City Public Works Department to address municipal property irrigation systems
- Collaboration with Vista Irrigation District (VID) to identify sources and coordinate programs/outreach
- Initiating contact and correspondence with property managers/owners
- Periodically assessing flows
- Optionally developing and implementing an incentive program

2) Septic System Maintenance Program

The objective of this program is to reduce anthropogenic loadings of bacteria in discharges from the City's MS4 during dry weather and wet weather conditions, ultimately improving receiving waters conditions. Core elements include:

- Identify properties with septic systems
- Develop educational materials and outreach program
- Implement septic system certification and verification program
- Optionally develop and implementing an incentive program
- Consider developing municipal codes requiring maintenance of septic systems

3) Property Based/Patrol Inspections

The objective of this program is to reduce discharges to the MS4 and provide inspection of existing development in a more cost-efficient and effective manner. Features include:

- Developing patrol and inspection protocols
- Developing and conducting staff training
- Conducting property based/patrol inspections

4) Optional Strategies

- Implement structural (engineered) BMPs or retrofitting existing structural BMPs to address flow and/or pollutant issues
- Implement offsite alternative compliance program to place water quality improvement projects in the BV06 Basin

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2.3 Agua Hedionda HA (904.3)

The Agua Hedionda Hydrologic Area (HA) is the third largest within the Carlsbad WMA. The HA, dominated by Agua Hedionda Creek, extends approximately 10.6 miles inland from the coast and is about 18,800 acres in area, comprising 14% of the WMA. Agua Hedionda Creek originates on the southwestern slopes of the San Marcos Mountains in west central San Diego County and discharges into the Pacific Ocean via Agua Hedionda Lagoon. The primary water bodies in the HA include Agua Hedionda Creek, Buena Creek, Letterbox Canyon, Agua Hedionda Lagoon and the Pacific Ocean. Most of the HA is in the City of Carlsbad (41%); the remainder is in Vista (24%) and San Diego County (24%) and small amounts in Oceanside and San Marcos.

During the initial phase of the Water Quality Improvement Plan process, assessment of existing data determined that the priority water quality conditions (PWQCs) within the Agua Hedionda HA include: indicator bacteria in Agua Hedionda Creek; toxicity in Agua Hedionda Creek; nutrients in Agua Hedionda Creek; hydromodification impacts in Agua Hedionda Creek; and nitrate and nitrite in Buena Creek. Of these PWQCs, the *highest priority water quality condition* (HPWQC) in the Agua Hedionda HA was determined to be *indicator bacteria* (dry and wet weather conditions) in Agua Hedionda Creek (June 2014 Carlsbad WMA WQIP submittal to RWQCB).

Figure 17 below, shows the Agua Hedionda HA, HPWQC and focus areas. The focus areas and their associated strategies and goals are explained in more detail below.

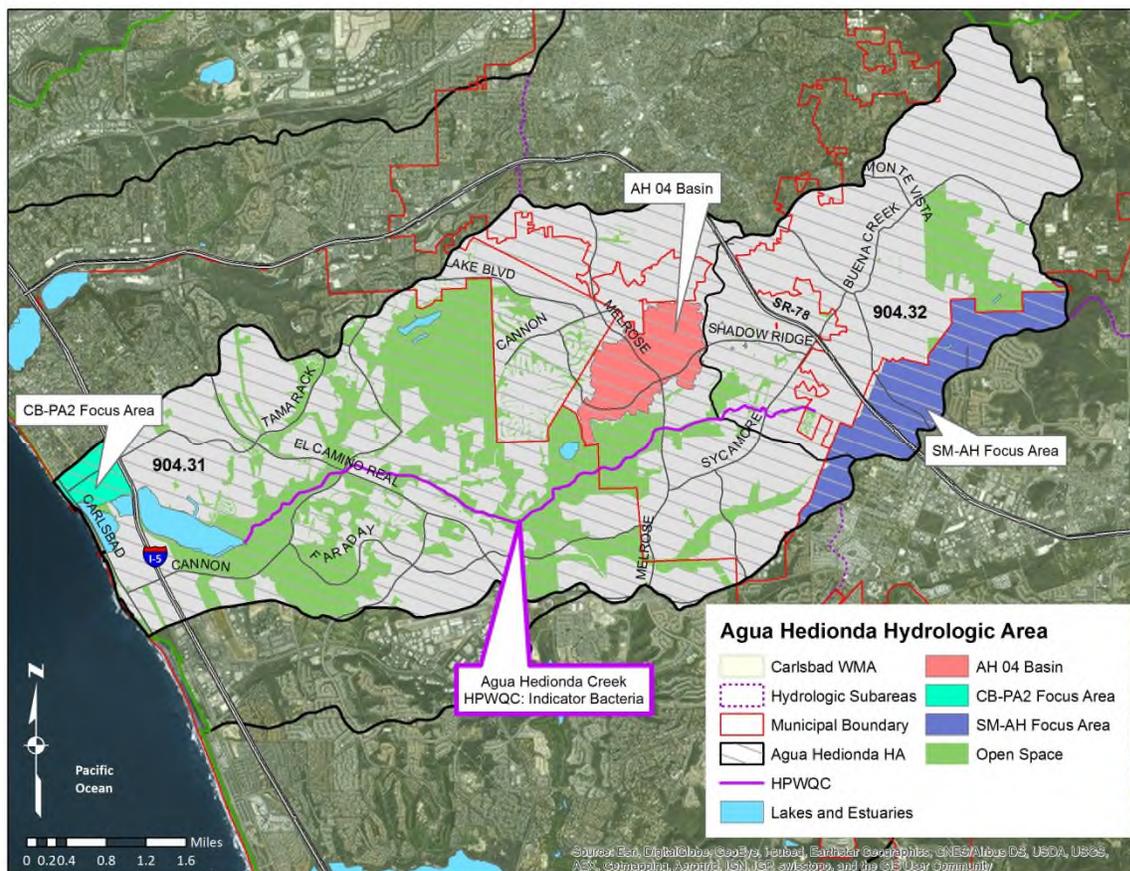


Figure 17: Agua Hedionda Hydrologic Area Highest Priority Water Quality Conditions and Focus Areas

2.3.1 Agua Hedionda HA Sources

The following table presents a listing of inventoried sources in the Agua Hedionda HA and their association with HPWQCs and PWQCs based on source loading potential (2011 LTEA). It is important to note that the PWQCs, toxicity and hydromodification are not presented in the table below. In this HA toxicity is not attributable to specific sources and may be caused by a variety of sources. Hydromodification impacts occur as a result of general land development and not specific sources.

Table 10: Pollutant Generating Sources – 904.3 Agua Hedionda Hydrologic Area

Inventory Sites/Facilities ¹	Quantities ²	Pollutant Source Loading Potential ³								
		Metals	Oil & Grease	Sediment	Pesticides	Nutrients	Bacteria/Pathogens	Dissolved Minerals	Organics	
Agriculture	4	L	UL	L	L	L	L	UK	UL	
Animal Facilities	5	N	UL	L	UK	L	L	N	L	
Auto Repair, Fueling, or Cleaning	67	L	L	UL	UL	UK	UL	L	L	
Auto Parking Lots or Storage	27	L	L	L	UK	UK	UK	UL	L	
Auto Body Repair or Painting	12	L	L	UL	UL	UL	UL	L	L	
Nurseries/Greenhouses	59	L	UL	L	L	L	L	UL	UL	
Building Materials Retail	2	L	L	L	UL	UL	UL	UL	L	
Chemical and Allied Products	4	UK	UK	UK	UK	UK	UL	N	L	
Eating or Drinking Establishments	162	N	L	UL	UK	UK	L	UL	L	
Equipment Repair or Fueling	40	L	L	UL	UL	UK	UL	UL	L	
Fabricated Metal	42	L	L	UK	UK	UK	UL	UL	L	
Food Manufacturing	21	UL	UL	UL	UL	UL	UL	UL	UL	
General Contractors	51	UL	UL	L	UL	UL	UL	UL	UL	
General Industrial	98	L	L	UK	UK	UK	UK	UK	L	
General Retail	58	UL	UL	L	UL	UL	UL	UL	UL	
Motor Freight	10	L	L	UK	UK	UK	UK	UL	L	
Parks and Rec (incl. Golf, Cemetery)	4	UK	UK	UK	UK	L	UK	UL	UK	
Pest Control Services	4	N	UK	N	L	N	UK	N	UK	
POTWs	1	UK	UK	UK	N	UK	L	UL	UK	
Primary Metal	5	L	UK	UK	UK	UK	UL	N	UK	
Recycling & Junk Yards	6	L	L	L	UL	UL	UL	L	L	
Stone/Glass Manufacturing	10	L	L	L	UL	UL	UL	UL	L	
Storage/Warehousing	48	L	L	L	UL	UL	UL	UL	L	
Municipal	69	N	N	L	N	N	UK	UL	N	
Construction	Varies ⁴	UL	UL	L	UL	UL	UL	L	UL	
Residential	6,613 acres	L	L	L	L	L	L	L	L	

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQC are identified in the table (yellow highlight signifies HPWQC). The HPWQC is associated with the sources that are likely to generate those pollutants (blue highlight). The PWQP is highlighted in green and the associated sources that are likely to generate those pollutants are depicted with an "L".

1: Other sources are not reported in this table including: Land Development and Non-inventoried Businesses

2: Quantities based on the Responsible Agencies FY 2012 JURMP Annual Reports

3: Pollutant Source Loading Potential taken from LTEA 2011; N = None, UK = Unknown, UL = Unlikely, L = Likely

4: The quantity of construction sites is dynamic due to projects starting and completing at any given time.

2.3.2 Agua Hedionda HA Goals and Strategies

2.3.2.1 Agua Hedionda HA Goals

Goals have not been established that apply to the entire Agua Hedionda HA. Separate goals have been established for each focus area and are presented in the sub-sections below.

2.3.2.2 Agua Hedionda HA Strategies

The following table identifies the Water Quality Improvement Strategies to be implemented throughout the entire Agua Hedionda HA and in some specific focus areas of the HA. In addition to the planned strategies, optional strategies are identified that may be implemented based on circumstances related to the progress RAs make towards numeric goals and funding. The strategies associated with the focus areas are described further in the sub-sections below.

As the RAs implement strategies and analyze assessment data, it is expected that these strategies and schedules may change through an iterative and adaptive management process. The adaptive management process will be presented in the Final Carlsbad WMA WQIP in June 2015.

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Table 11: Agua Hedionda HA Strategies

Water Quality Improvement Plan Strategies		Jurisdiction/Area					Target Sources								Target Pollutants						Implementation Schedule							
		City of San Marcos	City of Vista	City of Carlsbad	County of San Diego	City of Oceanside	Municipal Fixed Facilities	Industrial and Commercial Facilities/Owners	Construction Sites and Personnel	Residential	General Public	Land Development & Redevelopment	Roads, Streets, Highways and Parking Facilities	MS4	Bacteria/Pathogens	Trash	Heavy Metals	Nutrients	Oil and Grease	Sediment	Pesticides	Previous Fiscal Year(s)	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20	Future Fiscal Year(s)
1	Irrigation Runoff Reduction Program	HA Wide	AH-04 Basin	-	-	-	•	•		•	•	•	•	•	•		•	•	•	•	•		•	•	•	•	•	•
2	Property Based/Patrol Inspections	HA Wide	AH-04 Basin	CB-PA2	-	-	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		•	•	•	•	•	•
3	Targeted Increased Street Sweeping	-	-	CB-PA2	-	-	•	•	•	•		•	•		•				•				•	•	•	•	•	•
5	Provide Maximum Response Time for Complaints Received via Storm Water Hotline	-	-	CB-PA2	-	-	•	•	•	•		•	•	•	•	•	•	•	•	•	•		•	•	•	•	•	•
6	Enhanced Education Program	-	-	CB-PA2	-	-	•	•	•	•				•	•	•	•	•	•	•	•		•	•	•	•	•	•
7	Implement Program Efficiencies	-	-	CB-PA2	-	-	•	•	•	•			•	•	•	•	•	•	•	•	•		•	•	•	•	•	•
8	Residential Areas	-	-	CB-PA2	-	-			•	•				•	•	•	•	•	•	•	•		•	•	•	•	•	•
9	City of San Marcos & Vallecitos Water District (VWD) Irrigation Runoff/Water Waster Program	HA Wide	-	-	-	-	•	•	•	•	•		•			•	•						•	•				
10	City of San Marcos and VWD Fats, Oils and Grease Program Collaboration	HA Wide	-	-	-	-		•	•	•								•					•	•				
11	Homeowners Association and Property Manger Outreach Program	HA Wide	-	-	-	-			•	•			•				•			•			•	•				
12	Enhancements to Education Program	HA Wide	-	-	-	-	•	•	•	•	•			•		•	•			•			•	•				
13	Filter Retrofit Program	HA Wide	-	-	-	-	•					•		•			•						•	•				
14	County of San Diego Enhanced Program Strategies Listing – See Appendix A	-	-	-	HA Wide	-	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
15	Administrative BMPs ¹	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	•	•	•	•	•	•	•										•	•	•	•	•	•
16	Outfall Monitoring	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	•	•	•	•		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
17	Investigations	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

Table 11: Agua Hedionda HA Strategies

Water Quality Improvement Plan Strategies		Jurisdiction/Area					Target Sources							Target Pollutants						Implementation Schedule								
		City of San Marcos	City of Vista	City of Carlsbad	County of San Diego	City of Oceanside	Municipal Fixed Facilities	Industrial and Commercial Facilities/Owners	Construction Sites and Personnel	Residential	General Public	Land Development & Redevelopment	Roads, Streets, Highways and Parking Facilities	MS4	Bacteria/Pathogens	Trash	Heavy Metals	Nutrients	Oil and Grease	Sediment	Pesticides	Previous Fiscal Year(s)	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20	Future Fiscal Year(s)
18	Development and Redevelopment Requirements	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide						•			•	•	•	•	•	•	•	•	•	•	•	•	•	•
19	Construction Site Inspections	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide			•							•				•		•	•	•	•	•	•	
20	Municipal Facilities and Activities Inspections	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	•									•	•	•	•	•	•	•	•	•	•	•	•	
21	Residential Area Inspections	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide			•						•	•		•	•	•	•	•	•	•	•	•	•	
22	Commercial/ Industrial Inspections	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide		•							•	•	•	•	•	•	•	•	•	•	•	•	•	
23	MS4 Inspections/ Cleaning	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide							•		•	•				•		•	•	•	•	•	•	
24	Street Sweeping	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide						•			•	•	•		•	•		•	•	•	•	•	•	
25	Education and Outreach	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	•	•	•	•	•	•			•	•	•	•	•	•	•	•	•	•	•	•	•	
26	Employee Training	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	•					•	•		•	•	•	•	•	•	•	•	•	•	•	•	•	
27	Inspections	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	•	•	•	•		•	•		•	•	•	•	•	•	•	•	•	•	•	•	•	
28	Investigations	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	•	•	•	•	•	•	•		•	•	•	•	•	•	•	•	•	•	•	•	•	
29	Enforcement	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	•	•	•	•	•	•	•		•	•	•	•	•	•	•	•	•	•	•	•	•	
Optional Strategies																												
30	Implement Structural or Retrofit Existing BMPs	HA Wide	AH-04 Basin	CB-PA2	-	-	•	•	•	•		•			•	•	•	•	•	•	•	Based on appropriate criteria for initiating						
31	Implement Offsite Alternative Compliance Program	HA Wide	AH-04 Basin	CB-PA2	HA Wide	-		•	•			•			•	•	•	•	•	•	•	Based on appropriate criteria for initiating						
32	County of San Diego Optional Strategies Listing – See Appendix B																											

¹ Examples of Administrative BMPs include: Plan development, program standardization, maintaining and prioritizing inventories, updating education materials, etc.

2.3.3 Agua Hedionda HA Focus Areas

Concentrating programmatic efforts in specific geographic areas to address known or suspected sources of discharges and pollutants is expected to improve the effectiveness of the strategies and activities.

Based on the RAs review of the characteristics of the Agua Hedionda HA, several focus areas were selected for concentrated programmatic efforts. These focus areas include the AH04 Basin and San SM-AH Basin. The goals and strategies for these focus areas are summarized below.

2.3.3.1 City of Vista -Agua Hedionda 04 (AH04) Basin

The Agua Hedionda 04 (AH04) Basin is a large sub-basin located mid-watershed in the Agua Hedionda HA and discharges through a single outfall to a tributary channel approximately 2,000 feet upstream of Agua Hedionda Creek. The City identified the AH04 Basin as a focus area to concentrate strategy implementation. This focus area is completely within the City of Vista jurisdictional boundaries and has a mixture of single family residential, commercial and multi-family land uses. Land uses include homes, commercial buildings, apartment complexes, common areas, a high school and recreational park areas and a golf course that include landscaping and turf. The AH04 Basin is show in Figure 18 below.

The majority of this basin was developed prior to implementation of the City's Standard Urban Stormwater Mitigation Plan (SUSMP); therefore relatively few treatment control BMPs have been established.

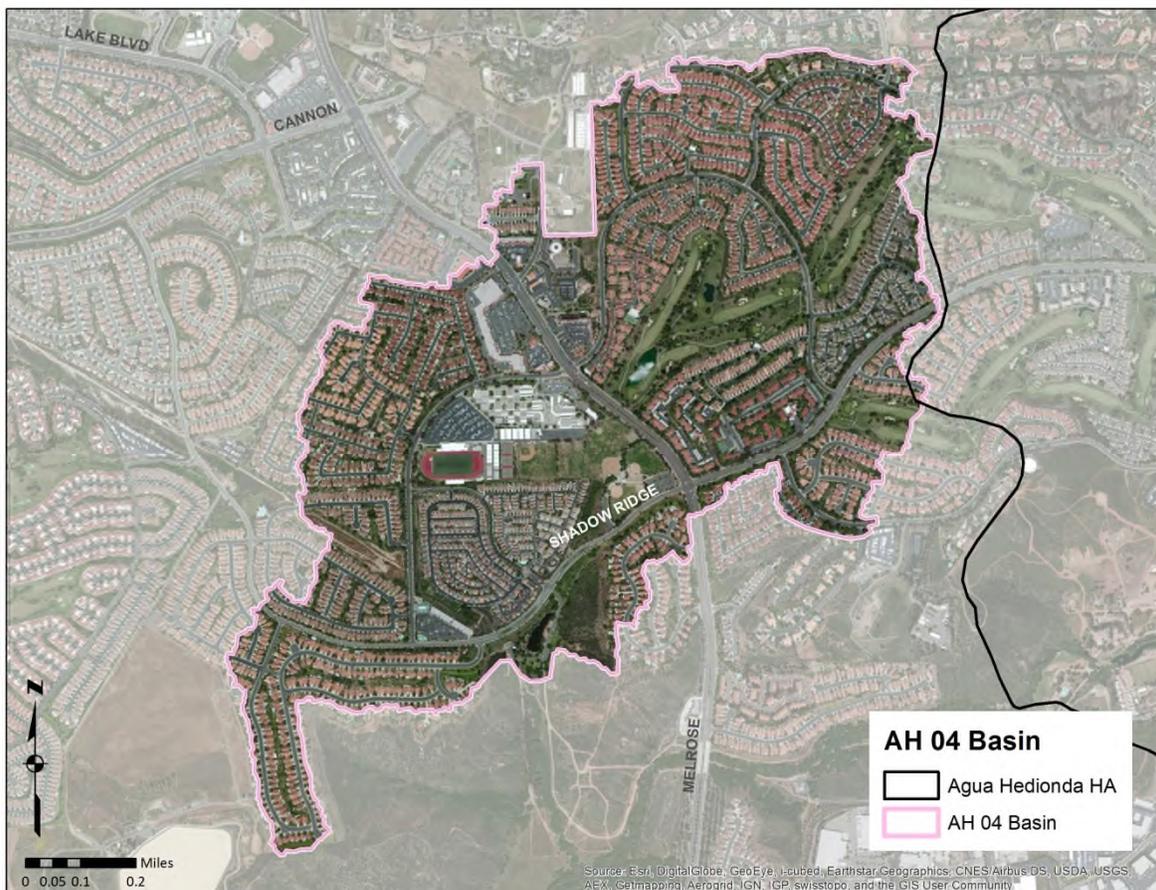


Figure 18: AH04 Basin Focus Area

AH04 Basin Focus Area Interim and Final Numeric Goals

Goals associated with this focus area are summarized in the goal table below. These goals have been established as a part of this initial WQIP development process. As the Responsible Agencies progress through the first several years of implementation and learn through data collection and analysis, it is expected that these goals and schedules will likely change. As goals and schedules are adapted, they will be presented in future WQIP annual reports or updates to the WQIP document.

Table 12: AH04 Basin Focus Area, Interim and Final Numeric Goals

Interim Goal (2013-2018) 2018 ¹	Interim Goal (2018-2023) 2023 ¹	Interim Goal (2023-2028) 2028 ¹	Interim Goal (2028-2033) 2033 ¹	Final Goal (2033-2038) 2038 ¹
10% reduction in anthropogenic dry-weather surface water runoff	20% reduction in anthropogenic dry-weather surface water runoff	40% reduction in anthropogenic dry-weather surface water runoff	60% reduction in anthropogenic dry-weather surface water runoff	80% reduction in anthropogenic dry-weather surface water runoff

¹ Flow reduction goals are currently based on best professional judgment as current flow data is not available. The goals may be adapted as monitoring data/information is gathered, analyzed and baselines are established.

The means for achieving these goals are identified in the strategies discussion below. Mechanisms for measuring progress towards and ultimately achieving these goals will be discussed in the Final Carlsbad WQIP to be completed in June 2015.

AH04 Basin Focus Area Strategies

In addition to the core jurisdictional strategies, the following summarizes supplemental or modified core strategies planned for implementation in the focus area to address the sources of pollutants and discharges.

The selected strategies are expected to have multi-pollutant benefits and intended to address non-stormwater flows and reducing the source loading of bacteria. Reducing non-stormwater flows: (1) reduces the loading of pollutant constituent discharged through MS4 system; (2) reduces the amount of indicator bacteria regrowth and contributions that occurs with accumulated biofilm in MS4 systems that requires water; and (3) reduces the wet-weather contribution of indicator bacteria from scoured biofilm under higher velocity flows from storm discharges.

To accomplish the multi-benefit objectives in the AH04 Basin, the City of Vista will supplement its core jurisdictional program by implementing the following strategies in this focus area:

1) Irrigation Runoff Reduction Program

The objective of the Irrigation Runoff Reduction Program (IRRP) is to eliminate or reduce dry weather flow contributions coming from irrigation runoff, regardless of the time of day the discharges occur. Core elements include:

- Developing educational materials and outreach program specific towards irrigation runoff
- Assessing dry weather flows at outfall(s)
- Identifying key times to perform site observations
- Perform site observations to identify sources of irrigation runoff
- Collaboration with City Public Works Department to address municipal property irrigation systems

- Initiating contact and correspondence with property managers/owners
- Periodically assessing flows
- Optionally developing and implementing an incentive program
- Consider developing municipal codes that prohibit irrigation runoff

2) Property Based/Patrol Inspections

The objective of this program is to reduce discharges to the MS4 and provide inspection of existing development in a more cost efficient and effective manner. Features include:

- Developing patrol and inspection protocols
- Developing and conducting staff training
- Conducting property based/patrol inspections

3) Optional Strategies

- Implement structural (engineered) BMPs or retrofitting existing structural BMPs to address flow and/or pollutant issues
- Implement offsite alternative compliance program to place water quality improvement projects in the AH04 Basin focus area

2.3.3.2 City of San Marcos – Agua Hedionda HA, SM-AH Focus Area

The Agua Hedionda HA extends into the western portion of the City of San Marcos. The City of San Marcos identified SM-AH focus area to concentrate strategy implementation. The SM-AH focus area has a mixture of single family residential, commercial, industrial and multi-family land uses and includes homes, commercial buildings, mobile home park, nurseries, common areas that include landscaping and turf – see Figure 19 below.

The majority of this basin was developed prior to implementation of the City’s Standard Urban Stormwater Mitigation Plan (SUSMP); therefore relatively few treatment control BMPs have been established.

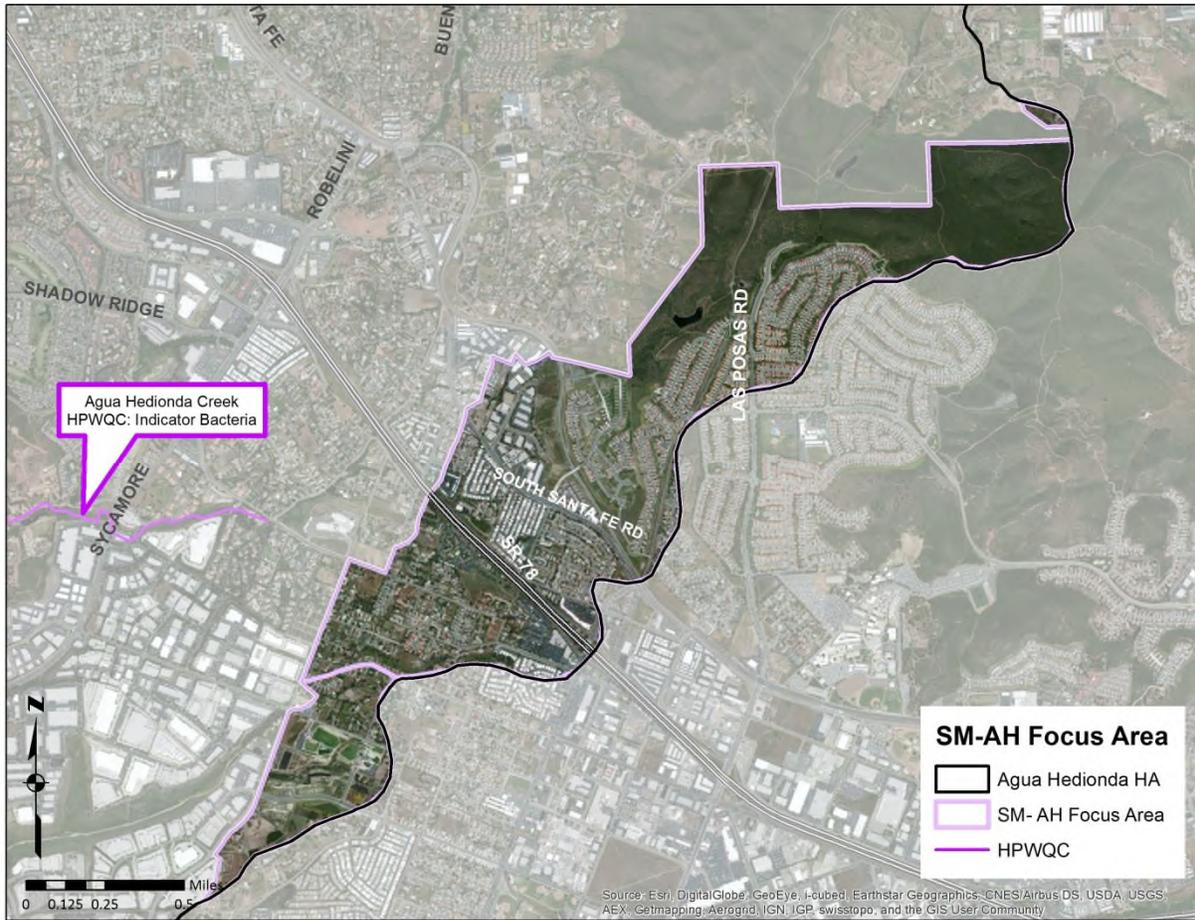


Figure 19: SM-AH Focus Area

SM-AH Focus Area Interim and Final Numeric Goals

Goals associated with this focus area are summarized in the goal table below. These goals have been established as a part of this initial WQIP development process. As the Responsible Agencies progress through the first several years of implementation and learn through data collection and analysis, it is expected that these goals and schedules will likely change. As goals and schedules are adapted, they will be presented in future WQIP annual reports or updates to the WQIP document.

Table 13: SM-AH Focus Area, Interim and Final Numeric Goals

Interim Goal (2013-2018) 2018 ¹	Interim Goal (2018-2023) 2023 ¹	Interim Goal (2023-2028) 2028 ¹	Interim Goal (2028-2033) 2033 ¹	Final Goal (2033-2038) 2038 ¹
10% reduction in anthropogenic dry-weather surface water runoff at selected outfalls	20% reduction in anthropogenic dry-weather surface water runoff at selected outfalls	40% reduction in anthropogenic dry-weather surface water runoff at selected outfalls	60% reduction in anthropogenic dry-weather surface water runoff at selected outfalls	80% reduction in anthropogenic dry-weather surface water runoff at selected outfalls

¹ Flow reduction goals are currently based on best professional judgment as current flow data is not available. The goals may be adapted as monitoring data/information is gathered, analyzed and baselines are established.

The means for achieving these goals are identified in the strategies discussion below. Mechanisms for measuring progress towards and ultimately achieving these goals will be discussed in the Final Carlsbad WQIP to be completed in June 2015.

SM-AH Focus Area Strategies

The City of San Marcos will implement their program core strategies within the focus area. In addition to the core jurisdictional strategies, the following summarizes supplemental or modified core strategies planned for implementation in the focus area to address the sources of pollutants and discharges.

The selected strategies are expected to have multi-pollutant benefits and intended to address non-stormwater flows and reducing the source loading of bacteria. Reducing non-stormwater flows: (1) reduces the loading of pollutant constituent discharged through MS4 system; (2) reduces the amount of indicator bacteria regrowth and contributions that occurs with accumulated biofilm in MS4 systems that requires water; and (3) reduces the wet-weather contribution of indicator bacteria from scoured biofilm under higher velocity flows from storm discharges.

To accomplish the multi-benefit objectives in the SM-AH focus area, the City of San Marcos will supplement its core jurisdictional program by implementing the following strategies:

1) Irrigation Runoff Reduction Program

The objective of the Irrigation Runoff Reduction Program (IRRP) is to eliminate or reduce dry weather flow contributions coming from irrigation runoff, regardless of the time of day the discharges occur. Core elements include:

- Developing municipal codes that prohibit irrigation runoff
- Developing educational materials and outreach program specific towards irrigation runoff
- Assessing dry weather flows at outfall(s)
- Identifying key times to perform site observations
- Perform site observations to identify sources of irrigation runoff
- Collaboration with City Public Works Department to address municipal property irrigation systems
- Initiating contact and correspondence with property managers/owners
- Periodically assessing flows
- Optionally developing and implementing an incentive program

2) Property Based/Patrol Inspections

The objective of this program is to reduce discharges to the MS4 and provide inspection of existing development in a more cost efficient and effective manner. Features include:

- Developing patrol and inspection protocols
- Developing and conducting staff training
- Conducting property based/patrol inspections

The City will perform these property based/patrol inspections multiple times per year at various times of the day to capture irrigation runoff and other non-authorized discharges as well as identify BMP issues.

- 3) City of San Marcos & Vallecitos Water District (VWD) Irrigation Runoff/Water Waster Program
 - City and VWD staff collaborate and communicate regularly to share information regarding reports and complaints
 - Public water waster reporting is available on both City and VWD websites
 - The City developed door hangers for field staff to distribute if water wasting is reported or observed at a property
 - The City developed template response letters identifying both City and VWD requirements
- 4) City of San Marcos & VWD Fats, Oils, and Grease (FOG) Program Collaboration
 - Continue coordination between City and VWD programs. The City anticipates a collaborative work effort between the City's inspection program and VWD's FOG program in order to reduce sewer backups and overflows that result from accumulation of FOG in the sewer system
 - VWD established an Ordinance to regulate FOG
 - VWD visited all of the Food Service Establishments (FSEs) within the City to provide an overview of the program and expectations
 - VWD created a guidance manual provided to each FSE that includes BMP information, maintenance requirements, and record keeping documents
 - VWD will inspect all FSEs at least once a year
- 5) Homeowners Association and Property Manger Outreach Program
 - The City will implement an education and outreach program that encourages and/or incentivizes Home Owners Associations (HOA)s and business property managers to implement measures to reduce dry weather and/or wet weather flows leaving their properties. Practices could include proper installation and maintenance of irrigation systems, conversion to drought tolerant landscaping, downspout disconnection, etc.
- 6) Enhancements to Education Program
 - Bacteria and other priority pollutant specific education and outreach program to be conducted in the SM-AH focus area for residents and commercial facilities related to bacteria and other priority pollutants. The materials will have an emphasis on discharges to the City's MS4 and the receiving waters impacts.
 - Developing and implementing a training/seminar for property managers and others that have direct responsibility for common areas within HOAs and commercial properties. Educational materials and information will be developed and provided to the managers for them to distribute to their residents and tenants.
 - As part of the residential outreach program, the City of San Marcos will work with residents and property owners to educate through various means, which may include school programs, block parties or one-on-one meetings.
- 7) Filter Retrofit Program
 - The City will continue to implement the filter upgrade program.
 - Filters located within public facilities that need repair are retrofitted with new filter systems that contain various media filters to treat dissolvable pollutants including nutrients and bacteria.

8) Optional Strategies

- Implement structural (engineered) BMPs or retrofitting existing structural BMPs to address flow and/or pollutant issues
- Implement offsite alternative compliance program to place water quality improvement projects in the SM-AH Basins

2.3.3.3 CB-PA2 Focus Area

The CB-PA2 focus area is split into two drainage areas located south of Carlsbad Village Drive and CB-PA1. The northern portion of the focus area drains to the north towards Buena Vista Lagoon. The southern portion drains south towards Agua Hedionda Lagoon. This area is a mixture of single family residential, commercial and multi-family land uses and includes homes, commercial buildings, apartment complexes, common areas, a school and recreational park areas that include landscaping and turf – see Figure 20 below.



Figure 20: CB-PA2 Focus Area

CB-PA2 Focus Area Interim and Final Numeric Goals

Goals associated with this focus area are summarized in the goals table below. These goals have been established as a part of this initial WQIP development process. As the Responsible Agencies progress through the first several years of implementation and learn through data collection and analysis, it is

expected that these goals and schedules will likely change. As goals and schedules are adapted, they will be presented in future WQIP annual reports or updates to the WQIP document.

Table 14: CB-PA2 Focus Area, Interim and Final Numeric Goals

Interim Goal (2013-2018) 2018 ¹	Interim Goal (2018-2023) 2023 ¹	Interim Goal (2023-2028) 2028 ¹	Interim Goal (2028-2033) 2033 ¹	Final Goal (2033-2038) 2038 ¹
10% reduction in anthropogenic surface water runoff	20% reduction in anthropogenic surface water runoff	40% reduction in anthropogenic surface water runoff	60% reduction in anthropogenic surface water runoff	80% reduction in anthropogenic surface water runoff

¹ Flow reduction goals are currently based on best professional judgment as current flow data is not available. The goals may be adapted as monitoring data/information is gathered, analyzed and baselines are established.

The means for achieving these goals are identified in the strategies discussion below. Mechanisms for measuring progress towards and ultimately achieving these goals will be discussed in the Final Carlsbad WQIP to be completed in June 2015.

CB-PA2 Focus Area Strategies

The City of Carlsbad will implement their program core strategies within the focus area. In addition to the core jurisdictional strategies, the following summarizes supplemental or modified core strategies planned for implementation in the focus area to address the sources of pollutants and discharges.

The selected strategies are expected to have multi-pollutant benefits and intended to address non-stormwater flows and reducing the source loading of bacteria. Reducing non-stormwater flows: (1) reduces the loading of pollutant constituent discharged through MS4 system; (2) reduces the amount of indicator bacteria regrowth and contributions that occurs with accumulated biofilm in MS4 systems that requires water; and (3) reduces the wet-weather contribution of indicator bacteria from scoured biofilm under higher velocity flows from storm discharges. Removing trash and sediment reduces the bacteria loading that is attached the trash and sediment.

To accomplish the multi-benefit objectives in the CB-PA2, the City of Carlsbad will augment its core jurisdictional program by making the following changes to its core program in this focus area:

- 1) Targeted street sweeping in the focus area will be a minimum frequency of every two weeks.
- 2) Perform property based inspections/patrol inspections of *each* property in the CB-PA2 at least once annually. These inspections will include:
 - a. Visual inspection of all public streets
 - b. Inspections of each existing development property:
 - i. Municipal facilities and areas
 - ii. Each commercial/industrial property
 - iii. Each residential property
- 3) Maintain a maximum response time for complaints received via Storm Water Hotline, or other mechanism. The City will have an Environmental Specialist respond and arrive on-site *within* 45 minutes of notification to eliminate any unauthorized discharge, identify the responsible party and minimize impacts to receiving waters. This response time is expected to eliminate

discharges while they are occurring and provide an opportunity to immediately educate or enforce as necessary.

- 4) Enhancements to education program to include:
 - a. Bacteria and other priority pollutant specific education and outreach program to be conducted in the CB-PA2 for residents and commercial facilities related to bacteria and other priority pollutants. The materials will have an emphasis on discharges to the City's MS4 and the receiving waters impacts.
 - b. Developing and implementing a training/seminar for property managers and others that have direct responsibility for common areas within HOAs and commercial properties. Educational materials and information will be developed and provided to the managers for them to distribute to their residents and tenants.
 - c. As CB-PA2 has a high concentration of Spanish speaking residents, the City will focus on distributing Spanish language outreach materials.
 - d. As part of the residential outreach program, the City of Carlsbad will work with residents and property owners to educate through various means, which may include school programs, block parties or one-on-one meetings.

- 5) Implement Program Efficiencies – The City's new computer database allows for use with mobile devices which will increase the City's response time to IDDE reports, discoveries, complaints and monitoring investigations. This new computer database will also streamline inspections and allow for review of previous information while in the field.

- 6) Residential Area Strategies:
 - a. At a minimum, biannual inspections will be conducted across the entire focus area
 - b. Increased proactive monitoring of the area
 - c. More focused education materials and outreach events

- 7) Optional Strategies
 - Implement structural (engineered) BMPs or retrofitting existing structural BMPs to address flow and/or pollutant issues
 - Implement offsite alternative compliance program to place water quality improvement projects in the CB-PA2 focus area

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2.4 Encinas HA (904.4)

The Encinas HA is 3,400 acres in size, making it the second smallest within the WMA. The HA extends inland from the coast 2.4 miles and the highest elevation within the drainage is approximately 430 feet above mean sea level. The HA begins as a small drainage behind an industrial area where it is immediately channelized. The Encinas Creek continues down through industrial and office parks associated with Palomar Airport until it reaches the lower valley area. It then makes its way to the Pacific Ocean after crossing Interstate 5 and Pacific Coast Highway. The Encinas HA is entirely within the City of Carlsbad and is located between the Agua Hedionda and San Marcos HAs. The only significant receiving water body within Encinas HA is the Pacific Ocean.

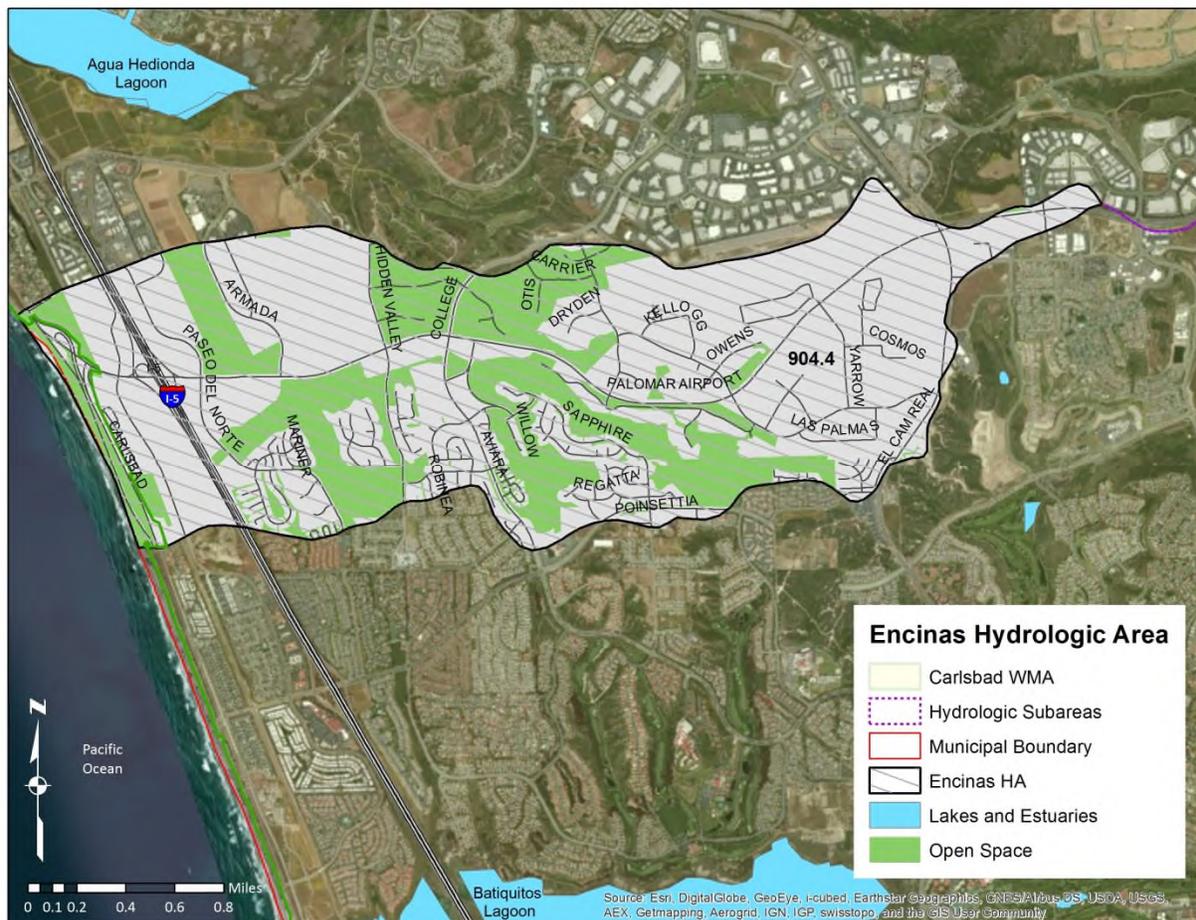


Figure 21: Encinas Hydrologic Area

2.4.1 Encinas HA Sources

The sources listing for Encinas HA is currently under development and will be included in the December 2014 submittal to the RWQCB for public review.

2.4.2 Encinas HA Goals and Strategies

2.4.2.1 Encinas HA Goals

Goals have not been established that apply throughout the entire Encinas HA.

2.4.2.2 Encinas HA Strategies

The following table identifies the Water Quality Improvement Strategies to be implemented throughout the entire Encinas HA.

As the RAs implement strategies and analyze data, it is expected that these strategies and schedules may change through an iterative and adaptive management process. The adaptive management process will be presented in the Final Carlsbad WMA WQIP in June 2015.

Table 15: Encinas HA Strategies

Water Quality Improvement Plan Strategies		Jurisdiction/ Area	Target Sources								Target Pollutants						Implementation Schedule						
		City of Carlsbad	Municipal Fixed Facilities	Industrial and Commercial Facilities / Owners	Construction Sites and Personnel	Residential	General Public	Land Development & Redevelopment	Roads, Streets, Highways and Parking Facilities	MS4	Bacteria/Pathogens	Trash	Heavy Metals	Nutrients	Oil and Grease	Sediment	Pesticides	Previous Fiscal Year(s)	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20
1	Administrative BMPs ¹	HA Wide	•	•	•	•	•	•	•	•							•	•	•	•	•	•	•
2	Outfall Monitoring	HA Wide	•	•	•	•		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
3	Investigations	HA Wide	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
4	Development and Redevelopment Requirements	HA Wide						•			•	•	•	•	•	•	•	•	•	•	•	•	•
5	Construction Site Inspections	HA Wide			•						•				•		•	•	•	•	•	•	•
6	Municipal Facilities and Activities Inspections	HA Wide	•								•	•	•	•	•	•	•	•	•	•	•	•	•
7	Residential Area Inspections	HA Wide				•					•	•	•	•	•	•	•	•	•	•	•	•	•
8	Commercial/ Industrial Inspections	HA Wide		•							•	•	•	•	•	•	•	•	•	•	•	•	•
9	MS4 Inspections/ Cleaning	HA Wide							•		•	•			•		•	•	•	•	•	•	•
10	Street Sweeping	HA Wide						•			•	•		•	•		•	•	•	•	•	•	•
11	Education and Outreach	HA Wide	•	•	•	•	•	•			•	•	•	•	•	•	•	•	•	•	•	•	•
12	Employee Training	HA Wide	•						•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
13	Inspections	HA Wide	•	•	•	•			•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
14	Investigations	HA Wide	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
15	Enforcement	HA Wide	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

¹ Examples of Administrative BMPs include: Plan development, program standardization, maintaining and prioritizing inventories, updating education materials, etc.

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2.5 San Marcos HA (904.5)

The San Marcos Hydrologic Area is the second largest within the WMA. The HA is about 36,000 acres in area and comprises approximately 28% of the Carlsbad WMA. The major receiving waters within the HA are San Marcos Creek, Encinitas Creek, Batiquitos Lagoon, and the Pacific Ocean. San Marcos Creek originates on the western slopes of the Merriam Mountains in west central San Diego County and discharges in to the Pacific Ocean, 14.6 miles away, via Batiquitos Lagoon. Encinitas Creek is another one of the major tributaries in the HA, originating in the hills southwest of Questhaven Road and paralleling El Camino Real before it converges with San Marcos Creek at the southeastern corner of Batiquitos Lagoon. The highest elevation within the HA is approximately 1,540 feet above mean sea level. Lake San Marcos is the largest impoundment within the HA. There are also a number of small agricultural reservoirs on various tributaries in the lower basin. The Cottonwood Creek sub-basin is also located in this HA which drains a portion of Encinitas directly into the Pacific Ocean. The San Marcos HA is primarily located in San Marcos, Carlsbad, Encinitas, and the County of San Diego, with a small portion in Escondido.

During the initial phase of the Water Quality Improvement Plan process, assessment of existing data determined that the priority water quality conditions (PWQCs) within the San Marcos HA include: indicator bacteria at the Pacific Ocean Shoreline at Moonlight Beach; phosphorous in San Marcos Creek; toxicity in San Marcos Creek; and nutrients in San Marcos Lake. Of these PWQC, the *highest priority water quality condition* (HPWQC) in the San Marcos HA was determined to be *indicator bacteria* (dry and wet weather conditions) at the Pacific Ocean Shoreline at Moonlight Beach (June 2014 Carlsbad WMA WQIP submittal to RWQCB).

Figure 22 below, shows the San Marcos HA, HPWQC and focus areas. The focus areas and their associated strategies and goals are explained in more detail below.

Regulatory Drivers

The Pacific Ocean Shoreline of the San Marcos HA has been identified as a waterbody subject to the requirements of San Diego Beaches and Creeks Project I Bacteria Total Maximum Daily Load (TMDL). The TMDL is for REC-1 beneficial use impairments of waterbodies throughout San Diego County. Based on analysis conducted in 2012⁵, it was determined that the Pacific Ocean shoreline at San Marcos HA would not have qualified for REC-1 beneficial use impairment at any time. Therefore, the HA was inappropriately included in the TMDL. The San Marcos HA Responsible Parties are not responsible for any further Bacteria TMDL action, including preparation and submittal of a Load Reduction Plan or Monitoring Plan, as long as monitoring data continues to support compliance with water quality standards. However, if at any time, the Pacific Ocean Shoreline becomes impaired under the Listing Policy⁶, the Responsible Parties will make appropriate modifications to the WQIP to meet the requirements of the Bacteria TMDL. The Responsible Parties will monitor the Pacific Ocean receiving waters and assess the potential for further TMDL actions.

The agencies in the upper portion of the San Marcos HA, tributary to Lake San Marcos, are currently involved in participation agreements with the RWQCB⁷. The intent of the participation agreements is to

⁵ San Marcos Hydrologic Area Responsible Parties analyzed available monitoring data in 2012 and presented to RWQCB

⁶ California Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List

⁷ Lake San Marcos voluntary participation agreement: for more information see <http://www.ci.san-marcos.ca.us/index.aspx?page=529>

develop solutions to water quality impairments in Lake San Marcos. The process is currently on-going and when results are finalized, they will be appropriately incorporated into the Carlsbad WQIP.

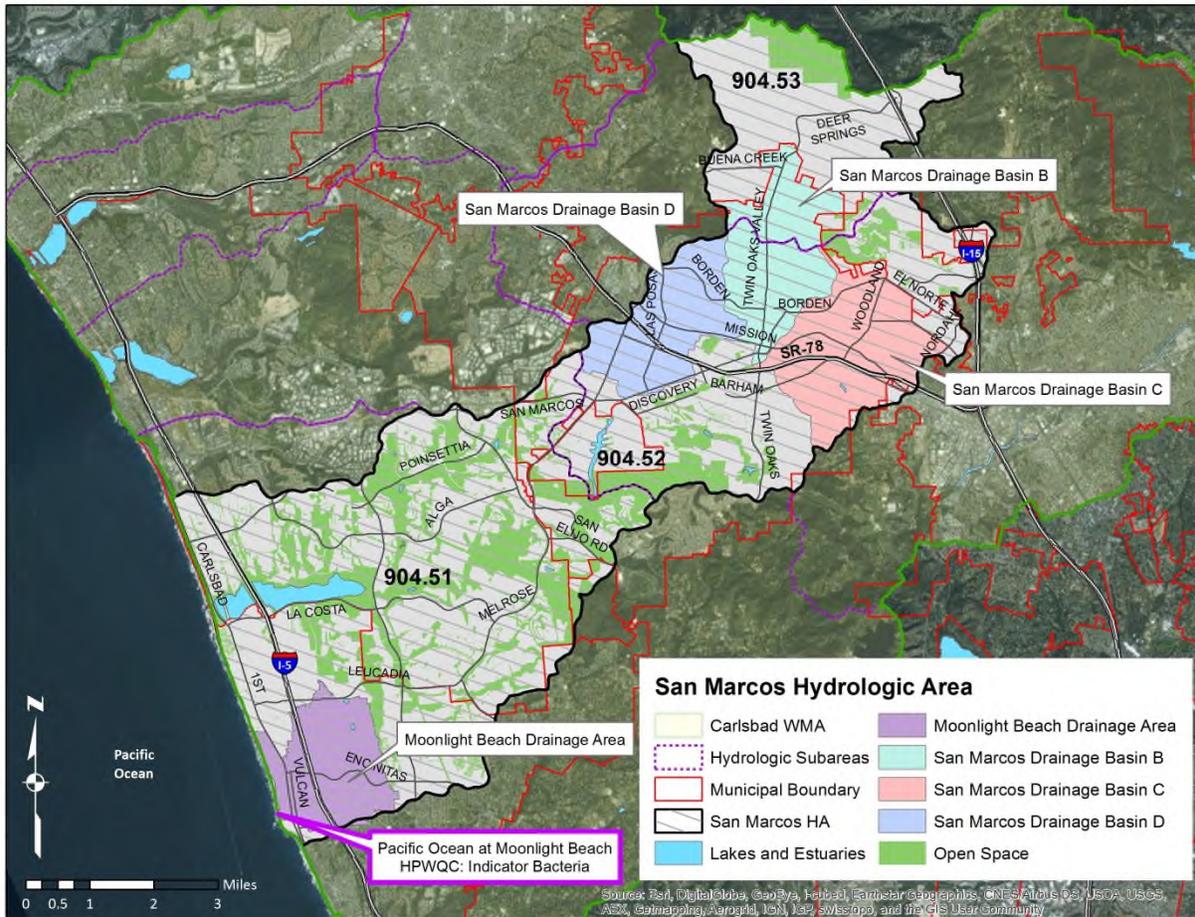


Figure 22: San Marcos Hydrologic Area Highest Priority Water Quality Conditions and Focus Areas

2.5.1 San Marcos HA Sources

The following table presents a listing of inventoried sources in the San Marcos HA and their association with HPWQCs and PWQCs based on source loading potential (2011 LTEA). It is important to note that the PWQC, toxicity, is not presented in the table below because in this HA it is not attributable to specific sources and may be caused by a variety of sources.

