San Diego Bay

Watershed Management Area Water Quality Improvement Plan

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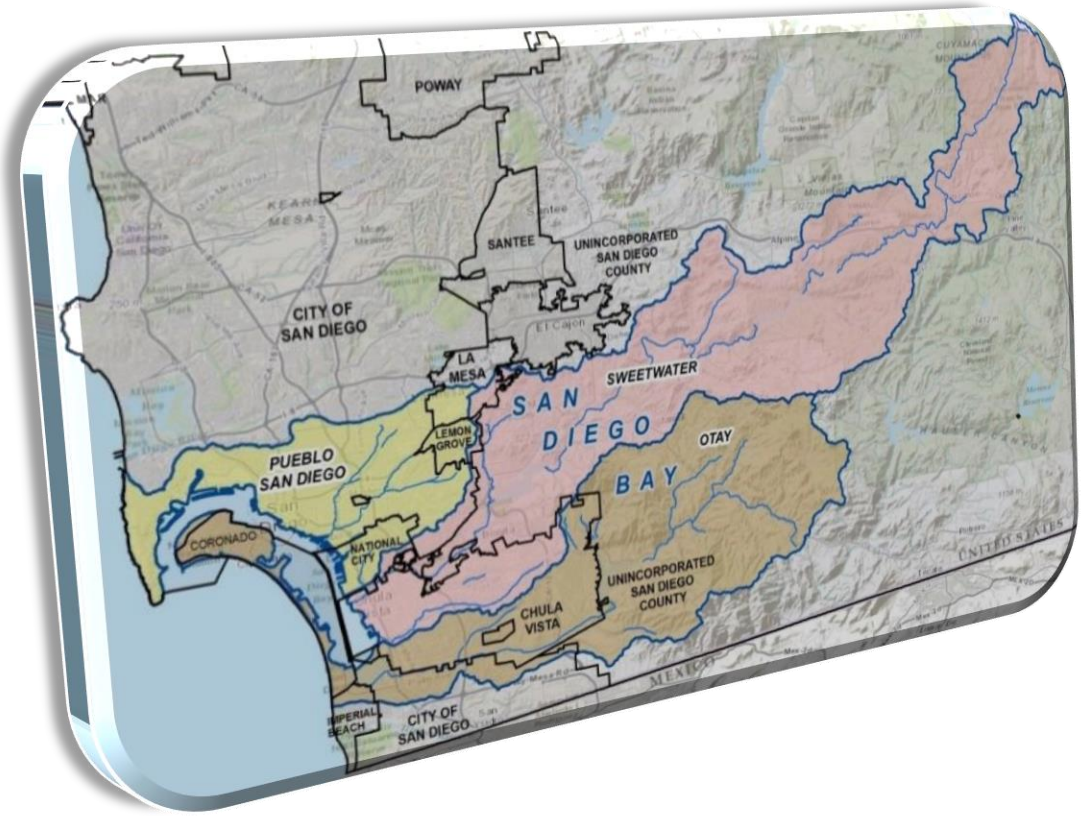
Final Deliverable: Water Quality Improvement Plan

Submitted to the

San Diego Regional Water Quality Control Board

by the San Diego Bay Responsible Parties



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Acronyms and Abbreviations

Acronym or Abbreviation	Definition
%	percent
303(d) List	CWA Section 303(d) List of Impaired Water Bodies
AB411	California Assembly Bill 411 (Beach Safety Act)
ABLM	ambient bay and lagoon monitoring
Airport Authority	San Diego County Regional Airport Authority
Bacteria TMDL	*Revised TMDLs for Indicator Bacteria, Project I—Twenty Beaches and Creeks in the San Diego Region (Including Tecolote Creek)* (Bacteria TMDL), Regional Board Resolution No. R9-2010-0001, approved February 10.
Basin Plan	Water Quality Control Plan for the San Diego Basin, Region 9
BIOL	Preservation of biological habitats of special significance beneficial use
BLTEA	Baseline Long Term Effectiveness Assessment
BMP	best management practice
BOA	business owner association
BOD	biological oxygen demand
Caltrans	California Department of Transportation
CLRP	Comprehensive Load Reduction Plan
Consultation Panel	Water Quality Improvement Plan Consultation Panel
Copermittee	an agency named in the Municipal Permit Provision B.1.
County	County of San Diego
CRAM	California Rapid Assessment Method
Cu	copper
CWA	Clean Water Act (Federal Water Pollution Control Act, 33 U.S.C. 1251-1376)
DEH	(County of San Diego) Department of Environmental Health
DWR	(California) Department of Water Resources
EST	Estuarine Habitat beneficial use
FIB	fecal indicator bacteria
FBO	fixed-based operator

Acronyms and Abbreviations (continued)

Acronym or Abbreviation	Definition
FY	fiscal year
HA	hydrologic area
HMP	Hydromodification Monitoring Program
HOA	homeowner association
HSA	hydrologic sub-area
HU	hydrologic unit
IB	Imperial Beach
IBI	Index of Biological Integrity
IC/ID	illicit connection and/or illicit discharge
IDDE	illicit discharge, detection, and elimination
IGP	Industrial General Permit
JRMP	Jurisdictional Runoff Management Program/Plan
JURMP	Jurisdictional Urban Runoff Management Program/Plan
LID	low-impact development
LOE	line of evidence
LTEA	Long Term Effectiveness Assessment
MAR	Marine habitat beneficial use
MEP	maximum extent practicable
Metals TMDL	*TMDLs for Dissolved Copper, Lead, and Zinc in Chollas Creek* (Metals TMDL); Regional Board Resolution No. R9-2007-0043, approved October 22, 2008
MLOEs	multiple lines of evidence
MLS	mass loading station
MS4	municipal separate storm sewer system
MTS	Metropolitan Transit System
MUN	Municipal drinking water beneficial use
Municipal Permit	San Diego Regional Water Quality Control Board Order Number R9-2013-0001, National Pollutant Discharge Elimination System (NPDES) Permit and Waste Discharge Requirements for Discharges from the Municipal Separate Storm Sewer System (MS4) Draining the Watersheds Within the San Diego Region

Acronyms and Abbreviations (continued)

Acronym or Abbreviation	Definition
N	nitrogen
NAL	non-storm water action level
NASSCO	National Steel and Shipbuilding Company (General Dynamics)
NGO	non-governmental organization
NLCD	National Land Cover Database
NPDES	National Pollutant Discharge Elimination System
NRCS	National Resources Conservation Service
ORWMP	Otay River Watershed Management Plan
P	phosphorus
Pb	lead
PFC	permeable friction course
PGA	pollutant-generating activity
Phase II MS4	an MS4 that is subject to the Statewide Phase II MS4 Permit
Port	Port of San Diego
POTW	publicly owned treatment works
psi	pounds per square inch
RCC	Rental Car Center
REC-1	Contact Water Recreation beneficial use—"Includes uses of water for recreational activities involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water-skiing, skin and SCUBA diving, surfing, white water activities, fishing, or use of natural hot springs." (San Diego Basin Plan, Chapter 2)
Regional Board	San Diego Regional Water Quality Control Board
Responsible Party (RP)	a Copermittee named in the Municipal Permit Provision B.1 and Caltrans
RHMP	Regional Harbor Monitoring Program
ROW	right-of-way
ROWD	Report of Waste Discharge

Acronyms and Abbreviations (continued)

Acronym or Abbreviation	Definition
SAL	storm water action level
SANDAG	San Diego Association of Governments
SHELL	Shellfish Harvesting beneficial use
SMC	Stormwater Monitoring Coalition
State	State of California
State Board	State Water Resources Control Board
SUSMP	Standard Urban Storm Water Mitigation Plan
TBD	to be determined
TMDL	total maximum daily load
U.S.C.	United States Code
USEPA	United States Environmental Protection Agency
UGSG	United States Geological Survey
UTC	urban tree canopy
WAMP	Watershed Asset Management Plan
WARM	Warm Freshwater Habitat beneficial use—"Includes uses of water that support warm water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish or wildlife, including invertebrates." (San Diego Basin Plan, Chapter 2)
Water Quality Improvement Plan	San Diego Bay Watershed Water Quality Improvement Plan
WER	water effect ratio
WLA	waste load allocation
WMA	San Diego Bay Watershed Management Area
WMAA	Watershed Management Area Analysis
WQBEL	water quality-based effluent limit
WQC	water quality condition
WQO	water quality objective
WURMP	Watershed Urban Runoff Management Program
Zn	zinc

Executive Summary

In May 2013, the San Diego Regional Water Quality Control Board (Regional Board) adopted Order R9-2013-0001, National Pollutant Discharge Elimination System Permit and Waste Discharge Requirements for Discharges from the Municipal Separate Storm Sewer Systems (MS4) Draining the Watersheds within the San Diego Region (Municipal Permit). The Municipal Permit requires the owners of storm drain systems to implement management programs to limit discharges of non-storm water runoff and pollutants from the storm drain systems. The Municipal Permit requires Responsible Parties, in each of the region's watersheds, to develop Water Quality Improvement Plans. The San Diego Bay Watershed Water Quality Improvement Plan (Water Quality Improvement Plan) was developed in response to the requirements of the Municipal Permit.

The Municipal Permit is based on watershed program planning and program outcomes. The Municipal Permit's intent is to enable each jurisdiction to focus its resources and efforts to:

- Effectively prohibit non-storm water discharges to its MS4;
- Reduce pollutants in storm water discharges from its MS4; and
- Achieve the interim and final [Water Quality Improvement Plan] numeric goals.

The Responsible Parties within the San Diego Bay Watershed include the following agencies:

- City of Chula Vista
- City of Imperial Beach
- City of Lemon Grove
- City of San Diego
- San Diego Unified Port District (Port of San Diego)
- San Diego County Regional Airport Authority
- City of Coronado
- City of La Mesa
- City of National City
- County of San Diego
- California Department of Transportation

The purpose of the Water Quality Improvement Plan is to guide the Responsible Parties' Jurisdictional Runoff Management Programs (JRMPs) toward achieving improved water quality in MS4 discharges and receiving waters. In this Water Quality Improvement Plan, priorities and goals are established and strategies selected for implementation by the Responsible Parties in order to achieve progress toward improving water quality. This approach establishes the Water Quality Improvement Plan as the foundation that each Responsible Party uses to develop and implement its JRMP. "Responsible Parties' JRMPs contain the strategies, standards and protocols by which each Responsible Party

will implement its individual program in response to the priorities and goals established in the Water Quality Improvement Plan."[1]

As defined in the Municipal Permit, a permittee to a National Pollutant Discharge Elimination System (NPDES) permit is responsible only for permit conditions relating to the discharges from the MS4s for which it is an operator. Discharges from non-municipal sources and activities (e.g., runoff from agriculture and industrial land uses, federal and state facilities, Caltrans, and MS4 Phase II permittees) are regulated separately. However, the Municipal Permit requires the Copermittees to control pollutants originating from non-MS4 or non-municipal lands if those pollutants ultimately discharge into the MS4. Therefore, the Copermittees recognize the need to collaborate and improve communication between non-municipal entities within the San Diego Bay Watershed and the appropriate regulatory agencies to ensure that discharges are appropriately regulated before entering the MS4, and to improve water quality throughout the San Diego Bay Watershed.

Figure ES-1 presents the major watersheds in the San Diego Bay Watershed.

[1] This Water Quality Improvement Plan sets forth activities that may occur within each Responsible Party's jurisdiction to satisfy permit requirements. Please note that the "Responsible Party need comply only with permit conditions relating to discharges from the MS4s for which they are operators (40 CFR 122.26(a)(3)(vi))," Order R9-2013-0001 at I.2 (emphasis added), and that each Responsible Party does not necessarily operate all portions of the MS4 within its jurisdiction. Responsible Parties include Copermittees and other permitted dischargers (e.g., Caltrans) in the watershed.

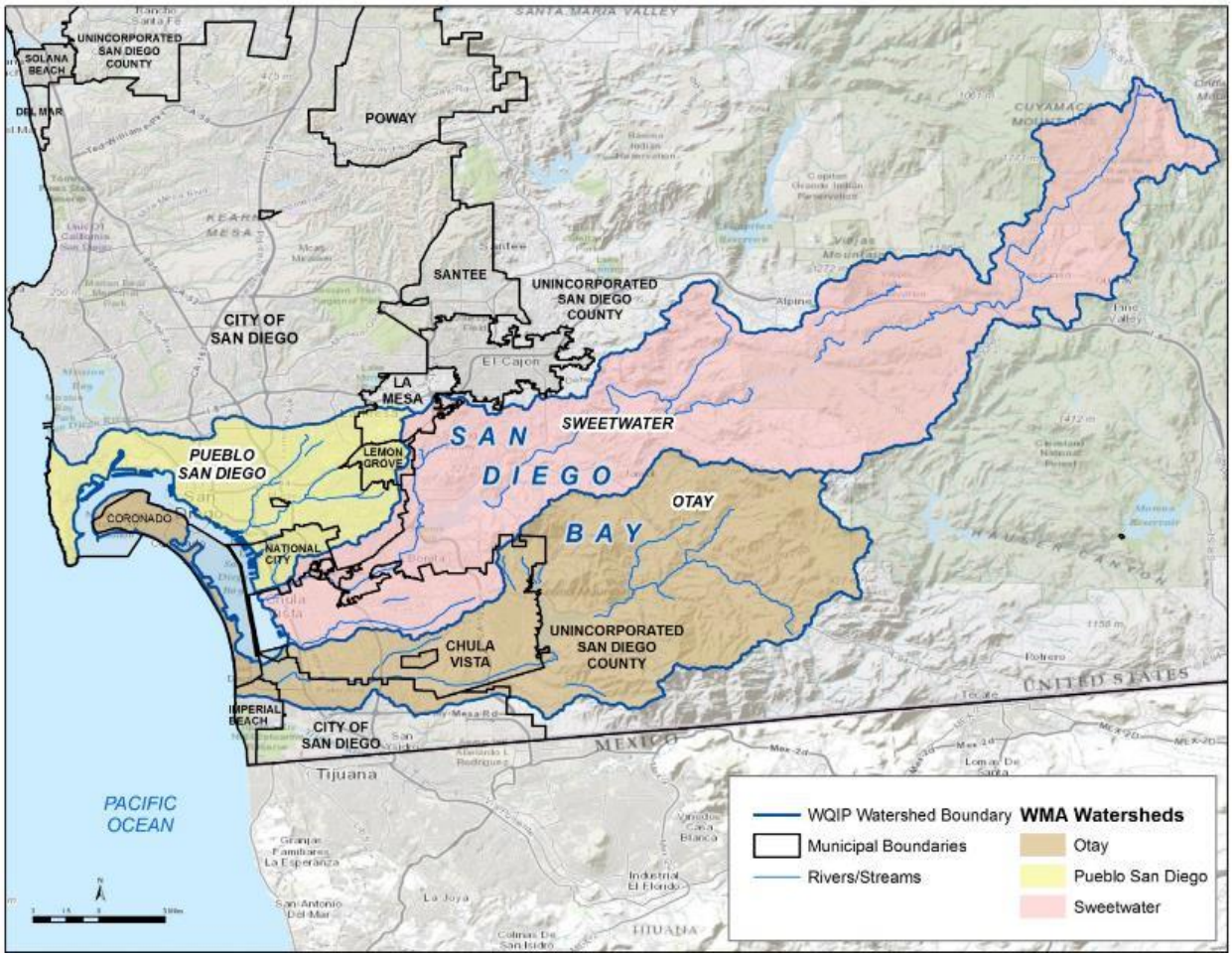

Figure ES-1
San Diego Bay—Major Watersheds

Development Process

The Water Quality Improvement Plan was developed over a two-year period after the Municipal Permit adoption. The Municipal Permit set phased benchmarks for the development and submittal of the components of the Water Quality Improvement Plan. The First Interim Deliverable focused on the assessment of priority water quality conditions and identification of Highest and Focused Priority Conditions. The Second Interim Deliverable focused on the identification of water quality numeric goals and schedules for achieving the goals as well as selection of water quality improvement strategies to address the sources of pollutants contributing to the Highest and Focused Priority Conditions. The final step of the process, the Water Quality Improvement Plan, included development of the monitoring and assessment program and an adaptive management process that are integral to the Water Quality Improvement Plan iterative process. The plan will be implemented through the effective period of the 2013 Municipal Permit.

Public Participation

During the two-year development process, public participation was a critical element. The Water Quality Improvement Plan process relied heavily on an active participation by the public. This process led to a greater amount of public participation than in previous Municipal Permit related water quality planning processes. The public participation process included four primary components:

(1) Public Workshops;

(2) Public Input in Response to Calls for Data;

(3) Water Quality Improvement Consultation Panel; and

(4) Regional Board Public Comment Period.

During the plan development process, the Responsible Parties held three public workshops (November 22, 2013, September 10, 2014, and October 21, 2014) to inform the public of the Water Quality Improvement Plan process and to solicit input on water quality conditions; sources contributing to water quality conditions; strategies to address the sources; and numeric goals and associated schedules. As a result of the solicitations, the public provided a variety of data and information for consideration in the planning process.

The Responsible Parties selected a Consultation Panel from interested candidates. The goal of the Consultation Panel was to provide recommendations to the Responsible Parties during the development of the Water Quality Improvement Plan. The Consultation Panel includes members from the San Diego Regional Board, the environmental community, and the development community, as required, and also includes three at-large members, representing the development and business/industrial community, and residents of the WMA.

The First Interim Deliverable and the Second Interim Deliverable where submitted to the Regional Board and for each a 30-day public comment period was facilitated by Regional Board staff. Each public comment period yielded comments for consideration by the Responsible Parties in the preparation of the final Water Quality Improvement Plan.

Throughout the process, the Consultation Panel and the public provided substantial input, much of which was incorporated into the development process and the final Water Quality Improvement Plan.

Water Quality Improvement Plan Content

Highest and Focused Priority Conditions—Section 2

The Responsible Parties evaluated available data, information, and public input and used the assessment process to identify water quality conditions in the San Diego Bay Watershed. Then the water quality conditions in the watershed were prioritized and several were identified by the Responsible Parties as the focus of their programmatic efforts, as appropriate—these are identified as Highest and Focused Priority Conditions. Although Responsible Parties will primarily target these conditions, it does not mean that other water quality conditions or pollutants will be ignored. To the contrary, many of the strategies implemented to address highest and/or focused priority conditions provide multi-benefit effects by also addressing many other pollutants and water quality conditions.

Table ES-1 summarizes the Highest and Focused Priority Conditions:

Table ES-1
San Diego Bay Watershed Summary of Highest and Focused Priority Conditions

HU	Condition	Pollutant/ Stressor	Geographic Extent (HU/HA)	Responsible Parties
Pueblo (908)	**Water Quality[1]**	**Bacteria; Dissolved copper, lead, and zinc**	**Chollas Creek (908.22)**	**City of La Mesa City of Lemon Grove City of San Diego County of San Diego Port of San Diego Caltrans**
	Water Quality	Copper and zinc (Wet Weather)	Airport Authority jurisdiction within HA 908.21	Airport Authority
Sweetwater (909)	Riparian Area Quality	Various	Paradise Creek—lower Sweetwater, HA 909.1[2]	City of National City
	Physical Aesthetics	Trash	The western portion of the City of Chula Vista within HA 909.1	City of Chula Vista Port of San Diego
Otay (910)	Swimmable Waters (Beaches)	Bacteria	Applicable RP jurisdiction within HA 910.1	City of Coronado Port of San Diego
	Physical Aesthetics	Trash	Applicable RP jurisdiction in HA 910.2	City of Chula Vista City of Imperial Beach Port of San Diego

Notes:

HA = Hydrologic Area; HU = Hydrologic Unit; RP = Responsible Party

1. **The conditions in bold are the Highest Priority Conditions for the San Diego Bay Watershed**. Pollutants in regular font are the Focused Priority Conditions.
2. For the purposes of the Water Quality Improvement Plan, Paradise Creek is considered to be part of the lower Sweetwater area, for which the San Diego Bay priority condition analysis has identified potential impacts to beneficial uses such as habitat and non-contact recreation.

Numeric Goals and Schedules—Section 4
Next, the Responsible Parties developed numeric goals and schedules for achieving the goals and to measure progress toward addressing the Highest and Focused Priority Conditions. Numeric goals may take a variety of forms, but all forms should be able to quantify a benefit to water quality so that progress toward and achievement of the goals are measurable. Highest and Focused Priority Conditions may have multiple goals associated with them and goals may have multiple criteria or indicators. Goals for Highest and Focused Priority Conditions may be met in the receiving water or in MS4 discharges. Goals for Focused Priority Conditions may be based on the performance of water quality improvement strategies, on the successful completion of a restoration project, or on other metrics.

The Water Quality Improvement Plan identifies goals related to each Highest Priority and Focused Priority. Furthermore, individual schedules for each goal were established. Together, the goals and schedules define the targets that the Responsible Parties use to develop their programs and to measure progress.

Strategies and Schedules—Section 4
The Responsible Parties determined the strategies to be implemented that are intended to achieve the goals and improve the water quality conditions. The Water Quality Improvement Plan identifies strategies with schedules that include both core Municipal Permit compliance activities and best management practices that Responsible Parties have been implementing for a number of years (to comply with previous permit requirements) as well as new strategies to be implemented that were not a part of explicit permit requirements, e.g., creek restoration.

A summary of the types of strategies identified in the Water Quality Improvement Plan are described in Table ES-2.

Table ES-2
Examples of Strategy Categories

Strategy Category	Example
Planning efforts, assessment, and studies	Trash receptacle assessments
Structural best management practices	Installation of trash capture devices on catch basin inlets
Programmatic best management practices	Street sweeping
Requirement for best management practices of regulated entities	Enforce minimum BMPs for existing residential, commercial, and industrial development.
Incentives	Residential and commercial rebate programs targeting water quality improvements
Activities, such as inspections and surveys	Targeted inspection programs

Monitoring and Assessment—Section 5
The Responsible Parties developed a monitoring and assessment plan that is specific to the Water Quality Improvement Plan. This program plays a key role in the Municipal Permit's new paradigm of focusing on the outcomes of program implementation. The monitoring and assessment program contains three major types of monitoring including general permit-required monitoring, Highest and Focused Priority Condition monitoring, and additional monitoring. Monitoring is intended to measure the progress that the Responsible Parties make towards achieving the established goals and schedules. The program includes assessment for each of the monitoring types, as well as an integrated assessment to evaluate the overall progress in the watershed.

Iterative Process and Adaptive Management—Section 6
The Water Quality Improvement Plan is intended to be a living planning document that is regularly assessed and updated as-needed to reflect new data and input. The Responsible Parties use information as "lessons learned" from plan implementation to improve management decisions related to water quality conditions, numeric goals, strategies and associated schedules, and the monitoring and assessment program. The typical cycle for the implementation, assessment, and the next planning phase is illustrated in Figure ES-2.

Figure ES-2
Iterative Process To Inform Adaptive Management

The San Diego Bay Water Quality Improvement Plan includes an iterative process for making improvements to components of the plan. Plan improvements take the form of updates to components on the basis of assessed data and new information. Each iteration of the implementation, assessment, and planning cycle is anticipated to provide the Responsible Parties with justifications for plan adaptations. The adaptations to plan components are intended to increase the effectiveness and efficiency of the overall programs.

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1 Introduction

1.1 Regulatory Background

The San Diego Regional Water Quality Control Board (Regional Board) develops and enforces water quality objectives and implements plans to protect the area's waters. On May 8, 2013, the Regional Board adopted a new Municipal Permit[1] to regulate discharges from Municipal Separate Storm Sewer Systems (MS4s) (Regional Board, 2013). The Municipal Permit established a new watershed-based approach by which the Copermittees plan and implement storm water programs. The new approach requires that the jurisdictions' storm water programs address the priority receiving water conditions, focusing efforts toward measureable improvements in receiving water quality. The Municipal Permit requires that a Water Quality Improvement Plan be developed for the San Diego Bay Watershed Management Area (WMA). The Municipal Permit regulates the Copermittees. Caltrans is regulated separately, but is participating voluntarily in the development of the WQIP as a named party in the Metals TMDL[2]. Collectively, the Copermittees and Caltrans are referred to as Responsible Parties (RPs) where appropriate in this document.

1.2 WMA Background

The San Diego Bay WMA (Figure 1-1 below) encompasses a 444-square-mile area (approximately 284,500 acres) that extends eastward from the San Diego Bay for more than 50 miles to the Laguna Mountains. The WMA ranges in elevation from sea level at San Diego Bay to a maximum elevation of approximately 6,000 feet above sea level at the eastern boundary. Most of the WMA land area generally lies north of the Tijuana River WMA, south of the San Diego River WMA, west of the Anza Borrego WMA, and east of the Pacific Ocean. The Regional Board-prepared *Water Quality Control Plan for the San Diego Basin* (Regional Board, 1994) (Basin Plan) defines the San Diego Bay WMA as containing three hydrologic units (HUs): (1) the Pueblo San Diego (Pueblo) HU, (2) the Sweetwater River (Sweetwater) HU, and (3) the Otay River (Otay) HU.

Figures showing the WMA drainage areas and jurisdictions (Figure B-1), land uses (Figure B-2), vegetative cover (Figure B-3), impervious area (Figure B-4), and Section 303(d)-listed waterbodies (Figure B-5) in the WMA are in Appendix B.