Table 16: Pollutant Generating Sources – 904.5 San Marcos Hydrologic Area

Inventory Sites/Facilities ¹	Quantities ²	Pollutant Source Loading Potential ³							
		Metals	Oil & Grease	Sediment	Pesticides	Nutrients	Bacteria/Pathogens	Dissolved Minerals	Organics
Aggregates/Mining	1	L	L	L	UL	UL	UL	UL	L
Animal Facilities	45	N	UL	L	UK	L	L	N	L
Auto Repair, Fueling, or Cleaning	136	L	L	UL	UL	UK	UL	L	L
Auto Parking Lots or Storage	4	L	L	L	UK	UK	UK	UL	L
Auto Body Repair or Painting	48	L	L	UL	UL	UL	UL	L	L
Nurseries/Greenhouses	96	L	UL	L	L	L	L	UL	UL
Building Materials Retail	30	L	L	L	UL	UL	UL	UL	L
Chemical and Allied Products	4	UK	UK	UK	UK	UK	UL	N	L
Concrete Manufacturing	4	L	L	L	UL	UL	UL	UL	L
Eating or Drinking Establishments	501	N	L	UL	UK	UK	L	UL	L
Equipment Repair or Fueling	87	L	L	UL	UL	UK	UL	UL	L
Fabricated Metal	39	L	L	UK	UK	UK	UL	UL	L
Food Manufacturing	30	UL	UL	UL	UL	UL	UL	UL	UL
General Contractors	129	UL	UL	L	UL	UL	UL	UL	UL
General Industrial	76	L	L	UK	UK	UK	UK	UK	L
General Retail	65	UL	UL	L	UL	UL	UL	UL	UL
Health Services	1	N	UL	L	UK	L	UL	UK	L
Motor Freight	23	L	L	UK	UK	UK	UK	UL	L
Offices	2	UK	UK	UK	UK	UK	UK	UK	UK
Parks and Rec (incl. Golf, Cemetery)	9	UK	UK	UK	UK	L	UK	UL	UK
Pest Control Services	1	N	UK	N	L	N	UK	N	UK
Pool and Fountain Cleaning	5	N	N	N	N	UK	N	N	UK
POTWs	3	UK	UK	UK	N	UK	L	UL	UK
Primary Metal	1	L	UK	UK	UK	UK	UL	N	UK
Recycling & Junk Yards	4	L	L	L	UL	UL	UL	L	L
Roads, Streets & Parking	1	L	L	L	UL	L	L	L	L
Stone/Glass Manufacturing	10	L	L	L	UL	UL	UL	UL	L
Storage/Warehousing	108	L	L	L	UL	UL	UL	UL	L
Municipal	119	N	N	L	N	N	UK	UL	N
Construction	Varies ⁴	UL	UL	L	UL	UL	UL	L	UL
Residential	12,977 acres	L	L	L	L	L	L	L	L

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQC are identified in the table (yellow highlight signifies HPWQC). The HPWQC is associated with the sources that are likely to generate those pollutants (blue highlight). The PWQP is highlighted in green and the associated sources that are likely to generate those pollutants are depicted with an "L".

1: Other sources are not reported in this table including: Land Development and Non-inventoried Businesses

2: Quantities based on the Responsible Agencies FY 2012 JURMP Annual Reports

3: Pollutant Source Loading Potential taken from LTEA 2011; N = None, UK = Unknown, UL = Unlikely, L = Likely

4: The quantity of construction sites is dynamic due to projects starting and completing at any given time.

2.5.2 San Marcos HA Goals and Strategies

2.5.2.1 San Marcos HA Goals

While the San Marcos HA is not currently impaired for REC-1 beneficial uses along the Pacific Ocean Shoreline, the area is still included as part of the TMDL requirements of the MS4 Permit Attachment E, Section 6. As a result, the Responsible Agencies have established both interim and final goals for wet and dry weather in the Hydrologic Area that are consistent with the TMDL requirements for indicator bacteria. The goals identify both receiving water and MS4 targets in order to provide opportunities to demonstrate progress toward or achievement of the goals. There are proposed changes to the interim goals, as allowed in the Permit. These changes are justified by the RAs having not been required to develop and implement a Load Reduction Plan (LRP) to date – see discussion in Section 2.5 Regulatory Drivers above. Since the RAs have not had to develop and implement an LRP, the WQIP will act as the planning and implementation document to address the TMDL in this HA. The WQIP will not become effective until years after the original LRP would have been developed and implemented, therefore creating a time gap and justification for differing interim compliance schedules.

The means for achieving the goals are identified in the strategies discussion below. Mechanisms (i.e. monitoring and assessment) for measuring progress toward and ultimately achieving these goals will be discussed in the Final Carlsbad WQIP to be completed in June 2015.

Table 17: San Marcos HA Dry Weather Interim and Final Goals

Interim Goal (2013-2018) 2018	Interim Goal (2018-2023) 2020	Final Goal (2033-2038) 2021
Reduce the anthropogenic surface water runoff at selected MS4 outfall(s) by 10% ¹	Meet TMDL Interim Compliance Requirements (See Note A below)	Meet TMDL Final Compliance Requirements (See Note B below)

¹ Flow reduction goals are currently based on best professional judgment as current flow data is not available. The goals may be adapted as monitoring data/information is gathered, analyzed and baselines are established.

Note A:

Meet TMDL Interim Compliance Requirements [Attachment E, 6.c(3)], which are:

- (a) No direct or indirect discharge from the Moonlight Beach MS4 outfall to the Pacific Ocean; or
- (b) No exceedances of final receiving water limitations for bacteria (i.e., 30-day geometric mean and single sample maximum for TC [1,000 MPN/100 mL, 10,000 MPN/100 mL], FC [200 MPN/100 mL, 400 MPN/100 mL] and ENT [35 MPN/100 mL, 104 MPN/100 mL]) in the Pacific Ocean, at or downstream of the Moonlight Beach MS4 outfall; or
- (c) No exceedances of the final effluent limitations for bacteria (30-day geometric mean and single sample maximum for TC [1,000 MPN/100 mL, 10,000 MPN/100 mL], FC [200 MPN/100 mL, 400 MPN/100 mL] and ENT [35 MPN/100 mL, 104 MPN/100 mL]) at the Moonlight Beach MS4 outfall; or
- (d) Reduce the load of bacteria from MS4 discharges to the Pacific Ocean downstream of Moonlight Beach MS4 outfall by at least 82.82% for TC, 82.55% for FC and 96.03% for ENT for dry weather; or
- (e) Demonstrate that exceedances of the final receiving water limitations in the receiving water are due to loads from natural sources, and pollutant loads from the Moonlight Beach MS4 outfall are not causing or contributing to the exceedances; or
- (f) No exceedances of interim receiving water limitations for bacteria (i.e., reduce the “existing” (2002) exceedance frequency of the 30-day geometric mean by 50%) in the Pacific Ocean downstream of the Moonlight Beach MS4 outfall; or
- (g) Pollutant load reductions for discharges of bacteria from the Moonlight Beach MS4 outfall are greater than or equal to the interim effluent limitations of 41.41% for TC, 41.28% for FC and 48.02% for ENT for dry weather; or
- (h) Implement a WQIP that is accepted by the Regional Board and that provides reasonable assurance that the interim TMDL compliance requirements (i.e., 6.c.(3)(a) through 6.b.(3)(h)) will be achieved.

Note B:

Meet TMDL Final Compliance Requirements [Attachment E, 6.b(3)], which are:

- (a) No direct or indirect discharge from the Moonlight Beach MS4 outfall to the Pacific Ocean; or
- (b) No exceedances of final receiving water limitations for bacteria (i.e., 30-day geometric mean and single sample maximum for TC [1,000 MPN/100 mL, 10,000 MPN/100 mL], FC [200 MPN/100 mL, 400 MPN/100 mL] and ENT [35 MPN/100 mL, 104 MPN/100 mL]) in the Pacific Ocean, at or downstream of the Moonlight Beach MS4 outfall; or
- (c) No exceedances of the final effluent limitations for bacteria (30-day geometric mean and single sample maximum for TC [1,000 MPN/100 mL, 10,000 MPN/100 mL], FC [200 MPN/100 mL, 400 MPN/100 mL] and ENT [35 MPN/100 mL, 104 MPN/100 mL]) at the Moonlight Beach MS4 outfall; or
- (d) Reduce the load of bacteria from Moonlight Beach MS4 outfall by at least 82.82% for TC, 82.55% for FC and 96.03% for ENT for dry weather; or
- (e) Demonstrate that exceedances of the final receiving water limitations in the receiving water are due to loads from natural sources, and pollutant loads from the Moonlight Beach MS4 outfall are not causing or contributing to the exceedances; or
- (f) Implement a WQIP that is accepted by the Regional Board and that provides reasonable assurance that the final TMDL compliance requirements (i.e., 6.b.(3)(a) through 6.b.(3)(e)) will be achieved.

Table 18: San Marcos HA Wet Weather Interim and Final Goals

Interim Goal (2013-2018) 2017 ^c	Interim Goal (2018-2023) 2021 ^c	Interim Goal (2023-2028) 2028	Final Goal (2028-2033) 2031
10% reduction in anthropogenic surface water runoff at selected outfalls ¹	20% reduction in anthropogenic surface water runoff at selected outfalls ¹	Meet TMDL Interim Compliance Requirements (See Note A below)	Meet TMDL Final Compliance Requirements (See Note B below)

¹ Flow reduction goals are currently based on best professional judgment as current flow data is not available. The goals may be adapted as monitoring data/information is gathered, analyzed and baselines are established.

Note A:

Meet TMDL Interim Compliance Requirements [Attachment E, 6.c(3)], which are:

- (a) No direct or indirect discharge from the Moonlight Beach MS4 outfall to the Pacific Ocean; or
- (b) No exceedances of final receiving water limitations for bacteria (i.e., 30-day geometric mean and single sample maximum for TC [1,000 MPN/100 mL, 10,000 MPN/100 mL], FC [200 MPN/100 mL, 400 MPN/100 mL] and ENT [35 MPN/100 mL, 104 MPN/100 mL]) in the Pacific Ocean, at or downstream of the Moonlight Beach MS4 outfall; or
- (c) No exceedances of the final effluent limitations for bacteria (30-day geometric mean and single sample maximum for TC [1,000 MPN/100 mL, 10,000 MPN/100 mL], FC [200 MPN/100 mL, 400 MPN/100 mL] and ENT [35 MPN/100 mL, 104 MPN/100 mL]) at the Moonlight Beach MS4 outfall; or
- (d) Reduce the load of bacteria from MS4 discharges to the Pacific Ocean Shoreline downstream of Moonlight Beach MS4 outfall by at least 18.47% for TC, 18.89% for FC and 20.19% for ENT for wet weather; or
- (e) Demonstrate that exceedances of the final receiving water limitations in the receiving water are due to loads from natural sources, and pollutant loads from the Moonlight Beach MS4 outfall are not causing or contributing to the exceedances; or
- (f) No exceedances of interim receiving water limitations for bacteria (i.e., reduce the “existing” (2002) exceedance frequency of the 30-day geometric mean by 50%) in the Pacific Ocean downstream of the Moonlight Beach MS4 outfall; or
- (g) Pollutant load reductions for discharges of bacteria from the Moonlight Beach MS4 outfall are greater than or equal to the interim effluent limitations of 9.24% for TC, 9.49% for FC and 10.10% for ENT for wet weather; or
- (h) Implement a WQIP that is accepted by the Regional Board and that provides reasonable assurance that the interim TMDL compliance requirements (i.e., 6.c.(3)(a) through 6.b.(3)(h)) will be achieved.

Note B:

Meet TMDL Final Compliance Requirements [Attachment E, 6.b(3)], which are:

- (a) No direct or indirect discharge the Moonlight Beach MS4 outfall to the Pacific Ocean; or
- (b) No exceedances of final receiving water limitations for bacteria (i.e., 30-day geometric mean and single sample maximum for TC [1,000 MPN/100 mL, 10,000 MPN/100 mL], FC [200 MPN/100 mL, 400 MPN/100 mL] and ENT [35 MPN/100 mL, 104 MPN/100 mL]) in the Pacific Ocean, at or downstream of the Moonlight Beach MS4 outfall; or
- (c) No exceedances of the final effluent limitations for bacteria (30-day geometric mean and single sample maximum for TC [1,000 MPN/100 mL, 10,000 MPN/100 mL], FC [200 MPN/100 mL, 400 MPN/100 mL] and ENT [35 MPN/100 mL, 104 MPN/100 mL]) at the MS4 outfalls; or
- (d) Reduce the load of bacteria from Moonlight Beach MS4 outfall by at least 18.47% for TC, 18.89% for FC and 20.19% for ENT for wet weather; or
- (e) Demonstrate that exceedances of the final receiving water limitations in the receiving water are due to loads from natural sources, and pollutant loads from the Moonlight Beach MS4 outfall are not causing or contributing to the exceedances; or
- (f) Implement a WQIP that is accepted by the Regional Board and that provides reasonable assurance that the final TMDL compliance requirements (i.e., 6.b.(3)(a) through 6.b.(3)(e)) will be achieved.

2.5.2.2 San Marcos HA Strategies

The following table identifies the Water Quality Improvement Strategies to be implemented throughout the entire San Marcos HA and in some specific focus areas of the HA. In addition to the planned strategies, optional strategies are identified that may be implemented based on circumstances related to the progress RAs make towards numeric goals and funding. The strategies associated with the focus areas are described further in the sub-sections below.

As the RAs implement strategies and analyze data, it is expected that these strategies and schedules may change through an iterative and adaptive management process. The adaptive management process will be presented in the Final Carlsbad WMA WQIP in June 2015.

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Table 19: San Marcos HA Strategies

Water Quality Improvement Plan Strategies		Jurisdiction/Area					Target Sources							Target Pollutants						Implementation Schedule								
		City of Encinitas	City of San Marcos	City of Carlsbad	City of Escondido	County of San Diego	Municipal Fixed Facilities	Industrial and Commercial Facilities/Owners	Construction Sites and Personnel	Residential	General Public	Land Development & Redevelopment	Roads, Streets, Highways and Parking Facilities	MS4	Bacteria/Pathogens	Trash	Heavy Metals	Nutrients	Oil and Grease	Sediment	Pesticides	Previous Fiscal Year(s)	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20	Future Fiscal Year(s)
1	Ultraviolet Bacteria Treatment Facility Operation	Cottonwood Creek Drainage Basin	-	-	-	-	•			•	•		•	•								•	•	•	•	•	•	•
2	Ultraviolet Bacteria Treatment Facility Upgrade Feasibility Study	Cottonwood Creek Drainage Basin	-	-	-	-	•			•	•		•	•											•	•	•	•
3	Low Impact Development Retrofit Program	Cottonwood Creek Drainage Basin	-	-	-	-			•	•	•	•			•	•	•	•	•	•	•	•	•	•	•	•	•	•
4	Evaluate Sanitary Sewer Maintenance and Overflow Prevention	Cottonwood Creek Drainage Basin	-	-	-	-				•	•				•									•	•	•	•	•
5	Homeowners Association and Property Manager Outreach Program	Cottonwood Creek Drainage Basin	HA Wide	-	-	-				•	•				•	•	•	•	•	•	•				•	•	•	•
6	Plastic Bag Ban	Cottonwood Creek Drainage Basin	-	-	-	-					•					•						•	•	•	•	•	•	•
7	Homeless Encampment Abatement Program	Cottonwood Creek Drainage Basin	-	-	-	-					•				•	•								•				
8	Increased Inspection Frequency for Highest Pollutant Potential Commercial Sources	2nd Street Sub-Basin	-	-	-	-			•		•					•	•		•							•		
9	Property Based/Patrol Inspections	-	B, C & D Drainage Basins	-	-	-	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•			•				
10	Irrigation Runoff Reduction	-	HA Wide	-	HA Wide	-	•	•		•	•		•	•		•	•	•	•	•	•			•	•	•	•	•
11	City of San Marcos & Vallecitos Water District (VWD) Irrigation Runoff/Water Waster Program	-	HA Wide	-	-	-	•	•	•	•	•	•	•			•	•		•	•				•	•			
12	City of San Marcos and VWD Fats, Oils and Grease Program Collaboration	-	HA Wide	-	-	-		•		•	•							•						•	•			
13	Enhancements to Education Program	-	B, C & D Drainage Basins	-	-	-	•	•	•	•	•	•			•		•		•	•				•	•			
14	Civic Center Landscape Conversion Demonstration Project	HA Wide	B Drainage Basin	-	-	-				•	•	•			•			•		•				•	•			

Table 19: San Marcos HA Strategies

Water Quality Improvement Plan Strategies		Jurisdiction/Area					Target Sources							Target Pollutants						Implementation Schedule								
		City of Encinitas	City of San Marcos	City of Carlsbad	City of Escondido	County of San Diego	Municipal Fixed Facilities	Industrial and Commercial Facilities/Owners	Construction Sites and Personnel	Residential	General Public	Land Development & Redevelopment	Roads, Streets, Highways and Parking Facilities	MS4	Bacteria/Pathogens	Trash	Heavy Metals	Nutrients	Oil and Grease	Sediment	Pesticides	Previous Fiscal Year(s)	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20	Future Fiscal Year(s)
15	Filter Retrofit Program	-	HA Wide	-	-	-	•						•		•			•					•	•				
16	County of San Diego Enhanced Program Strategies Listing – See Appendix A	-	-	-	-	HA Wide	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
17	Administrative BMPs ¹	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	•	•	•	•	•	•	•									•	•	•	•	•	•	•
18	Outfall Monitoring	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	•	•	•	•		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
19	Investigations	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
20	Development and Redevelopment Requirements	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide					•				•	•	•	•	•	•	•	•	•	•	•	•	•	•
21	Construction Site Inspections	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide			•							•				•		•	•	•	•	•	•	•
22	Municipal Facilities and Activities Inspections	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	•									•	•	•	•	•	•	•	•	•	•	•	•	•
23	Residential Area Inspections	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide				•					•	•		•	•	•	•	•	•	•	•	•	•	•
24	Commercial/Industrial Inspections	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide		•							•	•	•	•	•	•	•	•	•	•	•	•	•	•
25	MS4 Inspections/Cleaning	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide							•	•	•				•			•	•	•	•	•	•	•
26	Street Sweeping	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide						•		•	•	•		•	•			•	•	•	•	•	•	•
27	Education and Outreach	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	•	•	•	•	•	•		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
28	Employee Training	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	•					•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
29	Inspections	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	•	•	•	•		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
30	Investigations	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
31	Enforcement	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Optional Strategies																												
32	Implement Structural or Retrofit BMPs	Cottonwood Creek Drainage Basin	HA Wide	-	-	-	•	•	•	•		•		•	•	•	•	•	•	•	•	Based on appropriate criteria for initiating						
33	Implement Offsite Alternative Compliance Program	-	B, C & D Drainage Basins	-	HA Wide	HA Wide			•		•			•	•	•	•	•	•	•	Based on appropriate criteria for initiating							
34	County of San Diego Optional Strategies Listing – See Appendix B																											

¹ Examples of Administrative BMPs include: Plan development, program standardization, maintaining and prioritizing inventories, updating education materials, etc.

2.5.3 San Marcos HA Focus Areas

Concentrating programmatic efforts in specific geographic areas to address known or suspected sources of discharges and pollutants is expected to improve the effectiveness of the strategies and activities.

Based on the RAs review of the characteristics of the San Marcos HA, several areas of focus were selected for concentrated programmatic efforts. These focus areas include the Cottonwood Creek Drainage Area, Second Street Drainage Area (within the Cottonwood Creek Drainage Area) and the City of San Marcos jurisdiction within the San Marcos HA. The goals and strategies for these focus areas are summarized below.

2.5.3.1 Cottonwood Creek Drainage Area

The Cottonwood Creek Drainage Area is located in the lower San Marcos HA. The City has identified this drainage area and a sub-area, the 2nd Street Drainage Areas to focus additional strategies. Both focus areas are completely within the City of Encinitas jurisdictional boundaries and have a variety of land uses including a mixture of single family residential, commercial and multi-family, commercial buildings, apartment complexes, nurseries, common areas and recreational park areas that include landscaping and turf. The focus areas are show in Figure 23 below.

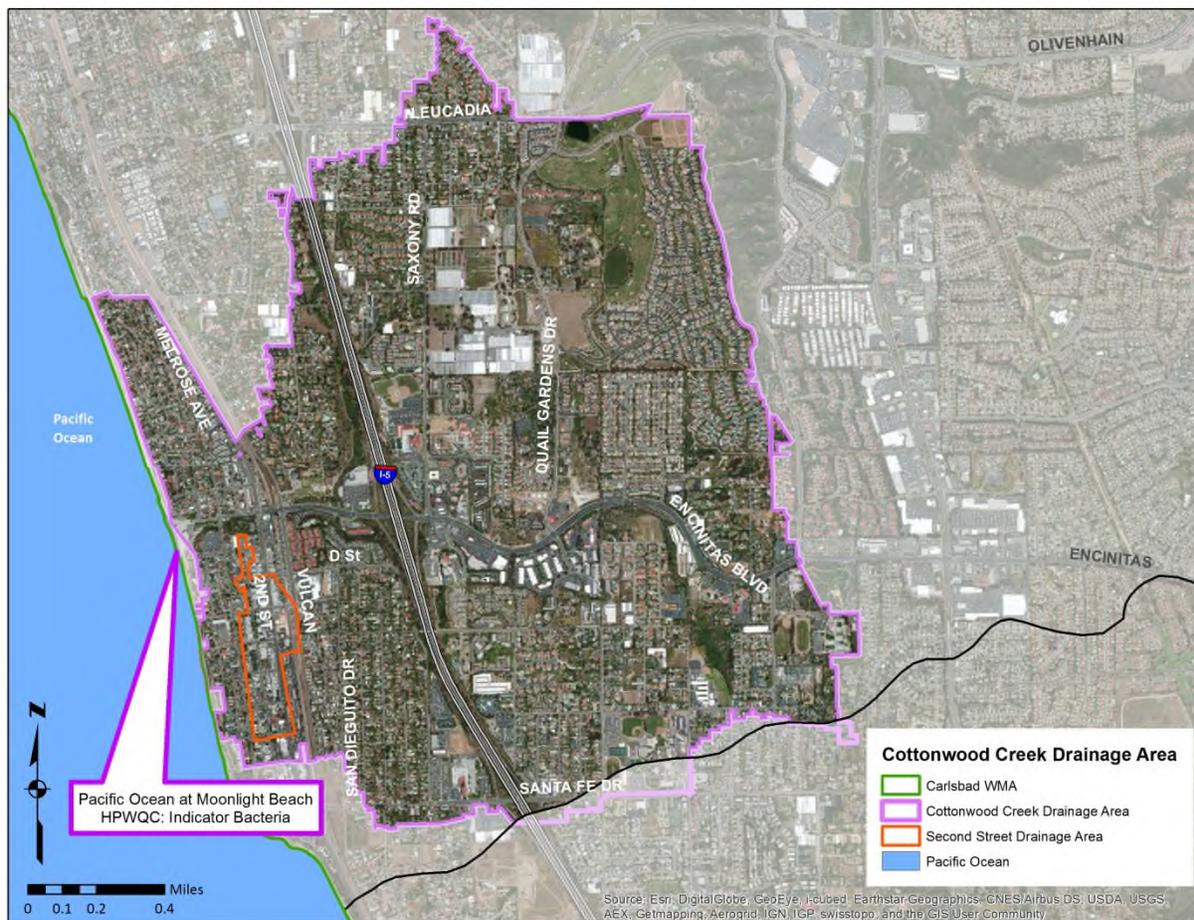


Figure 23: Cottonwood Creek and 2nd Street Drainage Areas

Cottonwood Creek Drainage Basin Interim and Final Numeric Goals

Goals have not been established separately for Cottonwood Creek and Second Street Drainage Basins. The goals associated with these focus areas are the same goals that apply throughout the entire San Marcos Hydrologic Area, as shown in Table 17 and 18 above.

Cottonwood Creek and 2nd Street Drainage Basin Strategies

The City of Encinitas has been implementing programmatic strategies throughout its City, to control pollutants and non-stormwater discharges from its MS4 system, including the Cottonwood Creek drainage basin.

The City of Encinitas will implement their program core strategies within the focus area. In addition to the core jurisdictional strategies, the following summarizes supplemental or modified core strategies planned for implementation in the focus area to address the sources of pollutants and discharges.

The selected strategies are specifically intended to address non-stormwater flows and thereby expected to have multi-pollutant benefits as well as reduce the source loading of bacteria. Reducing non-stormwater flows: (1) reduces the loading of pollutant constituents discharged through the MS4 system; (2) reduces the amount of indicator bacteria regrowth in the enclosed portion of the MS4 system; and (3) reduces the wet-weather contribution of indicator bacteria from scoured biofilm during high velocity storm flows.

To accomplish the multi-benefit objectives in the Moonlight Creek Basin, the City of Encinitas will supplement its core jurisdictional program by implementing the following strategies in the focus areas:

1) Operation of the Ultraviolet Bacteria Treatment Facility

The City has operated an ultraviolet (UV) treatment system just upstream of Cottonwood Creek since 2005. The City will continue to operate and maintain the treatment facility during dry weather conditions. The system effectively eliminates 99% of the indicator bacteria passing through the system.

2) Ultraviolet Bacteria Treatment Facility Upgrade Feasibility Study

The City of Encinitas will perform a feasibility study to determine if modifications to the operations of the treatment facility would yield beneficial results from wet weather operation. The study will evaluate whether operating the UV facility outside the typical dry season would affect water quality downstream. The results of this study will be used in conjunction with a bacteria monitoring study to assess compliance with current water quality standards. The resulting analysis will inform the City of options for modifying treatment facility operations to improve effectiveness. After evaluating the feasibility and monitoring studies, the City may initiate changed operations at its UV treatment facility as an optional strategy.

3) Low Impact Development Retrofit Program

The City is currently preparing a Low Impact Development (LID) Retrofit program specific to the Cottonwood Creek Drainage Basin. The LID Retrofit program consists of a two pronged implementation approach with a goal of improved source control and treatment control throughout the watershed. The program will include a) concept designs for proposed LID retrofit projects, and b) public education designed to compel residents to become watershed stewards by installing LID features in their yards.

The City is currently siting and preparing conceptual designs for four (4) LID retrofit projects. One of the criterion for site selection is the opportunity to intercept and redirect non-storm water flows from the City's MS4 system. Once the designs have been completed, the City will seek funding opportunities to construct these optional strategies in this basin.

To further the public's understanding and knowledge of LID as an effective mechanism for water quality improvements, the City will implement a pilot project to educate and motivate homeowners to reduce irrigation runoff and/or wet weather flows by implementing:

- Landscape water conservation practices (drip irrigation, turf reduction, etc.)
- Small-scale LID features (downspout disconnects, bioretention basins, etc.).

Existing water conservation incentives will be promoted through the program. Existing incentives include rebates for turf removal and installation of drip irrigation, both of which reduce overall water use and irrigation runoff. The pilot project will focus on the neighborhoods along Pacific View Lane and Sea View Court within the Cottonwood Creek Drainage Basin. This neighborhood was targeted due to observed presence of irrigation runoff. Based on lessons learned from the pilot project, the City may choose to expand the program to cover additional neighborhoods within the Cottonwood Creek Drainage Area.

4) Evaluate Sanitary Sewer Maintenance and Overflow Prevention

The City will evaluate sewer system maintenance frequencies and Fats Oil and Grease program policies, including procedures targeted at private laterals, to protect the Moonlight Beach Shoreline. While the City has not had sanitary sewer overflows (SSOs) recently, evaluating the City's SSMP is important as a proactive step. Based on the findings of the evaluation, the City may make modifications to its maintenance program to prevent SSOs.

5) Homeowners Association and Property Manager Outreach Program

The City will implement an education and outreach program that encourages and/or incentivizes Home Owners Associations (HOA)s and business property managers to implement measures to reduce dry weather and/or wet weather flows leaving their properties. Practices could include proper installation and maintenance of irrigation systems, conversion to drought tolerant landscaping, downspout disconnection, etc.

6) Plastic Bag Ban

The City of Encinitas passed an ordinance banning distribution of single use plastic bags on August 20, 2014. The ban applies to large retailers, grocery stores, drug stores, convenience stores, and mini-markets in spring 2015 and to farmers markets and all other retailers in fall 2015.

7) Homeless Encampment Abatement

The City will develop and implement a program to eradicate homeless encampments from riparian areas within the City. Associated with this program will be an educational component focusing on homeless waste practices related to degraded water quality conditions.

8) Optional Strategy

- Implement structural (engineered) BMPs or retrofitting existing structural BMPs to address flow and/or pollutant issues

2nd Street Sub-Basin

In the 2nd Street sub-basin, where there is a relatively higher concentration of commercial businesses including restaurants. In addition to the strategies listed above, the City will implement the following:

Increased Inspection Frequency for Highest Pollutant Potential Commercial Sources

More frequent inspections will be targeted at specific high-threat areas or activities in the 2nd Street sub-basin. High priority sites will be inspected twice per year, which is two times more than the minimum commercial inspection requirements mandated in the Municipal Permit.

2.5.3.2 City of San Marcos – San Marcos HA Focus Area

The San Marcos HA extends into the center portion of the City of San Marcos near the upper portion of the HA. Within the City of San Marcos there are four sub-basins that are a part of the San Marcos HA. The basins have a mixture of commercial, industrial, single family residential, and multi-family land uses. Nearly all of the four sub-basins drain through Upper San Marcos Creek to Lake San Marcos.

Within the four sub-basins, the City has identified B, C, and D Drainage Areas as their focus areas. These focus areas are considered a higher threat to water quality due to their proximity to tributary channels to San Marcos Creek and the business nature of the land uses (commercial and industrial). The focus areas are shown below in Figures 24, 25, and 26 below.

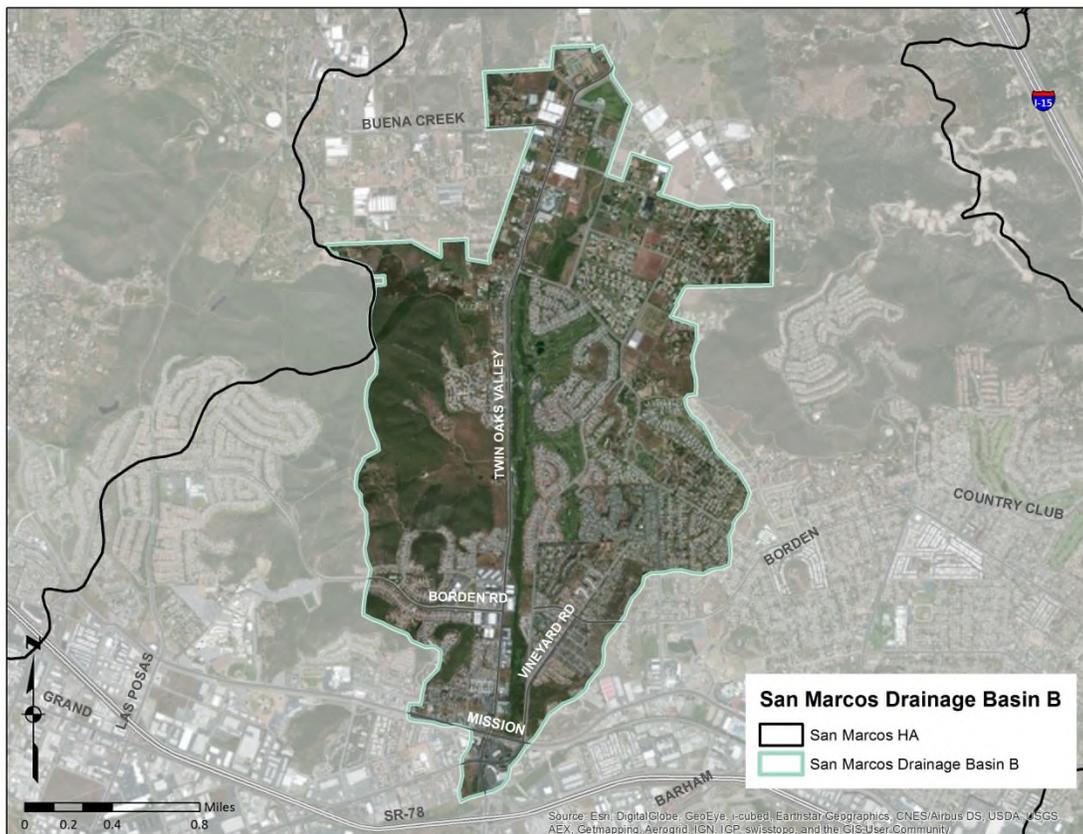


Figure 24: San Marcos Drainage Basin B

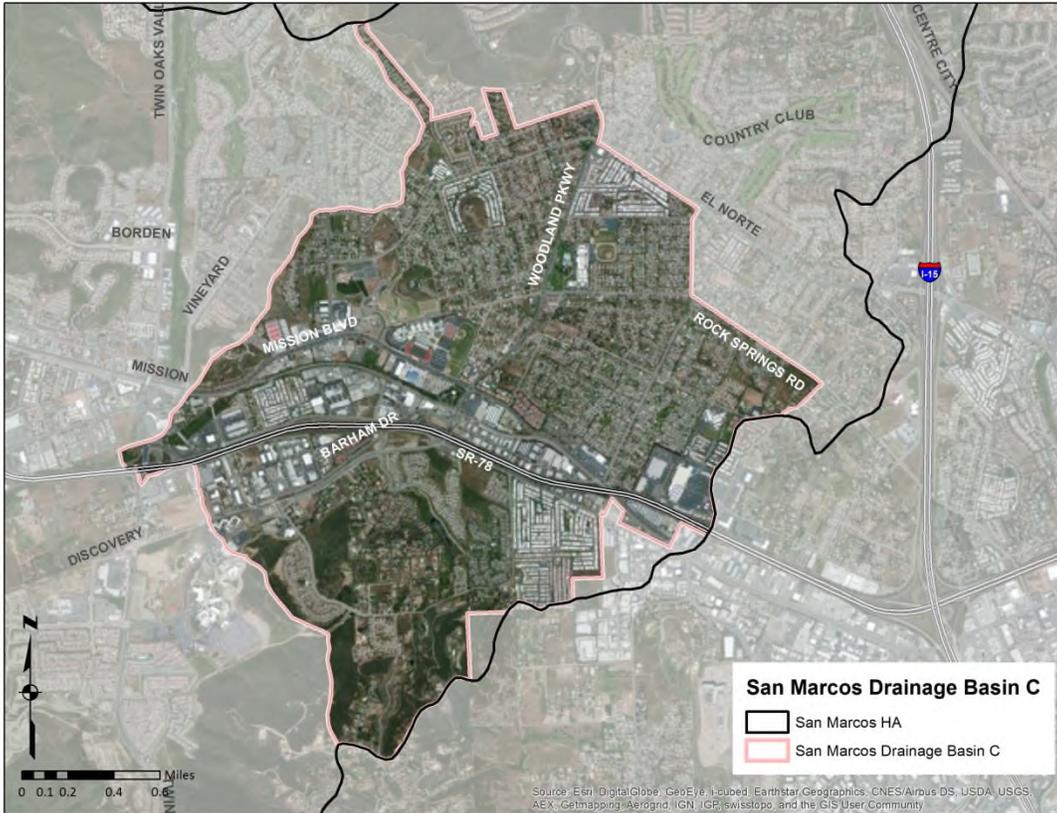


Figure 25: San Marcos Drainage Basin C



Figure 26: San Marcos Drainage Basin D

San Marcos B, C and D Drainage Basin Interim and Final Numeric Goals

Goals have not been established separately for San Marcos B, C and D Drainage Basins.

San Marcos B, C and D Drainage Basin Strategies

The City of San Marcos will implement its program core strategies within these focus areas. In addition to the core jurisdictional strategies, the following summarizes supplemental or modified core strategies planned for implementation in the focus area to address the sources of pollutants and discharges.

The selected strategies are expected to have multi-pollutant benefits and intended to address non-stormwater flows and reducing the source loading of nutrients. Reducing non-stormwater flows: (1) reduces the loading of pollutant constituent discharged through MS4 system; (2) reduces the amount of indicator bacteria regrowth and contributions that occurs with accumulated biofilm in MS4 systems that requires water; and (3) reduces the wet-weather contribution of indicator bacteria from scoured biofilm under higher velocity flows from storm discharges.

To accomplish the multi-benefit objectives in the San Marcos B, C and D Basins, the City of San Marcos will supplement its core jurisdictional program by implementing the following strategies in this focus area:

1) Irrigation Runoff Reduction Program

The objective of the Irrigation Runoff Reduction Program (IRRP) is to eliminate or reduce dry weather flow contributions coming from irrigation runoff, regardless of the time of day the discharges occur. Core elements include:

- Developing municipal codes that prohibit irrigation runoff
- Developing educational materials and outreach program specific towards irrigation runoff
- Assessing dry weather flows at outfall(s)
- Identifying key times to perform site observations
- Perform site observations to identify sources of irrigation runoff
- Collaboration with City Public Works Department to address municipal property irrigation systems
- Initiating contact and correspondence with property managers/owners
- Periodically assessing flows
- Optionally developing and implementing an incentive program

2) Property Based/Patrol Inspections

The objective of this program is to reduce discharges to the MS4 and provide inspection of existing development in a more cost efficient and effective manner. Features include:

- Developing patrol and inspection protocols
- Developing and conducting staff training
- Conducting property based/patrol inspections

The City will perform these property based/patrol inspections multiple times per year at various times of the day to capture irrigation runoff and other non-authorized discharges as well as identify BMP issues.

- 3) City of San Marcos & Vallecitos Water District (VWD) Irrigation Runoff/Water Waster Program
 - City and VWD staff collaborate and communicate regularly to share information regarding reports and complaints
 - Public water waster reporting is available on both City and VWD websites
 - The City developed door hangers for field staff to distribute if water wasting is reported or observed at a property
 - The City developed template response letters identifying both City and VWD requirements
- 4) City of San Marcos & VWD Fats, Oils, and Grease (FOG) Program Collaboration
 - Continue coordination between City and VWD programs. The City anticipates a collaborative work effort between the City's inspection program and VWD's FOG program in order to reduce sewer backups and overflows that result from accumulation of FOG in the sewer system
 - VWD established an Ordinance to regulate FOG
 - VWD visited all of the Food Service Establishments (FSEs) within the City to provide an overview of the program and expectations
 - VWD created a guidance manual provided to each FSE that includes BMP information, maintenance requirements, and record keeping documents
 - VWD will inspect all FSEs at least once a year
- 5) Homeowners Association and Property Manger Outreach Program
 - The City will implement an education and outreach program that encourages and/or incentivizes Home Owners Associations (HOA)s and business property managers to implement measures to reduce dry weather and/or wet weather flows leaving their properties. Practices could include proper installation and maintenance of irrigation systems, conversion to drought tolerant landscaping, downspout disconnection, etc.
- 6) Enhancements to Education Program
 - Bacteria and other priority pollutant specific education and outreach program to be conducted in the B,C and D focus areas for residents and commercial facilities related to bacteria and other priority pollutants. The materials will have an emphasis on discharges to the City's MS4 and the receiving waters impacts.
 - Developing and implementing a training/seminar for property managers and others that have direct responsibility for common areas within HOAs and commercial properties. Educational materials and information will be developed and provided to the managers for them to distribute to their residents and tenants.
 - As part of the residential outreach program, the City of San Marcos will work with residents and property owners to educate through various means, which may include school programs, block parties or one-on-one meetings.
- 7) Civic Center Landscape Conversion Demonstration Project
 - This program's objectives are to:
 - Provide measurable water use efficiency and water quality benefits in receiving waters.
 - Demonstrate the link between irrigation runoff reduction and associated reductions in pollutant concentrations and loading.

- To meet the objectives, this program will use landscape renovation, advances in irrigation technology, flow and water quality monitoring prior to and post renovation, and an education/outreach program.

8) Filter Retrofit Program

- The City will continue to implement the filter upgrade program.
- Filters located within public facilities that need repair are retrofitted with new filter systems that contain various media filters to treat dissolvable pollutants including nutrients and bacteria.

9) Optional Strategies

- Implement structural (engineered) BMPs or retrofitting existing structural BMPs to address flow and/or pollutant issues
- Implement offsite alternative compliance program to place water quality improvement projects in the San Marcos B, C and D Drainage Basins

2.6 Escondido Creek HA (904.6)

The Escondido Creek Hydrologic Area is the largest and most complex system within the WMA. The HA extends approximately 24.6 miles inland from the coast and totals 54,100 acres in the area, comprising 40% of the WMA. Escondido Creek watershed originates in Bear Valley in north central San Diego County and discharges into the Pacific Ocean via San Elijo Lagoon. Elevations within the HA range from sea level to 2,420 feet on the ridges above Bear Valley. There are two reservoirs within the watershed: Lake Wohlford and Dixon Lake. Most of the HA is in unincorporated areas of the County (55%). The remaining is in the cities of Escondido and Encinitas, with a small portion in San Marcos and Solana Beach. The primary receiving waters are Escondido Creek, Lake Wohlford, Lake Dixon, Reidy Creek, San Elijo Lagoon, and the Pacific Ocean.

During the initial phase of the Water Quality Improvement Plan process, assessment of existing data determined that the priority water quality conditions (PWQCs) within the Escondido Creek HA include: indicator bacteria in Escondido Creek and San Elijo Lagoon; toxicity in Escondido Creek; nutrients in Escondido Creek; sediment/siltation in San Elijo Lagoon; and eutrophic condition in San Elijo Lagoon. Of these PWQC, the *highest priority water quality condition* (HPWQC) in the Escondido Creek HA was determined to be *indicator bacteria* in Escondido Creek (wet weather conditions) and San Elijo Lagoon (dry weather conditions) (June 2014 Carlsbad WMA WQIP submittal to RWQCB).

Figure 27 below, shows the Escondido Creek HA, HPWQC and focus areas. The focus areas and their associated strategies and goals are explained in more detail below.

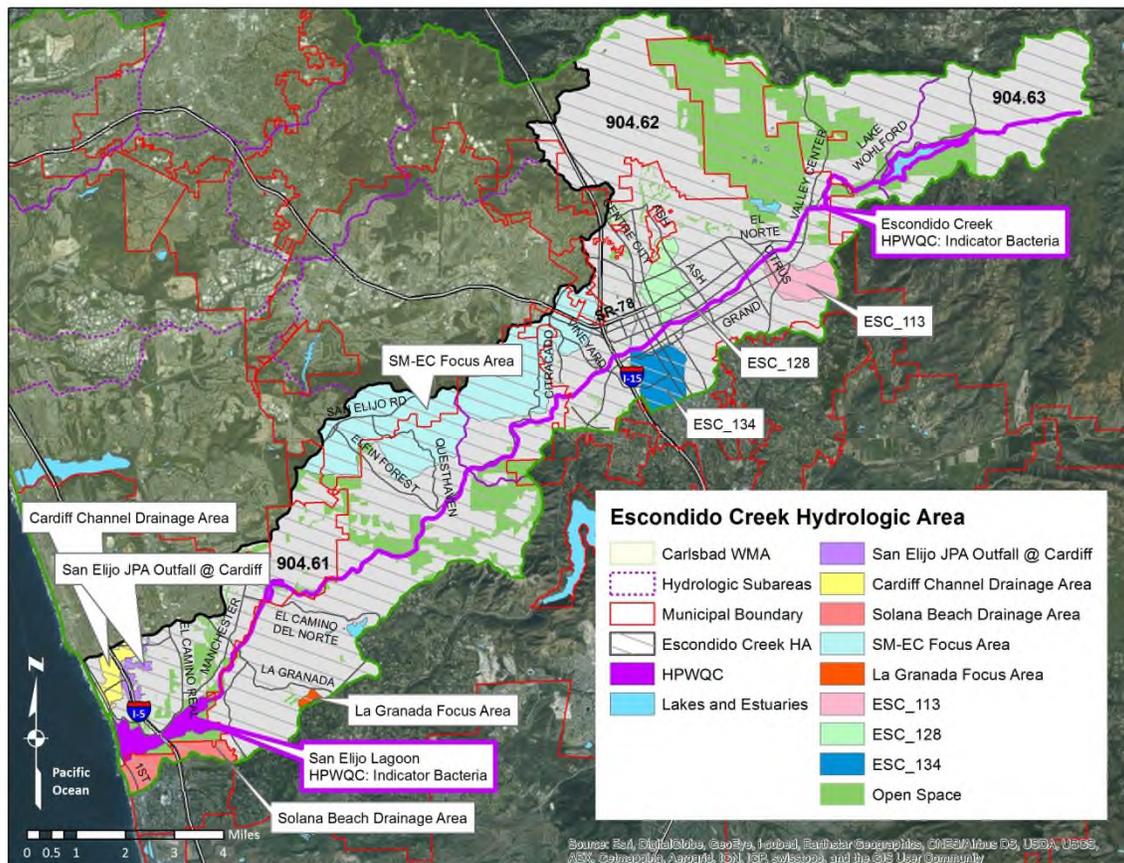


Figure 27: Escondido Creek HA Highest Priority Water Quality Conditions and Focus Areas

2.6.1 Escondido Creek HA Sources

The following table presents a listing of inventoried sources in the Escondido Creek HA and their association with HPWQCs and PWQCs based on source loading potential (2011 LTEA). It is important to note that the PWQC, toxicity, is not presented in Table 6 because sources are unknown. Toxicity in this HA is not attributable to specific sources and may be caused by a variety of sources. The PWQC, eutrophic condition, is included in the “nutrients” category in the table below.

Table 20: Pollutant Generating Sources – 904.6 Escondido Creek Hydrologic Area

Inventory Sites/Facilities ¹	Quantities ²	Pollutant Source Loading Potential ³								
		Metals	Oil & Grease	Sediment	Pesticides	Nutrients	Bacteria/Pathogens	Dissolved Minerals	Organics	
Animal Facilities	25	N	UL	L	UK	L	L	N	L	
Auto Repair, Fueling, or Cleaning	306	L	L	UL	UL	UK	UL	L	L	
Auto Parking Lots or Storage	97	L	L	L	UK	UK	UK	UL	L	
Auto Body Repair or Painting	38	L	L	UL	UL	UL	UL	L	L	
Nurseries/Greenhouses	29	L	UL	L	L	L	L	UL	UL	
Building Materials Retail	24	L	L	L	UL	UL	UL	UL	L	
Concrete Manufacturing	5	L	L	L	UL	UL	UL	UL	L	
Eating or Drinking Establishments	410	N	L	UL	UK	UK	L	UL	L	
Equipment Repair or Fueling	40	L	L	UL	UL	UK	UL	UL	L	
Fabricated Metal	53	L	L	UK	UK	UK	UL	UL	L	
Food Manufacturing	11	UL	UL	UL	UL	UL	UL	UL	UL	
General Contractors	155	UL	UL	L	UL	UL	UL	UL	UL	
General Industrial	53	L	L	UK	UK	UK	UK	UK	L	
General Retail	156	UL	UL	L	UL	UL	UL	UL	UL	
Health Services	8	N	UL	L	UK	L	UL	UK	L	
Motor Freight	17	L	L	UK	UK	UK	UK	UL	L	
Offices	8	UK	UK	UK	UK	UK	UK	UK	UK	
Parks and Rec	7	UK	UK	UK	UK	L	UK	UL	UK	
Pest Control Services	15	N	UK	N	L	N	UK	N	UK	
POTWs	1	UK	UK	UK	N	UK	L	UL	UK	
Primary Metal	4	L	UK	UK	UK	UK	UL	N	UK	
Recycling & Junk Yards	10	L	L	L	UL	UL	UL	L	L	
Roads, Streets & Parking	1	L	L	L	UL	L	L	L	L	
Stone/Glass Manufacturing	21	L	L	L	UL	UL	UL	UL	L	
Storage/Warehousing	30	L	L	L	UL	UL	UL	UL	L	
Municipal	100	N	N	L	N	N	UK	UL	N	
Construction	Varies ⁴	UL	UL	L	UL	UL	UL	L	UL	
Residential	18,910 acres	L	L	L	L	L	L	L	L	

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQC are identified in the table (yellow highlight signifies HPWQC). The HPWQC is associated with the sources that are likely to generate those pollutants (blue highlight). The PWQP is highlighted in green and the associated sources that are likely to generate those pollutants are depicted with an “L”.

1: Other sources are not reported in this table including: Land Development and Non-inventoried Businesses

2: Quantities based on the Responsible Agencies FY 2012 JURMP Annual Reports

3: Pollutant Source Loading Potential taken from LTEA 2011; N = None, UK = Unknown, UL = Unlikely, L = Likely

4: The quantity of construction sites is dynamic due to projects starting and completing at any given time.

2.6.2 Escondido Creek HA Goals and Strategies

2.6.2.1 Escondido Creek HA Goals

Goals have not been established that apply to the entire Escondido Creek Hydrologic Area. Separate goals have been established for each focus area and are presented in the sub-sections below.

2.6.2.2 Escondido Creek HA Strategies

The following table identifies the Water Quality Improvement Strategies to be implemented throughout the entire Escondido Creek HA and in some specific focus areas of the HA. In addition to the planned strategies, optional strategies are identified that may be implemented based on circumstances related to the progress RAs make towards numeric goals and funding. The strategies associated with the focus areas are described further in the sub-sections below.

As the RAs implement strategies and analyze data, it is expected that these strategies and schedules may change through an iterative and adaptive management process. The adaptive management process will be presented in the Final Carlsbad WMA WQIP in June 2015.