Most freshwater input to the San Diego Bay is from surface runoff from urban areas and intermittent flow from rivers and creeks during rain events. Dams and extensive use of groundwater over the past century in the Sweetwater and Otay Rivers have significantly

[1] *National Pollutant Discharge Elimination System (NPDES) Permit and Waste Discharge Requirements for Discharges from the Municipal Separate Storm Sewer System (MS4) Draining the Watersheds Within the San Diego Region* (Municipal Permit) (Order Number R9-2013-0001, Regional Board, 2013).
[2] *TMDL for Dissolved Copper, Lead, and Zinc in Chollas Creek, Resolution No. R9-2007-0043, referred to as the Metals Total Maximum Daily Load (TMDL).*

reduced the input from these rivers to the Bay (U.S. Army Corp of Engineers, 1973). Surface water beneficial uses are also presented in Appendix B, Table B-1.

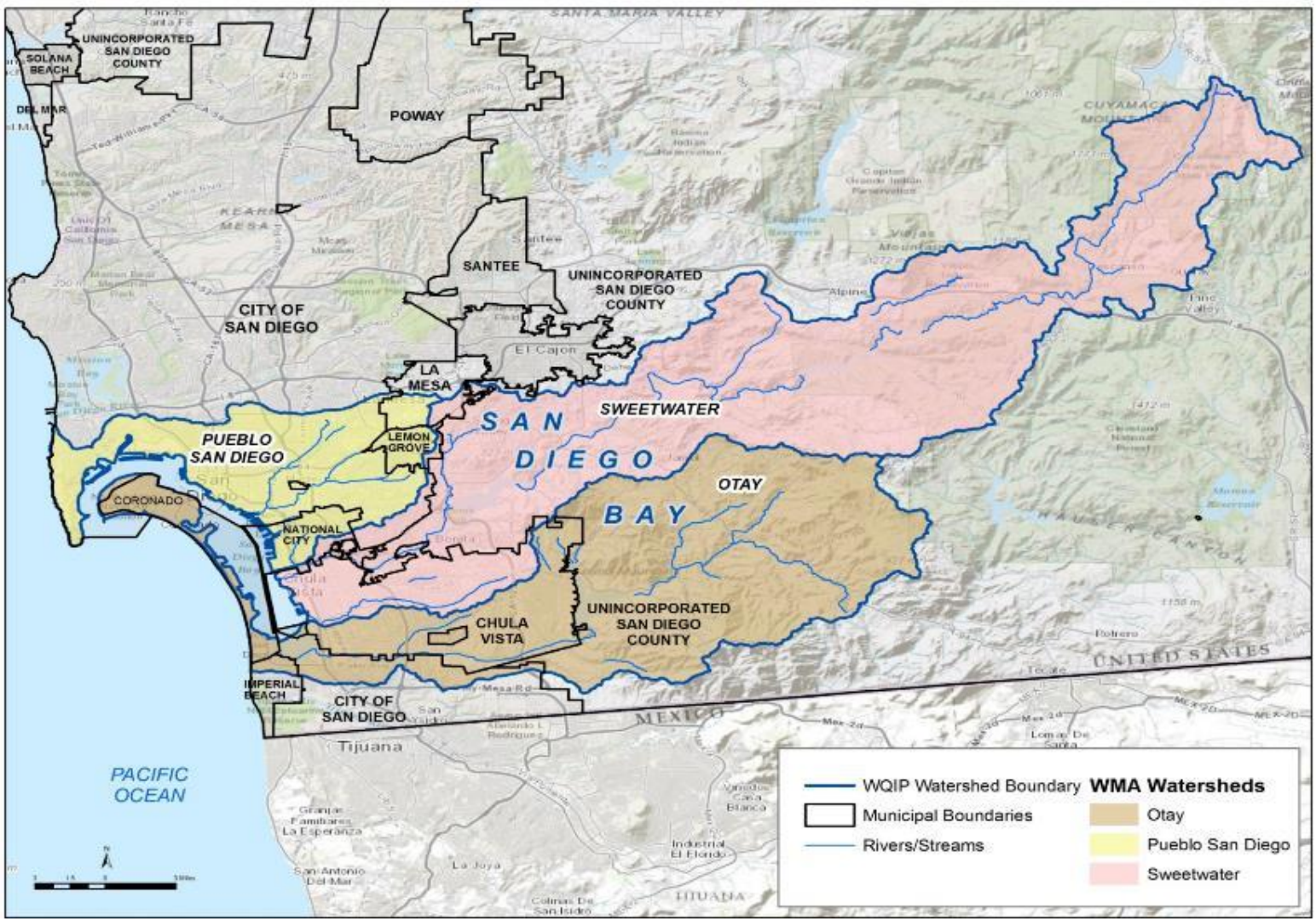

Figure 1-1
San Diego Bay Watershed Management Area

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1.2.1 Pueblo San Diego (Pueblo) HU (908)

The Pueblo HU encompasses approximately 60 square miles and has no central stream system. The Basin Plan identifies the Pueblo HU as the smallest of the three San Diego Bay HUs, covering approximately 38,000 acres. It is the most developed and most densely populated watershed in the San Diego Bay WMA. It contains three hydrologic areas (HAs): Point Loma (908.1), San Diego Mesa (908.2), and National City (908.3). Major water features are Chollas Creek, Paleta Creek, and San Diego Bay. Most of the water from the Pueblo HU drains to San Diego Bay, although a portion of the Point Loma HA drains directly to the Pacific Ocean. Figure 1-2 maps the Pueblo San Diego HU.

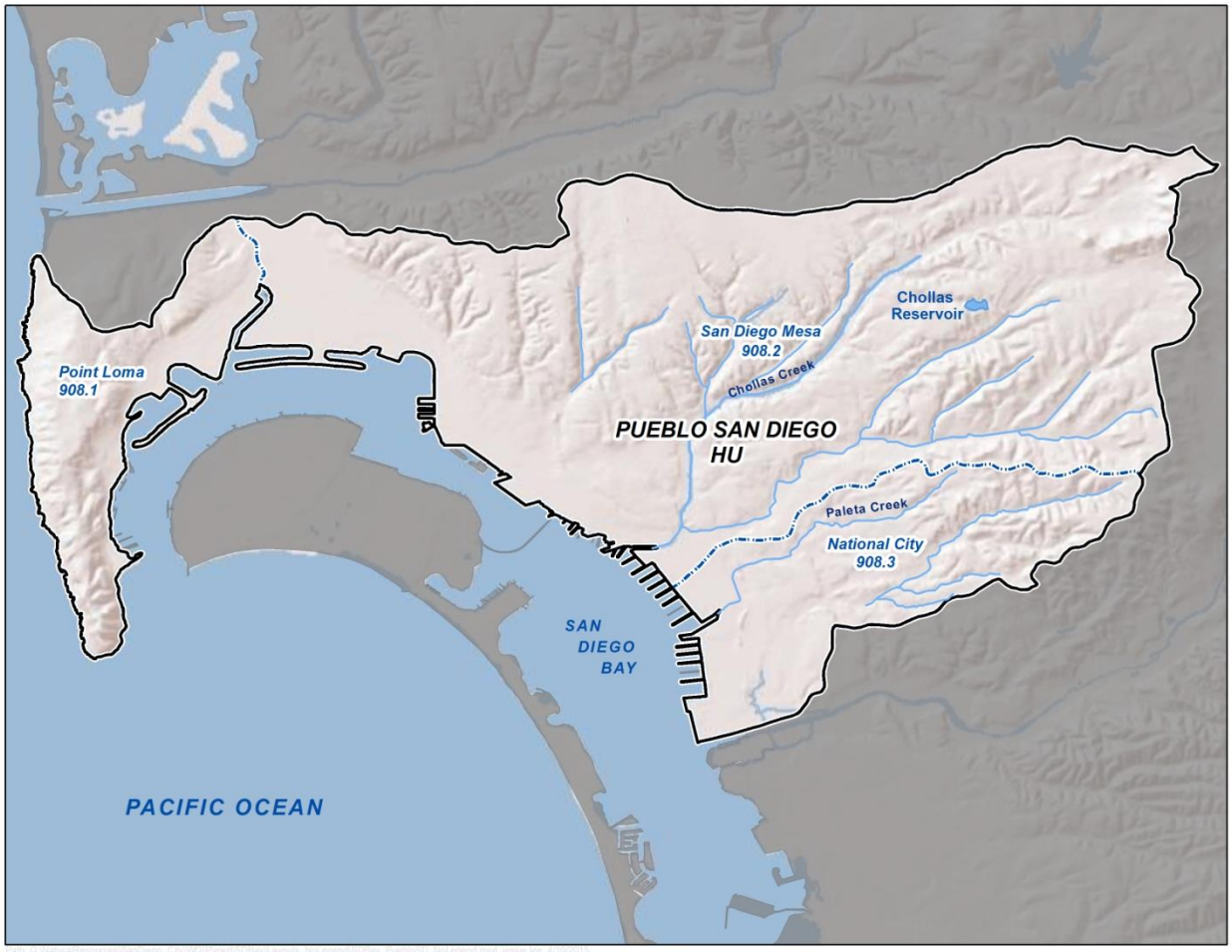


Figure 1-2
Pueblo Hydrologic Unit

The dominant land uses within the HAs are as follows (San Diego Bay Watershed Copermittees, 2008):

- Point Loma HA (908.1)—Within this HA, Residential uses make up approximately thirty-two percent (32%) of the land uses followed by Vacant/Undeveloped land at nineteen percent (19%), Transportation at sixteen percent (16%), and Military uses at fourteen percent (14%). The remaining nineteen percent (19%) consists primarily of Commercial Businesses, Public Facilities, Open Space/Preserves, and Schools.
- San Diego Mesa HA (908.2)—Within this HA, Residential comprises approximately forty percent (40%) of the land uses followed by Transportation at twenty-nine percent (29%), and Commercial/Office Business are approximately eight percent (8%) of the land use while Industrial Businesses are five percent (5%). Open Space/Preserves comprise approximately six percent (6%) of the HA. The remaining twelve percent (12%) consists of multiple uses, including Public Facilities, Schools, and Parks.
- National City HA (908.3)—Within this HA, Residential makes up forty-six percent (46%) followed by Transportation at twenty-three percent (23%). Military consists of nine percent (9%), while Schools make up nearly five percent (5%). Commercial/Office Businesses are four percent (4%) and Industrial Business is three percent (3%). The remaining ten percent (10%) consists of multiple uses, including Parks and Open Space/Preserves.

1.2.2 Sweetwater River (Sweetwater) HU (909)

The Sweetwater HU is the largest of the three San Diego Bay HUs, encompassing over 148,000 acres. Three main drainage areas are included within the Sweetwater HU: Lower Sweetwater HA (Hydrologic Sub-Areas [HSAs] 909.11, 909.12, and 908.32)[4]; Middle Sweetwater HA (909.2); and Upper Sweetwater HA (909.3). It has four major waterbodies: Sweetwater River, Sweetwater Reservoir, Loveland Reservoir, and San Diego Bay. Portions of the San Diego Bay National Wildlife Refuges, including the Sweetwater Marsh, are in the Sweetwater HU. Much of this watershed is occupied by undeveloped lands in the Cleveland National Forest, Cuyamaca Rancho State Park, and the unincorporated communities of Pine Valley, Descanso, Alpine, and the Viejas Indian Reservation. The Cleveland National Forest, Cuyamaca Rancho State Park, and Viejas Indian Reservation are regulated separately and the Responsible Parties (RPs)[5] do not have authority to require their participation or to implement Municipal Permit requirements. Figure 1-2 maps the Sweetwater HU.

[4] Telegraph Canyon Channel is in HSA 909.11, but drains directly to San Diego Bay rather than to the Sweetwater River. HSA 908.32, while technically in the Pueblo HU, drains to the Sweetwater River, so it is considered part of the Sweetwater HU.
[5] In this document, the Copermittees within the San Diego Bay WMA and Caltrans are collectively referred to as Responsible Parties (RPs).

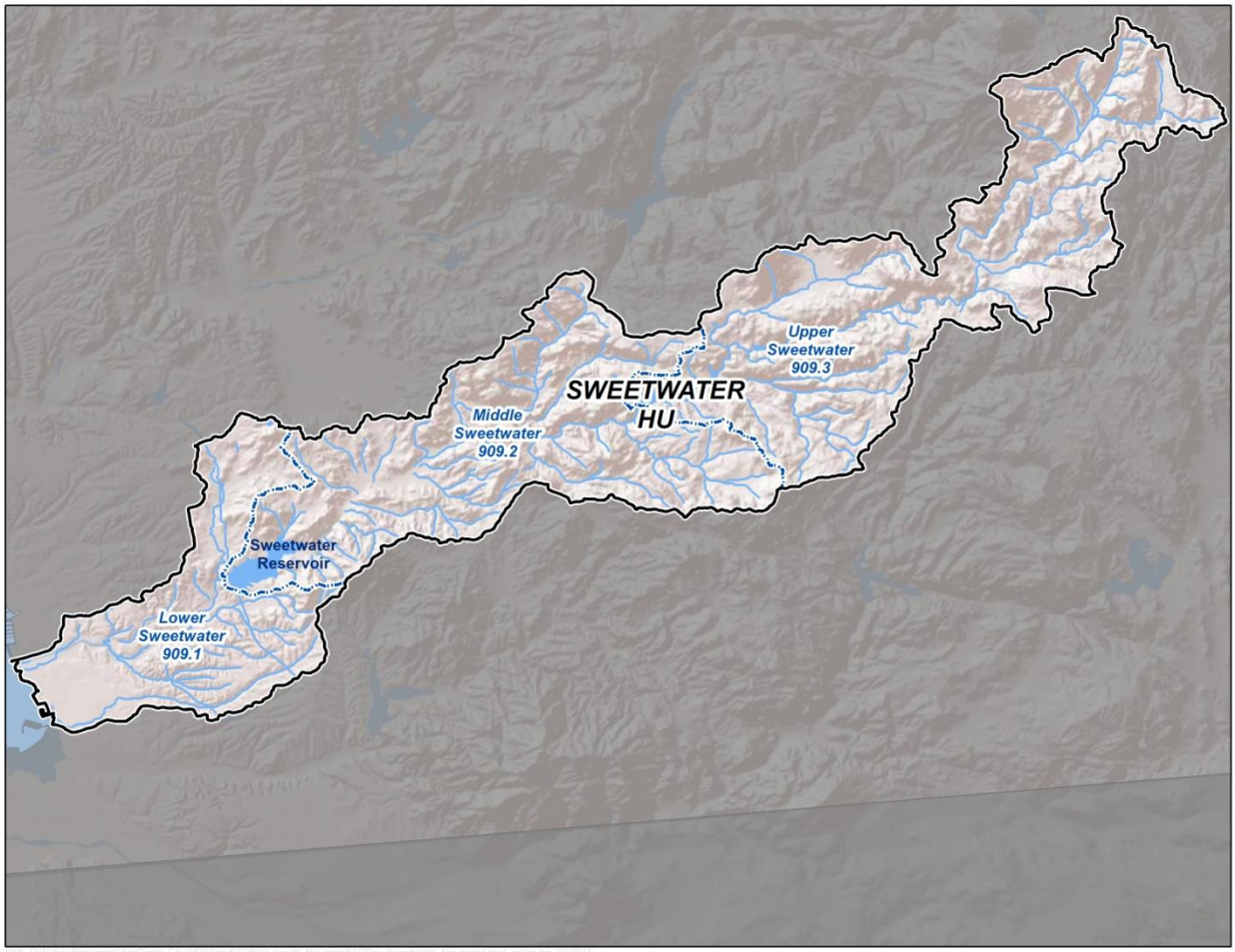


Figure 1-3
Sweetwater Hydrologic Unit

The dominant land uses within the HAs are as follows (San Diego Bay Watershed Copermittees, 2008):

- Lower Sweetwater HA (909.1): Within this HA, Residential comprises approximately forty-four percent (44%), followed by Transportation at eighteen percent (18%) and Open Space/Preserves at thirteen percent (13%). The remaining twenty-five percent (25%) consists of multiple uses, including Commercial and Industrial Businesses, Schools, and Undeveloped/Vacant Land.
- Middle Sweetwater HA (909.2): Within this HA, Undeveloped or Vacant land dominated with approximately thirty-eight percent (38%), followed by Residential consisting of twenty-eight percent (28%) and Open Space/Preserves at twenty-five percent (25%). The remaining eight percent (8%) consists of multiple uses, including Commercial Businesses and Transportation.

- Upper Sweetwater HA (909.3): The majority of the land within this HA is Undeveloped or Vacant land (50%), while Open Space/Preserves comprise thirty-two percent (32%) of land use. Twelve percent (12%) of the remaining area consists of Residential and four percent (4%) is Agriculture.

1.2.3 Otay River (Otay) HU (910)

The Basin Plan identifies the Otay HU as the second largest of the three San Diego Bay HUs. The Otay HU consists of three HAs: Coronado (910.1), Otay Valley (910.2), and Dulzura (910.3). It comprises nearly 98,500 acres and includes four major waterbodies: the Upper and Lower Otay Reservoirs, Otay River, and San Diego Bay. The two reservoirs supply drinking water, wildlife habitat, and recreational opportunities. The Otay HU includes portions of the San Diego Bay and San Diego Bay National Wildlife Refuges, the Rancho Jamul Ecological Reserve, the Otay Valley Regional Park, and approximately 23,000 acres that provide habitat for endangered plant and animal species as part of the San Diego County Multiple Species Conservation Program. Figure 1-2 maps the Otay River HU.

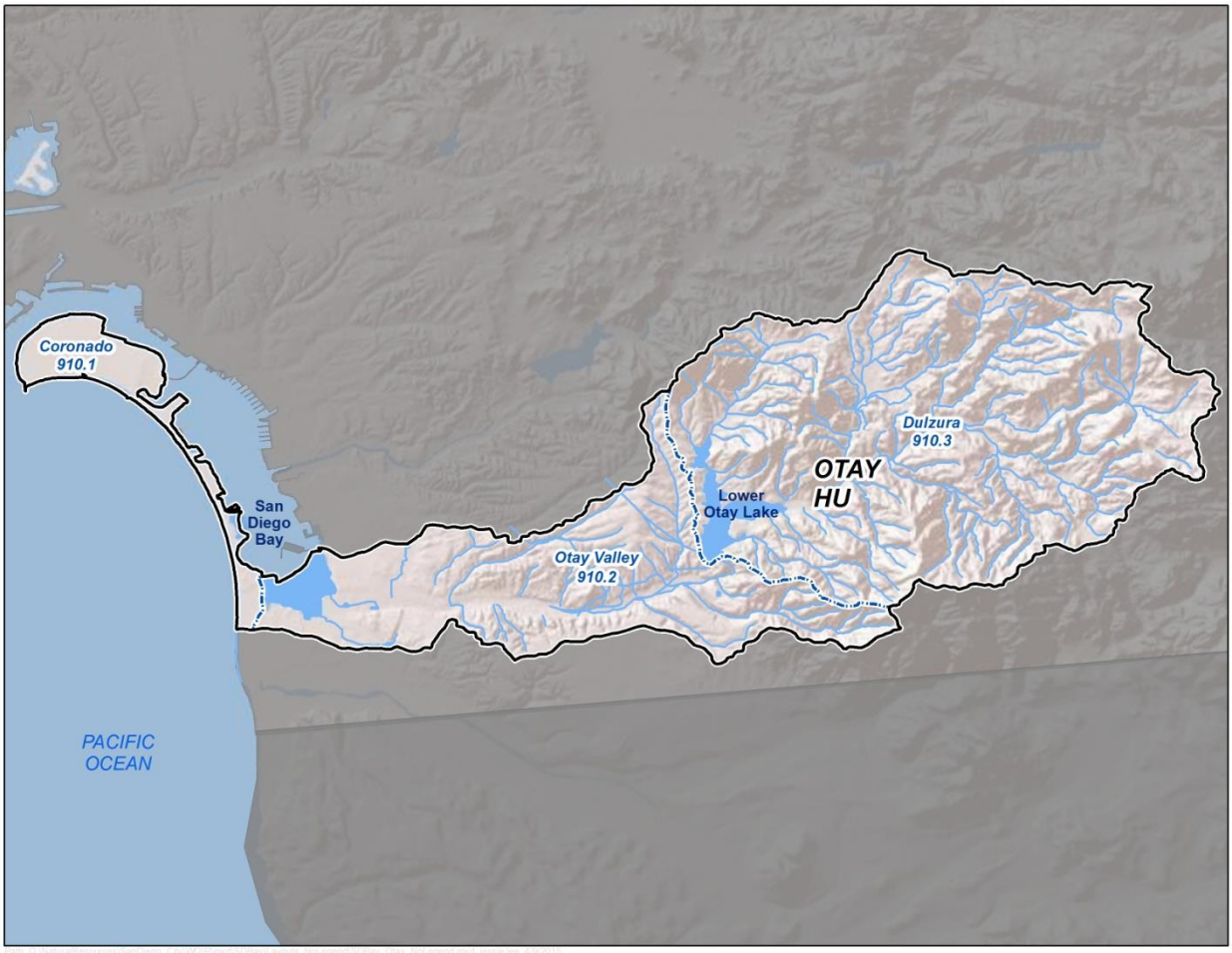


Figure 1-4
Otay Hydrologic Unit

The dominant land uses within the HAs are as follows (San Diego Bay Watershed Copermittees, 2008):

- Coronado HA (910.1): Military uses comprise approximately fifty-two percent (52%) of land in this HA. Other significant land uses include Residential at fifteen percent (15%), followed by Transportation at twelve percent (12%), and Commercial/Office at eight percent (8%). Open Space/Preserves and Parks account for a combined ten (10%) percent of land uses. The remaining three percent (3%) consists of multiple uses, including Undeveloped/Vacant land, Schools, and Public Facilities.
- Otay HA (910.2): Within this HA, Undeveloped/Vacant land accounts for twenty-five percent (25%) and Open Space/Preserves make up twenty-four percent (24%) of the land use. Other significant land uses include Residential at eighteen percent (18%), Transportation and Industrial at nine percent (9%) respectively, Public Facilities at five percent (5%), and Commercial/Office at four percent (4%). The remaining six percent (6%) consists of multiple uses, including Agriculture and Schools.
- Dulzura HA (910.3): Within this HA, Open Space/Preserves make up the majority of land use at forty-eight percent (48%), followed by Undeveloped or Vacant land at thirty-seven percent (37%), and Residential at twelve percent (12%). The remaining three percent (3%) consists of multiple uses, including Commercial and Industrial Businesses, Agriculture, and Transportation.

1.3 Water Quality Improvement Plan Process and Approach

Since 2002, under previous permits, the Copermittees have worked together to successfully implement the San Diego Bay Watershed Urban Runoff Management Program (WURMP). The WURMP was a collaborative effort to address high priority surface water quality issues throughout the San Diego Bay WMA. The program includes identifying and addressing high priority water quality problems in the WMA, developing and implementing activities that include pollutant load reduction and abatement (Watershed Water Quality Activities), implementing Watershed Education Activities, and improving public participation and collaborative land use planning.

The new watershed-based emphasis of the Municipal Permit continues the WURMP's approach to water quality management by focusing on providing consistent implementation, improving interagency communication and collaboration, and establishing requirements that focus on attaining water quality improvement goals. The emphasis of the Municipal Permit is on water quality outcomes rather than fulfillment of prescriptive activities. This approach assesses the WMA in its entirety, as well as at the subwatershed and jurisdictional level. The outcome-based adaptive management process supports the use of scientific tools to answer management questions that lead to implementation actions in the WMA. The goal of the Water Quality Improvement Plan is to reduce pollutants and other stressors from the RPs' MS4 discharges to further the Clean Water Act's objective to protect, preserve, enhance, and restore the water quality and designated beneficial uses of waters of the state.

The Water Quality Improvement Plan helps guide future updates to the Copermittees' jurisdictional programs and to the California Department of Transportation (Caltrans) Storm Water Management Program to achieve improved water quality in MS4 discharges and receiving waters by concentrating efforts on the Highest Priority Conditions and Focused Priority Conditions in the WMA. Numeric goals, strategies, and schedules are developed for Highest Priority Conditions and Focused Priority Conditions by the RPs with public input. The process for selecting Highest Priority Conditions and Focused Priority Conditions is described in more detail in Section 2.2 of this document.

1.3.1 Responsible Party Collaboration

The RPs identified in the Municipal Permit in the San Diego Bay WMA include the County of San Diego, the San Diego Unified Port District (Port of San Diego), the San Diego County Regional Airport Authority (Airport Authority), and the Cities of Chula Vista, Coronado, Imperial Beach, La Mesa, Lemon Grove, National City, and San Diego. Caltrans is also participating voluntarily in the development of the San Diego Bay WMA Water Quality Improvement Plan as a named party in the Chollas Creek Total TMDLs. Although Caltrans is under a separate storm water permit (Order No. 2012-0011-DWQ) (State Water Resources Control Board [State Board], 2013), the agency is participating voluntarily in multiple Water Quality Improvement Plan development efforts throughout the San Diego region.

Water Quality Improvement Plan development and implementation is a collaborative effort by all of the RPs. Table 1-1 provides an overview of the three HUs and the jurisdictions within the watershed.

Table 1-1
San Diego Bay WMA Jurisdictional Breakdown (by Hydrologic Area)

Responsible Party	San Diego Bay WMA								
	Pueblo			Sweetwater River			Otay River		
	908.1	908.2	908.3	909.1	909.2	909.3	910.1	910.2	910.3
Airport Authority		✓							
Chula Vista				✓				✓	✓
County		✓		✓	✓	✓		✓	✓
Coronado							✓		
Imperial Beach							✓	✓	
La Mesa		✓		✓					
Lemon Grove		✓		✓					
National City			✓	✓					
Port of San Diego	✓	✓	✓	✓			✓		
San Diego	✓	✓	✓	✓				✓	
Caltrans[1]		✓							

Note:
1. Caltrans is not listed in the Municipal Permit as a Copermittee, but is listed in the Chollas Creek TMDL for an 864-acre area within the Chollas Creek HSA.