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Table 21: Escondido Creek Strategies

Water Quality Improvement Plan Strategies		Jurisdiction/Area					Target Source								Target Pollutants						Implementation Schedule							
		City of Encinitas	City of Escondido	City of Solana Beach	City of San Marcos	County of San Diego	Municipal Fixed Facilities	Industrial and Commercial Facilities/Owners	Construction Sites and Personnel	Residential	General Public	Land Development & Redevelopment	Roads, Streets, Highways and Parking Facilities	MS4	Bacteria/Pathogens	Trash	Heavy Metals	Nutrients	Oil and Grease	Sediment	Pesticides	Previous Fiscal Year(s)	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20	Future Fiscal Year(s)
18	Bilingual Hotline – Live Operator	-	-	-	-	HA Wide	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
19	Pet Waste Management and Outreach in County Parks	-	-	-	-	HA Wide	•							•							•	•	•	•	•	•	•	
20	Outreach Presentations to Elementary, Middle, and High School Students	-	-	-	-	HA Wide	•	•		•				•	•	•	•	•	•	•	•	•	•	•	•	•	•	
21	Outreach to Mobile Landscaping Service Providers	-	-	-	-	La Granada & HA Wide	•	•		•				•	•		•		•	•	•	•	•	•	•	•	•	
22	Sponsor Trash Collection Events	-	-	-	-	HA Wide	•	•	•	•	•	•	•	•	•						•	•	•	•	•	•	•	
23	Focused Residential Inspections Based on Strategic Assessments	-	-	-	-	La Granada & HA Wide				•				•	•	•	•	•	•	•		•	•	•	•	•	•	
24	Updates to County Ordinance Related to Existing Development	-	-	-	-	La Granada & HA Wide	•	•		•				•	•	•	•	•	•	•	•	•	•	•	•	•	•	
25	Promote Rain Barrel Incentive Programs	-	-	-	-	La Granada & HA Wide		•		•											•	•	•	•	•	•	•	
26	Collaborate with Partner Agencies to Promote Incentive Programs for BMP Retrofits	-	-	-	-	La Granada & HA Wide		•		•											•	•	•	•	•	•	•	
27	Promote Live Turf Replacement Incentive Program	-	-	-	-	La Granada & HA Wide		•		•											•	•	•	•	•	•	•	
28	Promote Water Smart Incentive for Outdoor Water Efficiency as part of the public-private partnership	-	-	-	-	La Granada & HA Wide		•		•											•	•	•	•	•	•	•	
29	Develop, Improve, Distribute Outreach Materials for Existing Development	-	-	-	-	La Granada & HA Wide	•	•		•				•	•	•	•	•	•	•	•	•	•	•	•	•	•	
30	Educational Workshops (e.g., IPM, manure management)	-	-	-	-	La Granada & HA Wide				•				•			•			•	•	•	•	•	•	•	•	
31	Education & Outreach Effectiveness Survey	-	-	-	-	La Granada & HA Wide	•	•		•				•	•	•	•	•	•	•	•	•	•	•	•	•	•	
32	Administrative BMPs ¹	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	•	•	•	•	•	•	•								•	•	•	•	•	•	•	
33	Outfall Monitoring	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
34	Investigations	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	

Table 21: Escondido Creek Strategies

Water Quality Improvement Plan Strategies		Jurisdiction/Area					Target Source								Target Pollutants						Implementation Schedule									
		City of Encinitas	City of Escondido	City of Solana Beach	City of San Marcos	County of San Diego	Municipal Fixed Facilities	Industrial and Commercial Facilities/Owners	Construction Sites and Personnel	Residential	General Public	Land Development & Redevelopment	Roads, Streets, Highways and Parking Facilities	MS4	Bacteria/Pathogens	Trash	Heavy Metals	Nutrients	Oil and Grease	Sediment	Pesticides	Previous Fiscal Year(s)	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20	Future Fiscal Year(s)		
35	Development and Redevelopment Requirements	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide								•																
36	Construction Site Inspections	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide			•																					
37	Municipal Facilities and Activities Inspections	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	•																							
38	Residential Area Inspections	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide				•																				
39	Commercial/ Industrial Inspections	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide																								
40	MS4 Inspections/ Cleaning	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide								•																
41	Street Sweeping	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide																								
42	Education and Outreach	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	•	•	•	•	•	•																		
43	Employee Training	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	•																							
44	Inspections	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	•	•	•	•																				
45	Investigations	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
46	Enforcement	HA Wide	HA Wide	HA Wide	HA Wide	HA Wide	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Optional Strategies																														
47	Sewer Infrastructure Improvement Project	Cardiff Channel & San Elijo JPA Outfall at Cardiff Drainage Areas	-	-	-	-	•																							Based on appropriate criteria for initiating
48	Rehabilitation of the Olivenhain Trunk Sewer Line	Cardiff Channel & San Elijo JPA Outfall at Cardiff Drainage Areas	-	-	-	-	•																							Based on appropriate criteria for initiating
49	Mission Pools – Phase I	-	ESC134	-	-	-																								The City of Escondido is currently developing this program and will continue through FY15-16. For future years, implementation will depend on funding.
50	Implementation of Offsite Alternative Compliance Program	-	HA Wide	HA Wide	HA Wide	HA Wide																								Based on appropriate criteria for initiating

Table 21: Escondido Creek Strategies

Water Quality Improvement Plan Strategies		Jurisdiction/Area					Target Source								Target Pollutants						Implementation Schedule					
		City of Encinitas	City of Escondido	City of Solana Beach	City of San Marcos	County of San Diego	Municipal Fixed Facilities	Industrial and Commercial Facilities/Owners	Construction Sites and Personnel	Residential	General Public	Land Development & Redevelopment	Roads, Streets, Highways and Parking Facilities	MS4	Bacteria/Pathogens	Trash	Heavy Metals	Nutrients	Oil and Grease	Sediment	Pesticides	Previous Fiscal Year(s)	FY 15-16	FY 16-17	FY 17-18	FY 18-19
51	Implement Structural BMPs or Retrofitting to Address Flow and/or Pollutant Issues	-	-	HA Wide	HA Wide	-	•	•	•	•	•	•	•	•	•	•	•	•	•	•	Based on appropriate criteria for initiating					
52	Support Partnerships with Social Service Providers to Provide Sanitation & Trash Management for Persons Experiencing Homelessness	-	-	HA Wide	-	-				•		•		•	•						Based on appropriate criteria for initiating					
53	County of San Diego Optional Strategies Listing – See Appendix B																									

¹ Examples of Administrative BMPs include: Plan development, program standardization, maintaining and prioritizing inventories, updating education materials, etc.

2.6.3 Escondido Creek HA Focus Areas

Concentrating programmatic efforts in specific geographic areas to address known or suspected sources of discharges and pollutants is expected to improve the effectiveness of the strategies and activities.

Based on the RAs review of the characteristics of the Escondido Creek HA, several areas of focus were selected for concentrated programmatic efforts. These focus areas include the City of Solana Beach within the Escondido HA, two drainage basins in the City of Encinitas (Cardiff Channel Drainage Area and San Elijo JPA Outfall at Cardiff) and three basins in the City of Escondido (ESC 113, ESC 128, and ESC 134). The goals and strategies for these focus areas are summarized below.

2.6.3.1 Solana Beach Drainage Area

The San Elijo Lagoon is on the northern border of the City of Solana Beach. The City has identified the entire portion of the City that discharges towards the lagoon as its focus area, shown in Figure 28 below. The area is primarily single family residential land use with some commercial areas, multi-family residential, an elementary school, a portion of a golf course., common areas and recreational park areas that include landscaping and turf. The majority of this basin was developed prior to implementation of the City's Standard Urban Stormwater Mitigation Plan (SUSMP) therefore relatively few treatment control BMPs have been established.



Figure 28: Solana Beach Drainage Area/Focus Area

Solana Beach Drainage Area Interim and Final Numeric Goals

Goals associated with this focus areas are summarized in the goals tables below. These goals have been established as a part of this initial WQIP development process. As the City of Solana Beach progresses through the first several years of implementation and learns through data collection and analysis, it is expected that these goals and schedules will likely change. As goals and schedules are adapted, they will be presented in future WQIP annual reports or updates to the WQIP document.

Table 22: Solana Beach Drainage Area, Interim and Final Numeric Goals

Interim Goal (2013-2018) 2018 ¹	Interim Goal (2018-2023) 2023 ¹	Interim Goal (2023-2028) 2028 ¹	Interim Goal (2028-2033) 2033 ¹	Final Goal (2033-2038) 2038 ¹
10% reduction in anthropogenic surface water runoff at selected outfalls	20% reduction in anthropogenic surface water runoff at selected outfalls	40% reduction in anthropogenic surface water runoff at selected outfalls	60% reduction in anthropogenic surface water runoff at selected outfalls	80% reduction in anthropogenic surface water runoff at selected outfalls

¹ Flow reduction goals are currently based on best professional judgment as current flow data is not available. The goals may be adapted as monitoring data/information is gathered, analyzed and baselines are established.

The means for achieving these goals are identified in the strategies discussion below. Mechanisms for measuring progress towards and ultimately achieving these goals will be discussed in the Final Carlsbad WQIP to be completed in June 2015.

City of Solana Beach Drainage Area Strategies

The City of Solana Beach will implement their program core strategies within the focus area. In addition to the core jurisdictional strategies, the following summarizes supplemental or modified core strategies planned for implementation in the focus area to address the sources of pollutants and discharges.

The selected strategies are expected to have multi-pollutant benefits and intended to address non-stormwater flows and reducing the source loading of bacteria. Reducing non-stormwater flows: (1) reduces the loading of pollutant constituent discharged through MS4 system; (2) reduces the amount of indicator bacteria regrowth and contributions that occurs with accumulated biofilm in MS4 systems that requires water; and (3) reduces the wet-weather contribution of indicator bacteria from scoured biofilm under higher velocity flows from storm discharges.

To accomplish the multi-benefit objectives, the City of Solana Beach will supplement its core jurisdictional program by implementing the following strategies in this focus area:

1) Irrigation Runoff Reduction Program

The objective of the Irrigation Runoff Reduction Program (IRRP) is to eliminate or reduce dry weather flow contributions coming from irrigation runoff, regardless of the time of day the discharges occur. Core elements include:

- Developing municipal codes that prohibit irrigation runoff
- Developing educational materials and outreach program specific towards irrigation runoff
- Assessing dry weather flows at outfall(s)
- Identifying key times to perform site observations
- Perform site observations to identify sources of irrigation runoff
- Collaboration with City Public Works Department to address municipal property irrigation systems

- Initiating contact and correspondence with property managers/owners
- Periodically assessing flows
- Optionally developing and implementing an incentive program

2) Property Based/Patrol Inspections

The objective of this program is to reduce discharges to the MS4 and provide inspection of existing development in a more cost efficient and effective manner. Features include:

- Developing patrol and inspection protocols
- Developing and conducting staff training
- Conducting property based/patrol inspections

The City will perform these property based/patrol inspections multiple times per year at various times of the day to capture irrigation runoff and other non-authorized discharges as well as identify BMP issues. At this time the City has not determined the frequency at which the property based/patrol inspections will occur, but will have finalized in the Final Carlsbad WQIP in June 2015.

3) Plastic Bag Ban

The City of Solana Beach passed an ordinance banning distribution of single use plastic bags. The ban became effective for all grocery stores and pharmacies on August 9, 2012 and for all other retail stores on November 9, 2012.

4) Santa Rosita and Santa Florencia Slope Drainage Collection

In January 2014, the City approved plans for a slope drain diversion structure that diverts water collected in subdrains along the slopes of Santa Rosita and diverts it in the sewer manhole located at the intersection of Santa Rosita and Santa Florencia. This project was constructed in August 2014 and helps prevent dry weather flows caused from over irrigation from entering the MS4.

5) Stormwater Treatment CDS Unit

In 2002, the City approved plans for improvements along North Cedros Avenue, north of Cliff Street. These improvements included installation of a stormwater treatment CDS unit. This unit was installed in 2004 and has been in operation ever since. The CDS unit screens, separates, and traps debris in runoff from a 42" pipe.

6) Optional Strategies

- Implement structural (engineered) BMPs or retrofitting existing structural BMPs to address flow and/or pollutant issues
- Implement offsite alternative compliance program to place water quality improvement projects in the portion of the City that discharges to San Elijo Lagoon
- Support partnership effort by social service providers to provide sanitation and trash management for persons experiencing homelessness

2.6.3.2 City of Encinitas – Cardiff Channel and San Elijo JPA Outfall

The San Elijo Lagoon is on the southern border of the City of Encinitas. The City has identified two basins that discharge to the lagoon to focus their programmatic strategies. The basins have a variety of land uses with a mixture of single family residential, commercial and multi-family land uses and includes homes, commercial buildings, apartment complexes, nurseries, common areas and recreational park areas that include landscaping and turf. The majority of these basins were developed prior to

implementation of the City's Standard Urban Stormwater Mitigation Plan (SUSMP) and therefore relatively few treatment control BMPs are in place.

The City of Encinitas will concentrate strategy implementation in two focus areas, identified as Cardiff Channel Drainage Area and San Elijo JPA Outfall at - see Figures 29 and 30 below.

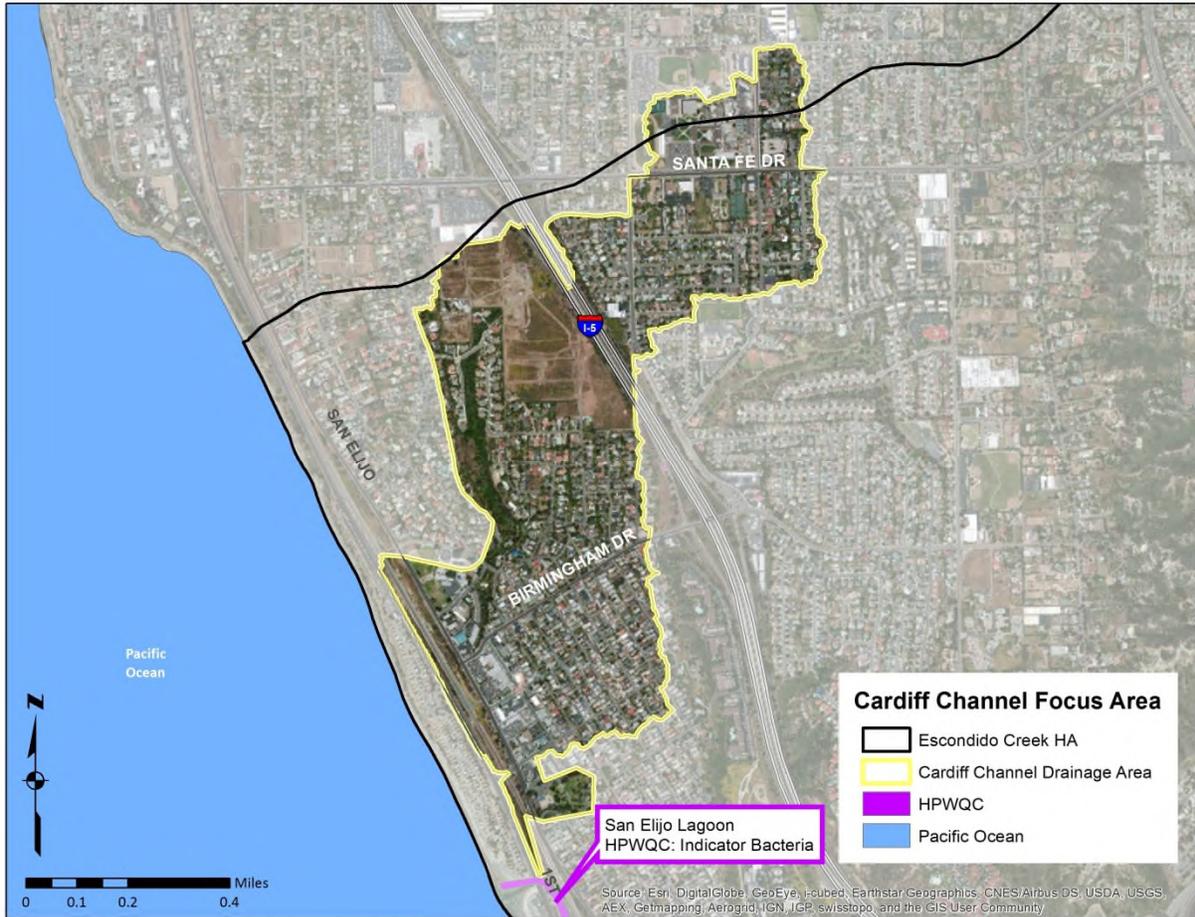


Figure 29: Cardiff Channel Drainage Area, City of Encinitas Focus Area

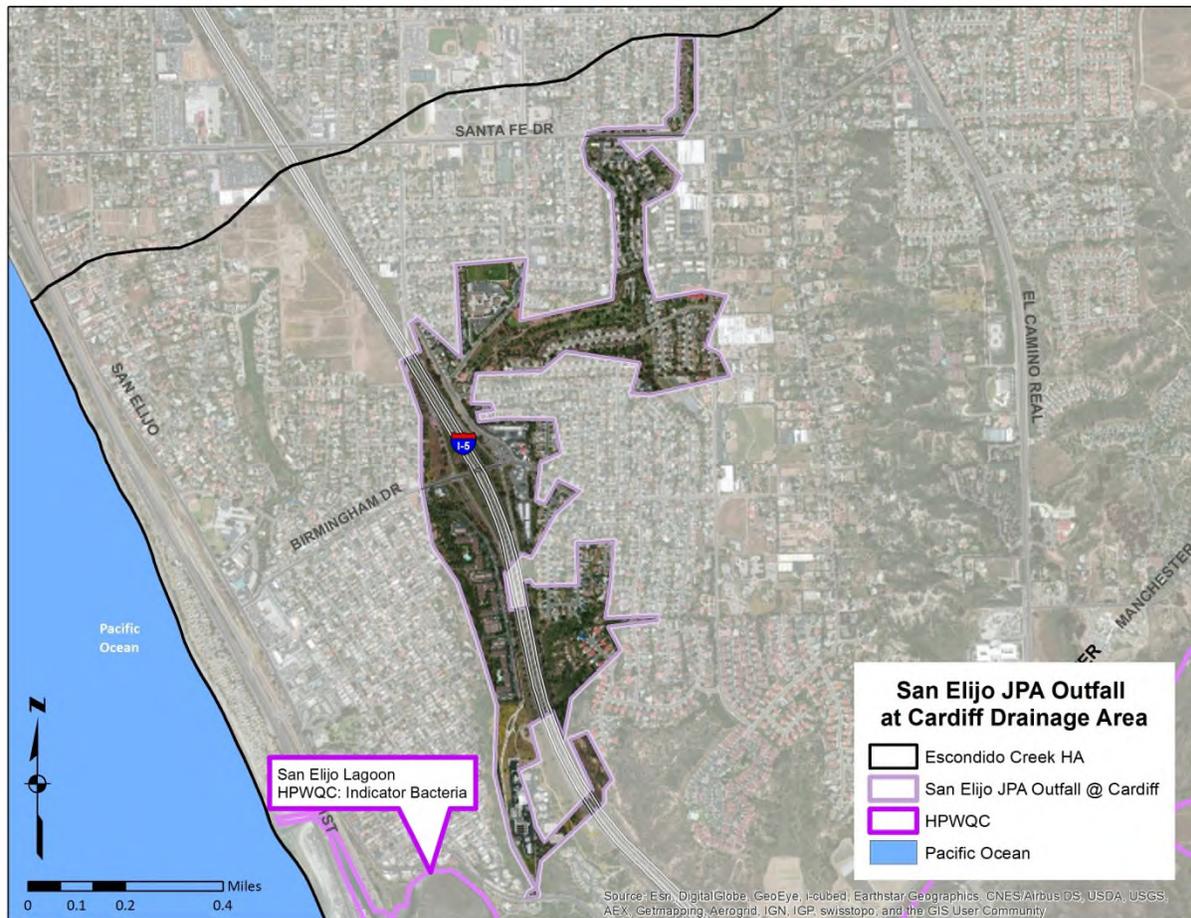


Figure 30: San Elijo JPA Outfall at Cardiff Drainage Area, City of Encinitas Focus Area

Cardiff Channel and San Elijo JPA Outfall Drainage Areas Interim and Final Numeric Goals

Goals associated with these focus areas are summarized in the goals tables below. These goals have been established as a part of this initial WQIP development process. As the City of Encinitas progresses through the first several years of implementation and learns through data collection and analysis, it is expected that these goals and schedules will likely change. As goals and schedules are adapted, they will be presented in future WQIP annual reports or updates to the WQIP document.

Table 23: Cardiff Channel and San Elijo JPA Outfall Drainage Areas, Interim and Final Numeric Goals

Interim Goal (2013-2018) 2018	Interim Goal (2018-2023) 2023	Interim Goal (2023-2028) 2028	Final Goal (2028-2033) 2033
<ul style="list-style-type: none"> 100% of dry weather flow to San Elijo JPA outfall at Cardiff diverted to the sanitary sewer system 10% reduction in anthropogenic dry weather flows within the Cardiff Channel drainage area¹ 	<ul style="list-style-type: none"> San Elijo Lagoon Restoration Completed² OR 50% reduction in anthropogenic dry weather flows within the Cardiff Channel drainage area¹ 	<ul style="list-style-type: none"> San Elijo Lagoon Restoration Completed² OR 65% reduction in anthropogenic dry weather flows within the Cardiff Channel drainage area¹ 	<ul style="list-style-type: none"> San Elijo Lagoon Restoration Completed¹ OR 80% reduction in anthropogenic dry weather flows within the Cardiff Channel drainage area¹

¹ Flow reduction goals are currently based on best professional judgment as current flow data is not available. The goals may be adapted as monitoring data/information is gathered, analyzed and baselines are established.

² The San Elijo Lagoon Conservancy is leading the lagoon restoration effort. The City of Encinitas anticipates providing public support for the restoration work and making some infrastructure improvements close to the lagoon that are necessary to complement the restoration work.

The means for achieving these goals are identified in the strategies discussion below. Mechanisms for measuring progress towards and ultimately achieving these goals will be discussed in the Final Carlsbad WQIP to be completed in June 2015.

San Elijo JPA Outfall and Cardiff Channel Drainage Area Strategies

The City of Encinitas will implement their program core strategies within the focus area. In addition to the core jurisdictional strategies, the following summarizes supplemental or modified core strategies planned for implementation in the focus area to address the sources of pollutants and discharges.

The selected strategies are expected to have multi-pollutant benefits and intended to address non-stormwater flows and reducing the source loading of bacteria. Reducing non-stormwater flows: (1) reduces the loading of pollutant constituent discharged through MS4 system; (2) reduces the amount of indicator bacteria regrowth and contributions that occurs with accumulated biofilm in MS4 systems that requires water; and (3) reduces the wet-weather contribution of indicator bacteria from scoured biofilm under higher velocity flows from storm discharges.

To accomplish the multi-benefit objectives in the two drainage areas, the City of Encinitas will supplement its core jurisdictional program by implementing the following strategies in this focus area:

1) San Elijo Lagoon Restoration

The planned restoration project will directly improve beneficial uses in the impacted receiving waters. The City identifies this as one of the most effective strategies to meet identified goals. The City will support the multi-agency efforts to restore San Elijo Lagoon in coming years. Part of the participation will come through supporting public infrastructure improvements.

2) Plastic Bag Ban

The City of Encinitas passed an ordinance banning distribution of single use plastic bags. The ban applies to large retailers, grocery stores, drug stores, convenience stores, and mini-markets in spring 2015 and to farmers markets and all other retailers in fall 2015.

3) Homeless Encampment Abatement

The City will develop and implement a program to remove homeless encampments from riparian areas within the City. Associated with this program will be an educational component concentrating on homeless waste practices related to degraded water quality conditions.

4) San Elijo JPA Dry Weather Diversion

In FY 2012-2013, a dry weather diversion was installed at the San Elijo JPA outfall in Cardiff. The diversion redirects dry weather flows to the sanitary sewer system for treatment prior to discharging to an ocean outfall. The City continues to operate and maintain this diversion.

5) Dry Weather Flow Abatement Program

Upon completion of the Dry Weather Flow Source Investigation Study, the city will focus on eliminating identified anthropogenic sources of non-stormwater dry weather flows.

6) Optional Strategies

Sewer Infrastructure Improvement Project

The Olivenhain Trunk Sewer line runs adjacent to the lagoon and is planned to be rehabilitated upon approval of funding. Rehabilitation would modernize the antiquated sewer line and reduce the risk of sewer overflows potentially discharging into the San Elijo Lagoon.

2.6.3.3 La Granada Drainage Area

The La Granada Drainage Area is in the lower portion of the HA in the unincorporated County of San Diego. This drainage area was selected as a focus area because of the observed persistent flow from the major MS4 outfall. The drainage area has a range of land use types which includes activities with likely potential for bacteria source loading. The area incorporates: approximately 15- 20 single family homes; part of a school; residential areas which have some agriculture; commercial businesses; and five county maintained roads.

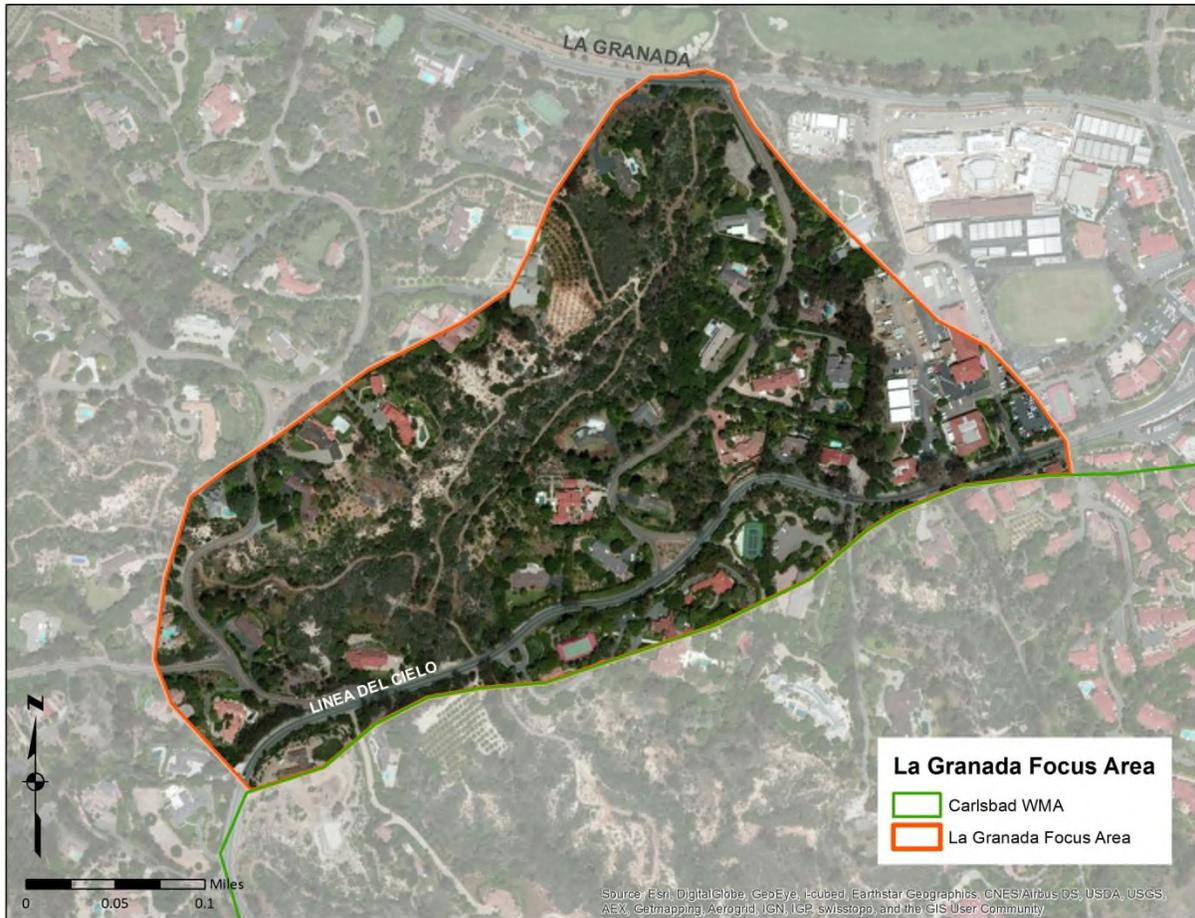


Figure 31: La Granada Drainage Area

La Granada Drainage Area Interim and Final Numeric Goals

Goals associated with this focus areas are summarized in the goals tables below. These goals have been established as part of this initial WQIP development process. As the County of San Diego progresses through the first several years of implementation and learns through data collection and analysis, it is expected that these goals and schedules will likely change. As goals and schedules are adapted, they will be presented in future WQIP annual reports or updates to the WQIP document.

Table 24: La Granada Drainage Area, Interim and Final Numeric Goals

Interim Goal (2013-2018) 2018 ¹	Interim Goal (2018-2023) 2023 ¹	Final Goal (2023-2028) 2028 ¹
Reduce bacteria and other pollutants with 5% Reduction of Volume or Number of Storm Drains with Dry Weather Flows ² in La Granada Neighborhood	Maintain the 5% reduction in La Granada Neighborhood and expand to additional neighborhood based on results of study and available funding	Maintain the 5 % reduction in La Granada Neighborhood; Expand to additional neighborhoods based on results of previous programs and available funding

¹ Flow reduction goals are currently based on best professional judgment as current flow data is not available. The goals may be adapted as monitoring data/information is gathered, analyzed and baselines are established.

² The term “dry weather flows” excludes groundwater, other exempt or permitted non-stormwater flows, and sanitary sewer overflows

The means for achieving these goals are identified in the strategies discussion below. Mechanisms for measuring progress towards and ultimately achieving these goals will be discussed in the Final Carlsbad WQIP to be completed in June 2015.

La Granada Drainage Area Strategies

The County of San Diego will implement their program core strategies within the focus area. In addition to the core jurisdictional strategies, the following summarizes supplemental or modified core strategies planned for implementation in the focus area to address the sources of pollutants and discharges.

The selected strategies are expected to have multi-pollutant benefits and intended to address non-stormwater flows and reducing the source loading of bacteria. Reducing non-stormwater flows: (1) reduces the loading of pollutant constituent discharged through MS4 system; (2) reduces the amount of indicator bacteria regrowth and contributions that occurs with accumulated biofilm in MS4 systems that requires water; and (3) reduces the wet-weather contribution of indicator bacteria from scoured biofilm under higher velocity flows from storm discharges.

To accomplish the multi-benefit objectives, the County of San Diego will supplement its core jurisdictional program by implementing the following strategies in this focus area:

- 1) Updated Focused Training for County Field Staff - Field Staff training to be updated with information on Highest Priority Water Quality Conditions identified in WQIP and the pollutant sources and pollutant generating activities that may be associated with the HPWQCs.
- 2) BMP Manual Training - External – The BMP Manual for new and redevelopment will be updated and training/outreach will be provided to the development industry.
- 3) Focused Residential Inspections Based on Strategic Assessments – La Granada focused area was selected based on strategic assessments, including review of 303(d) listings, monitoring data, and persistent flows. Field staff will conduct surveillance in neighborhoods and employ various tools to reduce pollutant loads and non-stormwater flows, including outreach efforts including over-irrigation focus, pet waste, HOA, and landscaper outreach. New outreach materials will be developed for use in focused residential inspections.
- 4) Updates to County Ordinance Related to Existing Development – County Ordinance will be updated to establish legal authority to achieve compliance in existing developments, and will be employed in La Granada area inspections as needed.
- 5) Promote Rain Barrel Incentive Programs – Promoting partners programs for residential rainwater harvesting rebates. Partner agencies including the Metropolitan Water District of Southern California (MWD), local water districts, and the San Diego County Water Authority. Example: MWD - www.socalwatersmart.com
- 6) Collaborate with Partner Agencies to Promote Incentive Programs for BMP Retrofits – Promoting incentives for water conservation and landscape retrofits through partner agencies (same as above) such as turf replacement, sprinkler head nozzle replacements, smart irrigation controllers, etc. Incentive programs may be developed for this program if funding is available.

- 7) Promote Live Turf Replacement Incentive Program – Promote turf replacement programs for replacement with California Friendly plants.
- 8) Promote Water Smart Incentive for Outdoor Water Efficiency as part of the public-private partnership – Development of Sustainable Landscape Program is underway with partners including: San Diego County Water Authority, City of San Diego, Surfrider Foundation, the Association of Compost Producers, and the County of San Diego. Guidelines are being developed and will promote water conservation, building healthy soils, and sustainable practices.
- 9) Develop, Improve, Distribute Outreach Materials for Existing Development - Develop outreach materials for home owner associations, multi-family complexes and single family residential neighborhoods to raise awareness of stormwater and urban runoff concerns and encourage behaviors that will improve water quality downstream. These new materials will be tailored for use in the focused residential area inspections.
- 10) Educational Workshops (e.g., IPM, manure management) – Continue to sponsor workshops for specific target audiences and pollutants of concern, including manure management and composting workshops for horse owners, Integrated pest management and gardening workshops for residents interested in gardening and more sustainable landscape practices, and rain water harvesting classes to encourage capturing rain from roofs and subsequent use on the landscape.
- 11) Education & Outreach Effectiveness Survey – The County has completed a baseline survey of residents (registered voters) in the unincorporated area, to establish a baseline for knowledge and awareness of residents. Additionally, pre and post surveys will be conducted during educational workshops to ensure that the programs are effectively reaching the attendees, showing an improvement in knowledge, awareness, and likely-hood of changing behaviors to be less polluting.
- 12) Optional Strategies
 - Consider feasibility of developing an alternative compliance program, and if developed to construct structural controls to reduce priority water pollutants.
 - Investigate feasibility of developing a Green Streets Program
 - Improvements to tracking watershed based inventories via consolidated database
 - Equestrian BMP Handbook
 - Investigating the feasibility of a residential inspections tracking program via mobile platform - miles, violations, etc
 - Investigating the feasibility of improvements to inspections data tracking through mobile phone
 - Investigate the feasibility of developing and implementing an incentive program for BMP Retrofits
 - Develop Sustainable Landscapes Program based on available grant funding
 - Homeowners Associations Outreach and Coordination Pilot Study
 - Investigate feasibility of incentives
 - Investigate feasibility of detention basins
 - Investigate feasibility of treatment systems

- Investigate feasibility of retrofitting projects in areas of existing development
- Investigate feasibility of stream, channel, and/or habitat rehabilitation projects
- Consider development of incentive programs for water conservation (turf replacement, smart irrigation controllers, irrigation modifications, sustainable landscapes, rain barrels), in collaboration with water agencies and others, to reduce priority
- Consider development of incentive programs, in collaboration with the Department of Environmental Health, for pumping septic systems in high risk areas adjacent to waterways (within 600 ft) or stormwater system; subject to grant funding
- Consider partnerships with Master Gardeners to provide education opportunities on water use and practices for gardening
- Consider collaboration with community groups to provide “boots on the ground” local information to focus implementation efforts on reducing bacteria and other pollutants, close to the source
- Consider collaboration with COSD internal departments to leverage mutually beneficial projects to promote retrofits to include installation of controls to address priority pollutants, if feasible.
- Consider collaboration with watershed partners to encourage consistent messaging to specific targeted audiences (commercial, residents, and others) to conserve water and mitigate dry weather
- Consider collaboration with watershed partners on Round 4 of Proposition 84 IRWM grant opportunities to fund targeted educational programs, building of structural controls (brick and mortar projects), or incentive programs to reduce runoff
- Consider collaboration with watershed partners and Regional Water Quality Control Board on effective measures to reduce potential impact of pollutant loads to waterways from unauthorized encampments
- Consider collaboration with wastewater agencies to identify where sewer and stormwater infrastructure are in close proximity and confirm the absence of flow at nearby stormwater MS4 outfall during dry weather
- In collaboration with the Department of Environmental Health, consider developing program for on-site wastewater treatment (septic) systems. May include mapping and risk assessment, inspection, or maintenance practices.
- Implement full scale residential pet waste projects (commitments, large property, urban)
- Consider investigating diverting persistent dry weather flows from storm drains to sanitary sewer, where feasible
- Consider the design of structural controls for persistent unpermitted dry weather flows where outreach has been unsuccessful and groundwater has been ruled out
- Consider collaboration with the Department of Agriculture, Weights and Measures (AWM) to evaluate and reprioritize the AWM's stormwater program to determine inspection priorities.

2.6.3.4 ESC 113, ESC 128, and ESC 134

The Escondido Creek HA extends through a significant portion of the City of Escondido near the upper portion of the HA. The City has identified three focus areas in the HA to focus their programmatic strategies. The basins have a mixture of single family residential, commercial, industrial and multi-family land uses and includes homes, commercial buildings, mobile home parks, nurseries, and common areas that include landscaping and turf.

The rationale for selecting these three focus areas is based on several key factors distinguishing them from other drainage basins. All three focus areas have:

- 1) Persistently flowing major MS4 outfalls directly into Escondido Creek
- 2) Jurisdictional basis in the City of Escondido, with minimal surface water influence from adjacent jurisdictions
- 3) Sizeable tributary areas
- 4) Recorded historical exceedances in indicator bacteria, the Highest Priority Water Quality Condition
- 5) Residential Areas which will be addressed by the City's residential JRMP component

The City will implement special strategies in three focus areas, identified as ESC 113, ESC 128, and ESC 134 – shown in Figures 32, 33 and 34 below.

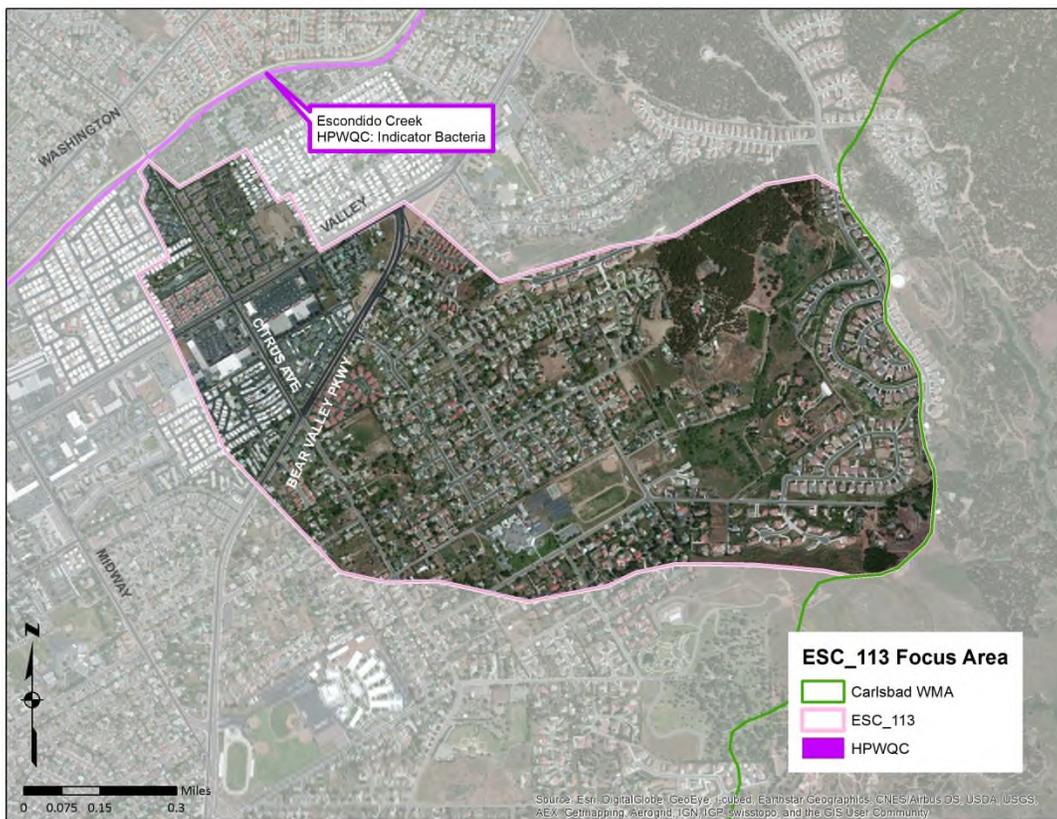


Figure 32: Escondido ESC 113 Focus Area

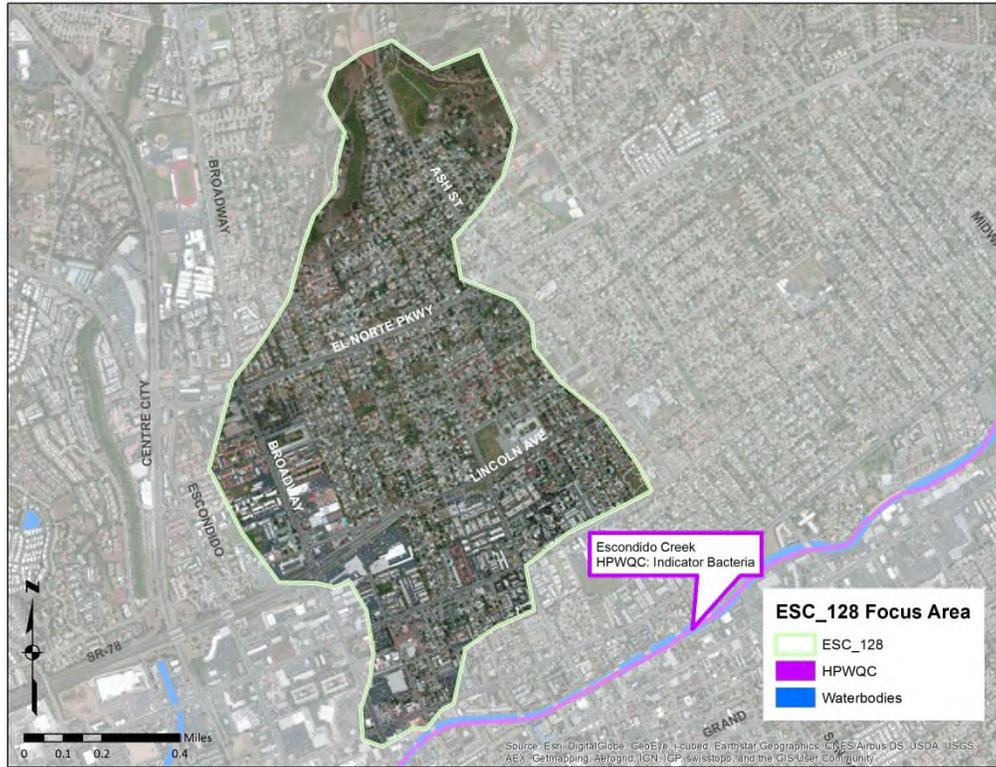


Figure 33: Escondido ESC 128 Focus Area

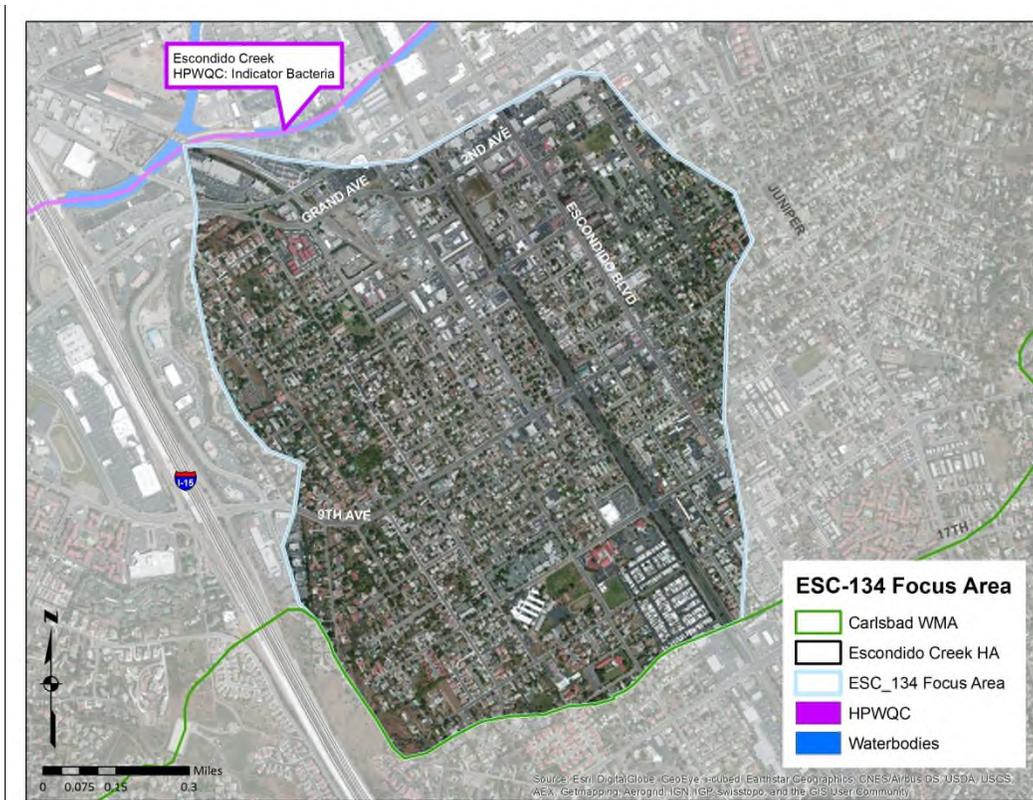


Figure 34: Escondido ESC 134 Focus Area

ESC 113, ESC 128, ESC 134 Focus Area Goals

Goals associated with this focus area are summarized in the goals table below. These goals have been established as a part of this initial WQIP development process. As the Responsible Agencies progress through the first several years of implementation and learn through data collection and analysis, it is expected that these goals and schedules will change. As goals and schedules are adapted, they will be presented in future WQIP annual reports or updates to the WQIP document.

Table 25: ESC 113, ESC 128, ESC 143 Focus Areas, Interim and Final Numeric Goals

Interim Goal (2013-2018) 2018 ¹	Interim Goal (2018-2023) 2023 ¹	Interim Goal (2023-2028) 2028 ¹	Interim Goal (2028-2033) 2033 ¹	Final Goal (2033-2038) 2038 ¹
10% reduction in anthropogenic dry-weather surface water runoff at selected outfalls	20% reduction in anthropogenic dry-weather surface water runoff at selected outfalls	40% reduction in anthropogenic dry-weather surface water runoff at selected outfalls	60% reduction in anthropogenic dry-weather surface water runoff at selected outfalls	80% reduction in anthropogenic dry-weather surface water runoff at selected outfalls

¹ Flow reduction goals are currently based on best professional judgment as current flow data is not available. The goals may be adapted as monitoring data/information is gathered, analyzed and baselines are established.

The means for achieving these goals are identified in the strategies discussion below. Mechanisms for measuring progress towards and ultimately achieving these goals will be discussed in the Final Carlsbad WQIP to be completed in June 2015.

ESC 113, ESC 128, ESC 134 Focus Area Strategies

The City of Escondido will implement their program core strategies throughout the City and within the three focus areas. The following summarizes supplemental or modified strategies planned for implementation in the focus areas to address the sources of pollutants, discharges, and dry weather anthropogenic flows.

The selected strategies are expected to have multi-pollutant benefits and intended to address non-stormwater flows and reducing the source loading of bacteria. Reducing non-stormwater flows: (1) reduces the loading of pollutant constituent discharged through MS4 system; (2) reduces the amount of indicator bacteria regrowth and contributions that occurs with accumulated biofilm in MS4 systems that requires water; and (3) reduces the wet-weather contribution of indicator bacteria from scoured biofilm under higher velocity flows from storm discharges.

To accomplish the multi-benefit objectives in the three focus areas, the City of Escondido will supplement its core jurisdictional program by implementing the following strategies in this focus area:

1) Property Based/Patrol Inspections

The objective of this program is to reduce discharges to the MS4 and provide inspection of existing development in a more cost efficient and effective manner. Inspections will address properties which have not previously been inspected by Environmental Programs staff, including residential properties, office parks, retail centers, and more. Features of this strategy include:

- Developing patrol and inspection protocols
- Developing and conducting staff training
- Conducting property based/patrol inspections of 100% of commercial, municipal and residential properties in focus areas at least once per year

- Recording observed violations and performing follow-up inspections as appropriate, through outreach/education or enforcement as determined to be appropriate by City staff.

2) Storm Drain Videos

On an as-needed basis, the City will use downhole video technology to assess where dry weather flows enter the storm drain system. The objective of the use of video is to identify groundwater intrusion and to facilitate a better understanding of the City's MS4 network through collaboration with the sewer and water utilities field staff.

3) Irrigation Runoff Reduction

The City's water supply/conservation and storm water programs are housed in the same department and will continue to work together to perform outreach to businesses and residents on irrigation reduction programs. The City hosts landscaping workshops and regularly promotes water conservation to residents as described in the JRMP. The City has a goal to increase the number of residents in Escondido who take advantage of rebates, incentives, and water audit programs by 10% by the next permit cycle. It is anticipated that interactions during the property-based patrol inspections will increase participation in such programs in the three focus areas.

4) Optional Strategies

- Mission Pools-Phase I: The major channel in Focus Area ESC 134 has been identified as a high priority for rehabilitation and engineering improvements. The City has secured a County of San Diego Vector Control grant for planning improvements to the channel and expects resource agency permit applications will be submitted within the municipal permit cycle. This project will be completed based on funding availability.
- Implement an offsite alternative compliance program to place water quality improvement projects throughout the City of Escondido, including Focus Areas.

2.6.3.5 City of San Marcos – Escondido Creek HA SM-EC Focus Area

The Escondido Creek HA extends into the western portion of the City of San Marcos. The City of San Marcos identified SM-EC focus area to concentrate strategy implementation. The SM-EC focus area is predominantly single family residential with small pockets of commercial and multi-family land uses and includes homes, commercial buildings, common areas that include landscaping and turf – see Figure 35 below.

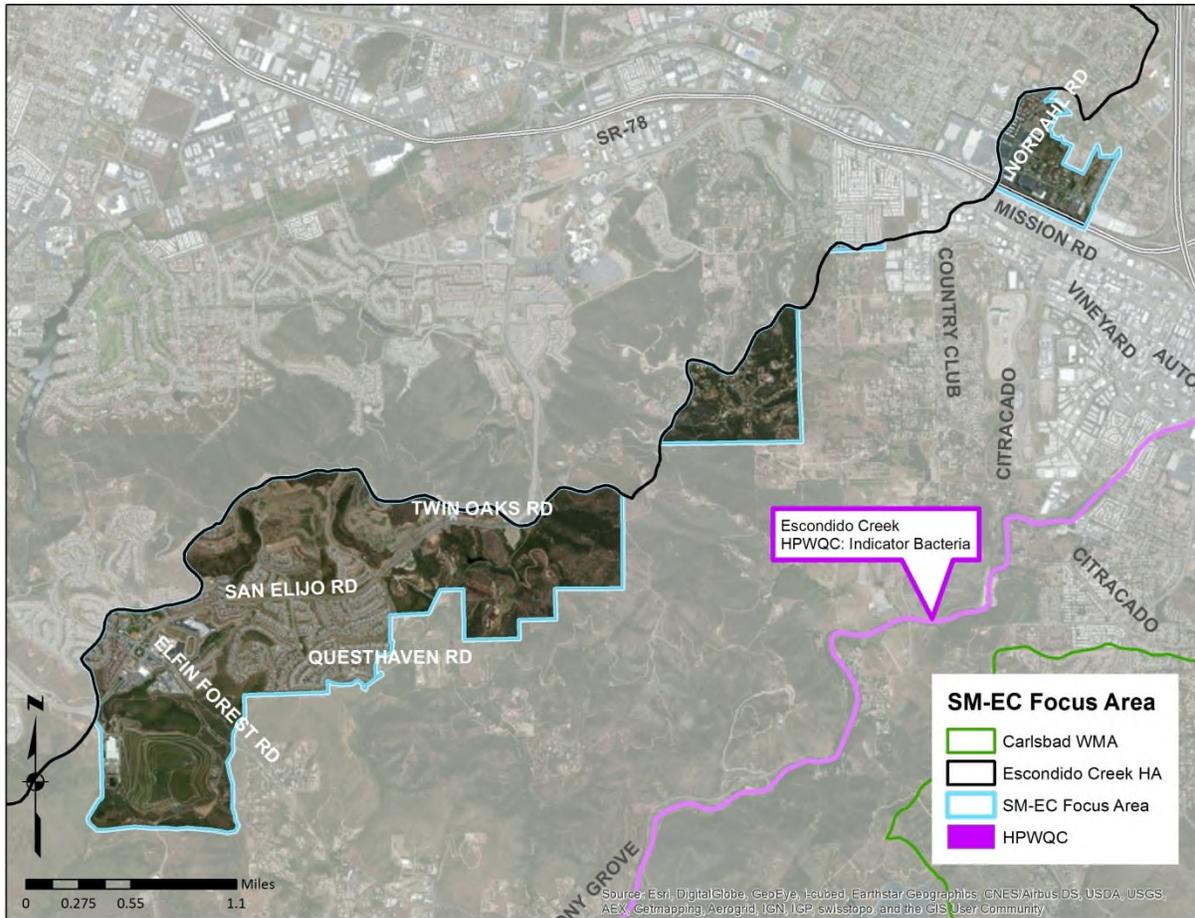


Figure 35: San Marcos SM-EC Focus Area

SM-EC Focus Area Interim and Final Numeric Goals

Goals associated with this focus area are summarized in the goal table below. These goals have been established as a part of this initial WQIP development process. As the Responsible Agencies progress through the first several years of implementation and learn through data collection and analysis, it is expected that these goals and schedules will likely change. As goals and schedules are adapted, they will be presented in future WQIP annual reports or updates to the WQIP document.

Table 26: City of San Marcos, SM-EC Focus Area, Interim and Final Numeric Goals

Interim Goal (2013-2018) 2018 ¹	Interim Goal (2018-2023) 2023 ¹	Interim Goal (2023-2028) 2028 ¹	Interim Goal (2028-2033) 2033 ¹	Final Goal (2033-2038) 2038 ¹
10% reduction in anthropogenic dry-weather surface water runoff at selected outfalls	20% reduction in anthropogenic dry-weather surface water runoff at selected outfalls	40% reduction in anthropogenic dry-weather surface water runoff at selected outfalls	60% reduction in anthropogenic dry-weather surface water runoff at selected outfalls	80% reduction in anthropogenic dry-weather surface water runoff at selected outfalls

¹ Flow reduction goals are currently based on best professional judgment as current flow data is not available. The goals may be adapted as monitoring data/information is gathered, analyzed and baselines are established.

The means for achieving these goals are identified in the strategies discussion below. Mechanisms for measuring progress towards and ultimately achieving these goals will be discussed in the Final Carlsbad WQIP to be completed in June 2015.

SM-EC Focus Area Strategies

The City of San Marcos will implement their program core strategies within the focus area. In addition to the core jurisdictional strategies, the following summarizes supplemental or modified core strategies planned for implementation in the focus area to address the sources of pollutants and discharges.

The selected strategies are expected to have multi-pollutant benefits and intended to address non-stormwater flows and reducing the source loading of bacteria. Reducing non-stormwater flows: (1) reduces the loading of pollutant constituent discharged through MS4 system; (2) reduces the amount of indicator bacteria regrowth and contributions that occurs with accumulated biofilm in MS4 systems that requires water; and (3) reduces the wet-weather contribution of indicator bacteria from scoured biofilm under higher velocity flows from storm discharges.

To accomplish the multi-benefit objectives in the SM-AH focus area, the City of San Marcos will supplement its core jurisdictional program by implementing the following strategies:

1) Irrigation Runoff Reduction Program

The objective of the Irrigation Runoff Reduction Program (IRRP) is to eliminate or reduce dry weather flow contributions coming from irrigation runoff, regardless of the time of day the discharges occur. Core elements include:

- Developing municipal codes that prohibit irrigation runoff
- Developing educational materials and outreach program specific towards irrigation runoff
- Assessing dry weather flows at outfall(s)
- Identifying key times to perform site observations
- Perform site observations to identify sources of irrigation runoff
- Collaboration with City Public Works Department to address municipal property irrigation systems
- Initiating contact and correspondence with property managers/owners
- Periodically assessing flows
- Optionally developing and implementing an incentive program

2) Property Based/Patrol Inspections

The objective of this program is to reduce discharges to the MS4 and provide inspection of existing development in a more cost efficient and effective manner. Features include:

- Developing patrol and inspection protocols
- Developing and conducting staff training
- Conducting property based/patrol inspections

The City will perform these property based/patrol inspections multiple times per year at various times of the day to capture irrigation runoff and other non-authorized discharges as well as identify BMP issues.

3) City of San Marcos & Vallecitos Water District (VWD) Irrigation Runoff/Water Waster Program

- City and VWD staff collaborate and communicate regularly to share information regarding reports and complaints
- Public water waster reporting is available on both City and VWD websites

- The City developed door hangers for field staff to distribute if water wasting is reported or observed at a property
 - The City developed template response letters identifying both City and VWD requirements
- 4) City of San Marcos & VWD Fats, Oils, and Grease (FOG) Program Collaboration
- Continue coordination between City and VWD programs. The City anticipates a collaborative work effort between the City's inspection program and VWD's FOG program in order to reduce sewer backups and overflows that result from accumulation of FOG in the sewer system
 - VWD established an Ordinance to regulate FOG
 - VWD visited all of the Food Service Establishments (FSEs) within the City to provide an overview of the program and expectations
 - VWD created a guidance manual provided to each FSE that includes BMP information, maintenance requirements, and record keeping documents
 - VWD will inspect all FSEs at least once a year
- 5) Homeowners Association and Property Manger Outreach Program
- The City will implement an education and outreach program that encourages and/or incentivizes Home Owners Associations (HOA)s and business property managers to implement measures to reduce dry weather and/or wet weather flows leaving their properties. Practices could include proper installation and maintenance of irrigation systems, conversion to drought tolerant landscaping, downspout disconnection, etc.
- 6) Enhancements to Education Program
- Bacteria and other priority pollutant specific education and outreach program to be conducted in the SM-AH focus area for residents and commercial facilities related to bacteria and other priority pollutants. The materials will have an emphasis on discharges to the City's MS4 and the receiving waters impacts.
 - Developing and implementing a training/seminar for property managers and others that have direct responsibility for common areas within HOAs and commercial properties. Educational materials and information will be developed and provided to the managers for them to distribute to their residents and tenants.
 - As part of the residential outreach program, the City of San Marcos will work with residents and property owners to educate through various means, which may include school programs, block parties or one-on-one meetings.
- 7) Filter Retrofit Program
- The City will continue to implement the filter upgrade program.
 - Filters located within public facilities that need repair are retrofitted with new filter systems that contain various media filters to treat dissolvable pollutants including nutrients and bacteria.
- 8) Optional Strategies
- Implement structural (engineered) BMPs or retrofitting existing structural BMPs to address flow and/or pollutant issues
 - Implement offsite alternative compliance program to place water quality improvement projects in the SM-EC Basins

Appendix A: County of San Diego Additional Strategies

In addition to program core strategies, the County of San Diego has developed the following strategies that will be implemented throughout their jurisdictional areas in the Carlsbad WMA, including the following hydrologic areas: Loma Alta, Buena Vista Creek, Agua Hedionda, San Marcos and Escondido Creek.

- 1) Updated Focused Training for County Field Staff - Field Staff training to be updated with information on Highest Priority Water Quality Conditions identified in WQIP and the pollutant sources and pollutant generating activities that may be associated with the HPWQCs.
- 2) BMP Manual Training - External – The BMP Manual for new and redevelopment will be updated and training/outreach will be provided to the development industry.
- 3) Focused Residential Inspections Based on Strategic Assessments – La Granada focused area was selected based on strategic assessments, including review of 303(d) listings, monitoring data, and persistent flows. Field staff will conduct surveillance in neighborhoods and employ various tools to reduce pollutant loads and non-stormwater flows, including outreach efforts including over-irrigation focus, pet waste, HOA, and landscaper outreach. New outreach materials will be developed for use in focused residential inspections.
- 4) Updates to County Ordinance Related to Existing Development – County Ordinance will be updated to establish legal authority to achieve compliance in existing developments, and will be employed in La Granada area inspections as needed.
- 5) Promote Rain Barrel Incentive Programs – Promoting partner programs for residential rainwater harvesting rebates. Partner agencies including the Metropolitan Water District of Southern California (MWD), local water districts, and the San Diego County Water Authority. Example: MWD - www.socalwatersmart.com
- 6) Collaborate with Partner Agencies to Promote Incentive Programs for BMP Retrofits – Promoting incentives for water conservation and landscape retrofits through partner agencies (same as above) such as turf replacement, sprinkler head nozzle replacements, smart irrigation controllers, etc. Incentive programs may be developed for this program if funding is available.
- 7) Promote Live Turf Replacement Incentive Program – Promote turf replacement programs for replacement with California Friendly plants.
- 8) Promote Water Smart Incentive for Outdoor Water Efficiency as part of the public-private partnership – Development of Sustainable Landscape Program is underway with partners including: San Diego County Water Authority, City of San Diego, Surfrider Foundation, the Association of Compost Producers, and the County of San Diego. Guidelines are being developed and will promote water conservation, building healthy soils, and sustainable practices.
- 9) Develop, Improve, Distribute Outreach Materials for Existing Development - Develop outreach materials for home owner associations, multi-family complexes and single family residential neighborhoods to raise awareness of stormwater and urban runoff concerns and encourage behaviors that will improve water quality downstream. These new materials will be tailored for use in the focused residential area inspections.

- 10) Educational Workshops (e.g., IPM, manure management) – Continue to sponsor workshops for specific target audiences and pollutants of concern, including manure management and composting workshops for horse owners, Integrated pest management and gardening workshops for residents interested in gardening and more sustainable landscape practices, and rain water harvesting classes to encourage capturing rain from roofs and subsequent use on the landscape.
- 11) Education & Outreach Effectiveness Survey – We have completed our County baseline survey of residents (registered voters) in the unincorporated area, to establish a baseline for knowledge and awareness of residents. Additionally, pre and post surveys will be conducted during educational workshops to ensure that the programs are effectively reaching the attendees, showing an improvement in knowledge, awareness, and likely-hood of changing behaviors to be less polluting.
- 12) Bilingual Hotline – Live Operator – County’s stormwater complaint/information phone line will be enhanced (from English only recorded message) with live operators answering the calls to provide better customer service and shorten response time. Spanish speaking operators are available. The advantages of live operators include clarifying details of the complaints to allow for more efficient and effective responses.
- 13) Pet Waste Management and Outreach in County Parks – Pet waste bag dispensers are provided at County Parks with educational information on pet waste impacts on watershed management.
- 14) Outreach Presentations to Elementary, Middle, and High School Students – County of San Diego sponsors the San Diego County Office of Education Splash Lab and Green Machine programs which provide watershed education to elementary and middle schools. County sponsors I Love a Clean San Diego which provides watershed educational programs to high schools.
- 15) Outreach to Mobile Landscaping Service Providers – County of San Diego sponsors the Sustainable Landscape Conference at Cuyamaca College which includes education to Landscape Service Providers.
- 16) Sponsor Trash Collection Events – County of San Diego sponsors three trash clean up events per year, rotating events to areas of need; for example, events may include the California Coastal Clean Up Day or Creek to Bay events.

Appendix B: County of San Diego Optional Strategies

In addition to the planned strategies, the County of San Diego has developed the following optional strategies that may be implemented based on circumstances related to the progress RAs make towards numeric goals and funding. The following optional strategies will be considered in all of the hydrologic areas that the County is a part of in the Carlsbad WMA, including: Loma Alta, Buena Vista Creek, Agua Hedionda, San Marcos and Escondido Creek.

- 1) Investigate the feasibility of developing a pilot program (including training) - volunteer surveillance program; develop public facing mobile phone application (2 years out)
- 2) Septic system rebate program with availability of grant funding
- 3) Collaborate with watershed partners to evaluate feasibility of invasive plant and animal removal
- 4) develop a pilot online septic system maintenance outreach program in collaboration with the Department of Environmental Health
- 5) Consider feasibility of developing an alternative compliance program, and if developed to construct structural controls to reduce priority water pollutants.
- 6) Investigate feasibility of developing a Green Streets Program
- 7) Investigating the feasibility of improvements to inspections data tracking through mobile phone
- 8) Improvements to tracking watershed based inventories via consolidated database
- 9) Stormwater Quality Master Plans for Special Drainage Fee Areas
- 10) Investigate the feasibility of developing and implementing an incentive program for BMP Retrofits
- 11) Equestrian BMP Handbook
- 12) Investigating the feasibility of a residential inspections tracking program via mobile platform - miles, violations, etc.
- 13) Develop Sustainable Landscapes Program based on available grant funding
- 14) Homeowners Associations Outreach and Coordination Pilot Study
- 15) Investigate feasibility of incentives
- 16) Investigate feasibility of detention basins
- 17) Investigate feasibility of treatment systems
- 18) Investigate feasibility of retrofitting projects in areas of existing development
- 19) Investigate feasibility of stream, channel, and/or habitat rehabilitation projects
- 20) Consider development of incentive programs for water conservation (turf replacement, smart irrigation controllers, irrigation modifications, sustainable landscapes, rain barrels), in collaboration with water agencies and others, to reduce priority pollutants.
- 21) Consider development of incentive programs, in collaboration with the Department of Environmental Health, for pumping septic systems in high risk areas adjacent to waterways (within 600 ft) or stormwater system; subject to grant funding
- 22) Consider partnerships with Master Gardeners to provide education opportunities on water use and practices for gardening

- 23) Consider collaboration with community groups to provide “boots on the ground” local information to focus implementation efforts on reducing bacteria and other pollutants, close to the source
- 24) Consider collaboration with COSD internal departments to leverage mutually beneficial projects to promote retrofits to include installation of controls to address priority pollutants, if feasible.
- 25) Consider collaboration with watershed partners to encourage consistent messaging to specific targeted audiences (commercial, residents, and others) to conserve water and mitigate dry weather flows
- 26) Consider collaboration with watershed partners on Round 4 of Proposition 84 IRWM grant opportunities to fund targeted educational programs, building of structural controls (brick and mortar projects), or incentive programs to reduce runoff
- 27) Consider collaboration with watershed partners and Regional Water Quality Control Board on effective measures to reduce potential impact of pollutant loads to waterways from unauthorized encampments
- 28) Consider collaboration with wastewater agencies to identify where sewer and stormwater infrastructure are in close proximity and confirm the absence of flow at nearby stormwater MS4 outfall during dry weather
- 29) In collaboration with the Department of Environmental Health, consider developing program for on-site wastewater treatment (septic) systems. May include mapping and risk assessment, inspection, or maintenance practices.
- 30) Implement full scale residential pet waste projects (commitments, large property, urban)
- 31) Consider investigating diverting persistent dry weather flows from storm drains to sanitary sewer, where feasible
- 32) Consider the design of structural controls for persistent unpermitted dry weather flows where outreach has been unsuccessful and groundwater has been ruled out
- 33) Consider collaboration with the Department of Agriculture, Weights and Measures (AWM) to evaluate and reprioritize the AWM's stormwater program to determine inspection priorities.

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- 30) Implement full scale residential pet waste projects (commitments, large property, urban)
- 31) Consider investigating diverting persistent dry weather flows from storm drains to sanitary sewer, where feasible
- 32) Consider the design of structural controls for persistent unpermitted dry weather flows where outreach has been unsuccessful and groundwater has been ruled out
- 33) Consider collaboration with the Department of Agriculture, Weights and Measures (AWM) to evaluate and reprioritize the AWM's stormwater program to determine inspection priorities.

Attachment 2

Comments Received from Water Quality Improvement Consultation Panel

This page intentional for printing purpose

Laurie Walsh (RWQCB) Comments on
October 28, 2014 Memorandum to
Water Quality Improvement Consultation Panel

This page intentional for printing purpose

General Comments:

1. This format was very easy to read and the graphics are well done.
2. (P.8) Responsible agencies developed goals both collaboratively and individually to best address the sources and stressors within the watershed and individual jurisdictions. Will the individual interim goals for each jurisdiction (being used to attain the same final goal for the WMA) be provided in the final Water Quality Improvement Plan deliverable?
3. (P.9) Language in the last bullet appears to be an incomplete thought: “Resource impacts consideration as RAs balance geographic.” Review of the language is needed.
4. All Tables – The Copermittees should considering including Partnership Programs to create leverage of resources with other agencies and/or non-profit organizations as an Optional Strategy. Non-profit organizations may have access to other sources of funding not available to a jurisdiction or be privy to certain expertise or access not otherwise available to a Copermittee.
5. All Tables – Footnote 1 addresses the fact that the baseline for the percent reduction goals are currently based on professional judgment and that the goals “may be” adapted as monitoring data/information is gathered, analyzed and baselines are establish. It would appear that the RAs “will” adapt these numeric goals once monitoring data/information is gathered, analyzed and baselines are established, not only to change the percent reductions (if necessary), but to document the fact that there is now a base line developed from in situ monitoring or infield information.
6. A strategy listed in all the tables is called “Inspections.” It is unclear what the difference is between the other strategies listed in the table that conduct inspections within certain land uses and this general strategy category. Further clarification is needed.
7. Appendix A – Appendix A should be reevaluated to list only those HAs where the County will implement the strategies, making clear that the County will not be spending resources in HAs (e.g. Loma Alta, Encinas) because they are so small, or negligible, a contributor to the conditions .

Loma Alta HA –

8. It is unclear how much, if any, land area the County of San Diego has in this HA. However, Table 3 shows the County conducting strategies 3-18 HA Wide. Appendix A *County of San Diego Additional Strategies* include BMPs such as focused inspections and ordinance changes. The full Water Quality Improvement Plan should explain work the County of San Diego is preparing to do HA Wide within the Loma Alta HS so that it is clear to the reader. If the County has no, or minimal land area then the document should identify that the County will not be implementing strategies within the HA.
9. (P.23) Strategy 16 is titled, Inspections – What is meant by these “inspections?” There are other types of inspections listed in the strategies Table 3 with more description in their title. Further explanation of this strategy is needed.
10. (P.23) Strategy 4 is titled, Administrative BMPs – This title is misleading. The term BMP is so strongly associated with in the ground structural management practices or non-structural management practices rather than administrative tasks associated with managing a storm water program. However, administrative work to conduct a storm water program can, and should be given credit for addressing target pollutants. It is noticeable that target pollutants are not identified for these BMPs. However, administrative work can be considered a non-structural strategy to address certain target pollutants. For example, prioritizing inventories may be done to address a specific pollutant or group of pollutants. Therefore, this line item strategy should be reevaluated to give it a more appropriate name and then given credit to the strategy addressing a particular target pollutant(s).
11. (P.23) Strategy 3 –Assuming the County of San Diego would be contributing to perhaps education strategies or some other non-structural BMP strategy HA Wide, it appears that the “additional strategies” provide by the County in Appendix A could fit within the listed strategies within Table 3. It appears that Appendix A was added to provide examples of what each strategies means for the County of San Diego, information that can be expressed in the County’s JRMP.
12. (P.23)Strategy 8, 9, 10, and 11 list different types of inspections as a strategy type but does not describe the actual strategy as say does street sweeping in strategy number 13. Construction site inspections, municipal facilities inspections, residential area inspections, and commercial/industrial inspection are all required jurisdictional program elements; therefore it is not clear what the “strategy” is. For example, will there be increased inspection frequency in focused areas? Additionally, strategy number 16 is

called, “Inspections.” It is unclear what the difference is between the strategies listed in 8-11 and strategy 19. Further clarification is needed.

13. Appendix A - Appendix A provided by the County of San Diego listed sixteen strategies as their additional strategies. There is concern that attention to all of these strategies may be trying to do everything, everywhere and some thought should be given to conducting focused strategies in those areas that are truly yielding water quality improvement outcomes. This is especially true since it appears that county plans on conducting all 19 strategies listed in Table 3 plus those described in Appendix A as indicated in strategy 3. This is even more concerning since the County does not have that much land area within the Loma Alta HA contributing to the HPWQC and PWQC. It would be expected that the County be contributing to less, if any efforts at all within this HA and more in the other HAs and/or other WMAs where their land area is contributing to more of the priority water quality conditions.

Buena Vista HA –

14. It is unclear how much, if any, land area the County of San Diego has in the Buena Vista HA. However, Table 5 shows the County conducting strategies 9-24 HA Wide. Appendix A *County of San Diego Additional Strategies* include BMPs such as focused inspections and ordinance changes. The County should focus its efforts on implementing strategies in those HAs where the County’s jurisdictional land area is contributing to the target pollutants. The Carlsbad WMA Water Quality Improvement Plan should explain work the County of San Diego is preparing to do within its jurisdictional boundaries HA Wide within the Buena Vista HA so that it is clear to the reader. If the County has little, or no land area within the Buena Vista HA contributing to the HPWQC, then Table 5 should indicate the County is not contributing to strategies within this HA because they are conducting strategies in other HAs or WMAs where they have more land area and are contributors targets pollutants. It is expected that a jurisdiction focus on those HAs and WMAs were they contribute to the sources of the priority and highest priority water quality conditions and not in those areas where they don’t.
15. (P.43) CB-PA2 Focus Area Strategies 4(c). The enhanced strategies listed include the City of Carlsbad working with residents and property owners to educate through various means, which may include school programs , block parties or one-on-one meetings. Block parties are a type of “out of the box” creative strategy that hasn’t typically been deployed to address pollutant reductions, but may be exactly the sort of small group education that could affect real change in a neighborhoods, and ultimately individual

residents behavior. This strategy certainly takes education a step beyond handing out pamphlets at a village fair.

Agua Hedionda HA -

16. (P. 58) Supplemental strategies include the Irrigation Runoff Reduction Program (IRRP) within the City of Vista for the AH04 Basin Focus Area, of which, a core element is “collaboration with City Public Works Department to address (emphasis added) municipal property irrigation systems. This element is vague and it would be expected that the City could collaborate with itself to reduce runoff, retrofit antiquated irrigation systems, etc, using a more proactive approach on those areas owned and operated by the City to achieve the goals listed in Table 12.
17. (P.59) This section describes City of Vista’s IRRP strategy and its core components. One of the components is “*Consider developing municipal codes that prohibit irrigation runoff.*” The San Diego Water Board has found that discharges of over-irrigation are a source of pollutants and are to be effectively prohibited (Provision A.1.b of Order R9-2013-0001 (Order)). Provision E.1 of the Order requires each Copermittee to establish, maintain, and enforce adequate legal authority within its jurisdiction to control pollutant discharges into and from its MS4 through statute, ordinance, permit, contract, order or similar means. It is unclear why the City of Vista is merely “considering” the development of an over-irrigation prohibition ordinance as a core component of the IRRP strategy.
18. (P61) This section describes the IRRP within the City of San Marcos. See Comment 16, the same comment applies to bullet 6 in the core elements.

Encinas HA – It is noted that no goals were submitted during this first draft Interim and Final Numeric Goals, Final Strategies, and Schedules submittal. The only strategies put forth were the program elements required in Order R9-2013-0001.

San Marcos HA –

19. (P.71) Regulatory Drivers - “*Based on analysis conducted in 2012, it was determined that the Pacific Ocean shoreline at San Marcos HA would not have qualified for REC-1 beneficial use impairment at any time. Therefore, the HA was inappropriately included*

in the TMDL. The San Marcos HA Responsible Parties are not responsible for any further Bacteria TMDL action, including preparation and submittal of a Load Reduction Plan or Monitoring plan, as long as monitoring data continues to support compliance with water quality standards. Therefore, the HA was inappropriately included in the TMDL.” Regional Board staff disagrees. Appendix E to Order R9-2013-0001 applies the Bacteria TMDL to the San Marcos HA for the Pacific Ocean Shoreline with a listing at Moonlight Beach. It is unclear what is meant by “it was determined that the Pacific Ocean shoreline at San Marcos HA would not have qualified for REC-1 beneficial use impairment **at any time** (emphasis added), and who made that determination. Further clarification is needed.

Additionally, as stated in this section, *“as long as the monitoring data continues to support compliance with water quality standards, no additional work to comply with the TMDL by the San Marcos HA Responsible Agencies is necessary.”* This statement says that the best management practices implemented by the Responsible Agencies are effective and therefore conditions in the receiving water are “in compliance with water quality standards.” Since monitoring data supports compliance with water quality standards for the Pacific Ocean Shoreline at Moonlight Beach, indicator bacteria is therefore, no longer the HPWQC and the San Marcos HA Responsible Agencies should re-evaluate their HPWQC for the San Marcos HA, choosing the next highest from the list of PWQC and develop numeric goals for it. Section 2.5.2.1 states “the goals identify both receiving water and MS4 targets in order to provide opportunities to demonstrate progress toward or achieving of the goals.” It is unclear why the Responsible Agencies would develop numeric goals for a condition in the receiving water for which compliance (with the TMDL and the water quality standards) have already been met. (i.e. *“as long as the monitoring data continues to support compliance with water quality standards, no additional work to comply with the TMDL by the San Marcos HA Responsible Agencies is necessary.”*)

Note. If nutrients in Lake San Marcos or phosphorous in San Marcos Creek were to be chosen as the HPWQC, the City of Encinitas would need to develop its own separate HPWQC to work on within its jurisdiction because the City of Encinitas does not have any part of its jurisdiction that drains into San Marcos Creek or Lake San Marcos.

20. Table 18 includes a footnote “c” on the year 2021 in the second column, titled Interim Goad (2018-2023). It is unclear what information this is referring to. The ‘c’s” in the Note A and B do not apply. This may be a typo. Further evaluation of this table is needed.

21. (P. 82) Cottonwood Creek Drainage Basin Interim and Final Numeric Goals. See comment 19.
22. (P.84) City of San Marcos Focus Area – Since drainage from the four San Marcos sub-basins “*nearly all drain through Upper San Marcos Creek to Lake San Marcos*”, it appears that goals for this upper portion of San Marcos HA should be designed to address the priority water quality conditions of phosphorus and nutrients in San Marcos Creek and Lake San Marcos not bacteria at Moonlight Beach. The Responsible Agencies should consider establishing a HPWQC for the portion of the WMA that drains to San Marcos Creek and is impounded by Lake San Marcos so that the strategies and schedules are designed to address the reductions in phosphorus and nutrients not bacteria. Many of the strategies listed on pages 86, 87, and 88 may reduce the amount of phosphorus, nutrients, and bacteria since they are focused on effectively prohibiting non-storm water discharges (i.e. IRRP, property based inspections, and Irrigation Runoff/Water Waster Program) however, the highest priority water quality condition should be bacteria for this portion of the HA.
23. (p.98) See comment 17 as the same applies to the IRRP in the City of Solana Beach.
24. (P.99) Stormwater Treatment CDS Unit – This BMP is listed as a strategy that will “supplement its core jurisdictional program.” This BMP has been in operation since 2004. The Regional Board considers operation and maintain of this unit as part of its “core jurisdictional program” facilities and not a strategy that “will supplement” its core jurisdictional program.
25. (P.103) San Elijo Dry Weather Diversion - This BMP is listed as a strategy that will “supplement its core jurisdictional program.” This BMP has been in operation since 2013. The Regional Board considers operation and maintain of this unit as part of its “core jurisdictional program” facilities and not a strategy that “will supplement” its core jurisdictional program.
26. Table 24 La Granada Drainage Area, Interim and Final Numeric Goals – Interim and Final Goals are to, maintain the 5% reduction in dry weather flows and expand to other neighborhoods. Why isn’t the goal to go beyond 5% reduction of dry weather flows (a prohibited discharge per Order R9-2013-0001). La Granada was selected for its persistent flows from a major outfall, therefore why wouldn’t the efforts be continued to further reduce dry weather flow volume or number of storm drains with dry weather flows until all were eliminated?

27. Since the HPWQC is indicator bacteria for all of the focus areas in the Escondido Creek HA, and all of the goals Tables use the “general” schedule associated with TMDL accounting for preparation time to prepared, be reviewed and accepted, and begin implementation of the Water Quality Improvement Plan. Since Escondido Creek is not a water body (or any segments of it) identified in the TMDL why isn’t the schedule shorter? Most of the strategies listed to reduce concentrations of indicator bacteria in the MS4 discharge are associated with reductions in non-storm water discharges, focused inspections, HOA programs, incentive program, and irrigation reduction programs. It is expected that these programs shouldn’t take 24 years to implement and see results. Tying accomplishment of these goals to the TMDL compliance schedule should be reevaluated.

Steve Gruber Comments on
October 28, 2014 Memorandum to
Water Quality Improvement Consultation Panel

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Mikhail Ogawa

From: Gruber, Steve J <sjgruber@burnsmcd.com>
Sent: Tuesday, November 11, 2014 10:19 AM
To: Mikhail Ogawa
Subject: FW: Carlsbad WQIP Consultation Panel Briefing

Mikhail,

Here are comments on the latest draft from me and Tory Walker. Please let me know if you have any questions and sorry for the delay in getting them in.

Thanks.

Steve Gruber, M.S.

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1. The interim and final goals for the focus areas rely for the most part on a percent reduction in anthropogenic surface water runoff. Decreasing dry weather flows is a critical component of the strategies identified in the document and, if achieved, should have a dramatic, positive, impact on water quality. Given the reliance of the numeric goals on the percent reduction over time compared to baseline values, the WQIP should provide more information on the definition of baseline, the status of the data in achieving a baseline, and the approach that will be used to measure progress toward meeting the flow reduction goals (e.g., will there be a statistical comparison to baseline data for demonstrating effectiveness?). Establishing baselines can be difficult, particularly with the spatial and temporal variability in flows in urban drainages. We understand that many of these details may still need to be worked out, but without a clear idea on how progress will be defensibly quantified, we may not know if the goals are being met over time. Providing at least some information on how these critically important values will be established (rather than implying that the details will be figured out at a later date) would provide more credibility for the document.
2. Reducing anthropogenic surface water runoff will reduce the bacterial loads originating from the MS4, however, it should be acknowledged in the document that the concentration-based water quality standards for indicator bacteria still must be met. This is an important distinction because reducing dry weather runoff (i.e., flows) will not necessarily reduce bacterial concentrations. In fact, some studies have suggested that decreasing flow may actually increase bacterial concentrations in the MS4 and receiving waters. The exclusive reliance for the numeric goals on reducing anthropogenic surface water runoff appears to imply that water quality standards for indicator bacteria will be met, which may not be the case.
3. While the concept of focus areas (where initial efforts will likely yield greatest benefits) has merit, the creeks themselves should also be considered as "focus areas" (the entire lengths, including tributaries). These riparian systems are the receiving waters for the upland focus areas where strategies are being developed. Many opportunities for improving the water quality and overall health of these creeks have already been identified (e.g., in watershed management plans), and more can be identified, especially when Alternative Compliance options are given the import and weight they should be given. In-stream solutions may actually offer the most effective strategy for achieving lasting water quality; from small draws and roadside ditches, to ephemeral creeks, to perennial creeks, multiple benefits would accrue. As it is, this document does not include such solutions even though they are included in the permit.

The restoration/rehabilitation/creation of healthy stream systems has multiple benefits, as multiple functions are provided with properly engineered systems. As such, there are a number of funding mechanisms, incentive programs, etc. that should be considered, both existing and those that will be developed with Alternative Compliance. The multiple benefits also bring different sources of funding. While it is not within the scope of this document to identify these many and varied sources of funding, the document could be improved by giving this important strategy at least equal weight as the strategies put forth.

4. In line with the above, it is concerning that the goals and strategies of the WQIP, being developed solely for the HPWQCs (i.e., bacteria, eutrophic conditions) may inadvertently exclude many other practical solutions that may in fact have a greater overall benefit, but that are not perceived or understood as activities with direct benefits relative to the HPWQCs. This inevitably results in a much smaller toolbox than would otherwise be available. A comprehensive approach (or mindset) that fulfills the permit obligation to address HPWQCs, but also includes other practical solutions in the receiving waters will in the end be far more successful in improving our regional water quality.
5. As bacteria has been identified as the sole HPWQC (with the exception of the Loma Alta Slough, which can have its own specific strategies), with fairly well known anthropogenic sources, it makes sense that a meaningful strategy would focus on changing behaviors that generate those sources (e.g., over-irrigation). Public education is a proven approach that is included in the document, but to date the strategy has not been nearly as successful as it could be, primarily because it has not been given the weight it deserves. This is not a critique of the document; in fact, the strategy is properly identified as “Enhanced Education Program.” However, to be successful, this approach must impact hearts and not just minds. A public education program for storm water that impacts society in a lasting way is achievable, but will need to be a much more prominent feature of the overall strategy to be successful in achieving the water quality goals of the WQIP.

The Escondido Creek Conservancy Comments
on October 28, 2014 Memorandum to
Water Quality Improvement Consultation Panel

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Carlsbad Water Quality Improvement
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November 10, 2014

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**Everett Delano of
Delano Law Offices**

Subject: Consultation Panel for the Carlsbad Watershed Management Area Water Quality Improvement Plan, Comments on Numeric Goals, Strategies, and Schedules in Draft Second Interim Deliverable

Dear Mr. Ogawa:

Thank you for the opportunity to review the Second Interim Deliverable of the development of the Water Quality Improvement Plan (WQIP) for the Carlsbad Watershed Management Area. We wish to thank you and the Copermitttees for their efforts in providing the draft document prior to the Panel meeting on October 28. We understand the tight schedule that you are working under and having the document in advance greatly facilitates the review process. We have organized this response letter with the General Comments and Recommendations first, which apply to all the Hydrologic Areas (HA) numeric goals and strategies. This is followed by comments under the headings matching those provided in the draft document, first with the Introduction and then by HA. Within each HA, we have arranged the comments under the following headings:

- 1) HA Sources
- 2) HA Area Goals and Strategies, and
- 3) HA Focus Areas

At the Panel meeting, you suggested that it would be helpful if the Panel members could also provide recommendations on improving the "presentation" of the document, so the reader has a clearer understanding of the process, measures, and mechanisms of meeting the water quality objectives. As a result, we have incorporated comments below that are meant to improve the presentation, in addition to comments on the proposed goals and strategies.

GENERAL COMMENTS AND RECOMMENDATIONS

Some references will be made to the Chesapeake Bay Commission study, "Crediting Conservation," which makes a case for giving credit in stormwater permits for preservation, rehabilitation, or creation of natural wetlands for reducing water pollution. This document is attached as a reference.

The Escondido Creek Conservancy (TECC) is a non-profit, public benefit, corporation dedicated to the preservation and protection of the natural open space within the Escondido Creek watershed. We support educational programs and compatible outdoor recreation within the watershed for the benefit of all residents of the area.

1. Selection of Flow Reduction for Numeric Goal

a. A better description of how the WQIP fits into the overall Basin Plan and its requirements for protecting beneficial uses is necessary for the reader to understand that water quality protections will continue to apply to the entire watershed.

b. Similarly, the way in which priorities have been established based on existing TMDLs should be made clear.

c. We understand that elimination of non-stormwater flow is one of the goals of the MS4 Permit and that it is being used as the method to also reduce dry weather HPWQCs and PWQCs. However, we recommend that there be a more robust explanation of why dry weather flow was selected as a metric for indicator bacteria reduction, rather than using the direct measurement of the standard indicators for bacterial testing (Total Coliform, Fecal Coliform, and Enterococci). The only way to measure the actual number of bacteria entering an impaired water body is to determine their concentration and then multiply by the volume; otherwise, when flow is reduced, the concentration of bacteria may increase.

d. Indicator bacteria as a High Priority Water Quality Condition was selected in the previous Provision B.2 Submittal (June, 2014) as the Highest Priority Water Quality Condition (HPCQC) for all the HAs with the exception of Loma Alta, which was selected for Eutrophic Conditions. It is our understanding that this was determined to be true for both wet and dry weather flows; however, primarily the wet weather condition seems to be where the highest indicator bacteria exceedances have occurred.

We recommend that you provide a more detailed basis for why dry weather flow was selected as the means to measure success in reducing indicator bacteria, particularly with respect to wet weather flows, since reducing dry weather flow may not have a significant effect on bacterial levels for wet weather flows. If you have information that indicates whether wet weather bacteria levels will also be reduced to the same degree as dry weather, could you please provide this information in the text.

e. Although we agree that reduction in dry weather flow should reduce indicator bacteria in most cases, there may be instances where bacterial sources are not flow related such as groundwater sources or naturally occurring animal sources. Please explain how you will verify that reducing flow will reduce HPWQCs and PWQCs.

2. Interim and Final Numeric Goal Schedules

a. We are surprised at the length of time that has been proposed for meeting both the interim goals and the final goals. Considering some of the strategies that have been selected to reduce dry weather flow, it is our opinion that rather than a straight line approach to achieving the final goal, an “S” curve would be more appropriate. Generally, there is a learning curve and so we would assume that it will take some time to ramp up the individual strategies. However, that should be relatively short, and then we would expect a more rapid increase followed by a tapering off near the end, after the easier early results have been achieved. This should apply to all of the Priority Water Quality Conditions that are related to dry weather flow, including bacteria, nutrients, and toxicity. We would therefore recommend

that you show a more ambitious schedule for achievement both the interim and final goals. The year 2038 is listed for achieving the final goals by most of the HAs; we believe this is far too long a period for achieving your goal. As is indicated in this document, there is a process to change the goals and schedules if the strategies are not working effectively.

b. The selection of focus areas within each HA was proposed as a means to provide the resources needed to identify the strategies that were successful in reducing the HPWQC and PWQC. We agree with that process; however, the results should be applied watershed wide as soon as meaningful results are known. There is no mention of when results will be applied to the whole watershed. Please provide a description of the nexus between the focus areas and the watershed as a whole.

c. The schedule for the goals seems weak in comparison to the Chesapeake Bay watershed effort, which aims to meet its goals in 15 years. Because dry weather flows could presumably be reduced significantly with mandatory water restrictions, we believe the goals could be met much earlier. Reducing the bacteria (not the flow) by 80% in storm water is understandably a more difficult goal, and, as a result, could take much longer.

3. Strategies Selected to Meet Numeric Goals

In reviewing the strategies we are encouraged by many of these strategies that have been selected. We believe, as stated above, that many of these strategies will be quite effective, such as property based patrol inspections, targeted increased street sweeping, storm water hotline, and implementing education of homeowner associations and landscape maintenance providers. We also note that there are some innovative strategies under the Optional Strategies that we believe will add significant value to the WQIP, if implemented. We offer the following recommendations regarding the proposed strategies:

a. Restoration of our existing stream habitat and wetlands is long overdue. Continued abuse of these important water quality resources due to high nutrient loads, toxics, and sediment loads has left us with most of our streams being classified as poor to very poor based on bio-assessments conducted in all of the streams in the watershed. Some are in worse condition than others. Embeddedness for instance (stream bed composition) has a major impact on the benthic communities, which form the basis for the aquatic life in these streams. The 2007 Surface Water Ambient Monitoring Program (SWAMP) stated that “multiple lines of evidence support the conclusion that the Carlsbad watershed is in poor ecological condition.” Based on this level of deterioration, due primarily on the past years impacts of MS4 discharges, we believe that the Copermittees would be well served by actively promoting actions which will in fact directly help to restore streams to more vibrant health. Just reducing dry weather flow as proposed will not in our opinion accomplish that goal, particularly with the very long schedules being proposed, and we recommend that one of the overarching goals should be to begin the process of restoring our precious creeks and streams. This is not mentioned directly in the WQIP, and yet the MS4 permit clearly sets forth the potential means through the Alternative Compliance, to rehabilitate the channels, streams, or habitats within the watershed. However, this is only mentioned as an Optional Offsite Alternative Compliance Program. We recommend that the Copermittees take advantage of this potential opportunity now and consider adding in wording in the Optional Strategies

that state that “rehabilitation of channels, streams, and habitat” is both a goal and a strategy to be considered.

b. At the Panel meeting there were a number of comments by the panel members and the general public about the ability of healthy streams, wetlands, and riparian systems to naturally reduce the HPWQC and PWQCs identified by the WQIP. Both TECC and San Diego Coastkeeper have been performing WQ monitoring and sampling for a number of years in Escondido Creek. The approximately 8 mile section of Escondido Creek from Harmony Grove Road at the City of Escondido Flood Control Channel downstream to El Camino Del Norte was used as the basis for testing at five locations. Based on average values (4 years for TECC water quality parameters and 5 years for Coastkeeper bacteria sampling), the following parameters have shown significant reduction as a result of the natural in-stream processes:

Nitrate	71% reduction
Nitrite	94% reduction
Phosphate	17% reduction
Enterococci	39% reduction
E. Coli	71% reduction
Total Coliform	39% reduction

We are not saying that the proposed strategies and goals should not be implemented and that we should rely on natural systems to do the job, in fact just the opposite. What we are saying is that there should be a parallel track that identifies recovery of our streams, wetlands, and riparian areas as the final goal and that to achieve that we need to also actively work to begin the recovery process. The WQIP has identified methods (Alternative Compliance) to begin that important process and now is the time in this document, to buy into that recovery as a long-term goal.

c. We have one final comment regarding rehabilitation of streams and related wetlands. The just approved Water Bond, Proposition 1, has allocated significant funding that will be set aside for this type of restoration project, and specifically \$100 million would be available for projects to protect urban creeks, and another \$20 million for a competitive program to fund multi-benefit watershed and urban rivers enhancement projects. There will be opportunities coming up to fund projects for urban creeks and wetlands through Prop. 1. If we are not considering these options, we will miss a critical opportunity.

d. The attached document “Crediting Conservation” by the Chesapeake Bay Commission makes a strong case for giving credit in water quality considerations for preservation, restoration, and creation of natural wetlands, as well as providing regulatory means of accomplishing this. We strongly urge the Responsible Agencies study this example of how this is presently being done in a watershed vastly larger than the Carlsbad WMA.

Preservation and rehabilitation of wetlands should be included as a parallel strategy for preventing increases in pollution. All the good intentions and BMPs cannot prevent an increase in water pollution, as the last several years have shown. Despite the best efforts of everyone involved, the consensus seems to be that the results are disappointing. It is difficult and expensive to replace the

natural cleansing functions of natural water courses that are removed by development. If this is not explicitly part of the effort to maintain water quality, it will only happen by occasional fortunate circumstances.

e. We noted that in the Escondido HA the City of Encinitas is showing Homeless Encampment Abatement Program as a strategy. However, under the Optional Strategies, the City of Solana Beach has listed an innovative strategy of “Support Partnerships with Social Service Providers to Provide Sanitation & Trash Management for Persons Experiencing Homelessness.” We believe the later Optional Strategy may be better directed at the water quality problem (bacteria and trash). Simply removing homeless people from an area may not result in resolving the pollution problem; instead, it will just spread it around.

This strategy should be implemented in all the stream-courses that experience encampments or even temporary misuse as latrines. Aqua Hedionda Creek has a significant legacy of itinerant workers (in both agriculture and housing construction) that has undoubtedly contributed human pathogens to the surface waters.

4. Role for NGOs

We believe that the local environmental organizations are part of the solution for the problems with our watersheds. Our volunteer efforts can greatly expand the reach and reduce the cost of program implementation for the public agencies that are responsible for achieving these results. In this entire memo, we read only one mention of an NGO participating in strategy implementation. This WQIP is intended to be an important start toward a new watershed based approach to improving water quality. Such an approach requires involving the broader community as part of the stakeholder process. It would be helpful to include some discussion about the on-going process of working together to implement the WQIP, not just during this period of preparing the plan, but meaningful involvement through plan implementation, monitoring, and the important adaptive management that will be essential to its success.

A. INTRODUCTION

1. Purpose

Page 7, last paragraph under Purpose: it is stated that “Current understanding of the effectiveness and efficiency of many strategies is unknown.” We agree that there are a number of strategies that are unknown in effectiveness; however, there are also many that are known through other agency programs and studies. Many of the strategies you have chosen have been demonstrated in other regions to be quite effective.

2. Goals

a. Page 7, second paragraph: last sentence states that the forthcoming Monitoring and Assessment Program will provide a basis for measuring progress. In the Panel meeting there was a slide that mentioned the need for flow monitoring to establish a baseline. It would be helpful at this point in the

introduction to the goals to describe this need because when the reader moves on to the goal tables it is confusing to see that there is no baseline yet. Additionally, how soon will this baseline be determined? Is this a long-term endeavor or will this be accomplished relatively quickly? As we recall, it was stated this was the first item to be done. Also, this might be a good place to mention how flow relates to bacteria reduction, and if you will also monitor bacteria (which is proposed in Loma Alta but not mentioned in the other HAs) along with flow to establish, along with flow, the relationship between flow and bacteria reduction. Additionally, we would assume that nutrients and toxics would also be measured. Can you confirm if this is correct?

b. Page 8, first paragraph: the last sentence states that “Once a final goal has been achieved, RAs can reassess their programmatic objectives and adapt their program so as to focus on new HPWQCs and maintain the status of the conditions they have achieved.” This sentence states that not until the final goal is achieved, will there be any reassessment of the objectives or focus on new HPWQCs. Looking at some of the tables later in the report, this date for final goal achievement is set for up to 24 years in the future. Are you saying that there will not be any reassessment before 24 years? If you do mean this, then we disagree highly with this proposal, however, if this has been misstated and you actually intend to reassess during each 5 year cycle, then please amend this sentence as appropriate. This comment also relates to our previous comment on how the goals, schedules, and strategies relate to implementation in the entire watershed. We believe this is an important issue and needs to be clarified.

c. Page 8, last paragraph before 1.3 Strategies section: can you provide a little more discussion here on what the “iterative and adaptive management process” will involve? Perhaps a process flow diagram would be helpful to the reader. Since this appears to be the process for how the WQIP will be modified over time to meet evolving goals and strategies, it would be helpful if you could provide a better idea of what that might involve.

3. Strategies

a. Page 8, first paragraph, under the 6th bullet states “Activities.” Perhaps something went missing here since this is quite vague. Additionally, on the next bullet it mentions “Program Core Strategies.” These terms are not defined, although variants of them are used frequently. Are they the existing JURMP strategies? Please define.

b. Page 8, implemented strategies 1), states “Effectively prohibit non-storm water discharges to the MS4.” All of the goal schedules show a final goal of 80% reduction, not 100%. Suggest sentence be modified to reflect the actual final goals.

c. Reduction in flow is a great strategy, as a means to achieving multiple goals, including reducing invasive species of plants and animals, and biofilms in the dry season. The goal is an 80% reduction in anthropogenic pathogens, which is a much more difficult goal to achieve.

d. There are many strategies listed that may not in fact reduce the bottom line in bacterial or pollutant loads.

e. Page 8, implemented strategies 3), states “Protect the beneficial uses of receiving waters...,” yet there is really nothing that relates back to this objective. We would like to see some discussion about the impact of the selected strategies on beneficial uses.

f. Pages 8-9 indicate the RA selected from a list of potential strategies. These were included in the prior report. We would like to see these brought forward so it is possible to identify which strategies were selected, which were excluded, and how this relates to the “Core Strategies.”

g. Page 9, second paragraph, 5th bullet is not complete.

h. Page 9, 5th paragraph, states “It is important to note that the suite of strategies...that will be implemented are generally not pollutant-specific...” In fact, very few are pollutant specific. We think there should be a more discussion on the HPWQC. In some cases, these may be assumed as part of what is identified as a very generic strategy such as “General Education and Outreach.” However, for bacteria there are some targeted strategies that really should be specified. For example, the two HA’s that mention addressing homeless encampments when to our knowledge this is an issue in essentially every HA. There also are a number of successful programs that have targeted pet waste.

4. Geographic Prioritization

a. Page 10-11, bullet items: we would suggest additional categories that, from personal experience, would warrant prioritization:

(i) The first involves the mass distribution of local advertiser based newspapers and advertisers (not the UT or other major newspapers). These are generally not read, include plastic wrappers, and are in all the RAs geographical areas. These could easily be regulated.

(ii) The second involves disposal of automotive coolant waste (propylene glycol and related products). In Encinitas, for instance, there are a number of auto related commercial establishments that are listed online for disposal. From personal experience, only one was actually accepting this waste, Encinitas Foreign (interestingly they do not charge and seem to be doing this as a resource to the community). Even with a local disposal source, coolant waste is many times flushed down the sanitary system or disposed in the storm drain or dumped on the ground. We recommend that the disposal sources be reviewed and contacted to see why they are not accepting this automotive waste and consider requiring them to accept it at no cost.

d. Page 11 “vintage” does not correctly characterize the distinction that is implied; areas developed prior to more recent storm water requirements.

e. Page 11 distinguishes “municipal properties” open space, parks and medians whose irrigation may create additional run-off. Certainly there are non-municipal properties with the same potential for run-off. Our concern is that the way this is characterized focuses only on the negative and not any positive geographic prioritization factors that should be considered. The percentage of impervious cover is one key indicator of the health of a watershed. Considering the amount and distribution of natural open space is an important factor to consider.

5. Goals and Strategies by Hydrologic Area

a. Page 13, Figure 2 highlights our concern about the selection of Buena Vista Lagoon as a focus area and not the associated creek. San Elijo includes the creek and lagoon. Agua Hedionda includes the creek but not the lagoon. Buena Vista Lagoon is such an anomaly with its artificial closure of the outlet. How does this artificial condition, which will be modified within the lifetime of the WQIP, impact this choice? Why does it make sense to exclude the creek from this beginning stage of watershed based planning? We think that it is critical to consider the creek as part of this effort. Failure to address upstream conditions will continue to impact the lagoon, even after a \$100m restoration effort. There should be discussion somewhere about the assumptions related to the major restoration of the lagoon and interface with the WQIP process. This has been done with the San Elijo Lagoon Restoration but is not mentioned for Buena Vista. This seems like an oversight.

b. Page 15, Table 4, would be the section of the report where we believe it would be quite helpful to expand on why flow was chosen and how it relates to bacteria reduction and other pollutant reduction such as nutrients, as is suggested in General Comments and Recommendations, item 1. Again, we believe this argument needs to be tested in each HA as a correct assumption. Further, since one of the objectives was to insure that all PWQCs were addressed by the chosen strategies, the assumption that nutrients for instance, are also proportionately reduced, should be tested. It would appear this has been considered by the City of Oceanside in Loma Alta HA Strategies, but we do not see that level of detail in the other HAs.

c. Page 16, box at the top of the page, item 8 Optional Strategies: this seems to be the only place that the important concept of “optional strategies” is mentioned. We request a more comprehensive explanation of what is intended with these optional strategies. We understand that the timing of implementation may be of concern; however, it is not clear if there is any real intent to pursue them. In many cases, we think what is identified as optional, is in fact a critical component of achieving sustainable health of the HA.