1.3.2 Public Participation Process

The development of this Water Quality Improvement Plan was achieved through a public process in which the RPs solicited data, information, and recommendations from the public (per Municipal Permit Provision F.1.a(1-2)). The general public and other agencies and districts located in the San Diego Bay WMA were solicited for participation in the Water Quality Improvement Plan process. The public participation process to date has included two public workshops, with approximately 20 attendees each, the creation of a Water Quality Improvement Plan Consultation Panel (Consultation Panel), and two Consultation Panel meetings.

The goal of the Consultation Panel is to provide recommendations during the development of the Water Quality Improvement Plan. Members of the public and other agencies whose projects or activities may cause discharges into the MS4 were provided an opportunity to participate in the public process, comment, and submit an application to become a member of the Consultation Panel. A Consultation Panel charter was developed to specify the role of the Consultation Panel in the participation process (Appendix C).

The Consultation Panel includes representatives from the following required entities:

- The San Diego Regional Board;
- The environmental community—a non-governmental organization or environmental interest group associated with a waterbody within the WMA; and
- The development community—an organization familiar with the opportunities for and constraints in implementing structural best management practices (BMPs), retrofit projects, and stream, channel, or habitat rehabilitation in the WMA.

In addition, the RPs chose four “at-large” representatives, based on interest forms received after the first public workshop. At-large representatives are individuals familiar with water quality issues and/or topics pertaining to the three HUs. Two environmentally focused non-governmental organizations, San Diego Coastkeeper and Wildcoast, participated in the San Diego Bay WMA Consultation Panel. Panel members are as follows:

San Diego Bay Water Quality Improvement Plan Consultation Panel	San Diego Regional Board	Wayne Chiu, PE
	Environmental Community	Travis Prichard
	Development Community	Cary Lowe, JD, PhD, AICP
	At-Large (Environmental)	John Holder
	At-Large (Development)	Patrick Mock, PhD, CSE, CWB
	At-Large (Business/Industrial)	Hugo Bermudez
	At-Large (Resident)	Lydia Roach Dorrance, PhD

The Consultation Panel and the public provided substantial input, much of which was incorporated. For example, public input led to the inclusion of Focused Priority Conditions in the Water Quality Improvement Plan as well as Highest Priority Conditions (see Section 2). Overall, the public provided input on the following Water Quality Improvement Plan topics:

- Water quality conditions in the watershed;
- Sources of the conditions;
- Strategies and BMPs to address the conditions;
- Goals for measuring water quality improvements in the WMA; and
- Schedules for meeting the goals.

The public, including the Consultation Panel and the Regional Board were provided with a 30-day comment period for each of two interim deliverables, and will also be provided with a 30-day comment period for the complete Water Quality Improvement Plan (this document) prior to its adoption by the Regional Board.

1.3.3 Water Quality Improvement Plan Development Process

The Water Quality Improvement Plan development process involves three phases. The first phase requires RPs to identify Priority Conditions, likely sources of those conditions, and potential strategies to address those conditions. The second phase requires RPs to identify goals, strategies, and schedules to address the Highest Priority Conditions and Focused Priority Conditions identified as part of the first phase. The third phase is the final Water Quality Improvement Plan document, in which the first phases, monitoring and assessment, and adaptive management processes, are incorporated. Each phase

involves multiple opportunities for the public to participate and comment. Table 1-2 summarizes the three phases and associated deliverables.

The First Phase of the Water Quality Improvement Plan Development Process

The first phase (following Municipal Permit Provision B.2) was completed by the RPs in June 2014, by submittal of the San Diego Bay Watershed Management Area Water Quality Improvement Plan—First Interim Deliverable: Priority Conditions, Sources, and Potential Strategies (First Interim Deliverable). Tasks included in the First Interim Deliverable are listed in Table 1-2.

The First Interim Deliverable (San Diego Bay Responsible Parties, December 2014) was posted by the Regional Board for a 30-day public comment period. Public comments were received and considered by the RPs. The RPs are to incorporate the comments into the Final Water Quality Improvement Plan as appropriate.

The Second Phase of the Water Quality Improvement Plan Development Process

The second phase of the Water Quality Improvement Plan process (following Municipal Permit Provision B.3) is the development of final and interim numeric goals for each Highest Priority Condition and Focused Priority Condition, and the strategies that the RPs intend to implement to make measureable progress toward the goals. Each goal is assigned an associated date for achievement, and the strategies are scheduled accordingly. The tasks that have been completed to date for the Second Interim Deliverable are listed in Table 1-2.

The Second Interim Deliverable (San Diego Bay Responsible Parties, 2014) was posted by the Regional Board for a 30-day public comment period. No public comments were received by the comment deadline on January 29, 2015. However, the Regional Board requested that the RPs consider comments received for a different WMA (Los Peñasquitos) primarily regarding the RP's level of responsibility for discharges from agencies outside their jurisdictions. The RPs are to incorporate the comments into the Final Water Quality Improvement Plan as appropriate.

The Third Phase of the Water Quality Improvement Plan Development Process

The third phase is the development of the complete Water Quality Improvement Plan (this document), which includes information from the First and Second Interim Deliverables, the Monitoring and Assessment Program, and the Iterative Approach and Adaptive Management Process. The Monitoring and Assessment Program describes the data collection and analysis needed to evaluate progress toward achieving the numeric goals. The Iterative Approach and Adaptive Management Process establishes the methods that RPs employ to evaluate water quality issues and to periodically revise the Water Quality Improvement Plan. The Final Water Quality Improvement Plan will be delivered to the Regional Board in June 2015, completing the third phase of the Water Quality Improvement Plan Development Process.

Post-Water Quality Improvement Plan Development

The Water Quality Improvement Plan will be implemented by the RPs upon the completion of the 30-day public comment period and receipt of written notification of acceptance of the final Water Quality Improvement Plan by the Regional Board. The information contained within the Water Quality Improvement Plan will be analyzed and updated through annual reporting and integrated assessments. Results from those assessments will be used to revise the Water Quality Improvement Plan, as necessary, as part of the Iterative Approach and the Adaptive Management Process.

Table 1-2
Water Quality Improvement Plan Development Process Phase and Deliverable Summary

Deliverable(s)	Tasks Completed to Date	Due to Regional Board
Phase 1		
First Interim Deliverable: Priority Conditions, Sources, and Potential Strategies	Public Workshop: November 22, 2013 Consultation Panel: April 24, 2014 Submitted to the Regional Board in June 2014; 30-day public comment period complete. The Deliverable included: • A summary of the regulatory structure and background of the Water Quality Improvement Plan, the public participation process, and the Consultation Panel; • A description of the San Diego Bay WMA, including maps of the Pueblo, Sweetwater, and Otay HUs; • Priority Conditions identified for the WMA; • Highest Priority Conditions, a subset of the Priority Conditions; • Focused Priority Conditions, a subset of the Priority Conditions; • MS4 sources of pollutants and/or stressors that potentially cause or contribute to the Highest Priority Conditions and Focused Priority Conditions; and • Potential strategies that may be used by RPs to address the sources in an effort to improve the identified water quality conditions.	June 26, 2014

Table 1-2 (continued)
Water Quality Improvement Plan Development Process Phase and Deliverable Summary

Deliverable(s)	Tasks Completed to Date	Due to Regional Board
Phase 2		
Second Interim Deliverable: Goals, Strategies, and Schedules	Public Workshop: September 10, 2014 Consultation Panel: October 21, 2014 Submitted to the Regional Board in December 2014; 30-day public comment period complete. The Deliverable included: • A summary of the Water Quality Improvement Plan process; • A Highest Priority Condition and Focused Priority Condition summary; • Goals and Schedules identified for each Highest Priority Condition and Focused Priority Condition in the WMA; • Strategies and Schedules for each Highest Priority Condition and Focused Priority Condition in the WMA; and • WMA strategies.	December 26, 2014
Phase 3		
Monitoring and Assessment Program Iterative Approach and Adaptive Management Process Final Water Quality Improvement Plan	• Combine First and Second Interim Deliverables with Monitoring and Assessment Plan and Iterative Approach and Adaptive Management Process to complete the Water Quality Improvement Plan • Posted by the Regional Board for a 30-day public comment period and incorporate public comments as appropriate • Anticipate approval by the Regional Board in August, 2015	June 26, 2015

1.4 Core Jurisdictional Programs

For more than 20 years, RPs have implemented jurisdictional BMPs to control MS4 discharges and protect water quality. The Municipal Permit requires RPs to implement compliance programs within their boundaries. The Municipal Permit, specifically Provisions D and E, describes the rigorous requirements of the Jurisdictional Runoff Management Programs (JRMPs). BMPs are implemented by each RP and typically address a wide range of water quality concerns. For example, public education addresses nearly all of the common water quality concerns (and typically involves more than just water quality), and certain street sweeping methods are generally effective to address sediment, trash, and a number of pollutants associated with roadway runoff. Other strategies and programs may be used in conjunction with street sweeping to prevent other pollutant sources, such as illegal dumping.

In addition to the core jurisdictional strategies, the JRMPs will include the additional strategies identified through the Water Quality Improvement Plan planning process. The core jurisdictional program elements required of the JRMPs (with Municipal Permit provisions in parentheses) include, but are not limited to:

(1) Outfall Monitoring Program (D.2.);

(2) Assessment (D.4.);

(3) Establishment and Enforcement of Legal Authority (E.1.);

(4) Illicit Discharge Detection and Elimination (E.2.);

(5) Development Planning (E.3.);

(6) Construction Management (E.4.);

(7) Existing Development Management (E.5.);

(8) Enforcement Response Plans (E.6.); and

(9) Public Education and Participation (E.7.).

1.5 Jurisdiction and Responsibilities

As defined in the Municipal Permit, a permittee to a National Pollutant Discharge Elimination System (NPDES) permit is responsible only for permit conditions relating to the discharges from the MS4s for which it is an operator. Discharges from non-municipal sources and activities (e.g., runoff from agriculture and industrial land uses, federal and state facilities, Caltrans, and Phase II storm water permittees) are regulated separately. For example, facilities designated as Phase II permittees (small MS4s) are regulated under the Phase II General Permit (State Board Order No. 2013-0001-DWQ). In California, industrial and construction activities are regulated under either the General Industrial Permit (State Board Order No. 2014-0057-DWQ) (State Board, 2014) or the General Construction Permit (State Board Order No. 2012-0006-DWQ) (State Board, 2012). Finally, conditional waivers that remove the need to file a report of waste discharge and that avoid coverage under the NPDES permit program are given to activities such as agriculture and nursery operations, onsite disposal systems, silvicultural operations, and

animal operations. Recently, draft general water discharge requirements for commercial agricultural and nursery operations were released for public review. The tentative draft order may be finalized during the development of this Water Quality Improvement Plan; this order will affect the ways in which sources from commercial agricultural and nursery operations are managed.

Under this regulatory framework, there are two general areas of storm water management responsibilities: (1) jurisdictional inspection and oversight (such as education, enforcement, and other Illicit Discharge Detection and Elimination (IDDE) activities), as described in the JRMPs in the Municipal Permit, and (2) control of pollutant discharges.

(1) *Jurisdictional inspections*: The Copermittees, as owners and operators of MS4s, require controls, such as minimum BMPs and inspection programs, to effectively prohibit non-storm water discharges into the MS4s and to reduce the discharge of pollutants in storm water from their own MS4s to the maximum extent practicable. Exceptions include NPDES Phase II, agricultural, state, federal, Caltrans, and Indian reservation lands. The United States Environmental Protection Agency (USEPA), State Board, and Regional Board are responsible for inspections of Phase II, agricultural, state, federal, and Indian reservation lands. Caltrans is subject to its own State of California (State)-issued MS4 Permit. In addition, the USEPA, State Board, and Regional Board have dual permitting and oversight responsibilities over industrial lands and construction sites.

    The Copermittees have limited regulatory oversight over industrial lands, construction sites, Phase II MS4s, and agricultural, state, federal, and Indian reservation lands. For example, the RPs implement IDDE activities to identify, investigate, and enforce discharges to their MS4s. Discharges to receiving waters from non-municipal sources and activities (e.g., runoff from agriculture and industrial land uses, federal and state facilities, Caltrans, and Phase II storm water permittees) are not regulated or controlled by the Copermittees since they do not enter a MS4. Accordingly, the scope of the Water Quality Improvement Plan is limited to the regulatory oversight of the Copermittees specified above.

(2) *Controlling pollutant discharges:* Various NPDES permits or conditional waivers regulate storm water and non-storm water discharges within the San Diego Bay WMA. The Copermittees are responsible for controlling pollutant discharges from their MS4s, except for agriculture and industrial land uses, federal and state facilities, Caltrans, and Phase II storm water permittees. The Copermittees do not have regulatory authority under the Municipal Permit to require entities regulated by other permits issued by the USEPA, State Board, or Regional Board to implement and/or construct BMPs to treat wet/dry weather pollutant discharges originating from their properties, facilities and/or activities. However, the MS4 Permit requires the RPs to control pollutants originating from non-MS4 or non-municipal lands if those pollutants ultimately discharged into the MS4. Therefore, the Copermittees recognize the need to collaborate and improve communication between non-municipal entities within the WMA and the appropriate regulatory agencies to ensure discharges are appropriately regulated before entering the MS4, and to improve water quality throughout the San Diego Bay WMA. The RPs

follow procedures to report discharges from these areas to the owner or manager of the area, and may report the discharge to the Regional Board if the discharge is not addressed.

Caltrans has partial responsibility for the implementation of the Metals TMDL, and *Project I—Twenty Beaches and Creeks in the San Diego Region (Including Tecolote Creek),* Resolution No. R9-2010-0001, referred to as the Bacteria TMDL. Caltrans has its own separate NPDES permit (Order No. 2012-0011-DWQ) (State Board, 2012b) and is not subject to the Municipal Permit. Caltrans is participating voluntarily along with the Copermittees as an RP in the development of the Water Quality Improvement Plan for the San Diego Bay WMA and other WMAs across the region.

Currently, some of the RPs are pursuing a subvention of funds from the State to pay for certain activities required by the 2007 Municipal Permit, including activities that require RPs to perform activities outside their jurisdictional boundaries and on a regional or watershed basis. Nothing in this Water Quality Improvement Plan should be viewed as a waiver of those claims or as a waiver of the rights of RPs to pursue a subvention of funds from the State to pay for certain activities required by the 2013 Municipal Permit, including the preparation and implementation of the Water Quality Improvement Plan. In addition, several RPs have filed petitions with the State Board challenging the requirement to prepare Water Quality Improvement Plans that are not voluntary and that are not linked to a receiving water limitations language compliance path, and on other issues related to the Municipal Permit. Because the State Board has not issued a stay of the 2013 Municipal Permit, RPs must comply with the Municipal Permit's requirements while the State Board process is pending.

1.6 Water Quality Improvement Plan Organization

Generally, the Water Quality Improvement Plan is structured to follow requirements of Provision B of the Municipal Permit and the Water Quality Improvement Plan process. Appendix A provides a "crosswalk," which is a table listing the individual Municipal Permit requirements and the corresponding section of the Water Quality Improvement Plan in which the requirement is addressed.

The document is divided into six sections:

Section 1. Introduction—This section provides background on the regulatory drivers of the Water Quality Improvement Plan and the San Diego Bay WMA. The introduction provides an overview of the Water Quality Improvement Plan process and approach, and outlines the document structure.

Section 2. Priority Water Quality Conditions (Priority Conditions)—This section describes the methodology used to identify Priority Conditions in the San Diego Bay WMA, and the selected Highest Priority Conditions and Focused Priority Conditions.

Section 3. Sources of Pollutants and Stressors—This section summarizes potential sources identified or with unknown contribution to the Highest and Focused Priority Conditions identified in the San Diego Bay WMA.

Section 4. Goals, Strategies and Schedules—This section describes the goals, strategies, and schedules for each of the Highest and Focused Priority Conditions. The common goals and schedules are presented in this section, as well as goals and schedules for each RP, where applicable. The subsections provide jurisdiction-specific interim goals, where applicable, and summarize the strategies and approach that each RP will implement to achieve the goals.

Each RP's approach to attaining the goals and the strategies to address the goals are summarized in this section. The lists of strategies for each of the RPs are in Appendix I, Jurisdictional Strategies.

Some strategies were identified as optional, requiring a trigger in order for a timeline to be initiated. Optional strategies will be considered for implementation depending on the performance of the near-term strategies and as resources become available.

This section also describes the collaborative strategies developed by the RPs. Collaborative strategies augment jurisdictional strategies and provide opportunities for efficiencies and effectiveness throughout the WMA. In particular, the RPs collectively chose to implement the optional Watershed Management Area Analysis (WMAA) per Municipal Permit Provision B.3.b(4) to provide for offsite alternative compliance. Further information on the WMAA is provided in Appendix J.

Section 5. Monitoring and Assessment—This section summarizes the Monitoring and Assessment Program organization and approach and provides monitoring program highlights.

Section 6. Adaptive Management and Iterative Approach—This section discusses the process and approach for refinement and adaptation of Sections 2 through 5 of this Water Quality Improvement Plan.

Appendices A through K—The appendices provide all of the supporting information summarized in Sections 2 through 5.

2 Priority Water Quality Conditions

The Municipal Permit required the RPs to identify receiving water condition priorities within the San Diego Bay WMA that will be addressed in the Water Quality Improvement Plan. The San Diego Bay WMA RPs recognize that the San Diego Bay WMA is different from other WMAs in San Diego County. The WMA comprises three very distinct HUs that are not hydrologically interconnected, but that have one final downstream receiving water body, namely San Diego Bay (small portions of the Pueblo and Otay HUs discharge directly to the Pacific Ocean). The San Diego Bay WMA was separated into three HUs to help prioritize receiving water quality conditions for each distinct watershed and to manage the JRMP efforts.

This section describes the methodology used to identify Priority Conditions, Highest Priority Conditions, and Focused Priority Conditions, and presents the results of the analysis. Based on input from the Consultation Panel, RPs that do not contribute to the Highest Priority Conditions identified Focused Priority Conditions that they will address and for which they will establish numeric goals, strategies, and schedules. Municipal Permit Requirements for the Priority Conditions and Highest Priority Conditions considerations are included in Appendix A, Water Quality Improvement Plan Crosswalk, which links the Municipal Permit requirements to the various sections of the Water Quality Improvement Plan.

2.1 Methodology To Identify Priority Conditions, Highest Priority Conditions, and Focused Priority Conditions

The methodology to identify the Priority Conditions and Highest Priority Conditions for the San Diego Bay WMA used a multiple lines of evidence (MLOE) approach, based on the principles presented in the Municipal Permit (Provision B.2). The process is shown schematically in Figures 2-1 and 2-2. Priority Conditions were identified by assessing the best available data and information from multiple sources of existing information. Figure 2-1 presents the Priority Conditions and Highest Priority Conditions selection process; Figure 2-2 presents the Focused Priority Conditions selection process.

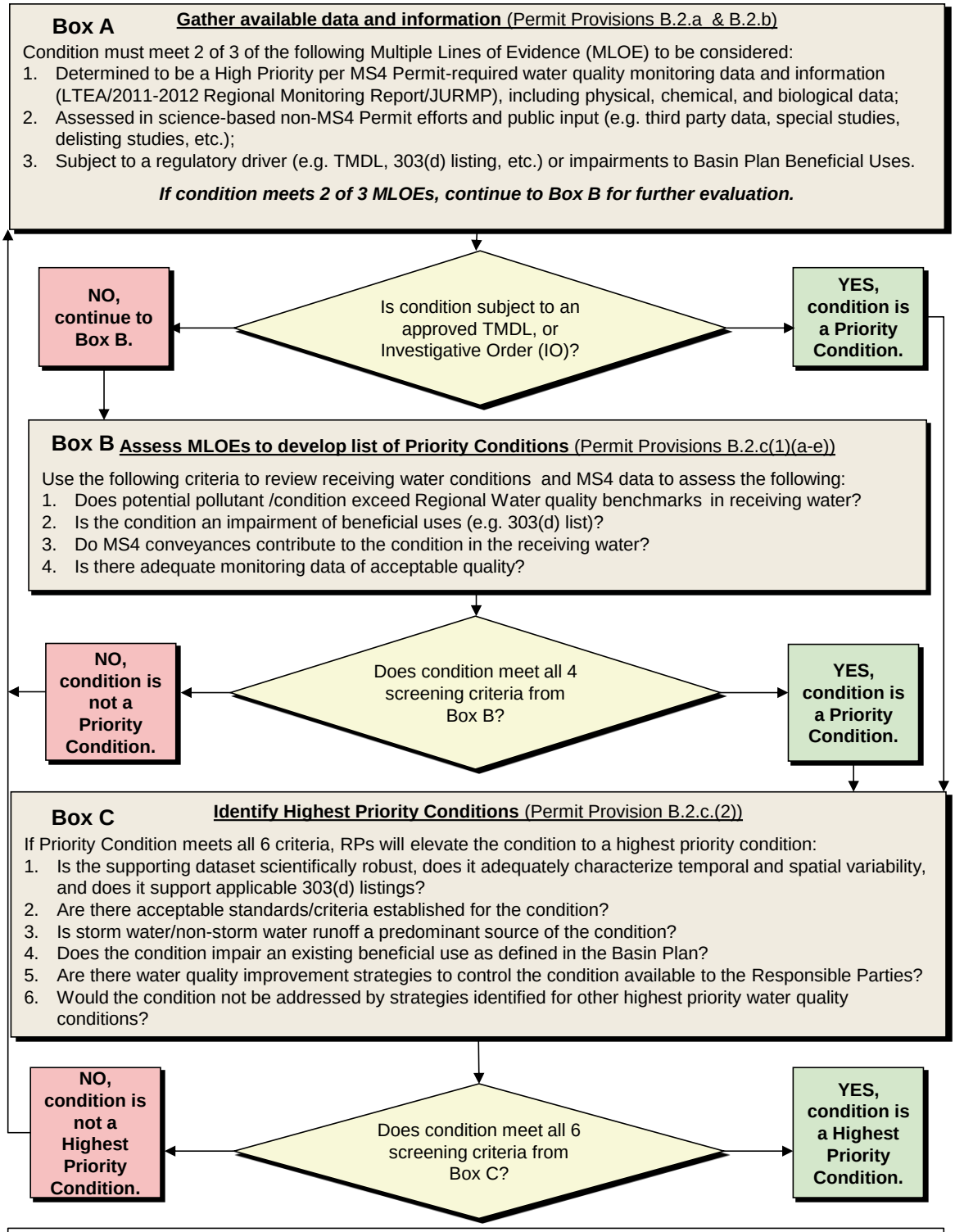
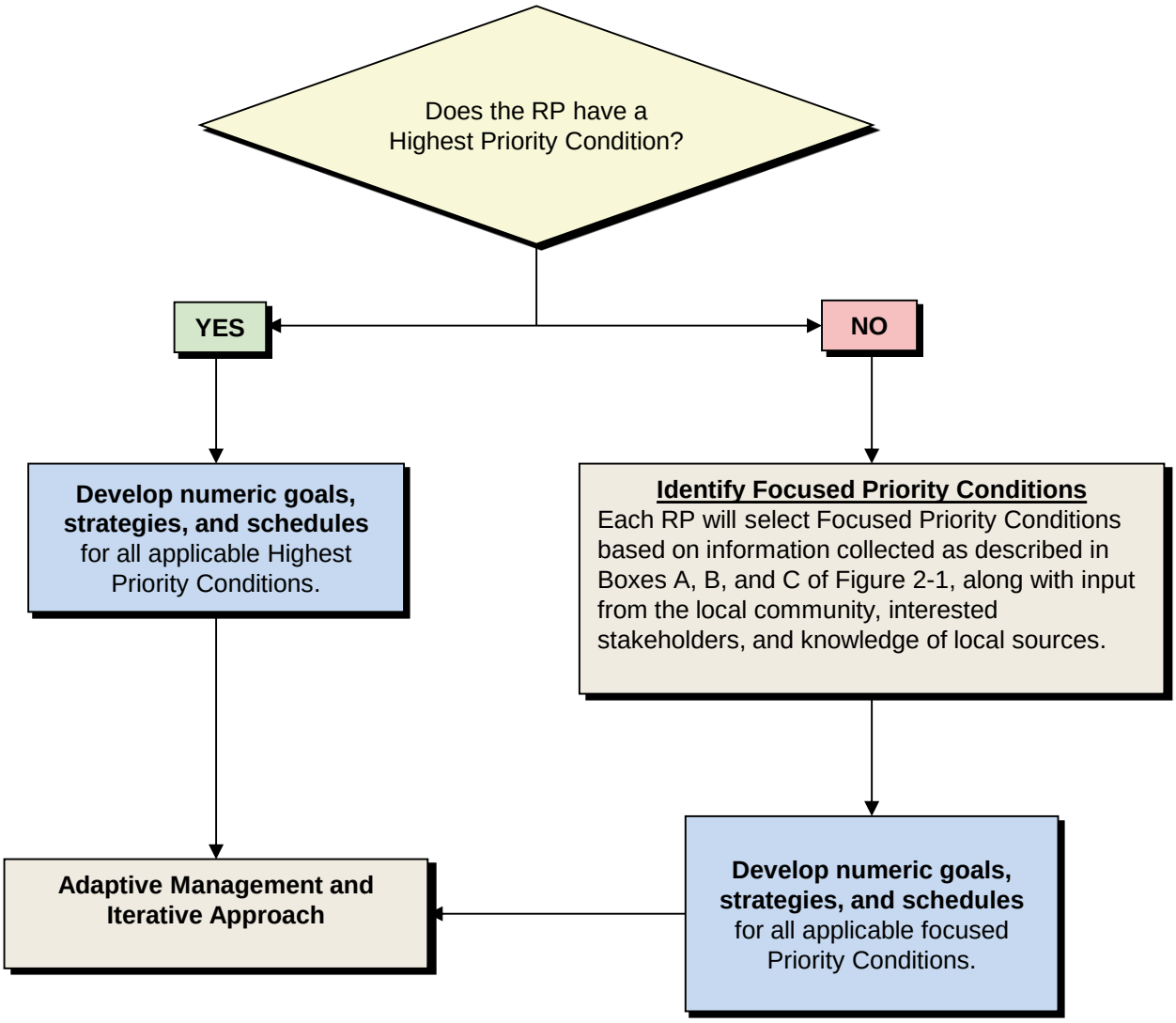


Figure 2-1
Priority Conditions and Highest Priority Conditions Selection Process



Notes:
1. Public input was also collected to aid in identifying priorities.
2. Storm water managers use Best Professional Judgment (BPJ) to aid in the prioritization of conditions, programs, and projects.
3. Regional water quality benchmarks were developed by the San Diego Regional Monitoring Workgroup for use in assessing the regional monitoring program results.
4. Numeric goals for Focused Priority Conditions can be BMP or performance-based goals.
5. The adaptive management process allows RPs to alter goals, strategies and schedules based on the performance of program implementation and to re-evaluate the process as both effective and ineffective strategies are identified and goals and schedules are attained.