B. LOMA ALTA HA

1. HA Sources

a. Page 19, Figure 7 shows a lake just west of Rancho del Oro. There used to be a lake there, but it has since been filled in. However, there is a smaller ground water pond (left from the old mining operations) on the northwest corner of Oceanside Blvd and El Camino Real.

b. Page 20, first paragraph, states that “It is important to note that the PWQC, toxicity, is not presented in Table 1 below because in this HA it is not attributable to specific sources and may be caused by a variety of sources.” In looking at Table 1 we note that for all the pollutants shown, many state unknown (UK), meaning this may be a source but it is not known at this time. Further, most of the pollutants are attributed to many sources. If the receiving water does in fact show traces of toxicity, would it not make more sense to show all as unknown? At least that would highlight the fact that more needs to be done to accurately determine the sources.

c. Page 20, Table 1, highest Threat to Water Quality (TTWQ), with color coding, is helpful. One suggestion has to do with the footnote for the PWQCs, which says that these sources are shown with an “L.” Would it be possible to use another highlight color for sources of those pollutants? It would make it easier to see rather than scanning for all the “L”s.

2. HA Area Goals and Strategies

a. Page 21, Table 2, goals begin with flow reduction and continue with flow reduction to year 2023. Then in 2028 you switch to Macroalgal Biomass. Can you please provide some context as to why this changed and why you wait so long to establish a final goal (year 2028)?

b. Page 21 Table 2, 2023, what is meant by “additional’ in this column?

c. Page 23, Table 3: In looking at the strategies, we are impressed with the list of first level strategies and believe they will in fact produce early results for both flow and HPWQCs. We are also struck by the fact that there is nothing stated about restoring the habitat. We understand that this may be grouped together in the Optional Strategies in Appendix B; however, the Loma Alta Creek would greatly benefit by habitat restoration and buffer improvement efforts.

d. Page 23/24, in this HA and others, the implementation schedule shows almost all of the strategies through all time periods. This almost implies everything starts from day one and continues unchanged for years. In Loma Alta, only strategies 1 and 2 are being added in the first year to what is really shown as on-going programs. Are we interpreting this correctly?

e. Page 23/24, Table 3, and each of the other HA’s strategies are sometimes listed as “HA Wide” but are only shown as such for each individual jurisdiction. For example, Strategy 3 is listed as HA Wide, but only for the county, which is a small part of the entire HA. We believe the intent is that these apply only to the geographic area of the identified jurisdiction, but this distinction is not clear. Please clarify.

f. Page 26, mid-page, item 1: we believe the effort to educate and assist the local landscape professionals is a great idea and we are pleased to see this effort. We have personally observed that application of fertilizers and pesticides is not practiced with concern for the possible overuse or area of application that is susceptible to being washed into the MS4 system. Broadcast spreaders (blowers and spreaders), for instance, are used by many landscape firms to distribute fertilizers and insecticides. We have observed these spreaders distributing to the streets, curbs, and gutters in our area. This excess product ends up directly in the MS4.

g. Pages 26 and 27 overall comment: the City of Oceanside review of proposed supplemental strategies for the Loma Alta HA Focus provides an excellent level of detail on proposed strategies. For instance, the determination of minimum statistical validity for number of observational visits is noted as being the type of rigor that is required for these types of strategies, and we encourage the other RAs to consider this in their specific strategies. The second paragraph provides more detail in how the baseline will be determined and tied to the HPWQC and PWQC. This is what we would like to see in all the HA Focus areas as mentioned in the comments on Introduction, item 5. On page 27, there is a good

discussion of specific methods for outreach to the landscape gardeners. This level of detail and specific discussion of strategies in the Loma Alta HA is what we would like to see in the other Focus Areas. However, at this point in this draft WQIP this level of detail is not accomplished.

h. Page 30 optional strategies includes potential structural BMP's/retrofitting. This is where we think consideration of non-structural improvements also needs to be considered (i.e. restoration and buffer enhancement).

C. BUENA VISTA CREEK HA

1. HA Sources

Page 34, Table 4: refer to the same prior comment for Loma Alta HA Sources regarding listing of toxics.

2. HA Area Goals and Strategies

a. Page 40, Table 6, page 45, Table 8: the schedule for Interim Goals is too long. Suggest significantly reducing the time for achieving the final goal. See Item 2 under General Comments and Recommendations above.

b. This section contains no overall goal for the HA. The focus areas each have goals, but they appear to account for only about 20% of the land area. Per Figures 2 and 12, the HPWQC is bacteria in Buena Vista Lagoon, yet only one of the four focus areas that have established goals is located near the lagoon. Please clarify the rationale for not having any overall goal, and the impact of the goals for the focus areas on the HPWQC.

3. HA Focus Areas

a. Page 40, third paragraph, under heading CB-PA1 Focus Area Strategies, within item 20: we believe that annual inspections may not be often enough to adequately pick up surface flows from property in this Focus Area. In reviewing our own local areas we see flows occurring at different times of day and evening and different times of the week. Annual inspections may not pick up these flows. As part of the flow monitoring program to establish the baseline, could you consider also performing video inspections to further isolate where flow is coming from? This might be helpful in reducing inspection resources.

b. Page 41, item 5, use of mobile devices to alert or report is a great idea. If this is successful in the City of Carlsbad, perhaps the other RAs can implement a similar program.

c. Page 47, Table 9: the goals have both flow reduction and septic system maintenance program enrollment. What is the area of this Focus Area and how many homes are involved? Just looking at the map it looks relatively small. Therefore, it would seem that it would be relatively easy to determine the extent of the existing sewer service area and the homes not serviced (which have septic systems). Why will it take so long to enroll these septic systems in a maintenance certification program? We believe this can be accomplished in the first Interim Goal.

d. Page 49, item 4: confirm if there are there opportunities for Alternative Compliance in this Focus Area?

D. AGUA HEDIONDA HA

1. HA Sources

a. Page 52, first paragraph, states that “It is important to note that the PWQC, toxicity, and hydromodification are not presented in Table 1 below because in this HA it is not attributable to specific sources and may be caused by a variety of sources.” These should indeed all appear in the table. Even though the PWQC may be different for each sub-watershed that is not a reason to not show their likely sources. We do not agree with not showing toxicity because “it is not attributable to specific sources.” Toxicity is attributable to specific sources, otherwise where does it come from? The issue is it has not been determined or rather it is Unknown (UK). We therefore suggest it be shown in the table and listed as UK for which sources are contributing.

b. Hydromodification is clearly linked to the creation of less pervious and impervious surfaces through the clearing of natural habitat and construction or paving, respectively, specifically Land Development, which leads to the remainder of the land uses in the table. How this differs from Construction, which is listed as “varies,” is not clear. Therefore, hydromodification should be included in the table, and all probable land use contributions shown as “Likely.” Since this table shows impacts for land use occupying no more than 40% of the HA, there should be some explanation of the remaining area. If 60% of the watershed remains in natural open space and land development is a large area, there is a clear opportunity to guide development where it will be the least harmful to future water quality. This should be an explicit strategy to achieve the goal of preventing further degradation of the watershed and water quality.

c. Page 52, Table 10: this table indicates that more than 50% of the Inventory Sites/Facilities are sources likely to contribute to the HPWQC, indicator bacteria. There appears to be a disconnect between the RAs view on what contributes to the HPWQC and what does not. For instance, comparing Table 4 on page 34 with the Table 10, we see that General Contractors do not contribute on Table 4, but they do on Table 10. Another example is provided is General Retail. It would seem that General Contractors or General Retail would not vary significantly within the Carlsbad Watershed. Can you explain these differences?

d. Page 52, Table 10: write out definition of POTWs.

2. HA Area Goals and Strategies

a. Several sites within the Mainstem Focus area (see below) are on public land, and were identified as ideal for BMP retrofit projects and habitat restoration in the Aqua Hedionda Watershed Management Plan (city of Vista, 2008). We suggest that these strategies specifically be added to list for short term implementation (2023) since much of the work has already been carried out.

b. A functioning natural landscape is by far the most efficient and effective means of reducing stormwater impacts to the watershed and the receiving waters. Protecting the level of natural landscape to achieve water quality goals should be a goal. The strategy to do so would be to determine the maximum loss of functioning landscape (due to impervious cover, conversion to agriculture, degradation, or invasion by invasive species) that the watershed should not exceed, followed by the strategy of developing municipal code to achieve this level of protection.

c. Functional buffers that protect stream banks and riparian habitat should be included as goals to be achieved as soon as possible, through strategies including municipal codes, easements, etc.

d. Table 11: Item 1: why are the cities of Carlsbad and Oceanside, and the County of San Diego, not implementing an irrigation runoff reduction program in this HA? Item 5: do you mean “minimum response time”? What does item 8 “Residential areas” refer to in the left hand column? Can numbers 6 and 25 be combined, as it looks strange for only Carlsbad to be carrying out number 6. The County of San Diego is implementing specific strategies in the Escondido Creek HA, i.e. items 17-31 in Table 21. Why don’t these apply on the upper reaches of the Aqua Hedionda Creek?

e. See comment 2.b. under Buena Vista Creek, Goals and Strategies, regarding lack of overall goal.

f. See General Comments and Recommendations and Introduction Comments.

g. Page 55, Table 11: comment on why are strategies 9-13 dropped beginning FY17-18?

h. See comment b under Buena Vista regarding the lack of overall goal.

3. HA Focus Areas

a. It is not clear why the AH04 Basin was chosen as a focus area. Is it because this area is served by a large detention basin that drains down a single tributary (“Willow Meander Creek”) to the mainstem of the Agua Hedionda, thus making water sampling straight forward? If so, please state this. Statements equivalent to those made in the case of ESC 113 Focus Area (page 108) would be appropriate. It is stated that AH04 has few BMPs; however, the large detention basin located in Buena Vista Park was apparently constructed as a water and sediment-controlling structure, although it has become a “duck pond”, and it is likely a source of very high bacteria loads. It would be helpful if this and all other sub-basins were cross-referenced with their statewide system identifier.

b. The Agua Hedionda Watershed Management Plan (city of Vista, 2008) calls out three areas of focus where it was concluded the most immediate benefit to the listed water bodies (the mainstem of AH Creek and the AH Lagoon) could be achieved. The Mainstem Focus Area includes Sub-basin 1015 that drains to Roman Creek, and may be the same as, or overlapping with, AH04 above; please clarify.

c. Page 58, AH04 Basin Focus Area Strategies appears to contain very little detail information from the City of Vista on the strategies. These are just a repeat of previous generic strategies for the Focus Area. Suggest looking at some of the detailed information from Loma Alta HA as an example of what we believe would be more informative and meaningful.

d. Page 58, AH04 is another area where consideration of non-structural BMP's, not just structural needs, should to be considered. The large amount of land used for park, natural open space and golf course all make such options more easily achieved here than in other areas.

e. Page 61, last paragraph: the City of San Marcos property based inspections are proposed to be conducted multiple times per year at various times of the day. We agree with this multiple inspections approach. Other Focus Areas are suggesting once per year which we do not believe is sufficient.

f. Page 62, item 6, enhanced education program provides some good clarification of program content. We would like to see more of this kind of detail included in the basic education/outreach program for all of the HAs.

g. Page 62, item 7: can you provide a little more detail on what the "filter upgrade program" is, and what the types of new media filters are being proposed? We have not seen this in other HAs and wonder if this type of BMP could be used throughout the watershed? Perhaps this is already occurring and has not been mentioned. Could you confirm and provide details?

h. Page 64: only PA2 gets a 45 minute storm water hotline response. It would be great to set this up as a pilot project and fully evaluate the additional staffing requirements and overall benefits in order to determine whether this is a strategy that should have much wider use.

E. ENCINAS HA

What is the plan for actually including this HA in the WQIP? Since it is the smallest HA, and entirely within a single jurisdiction, it would seem to be easier to address than many of the other HAs. The CWN and member groups have been working to create a "friends" group that would focus on this HA. Initial outreach and events have been held and more are planned for this next year. This is an opportunity to involve local stakeholders in both planning and implementing watershed programs. Its unique features make this a particularly good location to initiate pilot projects.

1. HA Sources

a. Palomar Airport is located near the head of this HA. The slopes surrounding the airport along both El Camino Real and Palomar Airport road are devoid of vegetation and presumably are regularly treated with herbicide. These slopes discharge to a culvert under PAR, under the Lowe's shopping center, and to an outlet that discharges to the creek in the Lowe's center. County storm water staff has inspected the site and report finding no storm water violations. However, the developer of the Lowe's center reports that the BMP at the outlet does not adequately address the run-off at that location and they have proposed a retrofit design to the city of Carlsbad.

b. In addition to these bare slopes, most of the industrial area development occurred prior to new stormwater requirements. These include things like curb cuts to direct parking lot run-off directly to the creek with no treatment. This HA has lots of room for improvement and really should not be

ignored. We understand why it is not in the first round of priorities, but request a schedule for incorporating it within the timeframe of the WQIP. Please confirm this schedule.

2. HA Area Goals and Strategies

a. Most of the industrial area development occurred prior to new stormwater requirements. This includes things like curb cuts to direct parking lot run-off directly to the creek with no treatment. This HA has lots of room for improvement and really should not be ignored. We understand why it is not in the first round of priorities, but request a plan to address it within the timeframe of the WQIP.

b. Some basic data collection is needed to confirm what is the HPWQC in this HA. It is not listed as an impaired water body only because adequate data collection has not been done.

3. Focus Areas

The Lowe's center and airport are at the head of this watershed and improvements there could have a significant impact on the entire HA.

F. SAN MARCOS HA

1. HA Sources

Page 73, Table 16: we see certain Inventory Sites/Facilities that are different from the last inventory in terms of being considered a source for the HPWQC, indicator bacteria. Please explain why they are so different between the HAs.

2. HA Area Goals and Strategies

a. Batiqitos Lagoon's greatest need is for dredging to keep a healthy tidal flow. Studies for dredging implementation have already been completed, but "guaranteed" funding got lost in the recession. This should be listed now as an optional strategy, at least. San Elijo Lagoon is a good example of this type of project being used to meet long term goals in that watershed.

b. Page 75, Table 17: the entire discussion on the TMDL Interim Compliance, per the Notes A and B, is confusing. Since all of the items under Note A, for instance, have "or" after them, it would seem that the final item (h) is all that is needed. In other words, it does not say "and" after each one. Then, in the final item it states that all the previous items need to be assured of being met in the WQIP. Should the items (a) through (g) say "and" rather than "or"? If not, please provide some additional explanation for this discussion.

c. Page 75, Table 17: please explain why the flow is not carried forward in the goals after 2018? Are you saying you think only 10% can be reduced?

d. Page 76, Table 18: the same comments as those noted in a. and b. above, except in this table it shows going to the second Interim Goal for a 20% reduction (not 10%). Why is there a difference between the tables?

3. HA Focus Areas

a. Page 82, item 3: the proposed LID Retrofit Program looks to be quite interesting and potentially useful. We support the City of Encinitas in this initiative and would be interested in learning more about this program as it progresses.

b. Page 83, item 7: moving homeless encampments from the riparian areas will just move the waste to another area. It is our assumption that the second part of this strategy is to work on how to keep that from happening. Confirm how you will ensure this program will succeed in reducing the overall waste load. Are you considering something a program similar to the City of Solana Beach in providing sanitation facilities through partnerships with social service organizations? If not, how will this “educational” component work?

G. ESCONDIDO CREEK HA

1. HA Sources

Page 90, first paragraph states that “It is important to note that the PWQC, toxicity, is not presented in Table 1 below because in this HA it is not attributable to specific sources and may be caused by a variety of sources.” We know from the SWAMP data and others, that toxicity is present in Escondido Creek. As stated previously, we do not agree with not showing toxicity because “it is not attributable to specific sources.” Toxicity is attributable to specific sources, otherwise, where does it come from? The issue is it has not been determined or rather it is Unknown (UK). We suggest it be shown in the table and listed as UK for which sources are contributing.

2. HA Area Goals and Strategies

a. Page 96, Item 52, please reference previous comments about this innovative strategy. Additionally, we would like to see a broader discussion of this strategy to identify how this might be implemented over the entire watershed. People affected by homelessness do not have the resources for proper sanitation and therefore will use whatever means are available. If this were somehow provided on a watershed basis by working within existing Social Service Providers, it could be quite effective in reducing bacterial loads and trash.

3. HA Focus Areas

a. Page 99, second bullet: how often will assessing flows activities be performed? This seems important because there will be a certain number of flow monitoring events needed to statistically establish a baseline and future reductions in flow.

b. Page 99, item 6 Optional Strategies: are there any existing potential projects within this focus area that might be considered as possible Alternative Compliance including habitat restoration projects adjacent to the lagoon? If not, we would recommend that the City proceed to consider these types of projects. The SELC would be a willing partner to assist the City in developing these types of projects.

c. Page 102, Table 23: we do not understand the 2023 and later Interim Goal of “San Elijo Lagoon Restoration Completed.” Can you explain how flow reduction is linked to the lagoon restoration? We see under 1) on that page that the lagoon restoration “will directly improve the beneficial uses of the impacted receiving waters”, and we agree with that statement. However, the HPWQC identified in the WQIP is bacteria and it is our understanding that we are talking about the goal of reductions in the MS4 system which discharges to the lagoon. We would therefore assume that continued reductions in the HA would be the goal. However, if the City of Encinitas is providing significant resources towards the lagoon restoration, which in turn will reduce flow and pollutants, then perhaps this is a valid change in the goals. However, the words “supporting public infrastructure improvements” do not define how much, where, etc; nor is it quantified as to possible reductions.

d. Page 103, item 6, the Olivenhain Trunk Sewer, which runs adjacent to the lagoon, is noted as “antiquated.” We would strongly suggest this project be moved up out of Optional Strategies and prioritized. Without knowing exactly what the word “antiquated” means in this case, we have to assume it may have structural deficiencies as well as capacity issues. With the sewer facility location right next to the lagoon, we know that any failure will end up in raw sewage being discharged directly to the lagoon, with no hope for containing it. In addition, these types of potential failures to protected receiving waters, when known to be possible in advance, should be at the top of the list for action.

e. Page 104, Table 24: can you please explain why you have selected such a low goal of 5% reduction? Further, why does this goal not change?

f. Page 108, first paragraph: we appreciate the fact that the City of Escondido has clearly stated the rationale for selecting these focus areas. This helps the reader to understand why these were the ones selected rather than some other area. In addition, these are tied to the HPWQC, indicator bacteria. The PWQCs could be added to this and sampling/monitoring.

g. Page 110, Table 25: all of the RAs have selected the same general horizon for meeting the interim and final goals. Since each of the focus areas is different within each jurisdiction, should not the goals and schedules change more to reflect this? It seems to us that there would naturally be more variation within the goals and schedules due to each focus areas unique makeup. Can you provide some discussion on this point, perhaps up front in the introduction, so the reader understands why there is not more variation?

h. Page 110, item 1 at bottom of page, third bullet: conducting property based inspections once a year may be not often enough. For instance, in residential neighborhoods, discharges can occur at all hours and days of the week. For the monitoring that you will be doing, we assume there will be 24 hour recording of flow at select locations. Can you please confirm if this is the case? If these flow recorders are moved upstream, the City will be able to potentially see where higher flows are coming into the

system. Then additional property inspections would be quite advantageous in determining the source(s).

i. Page 111, item 3, Irrigation Runoff Reduction: the stated 10% increase in number of residents taking advantage of this program in the first permit cycle is noted as a great way to use specific goals for the strategies to meet the flow reduction goals. More of this type of specific sub-goals in the strategies would seem to add substance to the strategy programs for all the RAs.

j. Page 111, item 4, Optional Strategies: this seems to be the first habitat related project that is singled out as a strategy. We are not familiar with this project and request more information. We would encourage more of this type of specific project related strategy for action, and hopefully move these types of projects up from optional to first line strategies. We are pleased to see that the City is specifically listing Offsite Alternative Compliance as a strategy and encourage the City to move forward with projects which will enhance and restore existing creek and wetland habitat.

k. Page 114, item 7, Filter Retrofit Program: can you provide a little more discussion on the nature of this program such as where, what kinds of filters?

l. Page 114, item 8, Optional Strategies: we appreciate the fact that the City of San Marcos is also considering Offsite Alternative Compliance, which will hopefully translate into improvement in the local habitat in local creeks and wetlands. It sounds like there is a particular project in mind. It would be helpful to include a description of this project in your response to help us understand how such projects will enhance the overall achievement of goals.

H. COMMENTS ON PRESENTATION

1. Show the water quality monitoring locations on the maps. Per text comments, this is a pretty small number of sites for each HA. For example, Loma Alta only mentions three. This would make it easier to relate the goals to the geographic conditions.

2. Explain anthropogenic and how it relates to the high priority pollutant, bacteria.

3. Include a single complete list of all of the strategies used- with a single numbering system and description. Where there are differences for a particular watershed explain that in the text and perhaps with a sub-number. This should also relate back to the earlier more complete list of “potential” strategies. Describe the process that was used to narrow the list.

4. There needs to be a clear explanation about the optional strategies. Explain why they are optional and what the purpose is for including them and the intent/process that will be used to move them from optional to actual (if there is one).

5. A few summary/comparison tables would be helpful. For example, a list of all of the strategies used and which HA/Focus area it is used in; each HA/focus areas goals by date (this would highlight the very few exceptions to the 10, 20, 40, 60, 80% reduction for each 5 year period that are so consistently across HAs even though there are different characteristics.

6. Alternative compliance strategies offer an important opportunity to enhance watershed function. We understand that each RA may have a different intention with respect to how Alternative Compliance will be implemented. It would be helpful if in each of the HA's there is a discussion of the possible process and schedules for implementing these strategies. If there are specific projects that might be implemented, provide examples of these. By doing this, there would be more depth regarding these optional strategies.

We appreciate the opportunity to review this step in the WQIP process. Our comments are intended to provide useful feedback for this important document as it moves forward toward implementation. We have endeavored to be positive in our comments and appreciate the effort the Copermittees have expended in preparing this Phase II draft document. We look forward to seeing the completed WQIP as it moves forward.

A handwritten signature in black ink, appearing to read "Gregory W. McBain". The signature is fluid and cursive, with a long horizontal stroke at the end.

Gregory W. McBain, P.E., BCEE
TECC Board Member
WQIP Environmental Community Panel Member (Primary)

Brad Roth
Carlsbad Watershed Network, Acting Chairperson
WQIP Environmental Community Panel Member (Alternate)

Cc:



CREDITING CONSERVATION

Accounting for the Water Quality Value of Conserved Lands Under the Chesapeake Bay TMDL

CHESAPEAKE BAY COMMISSION · JUNE 2013

There is an undeniable link between the health of the waters of the Chesapeake Bay and our stewardship of the huge area of land that comprises its watershed. The land-to-water ratio is larger than any other estuarine water body on earth. With a water surface for the tidal Bay of only 4,000 square miles and a watershed of 64,000 square miles, land surface exceeds water surface by more than 16 times. How we treat the land profoundly influences the quality of the water. Thus, land-use decisions may well be the most important factor in the success or failure of our efforts to restore and protect the Chesapeake Bay.

Keeping Our Commitment: Preserving Land in the Chesapeake Watershed
Chesapeake Bay Commission, February 2001

INTRODUCTION

Land conservation and sound land use are fundamental components of restoring and protecting the resilience of the Chesapeake Bay watershed. This is not a new concept. Land conservation has been supported throughout the history of the Chesapeake Bay Program Partnership. The 1983 and 1987 agreements, *Chesapeake 2000*, and, most recently, the 2010 Watershed Implementation Plans of Pennsylvania, Maryland and Virginia, all incorporate land conservation elements in their goals. Public support for land conservation throughout the region has resulted in not only the achievement of acre goals for land conservation but also the setting of new goals to protect even more acres.

The benefits of land conservation are numerous and multifaceted; no one denies the inherent value of preserved land to the achievement of a healthy Chesapeake Bay. However, even though land conservation is critical to protecting against water quality degradation,¹ its specific role in water quality protection has not been recognized as a critically important tool for reducing nitrogen, phosphorus and sediment pollution under the Chesapeake Bay Total Maximum Daily Load (TMDL). The simple reason is that conserving land doesn't effectuate major reductions in pollution; rather, it prevents increases in pollution by precluding conversion.

When the Chesapeake Bay Agreements were the primary driver behind Bay restoration efforts, land conservation received much attention. Now that the Bay TMDL has become the primary driver, its numeric nature of counting pounds of pollution entering the Bay from various sources has made integrating the water quality values of conserving land an awkward fit – not unlike “fitting a square peg into a round hole.”

1. Forests account for approximately 60% of the land area in the Bay watershed and contribute only about 15% of the total load of nitrogen and 2% of the phosphorus load to the Bay. In addition, river basins with the highest percentage of forest cover have the lowest annual sediment yields in the Bay region.

2 Crediting Conservation

Recognizing this problem, the Chesapeake Bay Commission engaged with a panel of experts to determine if there were credible and defensible means to link land conservation with pollution reduction explicitly within the Bay TMDL framework and, in so doing, soften the sharp edges of the square peg so it may more neatly fit into the round hole of the accounting constraints of the Bay TMDL. This report, *Crediting Conservation: Accounting for the Water Quality Value of Conserved Lands Under the Chesapeake Bay TMDL*, reflects the work and the findings of this investigation by the Commission.

THE BENEFITS OF LAND CONSERVATION

Land conservation within the Chesapeake Bay watershed has long been an important means to protect open spaces, provide for recreational use, preserve both terrestrial and aquatic habitat, and conserve a wide range of natural resource values. With the growth of concerns about the conversion of undeveloped lands to urban and suburban uses, an increasingly targeted approach to land conservation has evolved in the three primary Bay states (Pennsylvania, Maryland, and Virginia) – an approach that has proven successful in protecting forest and wetland resources, agricultural working lands, and historic and cultural areas.

Protecting land from conversion is one means of securing the ecosystem services that are a natural by-product of the functioning environment. Ecosystem services from preserved lands include:

- n stormwater runoff control
- n erosion control
- n waste treatment/pollutant uptake
- n groundwater purification
- n flood control
- n water flow regulation
- n water supply filtering
- n habitat restoration and protection
- n soil formation
- n pollination
- n climate regulation and adaptation

Research has identified a \$1 to \$100 ratio of investment to benefit on the preservation of intact ecosystems.²

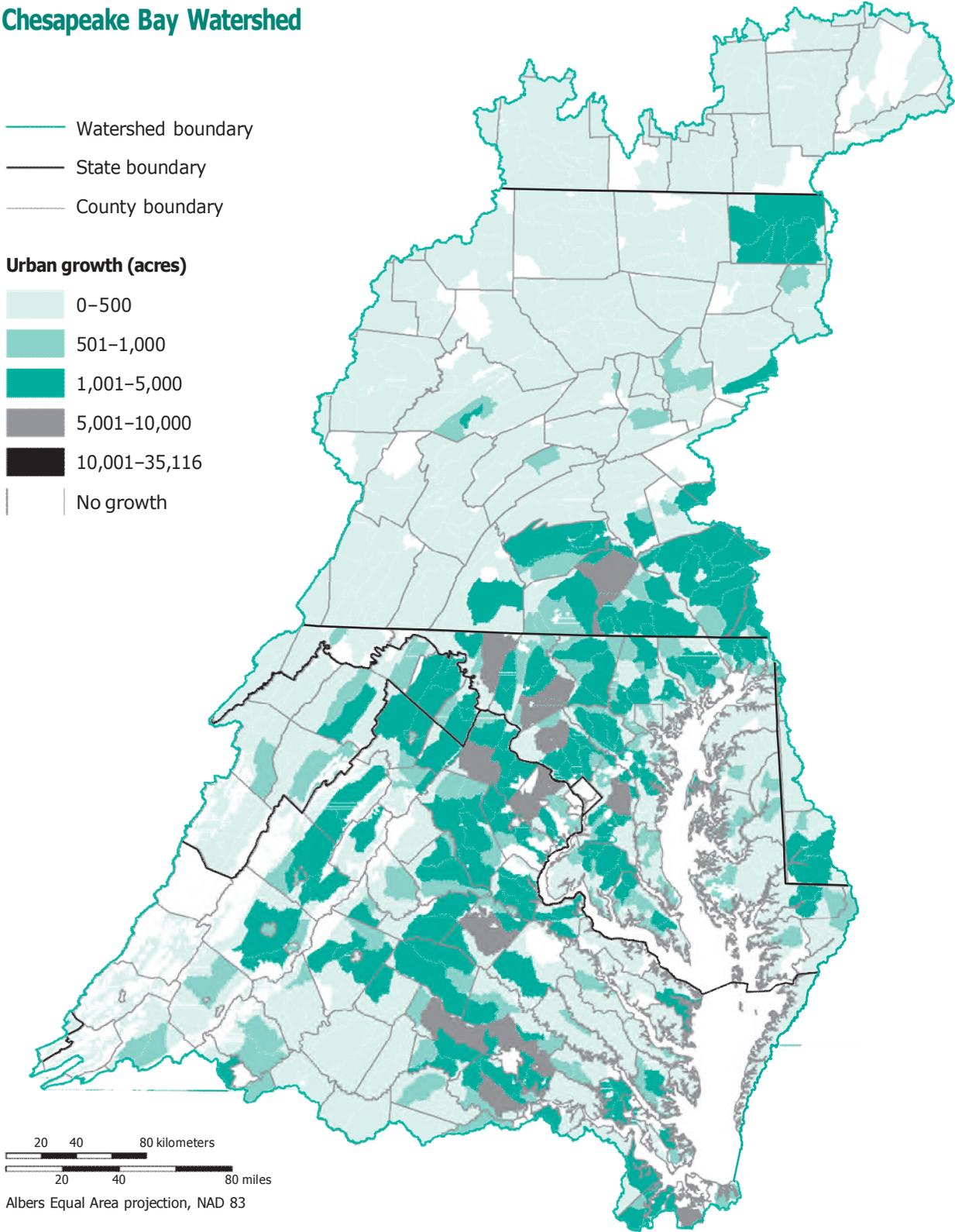
Another important benefit of land conservation is the contribution it makes in maintaining the quality of life for those living in the Bay watershed.³ This contribution, so essential for human existence, is directly linked to economic development and community vitality. For the past 20 years, the Bay Program Partnership has recognized these benefits.

Private landowners hold the majority of forest resources and agricultural working lands that provide the Bay region with food and fiber. Preservation of these land uses helps to stabilize the local and regional

2. For discussions on ecosystem services and economic contributions of conserved lands, see, *The Role of Natural Landscape Features in the Fate and Transport of Nutrients and Sediment*, Chesapeake Bay Program Science and Technical Advisory Committee (March 8, 2012). See, also, *Science Daily*, at <http://www.sciencedaily.com/releases/2002/08/020812070301.htm>. See, also, de Brun, *The Economic Benefits of Land Conservation*, Trust for Public Lands (2007).

3. See, Geis, *Conservation: An Investment That Pays*, Trust for Public Lands (2009).

Forecasted Urban Growth, 2006–2025 Chesapeake Bay Watershed



SOURCE: CHESAPEAKE BAY PROGRAM. BASED ON CHESAPEAKE BAY LAND CHANGE MODEL V2

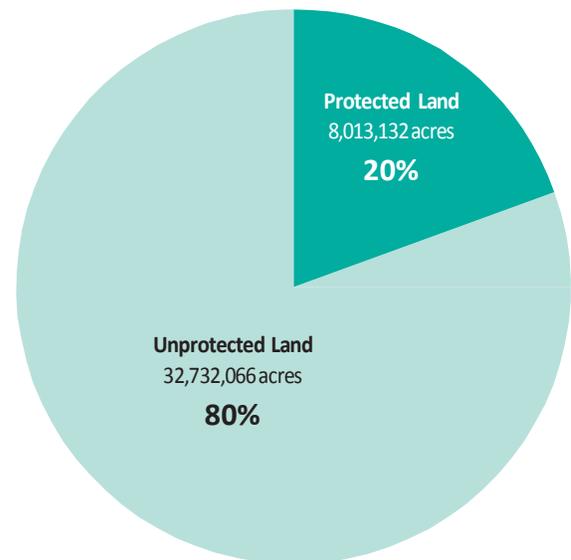
4 Crediting Conservation

economies by supporting local business suppliers and providing consumers with locally-sourced goods and services. And in contrast to the costs of services that result from suburban-style residential development, agricultural and forest lands generate more local tax revenue than the services they require, producing a positive influence on local economies.

Similarly, public lands have also long been recognized as a valuable influence on the economy. Studies have for decades calculated this economic value through the lens of their value for recreational use and as a community amenity. As early as 1971, studies showed that parkland acquisition precipitated increased land values in the five years after acquisition.⁴ Forty years later, the benefits of public lands are still well-documented.⁵

Conversely, the fragmentation and conversion of both private and public lands has long-term implications for the agricultural and forestry industries. As the population of urban and suburban areas increases, it spreads development outward over the adjacent agricultural and forest lands. For agriculture and forestry to be successful industries, they must have sufficient lands dedicated to the production of food and fiber resources. Forestry and agriculture are the largest industries in all three of the Commission's member states of Pennsylvania, Maryland, and Virginia. These industries will only be sustained if suitable land remains available. Virginia's Department of Forestry estimates that a typical paper mill needs a minimum of one million acres of harvestable timberland available annually within a 75-mile radius. Similar comparisons exist for dairies, beef processors, grain handlers, and other related businesses. As expanding development converts rural working lands to more urban uses, the farm supply businesses, equipment dealers, and labor pool all begin to shrink and eventually either close or shift their focus to serve a changed market.

Protected Land in the Chesapeake Watershed through 2011



CHESAPEAKE BAY PROGRAM

LAND CONSERVATION AND CHESAPEAKE 2000

On June 28, 2000, the Chesapeake Executive Council signed *Chesapeake 2000*, which reaffirmed the commitment to a “shared vision” of an ecosystem with “abundant, diverse populations of living resources, fed by healthy streams and rivers, sustaining strong local and regional economies, and our unique quality of life.” Reflecting the recognition that land conservation is fundamental to the long

4. Epp, Donald J., *The effect of public land acquisition for outdoor recreation on the real estate tax base*, *Journal of Leisure Research* 3(1), 17-27. (1971).

5. See, e.g., Banzhaf, et al, *Public Benefits of Exurban Open Space*, *Resources For The Future* (2005); Watchman et al, *Assessing the Wealth of Nature: Using Economic Studies to Promote Land Conservation Instead of Sprawl*, *Defenders of Wildlife* (2007); also, Nelson, et al, *Evaluating the Economic Impact of Community Open Space and Urban Forests: A Literature Review*, Univ. of Georgia/USDA (2004).

term restoration and protection of the resilience of the Chesapeake Bay as well as the economic vitality and quality of life of its citizens, the new agreement incorporated the following strategy:

Strengthen programs for land acquisition and preservation within each state that are supported by funding and target the most valued lands for protection. Permanently preserve from development 20 percent of the land area in the watershed by 2010.

In the years since, the Bay jurisdictions and their federal partners have met and exceeded this commitment. As of the end of 2011, over 8 million acres of land had been permanently protected throughout the Chesapeake Bay watershed.

THE TRANSITION TO THE BAY TMDL

Chesapeake 2000 and its predecessor Bay agreements drove a large number of successes, from improved crab management to sophisticated new water quality criteria and standards. Yet by the end of the first decade of the 21st century, it became clear to the members of the Chesapeake Bay Program Partnership that the agreements alone were not sufficient to accomplish the necessary restoration and, in particular, the necessary pollution reductions for restoring the water quality of the Bay. A new approach was required to ensure the achievement of the water quality goals that had long been among the most important but hardest to achieve elements of Bay restoration efforts.

As a result, the Chesapeake Bay is now subject to the largest and most complex Total Maximum Daily Load (TMDL) in the nation. This “pollution diet” or “blueprint” is designed to restore the water quality of the Bay and its tributaries in order to enable the recovery of the living resources for which the Bay is so well known. Under the Bay TMDL, the Bay jurisdictions, the Chesapeake Bay Commission and the U. S. Environmental Protection Agency (EPA) have committed to a 2025 deadline to have all the practices and programs in place to achieve the reductions in nitrogen, phosphorus and sediment pollution necessary to restore the Bay’s water quality.

Through the Bay TMDL, EPA has provided each of the jurisdictions with pollution load allocations for nitrogen, phosphorus and sediment. In response, each jurisdiction has developed Watershed Implementation Plans (WIPs) describing actions it will take to accomplish its specific pollution load allocations. EPA is tracking each jurisdiction’s performance through the use of two-year milestones and has discretion in the types and level of consequences that it may apply if a jurisdiction fails to meet its reduction goals. The TMDL not only requires the accomplishment of reductions in pollution loads, but also requires the maintenance of those reductions over time, even in the face of population growth and resulting land conversion.

Whereas *Chesapeake 2000* and the other Bay agreements included goals addressing multiple aspects of a healthy Chesapeake Bay, the Bay TMDL focuses exclusively on reducing nitrogen, phosphorus and sediment pollution. This is because water quality is the parameter under which a TMDL operates within the federal Clean Water Act framework and because the achievement of the specific pollution reduction goals is fundamental to a resilient Bay. Improved water quality is the base for the restoration of living resources, which rely upon measures extending beyond pollution reduction to habitat protection and fisheries management.

While the Bay TMDL is legally limited to pollution reduction goals, each of the Pennsylvania, Maryland, and Virginia WIPs contain either direct or indirect references to land conservation as a strategy for

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reducing pollution. Maryland's WIP, for example, highlights land conservation within the context of its smart growth program and its contributions to minimizing "stormwater pollution by reducing the amount of land consumed to accommodate new growth." (*Maryland Phase I WIP, Accounting for Growth*, p. 3-1.) Similarly, Virginia's plan includes "promoting and requiring ... land use practices to minimize development's impact on water quality. ..." (*Virginia Phase I WIP, Accounting for Growth*, p. 85.) Some also acknowledge the limitations in the linkage between land conservation and the current accounting for pollution load reductions under the Bay TMDL. For example, Pennsylvania's plan states, "While the Chesapeake Bay watershed model does not currently provide nutrient pollution reduction credit for land conservation activities, it is anticipated that this will occur in the future." (*Pennsylvania Phase I WIP*, p. 190.)

In spite of these references to the conservation of land, it is not seen as measurably contributing to targeted nutrient and sediment reductions in the Bay TMDL and its WIPs. The generally accepted benefits of land conservation are more forward looking: preventing increased loads that might result from land conversion and continuing existing ecosystem services in the future. The benefits are not directly linked to numerically-based pollution load reductions. Consequently, the act of conserving land is not prominently featured as a means to achieve measurable pollution reductions within the Bay TMDL and WIP scheme.

MOVING TOWARD CREDITING CONSERVATION UNDER THE BAY TMDL

In December 2010, the Chesapeake Bay Commission released a report entitled *Conserving Chesapeake Landscapes*. Developed in partnership with the Chesapeake Conservancy, the report reviewed the accomplishments of the previous decade and considered what additional tools, strategies, partners and policies would be needed to continue aggressive land conservation activities throughout the Chesapeake Bay watershed. One of the recommendations suggested that land conservation actions could contribute to the achievement of the Chesapeake Bay pollution limits established under the Bay TMDL.

The Chesapeake Bay Program's Maintain Healthy Watersheds Goal Implementation Team (GIT 4) embraced this idea. As a first step, it requested the Bay Program's Science and Technical Advisory Committee (STAC) to convene a workshop to consider whether there is a scientific basis for changing how the Chesapeake Bay Program Watershed Model assigns nutrient and/or sediment loadings rates of natural features based on their ecological health/condition, management status, and/or landscape position. (STAC Report 12-04, Edgewater, MD.)

The STAC Workshop (held in March 2012) resulted in a consensus among participants "that there is a scientific basis for adjusting Chesapeake Bay Program Watershed Model nutrient and sediment processing rates that are assigned to natural landscape features to better reflect the influence of landscape feature attributes that significantly affect actual rates." STAC recommended future improvements to the Watershed Model, including:

- n The addition of new land use classifications for lands having greater functional capacity for nutrient and sediment retention.
- n The adjustment of loadings rates for new land use classes, based upon spatially explicit landscape attributes.

- n The use of directional connectivity and the adjustment of loading rates based upon landscape attributes such as type, condition, and forest age.

To expand this work, the Chesapeake Bay Commission secured a grant from the National Fish and Wildlife Foundation (NFWF) to support efforts to explore and evaluate opportunities to provide nutrient and sediment reduction credits, under the Watershed Model, to land conservation actions. The Commission, again in partnership with the Chesapeake Conservancy, obtained the pro-bono services of the law firm of Hogan Lovells US LLP to evaluate the legality of incorporating land conservation into the Chesapeake Bay TMDL and its water quality accounting scheme. The Commission asked the firm to determine: “What statutory, regulatory, or agency policies provide support for, or present obstacles to, incorporating land conservation into the total maximum daily load (“TMDL”) compliance? Additionally, can land conservation be used to offset prospective loadings?”

In the summer of 2012, Hogan Lovells performed this evaluation through a review of several sources, including the federal Clean Water Act (CWA), the Chesapeake Bay TMDL, Presidential Executive Order 13508, and guidance issued by the Environmental Protection Agency (EPA). The firm specifically evaluated the opportunity for land conservation to contribute to nutrient and sediment load reductions and its value in offsetting prospective loads.

The key findings of the 2012 Hogan Lovells study were:

- n Language found in the CWA, the President’s Chesapeake Bay Executive Order and the Bay TMDL provide a sufficient legal basis for incorporating land conservation into the water quality accounting of the Bay TMDL.

TIME TO UPDATE THE MODEL

Changes in conserved land and “granularity:” two problem areas in the Chesapeake Bay Watershed Model

The Commission’s investigation into crediting conservation highlighted the fact that the Chesapeake Bay Watershed model treats all conserved forests in the same manner when it comes to valuing their water quality benefit. Whether it is a young forest under easement or an old growth forest under easement, the modeled pollution load contributed by the two forests are the same. Similarly, conserved open space or conserved farmland, even when it reverts to forestland, has the same modeled load as its original condition. That is, changed conditions of open land, from young forest to old or from fallow land to forest, do not receive different water quality credit in the model, although the aging of a forest or the reversion of a farmfield to a forest actually does alter the nitrogen, phosphorus and sediment load being contributed. In addition, because the Bay model best replicates reductions achieved on a large landscape scale, the “granularity” of the model is often too gross to allow for the integration of these land conservation changes at the scale at which they happen. Understanding this aspect of the model led the expert panel to conclude that the Chesapeake Bay Program Partnership should examine ways to more extensively account for differences among conserved lands and recognize those differences in the Bay model’s accounting system.

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- n Land conservation's water quality values could provide offsets for prospective loadings.
- n Requirements for sustainability under the TMDL can be met for conserved lands that provide offsets.
- n EPA has considerable discretion in how it may incorporate land conservation in its "reasonable assurance" determinations.
- n Obstacles to credit for land conservation include requirements for pollution reduction credit calculations with verification and assurance of performance.

A copy of the Hogan Lovells analysis can be found at www.chesbay.us.

Building upon these findings and using the funds provided by NFWF, the Chesapeake Bay Commission conducted an analysis of how to better account for the water quality benefits of land conservation within the Bay TMDL framework. The work began with a very open-ended examination of the possibilities that might exist to accomplish this challenge.

Calling on a panel of experts, the Commission held a brainstorming session with the panel to elicit ideas and possibilities. There were no predetermined or suggested outcomes; rather, the Commission relied on the panel's expertise and experience to provide the first level of idea generation. The panel included attorneys proficient in conservation easement development and negotiation as well as local land conservation; senior planners and policy makers who had years of state and local government experience; Chesapeake Bay Program modeling staff; and former natural resource leaders from Commission jurisdictions. The members of the expert panel, along with their affiliation are listed on Page 15.

The Commission also sought input and guidance from high-level water quality policymakers from jurisdictions across the watershed. This also included representatives from EPA Headquarters, its Chesapeake Bay Program Office, and EPA Region III.

Finally, follow-up phone calls, both individual and collective were held during the course of this project, allowing the experts to provide concrete ideas, raise questions about implementation of these ideas, and suggest other professionals to contact for input and dialogue. The deliberations concluded with the development of a series of key concepts that were then vetted with leading water quality and restoration scientists in the Bay watershed (their names and affiliations are also listed on Page 15). These additional consultants critiqued the expert panel concepts, suggested new avenues to pursue, and provided additional perspectives on the task of integrating land conservation's water quality values into the Bay TMDL.

After full consideration of all the information provided and ideas generated, groundtruthing and analyzing the concepts presented, the Commission identified four potential policy changes for additional discussion and evaluation to determine their suitability and acceptability for advancing land conservation as a measurable, verifiable strategy for achieving TMDL pollution reduction targets.

These four policy changes, each in their own way, reflect one or two of the following overarching conclusions that the Commission's work precipitated:

1. Incremental Advancements on Crediting: Efforts to incorporate land conservation into the Bay TMDL's water quality regime are important but are likely to remain incremental for some time. As such, it is important that we do not allow the TMDL process to relegate land conservation – which is in and of itself a critical, long term strategy in promoting the health and resilience of the Bay – to "sidebar" status in Bay restoration. The importance of continuing the historical, broad-based land conservation

and Bay restoration activities becomes even more critical in light of the narrow focus on water quality currently defined by the Bay TMDL, and the fact that maintenance of water quality objectives, when they are met, will require large areas of conserved land to continue to perform important natural functions. Restoring and protecting the resilience of the Bay's living resources will require a level of attention to the terrestrial and aquatic habitats and dependent fisheries that parallels the level of attention that the Bay TMDL currently provides to water quality.

2. Existing Deficiencies in Modeling and Valuation: Current systems at the jurisdictional level and at the Chesapeake Bay Program Partnership level are inadequate for capturing land use data and tracking land use change sufficiently for crediting the water quality values of land conservation under the Bay TMDL. This includes insufficiencies in the construct of the Watershed Model and the level of differentiation of land uses it incorporates; the Watershed Model could not value much of the conservation information directly even if jurisdictions were able to track and report it. A finer differentiation of land uses within the Watershed Model and refinement of associated pollution reduction efficiencies is necessary to establish the basis for assigning differing levels of pollutant reduction value to conserved landscape characteristics. Opportunities for crediting conservation do exist if relevant changes are made to the Watershed Model during planned updates in 2017 and beyond.

POLICY CHANGES FOR CREDITING WATER QUALITY VALUES OF LAND CONSERVATION IN THE BAY TMDL

The policy changes offered in this report do not represent major new policy directions or significant changes in process or accounting; the Commission found no “silver bullet” or major policy alteration that would dramatically elevate or shift the role of land conservation within the Bay TMDL structure. Rather, these changes, if implemented, would round the sharp edges of the square peg of land conservation. Even with these changes, however, land conservation and its water quality values still do not fit neatly into the round hole of the Bay TMDL. The suggested policy changes represent measured adjustments along the path toward a future where land conservation practices are measurably valued, and verified, as directly contributing toward TMDL goals.

 **Policy Change 1: PERPETUAL BMP CREDIT MULTIPLIER**
Modify the “all BMPs created equal” principle of the Chesapeake Bay Watershed Model and provide a credit multiplier to BMPs linked to permanent land conservation.

This first policy change recognizes that the Bay Program Partnership's Watershed Model, which serves as the calculator for determining regional and state-specific nutrient loadings, generally gives the same credit to a specific best management practice (BMP) regardless of its permanency. For example, when the model calculates the pollution reduction that a forested 35-foot riparian buffer provides, the buffer receives the same value for pollution reduction credits regardless of whether a conservation easement secures the perpetual existence of the buffer. Neither the permanency of the buffer nor the lack of permanency is a factor in determining the buffer's value in reducing pollution.

This policy change argues for incorporating new criteria into the Bay TMDL equation so that it accounts for the durability of a preserved BMP. That is, a riparian buffer with a conservation easement

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on it, that incorporates maintenance standards and preserves the buffer in perpetuity, receives a greater value for its role in protecting water quality or in reducing pollution than one with only a finite lifespan – that is, a 35-foot riparian buffer with a permanent conservation easement would receive greater pollution reduction credit than one without easement protection.

The rationale for this credit multiplier is that permanency provides a greater degree of verification, and thus certainty, of the ongoing pollution load reduction provided by the BMP. Conservation easements incorporate inspection and maintenance obligations, as well as enforcement opportunities, to ensure compliance with the terms of the easement. This increased level of inspection and verification achieves greater certainty of continued performance when compared with a BMP lacking a conservation easement. The assurance of long-term functionality is of value in determining expected water quality outcomes, and provides a basis for assigning a greater pollution reduction value when accounting for a BMP within a permanent easement within the Bay TMDL pollution metrics. This would, however, require a significant level of geographic specificity to be used within the context of the Watershed Model.

✓ **Policy Change 2: PREMIUM CREDIT FOR TARGETED CONSERVED LANDS**

Identify those conserved lands that provide a greater water quality benefit and provide them with more reduction credit than those conserved lands that provide less water quality benefit.

Under this second policy change, all conserved lands are not treated equally when it comes to water quality values. Policy Change 2 suggests that conserved lands which possess certain characteristics – for example, lands that incorporate a certain level of restoration, or lands that contain certain enhancing topographic features (e.g., large acreages of forests or wetlands) or provide targeted functions – receive greater water quality credit than conserved lands lacking one or more of these attributes. This policy change would rely on a sliding scale for crediting water quality value: conserved lands displaying the

A TOOL IN THE ‘REASONABLE ASSURANCE’ TOOLBOX

Land conservation and “reasonable assurance”

In tracking the implementation of the Bay TMDL, EPA must determine whether the state jurisdictions have provided “reasonable assurance” that the stipulated pollution reductions will occur. EPA determines whether the “reasonable assurance” requirement is satisfied by considering the numerous federal, state and local regulatory and non-regulatory programs identified in a Watershed Implementation Plan. Land conservation offers a jurisdiction the opportunity to enhance its reasonable assurance by providing a level of certainty against increased pollution loads: Permanent land conservation reduces the risk of land conversion and the resultant risk of increase in pollution loads. In this way, a jurisdiction can directly integrate land conservation into the Bay TMDL process, even if not into the Bay TMDL pollution reduction accounting. Whether conserved land actually provides reasonable assurance and how much it is counted towards providing reasonable assurance is neither known nor specified at this point in EPA’s determinations.

greatest number of the advantageous attributes receive the greatest pollution reduction value. However, there are at least two unanswered questions that surround this policy change.

First, what are the appropriate attributes of conserved lands that provide a greater water quality benefit and how do those attributes relate, in a defensible manner, to the final water quality value given to the conserved land? Examples of such attributes could be:

- n Located in a watershed with healthy streams.
- n Located in an area with a high risk for conversion to development.
- n Surrounding or located adjacent to spawning grounds of targeted fish.
- n Containing large contiguous forested areas or areas with mature trees and dense understory.