Figure 2-2
Focused Priority Conditions Selection Process

2.1.1 Gather and Review Data (Figure 2-1, Box A)

The RPs gathered existing data and information into three lines of evidence for consideration. The evaluation of available data included analysis of the relevant water and sediment chemistry, physical habitat, and biological data received in the "call for data" process. The following are examples of reports, plans, and data assessed in the process:

- 2011 Long Term Effectiveness Assessment (LTEA), which assessed Copermittee historical receiving water and MS4 monitoring data from the 2005-2006 through the 2009–2010 monitoring years;
- 2011–2012 San Diego Copermittee Regional Monitoring Report;
- 2011–2012 San Diego Coastkeeper water quality monitoring data;
- 2011–2012 WURMP Annual Report, including Chollas Creek TMDL monitoring;
- 2011–2012 Jurisdictional Urban Runoff Management Program/Plan (JURMP) Annual Reports, including jurisdictional dry weather MS4 monitoring;
- 2008 WURMP Program, assessment of multiple years of Copermittee historical receiving water and MS4 monitoring data;
- Otay River Watershed Management Plan;
- 2008 Regional Harbor Monitoring Report;
- Water Quality Control Plan for the San Diego Basin (Basin Plan);
- 2008 Southern California Bight Program Report; and
- Stakeholder and public input.

Receiving waters with impairments of beneficial uses or with elevated levels of pollutants or stressors were identified, based on the considerations in Municipal Permit Provision B.2.a. These conditions are presented as a table in Appendix D, Assessment of Impacts of MS4 Discharges on Potential Receiving Water Conditions. Then the considerations in Municipal Permit Provision B.2.b were used to identify potential MS4 causes of or contributions to these conditions. These conditions were then reviewed for data gaps and assessed according to the following MLOEs (Box A of Figure 2-1):

(1) Determined to be a Highest Priority Condition per Municipal-Permit-required water quality monitoring data and information (LTEA/2011-2012 Regional Monitoring Report/JURMP);

(2) Assessed in science-based non-Municipal Permit efforts and public input (e.g., third-party data, special studies, and delisting studies); and

(3) Subject to a regulatory driver (e.g., TMDL and Clean Water Act [CWA] Section 303(d) List of Impaired Water Bodies [303(d) List or Listing]) or impairments of Basin Plan beneficial uses.

Details of these considerations and the results of this assessment are presented in Appendix E, Initial Receiving Water Quality Conditions Multiple Lines of Evidence Assessment. In addition to the considerations discussed above, the following considerations were included as part of the process for gathering and reviewing data.

Biological habitats of special significance are considered sensitive or highly valued receiving waters and include waterbodies designated with the preservation of biological habitats of special significance (BIOL) beneficial use or designated as an ASBS, wetland, or estuary. In the San Diego Bay Watershed Management Area, the following waterbodies and areas are of special significance and are classified as (1) impaired for BIOL beneficial use, (2) impaired for other beneficial use(s); or (3) not impaired. These waterbodies and conditions were taken into account as part of the methodology.

- Impairment of BIOL:
  - None
- Impairment of other beneficial use(s):
  - San Diego Bay: 303(d)-listed for impaired COMM (PCBs);
  - San Diego Bay Shoreline, North of 24th Street Marine Terminal: 303(d)-listed for impaired MAR benthic community effects and sediment toxicity);
  - San Diego Bay Shoreline, Seventh Street Channel: 303(d)-listed for impaired MAR (benthic community effects and sediment toxicity);
  - Pacific Ocean Shoreline, Point Loma HA, at Bermuda Avenue: 303(d)-listed for impaired REC-1 and SHELL (total coliform);
  - San Diego Bay Shoreline, at Americas Cup Harbor: 303(d)-listed for impaired Estuarine Habitat beneficial use (EST) (copper);
  - San Diego Bay Shoreline, near Submarine Base: 303(d)-listed for impaired MAR (benthic community effects, sediment toxicity, and toxicity);
  - San Diego Bay Shoreline, Shelter Island Shoreline Park: 303(d)-listed for impaired REC-1 (*Enterococcus*, fecal coliform, and total coliform);
  - San Diego Bay, Shelter Island Yacht Basin: 303(d)-listed for impaired EST (dissolved copper);
  - San Diego Bay Shoreline, 32nd St. San Diego Naval Station: 303(d) listed for impaired (benthic community effects and sediment toxicity);
  - San Diego Bay Shoreline, at Harbor Island (East Basin): 303(d) listed for EST (copper);
  - San Diego Bay Shoreline, at Harbor Island (West Basin): 303(d)-listed for impaired EST (copper);
  - San Diego Bay Shoreline, at Marriott Marina: 303(d)-listed for impaired EST (copper);

- San Diego Bay Shoreline, at Spanish Landing: 303(d)-listed for impaired REC-1 and SHELL (total coliform);
- San Diego Bay Shoreline, Between Sampson and 28th Streets: 303(d)-listed for impaired MAR (copper and PAHs), COMM (mercury and PCBs), and WARM (zinc);
- San Diego Bay Shoreline, Downtown Anchorage: 303(d)-listed for impaired MAR (benthic community effects and sediment toxicity);
- San Diego Bay Shoreline, G Street Pier: 303(d)-listed for impaired REC-1 and SHELL (total coliform);
- San Diego Bay Shoreline, near Chollas Creek: 303(d)-listed for impaired MAR (benthic community effects and sediment toxicity);
- San Diego Bay Shoreline, near Coronado Bridge: 303(d)-listed for impaired MAR (benthic community effects and sediment toxicity);
- San Diego Bay Shoreline, near Switzer Creek: 303(d)-listed for impaired MAR (chlordane and PAHs);
- San Diego Bay Shoreline, Vicinity of B St and Broadway Piers: 303(d)-listed for impaired MAR (Benthic community effects and sediment toxicity and REC-1 and SHELL (total coliform);
- San Diego Bay Shoreline, at Bayside Park (J Street): 303(d)-listed for impaired REC-1 (Enterococcus and total coliform);
- San Diego Bay Shoreline, Chula Vista Marina: 303(d)-listed for impaired EST (copper);
- Pacific Ocean Shoreline, Coronado HA, at Silver Strand (north end, Oceanside): 303(d)-listed for impaired REC-1 (*Enterococcus*);
- Pacific Ocean Shoreline, Imperial Beach Pier: 303(d)-listed for impaired REC-1 (fecal coliform and total coliform) and COMM (PCBs);
- Pacific Ocean Shoreline, Otay Valley HA, at Carnation Ave and Camp Surf Jetty: 303(d)-listed for impaired REC-1 (total coliform);
- San Diego Bay Shoreline, at Coronado Cays: 303(d)-listed for impaired EST (copper);
- San Diego Bay Shoreline, at Glorietta Bay: 303(d)-listed for impaired EST (copper);
- San Diego Bay Shoreline, Tidelands Park: 303(d)-listed for impaired REC-1 (Enterococcus and total coliform); and
- Jamul Creek: 303(d)-listed for impaired WARM (toxicity).

- Not impaired:
  - San Diego Bay National Wildlife Refuge (NWR)–Sweetwater Marsh Unit

- San Diego Bay National Wildlife Refuge–South Bay Unit.

In addition, the LTEA identified hydromodification, TSS, and higher sediment loadings transported via storm flows as potential causes of low to poor benthic community structure, as measured by the IBI. The Municipal Permit defines hydromodification as:

> *"[T]he change in the natural watershed hydrologic processes and runoff characteristics (i.e., interception, infiltration, overland flow, and groundwater flow) caused by urbanization or other land use changes that result in increased stream flows and sediment transport. In addition, alteration of stream and river channels, such as stream channelization, shoreline erosion are also considered hydromodification, due to their disruption of natural watershed hydrologic processes."*

Based on this information, there is evidence of potential erosional impacts in the San Diego Bay Watershed Management Area. The Regional Monitoring Program was not initially designed to identify specific areas of erosion or hydromodification. The Hydromodification Management Plan (HMP) outlines a monitoring program to assess the effectiveness of hydromodification management facilities. Monitoring activities are ongoing, and include monitoring of inflow to and outflow from BMPs, baseline cross-section monitoring, and flow-based sediment monitoring. Monitoring data generated by the HMP monitoring program will be incorporated and considered in future iterations of the Water Quality Improvement Plan. However, at this time, more information is needed to characterize the spatial extent of current or potential areas affected by increased runoff volume and erosion potential.

The Responsible Parties within the San Diego Bay Watershed Management Area have elected to conduct the optional WMAA as provided by the Municipal Permit. The purpose of this analysis is to develop watershed-specific requirements for structural BMPs and to identify candidate projects related to hydromodification, stream restoration, or structural BMPs. The WMAA is in Appendix J.

The data sources listed above were supplemented with the information gathered during the public workshop and data call to evaluate any additional evidence of adverse chemical, physical, and biological integrity impacts on the receiving waters. Examples of potential receiving water conditions were presented to the public in a workshop on November 22, 2013, based on evaluation of the key data sources. Public input was received during and after the workshop. The public was asked to respond with final data by December 2, 2013. Data provided by the public consisted of observational data, information from regional non-governmental organizations, e-mail communications, and additional reports provided by the Responsible Parties. The data provided information on the evidence of pollutants and stressors at several locations. The majority of the data supported the initial list of receiving water conditions, and the list of receiving water conditions was finalized. These supporting data sources are summarized in Appendix B. The receiving water conditions provided by the public are:

- Pueblo Watershed:

  - No public data were submitted during the call for data and public workshop.
  - Data were submitted for erosion and sediment at Sunset Cliffs Natural Park during the first interim deliverable public comment period and the Final Water Quality Improvement Plan public comment period.
- Sweetwater Watershed:
  - Trash
- Otay Watershed:
  - Trash

Potential Improvements to Quality of MS4 Discharges

The potential improvements in the overall condition of the watershed management area were also considered for the receiving water and MS4 discharges. For the purposes of the Water Quality Improvement Plan, the potential improvement in the receiving waters and overall watershed management area is directly related to the potential improvements in the quality of the MS4 discharges, and therefore those considerations are integral to, and included in, the evaluation of the potential priority conditions.

An initial list of potential impacts from MS4 discharges on receiving water conditions was developed from the evaluation of MS4 outfall monitoring data and the MS4 maps. Impacts from MS4 discharges were identified when one or both of the following criteria were met:

- MS4 outfalls exhibit current or historical monitoring results that exceed water quality standards related to the receiving water condition, based on the subwatershed analysis allowed by the data presented in the LTEA or WURMP Annual Report.
- The MS4 or urban runoff was named as a source or potential source in the 2010 303(d) list of impaired waterbodies or in a TMDL.

The final list of potential impacts from MS4 discharges into subwatersheds in the San Diego Bay WMA is provided in Appendix D. The temporal extent of the MS4 impact is estimated on the basis of the monitoring data or best professional judgment, because the 303(d) list does not provide temporal extent. When additional data that may change the assessment of the potential impacts from MS4 discharges become available, the data will be incorporated per the iterative and adaptive management processes described in Section 6.

Prohibitions and Effluent Limitations

MS4 Permit Provisions A.1 and A.3 prohibit discharges from MS4s that cause or contribute to a receiving water condition, and effectively prohibit all discharges of non-storm water into an MS4. Storm water discharges from an MS4 must be free of pollutants to the MEP and all discharges must comply with applicable WQBELs defined in the MS4 Permit. As described below, potential impacts from MS4 discharges were identified by assessing samples from MS4 outfalls that exceeded water quality standards or that

persistently discharged non-storm water related to receiving water conditions identified in the previous section.

Based on the current regulations, TMDLs, monitoring data, and public input, the concerns in the watershed management area that are well documented as a potential threat to public health or the health of biological communities are bacteria, copper, lead, zinc, diazinon, toxicity (sediment and aqueous), benthic community effects, PAHs, and chlordane. Since the respective TMDLs were adopted, the Responsible Parties have been developing strategies and programs to address bacteria and to maintain REC-1 and REC-2 uses throughout the watershed. The watershed strategies described in Section 4 target the known pollutants and stressors and are intended to have secondary benefits to improve overall water quality by potentially reducing other pollutants and stressors. The Responsible Parties have committed funds to study bacteria, metals, pesticides, and toxicity throughout the San Diego region and to improve the understanding of these pollutants and stressors in the natural environment in wet and dry weather conditions, with the goals of attaining beneficial uses and achieving regulatory compliance.

The previous municipal NPDES Permits were not designed to assess MS4 discharges as they relate to beneficial uses. The contributions from MS4 discharges are not well known for certain priority conditions; therefore, the potential for improvement must be studied under this initial iteration of the Water Quality Improvement Plan, and the conditions may become priorities in future iterations. The receiving water conditions for which the contribution of MS4 discharges remain unknown are presented in Appendix D.

Locations of MS4 Outfalls with Persistent Discharges

Locations of MS4 Outfalls with persistent non-storm water discharges (Municipal Permit Provision B.2.b.(4)) and MS4 Outfalls with storm water discharges (Municipal Permit Provision B.2.b.(5)) that may cause or contribute to receiving water conditions are mapped on Figure 3-1, MS4 Structures and Associated Land Uses in Section 3. Additional information regarding MS4 outfalls is contained in Appendix E and Appendix K.

2.1.2 Methodology To Identify Priority Conditions (Figure 2-1, Box B)

To be considered for evaluation as a Priority Condition, the condition had to meet at least two of the three lines of evidence (LOEs). The RPs assessed the resulting conditions to develop a list of Priority Conditions. If the MS4 contributed to a condition that was subject to a regulatory driver, such as an approved TMDL or Investigative Order, the condition was automatically considered a Priority Condition. These conditions were prioritized in order for the RPs to comply with pre-existing regulations. All other potential conditions were screened according to Municipal Permit Provision B.2.c(1) and to considerations specific to the San Diego Bay WMA. A condition had to meet all of the following four San Diego Bay WMA-specific criteria to be considered a Priority Condition (Box B of Figure 2-1):

(1) Does the potential pollutant or condition exceed regional water quality benchmarks in the receiving water?

(2) Is the condition an impairment of a beneficial use (e.g., 303(d) List)?

(3) Do MS4 conveyances contribute to the condition in the receiving water?

(4) Are there adequate monitoring data of acceptable quality (e.g., temporal and spatial representativeness, meeting planned data quality objectives, and statistical confidence)?

The results of this evaluation are presented in Appendix F. Additional information about the Priority Conditions that is required by the Municipal Permit is provided in Appendix G, Potential Sources.

2.1.3 Methodology To Identify Highest Priority Conditions (Figure 2-1, Box C) and Focused Priority Conditions (Figure 2-2)

The list of Priority Conditions was then evaluated to identify a subset of water quality conditions (identified pursuant to Municipal Permit Provision B.2.c(2)) that were considered to be highest priority. As part of the assessment to determine whether a Priority Condition was to be elevated to a Highest Priority Condition, the RPs developed six criteria by which Priority Conditions should be elevated to Highest Priority Conditions.

Throughout this process, the RPs used their best professional judgment to help identify a Highest Priority Condition. Highest Priority Conditions are required to meet all six of the following criteria (Box C of Figure 2-1), as evaluated in Appendix F:

(1) Is the supporting dataset scientifically robust; does it adequately characterize temporal and spatial variability; and does it support applicable 303(d) Listings?

(2) Are there acceptable standards or criteria established for the condition?

(3) Is storm water/non-storm water runoff a predominant source of the condition?

(4) Does the condition impair an existing beneficial use as defined in the Basin Plan?

(5) Are there water quality improvement strategies to control the condition available to the RPs?

(6) Would the condition not be addressed by each RP's strategies identified for other Highest Priority Conditions?

As part of the assessment to determine whether a priority was to be elevated to a highest priority, the RPs also considered the multiple benefit effects of various strategies or BMPs (Criterion 6, above). For instance, it may not be necessary to elevate a particular Priority Condition to a Highest Priority Condition if there are strategies or BMPs already identified to address another Highest Priority Condition and if those strategies or BMPs are known or will be considered in the effectiveness evaluation of load reductions. The goal of this approach is to enable the RPs to focus resources and efforts where they are most needed.

The methodology determined the Highest Priority Conditions for the WMA; however, some jurisdictions do not discharge or contribute to the Highest Priority Conditions. While this is a positive result that may reflect a high level of attainment of beneficial uses, these jurisdictions recognize the need to develop numeric goals, strategies, and schedules for the Priority Conditions within their jurisdictions. Accordingly, and based on input from the Consultation Panel, these RPs identified Focused Priority Conditions. The Focused Priority Conditions were based on the results of the assessment described above (Figure 2-1), local knowledge of conditions and pollutants, and best professional judgment. The RPs considered local issues and concerns, including those raised by the public and citizen groups, ongoing jurisdictional strategies and policies, and known sources of pollutants and stressors. Figure 2-2 summarizes the process for identifying Focused Priority Conditions.

The Priority Conditions selection methodology may be updated periodically through an adaptive management approach that incorporates new data and information to refine the selection process. Re-evaluations and recommendations for modifications to the priorities list will be addressed in future updates of the Water Quality Improvement Plan. The list of priorities may change as water quality is improved and additional information and data are obtained.

2.2 Summary of Highest and Focused Priority Conditions

As described in Section 2.1, the RPs collected data to create an initial list of conditions that were then evaluated to identify Priority Conditions and Highest Priority Conditions.

2.2.1 Selection of Priority Conditions

Following the methodology presented in Section 2.1, the RPs analyzed the available reports, plans, and data to identify water quality conditions for consideration as a Priority Condition. Although the RPs' water quality monitoring programs to date have focused heavily on water chemistry, the RPs will continue to assess available physical and biological data as part of the periodic Water Quality Improvement Plan updates.

Of the 129 water quality conditions initially identified and assessed, 35 water quality conditions met the receiving water quality conditions MLOE criteria (Box A of Figure 2-1). Of the 35 water quality conditions, 27 conditions met the Priority Condition assessment criteria (Box B of Figure 2-1). The following list provides the 27 priority conditions and the HU, HA/HSA, and waterbody that it affects:

- Metals (Dissolved Copper), Pueblo, Point Loma/908.1, Shelter Island Yacht Basin
- Bacteria, Pueblo, Point Loma/908.1, Shelter Island Shoreline Park
- Metals (Dissolved Copper, zinc, and lead), Pueblo, San Diego Mesa/908.22, Chollas Creek
- Bacteria, Pueblo, San Diego Mesa/908.22, Chollas Creek
- Diazinon, Pueblo, San Diego Mesa/908.22, Chollas Creek

- Nutrients (Phosphorus, Total Nitrogen), Pueblo, San Diego Mesa/908.22, Chollas Creek
- Trash, Pueblo, San Diego Mesa/908.22, Chollas Creek
- PAHs, Pueblo, San Diego Mesa/908.22, Chollas Creek (at Mouth)
- Chlordane, Pueblo, San Diego Mesa/908.22, Chollas Creek (at Mouth)
- PCBs, Pueblo, San Diego Mesa/908.22, Chollas Creek (at Mouth)
- PAHs, Pueblo, San Diego Mesa/ 908.2, San Diego Bay Shoreline, between Sampson and 28th Streets
- Mercury, Pueblo, San Diego Mesa/908.2, San Diego Bay Shoreline, between Sampson and 28th Streets
- PCBs, Pueblo, San Diego Mesa/908.2, San Diego Bay Shoreline, between Sampson and 28th Streets
- Zinc, Pueblo, San Diego Mesa/908.2, San Diego Bay Shoreline, between Sampson and 28th Streets
- PAHs, Pueblo, San Diego Mesa/908.2, San Diego Bay Shoreline, near Switzer Creek (at the Mouth)
- PCBs, Pueblo, San Diego Mesa/908.2, San Diego Bay Shoreline, near Switzer Creek (at the Mouth)
- Chlordane, Pueblo, San Diego Mesa/908.2, San Diego Bay Shoreline, near Switzer Creek (at the Mouth)
- PAHs, Pueblo, National City/908.3, Mouth of Paleta Creek/Seventh Street Channel
- PCBs, Pueblo, National City/908.3, Mouth of Paleta Creek/Seventh Street Channel
- Chlordane, Pueblo, National City/908.3, Mouth of Paleta Creek/Seventh Street Channel
- Bacteria, Sweetwater, Lower Sweetwater (909.1), Lower Sweetwater River below reservoir
- Nutrients, Sweetwater, Lower Sweetwater (909.1), Lower Sweetwater River below reservoir
- Trash, Sweetwater, Lower Sweetwater (909.1)
- Bacteria, Sweetwater, Middle Sweetwater (909.2)
- Bacteria, Otay, Coronado/910.1, Pacific Ocean Shoreline at Carnation Ave and Camp Surf Jetty

- Bacteria, Otay, Coronado/910.1, Pacific Ocean Shoreline at Tidelands Park
- Nitrogen, Otay, Dulzura/910.3, Lower Otay Reservoir

Two water quality conditions met the Highest Priority Condition assessment criteria (Box C of Figure 2-1). Five receiving water quality conditions were identified as Focused Priority Conditions (Figure 2-2). The rationale for the selection of Focused Priority Conditions is provided in Section 2.1.3. For details on the assessment results, refer to Appendix E (Initial Receiving Water Quality Conditions MLOEs Assessment) and Appendix F (Priority Water Quality Conditions and Highest Priority Water Quality Conditions Evaluation).

The Highest Priority Conditions and Focused Priority Conditions identified through this process are summarized in Table 2-1. Highest Priority Conditions are indicated in bold text. Maps of Highest Priority Conditions and Focused Priority Conditions are available in Appendix B.

Table 2-1
San Diego Bay WMA Summary of Highest and Focused Priority Conditions

HU	Condition	Pollutant/ Stressor	Geographic Extent (HU/HA)	Responsible Parties
Pueblo (908)	**Water Quality[1]**	**Bacteria; Dissolved copper, lead, and zinc**	**Chollas Creek (908.22)**	**City of La Mesa City of Lemon Grove City of San Diego County of San Diego Port of San Diego Caltrans**
	Water Quality	Copper and zinc (Wet Weather)	Airport Authority jurisdiction within 908.21	Airport Authority
Sweetwater (909)	Riparian Area Quality	Various	Paradise Creek—lower Sweetwater, HA 909.1[2]	City of National City
	Physical Aesthetics	Trash	The western portion of the City of Chula Vista within HA 909.1	City of Chula Vista Port of San Diego
Otay (910)	Swimmable Waters (Beaches)	Bacteria	Applicable RP jurisdiction within HA 910.1	City of Coronado Port of San Diego
	Physical Aesthetics	Trash	Applicable RP jurisdiction in HA 910.2	City of Chula Vista City of Imperial Beach Port of San Diego

Notes:

1. **The conditions in bold are the Highest Priority Conditions for the San Diego Bay WMA**. Pollutants in regular font are the Focused Priority Conditions.
2. For the purposes of the Water Quality Improvement Plan, Paradise Creek is considered to be part of the lower Sweetwater area, for which the San Diego Bay priority condition analysis has identified potential impacts to beneficial uses such as habitat and non-contact recreation.

2.2.2 Identification of Highest Priority Conditions

The Highest Priority Conditions were identified as the potential impairments in Chollas Creek (908.22 HSA) of water quality by indicator bacteria (contact water recreation beneficial use [REC-1]) and by metals (warm freshwater habitat beneficial use [WARM], for copper, lead, and zinc). The Highest Priority Conditions listed in Table 2-1 have the greatest potential for near-term improvement in water quality that can be achieved by controlling discharges from the MS4. The two Highest Priority Conditions in the Chollas Creek HSA have approved TMDLs and extensive research has been conducted to assess their contributions from the RPs' MS4s. The research includes the existence of a robust monitoring dataset demonstrating elevated levels of pollutants and stressors in the HSA, with evidence that the MS4 is a predominant source of the impairment. In addition, a Comprehensive Load Reduction Plan (CLRP) has previously been developed to identify how the RPs plan to reduce the contribution of MS4 discharges.