Identification of the proper set of attributes would need to be based on a subsequent scientific and policy investigation.

The second question is whether the Bay Program Partnership could incorporate this policy change into its existing accounting scheme. Some members of the expert panel believed that Policy Change 2 simply could not be accomplished with the current Watershed Model. They concluded that at this time there is both insufficient science and insufficient modeling capability to incorporate a complex matrix of the attributes and resultant water quality values for a particular parcel of conserved land. Others disagreed, believing that there is currently sufficient knowledge with regard to certain land cover types.⁶ Still others concluded that given the TMDL's exclusive focus on water quality, this change, if made, must incorporate only those attributes directly linked to pollution reductions and not to other benefits that land conservation provides (e.g., habitat protection).

Recognizing that a multi-factor site-specific value may not be feasible, what might be an alternative? Dialogue among the expert panel as well with outside consultants led to a recognition that there was a highly defensible, rather simple, single attribute that the Chesapeake Bay Program Partnership could incorporate into the modeling system which would allow for the incorporation of the concepts underlying Policy Change 2:

Provide greater water quality value to forested lands that 1) have zero order (spring seeps), first order, and/or second order streams (often collectively known as "headwater" streams) within the land's geographic boundaries, and 2) are conserved in perpetuity.

Stroud Water Research Center has conducted substantial research to establish that protected or restored zero, first, and second order streams do more for nitrogen reduction in the Bay than other waterways. Riparian forested buffers along these streams provide significantly increased ecological functionality when compared to those along meadow streams; in fact, these headwater streams, when protected by forested buffers, show a two to eight-fold increase in nitrogen pollution processing.⁷ Additionally, many of these headwater streams are particularly vulnerable to land use changes. And, because zero, first, and second order streams are located widely across the watershed, they have the potential to individually receive greater impacts from pollution than the larger waterbodies.

This "instream processing" functionality of headwater streams is not currently incorporated into the pollution reduction efficiencies of the Chesapeake Bay Watershed Model. However, high value streams

6. Note that the Land Use Workgroup of the Partnership is looking to provide some additional specificity in the definition of land types for the 2017 Bay TMDL reassessment, categorizing them by certain attributes. This includes, for example, defining forests as "floodplain forests," "riparian forests," and "harvested/managed upland forests."

7. Sweeney, Bernard W. et al., *Riparian deforestation, stream narrowing, and loss of stream ecosystem services*, PNAS, Vol. 101, no. 39 (Sept. 28, 2004).

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and their enhanced ecological functions could be recognized by placing an additional water quality value on conserved lands that are identified as “protected headwaters” lands. As with a buffer along a zero, first, or second order stream, conserved land that protects the catchments of these small streams provides greater water quality benefits than conserved land located elsewhere.

✓ **Policy Change 3: CREDITING CONSERVATION IN OFFSET CALCULATIONS** Adopt an approach similar to Clean Water Act wetlands mitigation, allowing for land conservation to earn some level of credit for mitigating against new pollution loads.

Under the federal Clean Water Act (CWA), when an applicant seeks a permit to impact a wetland (for example, filling ten acres of wetland to build a new development), the law requires that the applicant mitigate that impact in order to receive a permit. The “compensatory mitigation sequencing” established under the CWA works as follows:

- n First, the applicant must seek to avoid the impact;
- n Second, the applicant must seek to minimize the impact; and
- n Third, the applicant must compensate for any impact that does occur.

When reaching the third level of the sequence (i.e., compensation), the law requires the restoration, creation, enhancement and/or preservation of other wetlands within the impacted watershed. The restore, create, enhance, and preserve options exist in a hierarchy. Preservation, because it does not provide any acreage to offset the loss of impacted wetland acres, is the lowest rung on this hierarchy ladder. As a result, preservation does not receive as much credit for offsetting the impact as does restoration, creation or enhancement. However, the hierarchy does allow preservation to be included as part of the overall compensation package when used in conjunction with the other forms of mitigation.

The concept of this compensatory hierarchy could be applied to land conservation as follows: the TMDL accounting would provide greater nutrient pollution reduction credit when conserved land is included in a nutrient pollution reduction or offset plan.

Consider, for example, this hypothetical:

- n A discharger of a new load of 100 pounds of nitrogen pollution must, under the TMDL calculation, offset this new load.
- n The jurisdiction in which the discharger is located has a 2:1 offset policy. That is, the jurisdiction requires a reduction of 200 pounds of nitrogen pollution to compensate for the new 100-pound load.
- n The discharger seeks to offset the new load by the establishment of a 5-mile riparian buffer. But the buffer achieves only a 190-pound offset towards the required 200 pounds.
- n The discharger places a permanent conservation easement on the riparian buffer and the adjoining 50 acres of forest.
- n The jurisdiction allows the discharger to increase the offset value of the riparian buffer with 10 additional pounds of nitrogen because of the linkage of the conserved buffer to the adjoining conserved forest.

This Policy Change 3 could easily fit into a nutrient credit trading program, allowing for conserved to land to contribute additional value to a trade.

✓ Policy Change 4: 2025 LAND USE BASELINE

Utilize a 2025 land use baseline scenario in the 2017 TMDL re-assessment, allowing for credit for conserved lands previously included as part of a growth scenario.

The Bay TMDL uses a 2010 land use landscape in calculating the load reductions necessary to achieve healthy water quality. That is, the Chesapeake Bay Watershed Model, when determining the total load of nutrients entering the Bay and the corresponding necessary load reductions, used the land use conditions that existed in 2010.

This, in a sense, froze the TMDL in time based on the pollution loads that the landscape generated in 2010. Calculating the TMDL based on 2010 land use conditions creates a reality gap: it ignores the reality that growth has occurred and will continue to occur between 2010 and the TMDL deadline of 2025. With population growth in the Bay watershed predicted to increase from 17.4 million in 2010 to over 20 million by the year 2030, increases in nitrogen, phosphorus and sediment loads to the Bay are highly likely. Absent some unforeseen technological advance, the pollution that comes from the activities of 2.5 million more human beings and from converting farms and forests to homes will cause the watershed to experience new loads of additional pollution.

Under the current 2010 land use structure for TMDL accounting, new loads must be offset so that there is a net zero gain. For every pound of nitrogen, phosphorus or sediment pollution added to the waters of the Bay from a new sewage treatment plant or a new shopping mall parking lot, a pound must be subtracted from the load of some other existing source. Because conserving land does not provide an immediate offset on the subtraction side for any increased load, it cannot by itself compensate for these new loads. Thus, the current accounting and modeling framework does little to promote land conservation.

ADDING TO RESILIENCY

“It’s just a matter of time.”

There is a fundamental difference between conserved and unconserved lands and their impact on water quality that goes beyond the simple pre and post conservation measurement of nitrogen, phosphorus and sediment loadings from the land. Conservation of land can reduce or even eliminate the inevitable impacts of development, providing a receiving waterbody with greater ecological and functional stability. It can alter the timing and severity of the impacts of land conversion, slowing down, or in some cases preventing entirely, the degradation of water quality. In essence, conservation of land provides, quite literally, a healthy watershed with the ability to maintain its healthy condition. It can also provide a damaged watershed more time to recover.

Given this time element associated with conserved land, it may be useful to consider providing jurisdictions which achieve a certain ratio of conserved to unconserved land in a designated watershed an extension of time to achieve other pollution reduction allocation targets on the theory that the land conservation will, over time, slow high impact development in that watershed, and reduce the need for additional sewage capacity or stormwater BMPs, to achieve the Bay TMDL pollution reduction goals. It would also provide for the maintenance of existing watershed health as other changes on the land occur over time.

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If, however, the TMDL load allocations include the anticipated loads that will occur from growth, the accounting changes, yielding an incentive for conserving land by recognizing its value in preventing increased future loads. By looking forward and including in the allocations the additional future loads that will occur due to projected land conversion, an incentive is provided for conserving land. Specifically, if a state or local government conserves land that it otherwise projected for growth, the government has reduced the anticipated load. Thus, there is value for this reduction within the TMDL accounting structure; i.e., for the prevention of loads not generated but previously anticipated. Conversely, if land currently conserved or projected for conservation is developed, there would be an increase in the overall projected load.

In this way, use of the 2025 projected landscape could not only provide a water quality accounting incentive for conserving land, it would also help show where unprotected lands are most likely to be developed over a specific time frame. It would help the prioritization of conservation work by directing the focus of preservation and improved local land use management efforts to areas that are both ecologically valuable and highly vulnerable to development.

Bay Program Partners are currently discussing the 2017 mid-point assessment of the TMDL and at least some of these discussions have raised the possibility of using a 2025 projected landscape for calculating loads and allocations for the development of the next phase of the Watershed Implementation Plans.

CONCLUSION: RETHINKING THE EXCLUSIVE FOCUS ON POLLUTION REDUCTION

In the history of the Bay restoration program there has been long-standing support for efforts to set aside and conserve land, driven by historical demand for recreation, open space and wildlife habitat, and in more recent years by desires to mitigate the impacts of fragmented landscapes that destroy working agricultural and forest lands. There has also always been a deep understanding that natural lands provide valuable ecosystem services that help deliver clean water. But as the TMDL program has developed, the focus has shifted from pollution prevention to pollution reduction. This shift precipitated an incomplete restoration agenda: by focusing on counting reductions exclusively, the Bay TMDL, as a restoration tool, misses a crucial opportunity to focus on retention of natural systems that are already effectively contributing water quality protection. This realization led the expert panel and the Commission to the conclusion that there must be a critical “parallel track” to pollution reduction for land conservation efforts, whereby land conservation becomes an integral part of our Bay restoration and water quality protection and improvement strategy.

The proposed Policy Changes contained in this report, whether implemented independently, in conjunction with another, or comprehensively as a package, are but first steps in furthering the integration of land conservation into the Bay TMDL. This integration will not occur merely as a result of the identification of the four Policy Changes detailed in this report. An important next step will be for the Chesapeake Bay Program Partnership to explore each option in greater detail, embrace the Policy Changes that hold the greatest promise and integrate their implementation in the work of the Partnership. This will require thoughtful discussions among the Chesapeake Bay Program Partnership players, from state agency officials to Region 3 EPA leaders to the advisory committees and Partnership stakeholders.

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Chesapeake Bay Commission
Policy for the Bay

Attachment 3

Responses to Comments Received from Water
Quality Improvement Consultation Panel

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Response to Comments – October 24, 2014 Memo to Carlsbad WQIP Consultation Panel

No.	Commenter Name	Memo Pg #	October 24, 2014 Memo Category	Comment	Response to Comment
1	Walsh		General Comments	This format was very easy to read and the graphics are well done.	<i>Noted</i>
2	Walsh	8	General Comments	(P.8) Responsible agencies developed goals both collaboratively and individually to best address the sources and stressors within the watershed and individual jurisdictions. Will the individual interim goals for each jurisdiction (being used to attain the same final goal for the WMA) be provided in the final Water Quality Improvement Plan deliverable?	<i>Noted – The individual interim goals are presented in the goals tables provided. They are not only individual to the specific jurisdiction, but also to the focus area within the jurisdictions.</i>
3	Walsh	9	General Comments	(P.9) Language in the last bullet appears to be an incomplete thought: “Resource impacts consideration as RAs balance geographic.” Review of the language is needed.	<i>Accepted</i>
4	Walsh	All tables	General Comments	All Tables – The Copermittees should considering including Partnership Programs to create leverage of resources with other agencies and/or non-profit organizations as an Optional Strategy. Non-profit organizations may have access to other sources of funding not available to a jurisdiction or be privy to certain expertise or access not otherwise available to a Copermittee.	<i>Accepted</i>
5	Walsh	All tables	General Comments	All Tables – Footnote 1 addresses the fact that the baseline for the percent reduction goals are currently based on professional judgment and that the goals “may be” adapted as monitoring data/information is gathered, analyzed and baselines are establish. It would appear that the RAs “will” adapt these numeric goals once monitoring data/information is gathered, analyzed and baselines are established, not only to change the percent reductions (if necessary), but to document the fact that there is now a base line developed from in situ monitoring or infield information.	<i>Correct</i>
6	Walsh	All tables	General Comments	A strategy listed in all the tables is called “Inspections.” It is unclear what the difference is between the other strategies listed in the table that conduct inspections within certain land uses and this general strategy category. Further clarification is needed.	<i>Accepted</i>
7	Walsh	Appendix A	General Comments	Appendix A – Appendix A should be reevaluated to list only those HAs where the County will implement the strategies, making clear that the County will not be spending resources in HAs (e.g. Loma Alta, Encinas) because they are so small, or negligible, a contributor to the conditions .	<i>Noted – adjustments made</i>
8	Walsh		Loma Alta HA	It is unclear how much, if any, land area the County of San Diego has in this HA. However, Table 3 shows the County conducting strategies 3-18 HA Wide. Appendix A County of San Diego Additional Strategies include BMPs such as focused inspections and ordinance changes. The full Water Quality Improvement Plan should explain work the County of San Diego is preparing to do HA Wide within the Loma Alta HS so that it is clear to the reader. If the County has no, or minimal land area then the document should identify that the County will not be implementing strategies within the HA.	<i>Noted – adjustments made</i>

Response to Comments – October 24, 2014 Memo to Carlsbad WQIP Consultation Panel

No.	Commenter Name	Memo Pg #	October 24, 2014 Memo Category	Comment	Response to Comment
9	Walsh	23	Loma Alta HA	(P.23) Strategy 16 is titled, Inspections – What is meant by these “inspections?” There are other types of inspections listed in the strategies Table 3 with more description in their title. Further explanation of this strategy is needed.	<i>Accepted</i>
10	Walsh	23	Loma Alta HA	(P.23) Strategy 4 is titled, Administrative BMPs – This title is misleading. The term BMP is so strongly associated with in the ground structural management practices or non-structural management practices rather than administrative tasks associated with managing a storm water program. However, administrative work to conduct a storm water program can, and should be given credit for addressing target pollutants. It is noticeable that target pollutants are not identified for these BMPs. However, administrative work can be considered a non-structural strategy to address certain target pollutants. For example, prioritizing inventories may be done to address a specific pollutant or group of pollutants. Therefore, this line item strategy should be reevaluated to give it a more appropriate name and then given credit to the strategy addressing a particular target pollutant(s).	<i>Noted</i>
11	Walsh	23	Loma Alta HA	(P.23) Strategy 3 –Assuming the County of San Diego would be contributing to perhaps education strategies or some other non-structural BMP strategy HA Wide, it appears that the “additional strategies” provide by the County in Appendix A could fit within the listed strategies within Table 3. It appears that Appendix A was added to provide examples of what each strategies means for the County of San Diego, information that can be expressed in the County’s JRMP.	<i>Noted – adjustments made</i>
12	Walsh	23	Loma Alta HA	(P.23)Strategy 8, 9, 10, and 11 list different types of inspections as a strategy type but does not describe the actual strategy as say does street sweeping in strategy number 13. Construction site inspections, municipal facilities inspections, residential area inspections, and commercial/industrial inspection are all required jurisdictional program elements; therefore it is not clear what the “strategy” is. For example, will there be increased inspection frequency in focused areas? Additionally, strategy number 16 is called, “Inspections.” It is unclear what the difference is between the strategies listed in 8-11 and strategy 19. Further clarification is needed.	<i>Accepted</i>
13	Walsh	Appendix A	Loma Alta HA	Appendix A - Appendix A provided by the County of San Diego listed sixteen strategies as their additional strategies. There is concern that attention to all of these strategies may be trying to do everything, everywhere and some thought should be given to conducting focused strategies in those areas that are truly yielding water quality improvement outcomes. This is especially true since it appears that county plans on conducting all 19 strategies listed in Table 3 plus those described in Appendix A as indicated in strategy 3. This is even more concerning since the County does not have that much land area within the Loma Alta HA contributing to the HPWQC and PWQC. It would be expected that the County be contributing to less, if any efforts at all within this HA and more in the other HAs and/or other WMAs where their land area is contributing to more of the priority water quality conditions.	<i>Noted – adjustments made</i>

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14	Walsh		Buena Vista HA	It is unclear how much, if any, land area the County of San Diego has in the Buena Vista HA. However, Table 5 shows the County conducting strategies 9-24 HA Wide. Appendix A County of San Diego Additional Strategies include BMPs such as focused inspections and ordinance changes. The County should focus its efforts on implementing strategies in those HAs where the County's jurisdictional land area is contributing to the target pollutants. The Carlsbad WMA Water Quality Improvement Plan should explain work the County of San Diego is preparing to do within its jurisdictional boundaries HA Wide within the Buena Vista HA so that it is clear to the reader. If the County has little, or no land area within the Buena Vista HA contributing to the HPWQC, then Table 5 should indicate the County is not contributing to strategies within this HA because they are conducting strategies in other HAs or WMAs where they have more land area and are contributors targets pollutants. It is expected that a jurisdiction focus on those HAs and WMAs were they contribute to the sources of the priority and highest priority water quality conditions and not in those areas where they don't.	<i>Noted – land area tables will be included in Final WQIP</i>
15	Walsh	43	Buena Vista HA	(P.43) CB-PA2 Focus Area Strategies 4(c). The enhanced strategies listed include the City of Carlsbad working with residents and property owners to educate through various means, which may include school programs , block parties or one-on-one meetings. Block parties are a type of “out of the box” creative strategy that hasn't typically been deployed to address pollutant reductions, but may be exactly the sort of small group education that could affect real change in a neighborhoods, and ultimately individual residents behavior. This strategy certainly takes education a step beyond handing out pamphlets at a village fair.	<i>Noted</i>
16	Walsh	58	Agua Hedionda HA	(P. 58) Supplemental strategies include the Irrigation Runoff Reduction Program (IRRP) within the City of Vista for the AH04 Basin Focus Area, of which, a core element is “collaboration with City Public Works Department to address (emphasis added) municipal property irrigation systems. This element is vague and it would be expected that the City could collaborate with itself to reduce runoff, retrofit antiquated irrigation systems, etc, using a more proactive approach on those areas owned and operated by the City to achieve the goals listed in Table 12.	<i>Noted</i>
17	Walsh	59	Agua Hedionda HA	(P.59) This section describes City of Vista's IRRP strategy and its core components. One of the components is “Consider developing municipal codes that prohibit irrigation runoff.” The San Diego Water Board has found that discharges of over-irrigation are a source of pollutants and are to be effectively prohibited (Provision A.1.b of Order R9-2013-0001 (Order)). Provision E.1 of the Order requires each Copermittee to establish, maintain, and enforce adequate legal authority within its jurisdiction to control pollutant discharges into and from its MS4 through statue, ordinance, permit, contract, order or similar means. It is unclear why the City of Vista is merely “considering” the development of an over-irrigation prohibition ordinance as a core component of the IRRP strategy.	<i>Accepted</i>

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18	Walsh	61	Agua Hedionda HA	(P.61) This section describes the IRRP within the City of San Marcos. See Comment 16, the same comment applies to bullet 6 in the core elements.	<i>Noted</i>
19	Walsh	71	San Marcos HA	<p>(P.71) Regulatory Drivers - “Based on analysis conducted in 2012, it was determined that the Pacific Ocean shoreline at San Marcos HA would not have qualified for REC-1 beneficial use impairment at any time. Therefore, the HA was inappropriately included in the TMDL. The San Marcos HA Responsible Parties are not responsible for any further Bacteria TMDL action, including preparation and submittal of a Load Reduction Plan or Monitoring plan, as long as monitoring data continues to support compliance with water quality standards. Therefore, the HA was inappropriately included in the TMDL.” Regional Board staff disagrees. Appendix E to Order R9-2013-0001 applies the Bacteria TMDL to the San Marcos HA for the Pacific Ocean Shoreline with a listing at Moonlight Beach. It is unclear what is meant by “it was determined that the Pacific Ocean shoreline at San Marcos HA would not have qualified for REC-1 beneficial use impairment at any time (emphasis added), and who made that determination. Further clarification is needed.</p> <p>Additionally, as stated in this section, “as long as the monitoring data continues to support compliance with water quality standards, no additional work to comply with the TMDL by the San Marcos HA Responsible Agencies is necessary.” This statement says that the best management practices implemented by the Responsible Agencies are effective and therefore conditions in the receiving water are “in compliance with water quality standards.” Since monitoring data supports compliance with water quality standards for the Pacific Ocean Shoreline at Moonlight Beach, indicator bacteria is therefore, no longer the HPWQC and the San Marcos HA Responsible Agencies should re-evaluate their HPWQC for the San Marcos HA, choosing the next highest from the list of PWQC and develop numeric goals for it. Section 2.5.2.1 states “the goals identify both receiving water and MS4 targets in order to provide opportunities to demonstrate progress toward or achieving of the goals.” It is unclear why the Responsible Agencies would develop numeric goals for a condition in the receiving water for which compliance (with the TMDL and the water quality standards) have already been met. (i.e. “as long as the monitoring data continues to support compliance with water quality standards, no additional work to comply with the TMDL by the San Marcos HA Responsible Agencies is necessary.”)</p> <p>Note. If nutrients in Lake San Marcos or phosphorous in San Marcos Creek were to be chosen as the HPWQC, the City of Encinitas would need to develop its own separate HPWQC to work on within its jurisdiction because the City of Encinitas does not have any part of its jurisdiction that drains into San Marcos Creek or Lake San Marcos.</p>	<p><i>Noted:</i> <i>At this time it is unsure whether the Pacific Ocean meets the wet weather conditions. The attached memo (March 29, 2012) and subsequent meetings with RWQCB Staff resulted in the current status. It is anticipated that if the monitoring data supports full compliance with the TMDL, then the City of Encinitas will evaluate its PWQCs within its jurisdictional boundaries and select another HPWQC.</i></p>

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20	Walsh	Table 18	San Marcos HA	Table 18 includes a footnote “c” on the year 2021 in the second column, titled Interim Goad (2018-2023). It is unclear what information this is referring to. The ‘c’s” in the Note A and B do not apply. This may be a typo. Further evaluation of this table is needed.	<i>Accepted - corrected</i>
21	Walsh	82	San Marcos HA	(P. 82) Cottonwood Creek Drainage Basin Interim and Final Numeric Goals. See comment 19.	<i>Accepted - corrected</i>
22	Walsh	84	San Marcos HA	(P.84) City of San Marcos Focus Area – Since drainage from the four San Marcos sub-basins “nearly all drain through Upper San Marcos Creek to Lake San Marcos”, it appears that goals for this upper portion of San Marcos HA should be designed to address the priority water quality conditions of phosphorus and nutrients in San Marcos Creek and Lake San Marcos not bacteria at Moonlight Beach. The Responsible Agencies should consider establishing a HPWQC for the portion of the WMA that drains to San Marcos Creek and is impounded by Lake San Marcos so that the strategies and schedules are designed to address the reductions in phosphorus and nutrients not bacteria. Many of the strategies listed on pages 86, 87, and 88 may reduce the amount of phosphorus, nutrients, and bacteria since they are focused on effectively prohibiting non-storm water discharges (i.e. IRRP, property based inspections, and Irrigation Runoff/Water Waster Program) however, the highest priority water quality condition should be bacteria for this portion of the HA.	<i>Noted: The City of San Marcos has identified strategies to focus on the PWQCs in Lake San Marcos as well as San Marcos Creek. The final document will be revised to reflect the strategies’ expected outcomes related to the PWQCs in these water bodies.</i>
23	Walsh	98	Escondido Creek HA	(P.98) See comment 17 as the same applies to the IRRP in the City of Solana Beach.	<i>Noted – the language is not the same as the previous comment issue. The City of Solana Beach identified the key steps in implementing their strategy.</i>

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24	Walsh	99	Escondido Creek HA	(P.99) Stormwater Treatment CDS Unit – This BMP is listed as a strategy that will “supplement its core jurisdictional program.” This BMP has been in operation since 2004. The Regional Board considers operation and maintain of this unit as part of its “core jurisdictional program” facilities and not a strategy that “will supplement” its core jurisdictional program.	<i>Noted – In terms of strategies to be implemented, it should not matter what the jurisdictions identify as “Program core strategies” or “core jurisdictional program”. What is important is that the reader understands what is being implemented (including Operations & Maintenance of a 10 year-old structural BMP) to improve water quality. The term “core” is intended to provide the reader with an understanding that the strategies associated with the term “core” are fairly universal across all jurisdictions.</i>
25	Walsh	103	Escondido Creek HA	(P.103) San Elijo Dry Weather Diversion - This BMP is listed as a strategy that will “supplement its core jurisdictional program.” This BMP has been in operation since 2013. The Regional Board considers operation and maintain of this unit as part of its “core jurisdictional program” facilities and not a strategy that “will supplement” its core jurisdictional program.	<i>See response above for comment No. 24</i>
26	Walsh	Table 24	Escondido Creek HA	Table 24 La Granada Drainage Area, Interim and Final Numeric Goals – Interim and Final Goals are to, maintain the 5% reduction in dry weather flows and expand to other neighborhoods. Why isn’t the goal to go beyond 5% reduction of dry weather flows (a prohibited discharge per Order R9-2013-0001). La Granada was selected for its persistent flows from a major outfall, therefore why wouldn’t the efforts be continued to further reduce dry weather flow volume or number of storm drains with dry weather flows until all were eliminated?	<i>Noted – adjustments made</i>

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27	Walsh	Goals Tables	Escondido Creek HA	Since the HPWQC is indicator bacteria for all of the focus areas in the Escondido Creek HA, and all of the goals Tables use the “general” schedule associated with TMDL accounting for preparation time to prepared, be reviewed and accepted, and begin implementation of the Water Quality Improvement Plan. Since Escondido Creek is not a water body (or any segments of it) identified in the TMDL why isn’t the schedule shorter? Most of the strategies listed to reduce concentrations of indicator bacteria in the MS4 discharge are associated with reductions in non-storm water discharges, focused inspections, HOA programs, incentive program, and irrigation reduction programs. It is expected that these programs shouldn’t take 24 years to implement and see results. Tying accomplishment of these goals to the TMDL compliance schedule should be reevaluated.	<i>Noted – as this is the first foray into this type of program development and implementation, the initial establishment of goals followed an established guideline. The goals are anticipated to be adjusted in future years.</i>
28	McBain		General Comments – Selection of flow reduction for numeric goal	A better description of how the WQIP fits into the overall Basin Plan and its requirements for protecting beneficial uses is necessary for the reader to understand that water quality protections will continue to apply to the entire watershed.	<i>Noted – this will appear in the Final WQIP</i>
29	McBain		General Comments – Selection of flow reduction for numeric goal	Similarly, the way in which priorities have been established based on existing TMDLs should be made clear.	<i>Noted – priorities were not solely based on TMDLs, rather a more comprehensive prioritization process</i>
30	McBain		General Comments – Selection of flow reduction for numeric goal	We understand that elimination of non-stormwater flow is one of the goals of the MS4 Permit and that it is being used as the method to also reduce dry weather HPWQCs and PWQCs. However, we recommend that there be a more robust explanation of why dry weather flow was selected as a metric for indicator bacteria reduction, rather than using the direct measurement of the standard indicators for bacterial testing (Total Coliform, Fecal Coliform, and Enterococci). The only way to measure the actual number of bacteria entering an impaired water body is to determine their concentration and then multiply by the volume; otherwise, when flow is reduced, the concentration of bacteria may increase.	<i>Partially Accepted</i>

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31	McBain		General Comments – Selection of flow reduction for numeric goal	<p>Indicator bacteria as a High Priority Water Quality Condition was selected in the previous Provision B.2 Submittal (June, 2014) as the Highest Priority Water Quality Condition (HPCQC) for all the HAs with the exception of Loma Alta, which was selected for Eutrophic Conditions. It is our understanding that this was determined to be true for both wet and dry weather flows; however, primarily the wet weather condition seems to be where the highest indicator bacteria exceedances have occurred.</p> <p>We recommend that you provide a more detailed basis for why dry weather flow was selected as the means to measure success in reducing indicator bacteria, particularly with respect to wet weather flows, since reducing dry weather flow may not have a significant effect on bacterial levels for wet weather flows. If you have information that indicates whether wet weather bacteria levels will also be reduced to the same degree as dry weather, could you please provide this information in the text.</p>	<i>Partially Accepted</i>
32	McBain		General Comments – Selection of flow reduction for numeric goal	<p>Although we agree that reduction in dry weather flow should reduce indicator bacteria in most cases, there may be instances where bacterial sources are not flow related such as groundwater sources or naturally occurring animal sources. Please explain how you will verify that reducing flow will reduce HPWQCs and PWQCs.</p>	<i>Partially Accepted – Monitoring will be used to determine impacts of strategies implemented. It is anticipated that the loads will be reduced in MS4 discharges, however, it is unclear on how this will improve PWQCs and HPWQCs.</i>
33	McBain		General Comments – Interim and final numeric goal schedules	<p>We are surprised at the length of time that has been proposed for meeting both the interim goals and the final goals. Considering some of the strategies that have been selected to reduce dry weather flow, it is our opinion that rather than a straight line approach to achieving the final goal, an “S” curve would be more appropriate. Generally, there is a learning curve and so we would assume that it will take some time to ramp up the individual strategies. However, that should be relatively short, and then we would expect a more rapid increase followed by a tapering off near the end, after the easier early results have been achieved. This should apply to all of the Priority Water Quality Conditions that are related to dry weather flow, including bacteria, nutrients, and toxicity. We would therefore recommend that you show a more ambitious schedule for achievement both the interim and final goals. The year 2038 is listed for achieving the final goals by most of the HAs; we believe this is far too long a period for achieving your goal. As is indicated in this document, there is a process to change the goals and schedules if the strategies are not working effectively.</p>	<i>Noted</i>

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34	McBain		General Comments – Interim and final numeric goal schedules	The selection of focus areas within each HA was proposed as a means to provide the resources needed to identify the strategies that were successful in reducing the HPWQC and PWQC. We agree with that process; however, the results should be applied watershed wide as soon as meaningful results are known. There is no mention of when results will be applied to the whole watershed. Please provide a description of the nexus between the focus areas and the watershed as a whole.	<i>Partially Accepted</i>
35	McBain		General Comments – Interim and final numeric goal schedules	The schedule for the goals seems weak in comparison to the Chesapeake Bay watershed effort, which aims to meet its goals in 15 years. Because dry weather flows could presumably be reduced significantly with mandatory water restrictions, we believe the goals could be met much earlier. Reducing the bacteria (not the flow) by 80% in storm water is understandably a more difficult goal, and, as a result, could take much longer.	<i>Noted</i>
36	McBain		General Comments – Strategies selected to meet numeric goals	Restoration of our existing stream habitat and wetlands is long overdue. Continued abuse of these important water quality resources due to high nutrient loads, toxics, and sediment loads has left us with most of our streams being classified as poor to very poor based on bio-assessments conducted in all of the streams in the watershed. Some are in worse condition than others. Embeddedness for instance (stream bed composition) has a major impact on the benthic communities, which form the basis for the aquatic life in these streams. The 2007 Surface Water Ambient Monitoring Program (SWAMP) stated that “multiple lines of evidence support the conclusion that the Carlsbad watershed is in poor ecological condition.” Based on this level of deterioration, due primarily on the past years impacts of MS4 discharges, we believe that the Copermittees would be well served by actively promoting actions which will in fact directly help to restore streams to more vibrant health. Just reducing dry weather flow as proposed will not in our opinion accomplish that goal, particularly with the very long schedules being proposed, and we recommend that one of the overarching goals should be to begin the process of restoring our precious creeks and streams. This is not mentioned directly in the WQIP, and yet the MS4 permit clearly sets forth the potential means through the Alternative Compliance, to rehabilitate the channels, streams, or habitats within the watershed. However, this is only mentioned as an Optional Offsite Alternative Compliance Program. We recommend that the Copermittees take advantage of this potential opportunity now and consider adding in wording in the Optional Strategies that state that “rehabilitation of channels, streams, and habitat” is both a goal and a strategy to be considered.	<i>Partially Accepted</i>

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37	McBain		General Comments – Strategies selected to meet numeric goals	<p>At the Panel meeting there were a number of comments by the panel members and the general public about the ability of healthy streams, wetlands, and riparian systems to naturally reduce the HPWQC and PWQCs identified by the WQIP. Both TECC and San Diego Coastkeeper have been performing WQ monitoring and sampling for a number of years in Escondido Creek. The approximately 8 mile section of Escondido Creek from Harmony Grove Road at the City of Escondido Flood Control Channel downstream to El Camino Del Norte was used as the basis for testing at five locations. Based on average values (4 years for TECC water quality parameters and 5 years for Coastkeeper bacteria sampling), the following parameters have shown significant reduction as a result of the natural in-stream processes:</p> <p>Nitrate 71% reduction Nitrite 94% reduction Phosphate 17% reduction Enterococci 39% reduction E. Coli 71% reduction Total Coliform 39% reduction</p> <p>We are not saying that the proposed strategies and goals should not be implemented and that we should rely on natural systems to do the job, in fact just the opposite. What we are saying is that there should be a parallel track that identifies recovery of our streams, wetlands, and riparian areas as the final goal and that to achieve that we need to also actively work to begin the recovery process. The WQIP has identified methods (Alternative Compliance) to begin that important process and now is the time in this document, to buy into that recovery as a long-term goal.</p>	<p><i>Partially Accepted – the recovery of streams, wetlands and riparian areas is an overarching holistic objective of many stakeholders in the watershed. It is anticipated that the numeric goals established and the strategies implemented will have positive impacts on the receiving waters.</i></p>
38	McBain		General Comments – Strategies selected to meet numeric goals	<p>We have one final comment regarding rehabilitation of streams and related wetlands. The just approved Water Bond, Proposition 1, has allocated significant funding that will be set aside for this type of restoration project, and specifically \$100 million would be available for projects to protect urban creeks, and another \$20 million for a competitive program to fund multi-benefit watershed and urban rivers enhancement projects. There will be opportunities coming up to fund projects for urban creeks and wetlands through Prop. 1. If we are not considering these options, we will miss a critical opportunity.</p>	<p><i>Noted</i></p>

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39	McBain		General Comments – Strategies selected to meet numeric goals	The attached document “Crediting Conservation” by the Chesapeake Bay Commission makes a strong case for giving credit in water quality considerations for preservation, restoration, and creation of natural wetlands, as well as providing regulatory means of accomplishing this. We strongly urge the Responsible Agencies study this example of how this is presently being done in a watershed vastly larger than the Carlsbad WMA. Reservation and rehabilitation of wetlands should be included as a parallel strategy for preventing increases in pollution. All the good intentions and BMPs cannot prevent an increase in water pollution, as the last several years have shown. Despite the best efforts of everyone involved, the consensus seems to be that the results are disappointing. It is difficult and expensive to replace the natural cleansing functions of natural water courses that are removed by development. If this is not explicitly part of the effort to maintain water quality, it will only happen by occasional fortunate circumstances.	<i>Noted</i>
40	McBain		General Comments – Strategies selected to meet numeric goals	We noted that in the Escondido HA the City of Encinitas is showing Homeless Encampment Abatement Program as a strategy. However, under the Optional Strategies, the City of Solana Beach has listed an innovative strategy of “Support Partnerships with Social Service Providers to Provide Sanitation & Trash Management for Persons Experiencing Homelessness.” We believe the later Optional Strategy may be better directed at the water quality problem (bacteria and trash). Simply removing homeless people from an area may not result in resolving the pollution problem; instead, it will just spread it around. This strategy should be implemented in all the stream-courses that experience encampments or even temporary misuse as latrines. Aqua Hedionda Creek has a significant legacy of itinerant workers (in both agriculture and housing construction) that has undoubtedly contributed human pathogens to the surface waters.	<i>Noted – adjustments made</i>
41	McBain		General Comments – Role for NGOs	We believe that the local environmental organizations are part of the solution for the problems with our watersheds. Our volunteer efforts can greatly expand the reach and reduce the cost of program implementation for the public agencies that are responsible for achieving these results. In this entire memo, we read only one mention of an NGO participating in strategy implementation. This WQIP is intended to be an important start toward a new watershed based approach to improving water quality. Such an approach requires involving the broader community as part of the stakeholder process. It would be helpful to include some discussion about the on-going process of working together to implement the WQIP, not just during this period of preparing the plan, but meaningful involvement through plan implementation, monitoring, and the important adaptive management that will be essential to its success.	<i>Accepted</i>
42	McBain	7	Introduction - Purpose	Page 7, last paragraph under Purpose: it is stated that “Current understanding of the effectiveness and efficiency of many strategies is unknown.” We agree that there are a number of strategies that are unknown in effectiveness; however, there are also many that are known through other agency programs and studies. Many of the strategies you have chosen have been demonstrated in other regions to be quite effective.	<i>Noted</i>

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43	McBain	7	Introduction - Goals	Page 7, second paragraph: last sentence states that the forthcoming Monitoring and Assessment Program will provide a basis for measuring progress. In the Panel meeting there was a slide that mentioned the need for flow monitoring to establish a baseline. It would be helpful at this point in the introduction to the goals to describe this need because when the reader moves on to the goal tables it is confusing to see that there is no baseline yet. Additionally, how soon will this baseline be determined? Is this a long-term endeavor or will this be accomplished relatively quickly? As we recall, it was stated this was the first item to be done. Also, this might be a good place to mention how flow relates to bacteria reduction, and if you will also monitor bacteria (which is proposed in Loma Alta but not mentioned in the other HAs) along with flow to establish, along with flow, the relationship between flow and bacteria reduction. Additionally, we would assume that nutrients and toxics would also be measured. Can you confirm if this is correct?	<i>Partially Accepted – the monitoring program will be more fully explained in the Final WQIP</i>
44	McBain	8	Introduction - Goals	Page 8, first paragraph: the last sentence states that “Once a final goal has been achieved, RAs can reassess their programmatic objectives and adapt their program so as to focus on new HPWQCs and maintain the status of the conditions they have achieved.” This sentence states that not until the final goal is achieved, will there be any reassessment of the objectives or focus on new HPWQCs. Looking at some of the tables later in the report, this date for final goal achievement is set for up to 24 years in the future. Are you saying that there will not be any reassessment before 24 years? If you do mean this, then we disagree highly with this proposal, however, if this has been misstated and you actually intend to reassess during each 5 year cycle, then please amend this sentence as appropriate. This comment also relates to our previous comment on how the goals, schedules, and strategies relate to implementation in the entire watershed. We believe this is an important issue and needs to be clarified.	<i>Partially Accepted</i>
45	McBain	8	Introduction - Goals	Page 8, last paragraph before 1.3 Strategies section: can you provide a little more discussion here on what the “iterative and adaptive management process” will involve? Perhaps a process flow diagram would be helpful to the reader. Since this appears to be the process for how the WQIP will be modified over time to meet evolving goals and strategies, it would be helpful if you could provide a better idea of what that might involve.	<i>Noted – will be provided in Final WQIP</i>
46	McBain	8	Introduction - Strategies	Page 8, first paragraph, under the 6th bullet states “Activities.” Perhaps something went missing here since this is quite vague. Additionally, on the next bullet it mentions “Program Core Strategies.” These terms are not defined, although variants of them are used frequently. Are they the existing JURMP strategies? Please define.	<i>Accepted</i>
47	McBain	8	Introduction - Strategies	Page 8, implemented strategies 1), states “Effectively prohibit non-storm water discharges to the MS4.” All of the goal schedules show a final goal of 80% reduction, not 100%. Suggest sentence be modified to reflect the actual final goals.	<i>Noted</i>

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48	McBain		Introduction - Strategies	Reduction in flow is a great strategy, as a means to achieving multiple goals, including reducing invasive species of plants and animals, and biofilms in the dry season. The goal is an 80% reduction in anthropogenic pathogens, which is a much more difficult goal to achieve.	<i>Noted</i>
49	McBain		Introduction - Strategies	There are many strategies listed that may not in fact reduce the bottom line in bacterial or pollutant loads.	<i>Noted</i>
50	McBain	8	Introduction - Strategies	Page 8, implemented strategies 3), states “Protect the beneficial uses of receiving waters...,” yet there is really nothing that relates back to this objective. We would like to see some discussion about the impact of the selected strategies on beneficial uses.	<i>Noted</i>
51	McBain	8-9	Introduction - Strategies	Pages 8-9 indicate the RA selected from a list of potential strategies. These were included in the prior report. We would like to see these brought forward so it is possible to identify which strategies were selected, which were excluded, and how this relates to the “Core Strategies.”	<i>Accepted</i>
52	McBain	9	Introduction - Strategies	Page 9, second paragraph, 5th bullet is not complete.	<i>Accepted</i>
53	McBain	9	Introduction - Strategies	Page 9, 5th paragraph, states “It is important to note that the suite of strategies...that will be implemented are generally not pollutant-specific...” In fact, very few are pollutant specific. We think there should be a more discussion on the HPWQC. In some cases, these may be assumed as part of what is identified as a very generic strategy such as “General Education and Outreach.” However, for bacteria there are some targeted strategies that really should be specified. For example, the two HA’s that mention addressing homeless encampments when to our knowledge this is an issue in essentially every HA. There also are a number of successful programs that have targeted pet waste.	<i>Partially Accepted</i>
54	McBain	10-11	Introduction – Geographic Prioritization	Page 10-11, bullet items: we would suggest additional categories that, from personal experience, would warrant prioritization: The first involves the mass distribution of local advertiser based newspapers and advertisers (not the UT or other major newspapers). These are generally not read, include plastic wrappers, and are in all the RAs geographical areas. These could easily be regulated.	<i>Noted</i>
55	McBain	10-11	Introduction – Geographic Prioritization	Page 10-11, bullet items: we would suggest additional categories that, from personal experience, would warrant prioritization: The second involves disposal of automotive coolant waste (propylene glycol and related products). In Encinitas, for instance, there are a number of auto related commercial establishments that are listed online for disposal. From personal experience, only one was actually accepting this waste, Encinitas Foreign (interestingly they do not charge and seem to be doing this as a resource to the community). Even with a local disposal source, coolant waste is many times flushed down the sanitary system or disposed in the storm drain or dumped on the ground. We recommend that the disposal sources be reviewed and contacted to see why they are not accepting this automotive waste and consider requiring them to accept it at no cost.	<i>Noted</i>

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56	McBain	11	Introduction – Geographic Prioritization	Page 11 “vintage” does not correctly characterize the distinction that is implied; areas developed prior to more recent storm water requirements.	<i>Accepted</i>
57	McBain	11	Introduction – Geographic Prioritization	Page 11 distinguishes “municipal properties” open space, parks and medians whose irrigation may create additional run-off. Certainly there are non-municipal properties with the same potential for run-off. Our concern is that the way this is characterized focuses only on the negative and not any positive geographic prioritization factors that should be considered. The percentage of impervious cover is one key indicator of the health of a watershed. Considering the amount and distribution of natural open space is an important factor to consider.	<i>Accepted</i>
58	McBain	13	Introduction – Goals and Strategies by Hydrologic Area	Page 13, Figure 2 highlights our concern about the selection of Buena Vista Lagoon as a focus area and not the associated creek. San Elijo includes the creek and lagoon. Agua Hedionda includes the creek but not the lagoon. Buena Vista Lagoon is such an anomaly with its artificial closure of the outlet. How does this artificial condition, which will be modified within the lifetime of the WQIP, impact this choice? Why does it make sense to exclude the creek from this beginning stage of watershed based planning? We think that it is critical to consider the creek as part of this effort. Failure to address upstream conditions will continue to impact the lagoon, even after a \$100m restoration effort. There should be discussion somewhere about the assumptions related to the major restoration of the lagoon and interface with the WQIP process. This has been done with the San Elijo Lagoon Restoration but is not mentioned for Buena Vista. This seems like an oversight.	<i>Noted – For Oceanside, tasks successfully implemented in initial focus areas to reduce anthropogenic persistent flows from storm drains, will be used as a foundation to develop and implement non-structural BMPs to reduce persistent flows from other storm drain outfalls that drain jurisdictional lands and reach receiving waters in other watersheds including Buena Vista Creek.</i>
59	McBain	15	Introduction – Goals and Strategies by Hydrologic Area	Page 15, Table 4, would be the section of the report where we believe it would be quite helpful to expand on why flow was chosen and how it relates to bacteria reduction and other pollutant reduction such as nutrients, as is suggested in General Comments and Recommendations, item 1. Again, we believe this argument needs to be tested in each HA as a correct assumption. Further, since one of the objectives was to insure that all PWQCs were addressed by the chosen strategies, the assumption that nutrients for instance, are also proportionately reduced, should be tested. It would appear this has been considered by the City of Oceanside in Loma Alta HA Strategies, but we do not see that level of detail in the other HAs.	<i>Noted</i>
60	McBain	16	Introduction – Goals and Strategies by Hydrologic Area	Page 16, box at the top of the page, item 8 Optional Strategies: this seems to be the only place that the important concept of “optional strategies” is mentioned. We request a more comprehensive explanation of what is intended with these optional strategies. We understand that the timing of implementation may be of concern; however, it is not clear if there is any real intent to pursue them. In many cases, we think what is identified as optional, is in fact a critical component of achieving sustainable health of the HA.	<i>Partially Accepted</i>

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61	McBain	19	Loma Alta HA – HA Sources	Page 19, Figure 7 shows a lake just west of Rancho del Oro. There used to be a lake there, but it has since been filled in. However, there is a smaller ground water pond (left from the old mining operations) on the northwest corner of Oceanside Blvd and El Camino Real.	<i>Accepted</i>
62	McBain	20	Loma Alta HA – HA Sources	Page 20, first paragraph, states that “It is important to note that the PWQC, toxicity, is not presented in Table 1 below because in this HA it is not attributable to specific sources and may be caused by a variety of sources.” In looking at Table 1 we note that for all the pollutants shown, many state unknown (UK), meaning this may be a source but it is not known at this time. Further, most of the pollutants are attributed to many sources. If the receiving water does in fact show traces of toxicity, would it not make more sense to show all as unknown? At least that would highlight the fact that more needs to be done to accurately determine the sources.	<i>Accepted</i>
63	McBain	20	Loma Alta HA – HA Sources	Page 20, Table 1, highest Threat to Water Quality (TTWQ), with color coding, is helpful. One suggestion has to do with the footnote for the PWQCs, which says that these sources are shown with an “L.” Would it be possible to use another highlight color for sources of those pollutants? It would make it easier to see rather than scanning for all the “L”s.	<i>Noted</i>

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64	McBain	21	Loma Alta HA – HA Area Goals and Strategies	Page 21, Table 2, goals begin with flow reduction and continue with flow reduction to year 2023. Then in 2028 you switch to Macroalgal Biomass. Can you please provide some context as to why this changed and why you wait so long to establish a final goal (year 2028)?	<i>Flow reductions are used as interim goals since a baseline exists from previous monitoring efforts, such as past MS4 permits and investigative orders. The Slough Monitoring Plan, an effort separate from the routine MS4 Permit monitoring programs, is to be implement as part of the City's commitment to eliminating the eutrophication impairment. This monitoring program will create the baseline for macroalgae in the first few years of monitoring, as no current reliable data are available. The final macroalgal goals were set in response to the numeric targets which will result in attainment of protective water quality in Loma Alta Slough. Once a baseline for macroalgae is established, the City will revisit the numeric goals and consider including interim goals for the algae metrics.</i>
65	McBain	21	Loma Alta HA – HA Area Goals and Strategies	Page 21 Table 2, 2023, what is meant by “additional’ in this column?	<i>Noted - Additional refers to identifying other persistent flows from other storm drain pipes that drain other areas within the watershed.</i>
66	McBain	23	Loma Alta HA – HA Area Goals and Strategies	Page 23, Table 3: In looking at the strategies, we are impressed with the list of first level strategies and believe they will in fact produce early results for both flow and HPWQCs. We are also struck by the fact that there is nothing stated about restoring the habitat. We understand that this may be grouped together in the Optional Strategies in Appendix B; however, the Loma Alta Creek would greatly benefit by habitat restoration and buffer improvement efforts.	<i>Noted</i>

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67	McBain	23-24	Loma Alta HA – HA Area Goals and Strategies	Page 23/24, in this HA and others, the implementation schedule shows almost all of the strategies through all time periods. This almost implies everything starts from day one and continues unchanged for years. In Loma Alta, only strategies 1 and 2 are being added in the first year to what is really shown as on-going programs. Are we interpreting this correctly?	Yes
68	McBain	23-24	Loma Alta HA – HA Area Goals and Strategies	Page 23/24, Table 3, and each of the other HA’s strategies are sometimes listed as “HA Wide” but are only shown as such for each individual jurisdiction. For example, Strategy 3 is listed as HA Wide, but only for the county, which is a small part of the entire HA. We believe the intent is that these apply only to the geographic area of the identified jurisdiction, but this distinction is not clear. Please clarify.	Accepted
69	McBain	26	Loma Alta HA – HA Area Goals and Strategies	Page 26, mid-page, item 1: we believe the effort to educate and assist the local landscape professionals is a great idea and we are pleased to see this effort. We have personally observed that application of fertilizers and pesticides is not practiced with concern for the possible overuse or area of application that is susceptible to being washed into the MS4 system. Broadcast spreaders (blowers and spreaders), for instance, are used by many landscape firms to distribute fertilizers and insecticides. We have observed these spreaders distributing to the streets, curbs, and gutters in our area. This excess product ends up directly in the MS4.	Noted
70	McBain	26-27	Loma Alta HA – HA Area Goals and Strategies	Pages 26 and 27 overall comment: the City of Oceanside review of proposed supplemental strategies for the Loma Alta HA Focus provides an excellent level of detail on proposed strategies. For instance, the determination of minimum statistical validity for number of observational visits is noted as being the type of rigor that is required for these types of strategies, and we encourage the other RAs to consider this in their specific strategies. The second paragraph provides more detail in how the baseline will be determined and tied to the HPWQC and PWQC. This is what we would like to see in all the HA Focus areas as mentioned in the comments on Introduction, item 5. On page 27, there is a good discussion of specific methods for outreach to the landscape gardeners. This level of detail and specific discussion of strategies in the Loma Alta HA is what we would like to see in the other Focus Areas. However, at this point in this draft WQIP this level of detail is not accomplished.	Partially Accepted – additional information has been provided in Appendix. Further descriptions will be included in Final WQIP and individual JRMPs
71	McBain	30	Loma Alta HA – HA Area Goals and Strategies	Page 30 optional strategies includes potential structural BMP’s/retrofitting. This is where we think consideration of non-structural improvements also needs to be considered (i.e. restoration and buffer enhancement).	Accepted
72	McBain	34	Buena Vista Creek HA – HA Sources	Page 34, Table 4: refer to the same prior comment for Loma Alta HA Sources regarding listing of toxics.	Accepted
73	McBain	40	Buena Vista Creek HA – HA Area Goals and Strategies	Page 40, Table 6, page 45, Table 8: the schedule for Interim Goals is too long. Suggest significantly reducing the time for achieving the final goal. See Item 2 under General Comments and Recommendations above.	Noted