2.2.3 Identification of Focused Priority Conditions

RPs that did not have any MS4 within a portion of the watershed for which a Highest Priority Condition has been identified selected Focused Priority Conditions (Table 2-1), for which numeric goals, strategies, and schedules will be developed. The RPs responsible for each Focused Priority Condition will develop their strategies to target Focused Priority Conditions with respect to their jurisdiction. The rationale for selecting the Focused Priority Conditions is summarized below.

2.2.3.1 Pueblo HU

Focused Priority Conditions have been identified in the Pueblo HU for the following jurisdiction:

- Airport Authority.

Water Quality (San Diego Mesa HA 908.21): The Airport Authority has identified metals in wet weather as a Focused Priority Condition, based on monitoring data and knowledge of sources collected under their industrial stormwater program. Wet weather runoff sampling has been conducted at San Diego International Airport since the inception of the Airport Authority, in 2003. The runoff sampling is conducted in compliance with the State's Industrial General Stormwater Permit (IGP) (NPDES Permit No. CAS000001). The annual sampling data are published on the Airport Authority webpage. Historically, the sampling data have shown that copper and zinc consistently exceed the 2008 USEPA NPDES Multi-Sector General Permit (2008 MSGP) benchmark values. As such, the Airport Authority has identified total and dissolved copper and total and dissolved zinc as the contaminants of concern and water quality as a Focused Priority Condition. While aerial deposition of copper and zinc generated from offsite may be one source, likely onsite sources have also been identified throughout existing airport facilities (building roofs and galvanized fencing) and operations (tire and brake pad wear from aircraft and vehicle traffic).

2.2.3.2 Sweetwater HU

Focused Priority Conditions have been identified in the Sweetwater HU for the following jurisdictions:

- City of National City;
- City of Chula Vista; and
- Port of San Diego (Port).

Riparian Area Quality (Lower Sweetwater HA 909.1): The City of National City has identified riparian area quality along Paradise Creek as a Focused Priority Condition. The selection was based on a number of local factors, including public knowledge of the condition and ongoing improvement efforts. The City of National City is the only municipality that drains to Paradise Creek, although other entities such as school districts and transportation agencies are also located in the Paradise Creek watershed. Paradise Creek is listed as being part of the Pueblo HU in the Basin Plan, but actually drains to the

Sweetwater River Estuary. For the purposes of the Water Quality Improvement Plan, Paradise Creek is considered to be part of the lower Sweetwater area, for which the San Diego Bay priority condition analysis has identified potential impacts on beneficial uses, such as habitat and non-contact recreation.

Of the water bodies within the City of National City, Paradise Creek was deemed to have the greatest potential for improvements benefitting both water quality and the community. While most of the other water bodies within the City are largely channelized and fenced off to prevent public access, several segments of Paradise Creek are directly accessible to the public in established City parks. In Paradise Creek, impacts on riparian area quality include a concrete channel bottom and non-native bank vegetation in the Kimball Park area and occasional trash at various points along the creek. Improving riparian area quality along Paradise Creek is part of the City's larger vision to provide residents in the central and western portions of the City with improved access to natural environments and green spaces. The City has also established a partnership with a local environmental group, Paradise Creek Educational Park, Inc., which maintains native vegetation along portions of Paradise Creek and completes regular creek cleanups. Improvements to riparian area quality in Paradise Creek may also positively impact the downstream Paradise Marsh portion of the Sweetwater Marsh Complex, which is part of the San Diego Bay National Wildlife Refuge.

Physical Aesthetics (Lower Sweetwater HA 909.1): The City of Chula Vista and the Port of San Diego have identified physical aesthetic impacts that are due to trash as a Focused Priority Condition. Trash inspections of storm drain structures during the previous dry weather and MS4 outfall monitoring programs in the City of Chula Vista have found that there is more trash in storm drains in the western portion of the City's jurisdiction. Additionally, the public has expressed concern about trash in both the Sweetwater and Otay HUs. Focusing on strategies to reduce trash helps improve both the aesthetic quality as well as various beneficial uses of receiving waters. Wildlife can ingest or become entangled in trash that gets into the waterways. Trash that settles in receiving waters can also harm benthic organisms and can contaminate the sediment in which these creatures live. By focusing on trash, the City of Chula Vista and the Port of San Diego can improve receiving water quality and increase public awareness and education about proper waste disposal. BMPs that focus on trash also have the potential to address other pollutants, thus achieving a multiple-benefit effect.

2.2.3.3 Otay HU

Focused Priority Conditions have been identified in the Otay HU for the following jurisdictions:

- City of Coronado;
- City of Imperial Beach;
- City of Chula Vista; and
- Port of San Diego.

Swimmable Waters (Coronado HA 910.1): The RPs in the Coronado HA (the City of Coronado and the Port of San Diego) have identified swimmable waters as a Focused Priority Condition. These RPs will work collaboratively, where feasible, to address receiving water conditions and preserve and/or enhance swimmable waters in the Coronado HA. Water recreation e.g., boating, fishing, swimming, bird watching, and beach walking) is a major part of the quality of life in the San Diego Bay. As such, swimmable waters are important to the local community and stakeholders.

Bacterial indicators have been identified as a potential pollutant that may affect swimmable conditions at beaches such as those in the Coronado HA. The RPs plan to collaborate on developing an approach to address bacteria.

Physical Aesthetics (Otay Valley HA 910.2): Three RPs in the Otay Valley HA (the City of Chula Vista, the City of Imperial Beach, and the Port of San Diego) have identified physical aesthetic impacts due to trash as a Focused Priority Condition. The RPs will work collaboratively, where feasible, to address impairments of physical aesthetics due to trash. In addition to the concern expressed by the public about trash in the Otay HU during the public participation process, the Otay River Watershed Management Plan (ORWMP) identified trash (e.g., illegal dumping and litter) as a significant issue. Activities implemented to reduce trash can improve water quality and help to increase public awareness and education about proper waste disposal. BMPs that focus on trash also have the potential to address other pollutants (such as bacteria), thus achieving a multiple-benefit effect.

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3 Municipal Separate Storm Sewer System (MS4) Sources of Pollutants and/or Stressors

Known and suspected sources of storm water and non-storm water pollutants and/or stressors associated with MS4 discharges that cause or contribute to Highest Priority Conditions were identified on the basis of available resources and the considerations required by the Municipal Permit (Provision B.2(d)). Eight primary resources provided the information needed:

- 2011 LTEA;
- 2008 WURMP Program;
- 2011–2012 WURMP Annual Report;
- 2011–2012 JURMP Annual Reports;
- Stakeholder and public input;
- Approved and draft TMDLs source analysis information;
- Bacteria source characterization process (City of San Diego, 2012); and
- MS4 structure geospatial data maintained by each RP.

The potential source input received from stakeholders at the November 22, 2013, public workshop and additional data sources used to augment the primary sources listed above are in Appendix G.

3.1 Potential Sources of Pollutants and/or Stressors

Updates to MS4 source identification (Municipal Permit Provision B.2.d) were built upon source assessments of general pollutant categories previously conducted as a part of the 2011 LTEA and the 2012 WURMP Annual Report. The 2011 LTEA began with sources identified in the previous Municipal Permit (R9-2007-001) and updated the list, based on the most recent inventory and available data associated with the JURMPs. To identify sources, the LTEA evaluated the available wet and dry weather receiving water and outfall monitoring data and IDDE program results, as well as the adequacy of the data to identify and prioritize sources and/or stressors. Additional information and supporting documentation are in Appendix G.

To assess the potential sources of pollutants and/or stressors of Focused Priority Conditions and Highest Priority Conditions, tables were developed to correlate Priority Conditions with the RP's currently inventoried sources. The process used to develop the tables was taken directly from the 2005 Baseline LTEA (BLTEA) and 2011 LTEA. A total of 37 facility, area, and activity categories were evaluated and identified as likely sources of stressors in the LTEA, which was conducted on a regional level. The 2012 WURMP Annual Report refined the likely sources of pollutant categories identified in the LTEA to

those that are found specifically within the San Diego Bay WMA. The inventoried sources in each of the HAs are also summarized in Appendix G.

Sources other than the MS4 discharges that are not under the RP's regulatory authority may also contribute to the potential impairments within the San Diego Bay WMA. These other pollutant sources are summarized in Table 3-1. Discharges from these sources are often conveyed to receiving waters by the RPs' MS4s.

Table 3-1
Other Known or Suspected Sources of Pollutants and/or Stressors

Other Known or Suspected Sources	Description
Phase II MS4 Outfalls	Smaller agencies or areas regulated under the State's Phase II MS4 Permit (State Board Order No. 2013-0001-DWG), such as schools, the Metropolitan Correctional Center San Diego (Pueblo HU), and Donovan State Prison (Otay HU)
Other Permitted Discharges	Discharges covered under California's Construction General Permit and Industrial General Permit; discharges from waste sites (e.g., landfills and waste transfer stations); and discharges covered by other NPDES permits (i.e., US Navy, Caltrans)
Other Potential Point Sources[1]	Private outfalls; waste water collection systems and treatment plants (POTWs); and discharge of drinking water supply into receiving waters in boating activities
Other Non-Point Sources[2]	Agriculture (sites currently operate under a conditional waiver from Regional Board), livestock operations, wildlife, homeless encampments, sewage infrastructure, bacteria regrowth, atmospheric deposition, and other natural sources (e.g., groundwater infiltration and rising groundwater)

Notes:

POTWs = publicly owned treatment works

1. A point source is any discernible, confined, and discrete conveyance, including, but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft from which pollutants are or may be discharged. (Clean Water Act, Section 502(14)).
2. Non-point source pollution is derived from many different sources and is transported by rainfall or snowmelt moving over and through the ground, which picks up and carries away natural and human-made pollutants, finally depositing them into lakes, rivers, wetlands, and coastal waters.

RPs are responsible for controlling pollutant discharges from their MS4s. The USEPA, State Board, and Regional Board regulate discharges from construction sites and from industrial, agricultural, Phase II, state, federal, and Indian reservation lands under separate permits or waivers. However, the Copermittees' Municipal Permit and Caltrans' MS4 Permit hold the RPs responsible for pollutants originating from these lands if those pollutants are ultimately discharged from an MS4 operated by one of the RPs. Therefore, the RPs recognize the need for coordination and improved communication with non-municipal sources and with the appropriate regulatory agencies to ensure that these

discharges are appropriately regulated before entering the RPs' storm drain systems and to improve water quality throughout the watershed.

All sources of stressors have different discharge potential under wet and dry conditions, and the transport mechanisms are different. During wet weather, pollutants from these sources discharge to the MS4 and then to the receiving waters via storm water runoff. The discharge is spread over a general area and can be represented by a category such as land use. Runoff during wet weather mobilizes and transports pollutants from areas that are collectively associated with particular land uses. This is in contrast to the pollutants found in dry weather urban runoff, which are generally associated with identifiable dischargers, such as residences and commercial facilities.

During dry weather, discharge pollutants are typically conveyed by non-storm water runoff, which includes illicit discharges, over-irrigation, groundwater infiltration, and permitted discharges; these discharges are generally associated with specific facilities, areas, or activities. The different wet and dry weather transport mechanisms require varying strategies to address the sources and to minimize the pollutants through selected strategies. As more source information is gathered, the priorities may change and vary by RP. Detailed information on land uses in each of the HAs is summarized in Appendix B.

Identifying the potential sources, pollutant discharges, and/or other factors causing the San Diego Bay WMA's Priority Conditions, to the extent possible, will assist the RPs in directing programmatic efforts and resources toward relevant Focused Priority Conditions and Highest Priority Conditions, as appropriate.

3.1.1 Locations of the Responsible Parties' MS4s

The MS4 maps discussed in Section 2 were reviewed as part of the source assessment process because the MS4 can convey stressors to the receiving waters. Geospatial analysis of storm drain outfall, outlet, channel, and culvert data received from the Responsible Parties was conducted as part of the source identification. The Pueblo San Diego Watershed contains the most concentrated area of urban land uses and MS4 outlets and outfalls. MS4 outlets and outfalls are concentrated in the developed, lower portions of each watershed, as presented in Figure 3-1. Figure 3-1 contains MS4 outlets and outfalls for the entire San Diego Bay Watershed Management Area.

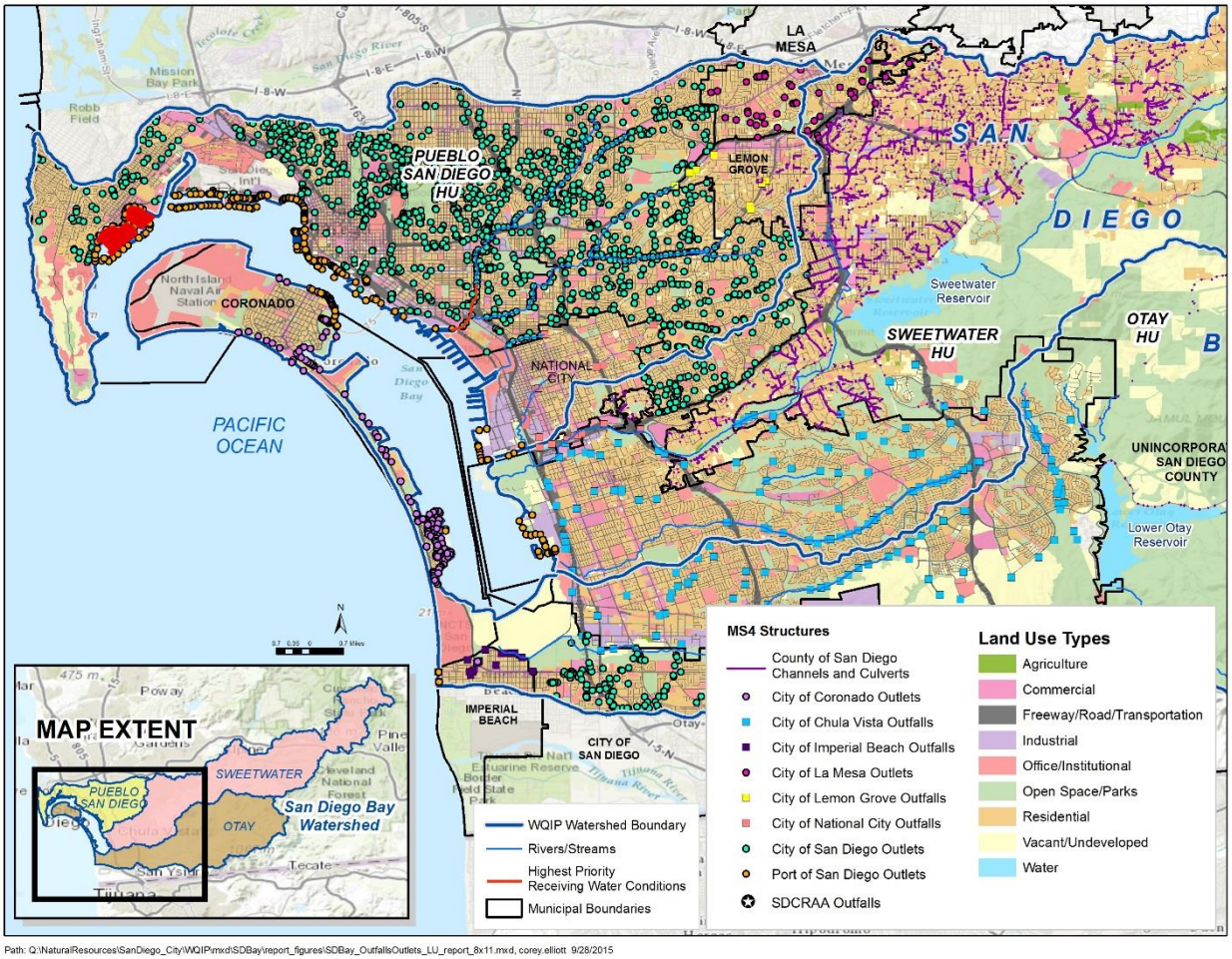


Figure 3-1
MS4 Structures and Associated Land Uses

(SANDAG, 2009)

3.1.2 Phase II MS4s

Phase II MS4s are smaller agencies (relative to municipalities) or areas that are regulated under the State's Phase II MS4 Permit (SWRCB Order No. 2013-0001-DWG); they are outside the authority of the Responsible Parties and can include, but are not limited to, facilities such as prisons. Phase II MS4 permittees are responsible only for the runoff from their facilities and activities, whereas the Responsible Parties are responsible for the receiving runoff from other sources. Some Phase II MS4s have been named in TMDLS, such as the Bacteria TMDL (Regional Board, 2010). Contribution from Phase II MS4s is a suspected source of pollutants in both storm water and dry weather non-storm water discharges. There are two Phase II MS4 permittees—Metropolitan Correctional Center San Diego (MCC San Diego) and R.J. Donovan Correctional Facility (Donovan State Prison)—in the San Diego Bay Watershed Management Area. MCC San Diego, part of the Bureau of Prisons, is located within the Pueblo HU, which has highest priority water quality conditions for bacteria and metals. Donovan State Prison is located in the Otay

HU, which is upstream from the Physical Aesthetics Focused Priority Condition. MCC San Diego and Donovan State Prison are both potential sources of stressors for the highest or focused conditions in the San Diego Bay Watershed Management Area, respectively, but are considered unlikely to be a major contributor to highest and focused conditions because there is minimal outdoor activity associated with the facilities.

3.1.3 Other Permitted Discharges

Other permitted discharges, such as discharges covered under the state's Construction General Permit and Industrial General Permit, may also contribute to impairments. For example, industrial waste treatment facilities have been identified as a potential point source of copper. Such discharges are often conveyed to receiving waters by the Responsible Parties' MS4s.

In addition to the Permit, five other types of storm water discharge permits have been identified in the drainage areas with the highest water quality priorities in the San Diego Bay Watershed Management Area, as presented in Table 3-2.

Table 3-2
Other Discharge Permits

Permit Type	Number of Permits in the Pueblo HA
Municipal Storm Water	1
Industrial Storm Water	93
Construction Storm Water	89
Caltrans Storm Water	1
Other Discharge Permits[1]	5
Total:	189

Notes:
NPDES = National Pollutant Discharge Elimination System
Caltrans = California Department of Transportation
1. Includes Order No. R9-2010-0003, R9-2011-0022, 2011-0002-DWQ, 2011-0003-DWQ, and 2011-0004-DWQ. Dischargers may apply for such permits, as necessary.
Source: SWRCB 2012a, SWRCB 2012b, SWRCB 2012c.

Waste sites (e.g., landfills and waste transfer stations) and construction sites have also been identified as significant point sources of pollutants in the San Diego Region (Regional Board, 2010). Although there are five municipal waste sites and one waste site owned by the San Diego Unified School District in the areas adjacent to the highest-priority water quality conditions, none were identified as a likely source of stressors in the 2012 WURMP Annual Report. Additional data are necessary to determine whether waste sites are a source of stressors for the highest and focused conditions in the San Diego Bay Watershed Management Area. However, a number of open waste cleanup sites also exist within the watershed management area, including gas stations with leaking underground fuel tanks, which may contribute pollutants to soil and groundwater and

which can eventually reach receiving waters. The State Water Resources Control Board addresses waste cleanup sites through a separate regulatory mechanism.

3.1.4 Locations of Major Structural Controls for Storm and Non-Storm Water

The Cities of Coronado and Imperial Beach have dry weather flow diversion systems to prevent dry weather flow from leaving the MS4 and entering receiving waters. Structural BMPs have also been implemented within each Responsible Party's jurisdiction to address Standard Urban Stormwater Mitigation Plan (SUSMP) BMP requirements (from the previous Municipal Permit). These SUSMP BMP requirements may address one or more of the priority conditions and their sources. In addition, Responsible Parties in the three HUs currently implement decentralized structural BMPs, as necessary, based on current land development requirements for pollutant removal, volume reduction, and velocity reduction of storm water entering the MS4. As shown in Figure 3-1, the two major structural controls in the upper portions of the Sweetwater and Otay HUs are reservoirs. Reservoirs limit the transport of storm water and pollutants in discharges and reduce flow velocity reduction from the upper portions of the respective drainage areas. The RPs will consider the locations of existing structural controls when considering future implementation efforts and potential locations for major structural controls.

3.1.5 Illicit Discharge, Detection, and Elimination (IDDE) Program and Dry Weather Monitoring Data

In addition to the evaluation in the LTEA, data from the IDDE program and receiving water monitoring programs were reviewed to identify persistent dry weather flows and illicit discharges by the Responsible Parties' MS4s. Dry weather field screening, inspections, and complaint responses have been shown to be effective in detecting and eliminating illicit discharges (San Diego County Municipal Copermittees, 2011b).

3.1.5.1 Dry Weather Field Screening and Persistent Flow

Dry weather field screening data collected as part of the MS4 Permit's transitional monitoring program were also considered on the basis of dry weather persistent flows, where available. Flow during dry weather may result from permitted, allowed, or illegal discharges. Dry weather flow provides a mechanism for transport of bacteria from facilities, areas, or activities to receiving waters.

Per the MS4 Permit Provision D.2.a(2)(b)(iv),

> *"Persistent flow is defined as the presence of flowing, pooled, or ponded water more than 72 hours after a measureable 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.*"

Based on a review of the MS4 outfall map in Section 2, the Responsible Parties have identified a total of 43 major MS4 outfalls in the San Dieguito River Below Lake Hodges subwatershed and 45 major MS4 outfalls in the San Dieguito River Above Lake Hodges

subwatershed. No major outfalls were identified in the San Dieguito River Above Sutherland Reservoir subwatershed. The Responsible Parties have identified 18 major MS4 outfalls in the San Dieguito River WMA that may persistently discharge non-storm water. These outfalls are presented in Appendix K.

3.1.5.2 Facility Inspections

Facility inspections complement the IDDE program and include informing the public about storm water and dry weather runoff. Inspections also detect potential dry weather flows discharging from facilities. Inspections may confirm whether specific types of facilities are significant sources of bacteria. Although information is available on facility inspections based on the previous permit JURMP annual reporting requirements, the JURMP data assessment did not provide detailed information linking facility inspections to sources of bacteria. Each inspection notes which BMPs are being used and where the inspection takes place. Section 5 (Monitoring and Assessment) and Section 6 (Iterative Approach) describe how JRMP report requirements will be used to answer water-quality-related questions by providing more detail on the individual inspections.

3.1.5.3 Storm Water Complaints

The Responsible Parties have implemented regional and jurisdictional storm water telephone hotlines since the issuance of Order R9-2001-01 in 2001. Members of the public may call in complaints to the Regional Hotline (maintained by the County of San Diego) or report them online; the County of San Diego then refers the complaints to the appropriate jurisdiction for followup. In addition, jurisdictions respond to complaints received on their own telephone hotlines. Complaints received via the hotlines have helped Responsible Parties identify and eliminate illicit discharges, particularly during dry weather (San Diego County Municipal Copermittees, 2011b). As with facility inspections, storm water complaints were reported annually on the basis of the previous permit JURMP annual reporting requirements, but the JURMP data assessment did not provide detailed information linking storm water complaints and IDDE investigations to sources.

3.2 MS4 Sources of Highest Priority Conditions

Section 2.2.2 established that the Highest Priority Conditions in the San Diego Bay WMA are the impairments of REC-1 due to bacteria and WARM due to dissolved metals in Chollas Creek (908.22 HSA) in the Pueblo HU. The goal of this section is to comply with the requirements of Provision B.2.d of the Municipal Permit (identification and prioritization) and identify, to the extent possible, the known or suspected sources, pollutant discharges, and/or other factors causing the Highest Priority Conditions within the Chollas Creek HSA.

As discussed in Section 2.3.1, source identification and prioritization were based upon source assessments previously conducted as a part of the 2011 LTEA and refined in the 2012 WURMP Annual Report. The pollutant source assessment was based on currently available data associated with the RPs' monitoring, inspections, and inventories that were refined for each of the Highest Priority Conditions. These data sources have provided

sufficient information to categorize the likely sources of stressors of the Highest Priority Conditions.

3.2.1 Sources of Pollutants and/or Stressors

To determine and prioritize potential sources of pollutants or stressors for the Highest Priority Conditions in the Chollas Creek HSA, likely sources were reviewed based on information collected as part of the 2012 WURMP Annual Report. Table 3-3 summarizes the facilities, areas, and activities identified by the RPs as known or suspected sources of pollutants and/or stressors identified for the Highest Priority Conditions for the San Diego Mesa HA, which includes the Chollas Creek HSA.

Table 3-3
Likely Sources of Pollutants and/or Stressors of Highest Priority Conditions

Source Type	Total Number of Facilities in HA[1]	Bacteria	Metals
Chollas Creek (San Diego Mesa HA)			
Agriculture	1	✓	✓
Animal Facilities	82	✓	
Automotive	876		✓
Eating or Drinking Establishments	2,316	✓	
Equipment	91		✓
General Industrial	95		✓
Institutional	68		✓
Manufacturing	57		✓
Metal	40		✓
Nurseries/Greenhouses	18	✓	✓
Stone/Glass Manufacturing	9		✓
Storage/Warehousing	210		✓
Municipal	298		✓
Residential Areas[2]	10,716 (acres)	✓	✓

Notes:

✓ = Stressor has been identified for the Highest Priority Condition in the HA.

Blank = Stressor is not identified as a potential source in the WURMP Annual Reports.

1. Total number of facilities in San Diego Mesa HA. Many of these facilities do not drain to the Chollas Creek HSA.
2. Residential areas are reported as acreage and not by the number of dwellings.

Additional Potential Sources of Bacteria

The Chollas Creek Bacteria TMDL[6] Technical Report identifies wildlife areas as including agriculture, dairy-intensive livestock operations (not currently subject to NPDES requirements), open recreation, open space, and water resource land uses. The wildlife areas partially account for bacteria contributions from wild animals and decaying plant sources in Chollas Creek (Regional Board, 2010).

The Bacteria Source Characterization Process (Chollas Creek) identifies homeless encampments as a bacteria source that can directly discharge bacteria from human origins to receiving waters (City of San Diego, 2012). Sources related to sewage infrastructure (such as sewer collection systems, sanitary sewer overflows, illicit discharges to the sewer system, and septic tanks) have also been identified by the RPs as potential sources of bacteria in Chollas Creek (City of San Diego, 2012).

In addition to these non-point sources, the contribution of groundwater into the MS4 through infiltration and receiving waters at areas where the groundwater table reaches surface water (rising groundwater) may also be considered a non-point source for freshwater discharges (Regional Board, 2010).

Additional Potential Sources of Dissolved Metals

The highest relative load contributions of dissolved copper, lead, and zinc in Chollas Creek have been attributed to freeways and to commercial/industrial land uses, which may include both point and non-point sources (Regional Board, 2008). Discharge of drinking water supply into Chollas Creek has also been identified as a point source of metals. Metals in drinking water may be partially contributed to by piping infrastructure. Industrial sources may be a significant source of copper, lead, and zinc in Chollas Creek (Regional Board, 2008). Atmospheric deposition of metals has been found to be a non-point source (City of San Diego, 2012). Additionally, brake pad wear on automobiles is a likely non-point source of copper, and, to a lesser extent, a source of lead and zinc (Regional Board, 2008) due to deposition of brake dust that is transported by rainfall into Chollas Creek.

3.2.2 Controllability of Sources of Pollutants and/or Stressors

Sources in the Chollas Creek HSA were prioritized based on two factors: the ability of the RPs to control the source and the level of anthropogenic (i.e., associated with humans) contribution. The prioritization of the known and suspected sources is described in Section 3.2.3.

[6] Chollas Creek Bacteria TMDL, commonly referred to as the Twenty Beaches and Creeks Bacteria TMDL, California Regional Water Quality Control Board, San Diego Region (Regional Board). 2010. Revised TMDL for Indicator Bacteria, Project I—Twenty Beaches and Creeks in the San Diego Region (Including Tecolote Creek). Resolution No. R9-2010-0001. Approved February 10.

To determine whether a potential source is controllable, four factors were considered (supporting information is in Appendix G):

(1) The locations of the MS4s;

(2) The potential contributing land uses during wet weather;

(3) Known outfalls with persistent dry weather flow; and

(4) Jurisdictional authority.

Sources were ranked based on the ability of RPs to control the associated discharges. Most point sources are considered controllable, whereas many non-point sources are not. The Bacteria TMDL provided guidance on how a controllable source is defined, stating that controllable sources are those sources that are anthropogenic (i.e., influenced by humans) in origin (Regional Board, 2010). In addition, sources considered to be non-controllable by the RPs include sources outside the RPs' jurisdictional boundaries, sources over which the RPs do not have regulatory authority, and non-point sources that are not considered controllable.

3.2.3 Other Point Sources

A point source is a discrete conveyance, such as a pipe or ditch. A summary of point sources potentially contributing to the highest priority water quality conditions in the San Diego Bay Watershed Management Area is provided in this section.

Bacteria

Private outfalls are point sources that may discharge bacteria to the MS4 or receiving waters; however, no private outfalls have been identified by the Responsible Parties. While wastewater collection systems and treatment plants are potential point sources of bacteria, there are no direct point source discharges into Chollas Creek (Regional Board, 2008). No publicly owned treatment works (POTWs) were identified as a source in the San Diego Bay Watershed Management Area.

Metals

The highest relative load contributions of dissolved copper, lead, and zinc in Chollas Creek have been attributed to freeways and commercial/industrial land uses, which may include both point and non-point sources (Regional Board, 2008). Discharge of drinking water supply in Chollas Creek has also been identified as a point source of metals, and may partially be contributed to by piping infrastructure. Industrial sources may be a significant source of copper, lead, and zinc in Chollas Creek (Regional Board, 2008).

3.2.4 Other Non-Point Sources

Non-point sources typically flow over land and discharge to receiving waters over a broad area, as opposed to a point location.

Bacteria

Other potential non-point source discharges that may contain bacteria are agriculture, wildlife, homeless encampments, sewage infrastructure, biofilm regrowth, and other natural sources (City of San Diego, 2009; Regional Board, 2013). The Bacteria TMDL Technical Report identifies wildlife areas that include agriculture, dairy-intensive livestock operations (not currently subject to NPDES requirements), open recreation, open space, and water land uses. The wildlife areas partially account for bacteria contributions from wild animals and decaying plant sources in Chollas Creek (Regional Board, 2010).

The Bacteria Source Characterization Process (Chollas Creek) identify homeless encampments as a bacteria source that can directly discharge bacteria from human origins to receiving waters (City of San Diego, 2012; Regional Board, 2008). Sources related to sewage infrastructure such as sewer collection systems, sanitary sewer overflows, illicit discharges to the sewer system, and septic tanks have also been identified by the Responsible Parties as potential sources of bacteria in Chollas Creek (City of San Diego, 2012). These sources are also found within other areas of the San Diego Bay Watershed Management Area.

Agricultural sites operate under a conditional discharge waiver from the Regional Board, meaning that they are exempt from the discharge requirements of the current Permit (Resolution No. R9-2007-0104). This permit will expire in 2014, and a new Agricultural Order is expected to go into effect in 2015. During wet weather, storm water runoff may carry indicator bacteria from agricultural lands to roads, storm drains, or other municipal infrastructure. Under the conditional waiver, agricultural operators may form monitoring groups to monitor water quality and report monitoring results to the Regional Board. One monitoring group currently operates in the San Diego Bay Watershed Management Area.

In addition to these non-point sources, the contribution of groundwater into the MS4 through infiltration and receiving waters at areas where the groundwater table reaches surface water (rising groundwater) may also be considered a non-point source of freshwater discharges (SCRWQCB, 2010). During dry weather, indicator bacteria may enter the Copermittee's MS4 or receiving waters through groundwater infiltration or over-irrigation into municipal drainage channels (County of Los Angeles, 2010). Also, groundwater may contribute to the bacteria in the MS4 and receiving waters (Regional Board, 2010).

Metals

Sediment and groundwater flows have been identified as non-point sources of metals (copper, lead, and zinc) in Chollas Creek. Additionally, brake pad wear on automobiles is a likely non-point source of copper, and, to a lesser extent, a source of lead and zinc in Chollas Creek. (Regional Board, 2009).

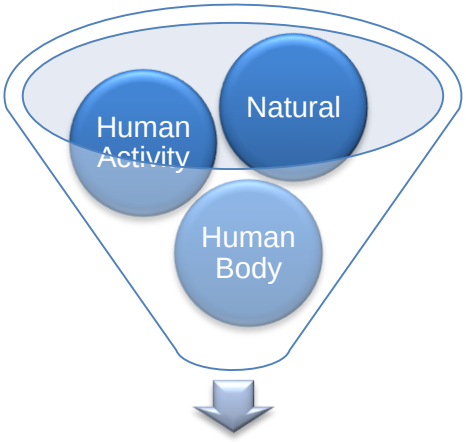
3.2.5 Level of Human Influence and Source Prioritization

Sources of bacteria and metals were also prioritized, based on human influence on the sources in the Chollas Creek HSA. The Bacteria Source Characterization Process submitted in the San Diego County Municipal Copermittees' *2011–2012 Urban Runoff Monitoring Report* (San Diego County Copermittees, 2013) provided a methodology to

characterize the sources of indicator bacteria (*Enterococcus*, fecal coliform, and total coliform) by the level of human influence. Metals source prioritization used the same methodology as that for bacteria, excluding sources from the human body.

The three categories of source origin are the human body, human activity, and natural:

- Human Body (not applicable to metals): bacteria carried or shed by humans (e.g., bather shedding and sewage);
- Human Activity: Sources from non–human anthropogenic origins (the source is natural and is not from the human body, but it may be increased by human influence or activities such as pet waste for bacteria or brake pad wear for metals); and
- Natural: Sources from non-human non-anthropogenic origins (i.e., independent of human influence), such as natural sources, including wildlife and natural plant decay for bacteria or geologic features for metals.



Pollutant Sources

Sources were ranked based on the category of the source origin first by sources associated with human activity, and then by sources known or suspected to be natural in origin. Natural sources of indicator bacteria include animal (e.g., birds, coyotes, and native reptiles) and vegetable (e.g., decaying leaves and wrack-line kelp) sources. Natural sources of metals include rocks and soils subject to natural erosion and groundwater with high concentrations of salts. For indicator bacteria, sources were given an additional category: from the human body. Sources identified as from the human body were given the highest priority. For the Chollas Creek HA, the final prioritization is described in Table 3-4.

Table 3-4
Source Prioritization Matrix

Stressor	Controllability	Origin	Priority
Bacteria	Controllable	Human body	High
		Human activity	Medium
		Natural	Low
	Not controllable	Any	Low
Metals	Controllable	Human activity	High
		Natural	Low
	Not controllable	Any	Low

Table 3-5 presents the prioritization of identified known and suspected sources of bacteria and metals in the Chollas Creek HSA in the Pueblo HU. Sources that are considered high priority by the RPs are presented in boldface font.

Table 3-5
Prioritization of Identified Known and Suspected Sources of Bacteria and Metals

Known or Suspected Source[1]	Wet or Dry Weather	Controllability Based on Copermittee Jurisdiction	Potential Origin of the Source	Final Ranking
Chollas Creek (San Diego Mesa HA)—Bacteria				
Agriculture	Wet & Dry	Not controllable[2]	Human activity	Low
Animal Facilities	Wet	Controllable	Human activity	Medium
Eating or Drinking Establishments	Wet & Dry	Controllable	Human activity	Medium
Nurseries/Greenhouses	Wet & Dry	Controllable	Human activity	Medium
Residential Areas	Wet & Dry	Controllable	Human activity	Medium
Wildlife	Wet	Not controllable	Natural	Low
Homeless Encampments	Wet & Dry	Controllable	Human body and human activity	Medium[3]
Sewage Infrastructure and Activities	**Wet & Dry**	**Controllable**	**Human body and human activity**	**High**
Biofilm Regrowth	Wet	Controllable	Human activity and natural	Low
Open Space/Recreation Land Uses	Wet	Controllable	Human activity and natural	Low
Natural/Background Growth in Water Land Uses	Wet	Not controllable	Natural	Low
Decaying Plant Sources	Wet	Not controllable	Natural	Low
Septic Tanks	**Wet & Dry**	**Controllable**	**Human body and human activity**	**High**
Groundwater Contribution	Dry	Not controllable	Human activity and natural	Low
Over-irrigation	Dry	Controllable	Human activity	Medium
Chollas Creek (San Diego Mesa HA)—Metals				
Agriculture	Wet & Dry	Not controllable	Human activity	Medium
Automotive	**Wet**	**Controllable**	**Human activity**	**High**
Equipment Repair	**Wet**	**Controllable**	**Human activity**	**High**
General Industrial	**Wet & Dry**	**Controllable**	**Human activity**	**High**
Institutional	**Wet**	**Controllable**	**Human activity**	**High**
Manufacturing	**Wet**	**Controllable**	**Human activity**	**High**

Notes:

1. High priority sources are presented in **boldface** font.
2. Agricultural sources are considered not controllable by the RPs because they are regulated under the Conditional Waiver of Discharges from Agricultural and Nursery Operations (Resolution No. R9-2007-0104).
3. Homeless encampments, recognized as neither fully controllable nor fully uncontrollable, have been assigned a medium priority.

Table 3-5 (continued)
Prioritization of Identified Known and Suspected Sources of Bacteria and Metals

Known or Suspected Source[1]	Wet or Dry Weather	Controllability Based on Copermittee Jurisdiction	Potential Origin of the Source	Final Ranking
Metal	**Wet**	**Controllable**	**Human activity**	**High**
Nurseries/Greenhouses	**Wet & Dry**	**Controllable**	**Human activity**	**High**
Stone/Glass Manufacturing	**Wet**	**Controllable**	**Human activity**	**High**
Storage/Warehousing	**Wet**	**Controllable**	**Human activity**	**High**
Municipal	**Wet**	**Controllable**	**Human activity**	**High**
Residential Areas	**Wet & Dry**	**Controllable**	**Human activity**	**High**
Roads, Streets, Freeways	**Wet & Dry**	**Controllable**	**Human activity**	**High**
Sediment Accumulation	Wet & Dry	Controllable	Human activity and natural	Low
Groundwater contribution	Dry	Not controllable	Human activity and natural	Low
Brake Pad Wear	**Wet & Dry**	**Not controllable**	**Human activity**	**High**
Natural/Background	Wet	Not controllable	Natural	Low
Atmospheric Deposition	Wet & Dry	Not controllable	Natural	Low

Notes:

1. High priority sources are presented in **boldface** font.
2. Agricultural sources are considered not controllable by the RPs because they are regulated under the Conditional Waiver of Discharges from Agricultural and Nursery Operations (Resolution No. R9-2007-0104).
3. Homeless encampments, recognized as neither fully controllable nor fully uncontrollable, have been assigned a medium priority.

3.3 MS4 Sources of Focused Priority Conditions

Section 2.2.3 established the Focused Priority Conditions for the RPs that did not have any jurisdictional area within a portion of the watershed for which a Highest Priority Condition has been assigned. The goal of this section is to identify, to the extent possible, the known or suspected sources, pollutant discharges, and/or factors contributing to the Focused Priority Conditions.

3.3.1 Water Quality in San Diego Mesa, HA 908.21

As established in Section 2.2.3, the Airport Authority has identified total and dissolved copper and zinc in wet weather as a Focused Priority Condition, based on monitoring data collected under their industrial stormwater program and compared to the 2008 USEPA NPDES Multi-Sector General Permit (2008 MSGP) benchmark values. The Airport Authority's 2011–2012 Municipal Stormwater Permit Annual Report (September 2012) identified airport operations, industrial land use, and ground transportation as the sources most closely associated with the potential for copper and zinc pollution.

Atmospheric deposition of metals generated offsite is another potential source. Table 3-6 summarizes the facilities, areas, and activities identified by the Airport Authority as known or suspected sources of copper and zinc in Airport Authority jurisdiction in the San Diego Mesa HA.

Table 3-6
Likely Sources of Pollutants and/or Stressors of Focused Priority Conditions in the Airport Authority Jurisdiction

Source Type
Airport Authority Jurisdiction (San Diego Mesa HA)[1]
Industrial—Tenant Operational Areas
Industrial—Airport Operational Areas (runway, taxiways, roofs)
Ground Transportation—Parking Lots/Roads
Atmospheric Deposition

Note:
1. Only facilities within the Airport Authority jurisdiction in the San Diego Mesa HA are identified.

Controllability and Source Prioritization

Using the methodology outlined in Section 3.2, the sources were prioritized and ranked, based on the ability of the Airport Authority to control the associated discharges. The results of this prioritization are presented in Table 3-7.

Table 3-7
Prioritization of Sources—Focused Priority Conditions in the Airport Authority Jurisdiction

Known or Suspected Source	Wet or Dry Weather	Controllability Based on Copermittee Jurisdiction	Potential Origin of the Source	Final Ranking
Airport Authority Jurisdiction (San Diego Mesa HA)—Total and Dissolved Copper and Zinc				
Industrial—Tenant Operational Areas	**Wet**	**Controllable**	**Human activity**	**High**
Industrial—Airport Operational Areas	**Wet**	**Controllable**	**Human activity**	**High**
Ground Transportation—Parking Lots/Roads	**Wet**	**Controllable**	**Human activity**	**High**
Atmospheric Deposition	Wet & dry	Not controllable	Human activity	Low

Note:
1. Sources of Focused Priority Conditions are presented in **boldface** font.

3.3.2 Riparian Area Quality in Paradise Creek, Sweetwater, HA 909.1

In Paradise Creek, impacts on riparian area quality include a concrete channel bottom and non-native bank vegetation in the Kimball Park area and occasional trash at various points along the creek. While channelization and the presence of invasive species are not necessarily directly related to MS4 discharges, it may still be possible to make improvements with respect to these stressors to improve water quality, for example, through creek restoration or buffer enhancement projects.

Paradise Creek is 303(d)-Listed for selenium. A study to evaluate selenium levels in Paradise Creek is currently underway. So far approximately 50 samples have been collected, and none has exceeded the water quality objective for selenium (personal communication with John Quenzer of D-MAX Engineering, March 27, 2015). Based on that information, selenium does not appear to be a significant stressor affecting riparian area quality in Paradise Creek.

The City of National City evaluates trash pollutant discharge potential during inspections of industrial, commercial, and municipal sites. Commercial businesses (the majority of which are eating and drinking establishments in strip malls), municipal facilities, and residential land uses were identified as potential sources of trash. Past residential evaluation programs completed by the City of National City have indicated that multi-family residential areas are more likely to be a source of trash than single-family residential. Phase II jurisdiction facilities, including schools and a Metropolitan Transit System (MTS) trolley station, are also potential sources of trash within the Paradise Creek drainage area. Based on field observations during past dry weather and MS4 outfall monitoring programs, homeless populations are also a source of trash.

Controllability and Prioritization of Sources of Pollutants and/or Stressors: Paradise Creek

Sources in the Paradise Creek drainage area were prioritized based on two factors: the ability of the RPs to control the source and the level of anthropogenic (i.e., associated with humans) contribution. The prioritization of the known and suspected sources is described in this section.

To determine whether a potential source is controllable, four factors were considered as described in Section 3.2 (supporting information is located in Appendix G):

(1) The locations of the MS4s;

(2) The potential contributing land uses during wet weather;

(3) Known outfalls with persistent dry weather flow; and

(4) Jurisdictional authority.

Currently, field observations show that there are three outfalls in the Paradise Creek drainage area with persistent flow. None of these are major flow sources: one has had a flow rate of 0.5 gallon per minute, and the other two have had ponded water but have not been observed with flowing water. The ponded sites are classified as persistently flowing because of three consecutive visits with ponded water, in accordance with the Municipal Permit's definition of persistent flow (City of National City, 2014).

Most of the major sources discussed above are considered controllable. The exceptions are portions of the watershed controlled by Phase II agencies (which are outside the RP's jurisdiction) and homeless communities (which are neither fully controllable nor fully uncontrollable). Most of the sources and stressors are also linked to human activity, although not necessarily to MS4 discharges.

Two general categories of sources and stressors were considered for evaluation: (1) stressors related to conditions in the stream and stream corridor, and (2) upstream sources of other stressors. In general, stressors in the stream and stream corridor are considered a higher priority for action because addressing them will likely result in a greater improvement to riparian area quality. At this point, trash is the main stressor of concern related to upstream sources in the watershed. High levels of trash have not been observed throughout the creek, and it is considered a lower priority than the in-stream and stream corridor stressors. For this reason, the upstream watershed sources are considered a medium priority.

Table 3-8 summarizes the prioritization of identified known and suspected sources or stressors.

Table 3-8
Prioritization of Identified Known and Suspected Sources or Stressors

Known or Suspected Source or Stressor[1]	Wet or Dry Weather	Final Ranking
Paradise Creek (Lower Sweetwater)—Riparian Area Quality: In-Stream and Stream Corridor		
Concrete Channel Bottom (Segment within Kimball Park)	**Wet & dry**	**High**
Non-Native Bank Vegetation (Segment within Kimball Park)	**Wet & dry**	**High**
Paradise Creek (Lower Sweetwater)—Riparian Area Quality: Watershed Sources[2]		
Eating or Drinking Establishments	Wet	Medium
Automotive	Wet	Medium
Multi-Family Residential Areas	Wet	Medium
Homeless Encampments	Wet & dry	Medium
Roads and Streets	Wet	Medium
Municipal	Wet	Medium

Notes:

1. High priority sources are presented in **boldface** font.
2. Trash is the primary stressor of concern associated with upstream watershed sources.

3.3.3 Physical Aesthetics of Trash in Lower Sweetwater, HA 909.1, and in Otay Valley, HA 910.2

Within the Lower Sweetwater HA, trash was established as a Focused Priority Condition for the western portion of the City of Chula Vista, which includes tideland areas under the jurisdiction of the Port of San Diego. Past trash monitoring data and public input were factors that elevated trash to a Focused Priority Condition in this area. Trash was established as a Focused Priority Condition for the western portion of the City of Chula Vista and portions of the City of Imperial Beach and the Port of San Diego within the Otay Valley HA. Public input, previous monitoring data, as well as the ORWMP, have identified trash as a pollutant in this area. In addition to impacts on the physical aesthetics of an area, trash poses a health risk to both humans and wildlife and can affect the beneficial uses of waterways. Table 3-9 summarizes the RPs involved, the areas of focus, and the drivers to identify trash.

Table 3-9
Physical Aesthetics Program Participants and Drivers

Known or Suspected Source or Stressor	Areas of Focus	Trash ID Drivers
Chula Vista	Lower Sweetwater HA	Public input and previous monitoring
Port of San Diego		
Chula Vista	Otay Valley HA	Public input, previous monitoring, and ORWMP
Imperial Beach		
Port of San Diego		

Note:
ORWMP = Otay River Watershed Management Plan

Sources of Pollutants and/or Stressors

There are numerous types of land uses associated with trash generation. Trash can enter waterways by being transported in the storm drain system, through wind action, or by illegal dumping.

Table 3-10 summarize the general types of sources of trash as well as their associated land use(s) identified by the RPs. Table 3-11 summarizes the general types of sources of trash as well their associated land use(s) identified by the RPs in the western portion of the City of Chula Vista, and portions of the City of Imperial Beach and Port of San Diego within the Otay Valley HA. To determine and prioritize potential sources of pollutants or stressors for trash in these areas, likely sources were reviewed on the basis of information collected as part of the 2012 WURMP Annual Report and in the ORWMP.

Table 3-10
Likely Sources of Trash—Lower Sweetwater, HA 909.1

Known or Suspected Source	Land Uses						
	Commercial	Industrial	Municipal	Residential	Parks and Recreation	Open Space	Other[1]
General Retail/ Commercial Areas, including Eating or Drinking Establishments	✓						
General Industrial		✓					
Illegal Dumping	✓	✓	✓	✓	✓	✓	✓
Institutional Facilities							✓
Homeless Encampments					✓	✓	
Municipal Facilities			✓		✓		
Recreational Land Uses/ Open Space					✓	✓	
Residential Areas[2]				✓			
Roads and Highways[3]			✓				✓

Notes:

1. Other sources are those sources outside of the Responsible Parties' jurisdiction and regulatory authority; see Section 3.1.
2. Port of San Diego does not have residential land uses.
3. Roads and highways are not limited to the Cities of Chula Vista and Imperial Beach, and the Port of San Diego jurisdictions.

Table 3-11
Likely Sources of Trash—Otay Valley, HA 910.2

Known or Suspected Source	Land Uses						
	Commercial	Industrial	Municipal	Residential	Parks and Recreation	Open Space	Other[1]
General Retail/ Commercial Areas, including Eating or Drinking Establishments	✓						
General Industrial		✓					
Illegal Dumping	✓	✓	✓	✓	✓	✓	✓
Institutional Facilities							✓
Homeless Encampments					✓	✓	
Municipal Facilities			✓		✓		
Recreational Land Uses/ Open Space					✓	✓	
Residential Areas[2]				✓			
Roads and Highways[3]			✓				✓

Notes:

1. Other sources are those sources outside of the Responsible Parties' jurisdiction and regulatory authority; see Section 3.1.
2. Port of San Diego does not have residential land uses.
3. Roads and highways are not limited to the Cities of Chula Vista and Imperial Beach, and the Port of San Diego jurisdictions.

Controllability of Sources of Pollutants and/or Stressors and Source Prioritization

To identify the controllability and prioritize sources of trash in the Lower Sweetwater HA and in the Otay Valley HA, the RPs used a process similar to the method described in Section 3.2 for the Chollas Creek HSA. Because trash is anthropogenic in nature, human activity is always considered the origin of the source of trash.

A thorough assessment of all available trash and source data, drainage areas, and potential locations in high-volume trash-generating areas is needed to fully characterize sources of trash and to feasibly implement partial- and full-capture trash devices and other trash strategies. The approach for physical aesthetics within the Sweetwater River HA (909.1) and Otay River HA (910.2) may potentially serve as a model that the RPs can use in other areas of their jurisdictions.

Table 3-12 presents the prioritization of identified known and suspected sources of trash in Lower Sweetwater HA (909.1 HA) in the western portion of the City of Chula Vista. Table 3-13 presents the prioritization of identified known and suspected sources of trash in Otay Valley HA (910.2 HA) in the western portion of the City of Chula Vista, and portions

of the City of Imperial Beach and Port of San Diego. High priority sources are presented in boldface font. Sources of trash were ranked by adapting the methodology for metals described in Section 3.2. Recognizing that trash inherently originates from human activity, all sources within the jurisdiction were considered controllable. The final ranking was determined by best professional judgment of the RPs' ability to directly address the predominant sources. In general, commercial land uses tend to generate the highest amounts of trash, which includes shopping centers and eating or drinking establishments. Trash from these areas was considered a high priority source. Residential areas, municipal facilities, and recreational/open space land uses were considered low priority because, in general, they have been found to generate less trash than commercial areas.