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74	McBain		Buena Vista Creek HA – HA Area Goals and Strategies	This section contains no overall goal for the HA. The focus areas each have goals, but they appear to account for only about 20% of the land area. Per Figures 2 and 12, the HPWQC is bacteria in Buena Vista Lagoon, yet only one of the four focus areas that have established goals is located near the lagoon. Please clarify the rationale for not having any overall goal, and the impact of the goals for the focus areas on the HPWQC.	<i>Partially Accepted – There is no requirement to have an overall HA Wide goal</i>
75	McBain	40	Buena Vista Creek HA – HA Focus Areas	Page 40, third paragraph, under heading CB-PA1 Focus Area Strategies, within item 20: we believe that annual inspections may not be often enough to adequately pick up surface flows from property in this Focus Area. In reviewing our own local areas we see flows occurring at different times of day and evening and different times of the week. Annual inspections may not pick up these flows. As part of the flow monitoring program to establish the baseline, could you consider also performing video inspections to further isolate where flow is coming from? This might be helpful in reducing inspection resources.	<i>Noted – Inspections are separate than other program activities that will include observations of non-stormwater discharges</i>
76	McBain	41	Buena Vista Creek HA – HA Focus Areas	Page 41, item 5, use of mobile devices to alert or report is a great idea. If this is successful in the City of Carlsbad, perhaps the other RAs can implement a similar program.	<i>Noted</i>
77	McBain	47	Buena Vista Creek HA – HA Focus Areas	Page 47, Table 9: the goals have both flow reduction and septic system maintenance program enrollment. What is the area of this Focus Area and how many homes are involved? Just looking at the map it looks relatively small. Therefore, it would seem that it would be relatively easy to determine the extent of the existing sewer service area and the homes not serviced (which have septic systems). Why will it take so long to enroll these septic systems in a maintenance certification program? We believe this can be accomplished in the first Interim Goal.	<i>Noted – adjustments made</i>
78	McBain	49	Buena Vista Creek HA – HA Focus Areas	Page 49, item 4: confirm if there are there opportunities for Alternative Compliance in this Focus Area?	<i>Noted</i>
79	McBain	52	Agua Hedionda HA – HA Sources	Page 52, first paragraph, states that “It is important to note that the PWQC, toxicity, and hydromodification are not presented in Table 1 below because in this HA it is not attributable to specific sources and may be caused by a variety of sources.” These should indeed all appear in the table. Even though the PWQC may be different for each sub-watershed that is not a reason to not show their likely sources. We do not agree with not showing toxicity because “it is not attributable to specific sources.” Toxicity is attributable to specific sources, otherwise where does it come from? The issue is it has not been determined or rather it is Unknown (UK). We therefore suggest it be shown in the table and listed as UK for which sources are contributing.	<i>Accepted</i>

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80	McBain		Agua Hedionda HA – HA Sources	Hydromodification is clearly linked to the creation of less pervious and impervious surfaces through the clearing of natural habitat and construction or paving, respectively, specifically Land Development, which leads to the remainder of the land uses in the table. How this differs from Construction, which is listed as “varies,” is not clear. Therefore, hydromodification should be included in the table, and all probable land use contributions shown as “Likely.” Since this table shows impacts for land use occupying no more than 40% of the HA, there should be some explanation of the remaining area. If 60% of the watershed remains in natural open space and land development is a large area, there is a clear opportunity to guide development where it will be the least harmful to future water quality. This should be an explicit strategy to achieve the goal of preventing further degradation of the watershed and water quality.	<i>Noted</i>
81	McBain	52	Agua Hedionda HA – HA Sources	Page 52, Table 10: this table indicates that more than 50% of the Inventory Sites/Facilities are sources likely to contribute to the HPWQC, indicator bacteria. There appears to be a disconnect between the RAs view on what contributes to the HPWQC and what does not. For instance, comparing Table 4 on page 34 with the Table 10, we see that General Contractors do not contribute on Table 4, but they do on Table 10. Another example is provided is General Retail. It would seem that General Contractors or General Retail would not vary significantly within the Carlsbad Watershed. Can you explain these differences?	<i>Noted – Not seeing a difference</i>
82	McBain	52	Agua Hedionda HA – HA Sources	Page 52, Table 10: write out definition of POTWs.	<i>Accepted</i>
83	McBain		Agua Hedionda HA – HA Area Goals and Strategies	Several sites within the Mainstem Focus area (see below) are on public land, and were identified as ideal for BMP retrofit projects and habitat restoration in the Aqua Hedionda Watershed Management Plan (city of Vista, 2008). We suggest that these strategies specifically be added to list for short term implementation (2023) since much of the work has already been carried out.	<i>Partially Accepted</i>
84	McBain		Agua Hedionda HA – HA Area Goals and Strategies	A functioning natural landscape is by far the most efficient and effective means of reducing stormwater impacts to the watershed and the receiving waters. Protecting the level of natural landscape to achieve water quality goals should be a goal. The strategy to do so would be to determine the maximum loss of functioning landscape (due to impervious cover, conversion to agriculture, degradation, or invasion by invasive species) that the watershed should not exceed, followed by the strategy of developing municipal code to achieve this level of protection.	<i>Noted</i>
85	McBain		Agua Hedionda HA – HA Area Goals and Strategies	Functional buffers that protect stream banks and riparian habitat should be included as goals to be achieved as soon as possible, through strategies including municipal codes, easements, etc.	<i>Noted</i>

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86	McBain	Table 11	Agua Hedionda HA – HA Area Goals and Strategies	Table 11: Item 1: why are the cities of Carlsbad and Oceanside, and the County of San Diego, not implementing an irrigation runoff reduction program in this HA? Item 5: do you mean “minimum response time”? What does item 8 “Residential areas” refer to in the left hand column? Can numbers 6 and 25 be combined, as it looks strange for only Carlsbad to be carrying out number 6. The County of San Diego is implementing specific strategies in the Escondido Creek HA, i.e. items 17-31 in Table 21. Why don’t these apply on the upper reaches of the Aqua Hedionda Creek?	<i>Partially Accepted – not all jurisdictions will implement the same strategies. For item 5, the phrase “Maximum Response Time” is used because the maximum response time is given (45 minutes maximum). Corrections made to tables and narrative to clarify.</i>
87	McBain		Agua Hedionda HA – HA Area Goals and Strategies	See comment 2.b. under Buena Vista Creek, Goals and Strategies, regarding lack of overall goal. (2b. This section contains no overall goal for the HA. The focus areas each have goals, but they appear to account for only about 20% of the land area. Per Figures 2 and 12, the HPWQC is bacteria in Buena Vista Lagoon, yet only one of the four focus areas that have established goals is located near the lagoon. Please clarify the rationale for not having any overall goal, and the impact of the goals for the focus areas on the HPWQC.)	<i>Partially Accepted – There is no requirement to have an overall HA Wide goal</i>
88	McBain		Agua Hedionda HA – HA Area Goals and Strategies	See General Comments and Recommendations and Introduction Comments.	<i>Noted</i>
89	McBain	55	Agua Hedionda HA – HA Area Goals and Strategies	Page 55, Table 11: comment on why are strategies 9-13 dropped beginning FY17-18?	<i>Accepted - Typo</i>
90	McBain		Agua Hedionda HA – HA Area Goals and Strategies	See comment b under Buena Vista regarding the lack of overall goal (2b. This section contains no overall goal for the HA. The focus areas each have goals, but they appear to account for only about 20% of the land area. Per Figures 2 and 12, the HPWQC is bacteria in Buena Vista Lagoon, yet only one of the four focus areas that have established goals is located near the lagoon. Please clarify the rationale for not having any overall goal, and the impact of the goals for the focus areas on the HPWQC.)	<i>Partially Accepted – There is no requirement to have an overall HA Wide goal</i>
91	McBain		Agua Hedionda HA – HA Focus Areas	It is not clear why the AH04 Basin was chosen as a focus area. Is it because this area is served by a large detention basin that drains down a single tributary (“Willow Meander Creek”) to the mainstem of the Agua Hedionda, thus making water sampling straight forward? If so, please state this. Statements equivalent to those made in the case of ESC 113 Focus Area (page 108) would be appropriate. It is stated that AH04 has few BMPs; however, the large detention basin located in Buena Vista Park was apparently constructed as a water and sediment-controlling structure, although it has become a “duck pond”, and it is likely a source of very high bacteria loads. It would be helpful if this and all other sub-basins were cross-referenced with their statewide system identifier.	<i>Noted – the focus area was selected because of land uses, flow at MS4 outfall and areas (greenbelts and common areas) that are likely sources of non-stormwater discharges.</i>

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92	McBain		Agua Hedionda HA – HA Focus Areas	The Aqua Hedionda Watershed Management Plan (city of Vista, 2008) calls out three areas of focus where it was concluded the most immediate benefit to the listed water bodies (the mainstem of AH Creek and the AH Lagoon) could be achieved. The Mainstem Focus Area includes Sub-basin 1015 that drains to Roman Creek, and may be the same as, or overlapping with, AH04 above; please clarify.	<i>Noted – it appears the Roman Creek basin identified in the Agua Hedionda Watershed Management Plan is overlapping with AH04.</i>
93	McBain	58	Agua Hedionda HA – HA Focus Areas	Page 58, AH04 Basin Focus Area Strategies appears to contain very little detail information from the City of Vista on the strategies. These are just a repeat of previous generic strategies for the Focus Area. Suggest looking at some of the detailed information from Loma Alta HA as an example of what we believe would be more informative and meaningful.	<i>Noted</i>
94	McBain	58	Agua Hedionda HA – HA Focus Areas	Page 58, AH04 is another area where consideration of non-structural BMP's, not just structural needs, should to be considered. The large amount of land used for park, natural open space and golf course all make such options more easily achieved here than in other areas.	<i>Noted</i>
95	McBain	61	Agua Hedionda HA – HA Focus Areas	Page 61, last paragraph: the City of San Marcos property based inspections are proposed to be conducted multiple times per year at various times of the day. We agree with this multiple inspections approach. Other Focus Areas are suggesting once per year which we do not believe is sufficient.	<i>Noted</i>
96	McBain	62	Agua Hedionda HA – HA Focus Areas	Page 62, item 6, enhanced education program provides some good clarification of program content. We would like to see more of this kind of detail included in the basic education/outreach program for all of the HAs.	<i>Noted</i>
97	McBain	62	Agua Hedionda HA – HA Focus Areas	Page 62, item 7: can you provide a little more detail on what the “filter upgrade program” is, and what the types of new media filters are being proposed? We have not seen this in other HAs and wonder if this type of BMP could be used throughout the watershed? Perhaps this is already occurring and has not been mentioned. Could you confirm and provide details?	<i>Accepted</i>
98	McBain	64	Agua Hedionda HA – HA Focus Areas	Page 64: only PA2 gets a 45 minute storm water hotline response. It would be great to set this up as a pilot project and fully evaluate the additional staffing requirements and overall benefits in order to determine whether this is a strategy that should have much wider use.	<i>Noted – it is expected that all strategies will be evaluated for effectiveness and those that are effective and efficient will be implemented on a greater geographic basis in future years.</i>
99	McBain		Encinas HA	What is the plan for actually including this HA in the WQIP? Since it is the smallest HA, and entirely within a single jurisdiction, it would seem to be easier to address than many of the other HAs. The CWN and member groups have been working to create a “friends” group that would focus on this HA. Initial outreach and events have been held and more are planned for this next year. This is an opportunity to involve local stakeholders in both planning and implementing watershed programs. Its unique features make this a particularly good location to initiate pilot projects.	<i>Noted – will be evaluated in future efforts</i>

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100	McBain		Encinas HA – HA Sources	Palomar Airport is located near the head of this HA. The slopes surrounding the airport along both El Camino Real and Palomar Airport road are devoid of vegetation and presumably are regularly treated with herbicide. These slopes discharge to a culvert under PAR, under the Lowe’s shopping center, and to an outlet that discharges to the creek in the Lowe’s center. County storm water staff has inspected the site and report finding no storm water violations. However, the developer of the Lowe’s center reports that the BMP at the outlet does not adequately address the run-off at that location and they have proposed a retrofit design to the city of Carlsbad.	<i>Noted – will be evaluated in future efforts</i>
101	McBain		Encinas HA – HA Sources	In addition to these bare slopes, most of the industrial area development occurred prior to new stormwater requirements. These include things like curb cuts to direct parking lot run-off directly to the creek with no treatment. This HA has lots of room for improvement and really should not be ignored. We understand why it is not in the first round of priorities, but request a schedule for incorporating it within the timeframe of the WQIP. Please confirm this schedule.	<i>Noted – will be evaluated in future efforts</i>
102	McBain		Encinas HA – HA Area Goals and Strategies	Most of the industrial area development occurred prior to new stormwater requirements. This includes things like curb cuts to direct parking lot run-off directly to the creek with no treatment. This HA has lots of room for improvement and really should not be ignored. We understand why it is not in the first round of priorities, but request a plan to address it within the timeframe of the WQIP.	<i>Noted – will be evaluated in future efforts</i>
103	McBain		Encinas HA – HA Area Goals and Strategies	Some basic data collection is needed to confirm what is the HPWQC in this HA. It is not listed as an impaired water body only because adequate data collection has not been done.	<i>Noted – will be evaluated as part of the City of Carlsbad’s monitoring program</i>
104	McBain		Encinas HA – Focus Areas	The Lowe’s center and airport are at the head of this watershed and improvements there could have a significant impact on the entire HA.	<i>Noted</i>
105	McBain	73	San Marcos HA – HA Sources	Page 73, Table 16: we see certain Inventory Sites/Facilities that are different from the last inventory in terms of being considered a source for the HPWQC, indicator bacteria. Please explain why they are so different between the HAs.	<i>Noted – highlighted sources depend on the likelihood of those sources to discharge pollutants (or categories of pollutants). When PWQCs vary between HAs, the result may be different highlighted sources.</i>
106	McBain		San Marcos HA – HA Area Goals and Strategies	Batiquitos Lagoon’s greatest need is for dredging to keep a healthy tidal flow. Studies for dredging implementation have already been completed, but “guaranteed” funding got lost in the recession. This should be listed now as an optional strategy, at least. San Elijo Lagoon is a good example of this type of project being used to meet long term goals in that watershed.	<i>Noted</i>

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107	McBain	75	San Marcos HA – HA Area Goals and Strategies	Page 75, Table 17: the entire discussion on the TMDL Interim Compliance, per the Notes A and B, is confusing. Since all of the items under Note A, for instance, have “or” after them, it would seem that the final item (h) is all that is needed. In other words, it does not say “and” after each one. Then, in the final item it states that all the previous items need to be assured of being met in the WQIP. Should the items (a) through (g) say “and” rather than “or”? If not, please provide some additional explanation for this discussion.	<i>Noted – further discussion will be added to the Final WQIP. Each of the items are pathways to demonstrate compliance with the TMDL. If one of the items is satisfied, compliance is demonstrated.</i>
108	McBain	75	San Marcos HA – HA Area Goals and Strategies	Page 75, Table 17: please explain why the flow is not carried forward in the goals after 2018? Are you saying you think only 10% can be reduced?	<i>Noted – flow is used as an interim goal up until the point in time when the TMDL compliance requirements become effective</i>
109	McBain	76	San Marcos HA – HA Area Goals and Strategies	Page 76, Table 18: the same comments as those noted in a. and b. above, except in this table it shows going to the second Interim Goal for a 20% reduction (not 10%). Why is there a difference between the tables?	<i>Noted – flow is used as an interim goal up until the point in time when the TMDL compliance requirements become effective</i>
110	McBain	82	San Marcos HA – HA Focus Areas	Page 82, item 3: the proposed LID Retrofit Program looks to be quite interesting and potentially useful. We support the City of Encinitas in this initiative and would be interested in learning more about this program as it progresses.	<i>Noted</i>
111	McBain	83	San Marcos HA – HA Focus Areas	Page 83, item 7: moving homeless encampments from the riparian areas will just move the waste to another area. It is our assumption that the second part of this strategy is to work on how to keep that from happening. Confirm how you will ensure this program will succeed in reducing the overall waste load. Are you considering something a program similar to the City of Solana Beach in providing sanitation facilities through partnerships with social service organizations? If not, how will this “educational” component work?	<i>Noted – adjustments made</i>
112	McBain	90	Escondido Creek HA – HA Sources	Page 90, first paragraph states that “It is important to note that the PWQC, toxicity, is not presented in Table 1 below because in this HA it is not attributable to specific sources and may be caused by a variety of sources.” We know from the SWAMP data and others, that toxicity is present in Escondido Creek. As stated previously, we do not agree with not showing toxicity because “it is not attributable to specific sources.” Toxicity is attributable to specific sources, otherwise, where does it come from? The issue is it has not been determined or rather it is Unknown (UK). We suggest it be shown in the table and listed as UK for which sources are contributing.	<i>Accepted</i>

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No.	Commenter Name	Memo Pg #	October 24, 2014 Memo Category	Comment	Response to Comment
113	McBain	96	Escondido Creek HA – HA Area Goals and Strategies	Page 96, Item 52, please reference previous comments about this innovative strategy. Additionally, we would like to see a broader discussion of this strategy to identify how this might be implemented over the entire watershed. People affected by homelessness do not have the resources for proper sanitation and therefore will use whatever means are available. If this were somehow provided on a watershed basis by working within existing Social Service Providers, it could be quite effective in reducing bacterial loads and trash.	<i>Noted</i>
114	McBain	99	Escondido Creek HA – HA Focus Areas	Page 99, second bullet: how often will assessing flows activities be performed? This seems important because there will be a certain number of flow monitoring events needed to statistically establish a baseline and future reductions in flow.	<i>Accepted Will be provided in Final WQIP</i>
115	McBain	99	Escondido Creek HA – HA Focus Areas	Page 99, item 6 Optional Strategies: are there any existing potential projects within this focus area that might be considered as possible Alternative Compliance including habitat restoration projects adjacent to the lagoon? If not, we would recommend that the City proceed to consider these types of projects. The SELC would be a willing partner to assist the City in developing these types of projects.	<i>Partially Accepted – If the City moves forward with an Offsite Alternative Compliance (OAC) program, OAC projects as well as other projects are potential options for this particular geographic area. Furthermore, the City is open to working with outside entities, such as SELC, to partner to identify, prioritize and seek funding for such projects in the future.</i>
116	McBain	102	Escondido Creek HA – HA Focus Areas	Page 102, Table 23: we do not understand the 2023 and later Interim Goal of “San Elijo Lagoon Restoration Completed.” Can you explain how flow reduction is linked to the lagoon restoration? We see under 1) on that page that the lagoon restoration “will directly improve the beneficial uses of the impacted receiving waters”, and we agree with that statement. However, the HPWQC identified in the WQIP is bacteria and it is our understanding that we are talking about the goal of reductions in the MS4 system which discharges to the lagoon. We would therefore assume that continued reductions in the HA would be the goal. However, if the City of Encinitas is providing significant resources towards the lagoon restoration, which in turn will reduce flow and pollutants, then perhaps this is a valid change in the goals. However, the words “supporting public infrastructure improvements” do not define how much, where, etc; nor is it quantified as to possible reductions.	<i>Noted – It is anticipated that the restoration project will restore the desired beneficial uses of the lagoon (for indicator bacteria – the current HPWQC). If this is the case, then the City of Encinitas will reevaluate its overall jurisdictional priorities and may designate new PWQCs/HPWQC and focus areas, goals and strategies.</i>

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No.	Commenter Name	Memo Pg #	October 24, 2014 Memo Category	Comment	Response to Comment
117	McBain	103	Escondido Creek HA – HA Focus Areas	Page 103, item 6, the Olivenhain Trunk Sewer, which runs adjacent to the lagoon, is noted as “antiquated.” We would strongly suggest this project be moved up out of Optional Strategies and prioritized. Without knowing exactly what the word “antiquated” means in this case, we have to assume it may have structural deficiencies as well as capacity issues. With the sewer facility location right next to the lagoon, we know that any failure will end up in raw sewage being discharged directly to the lagoon, with no hope for containing it. In addition, these types of potential failures to protected receiving waters, when known to be possible in advance, should be at the top of the list for action.	<i>Accepted</i>
118	McBain	104	Escondido Creek HA – HA Focus Areas	Page 104, Table 24: can you please explain why you have selected such a low goal of 5% reduction? Further, why does this goal not change?	<i>Noted – adjustments made</i>
119	McBain	108	Escondido Creek HA – HA Focus Areas	Page 108, first paragraph: we appreciate the fact that the City of Escondido has clearly stated the rationale for selecting these focus areas. This helps the reader to understand why these were the ones selected rather than some other area. In addition, these are tied to the HPWQC, indicator bacteria. The PWQCs could be added to this and sampling/monitoring.	<i>Noted</i>
120	McBain	110	Escondido Creek HA – HA Focus Areas	Page 110, Table 25: all of the RAs have selected the same general horizon for meeting the interim and final goals. Since each of the focus areas is different within each jurisdiction, should not the goals and schedules change more to reflect this? It seems to us that there would naturally be more variation within the goals and schedules due to each focus areas unique makeup. Can you provide some discussion on this point, perhaps up front in the introduction, so the reader understands why there is not more variation?	<i>Accepted</i>
121	McBain	110	Escondido Creek HA – HA Focus Areas	Page 110, item 1 at bottom of page, third bullet: conducting property based inspections once a year may be not often enough. For instance, in residential neighborhoods, discharges can occur at all hours and days of the week. For the monitoring that you will be doing, we assume there will be 24 hour recording of flow at select locations. Can you please confirm if this is the case? If these flow recorders are moved upstream, the City will be able to potentially see where higher flows are coming into the system. Then additional property inspections would be quite advantageous in determining the source(s).	<i>Noted – inspections are a minimum of once per year. The City will exercise flexibility in frequency to allow the use of resources to increase frequencies for specific areas based on identified characteristics and inspections findings.</i>
122	McBain	111	Escondido Creek HA – HA Focus Areas	Page 111, item 3, Irrigation Runoff Reduction: the stated 10% increase in number of residents taking advantage of this program in the first permit cycle is noted as a great way to use specific goals for the strategies to meet the flow reduction goals. More of this type of specific sub-goals in the strategies would seem to add substance to the strategy programs for all the RAs.	<i>Noted</i>

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No.	Commenter Name	Memo Pg #	October 24, 2014 Memo Category	Comment	Response to Comment
123	McBain	111	Escondido Creek HA – HA Focus Areas	Page 111, item 4, Optional Strategies: this seems to be the first habitat related project that is singled out as a strategy. We are not familiar with this project and request more information. We would encourage more of this type of specific project related strategy for action, and hopefully move these types of projects up from optional to first line strategies. We are pleased to see that the City is specifically listing Offsite Alternative Compliance as a strategy and encourage the City to move forward with projects which will enhance and restore existing creek and wetland habitat.	<i>Noted</i>
124	McBain	114	Escondido Creek HA – HA Focus Areas	Page 114, item 7, Filter Retrofit Program: can you provide a little more discussion on the nature of this program such as where, what kinds of filters?	<i>Accepted</i>
125	McBain	114	Escondido Creek HA – HA Focus Areas	Page 114, item 8, Optional Strategies: we appreciate the fact that the City of San Marcos is also considering Offsite Alternative Compliance, which will hopefully translate into improvement in the local habitat in local creeks and wetlands. It sounds like there is a particular project in mind. It would be helpful to include a description of this project in your response to help us understand how such projects will enhance the overall achievement of goals.	<i>Noted</i>
126	McBain		Comments on Presentation	Show the water quality monitoring locations on the maps. Per text comments, this is a pretty small number of sites for each HA. For example, Loma Alta only mentions three. This would make it easier to relate the goals to the geographic conditions.	<i>Accepted – Will be provided in Final WQIP</i>
127	McBain		Comments on Presentation	Explain anthropogenic and how it relates to the high priority pollutant, bacteria.	<i>Accepted – Will be provided in Final WQIP</i>
128	McBain		Comments on Presentation	Include a single complete list of all of the strategies used- with a single numbering system and description. Where there are differences for a particular watershed explain that in the text and perhaps with a sub-number. This should also relate back to the earlier more complete list of “potential” strategies. Describe the process that was used to narrow the list.	<i>Noted</i>
129	McBain		Comments on Presentation	There needs to be a clear explanation about the optional strategies. Explain why they are optional and what the purpose is for including them and the intent/process that will be used to move them from optional to actual (if there is one).	<i>Accepted</i>
130	McBain		Comments on Presentation	A few summary/comparison tables would be helpful. For example, a list of all of the strategies used and which HA/Focus area it is used in; each HA/focus areas goals by date (this would highlight the very few exceptions to the 10, 20, 40, 60, 80% reduction for each 5 year period that are so consistently across HAs even though there are different characteristics.	<i>Noted</i>

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No.	Commenter Name	Memo Pg #	October 24, 2014 Memo Category	Comment	Response to Comment
131	McBain		Comments on Presentation	Alternative compliance strategies offer an important opportunity to enhance watershed function. We understand that each RA may have a different intention with respect to how Alternative Compliance will be implemented. It would be helpful if in each of the HA's there is a discussion of the possible process and schedules for implementing these strategies. If there are specific projects that might be implemented, provide examples of these. By doing this, there would be more depth regarding these optional strategies.	<i>Noted – specific projects and project types are provided in the deliverable. At this time, for most Responsible Agencies, it is premature to discuss Offsite Alternative Compliance programs beyond identifying them as optional strategies and offering potential projects.</i>
132	Gruber			The interim and final goals for the focus areas rely for the most part on a percent reduction in anthropogenic surface water runoff. Decreasing dry weather flows is a critical component of the strategies identified in the document and, if achieved, should have a dramatic, positive, impact on water quality. Given the reliance of the numeric goals on the percent reduction over time compared to baseline values, the WQIP should provide more information on the definition of baseline, the status of the data in achieving a baseline, and the approach that will be used to measure progress toward meeting the flow reduction goals (e.g., will there be a statistical comparison to baseline data for demonstrating effectiveness?). Establishing baselines can be difficult, particularly with the spatial and temporal variability in flows in urban drainages. We understand that many of these details may still need to be worked out, but without a clear idea on how progress will be defensibly quantified, we may not know if the goals are being met over time. Providing at least some information on how these critically important values will be established (rather than implying that the details will be figured out at a later date) would provide more credibility for the document.	<i>Accepted – Will be provided in Final WQIP</i>
133	Gruber			Reducing anthropogenic surface water runoff will reduce the bacterial loads originating from the MS4, however, it should be acknowledged in the document that the concentration-based water quality standards for indicator bacteria still must be met. This is an important distinction because reducing dry weather runoff (i.e., flows) will not necessarily reduce bacterial concentrations. In fact, some studies have suggested that decreasing flow may actually increase bacterial concentrations in the MS4 and receiving waters. The exclusive reliance for the numeric goals on reducing anthropogenic surface water runoff appears to imply that water quality standards for indicator bacteria will be met, which may not be the case.	<i>Noted – concentrations and loading will be evaluated and goals may be adjusted based on findings</i>

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No.	Commenter Name	Memo Pg #	October 24, 2014 Memo Category	Comment	Response to Comment
134	Gruber			<p>While the concept of focus areas (where initial efforts will likely yield greatest benefits) has merit, the creeks themselves should also be considered as “focus areas” (the entire lengths, including tributaries). These riparian systems are the receiving waters for the upland focus areas where strategies are being developed. Many opportunities for improving the water quality and overall health of these creeks have already been identified (e.g., in watershed management plans), and more can be identified, especially when Alternative Compliance options are given the import and weight they should be given. In-stream solutions may actually offer the most effective strategy for achieving lasting water quality; from small draws and roadside ditches, to ephemeral creeks, to perennial creeks, multiple benefits would accrue. As it is, this document does not include such solutions even though they are included in the permit. The restoration/rehabilitation/creation of healthy stream systems has multiple benefits, as multiple functions are provided with properly engineered systems. As such, there are a number of funding mechanisms, incentive programs, etc. that should be considered, both existing and those that will be developed with Alternative Compliance. The multiple benefits also bring different sources of funding. While it is not within the scope of this document to identify these many and varied sources of funding, the document could be improved by giving this important strategy at least equal weight as the strategies put forth.</p>	<i>Noted</i>
135	Gruber			<p>In line with the above, it is concerning that the goals and strategies of the WQIP, being developed solely for the HPWQCs (i.e., bacteria, eutrophic conditions) may inadvertently exclude many other practical solutions that may in fact have a greater overall benefit, but that are not perceived or understood as activities with direct benefits relative to the HPWQCs. This inevitably results in a much smaller toolbox than would otherwise be available. A comprehensive approach (or mindset) that fulfills the permit obligation to address HPWQCs, but also includes other practical solutions in the receiving waters will in the end be far more successful in improving our regional water quality.</p>	<i>Noted</i>
136	Gruber			<p>As bacteria has been identified as the sole HPWQC (with the exception of the Loma Alta Slough, which can have its own specific strategies), with fairly well known anthropogenic sources, it makes sense that a meaningful strategy would focus on changing behaviors that generate those sources (e.g., over irrigation). Public education is a proven approach that is included in the document, but to date the strategy has not been nearly as successful as it could be, primarily because it has not been given the weight it deserves. This is not a critique of the document; in fact, the strategy is properly identified as “Enhanced Education Program.” However, to be successful, this approach must impact hearts and not just minds. A public education program for storm water that impacts society in a lasting way is achievable, but will need to be a much more prominent feature of the overall strategy to be successful in achieving the water quality goals of the WQIP.</p>	<i>Noted</i>

MEMORANDUM



DATE: March 29, 2012

TO: Erik Steenblock, City of Encinitas

COPY TO: San Marcos HA Responsible Parties
Mikhail Ogawa, MOE

SUBJECT: Technical Analysis of the Bacteria TMDL in the
San Marcos Hydrologic Area

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In 2010, the San Diego Regional Water Quality Control Board (Regional Board) adopted Resolution No. R9-2010-0001 to incorporate into the Basin Plan the *Revised Total Maximum Daily Loads (TMDL) for Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region (Including Tecolote Creek)* (hereafter, Bacteria TMDL or TMDL). Per the Resolution adopting the Basin Plan Amendment (BPA), the TMDL was established to address exceedances of the Contact Water Recreation (REC-1) water quality objectives¹.

The BPA lists the San Marcos Hydrologic Area (HA) shoreline as a waterbody addressed by the TMDL. Inclusion of the San Marcos HA in the TMDL is based upon data from the receiving waters at Moonlight State Beach². Responsible Parties in the San Marcos HA include the Cities of Carlsbad, Encinitas, Escondido, San Marcos, the California Department of Transportation, and County of San Diego.

The purpose of this memorandum is to:

- Evaluate existing information and data to assess the extent and magnitude of the REC-1 impairment to define implementation of the Bacteria TMDL in the San Marcos HA.

REC-1 Impairment Analysis

To assess the extent and magnitude of exceedances of the REC-1 water quality objectives (the basis for the TMDL), current and prior Clean Water Act Section 303(d) lists have been evaluated. Per the 2010 303(d) list, the Pacific Ocean Shoreline at Moonlight State Beach is listed for Total Coliform based upon exceedances of the Shellfish Harvesting Beneficial Use (SHELL) water quality objectives and not the REC-1 water quality objectives³. As the TMDL

¹ Resolution No. R9-2010-0001, Pg. 4.

² Resolution No. R9-2010-0001, Pg. 6; Pg. A-1; Pg. A-61; Pg. A-64; Appendix T

³ http://www.waterboards.ca.gov/water_issues/programs/tmdl/2010state_ir_reports/02492.shtml#17722

applies only to the REC-1 beneficial use and not the SHELL beneficial use⁴, prior 303(d) lists have been evaluated as well.

Prior 303(d) lists, including the 2002 list that the TMDL is based upon, only list the San Marcos HA as impaired for indicator bacteria without specifying the bacteria indicator and/or beneficial use (SHELL and/or REC-1) that the listing decision is based upon. Therefore, to evaluate the basis for prior listings, as well as the status of any current listing, an impairment analysis has been conducted as described below.

1.1 IMPAIRMENT ANALYSIS PARAMETERS

To assess impairment status of the REC-1 water quality objectives (both historic and current impairment), data were evaluated against the applicable water quality objectives. Exceedances of the objectives were compared to the allowable exceedance frequencies per the *Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List* (Listing Policy)⁵. More specifically, the data were assessed utilizing the following parameters:

- a. **Water Quality Objectives:** The TMDL is established to address REC-1 impairments. As only the shoreline of the San Marcos HA is included in the TMDL, data were assessed using the water quality objectives for bacteria in the waters of the Pacific Ocean shoreline contained in the *Water Quality Control Plan, Ocean Waters of California*⁶ (Ocean Plan) as summarized below in **Table 1**.

Table 1. Water Quality Objective for Analysis of San Marcos HA Shoreline (Ocean Plan)

Indicator Bacteria	Single Sample Maximum (SSM) (MPN/100ml)	Geometric Mean (Geomean) (MPN/100ml)
Total Coliform (TC)	10,000 / 1,000*	1,000
Fecal Coliform (FC)	400	200
Enterococci (ENT)	104	35

* = TC density shall not exceed 1,000 MPN/100ml when the TC to FC ratio exceeds 0.1

- b. **Calculation of Geomean:** Consistent with the methodology utilized by the State Board in the 2010 303(d) analysis, geomeans were calculated on a monthly basis. Both a minimum sample size of four (equating to weekly sampling) and five were evaluated as part of the impairment analysis.
- c. **Exceedance Frequency:** The Listing Policy establishes the listing and delisting methodology for determining if a waterbody is meeting water quality standards. Per Section 3.3 of the Listing Policy, the sample sizes and *minimum* exceedance frequencies established in Table 3.2 were utilized to determine impairment of the REC-1 water quality objectives (i.e, exceedance frequencies for REC-1 that would result in placing the waterbody on the 303(d) List). To fully support and conduct a complete impairment analysis, data were also compared to the delisting requirements contained in Table 4.2 of the Listing Policy, which defines the sample sizes and *maximum* exceedance frequencies

⁴ Resolution No. R9-2010-0001, Pg. 4, footnote 17.

⁵ Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List, adopted September 2004

⁶State Water Resources Control Board Resolution No. 2009-0072. Effective March 10, 2010.

(i.e., exceedance frequencies for REC-1 that would result in removing a waterbody from the 303(d) List).

- d. **Period of Analysis:** For Moonlight State Beach, all available beach data from 1999 to 2011 were assessed, with 1999 representing the approximate earliest data that may have been assessed for the 2002 303(d) list and 2011 representing the most recent data available. For all other sites within the San Marcos HA Shoreline segment (see below), data were also assessed from 1999 to 2011, with the exception of Ponto Drive, where data were available from December 1998. Data were bundled in relative dates that would approximate each of the 303(d) assessment periods (2002, 2006, and 2010), with the exception of the 2010 303(d) List for which analysis dates are known. Data were evaluated in the following timeframes:
- All Data (Entire data set from 1999 – 2011)
 - April 1999 – December 2001 (Approximate 2002 303(d) List)
 - January 2002 – February 2004 (Approximate 2006 303(d) List)
 - March 2004 – December 2007 (Known assessment period for 2010 303(d) List)
 - January 2008 – December 2011 (New data not yet evaluated in a 303(d) assessment)

The purpose of grouping the data in the above timeframes was to determine if and when the REC-1 water quality objectives in the San Marcos HA were impaired. Additionally, data not yet considered in a 303(d) assessment were also evaluated to confirm that REC-1 objectives have not been impaired after the last 303(d) assessment was conducted.

- e. **Locations Analyzed:** The Pacific Ocean Shoreline at Moonlight State Beach is the basis for the past and current 303(d) listings, resulting in the inclusion of the entire San Marcos HA in the Bacteria TMDL. To support a comprehensive analysis of the entire San Marcos HA Shoreline segment, additional AB 411 and Coastal Storm Drain Outfall monitoring sites in the HA were also assessed individually. The evaluated sites and station identifications are shown in Appendix A and include:
- EH-440: Batiquitos Lagoon Outlet
 - EH-420: Moonlight State Beach
 - EH-410: Swami's
 - EN-020: Ponto Drive
- f. **Data Sources:** Data sources include the County of San Diego, Department of Environmental Health (AB 411 data), the City of Encinitas (Coastal Storm Drain Monitoring (CSDM data, beach samples only), and data from other site-specific studies as follows:
- Batiquitos Lagoon Outlet: AB 411
 - Moonlight State Beach: AB 411, CSDM, Moonlight Beach Urban Runoff Treatment Facility Final Report (City of Encinitas, 2006)
 - Swami's: AB 411, CSDM

- Ponto Drive: AB 411

1.2 REC-1 IMPAIRMENT ANALYSIS RESULTS

The REC-1 impairment analysis results for each site are presented below. For brevity, only the results for the entire data set are presented within the main body of the memorandum, while the full results (grouped by the timeframes identified above) are presented in Appendix B. Note that the impairment analysis for each timeframe at all stations presented in Appendix B results in the same finding as presented below for the entire data set.

1.2.1 Moonlight State Beach (1999-2011)

Total Coliform:

- SSM: 44/1447 Exceedances; Does not meet 303(d) Listing requirements
- Geomean (n=>4): 2/110 Exceedances; Does not meet 303(d) Listing requirements
- Geomean (n=>5): 2/95 Exceedances; Does not meet 303(d) Listing requirements
- TC:FC Ratio 41/1447 Exceedances; Does not meet 303(d) Listing requirements

Fecal Coliform

- SSM: 57/1428 Exceedances; Does not meet 303(d) Listing requirements
- Geomean (n=>4): 2/110 Exceedances; Does not meet 303(d) Listing requirements
- Geomean (n=>5): 2/95 Exceedances; Does not meet 303(d) Listing requirements

Enterococci

- SSM: 142/1447 Exceedances; Does not meet 303(d) Listing requirements
- Geomean (n=>4): 9/110 Exceedances; Does not meet 303(d) Listing requirements
- Geomean (n=>5): 7/95 Exceedances; Does not meet 303(d) Listing requirements

1.2.2 Batiquitos Lagoon (1999 - 2011)

Total Coliform:

- SSM: 4/635 Exceedances; Does not meet 303(d) Listing requirements
- Geomean (n=>4): 0/93 Exceedances; Does not meet 303(d) Listing requirements
- Geomean (n=>5): 0/52 Exceedances; Does not meet 303(d) Listing requirements
- TC:FC Ratio 11/635 Exceedances; Does not meet 303(d) Listing requirements

Fecal Coliform

- SSM: 13/635 Exceedances; Does not meet 303(d) Listing requirements
- Geomean (n=>4): 0/93 Exceedances; Does not meet 303(d) Listing requirements
- Geomean (n=>5): 0/52 Exceedances; Does not meet 303(d) Listing requirements

Enterococci

- SSM: 34/635 Exceedances; Does not meet 303(d) Listing requirements

- Geomean (n=>4): 2/93 Exceedances; Does not meet 303(d) Listing requirements
- Geomean (n=>5): 2/52 Exceedances; Does not meet 303(d) Listing requirements

1.2.3 Swami's (1999 - 2011)

Total Coliform:

- SSM: 1/394 Exceedances; Does not meet 303(d) Listing requirements
- Geomean (n=>4): 0/71 Exceedances; Does not meet 303(d) Listing requirements
- Geomean (n=>5): 0/37 Exceedances; Does not meet 303(d) Listing requirements
- TC:FC Ratio 0/394 Exceedances; Does not meet 303(d) Listing requirements

Fecal Coliform

- SSM: 0/394 Exceedances; Does not meet 303(d) Listing requirements
- Geomean (n=>4): 0/71 Exceedances; Does not meet 303(d) Listing requirements
- Geomean (n=>5): 0/37 Exceedances; Does not meet 303(d) Listing requirements

Enterococci

- SSM: 5/395 Exceedances; Does not meet 303(d) Listing requirements
- Geomean (n=>4): 1/71 Exceedances; Does not meet 303(d) Listing requirements
- Geomean (n=>5): 0/37 Exceedances; Does not meet 303(d) Listing requirements

1.2.4 Ponto Drive (1999 - 2011)

Total Coliform:

- SSM: 0/653 Exceedances; Does not meet 303(d) Listing requirements
- Geomean (n=>4): 0/141 Exceedances; Does not meet 303(d) Listing requirements
- Geomean (n=>5): 0/50 Exceedances; Does not meet 303(d) Listing requirements
- TC:FC Ratio 0/653 Exceedances; Does not meet 303(d) Listing requirements

Fecal Coliform

- SSM: 0/649 Exceedances; Does not meet 303(d) Listing requirements
- Geomean (n=>4): 0/141 Exceedances; Does not meet 303(d) Listing requirements
- Geomean (n=>5): 0/50 Exceedances; Does not meet 303(d) Listing requirements

Enterococci

- SSM: 3/645 Exceedances; Does not meet 303(d) Listing requirements
- Geomean (n=>4): 0/141 Exceedances; Does not meet 303(d) Listing requirements
- Geomean (n=>5): 0/50 Exceedances; Does not meet 303(d) Listing requirements

1.3 CONCLUSION

Based upon the impairment and associated data analysis presented above, the following conclusions can be made:

- The Pacific Ocean Shoreline at Moonlight State Beach, the basis for including the entire San Marcos HA in the Bacteria TMDL, is not impaired for REC-1 beneficial uses.
 - Per the 2010 303(d) list, the listing at Moonlight Beach for total coliform is based upon the water quality objectives for the SHELL beneficial use only, and is not listed for REC-1.
- Based upon data analysis, no REC-1 impairment can be established for any period of time from 1999-2011, including the approximate period of time for which data were assessed to establish the TMDL (the 2002 303(d) List).
- Based upon data analysis, all other beach monitoring locations in the San Marcos HA (Batiquitos Lagoon Outlet, Swami's, Ponto Drive) are also not impaired for REC-1 beneficial uses.
 - Similar to Moonlight State Beach, no REC-1 impairment can be established for any period of time from 1999-2011, including the approximate period of time for which data were assessed to establish the TMDL (the 2002 303(d) List).

Appendix A: Monitoring Sites Analyzed

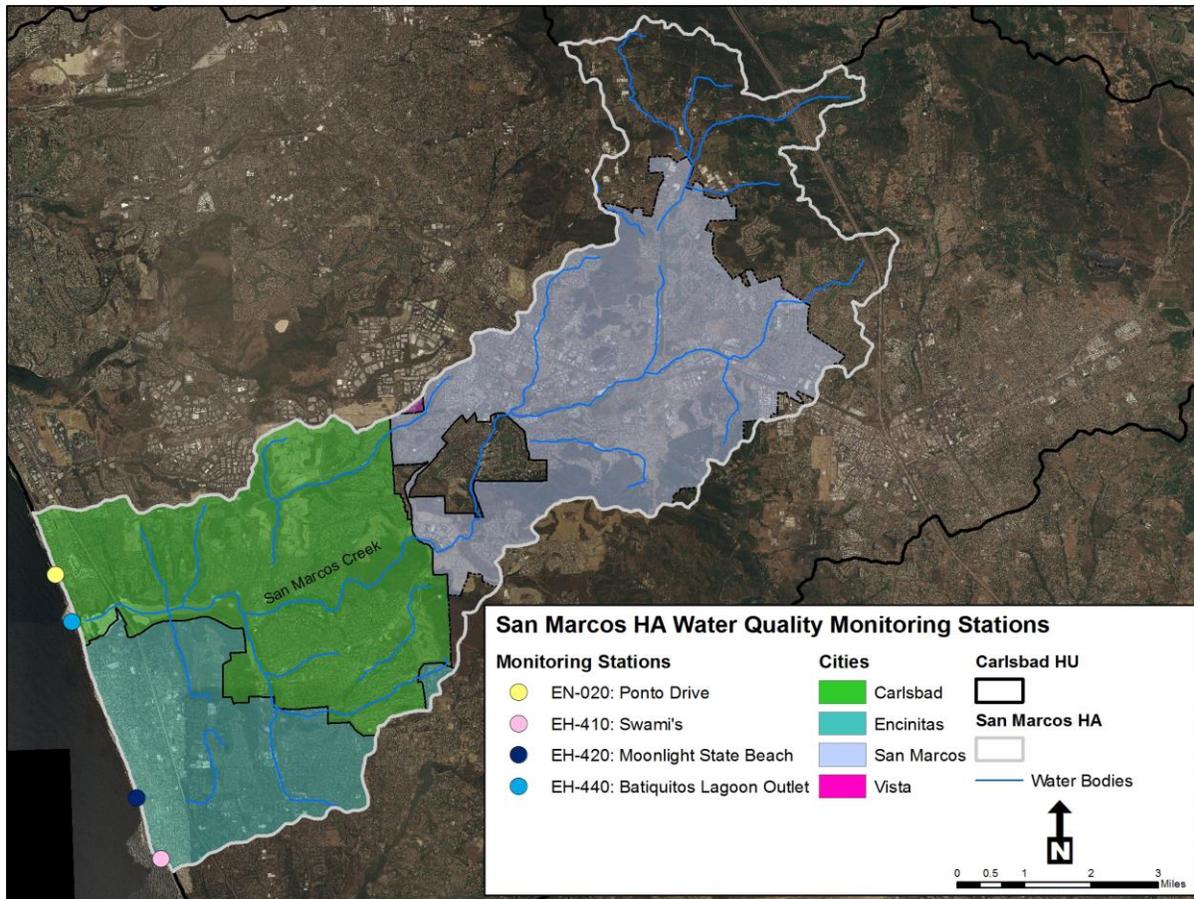


Figure A-1. Evaluated Sites and Station Identifications

Appendix B: REC-1 Impairment Analysis Results

Table B-1. Impairment Analysis for Moonlight State Beach (1999 – 2011)¹

Total Coliform SSM	Data Analysis Period	303(d) list*	SSM Sample Size (n=)	SSM Exceedances	Allowable Exceedance (List if = or >)	Allowable Exceedance (Delist if = or <)
	Apr 1999 - Dec 2001	2002	84	2	14	13
	Jan 2002 - Feb 2004	2006	145	0	24	23
	Mar 2004 - Dec 2007	2010	770	25	128	127
	Jan 2008 - Dec 2011	New	448	17	75	74
	Apr 1999 - Dec 2011	All	1447	44	241	240
Total Coliform GeoMean	Data Analysis Period	303(d) list*	Geomean Sample Size (n>=4)	Geomean Exceedances (n>=4)	Allowable Exceedance (List if = or >)	Allowable Exceedance (Delist if = or <)
	Apr 1999 - Dec 2001	2002	12	0	5	N/A
	Jan 2002 - Feb 2004	2006	14	0	5	N/A
	Mar 2004 - Dec 2007	2010	44	1	8	7
	Jan 2008 - Dec 2011	New	40	1	7	6
	Apr 1999 - Dec 2011	All	110	2	19	18
Total Coliform GeoMean	Data Analysis Period	303(d) list*	Geomean Sample Size (n>=5)	Geomean Exceedances (n>=5)	Allowable Exceedance (List if = or >)	Allowable Exceedance (Delist if = or <)
	Apr 1999 - Dec 2001	2002	8	0	5	N/A
	Jan 2002 - Feb 2004	2006	7	0	5	N/A
	Mar 2004 - Dec 2007	2010	43	1	8	7
	Jan 2008 - Dec 2011	New	37	1	7	6
	Apr 1999 - Dec 2011	All	95	2	16	15
Fecal Coliform SSM	Data Analysis Period	303(d) list*	SSM Sample Size (n=)	SSM Exceedances	Allowable Exceedance (List if = or >)	Allowable Exceedance (Delist if = or <)
	Apr 1999 - Dec 2001	2002	84	8	14	13
	Jan 2002 - Feb 2004	2006	144	3	24	23
	Mar 2004 - Dec 2007	2010	771	33	128	127
	Jan 2008 - Dec 2011	New	429	13	72	71
	Apr 1999 - Dec 2011	All	1428	57	237	236
Fecal Coliform GeoMean	Data Analysis Period	303(d) list*	Geomean Sample Size (n>=4)	Geomean Exceedances (n>=4)	Allowable Exceedance (List if = or >)	Allowable Exceedance (Delist if = or <)
	Apr 1999 - Dec 2001	2002	12	0	5	N/A
	Jan 2002 - Feb 2004	2006	14	0	5	N/A
	Mar 2004 - Dec 2007	2010	44	1	8	7
	Jan 2008 - Dec 2011	New	40	1	7	6
	Apr 1999 - Dec 2011	All	110	2	19	18

Fecal Coliform Geomean	Data Analysis Period	303(d) list*	Geomean Sample Size (n>=5)	Geomean Exceedances (n>=5)	Allowable Exceedance (List if = or >)	Allowable Exceedance (Delist if = or <)
	Apr 1999 - Dec 2001	2002	8	0	5	N/A
	Jan 2002 - Feb 2004	2006	7	0	5	N/A
	Mar 2004 - Dec 2007	2010	43	1	8	7
	Jan 2008 - Dec 2011	New	37	1	7	6
	Apr 1999 - Dec 2011	All	95	2	16	15
Enterococci SSM	Data Analysis Period	303(d) list*	SSM Sample Size (n=)	SSM Exceedances	Allowable Exceedance (List if = or >)	Allowable Exceedance (Delist if = or <)
	Apr 1999 - Dec 2001	2002	84	13	14	13
	Jan 2002 - Feb 2004	2006	145	17	24	23
	Mar 2004 - Dec 2007	2010	770	80	128	127
	Jan 2008 - Dec 2011	New	448	32	75	74
	Apr 1999 - Dec 2011	All	1447	142	241	240
Enterococci Geomean	Data Analysis Period	303(d) list*	Geomean Sample Size (n>=4)	Geomean Exceedances (n>=4)	Allowable Exceedance (List if = or >)	Allowable Exceedance (Delist if = or <)
	Apr 1999 - Dec 2001	2002	12	2	5	N/A
	Jan 2002 - Feb 2004	2006	14	2	5	N/A
	Mar 2004 - Dec 2007	2010	44	2	8	7
	Jan 2008 - Dec 2011	New	40	3	7	6
	Apr 1999 - Dec 2011	All	110	9	19	18
Enterococci Geomean	Data Analysis Period	303(d) list*	Geomean Sample Size (n>=5)	Geomean Exceedances (n>=5)	Allowable Exceedance (List if = or >)	Allowable Exceedance (Delist if = or <)
	Apr 1999 - Dec 2001	2002	8	1	5	N/A
	Jan 2002 - Feb 2004	2006	7	1	5	N/A
	Mar 2004 - Dec 2007	2010	43	2	8	7
	Jan 2008 - Dec 2011	New	37	3	7	6
	Apr 1999 - Dec 2011	All	95	7	16	15
TC:FC Ratio	Data Analysis Period	303(d) list*	SSM Sample Size (n=)	TC > 1000 & FC:TC > 0.1 Exceedances	Allowable Exceedance (List if = or >)	Allowable Exceedance (Delist if = or <)
	Jan 1999 - Dec 2001	2002	84	1	14	13
	Jan 2002 - Feb 2004	2006	145	0	24	23
	Mar 2004 - Dec 2007	2010	770	32	128	127
	Jan 2008 - Dec 2011	New	448	8	75	74
	Jan 1999 - Dec 2011	All	1447	41	241	240

¹ = Data sources for Moonlight State Beach include:

- The County of San Diego, Department of Environmental Health, AB 411 data (April 1999 – December 2011);
- The City of Encinitas, Coastal Storm Drain Monitoring data, beach samples ONLY (October 2007 – December 2011); and
- The Moonlight Beach Urban Runoff Treatment Facility Final Report (City of Encinitas, 2006) (May 2000 – July 2006).