Table 3-12
Prioritization of Known and Suspected Sources of Trash—
Lower Sweetwater, HA 909.1

Known or Suspected Source[1]	Controllability Based on Copermittee Jurisdiction	Final Ranking
General Retail/ Commercial Areas, including Eating or Drinking Establishments	**Controllable**	**High**
General Industrial Areas	Controllable	Medium
Homeless Encampments[2]	Controllable	Medium
Illegal Dumping	Controllable	Medium[2]
Institutional Facilities	Controllable	Medium
Municipal Facilities	Controllable	Low
Residential Areas[3]	Controllable	Low
Recreational Land Uses/ Open Space	Controllable	Low
Roads and Highways[4]	Controllable	Medium

Notes:

1. High priority sources are presented in **boldface** font.
2. Recognizing that homeless encampments and illegal dumping are neither fully controllable nor fully uncontrollable, they have been assigned a priority of medium.
3. Port of San Diego does not have residential land uses.
4. Roads and highways are not limited to the Cities of Chula Vista and Imperial Beach, and the Port of San Diego jurisdictions.

Table 3-13
Prioritization of Known and Suspected Sources of Trash—
Otay Valley, HA 910.2

Known or Suspected Source[1]	Controllability Based on Copermittee Jurisdiction	Final Ranking
General Retail/ Commercial Areas, including Eating or Drinking Establishments	**Controllable**	**High**
General Industrial Areas	Controllable	Medium
Homeless Encampments[2]	Controllable	Medium
Illegal Dumping	Controllable	Medium[2]
Institutional Facilities	Controllable	Medium
Municipal Facilities	Controllable	Low
Residential Areas[3]	Controllable	Low
Recreational Land Uses/ Open Space	Controllable	Low
Roads and Highways[4]	Controllable	Medium

Notes:

1. High priority sources are presented in **boldface** font.
2. Recognizing that homeless encampments and illegal dumping are neither fully controllable nor fully uncontrollable, they have been assigned a priority of medium.
3. Port of San Diego does not have residential land uses.
4. Roads and highways are not limited to the Cities of Chula Vista and Imperial Beach, and the Port of San Diego jurisdictions.

3.3.4 Swimmable Waters in HA 910.1

The Focused Priority Condition for 910.1 HA is Swimmable Waters. To determine and prioritize potential sources of indicator bacteria in 910.1 HA, likely sources were reviewed, based on information collected as part of the 2012 WURMP Annual Report. Table 3-14 summarizes the facilities, areas, and activities identified by the RPs as known or suspected sources of pollutants and/or stressors identified for the Focused Priority Condition in HA 910.1.

For bacteria in particular, the source or sources of the indicator bacteria at a beach are often not known for certain because of the complex workings of wind, weather, and water patterns. As discussed in Table 3-14, non-point sources in 910.1 HA may be wild life areas, near-shore intertidal habitats (e.g., seagrass beds), biofilm regrowth, and decaying plant sources. Wildlife areas may include sources from animals such as waterfowl (sea gulls, terns, ducks, etc.). Pets (dogs, cats, etc.) have also been identified as potential sources. In addition, recreational open space/parks, and swimming are also potential sources.

The Tijuana River flow may also be a potential source of bacteria to beaches in 910.1 HA in both wet and dry weather. However, a Tijuana River dry weather flow diversion and treatment plant was part of a multi-faceted water quality treaty between the United States and Mexico, which has led to significantly improved summer dry beach water quality along

the south county coastline. During wet weather, flows from the sewage-impacted Tijuana River during high-volume flows (e.g., during a significant rain event) may continue to impact San Diego beaches from the international border north to Coronado. Tides, wind, near-shore ocean currents and other factors will determine how far north the Tijuana River impacts may extend and potentially affect beaches in 910.1 HA. To identify the controllability and prioritize sources of bacteria in 910.1 HA, the RPs used a process similar to the method described in Section 3.2 for Chollas Creek HSA. Table 3-15 presents the prioritization of identified known and suspected sources of bacteria in 910.1 HA. High priority sources are presented in boldface font.

Table 3-14
Pollutant-Generating Sources and Associated Land Uses—
Swimmable Waters in HA 910.1

Known or Suspected Source	Land Uses						
	Commercial	Industrial	Municipal	Residential	Parks and Recreation	Open Space	Other[1]
Animal Facilities	✓				✓		✓
Eating or Drinking Establishments	✓		✓		✓		
General Retail	✓						
Golf	✓				✓		✓
Nurseries/Greenhouses	✓						✓
Residential Areas[2]				✓			✓
Wildlife					✓	✓	
Pet Waste	✓			✓	✓	✓	✓
Homeless Encampments			✓		✓	✓	
Sewage Infrastructure and Activities		✓	✓	✓	✓		
Biofilm Regrowth			✓				✓
Natural/Background Growth in Water					✓		✓
Swimming					✓		✓
Groundwater Contribution					✓	✓	✓
Over-irrigation	✓	✓	✓	✓	✓		✓

Notes:

1. Other sources are those sources outside of the RPs' jurisdiction and regulatory authority; see Section 2.3.
2. The Port of San Diego does not have residential land uses.

✓ Indicates known or suspected source is identified.

Table 3-15
Prioritization of Known and Suspected Sources—
Swimmable Waters in HA 910.1

Known or Suspected Source[1]	Wet or Dry Weather	Controllability Based on Copermittee Jurisdiction	Potential Origin of the Source	Final Ranking
Animal Facilities	**Wet**	**Controllable**	**Human activity**	**High**
Eating or Drinking Establishments	**Wet & dry**	**Controllable**	**Human activity**	**High**
General Retail	Wet & dry	Controllable	Human activity	Low
Golf	Wet & dry	Controllable	Human activity	Low
Nurseries/Greenhouses	Wet & dry	Controllable	Human activity	Medium
Residential Areas[2]	Wet & dry	Controllable	Human activity	Medium
Wildlife	Wet	Not controllable	Natural	Low
Pet Waste	**Wet & dry**	**Controllable**	**Human activity**	**High**
Homeless Encampments	Wet & dry	Controllable	Human body and human activity	Medium[3]
Sewage Infrastructure and Activities	**Wet & dry**	**Controllable**	**Human body and human activity**	**High**
Biofilm Regrowth	Wet	Controllable	Human activity and natural	Low
Open Space/Recreation Land Uses	Wet	Controllable	Human activity and natural	Low
Natural/Background Growth in Water Land Uses	Wet	Not controllable	Natural	Low
Decaying Plant Sources	Wet	Not controllable	Natural	Low
Swimming	Wet & dry	Controllable	Human body and human activity	Medium
Groundwater Contribution	Dry	Not controllable	Human activity and natural	Medium[4]
Over-irrigation	Dry	Controllable	Human activity	Medium

Notes:

1. High priority sources are presented in **boldface** font.
2. Port of San Diego does not have residential land uses.
3. Recognizing that homeless encampments are neither fully controllable nor fully uncontrollable, they have been assigned a priority of medium.
4. RP observations and experience indicates that groundwater can infiltrate the storm drain system and act as a mobilizer and medium for regrowth of bacteria.

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4 Goals, Strategies, and Schedules

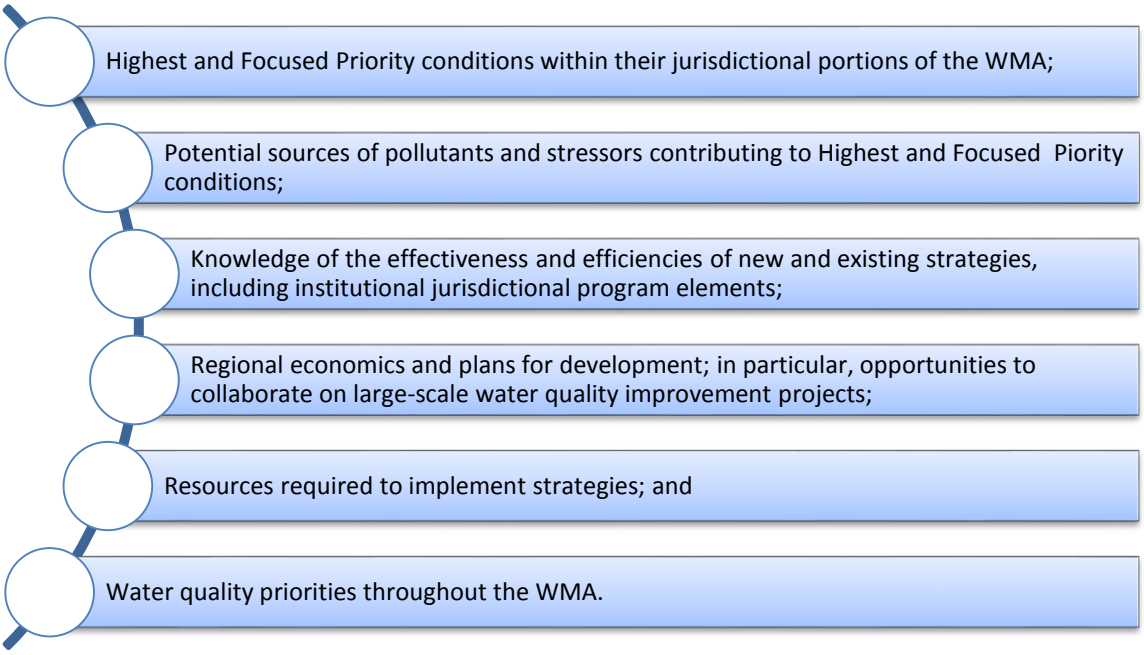
The ultimate goal of the Water Quality Improvement Plan is to prevent MS4 discharges from causing or contributing to beneficial use impairments in the San Diego Bay WMA. Setting specific numeric goals establishes the desired results for the programmatic efforts that the RPs plan to implement. Identifying goals and the means to achieve them is fundamental for demonstrating improvements in water quality in the San Diego Bay WMA. To achieve those goals, RPs must review and implement jurisdictional, watershed, and regional strategies and set schedules for strategy assessment and progress towards meeting the goals.

This section develops numeric goals and schedules for the Highest Priority Conditions and Focused Priority Conditions. Footnote 6 to Municipal Permit Provision II.B.3.a(1) states that interim and final numeric goals for Highest Priority Conditions can "…take on a variety of forms such as TMDL established Water Quality-Based Effluent Limits (WQBELs), action levels, pollutant concentrations, load reductions, number of impaired water bodies delisted from the List of Water Quality Impaired Segments, Index of Biological Integrity (IBI) scores, or other appropriate metrics." Numeric goals for Focused Priority Conditions can take the form of metrics that may include operational or management performance goals that measure criteria or indicators that align the Focused Priority Conditions, where applicable, with JRMP elements (e.g., existing development and public education). Numeric goals for Focused Priority Conditions can take the form of inspection frequencies, amounts of debris removed, or implementation of BMPs.

4.1 Overview of Goals

Two types of numeric goals are required for each of the Highest Priority Conditions and Focused Priority Conditions: interim and final goals. Final goals provide end-points that mark achievement of desired water quality improvements. Interim goals are benchmarks for program performance and are intended to establish checkpoints along the path toward achieving final goals. Interim goals have been developed for each five-year period following Water Quality Improvement Plan approval until the proposed completion date for the final goal, including an interim goal for the current permit term.

To develop the initial schedule for achieving goals, the RPs considered the following:



Numeric goals have been developed to measure progress toward addressing the Highest Priority Conditions and Focused Priority Conditions. Numeric goals may take a variety of forms, but must quantify a benefit to water quality so that progress toward and achievement of the goals are measurable. Based on the multiple compliance pathways available under Municipal Permit Attachment E.6.b.(3), *Final TMDL Compliance Determination,* each Highest Priority Condition and Focused Priority Condition may include multiple goals, and goals may have multiple criteria or indicators. For example, goals for Highest Priority Conditions may be met in the receiving water, in MS4 discharges, or in several other ways (see Section 3.1). Goals for Focused Priority Conditions may be based on the performance of water quality improvement strategies, on the successful completion of a restoration project, or on other metrics (see Sections 3.2 through 3.7).

The RPs developed collaborative and individual goals to address the sources and stressors within the watershed and with respect to their MS4s. RPs focused on goals that can be addressed collaboratively but assessed individually. Collaborative goals were developed for those Highest Priority Conditions and Focused Priority Conditions with geographic boundaries that extend to multiple jurisdictions. Individual jurisdiction goals may provide the flexibility for jurisdiction-specific strategies and schedules and the framework for a more accurate assessment of progress toward achieving goals within each jurisdiction.

4.2 Strategy Identification and Selection

The RPs will implement strategies to achieve the final and interim goals. A list of strategies was developed by the RPs on the basis of (1) the list of potential strategies developed for the First Interim Deliverable, (2) enhancements to previous JURMP activities, and (3) public input and discussion with the Consultation Panel. To meet the goals, strategies were selected on the basis of their ability to achieve the following specific objectives:

- Effectively prohibit non-storm water discharges to the MS4;
- Reduce pollutants in storm water discharges from the MS4 to the maximum extent practicable (MEP); and
- Programmatic or institutional best management practices.

Core jurisdictional programs consist of the baseline requirements of Municipal Permit Provision E. These program elements are applied throughout each jurisdiction per Municipal Permit Provision E to protect and enhance water quality. Additional strategies have been developed to address the Highest Priority Conditions and Focused Priority Conditions. The Municipal Permit (Provision B.3.b) requires the RPs to identify strategies that will be implemented in their jurisdictions.

The term “strategies” in the Water Quality Improvement Plan includes, but is not limited to, the following:

Potential jurisdictional strategies considered during development of the Water Quality Improvement Plan are in Appendix I. During strategy selection, each RP considered the following:

- Ability to target Highest Priority Conditions and Focused Priority Conditions;
- Ability to address additional priorities and conditions (i.e., provide multiple benefits);
- The triple bottom line, which consists of the environmental, economic, and social components and consequences of the strategies; and
- Opportunity to improve and promote cooperation and collaboration among the RPs and other agencies, for example:
    - Community-based groups in the WMA;
    - Non-governmental organizations (NGOs);
    - Developers;
    - Caltrans;
    - Water districts, school districts, etc.; and,
    - Among different departments within each RP agency.

Schedules reflect the time necessary to fully fund, develop, initiate, and complete the strategies. Strategies with relatively high impact and low resource requirements are scheduled earlier. Strategies planned for later years may have implementation requirements that depend on the outcomes of earlier strategies, or may have significant funding needs. Some strategies, especially those that are not linked to TMDL compliance and are scheduled to commence more than five years after Water Quality Improvement Plan approval, may change depending on the results of the near-term strategies. Section 6 describes how the RPs will adaptively manage the strategies on the basis of results and experience.

4.3 Goals for Bacteria and Metals in Chollas Creek HSA (908.22)

Metals and bacteria in Chollas Creek are the Highest Priority Conditions in the San Diego Bay WMA. In addition, specific areas of Chollas Creek and its tributaries have been identified for targeted BMP implementation. The geographic extent of the Highest Priority Conditions is the drainage area of Chollas Creek within the jurisdictional boundaries of the Cities of La Mesa, Lemon Grove, and San Diego, the County of San Diego, the Port of San Diego, and Caltrans within the Pueblo HU. The RPs have identified goals and strategies that will be implemented to address these conditions.

Two TMDLs are in effect for Chollas Creek (Municipal Permit Attachment E):

> *TMDLs for Dissolved Copper, Lead, and Zinc in Chollas Creek* (Metals TMDL); Regional Board Resolution No. R9-2007-0043, approved October 22, 2008; and
>
> The *Revised TMDLs for Indicator Bacteria, Project I—Twenty Beaches and Creeks in the San Diego Region (Including Tecolote Creek)* (Bacteria TMDL); Regional Board Resolution No. R9-2010-0001, approved February 10, 2010.

The TMDLs include numeric final and interim goals. The RPs developed additional interim goals to help assess progress on the basis of the understanding that significant improvements in receiving water quality may not be apparent in the short term. The RPs developed goals and strategies both collaboratively and individually to best address the sources and stressors within the watershed and with respect to their MS4s.

Both TMDLs identify receiving water and watershed targets. Water Quality Improvement Plan numeric goals mirror TMDL targets and provide multiple compliance pathways that can be met within the receiving water or within the watershed. Water Quality Improvement Plan numeric goals may be met in one of five ways:

(1) Meeting receiving water limitations in the receiving water; or

(2) Demonstrating that the MS4 is not causing or contributing to receiving water exceedances through MS4 discharge compliance with final receiving water limitations; or

(3) Complying with final effluent limitations for MS4 discharges; or

(4) Demonstrating that there are no direct or indirect discharges for the MS4s; or

(5) Implementing an approved Water Quality Improvement Plan that used a watershed model or other watershed analytical tool to identify BMPs required to comply with the final receiving water or effluent limitations.

Compliance with the Bacteria TMDL may also be met if the RPs can demonstrate that the final receiving water limitations are due to loads from natural sources and pollutant loads from the MS4s are found to not cause or contribute to the exceedances.

The multiple compliance pathways previously discussed allow each RP the flexibility to determine its approach for addressing bacteria and metals and for selection of strategies, based on either the compliance analysis results or other methods, which may include, but does not necessitate, watershed modeling. Watershed models inherently include a degree of uncertainty in the results due to a number of factors, including the availability of long-term data for model calibration, complexity of the watershed, constantly changing weather conditions, irrigation patterns and timing, and dynamic interactions between surface and groundwater components. RPs that used the compliance analysis to guide BMP implementation and as a potential compliance pathway have included the strategies

and schedules that provide reasonable assurance that the jurisdiction will meet final receiving water or effluent limitations.

Following adoption of the TMDLs, the RPs developed a CLRP (Chollas Creek TMDL Responsible Parties, 2012) that recommended a number of nonstructural and structural BMPs. A follow-up effort to the CLRP (ibid, 2013), completed in 2013, contained a compliance analysis based on a watershed model to quantify load reductions to support evaluation of TMDL compliance and select the most cost-effective BMP strategy for implementation.

The Municipal Permit states that final and interim compliance with the TMDLs may be met by any one of the compliance pathways presented for each TMDL, as indicated by the "or" between pathways. These goals apply to all jurisdictions in the Chollas Creek HSA, with the exception of Caltrans. Caltrans' compliance with the Metals TMDL and Bacteria TMDL is assessed using compliance units. Caltrans' goals are presented in Section 4.3.6. The Water Quality Improvement Plan final and interim goals for wet weather and dry weather are presented in Table 4-1 and Table 4-2, respectively.

Appendix H describes the Chollas Creek Metals TMDL and Bacteria TMDL numeric targets, how the targets were derived, and how the targets were translated into numeric goals for the Water Quality Improvement Plan. During Water Quality Improvement Plan development, the compliance analysis was updated based on the results of the site-specific water effect ratio (WER) evaluation, planned for adoption in 2015. BMP implementation strategies were re-evaluated and the modeling quantified the new estimated level of effort required to achieve final and interim load reduction goals. Metals TMDL targets are currently being reviewed by the Regional Board to include a site-specific WER and a revision to the lead water quality objective (WQO) equation. Approval of the site-specific targets and amendment of the Basin Plan (required to update the Chollas Creek Metals TMDL) is anticipated in 2015. The Water Quality Improvement Plan goals include the anticipated Basin Plan amendment. If alternate targets are adopted as part of the Basin Plan amendment, the Water Quality Improvement Plan will be updated accordingly.

The Metals TMDL provides numeric targets for acute and chronic conditions. Acute WQOs were used to calculate the wet weather Metals TMDL load, which represents most of the total receiving water loading because of the relatively high volume of discharge during wet weather. Chronic concentrations are typically associated with longer periods of dry weather; therefore, the chronic WQOs were used to calculate the dry weather Metals TMDL receiving water loads. The dry weather condition for metals was not selected as the highest priority water quality condition because both model results and monitoring results show that the RPs are meeting TMDL targets during dry weather. The updated TMDL model, using the site-specific WER, resulted in a 0% load reduction required for metals indicating that the targets are being met. Dry weather monitoring results support the model results. All 12 dry weather monitoring samples collected from two monitoring stations (CC-NT54 and CC-SD8(1)) between 2010 and 2014 were below the TMDL target using the site-specific WER (City of San Diego et al., 2014). The chronic

TMDL targets are incorporated as WQIP dry weather goals in Table 4-2 although the RPs are currently meeting the goals.

In the subsequent sections, each RP also has identified specific goals, referenced as performance measures in Tables 4-1 and 4-2. Performance-based goals are included to measure the short-term jurisdictional progress toward achieving goals given that sustained water quality improvement is typically demonstrated over a longer timeframe. Performance measures are intended to measure an outcome from a strategy or suite of strategies, and provide an interim link to demonstrate reasonable incremental progress in the quality of MS4 discharges and receiving waters.

In addition to strategies that are linked to performance measures, the RPs will continue to implement and revise their JRMPs, which include the RPs' core compliance program strategies. To make progress toward their identified goals, the RPs may enhance existing JRMP strategies and implement new strategies that concentrate on the Highest and Focused Priority Conditions. The complete plan of strategies is in Appendix I of this Water Quality Improvement Plan and in each jurisdiction's JRMP.

Sections 4.3.1 through 4.3.6 present the jurisdiction-specific goals and strategies for each RP to address the Highest Priority Conditions in Chollas Creek.

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Table 4-1
Wet Weather Numeric Goals for Chollas Creek

Compliance Pathways		Baseline	Assessment Period and Fiscal Year				
			Current Permit Term	FY 16–20	FY 21–25	FY 26–30	FY 31–36
Wet Weather Metals							
			FY 18	FY 19[1]	FY 24	FY 29[1]	N/A
MS4 Discharges Allowable % Above Effluent Limitations	Copper	100% exceedance of effluent limitations in FY 09 (Year 1 of TMDL compliance)	See performance measures	20%	15%	0%	
	Lead						
	Zinc						
Or							
Receiving Water Allowable % Above Receiving Water Limitations	Copper	100% exceedance of receiving water limitations in FY09 (Year 1 of TMDL compliance)	See performance measures	0%	0%	0%	
	Lead						
	Zinc						
Or							
Number of Direct or Indirect MS4 Discharges to Receiving Water		Number of flowing MS4 outfalls during wet weather monitoring (Monitoring and Assessment Program Section of the Final Water Quality Improvement Plan)	See performance measures	0	0	0	
Or							

Notes:
1. Denotes TMDL final and interim target. Alternative interim compliance dates are presented.
2. The County of San Diego has selected alternative interim schedules and goals for compliance with the Bacteria TMDL. The County will meet the goal in FY 29. See Section 4.3.4.1 for County of San Diego final and interim goals.
3. Denotes existing wet weather frequency as modeled in the Bacteria TMDL. With limited baseline monitoring data available, this goal reflects a reasonable estimate considering the difficulty in demonstrating progress within the receiving water during wet weather in a short amount of time. Furthermore, development and redevelopment of the urban environment has occurred since the Bacteria TMDL baseline loads were calculated in 2001. As such, this goal demonstrates that progress has been made by the RAs by maintaining the existing wet weather exceedance frequency.
4. Total coliform effluent limitations only apply to MS4 outfalls that discharge to the Chollas Creek mouth.
5. Demonstration of exceedances due to natural sources includes demonstration that pollutant loads from MS4s are not causing or contributing to exceedances.

% = percent; FY = fiscal year; WER = Water-Effect Ratio; WQO = Water Quality Objective

Table 4-1 (continued)
Wet Weather Numeric Goals for Chollas Creek

Compliance Pathways		Baseline	Assessment Period and Fiscal Year				
			Current Permit Term	FY 16–20	FY 21–25	FY 26–30	FY 31–36
			FY 18	FY 19[1]	FY 24	FY 29[1]	N/A
Implement Accepted Water Quality Improvement Plan Strategies to Reduce MS4 Discharges Will Result in % Load Reduction (Using WER Update 2014)	Metric for compliance analysis is MS4 discharge % load reduction. Interim compliance is implementation of strategies and schedule based on analysis results (Appendix I). Final compliance is implementation of BMPs based on analysis results and demonstration of compliance with any of the compliance pathways through monitoring and assessment.						
	Copper	0% Load Reduction (2003 TMDL Model)	See performance measures	0%	0%	0%	
	Lead			0%	0%	0%	
	Zinc			23.3%	24.7%	29.1%	
Wet Weather Indicator Bacteria							
			FY 18	FY 19	FY 24[1, 2]	FY 29[2]	FY 31[1]
Receiving Water % Days Exceeding WQO	Fecal coliform	60% Days Exceeding WQO (2002 TMDL Model)	See performance measures	60%[3]	41%	32%	22%
	Enterococcus	63% Days Exceeding WQO (2002 TMDL Model)		63%[3]	43%	33%	22%
Or							

Notes:
1. Denotes TMDL final and interim target. Alternative interim compliance dates are presented.
2. The County of San Diego has selected alternative interim schedules and goals for compliance with the Bacteria TMDL. The County will meet the goal in FY 29. See Section 4.3.4.1 for County of San Diego final and interim goals.
3. Denotes existing wet weather frequency as modeled in the Bacteria TMDL. With limited baseline monitoring data available, this goal reflects a reasonable estimate considering the difficulty in demonstrating progress within the receiving water during wet weather in a short amount of time. Furthermore, development and redevelopment of the urban environment has occurred since the Bacteria TMDL baseline loads were calculated in 2001. As such, this goal demonstrates that progress has been made by the RAs by maintaining the existing wet weather exceedance frequency.
4. Total coliform effluent limitations only apply to MS4 outfalls that discharge to the Chollas Creek mouth.
5. Demonstration of exceedances due to natural sources includes demonstration that pollutant loads from MS4s are not causing or contributing to exceedances.