Table B-2. Impairment Analysis for Batiquitos Lagoon (1999 – 2011)²

Total Coliform SSM	Data Analysis Period	303(d) list*	SSM Sample Size (n=)	SSM Exceedances	Allowable Exceedance (List if = or >)	Allowable Exceedance (Delist if = or <)
	Apr 1999 - Dec 2001	2002	117	0	20	19
	Jan 2002 - Feb 2004	2006	113	0	19	18
	Mar 2004 - Dec 2007	2010	264	4	44	43
	Jan 2008 - Dec 2011	New	141	0	24	23
	Apr 1999 - Dec 2011	All	635	4	106	105
Total Coliform GeoMean	Data Analysis Period	303(d) list*	Geomean Sample Size (n>=4)	Geomean Exceedances (n>=4)	Allowable Exceedance (List if = or >)	Allowable Exceedance (Delist if = or <)
	Apr 1999 - Dec 2001	2002	19	0	5	N/A
	Jan 2002 - Feb 2004	2006	19	0	5	N/A
	Mar 2004 - Dec 2007	2010	32	0	6	5
	Jan 2008 - Dec 2011	New	23	0	5	N/A
	Apr 1999 - Dec 2011	All	93	0	17	16
Total Coliform GeoMean	Data Analysis Period	303(d) list*	Geomean Sample Size (n>=5)	Geomean Exceedances (n>=5)	Allowable Exceedance (List if = or >)	Allowable Exceedance (Delist if = or <)
	Apr 1999 - Dec 2001	2002	11	0	5	N/A
	Jan 2002 - Feb 2004	2006	10	0	5	N/A
	Mar 2004 - Dec 2007	2010	18	0	5	N/A
	Jan 2008 - Dec 2011	New	13	0	5	N/A
	Apr 1999 - Dec 2011	All	52	0	10	9
Fecal Coliform SSM	Data Analysis Period	303(d) list*	SSM Sample Size (n=)	SSM Exceedances	Allowable Exceedance (List if = or >)	Allowable Exceedance (Delist if = or <)
	Apr 1999 - Dec 2001	2002	117	0	20	19
	Jan 2002 - Feb 2004	2006	113	0	19	18
	Mar 2004 - Dec 2007	2010	264	13	44	43
	Jan 2008 - Dec 2011	New	141	0	24	23
	Apr 1999 - Dec 2011	All	635	13	106	105
Fecal Coliform Geomean	Data Analysis Period	303(d) list*	Geomean Sample Size (n>=4)	Geomean Exceedances (n>=4)	Allowable Exceedance (List if = or >)	Allowable Exceedance (Delist if = or <)
	Apr 1999 - Dec 2001	2002	19	0	5	N/A
	Jan 2002 - Feb 2004	2006	19	0	5	N/A
	Mar 2004 - Dec 2007	2010	32	0	6	5
	Jan 2008 - Dec 2011	New	23	0	5	N/A
	Apr 1999 - Dec 2011	All	93	0	17	16

Fecal Coliform Geomean	Data Analysis Period	303(d) list*	Geomean Sample Size (n>=5)	Geomean Exceedances (n>=5)	Allowable Exceedance (List if = or >)	Allowable Exceedance (Delist if = or <)
	Apr 1999 - Dec 2001	2002	11	0	5	N/A
	Jan 2002 - Feb 2004	2006	10	0	5	N/A
	Mar 2004 - Dec 2007	2010	18	0	5	N/A
	Jan 2008 - Dec 2011	New	13	0	5	N/A
	Apr 1999 - Dec 2011	All	52	0	10	9
Enterococci SSM	Data Analysis Period	303(d) list*	SSM Sample Size (n=)	SSM Exceedances	Allowable Exceedance (List if = or >)	Allowable Exceedance (Delist if = or <)
	Apr 1999 - Dec 2001	2002	117	6	20	19
	Jan 2002 - Feb 2004	2006	113	1	19	18
	Mar 2004 - Dec 2007	2010	264	25	44	43
	Jan 2008 - Dec 2011	New	141	2	24	23
	Apr 1999 - Dec 2011	All	635	34	106	105
Enterococci Geomean	Data Analysis Period	303(d) list*	Geomean Sample Size (n>=4)	Geomean Exceedances (n>=4)	Allowable Exceedance (List if = or >)	Allowable Exceedance (Delist if = or <)
	Apr 1999 - Dec 2001	2002	19	0	5	N/A
	Jan 2002 - Feb 2004	2006	19	0	5	N/A
	Mar 2004 - Dec 2007	2010	32	2	6	5
	Jan 2008 - Dec 2011	New	23	0	5	N/A
	Apr 1999 - Dec 2011	All	93	2	17	16
Enterococci Geomean	Data Analysis Period	303(d) list*	Geomean Sample Size (n>=5)	Geomean Exceedances (n>=5)	Allowable Exceedance (List if = or >)	Allowable Exceedance (Delist if = or <)
	Apr 1999 - Dec 2001	2002	11	0	5	N/A
	Jan 2002 - Feb 2004	2006	10	0	5	N/A
	Mar 2004 - Dec 2007	2010	18	2	5	N/A
	Jan 2008 - Dec 2011	New	13	0	5	N/A
	Apr 1999 - Dec 2011	All	52	2	10	9
TC:FC Ratio	Data Analysis Period	303(d) list*	SSM Sample Size (n=)	TC > 1000 & FC:TC > 0.1 Exceedances	Allowable Exceedance (List if = or >)	Allowable Exceedance (Delist if = or <)
	Apr 1999 - Dec 2001	2002	117	0	20	19
	Jan 2002 - Feb 2004	2006	113	0	19	18
	Mar 2004 - Dec 2007	2010	264	11	44	43
	Jan 2008 - Dec 2011	New	141	0	24	23
	Apr 1999 - Dec 2011	All	635	11	106	105

2 = The data sources for Batiquitos Lagoon:

- the County of San Diego, Department of Environmental Health, AB 411 data (April 1999 – November 2011).

Table B-3. Impairment Analysis for Swami's (1999 – 2011)³

Total Coliform SSM	Data Analysis Period	303(d) list*	SSM Sample Size (n=)	SSM Exceedances	Allowable Exceedance (List if = or >)	Allowable Exceedance (Delist if = or <)
	Apr 1999 - Dec 2001	2002	78	0	13	12
	Jan 2002 - Feb 2004	2006	91	0	15	14
	Mar 2004 - Dec 2007	2010	121	1	20	19
	Jan 2008 - Dec 2011	New	104	0	18	17
	Apr 1999 - Dec 2011	All	394	1	66	65
Total Coliform GeoMean	Data Analysis Period	303(d) list*	Geomean Sample Size (n>=4)	Geomean Exceedances (n>=4)	Allowable Exceedance (List if = or >)	Allowable Exceedance (Delist if = or <)
	Apr 1999 - Dec 2001	2002	16	0	5	N/A
	Jan 2002 - Feb 2004	2006	14	0	5	N/A
	Mar 2004 - Dec 2007	2010	22	0	5	N/A
	Jan 2008 - Dec 2011	New	19	0	5	N/A
	Apr 1999 - Dec 2011	All	71	0	12	11
Total Coliform GeoMean	Data Analysis Period	303(d) list*	Geomean Sample Size (n>=5)	Geomean Exceedances (n>=5)	Allowable Exceedance (List if = or >)	Allowable Exceedance (Delist if = or <)
	Apr 1999 - Dec 2001	2002	8	0	5	N/A
	Jan 2002 - Feb 2004	2006	9	0	5	N/A
	Mar 2004 - Dec 2007	2010	11	0	5	N/A
	Jan 2008 - Dec 2011	New	9	0	5	N/A
	Apr 1999 - Dec 2011	All	37	0	7	6
Fecal Coliform SSM	Data Analysis Period	303(d) list*	SSM Sample Size (n=)	SSM Exceedances	Allowable Exceedance (List if = or >)	Allowable Exceedance (Delist if = or <)
	Apr 1999 - Dec 2001	2002	78	0	13	12
	Jan 2002 - Feb 2004	2006	91	0	15	14
	Mar 2004 - Dec 2007	2010	121	0	20	19
	Jan 2008 - Dec 2011	New	104	0	18	17
	Apr 1999 - Dec 2011	All	394	0	66	65
Fecal Coliform GeoMean	Data Analysis Period	303(d) list*	Geomean Sample Size (n>=4)	Geomean Exceedances (n>=4)	Allowable Exceedance (List if = or >)	Allowable Exceedance (Delist if = or <)
	Apr 1999 - Dec 2001	2002	16	0	5	N/A
	Jan 2002 - Feb 2004	2006	14	0	5	N/A
	Mar 2004 - Dec 2007	2010	22	0	5	N/A
	Jan 2008 - Dec 2011	New	19	0	5	N/A
	Apr 1999 - Dec 2011	All	71	0	12	11

Fecal Coliform GeoMean	Data Analysis Period	303(d) list*	Geomean Sample Size (n>=5)	Geomean Exceedances (n>=5)	Allowable Exceedance (List if = or >)	Allowable Exceedance (Delist if = or <)
	Apr 1999 - Dec 2001	2002	8	0	5	N/A
	Jan 2002 - Feb 2004	2006	9	0	5	N/A
	Mar 2004 - Dec 2007	2010	11	0	5	N/A
	Jan 2008 - Dec 2011	New	9	0	5	N/A
	Apr 1999 - Dec 2011	All	37	0	7	6
Enterococci SSM	Data Analysis Period	303(d) list*	SSM Sample Size (n=)	SSM Exceedances	Allowable Exceedance (List if = or >)	Allowable Exceedance (Delist if = or <)
	Apr 1999 - Dec 2001	2002	78	0	13	12
	Jan 2002 - Feb 2004	2006	92	0	16	15
	Mar 2004 - Dec 2007	2010	121	5	20	19
	Jan 2008 - Dec 2011	New	104	0	18	17
	Apr 1999 - Dec 2011	All	395	5	66	65
Enterococci Geomean	Data Analysis Period	303(d) list*	Geomean Sample Size (n>=4)	Geomean Exceedances (n>=4)	Allowable Exceedance (List if = or >)	Allowable Exceedance (Delist if = or <)
	Apr 1999 - Dec 2001	2002	16	0	5	N/A
	Jan 2002 - Feb 2004	2006	14	0	5	N/A
	Mar 2004 - Dec 2007	2010	22	0	5	N/A
	Jan 2008 - Dec 2011	New	19	1	5	N/A
	Apr 1999 - Dec 2011	All	71	1	12	11
Enterococci Geomean	Data Analysis Period	303(d) list*	Geomean Sample Size (n>=5)	Geomean Exceedances (n>=5)	Allowable Exceedance (List if = or >)	Allowable Exceedance (Delist if = or <)
	Apr 1999 - Dec 2001	2002	8	0	5	N/A
	Jan 2002 - Feb 2004	2006	9	0	5	N/A
	Mar 2004 - Dec 2007	2010	11	0	5	N/A
	Jan 2008 - Dec 2011	New	9	0	5	N/A
	Apr 1999 - Dec 2011	All	37	0	7	6
TC:FC Ratio	Data Analysis Period	303(d) list*	SSM Sample Size (n=)	TC > 1000 & FC:TC > 0.1 Exceedances	Allowable Exceedance (List if = or >)	Allowable Exceedance (Delist if = or <)
	Apr 1999 - Dec 2001	2002	78	0	13	12
	Jan 2002 - Feb 2004	2006	91	0	15	14
	Mar 2004 - Dec 2007	2010	121	0	20	19
	Jan 2008 - Dec 2011	New	104	0	18	17
	Apr 1999 - Dec 2011	All	394	0	66	65

³ = Data sources for Swami's include:

- The County of San Diego, Department of Environmental Health, AB 411 data (April 1999 – December 2011) and
- The City of Encinitas, Coastal Storm Drain Monitoring data (October 2007 – December 2011).

Table B-4. Impairment Analysis for Ponto Drive (1998 – 2011)⁴

Total Coliform SSM	Data Analysis Period	303(d) list*	SSM Sample Size (n=)	SSM Exceedances	Allowable Exceedance (List if = or >)	Allowable Exceedance (Delist if = or <)
	Dec 1998 - Dec 2001	2002	147	0	25	24
	Jan 2002 - Feb 2004	2006	111	0	19	18
	Mar 2004 - Dec 2007	2010	200	0	34	33
	Jan 2008 - Dec 2011	New	195	0	33	32
	Dec 1998 - Dec 2011	All	653	0	109	108
Total Coliform GeoMean	Data Analysis Period	303(d) list*	Geomean Sample Size (n>=4)	Geomean Exceedances (n>=4)	Allowable Exceedance (List if = or >)	Allowable Exceedance (Delist if = or <)
	Dec 1998 - Dec 2001	2002	31	0	6	5
	Jan 2002 - Feb 2004	2006	22	0	5	N/A
	Mar 2004 - Dec 2007	2010	45	0	8	7
	Jan 2008 - Dec 2011	New	43	0	10	9
	Dec 1998 - Dec 2011	All	141	0	26	25
Total Coliform GeoMean	Data Analysis Period	303(d) list*	Geomean Sample Size (n>=5)	Geomean Exceedances (n>=5)	Allowable Exceedance (List if = or >)	Allowable Exceedance (Delist if = or <)
	Dec 1998 - Dec 2001	2002	11	0	5	N/A
	Jan 2002 - Feb 2004	2006	7	0	5	N/A
	Mar 2004 - Dec 2007	2010	17	0	5	N/A
	Jan 2008 - Dec 2011	New	15	0	5	N/A
	Dec 1998 - Dec 2011	All	50	0	9	8
Fecal Coliform SSM	Data Analysis Period	303(d) list*	SSM Sample Size (n=)	SSM Exceedances	Allowable Exceedance (List if = or >)	Allowable Exceedance (Delist if = or <)
	Dec 1998 - Dec 2001	2002	147	0	25	24
	Jan 2002 - Feb 2004	2006	107	0	18	17
	Mar 2004 - Dec 2007	2010	200	0	34	33
	Jan 2008 - Dec 2011	New	195	0	33	32
	Dec 1998 - Dec 2011	All	649	0	108	107
Fecal Coliform GeoMean	Data Analysis Period	303(d) list*	Geomean Sample Size (n>=4)	Geomean Exceedances (n>=4)	Allowable Exceedance (List if = or >)	Allowable Exceedance (Delist if = or <)
	Dec 1998 - Dec 2001	2002	31	0	6	5
	Jan 2002 - Feb 2004	2006	22	0	5	N/A
	Mar 2004 - Dec 2007	2010	45	0	8	7
	Jan 2008 - Dec 2011	New	43	0	10	9
	Dec 1998 - Dec 2011	All	141	0	26	25

Fecal Coliform Geomean	Data Analysis Period	303(d) list*	Geomean Sample Size (n>=5)	Geomean Exceedances (n>=5)	Allowable Exceedance (List if = or >)	Allowable Exceedance (Delist if = or <)
	Dec 1998 - Dec 2001	2002	11	0	5	N/A
	Jan 2002 - Feb 2004	2006	7	0	5	N/A
	Mar 2004 - Dec 2007	2010	17	0	5	N/A
	Jan 2008 - Dec 2011	New	15	0	5	N/A
	Dec 1998 - Dec 2011	All	50	0	9	8
Enterococci SSM	Data Analysis Period	303(d) list*	SSM Sample Size (n=)	SSM Exceedances	Allowable Exceedance (List if = or >)	Allowable Exceedance (Delist if = or <)
	Dec 1998 - Dec 2001	2002	147	0	25	24
	Jan 2002 - Feb 2004	2006	103	0	17	16
	Mar 2004 - Dec 2007	2010	200	2	34	33
	Jan 2008 - Dec 2011	New	195	1	33	32
	Dec 1998 - Dec 2011	All	645	3	107	106
Enterococci Geomean	Data Analysis Period	303(d) list*	Geomean Sample Size (n>=4)	Geomean Exceedances (n>=4)	Allowable Exceedance (List if = or >)	Allowable Exceedance (Delist if = or <)
	Dec 1998 - Dec 2001	2002	31	0	6	5
	Jan 2002 - Feb 2004	2006	22	0	5	N/A
	Mar 2004 - Dec 2007	2010	45	0	8	7
	Jan 2008 - Dec 2011	New	43	0	10	9
	Dec 1998 - Dec 2011	All	141	0	26	25
Enterococci Geomean	Data Analysis Period	303(d) list*	Geomean Sample Size (n>=5)	Geomean Exceedances (n>=5)	Allowable Exceedance (List if = or >)	Allowable Exceedance (Delist if = or <)
	Dec 1998 - Dec 2001	2002	11	0	5	N/A
	Jan 2002 - Feb 2004	2006	7	0	5	N/A
	Mar 2004 - Dec 2007	2010	17	0	5	N/A
	Jan 2008 - Dec 2011	New	15	0	5	N/A
	Dec 1998 - Dec 2011	All	50	0	9	8
TC:FC Ratio	Data Analysis Period	303(d) list*	SSM Sample Size (n=)	TC > 1000 & FC:TC > 0.1 Exceedances	Allowable Exceedance (List if = or >)	Allowable Exceedance (Delist if = or <)
	Dec 1998 - Dec 2001	2002	147	0	25	24
	Jan 2002 - Feb 2004	2006	111	0	19	18
	Mar 2004 - Dec 2007	2010	200	0	34	33
	Jan 2008 - Dec 2011	New	195	0	33	32
	Dec 1998 - Dec 2011	All	653	0	109	108

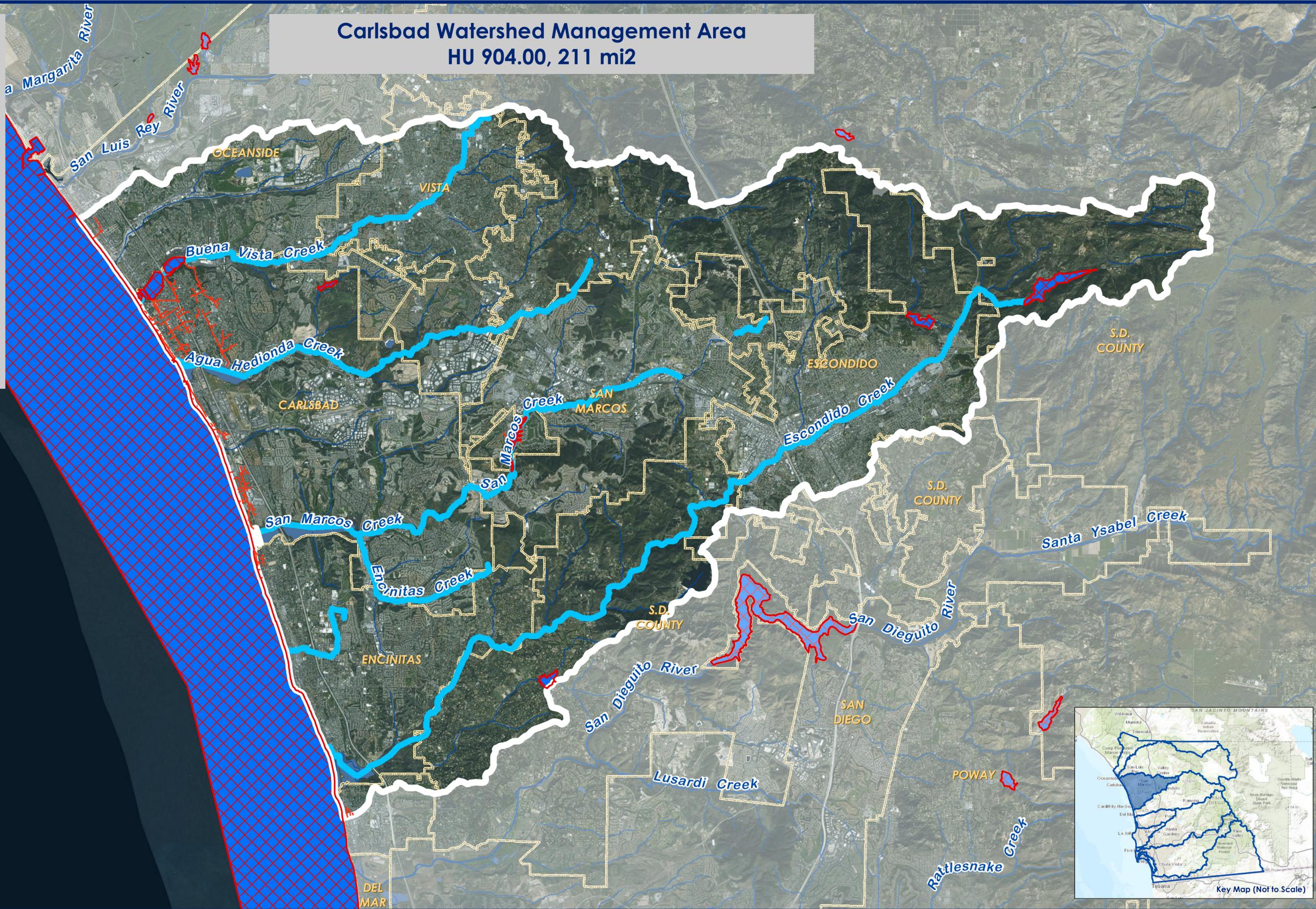
4 = The data source for Ponto Drive:

- County of San Diego, Department of Environmental Health, AB 411 data (December 1998 – December 2011).

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Carlsbad Watershed Management Area HU 904.00, 211 mi²

- Legend**
-  Watershed Boundaries
 -  Municipal Boundaries
 -  Regional WMAA Streams
 -  Exempt Bodies:
Water Storage Reservoirs, Lakes,
Enclosed Embayments, Pacific
Ocean, Buena Vista Lagoon
 -  Exempt River Reaches:
Reaches of San Luis Rey River, San
Dieguito River, San Diego River,
Forester Creek, Sweetwater River,
Otay River
 -  Exempt Conveyance Systems:
Existing underground storm drains or
conveyance channels whose bed
and bank are concrete-lined,
discharging directly to exempt water
bodies, exempt rivers, or localized
areas of Agua Hedionda Lagoon and
Batiquitos Lagoon



Receiving Waters and Conveyance Systems Exempt from Hydromodification Management Requirements

Exhibit Date: Sept. 8, 2014



Aerial Imagery Source: DigitalGlobe, 09/2012

ATTACHMENT C
ELECTRONIC FILES

Electronic Folder titled “Carlsbad_WMAA_Attachment C Electronic_Data.zip” Contents:

1. ArcMap 10.0 and 10.1 map files created for purpose of viewing Regional WMAA data
 - WMAA_03_Carlsbad_Data_2014_0908_v10.mxd
 - WMAA_05_Carlsbad_Data_2014_0908_v101.mxd
2. ESRI Geodatabase titled " WMAA_03_ Carlsbad_Data_2014_0908_v10.gdb" containing the following data:
 - WatershedBoundaries
 - Watershed_Boundaries
 - HydrologicProcesses
 - HRUAnalysis
 - Streams – description of existing streams in the watershed
 - SD_Regional_WMAA_Streams (streams selected for detailed analysis)
 - SD_NHD_Streams (portion of NHD dataset included for reference)
 - LandUsePlanning
 - SanGIS_ExistingLandUse
 - SanGIS_PlannedLandUse
 - SanGIS_DevelopableLands
 - SanGIS_RedevelopmentandInfill
 - SanGIS_MunicipalBoundaries
 - Federal_State_Indian_Lands
 - SanGIS_MHPA_SD
 - SanGIS_MSCP_CN
 - SanGIS_MSCP_EAST_DRAFT_CN
 - SanGIS_Draft_North_County_MSCP_Version_8_Categories
 - PotentialCoarseSedimentYield
 - GLUAnalysis
 - PotentialCoarseSedimentYieldAreas
 - MacroLevelPotentialCriticalAreas
 - PotentialCriticalCoarseSedimentYieldAreas
 - ChannelStructures
 - ChannelStructures
 - HydromodExemptions
 - Exempt_Systems
 - Exempt_Bodies
 - Floodplains: included for reference
 - FEMA_NFHL
 - Baselayers: included for reference
 - SanGIS_Lakes
 - link to ESRI World Imagery (internet connection is required to access ESRI World Imagery basemap)

Electronic Folder titled “Carlsbad _WMAA_Attachment C Electronic_Data.zip” Contents, continued:

3. Google Earth – KMZ file titled: “WMAA_03_Carlsbad _Data_2014_0908_GoogleEarth.kmz”, containing the following data:
 - WatershedBoundaries
 - Streams
 - SD Regional WMAA Streams (streams selected for detailed analysis)
 - SD NHD Streams (portion of NHD dataset included for reference)
 - LandUsePlanning
 - Municipal Boundaries
 - Federal/State/Indian Lands
 - ChannelStructures
 - HydromodExemptions
 - Exempt_Systems
 - Exempt_Bodies
 - Floodplains: included for reference
 - FEMA Floodplain
 - Dominant Hydrologic Processes
 - Potential Critical Coarse Sediment Yield Areas

Notes:

- Open a map file (with extension .mxd) using ArcMap to view the data.
- All data contained in the geodatabase is loaded into the map.

ATTACHMENT D
REGIONAL MS4 PERMIT CROSSWALK

Table below provides a linkage between the Regional MS4 Permit requirements for WMAA and this report.

Regional MS4 Permit Provision	Regional WMAA Report
B.3.b.(4)(a)	Chapter 2; Section 5.1; Attachment A and Attachment C
B.3.b.(4)(a)(i)	Section 2.1; Attachment A.1 and Attachment C
B.3.b.(4)(a)(ii)	Section 2.2; Attachment A.2 and Attachment C
B.3.b.(4)(a)(iii)	Section 2.3; Attachment A.3 and Attachment C
B.3.b.(4)(a)(iv)	Section 2.4; Attachment A.4 and Attachment C
B.3.b.(4)(a)(v)	Section 2.5; Attachment A.5 and Attachment C
B.3.b.(4)(b)	Chapter 3 and Section 5.2
B.3.b.(4)(c)	Chapter 4; Section 5.3; Attachment B and Attachment C

Attachment 5

Offsite Alternative Compliance Candidate Projects List

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Carlsbad Watershed Management Area Offsite Alternative Compliance Candidate Projects Listing

Project Identifier	Hydrologic Area (HA)	Hydrologic Subarea (HSA)	Jurisdiction	Project Name	Ownership		Project Location				Project Origination/Originator		Project Category	Specific Project Type	Potential Pollutant	Project Size & Parameters			Project Timeline	Other Notes	Originating Report	E-Mail	Phone	Contact Address
					Type	Owner Information	Address	APN	Latitude	Longitude	Name	Contact Information				Contributing Drainage Area (acres)	Parcel Size (acres)	Project Footprint (acres)						
ESC - C1	N/A	N/A	N/A	Trash Enclosure Retrofits	N/A	N/A	Various locations in Escondido	Various	Various	Various	City of Escondido	Helen Davies	Retrofitting existing infrastructure	N/A	Multiple (Primary: Bacteria)	N/A	N/A	N/A	Ongoing	Retrofit trash management areas on publically-owned land (including properties leased to businesses) to prevent rainwater exposure to trash.	-	-	-	-
ESC - C2	Escondido Creek	Escondido (904.62)	ESCONDIDO	Centre City Parkway Improvements	Public	City of Escondido	N/A	Various	Various	Various	City of Escondido	Helen Davies	Retrofitting existing infrastructure	Green Streets	Multiple (Primary: Bacteria)	N/A	N/A	N/A	Future (Year to be determined)	Centre City Parkway will be evaluated for a green streets project that will facilitate runoff infiltration/treatment, and use California-friendly landscaping to reduce water and turf use. If feasible in this watershed, then the project referenced here will be used for implementation.	-	-	-	-
ESC - C3	Escondido Creek	Escondido (904.62)	ESCONDIDO	Woodward Parking Lot	Public	City of Escondido	N/A	131 Woodward Avenue	Various	Various	City of Escondido	Helen Davies	Retrofitting existing infrastructure	LID	Multiple (Primary: Bacteria)	N/A	N/A	N/A	Future (Year to be determined)	Woodward Parking Lot is a municipal property that could be retrofitted to drain to low impact development structures and thereby improve water quality before it is discharged to Escondido Creek.	-	-	-	-
ESC - C4	Escondido Creek	Escondido (904.62)	ESCONDIDO	Spruce Street Channel Improvement	Public	City of Escondido	N/A	Various	Various	Various	City of Escondido	Helen Davies	Stream or riparian area rehabilitation	Habitat Restoration	Multiple (Primary: Bacteria)	N/A	N/A	N/A	Future (Year to be determined)	Drainage channel near Spruce and Grand that drains to Escondido Creek needs maintenance that could be combined with improvements to prevent future discharges to the channel and to improve water quality and habitat in the channel. Project also known as "Mission Pools."	-	-	-	-
ESC - C5	Escondido Creek	Escondido (904.62)	ESCONDIDO	Various locations	Public-private partnership	City of Escondido	N/A	Various	Various	Various	City of Escondido	Helen Davies	Retrofitting existing infrastructure	LID	Multiple (Primary: Bacteria)	N/A	N/A	N/A	Future (Year to be determined)	Identify properties that could be retrofitted with BMPs to improve water quality. Priority will be given to areas with large impervious area (e.g., substantial parking lots).	-	-	-	-
ESC - C6	Escondido Creek	Escondido (904.62)	ESCONDIDO	Various locations	Public	City of Escondido	N/A	Various	Various	Various	City of Escondido	Helen Davies	Retrofitting existing infrastructure	LID	Multiple (Primary: Bacteria)	N/A	N/A	N/A	Future (Year to be determined)	Retrofit landscaped areas with BMPs and California-friendly landscaping.	-	-	-	-
ESC - C7	Escondido Creek	Escondido (904.62)	ESCONDIDO	Grand Avenue	Public	City of Escondido	N/A	Various	Various	Various	City of Escondido	Helen Davies	Retrofitting existing infrastructure	Green Streets	Multiple (Primary: Bacteria)	N/A	N/A	N/A	Future (Year to be determined)	Future planned improvements for Grand Avenue could include incorporation of BMPs to improve water quality.	-	-	-	-
ESC - C8	Escondido Creek	Escondido (904.62)	ESCONDIDO	Grape Day Park	Public	City of Escondido	N/A	Various	Various	Various	City of Escondido	Helen Davies	Other project types allowed by MS4 Permit	Infiltration in concrete channel	Multiple (Primary: Bacteria)	N/A	N/A	N/A	Future (Year to be determined)	Evaluate if there are ways to enhance/restore Escondido Channel near Grape Day park and to introduce more natural hydraulic function. This project would be used for enhancement/restoration activities.	-	-	-	-
ESC - C9	Escondido Creek	Escondido (904.62)	ESCONDIDO	1345 Stanley	Public	City of Escondido	1345 Stanely Way	Various	Various	Various	City of Escondido	Helen Davies	Other project types allowed by MS4 Permit	NA	Multiple (Primary: Bacteria)	N/A	N/A	N/A	Future (Year to be determined)	There is an area at the south end of this publically-owned parcel that could be used to install a BMP to treat the water collected in this drainage.	-	-	-	-
ESC - C10	Escondido Creek	Escondido (904.62)	ESCONDIDO	Willow Walk*	Public-private partnership	City of Escondido	N/A	Various	Various	Various	City of Escondido	Helen Davies	Stream or riparian area rehabilitation	Habitat Restoration	Multiple (Primary: Bacteria)	N/A	N/A	N/A	Future (Year to be determined)	*Project being led by The Escondido Creek Conservancy. Could combine public access to creek and enhancement of riparian habitat.	-	-	-	-

Carlsbad Watershed Management Area Offsite Alternative Compliance Candidate Projects Listing

Project Identifier	Hydrologic Area (HA)	Hydrologic Subarea (HSA)	Jurisdiction	Project Name	Ownership		Project Location				Project Origination/Originator		Project Category	Specific Project Type	Potential Pollutant	Project Size & Parameters			Project Timeline	Other Notes	Originating Report	E-Mail	Phone	Contact Address
					Type	Owner Information	Address	APN	Latitude	Longitude	Name	Contact Information				Contributing Drainage Area (acres)	Parcel Size (acres)	Project Footprint (acres)						
CLB-10	San Marcos	Richland (904.52)	SAN MARCOS	SDA10 INLINE TREATMENT 210505	Public	SAN MARCOS 197 OWNERS ASSOCIATION	ROCK SPRINGS ROAD AND BENNETT AVE	2267201500	1998100.03	6294667.31	S.D. COUNTY	-	Regional BMP's	STRUCTURAL BMP	-	352.05	-	-	-	SDA 10, EX DUAL 8"x4" RCB, CAPACITY UNKNOWN, AREA IS ADJACENT TO A GREEN BELT WITH CONC. SPILLWAY, RECOMMENDED INLINE TREATMENT.	SDA 10 STORMWATER QUALITY MASTER PLAN	-	-	-
CLB-15	San Marcos	Richland (904.52)	S.D. COUNTY	SDA10 INLINE TREATMENT 260432	Public	DOLDER FAMILY TRUST 12-30-97, GUTHRIE LARRY R LIVING TRUST 07-15-10	CAMINO DEL LAGO AND SAN MARINO DR	2220310600	1988683.24	6267762.05	S.D. COUNTY	-	Regional BMP's	BASIN	-	278.15	-	-	-	SDA 10, EX 66" CIPP. NEW EASEMENTS MAY BE NECESSARY FOR BASIN TREATMENT. RECOMMENDED INLINE TREATMENT.	SDA 10 STORMWATER QUALITY MASTER PLAN	-	-	-
CLB-3	San Marcos	Richland (904.52)	S.D. COUNTY	SDA10 INLINE TREATMENT 260376	Public	S.D. COUNTY	SAN PABLO DR AND LA PLAZA DR, SAN MARCOS	2215104500	1988288.5	6269120.98	S.D. COUNTY	-	Regional BMP's	STRUCTURAL BMP	-	60.03	-	-	-	SDA 10, EX 24" CMP HAS INADEQUATE CAPACITY, RECOMMENDED INLINE TREATMENT, DISCHARGES TO LAKE.	SDA 10 STORMWATER QUALITY MASTER PLAN	-	-	-
CLB-4	San Marcos	Richland (904.52)	S.D. COUNTY	SDA10 BASIN OR INLINE TREATMENT 260340	Public	S.D. COUNTY	VIA ENTRADA DEL LAGO	2215003500	1989555.45	6268401.16	S.D. COUNTY	-	Regional BMP's	BASIN OR STRUCTURAL BMP	-	26.69	-	-	-	SDA 10, EX 42" RCP, RECOMMENDED INLINE TREATMENT OR OFFLINE BASIN (MAY REQUIRE AN EASEMENT) IF AREA IS AVAILABLE.	SDA 10 STORMWATER QUALITY MASTER PLAN	-	-	-
CLB-5	San Marcos	Richland (904.52)	S.D. COUNTY	SDA10 BASIN OR INLINE TREATMENT 260285	Public	S.D. COUNTY	SAN MARINO DR AND SAN PABLO DR	N/A	1990234.44	6269272.29	S.D. COUNTY	-	Regional BMP's	BASIN OR STRUCTURAL BMP	-	19.58	-	-	-	SDA 10, EX 36" CMP HAS INADEQUATE CAPACITY FOR 100-YR FLOW. RECOMMENDED INLINE TREATMENT, BASIN TREATMENT MAY REQUIRE EASEMENTS DUE TO INADEQUATE AREA	SDA 10 STORMWATER QUALITY MASTER PLAN	-	-	-
CLB-6	San Marcos	Richland (904.52)	S.D. COUNTY	SDA10 BASIN OR INLINE TREATMENT 260256	Public	S.D. COUNTY	LA FIESTA DR/LA FIESTA LN	2212400100	1990915.91	6269267.78	S.D. COUNTY	-	Regional BMP's	BASIN OR STRUCTURAL BMP	-	44.69	-	-	-	SDA 10, EX 24" CMP DOES NOT HAVE ADEQUATE CAPACITY FOR 100 YR FLOW, RECOMMENDED INLINE TREATMENT. EASEMENTS MAY BE NEEDED IF A BASIN IS DESIRED.	SDA 10 STORMWATER QUALITY MASTER PLAN	-	-	-
CLB-7	San Marcos	Richland (904.52)	S.D. COUNTY	SDA10 INLINE TREATMENT 260235	Public	S.D. COUNTY	NORTH OF SAN PABLO DR	2212400100	1990799.55	6269535.15	S.D. COUNTY	-	Regional BMP's	STRUCTURAL BMP	-	44.94	-	-	-	SDA 10, EX DOUBLE 36" X 22" CSPA DOES NOT HAVE ADEQUATE CAPACITY FOR 100 YR FLOW, RECOMMENDED INLINE TREATMENT. EASEMENTS MAY BE NEEDED IF A BASIN IS DESIRED.	SDA 10 STORMWATER QUALITY MASTER PLAN	-	-	-
CLB-8	San Marcos	Richland (904.52)	S.D. COUNTY	SDA10 INLINE TREATMENT 260130	Public	S.D. COUNTY	DISCOVERY STREET AND W SAN MARCOS BLVD	N/A	1992450.88	6270711.81	S.D. COUNTY	-	Regional BMP's	STRUCTURAL BMP	-	31.95	-	-	-	SDA 10, NO ADJACENT SD, RECOMMENDED INLINE STRUCTURAL TREATMENT, OR OFFLINE BASIN IF AREA IS AVAILABLE.	SDA 10 STORMWATER QUALITY MASTER PLAN	-	-	-
CLB-9	San Marcos	Richland (904.52)	S.D. COUNTY	SDA10 INLINE TREATMENT 260125	Public	S.D. COUNTY	DISCOVERY ST AND SAN PABLO DR	N/A	1992215.14	6270871.83	S.D. COUNTY	-	Regional BMP's	STRUCTURAL BMP	-	47.3	-	-	-	SDA 10, NO ADJACENT SD, RECOMMENDED INLINE STRUCTURAL TREATMENT, OR OFFLINE BASIN IF AREA IS AVAILABLE.	SDA 10 STORMWATER QUALITY MASTER PLAN	-	-	-
CLB-11	San Marcos	Twin Oaks (904.53)	SAN MARCOS	SDA10 BASIN 200580	Public	GONZALES LIVING TRUST 05-13-04, LEE ROBERT J&SUE J, WIBERG ARLAND M FAMILY TRUST, PANNO ANDREW JR&CLARICE J	ROBINHOOD RD (PRIVATE)	1821102700	2008751.06	6280679.22	S.D. COUNTY	-	Regional BMP's	BASIN	-	76.22	-	-	-	SDA 10, NO ADJACENT SD, ADJACENT TO WATER OF THE U.S., BASIN TREATMENT COULD BE CONSIDERED IN EX GRADED/DISTURBED AREAS.	SDA 10 STORMWATER QUALITY MASTER PLAN	-	-	-
CLB-12	San Marcos	Twin Oaks (904.53)	S.D. COUNTY	SDA10 BASIN 200438	Public	YASUKOCHI FAMILY TRUST A 05-03-89, YASUKOCHI ERNEST ET AL	MULBERRY DR AND OLIVE ST	1820761000	2009893.9	6287259.16	S.D. COUNTY	-	Regional BMP's	BASIN	-	416.34	-	-	-	SDA 10, NO ADJACENT SD, ADJACENT TO WATER OF THE U.S., OFFLINE BASIN TREATMENT COULD BE CONSIDERED IN ADJACENT GRADED/DISTURBED AREAS.	SDA 10 STORMWATER QUALITY MASTER PLAN	-	-	-

Carlsbad Watershed Management Area Offsite Alternative Compliance Candidate Projects Listing

Project Identifier	Hydrologic Area (HA)	Hydrologic Subarea (HSA)	Jurisdiction	Project Name	Ownership		Project Location				Project Origination/Originator		Project Category	Specific Project Type	Potential Pollutant	Project Size & Parameters			Project Timeline	Other Notes	Originating Report	E-Mail	Phone	Contact Address
					Type	Owner Information	Address	APN	Latitude	Longitude	Name	Contact Information				Contributing Drainage Area (acres)	Parcel Size (acres)	Project Footprint (acres)						
CLB-13	San Marcos	Twin Oaks (904.53)	S.D. COUNTY	SDA10 BASIN 200123	Public	POSITIVE LLC	TWIN OAKS VALLEY ROAD, SOUTH OF QUARRY RD	1781801500	2018573.67	6281389.95	S.D. COUNTY	-	Regional BMP's	BASIN	-	285.77	-	-	-	SDA 10, NO ADJACENT SD, RECOMMENDED INLINE TREATMENT, OFFLINE BASIN TREATMENT IS AN OPTION DEPENDING ON AVAILABLE AREA. MAY BE DIFFICULT TO AVOID WATERS OF THE U.S. COMBINE TREATMENT WITH THAT FROM SDA10 AREA 200169.	SDA 10 STORMWATER QUALITY MASTER PLAN	-	-	-
CLB-1	Escondido Creek	San Elijo (904.61)	S.D. COUNTY	Resource Management Plan for Sage Hill Preserve San Diego County Restoration of Tamarisk Scrub with Riparian Scrub	Public	COUNTY OF SAN DIEGO	ELFIN FOREST RD	6790801000	1976316.79	6275304.82	Rick Engineering Company	-	Stream or Riparian Rehabilitation	Riparian Restoration	-	-	-	-	This area is in conjunction with area to the northwest	Sage Hill Preserve Draft Resource Management Plan (Sage_Hill_RMP_Draft_June2010.pdf)	-	619-291-0707	-	
CLB-16	Escondido Creek	San Elijo (904.61)	S.D. COUNTY	SDA9 STRUCTURAL BMP 21	Public	S.D. COUNTY	ALISO CANYON RD	2652706500	1961904.66	6274492.32	S.D. COUNTY	-	Regional BMP's	STRUCTURAL BMP	-	457	-	-	SDA 9, % OF TOTAL WATERSHED TREATED=25%, CAPITAL COST \$76,000, LIFE CYCLE COST \$119,875, RANK=2, EX 48" RCP	SDA 9 STORMWATER QUALITY MASTER PLAN	-	-	-	
CLB-17	Escondido Creek	San Elijo (904.61)	S.D. COUNTY	SDA9 OPEN SPACE BMP 2	Public	RANCHO SANTA FE ASSN	RAMBLA DE LAS FLORES	2680501900	1951239.95	6261229.44	S.D. COUNTY	-	Regional BMP's	REGIONAL DETENTION BASIN	-	1778	-	7	SDA 9, CAPITAL COST \$1,167,904, LIFE CYCLE COST \$3,209,451, RANK 7	SDA 9 STORMWATER QUALITY MASTER PLAN	-	-	-	
CLB-18	Escondido Creek	San Elijo (904.61)	S.D. COUNTY	SDA9 OPEN SPACE BMP 3	Public	SAN DIEGUITO WATER DISTRICT	EL CAMINO DEL NORTE	2651800801	1960208.8	6272467.21	S.D. COUNTY	-	Regional BMP's	REGIONAL DETENTION BASIN	-	1101	-	16	SDA 9, CAPITAL COST \$858,434, LIFE CYCLE COST \$2,191,523, RANK 1	SDA 9 STORMWATER QUALITY MASTER PLAN	-	-	-	
CLB-19	Escondido Creek	San Elijo (904.61)	S.D. COUNTY	SDA9 OPEN SPACE BMP 5	Public	ELFIN ACRES PROPERTIES LLC	QUESTHAVEN RD	2640531200	1971026.07	6282238.01	S.D. COUNTY	-	Regional BMP's	REGIONAL DETENTION BASIN	-	229	-	5	SDA 9, CAPITAL COST \$763,811, LIFE CYCLE COST \$1,084,797, RANK 6	SDA 9 STORMWATER QUALITY MASTER PLAN	-	-	-	
CLB-20	Escondido Creek	San Elijo (904.61)	S.D. COUNTY	SDA9 OPEN SPACE BMP 6	Public	WHITE BYRON F 2001 REVOCABLE TRUST 08-08-01	ELFIN FOREST RD	2640530900	1971196.84	6280227.07	S.D. COUNTY	-	Regional BMP's	REGIONAL DETENTION BASIN	-	269	-	6	SDA 9, CAPITAL COST \$651,491, LIFE CYCLE COST \$1,056,921, RANK 5	SDA 9 STORMWATER QUALITY MASTER PLAN	-	-	-	
CLB-21	Escondido Creek	San Elijo (904.61)	S.D. COUNTY	SDA9 OPEN SPACE BMP 7	Public	CANCELLIER FAMILY PARTNERSHIP L P	QUESTHAVEN RD	2221220500	1979985.34	6279369.14	S.D. COUNTY	-	Regional BMP's	REGIONAL DETENTION BASIN	-	1281	-	7	SDA 9, CAPITAL COST \$1,064,890, LIFE CYCLE COST \$2,285,381, RANK 3	SDA 9 STORMWATER QUALITY MASTER PLAN	-	-	-	
CLB-22	Escondido Creek	San Elijo (904.61)	SAN MARCOS	SDA9 OPEN SPACE BMP 8	Public	S.D. COUNTY	SAN ELIJO RD	2230804300	1979125.39	6269918.44	S.D. COUNTY	-	Regional BMP's	REGIONAL DETENTION BASIN	-	527	-	12	SDA 9, CAPITAL COST \$269,791, LIFE CYCLE COST \$876,820, RANK 4	SDA 9 STORMWATER QUALITY MASTER PLAN	-	-	-	
CLB-23	Escondido Creek	San Elijo (904.61)	S.D. COUNTY	Resource Management Plan for Sage Hill Preserve San Diego County Restoration of Tamarisk Scrub with Riparian Scrub	Public	COUNTY OF SAN DIEGO	ELFIN FOREST RD	6790801000	1976316.79	6275304.82	Rick Engineering Company	-	Stream or Riparian Rehabilitation	Floodplain Preservation	-	-	-	-	This area is in conjunction with area to the northwest	Sage Hill Preserve Draft Resource Management Plan (Sage_Hill_RMP_Draft_June2010.pdf)	-	619-291-0707	-	
CLB-24	Escondido Creek	San Elijo (904.61)	ENCINITAS	San Elijo Lagoon Restoration Project	Public-Private	CA Dept. of Fish and Wildlife, SDCO DPR, San Elijo Lagoon Conservancy	San Elijo Lagoon	2620731700	1951888.26	6255326.71	Sarah Child/ Gladys Gonzalez	-	Stream Rehabilitation	Floodplain Preservation	Sediment	0	0	0	Map Exhibit of the boundaries of the project were sent to Rick Engineering throughout the FTP.	Environmental Impact Report/Environmental Impact Statement for the San Elijo Lagoon Restoration Project	Gladys.Gonzalez2@sdcounty.ca.gov	619-851-5629	5510 Overland Avenue Suite 410 San Diego, 92123	
CLB-14	Escondido Creek	Escondido (904.62)	ESCONDIDO	SDA10 INLINE TREATMENT 111547	Public	N/A	MONTIEL RD AND VIA GORDO	N/A	1991764.21	6298174.14	S.D. COUNTY	-	Regional BMP's	BASIN	-	57.41	-	-	SDA 10, EX 48" RCP, RECOMMENDED INLINE TREATMENT. DISCHARGES TO CITY OF ESCONDIDO JURISDICTIONAL LIMITS.	SDA 10 STORMWATER QUALITY MASTER PLAN	-	-	-	
CLB-2	Escondido Creek	Escondido (904.62)	S.D. COUNTY	SDA10 BASIN OR INLINE TREATMENT 110479	Public	S.D. COUNTY	BROADWAY AVE AND CALLE RICARDO	N/A	2010795.77	6303865.3	S.D. COUNTY	-	Regional BMP's	BASIN OR STRUCTURAL BMP	-	90.88	-	-	SDA 10, EX 57"X38" CSP HAS INADEQUATE CAPACITY, RECOMMENDED INLINE TREATMENT OR OFFLINE BASIN BASED ON AVAILABLE AREA, ADJACENT TO WATER OF THE U.S.	SDA 10 STORMWATER QUALITY MASTER PLAN	-	-	-	
CLB-25	Escondido Creek	Escondido (904.62)	ESCONDIDO	Escondido Creek Conservation Enhancement	Public-Private	City of Escondido and Private	Intersection of Ash Street and the Escondido Creek.	2301410100	1993032.18	6311625.17	Ann Van Leer	-	Floodplain Preservation	Land Acquisition	Multiple	5.5	5.5	5.5	-	Revealing Escondido Creek Plan	ann@landsconserve.com	858-442-0937	P.O. Box 3799 Rancho Santa Fe CA, 92067	

Carlsbad Watershed Management Area Offsite Alternative Compliance Candidate Projects Listing

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					Type	Owner Information	Address	APN	Latitude	Longitude	Name	Contact Information				Contributing Drainage Area (acres)	Parcel Size (acres)	Project Footprint (acres)						
CLB-26	Escondido Creek	Escondido (904.62)	ESCONDIDO	Grape Park Land Acquisition	City of San Diego and Private	CITY OF ESCONDIDO COMMUNITY DEVELOPMENT COMMISSION	Near 321 N. Broadway, Escondido, CA	2293521200	1989646.79	6306246.64	Ann Van Leer	-	Stream Rehabilitation	Land Acquisition	Multiple	0	0	34	-	-	Revealing Escondido Creek	ann@landsconserve.com	585-442-0937	P.O. Box 3799 Rancho Santa Fe CA, 92067
CLB-28	Escondido Creek	Escondido (904.62)	S.D. COUNTY	Escondido Creek Conservation Enhancement part 1	Public	City of Escondido	2511 Harmony Grove Rd, Escondido	2350322500	1981366.21	6294065.88	Ann Van Leer	-	Floodplain Preservation	Land Acquisition	-	0	0	0	-	This is part one out of part 3 for this proposed project. The APN number is 235-032-2500.	-	ann@landconserve.com	858-442-0937	P.O. Box 3799 Rancho Santa Fe CA, 92067
CLB-29	Escondido Creek	Escondido (904.62)	S.D. COUNTY	Escondido Creek Conservation Enhancement Part 2	Public	City of Escondido	2511 Harmony Grove Road Escondido, California	2350320600	1982036.34	6294928.92	Ann Van Leer	-	Floodplain Preservation	Land Acquisition	-	0	0	0	-	This part 2 out of 3 for this proposed project. The APN number for this section is 235-032-06.	-	ann@landconserve.com	858-442-3799	P.O. Box 3799 Rancho Santa Fe CA, 92067
CLB-30	Escondido Creek	Escondido (904.62)	S.D. COUNTY	Escondido Creek Conservation Enhancement part 3		B&W PRECAST CONSTRUCTION INC	2511 Harmony Grove Road Escondido, California	2350320700	1981241.4	6294928.25	Ann Van Leer	-	Floodplain Preservation	Land Acquisition	-	0	0	0	-	This is part 3 out of 3 parts for this proposed project. The APN number is 235-032-07.	-	ann@landconserve.com	858-442-0937	P.O. Box 3799 Rancho Santa Fe CA, 92067