% = percent; FY = fiscal year; WER = Water-Effect Ratio; WQO = Water Quality Objective

Table 4-1 (continued)
Wet Weather Numeric Goals for Chollas Creek

Compliance Pathways		Baseline	Assessment Period and Fiscal Year				
			Current Permit Term	FY 16–20	FY 21–25	FY 26–30	FY 31–36
			FY 18	FY 19	FY 24[1, 2]	FY 29[2]	FY 31[1]
MS4 Discharges % Load Reduction	Fecal coliform	0% Load Reduction (2002 TMDL Model)	See performance measures.	5%	15%	26%	29%
	Enterococcus			4%	12%	20%	24%
	Total coliform[4]			3%	9%	15%	18%
Or							
MS4 Discharges % Days Exceeding WQO	Fecal coliform	Historical MS4 wet weather data will be used to identify the baseline in the first annual report	See performance measures.	22%	22%	22%	22%
	Enterococcus			22%	22%	22%	22%
	Total coliform[4]			22%	22%	22%	22%
Or							
Number of Direct or Indirect MS4 Discharges to Receiving Water		Number of flowing MS4 outfalls during wet weather monitoring (Monitoring and Assessment Program Section of the Final Water Quality Improvement Plan)	See performance measures.	0	0	0	0
Or							

Notes:
1. Denotes TMDL final and interim target. Alternative interim compliance dates are presented.
2. The County of San Diego has selected alternative interim schedules and goals for compliance with the Bacteria TMDL. The County will meet the goal in FY 29. See Section 4.3.4.1 for County of San Diego final and interim goals.
3. Denotes existing wet weather frequency as modeled in the Bacteria TMDL. With limited baseline monitoring data available, this goal reflects a reasonable estimate considering the difficulty in demonstrating progress within the receiving water during wet weather in a short amount of time. Furthermore, development and redevelopment of the urban environment has occurred since the Bacteria TMDL baseline loads were calculated in 2001. As such, this goal demonstrates that progress has been made by the RAs by maintaining the existing wet weather exceedance frequency.
4. Total coliform effluent limitations only apply to MS4 outfalls that discharge to the Chollas Creek mouth.
5. Demonstration of exceedances due to natural sources includes demonstration that pollutant loads from MS4s are not causing or contributing to exceedances.

% = percent; FY = fiscal year; WER = Water-Effect Ratio; WQO = Water Quality Objective

Table 4-1 (continued)
Wet Weather Numeric Goals for Chollas Creek

Compliance Pathways		Baseline	Assessment Period and Fiscal Year				
			Current Permit Term	FY 16–20	FY 21–25	FY 26–30	FY 31–36
			FY 18	FY 19	FY 24[1, 2]	FY 29[2]	FY 31[1]
% of Exceedances of Final Receiving Water WQOs due to Natural Sources[5]	Fecal coliform	Not available	100%	100%	100%	100%	100%
	Enterococcus		100%	100%	100%	100%	100%
Or							
Implement Accepted Water Quality Improvement Plan	Metric for compliance analysis is MS4 discharge % load reduction. Interim compliance is implementation of strategies and schedule based on analysis results (Appendix I). Final compliance is implementation of BMPs based on analysis results and demonstration of compliance with any of the compliance pathways through monitoring and assessment.						

Notes:
1. Denotes TMDL final and interim target. Alternative interim compliance dates are presented.
2. The County of San Diego has selected alternative interim schedules and goals for compliance with the Bacteria TMDL. The County will meet the goal in FY 29. See Section 4.3.4.1 for County of San Diego final and interim goals.
3. Denotes existing wet weather frequency as modeled in the Bacteria TMDL. With limited baseline monitoring data available, this goal reflects a reasonable estimate considering the difficulty in demonstrating progress within the receiving water during wet weather in a short amount of time. Furthermore, development and redevelopment of the urban environment has occurred since the Bacteria TMDL baseline loads were calculated in 2001. As such, this goal demonstrates that progress has been made by the RAs by maintaining the existing wet weather exceedance frequency.
4. Total coliform effluent limitations only apply to MS4 outfalls that discharge to the Chollas Creek mouth.
5. Demonstration of exceedances due to natural sources includes demonstration that pollutant loads from MS4s are not causing or contributing to exceedances.

% = percent; FY = fiscal year; WER = Water-Effect Ratio; WQO = Water Quality Objective

Table 4-2
Dry Weather Numeric Goals for Chollas Creek

Compliance Pathways		Baseline	Assessment Period and Fiscal Year			
			Current Permit Term	FY 16-20	FY 21-25	FY 26-30
DRY WEATHER METALS						
			FY 18	FY 19[1]	FY 24	FY29[1]
MS4 Discharges Allowable % Above Effluent Limitations	Copper	% exceedance of effluent limitations (Monitoring and Assessment Program Section of the Final Water Quality Improvement Plan)	See Performance Measures	20%	15%	0%
	Lead					
	Zinc					
OR						
Receiving Water Allowable % Above Receiving Water Limitations	Copper	0% exceedance of receiving water limitations (Transitional Monitoring and Assessment Program 2012 – 2014)	See Performance Measures	0%	0%	0%
	Lead					
	Zinc					
OR						
# of Direct or Indirect MS4 Discharges to Receiving Water		Number of flowing MS4 outfalls during dry weather monitoring (Monitoring and Assessment Program Section of the Final Water Quality Improvement Plan)	See Performance Measures	0	0	0
OR						

Table 4-2 (continued)
Dry Weather Numeric Goals for Chollas Creek

Compliance Pathways		Baseline	Assessment Period and Fiscal Year			
			Current Permit Term	FY 16-20	FY 21-25	FY 26-30
Implement Accepted Water Quality Improvement Plan Strategies to Reduce MS4 Discharges Will Result in % Load Reduction (Using WER Update 2014)	Metric for compliance analysis is MS4 discharge % load reduction. Interim compliance is implementation of strategies and schedule based on analysis results (Appendix I). Final compliance is implementation of BMPs based on analysis results and demonstration of compliance with any of the compliance pathways through monitoring and assessment.					
	Copper	0% Load Reduction (2003 TMDL Model)	See Performance Measures	0%	0%	0%
	Lead		See Performance Measures	0%	0%	0%
	Zinc		See Performance Measures	0%	0%	0%
DRY WEATHER INDICATOR BACTERIA						
			FY 18	FY 19[1, 3]	FY 21[1]	N/A
Receiving Water % Days Exceeding WQO	Fecal coliform	100% (1996-2002[2])	See Performance Measures	50%	0%	
	Enterococcus	100% (1996-2002[2])		50%	0%	
OR						
MS4 Discharges % Load Reduction	Fecal coliform	0% (2002 TMDL Model)	See Performance Measures	49.4%	98.8%	
	Enterococcus			49.7%	99.3%	
	Total coliform[4]			46.1%	92.1%	
OR						
MS4 Discharges **%** Days Exceeding WQO	Fecal coliform	Historical MS4 dry weather data will be used to identify the baseline in the first annual report	See Performance Measures	0%	0%	
	Enterococcus			0%	0%	
	Total coliform[4]			0%	0%	
OR						

Table 4-2 (continued)
Dry Weather Numeric Goals for Chollas Creek

Compliance Pathways		Baseline	Assessment Period and Fiscal Year			
			Current Permit Term	FY 16-20	FY 21-25	FY 26-30
# of Direct or Indirect MS4 Discharges to Receiving Water		Number of persistently flowing major MS4 outfalls provided in the Monitoring and Assessment Program Section of the Final Water Quality Improvement Plan	See Performance Measures	0	0	
OR						
% of Exceedances of Final Receiving Water WQOs due to Natural Sources[5]	Fecal coliform	Not Available	100%	100%	100%	
	Enterococcus					
OR						
Implement Accepted Water Quality Improvement Plan	Metric for compliance analysis is MS4 discharge % load reduction. Interim compliance is implementation of strategies and schedule based on analysis results (Appendix I). Final compliance is implementation of BMPs based on analysis results and demonstration of compliance with any of the compliance pathways through monitoring and assessment.					

Notes:
1. Denotes TMDL final and interim target. Alternative interim compliance dates are presented.
2. The existing exceedance frequency was calculated on the basis of available monitoring data between 1996 and 2002 per Municipal Permit requirements and presented in more detail in Appendix H.
3. The County of San Diego has selected an alternative interim schedule for compliance with interim Chollas Creek Bacteria TMDL targets. The County will meet the goal in FY 20.
4. Total coliform effluent limitations only apply to MS4 outfalls that discharge to the Chollas Creek mouth.
5. Demonstration of exceedances due to natural sources includes demonstration that pollutant loads from MS4s are not causing or contributing to exceedances.

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4.3.1 City of La Mesa

City of La Mesa (La Mesa) jurisdiction-specific goals are presented in Section 4.3.1.1. The key strategies identified to address the Highest Priority Conditions in La Mesa's jurisdiction are in Section 4.3.1.2. Most of La Mesa's jurisdiction that drains to Chollas Creek is south of Interstate 8. Therefore, the southern half of La Mesa is the area that will be targeted by strategies to meet the final and interim goals. In Chollas Creek, a compliance analysis using a watershed model was conducted to identify the strategies required to be implemented to meet final goals. The strategies and implementation schedules identified demonstrate that numeric goals will be met. The adaptive management process provides the framework to evaluate progress toward meeting the goals and allows for modification of strategies. As strategies are modified, the compliance analysis will be updated as needed to provide assurance that numeric goals will be met.

4.3.1.1 Goals and Schedules

In addition to the TMDL-derived goals applicable to La Mesa in Tables 4-1 and 4-2, jurisdiction-specific interim Water Quality Improvement Plan wet and dry weather goals are presented in Table 4-3. Performance-based goals are included to measure the short-term jurisdictional progress toward achieving goals, given that monitoring is required to demonstrate sustained water quality improvement over time.

Table 4-3
Goals for Chollas Creek (Wet and Dry Weather)—City of La Mesa

Performance Measure for Key First Permit Term Strategies		Assessment Period and Fiscal Year
		Current Permit Term
Performance Measure—Wet and Dry Weather		
Performance Metrics		FY 18
Design, Construct, and Maintain Low-Impact Development (LID) Retrofits	Linear feet	Approximately 4,540 linear feet of bioretention areas will replace impervious asphalt along University Avenue between La Mesa Boulevard and Harbison Avenue.

4.3.1.2 Summary of Strategies and Schedules

La Mesa has selected jurisdictional strategies that best suit the topography and characteristics of its jurisdiction to comply with Municipal Permit requirements. A complete list of jurisdictional strategies planned for implementation within the WMA is provided in Appendix I. The following is a summary of the implementation approach and key strategies that have been identified to address the Highest Priority Condition in La Mesa's jurisdiction within the Chollas Creek HSA. Figure 4-1 shows La Mesa's jurisdiction within the Chollas Creek Highest Priority Condition where the strategies will be implemented.

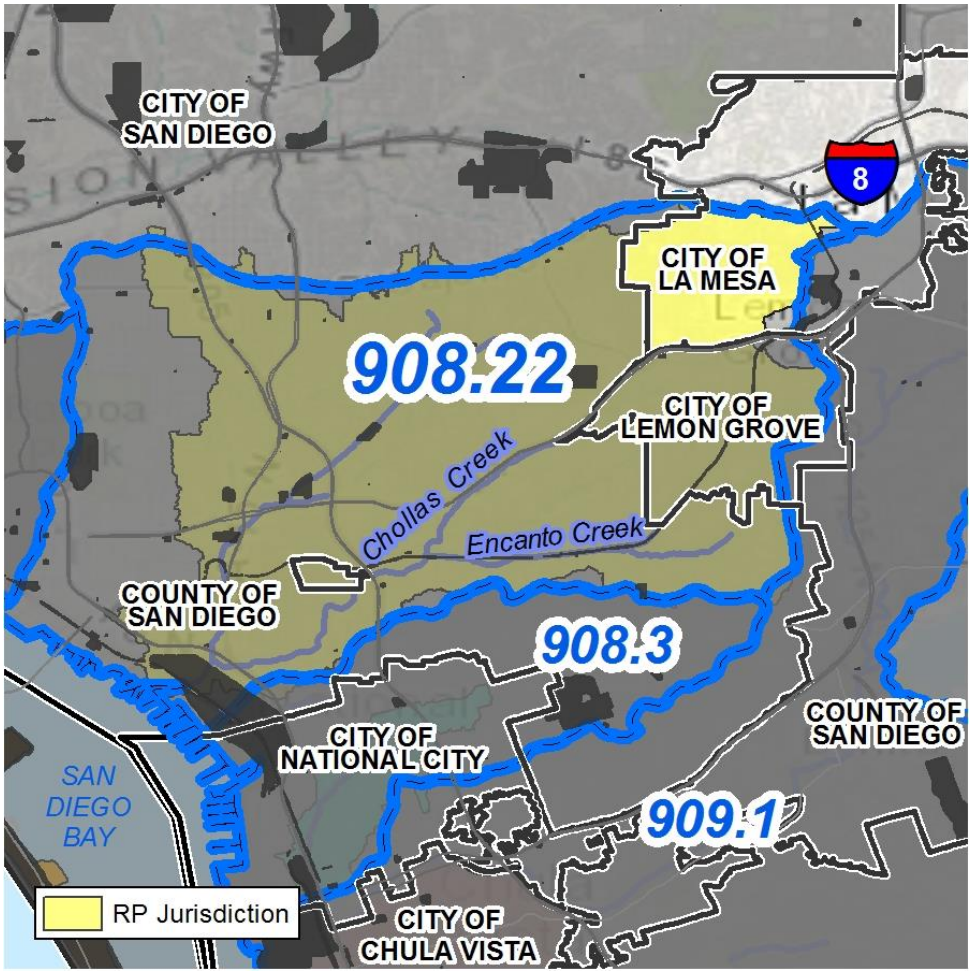

Figure 4-1
La Mesa's Jurisdiction Within the Chollas Creek Highest Priority Condition

Optional strategies that will be considered upon need and as resources are available are also summarized. In Chollas Creek, a compliance analysis using a watershed model was conducted to identify the strategies required to be implemented to meet final goals. The strategies and implementation schedules identified demonstrate that numeric goals will be met. The adaptive management process provides the framework to evaluate progress toward meeting the goals and allows for modification of strategies. As strategies are modified, the compliance analysis will be updated as needed to provide assurance that numeric goals will be met.

To address bacteria, metals, and other pollutants in MS4 discharges in wet and dry weather, La Mesa plans to implement or continue public area enhancements, including low-impact development retrofit projects in roadway medians, sanitary sewer infrastructure replacement, and enhanced operation and maintenance activities for MS4 infrastructure and public roadways, such as installing trash capture devices in catch basins.

Specifically, La Mesa has been awarded a grant from the State Water Resources Control Board Proposition 84 Storm Water Grant Program for the University Avenue Median Water Quality Improvement project to remove and replace impervious medians with pervious bioretention areas that will reduce pollutant discharges to receiving waters. In addition, a major effort to prevent bacteria from entering the receiving water is planned. Aging sewer infrastructure within the flood plain will be removed and relocated to reduce the potential for sewer leaks and breaks.

To reduce pollutants from private land uses, La Mesa is planning to expand the commercial facility and construction site inspection program and increase public education and outreach. High priority commercial businesses may be inspected twice per year, while high priority construction sites will be inspected twice per week. La Mesa has a robust education and outreach program that includes collaboration with the Environmental Sustainability Commission, which targets residents and commercial business owners. Educational activities include supporting Eagle Scout groups in their efforts to build information kiosks to provide information about pet waste and trash pickup and other park rules.

Table 4-4 summarizes La Mesa’s strategies and schedules for the Chollas Creek HSA.

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Table 4-4
Summary of Strategies for Chollas Creek—City of La Mesa

Strategy	Jurisdictional Areas		Priority Conditions				Implementation Schedule						
	Jurisdiction-Wide	Chollas	Trash	Bacteria	Nutrients	Metals	Previous Fiscal Year(s)	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20	Future Fiscal Year(s)
University Avenue median water quality improvements		X	X	X	X	X			X				
Sanitary sewer infrastructure replacement	X	X		X	X				X				
MS4 infrastructure and outfall operation and maintenance	X	X	X	X	X	X				X	X	X	X
Enhanced street sweeping	X	X	X	X		X				X	X	X	X
Installation of trash capture devices on catch basin inlets	X	X	X						X	X			
Inspection programs	X	X	X	X	X	X	X	X	X	X	X	X	X
Education and outreach	X	X	X	X	X	X		X	X	X	X	X	X
Monitoring		X				X	X	x	X	X	X	X	X
Optional Jurisdictional Strategies													
Collaborate with homeowners' associations	X		X	X	X		See Appendix I for criteria for initiating strategies.						
Participate in a regional social services effort for homelessness	X		X	X									
Implement sweeping and maintenance of private roads and parking lots in targeted areas			X	X		X							
Replace La Mesa-owned vehicle brake pads with copper-free brake pads as they become commercially available						X							
Implement other green infrastructure projects			X	X	X	X							

Note:
Implementation of strategies is dependent on approval of fiscal budgets and available resources.

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4.3.2 City of Lemon Grove

The City of Lemon Grove's (Lemon Grove) jurisdiction within the Chollas Creek HSA is relatively small and includes a mixture of residential, light industrial, and commercial developments. Industrial and commercial development is primarily concentrated along Federal Boulevard and Broadway. Lemon Grove primarily discharges to the south fork of Chollas Creek.

Like the other jurisdictions in the Chollas Creek HSA, Lemon Grove is subject to TMDLs for metals and bacteria, and these pollutants are also the relevant Highest Priority Condition. Monitoring data from the last three monitoring years at Lemon Grove's jurisdictional boundary has shown metals levels below the TMDL final targets. The City's dry weather MS4 outfall monitoring program has determined that there is only one site in the City with persistent flow, and the rest of the sites are dry. The City has taken this data into account when developing its strategies, as discussed in more detail in Section 4.3.2.2. Goals and strategies for the current Municipal Permit term focus dry weather implementation on the reduction of irrigation runoff, beginning with municipal facilities as an example of BMP implementation. Goals and strategies for wet weather during the current Municipal Permit term also focus on municipal facilities, including installation of downspout disconnections and enhanced street sweeping, as well as the continuation of a robust inspection program targeting restaurants to reduce bacteria loading.

Lemon Grove's jurisdiction-specific Water Quality Improvement Plan goals are presented in Section 4.3.2.1. The key strategies identified to address the Highest Priority Condition in Lemon Grove's jurisdiction are presented in Section 4.3.2.2. Strategies and implementation schedules were identified using best information available on efficiency, effectiveness, and level of effort estimated to comply with numeric goals. The strategies selected represent actions and activities that Lemon Grove has seen success in implementing on the basis of monitoring results that have shown progress in improving water quality, as discussed in more detail in Section 4.3.2.2. Lemon Grove expects that further implementation of these strategies will attain TMDL final and interim receiving water or effluent limitations. The adaptive management process provides the framework to evaluate progress toward meeting the goals and allows for modification of strategies. As strategies are modified, the Water Quality Improvement Plan will be updated. The implementation of each strategy will be contingent upon annual budget approvals and funding availability.

4.3.2.1 Goals and Schedules

In addition to the TMDL-derived goals applicable to Lemon Grove in Tables 3-1 and 3-2, jurisdiction-specific interim Water Quality Improvement Plan wet and dry weather goals are presented in Table 4-5. Performance-based goals are included to measure the short-term jurisdictional progress toward achieving goals, given that monitoring is required to demonstrate sustained water quality improvement over time.

Table 4-5
Current Municipal Permit Term Goals for Chollas Creek—City of Lemon Grove

Performance Measures for Key First Permit Term Strategies		Current Permit Term (FY 14—FY 18)
		FY 18
Performance Measures—Wet Weather		
Reduction in Bacteria	Restaurant used cooking oil bins stored in covered areas and protected from run-on.	75 percent (%)[1]
Or		
Municipal Facility Retrofits for Reduction of Bacteria and Metals	Redirect parking lot runoff to pervious area.	2 municipal facilities retrofitted (drainage area/facility to be determined (TBD) during site selection in FY 16)
	Redirect roof downspouts to pervious area.	2 municipal facilities retrofitted (drainage area/facility TBD during site selection in FY 16)
Performance Measures—Dry Weather		
Non-Storm Water Flow Reduction Programs	Install smart irrigation systems at municipal facilities.	8 Cal-Sense smart irrigation systems installed

Note:
1. These data have not been directly recorded in past inspection programs. The City's current BMP requirements state that bins must be kept clean but do not always require coverage. Based on discussion with inspection staff, it is estimated that about 20-30% of used oil cooking bins are stored in covered areas protected from run-on.

4.3.2.2 Summary of Strategies and Schedules

Lemon Grove has selected jurisdictional strategies that best suit the topography and characteristics of its jurisdiction to comply with Municipal Permit requirements. A complete list of jurisdictional strategies planned for implementation within the WMA is provided in Appendix I. The following is a summary of the implementation approach and key strategies that have been identified to address the Highest Priority Conditions in Lemon Grove's jurisdiction within the Chollas Creek HSA. Figure 4-2 shows the portion of Lemon Grove's jurisdiction that drains to Chollas Creek, which is where the strategies will be implemented.

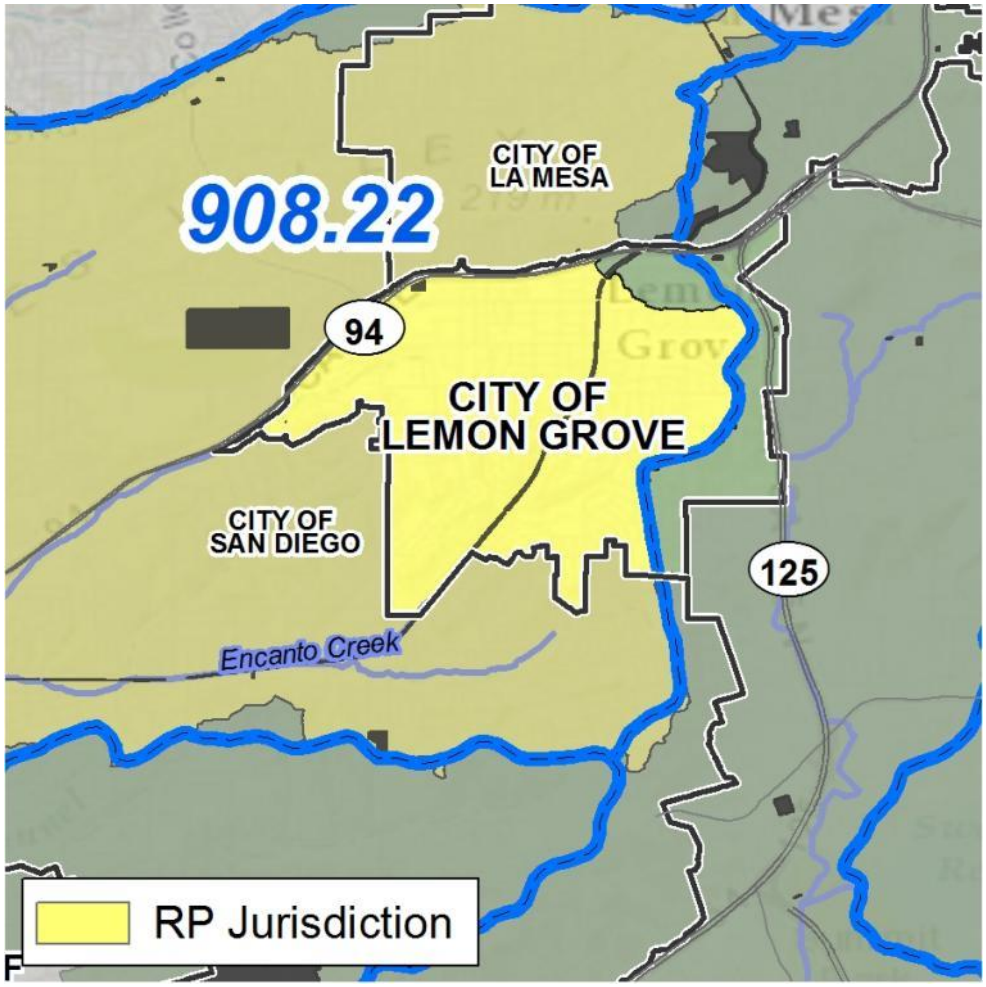

Figure 4-2
Lemon Grove's Jurisdiction Within the Chollas Creek HSA

Strategy Selection Process Overview

As part of the process of selecting strategies, the City of Lemon Grove has evaluated modeling results and water quality monitoring data. Modeling done for the entire watershed as part of the CLRP suggests that metals, particularly copper, must be reduced by just over 73 percent to meet the TMDL compliance targets. However, the modeled load reduction was calculated on the basis of the entire watershed, not specifically Lemon Grove. Water quality monitoring data collected in the receiving water body just downstream of Lemon Grove's jurisdictional boundary from 2011 through 2014 has consistently shown metals—copper, lead, and zinc—levels below the TMDL targets (City of San Diego et al., 2012; 2013, 2014). Metals TMDL compliance monitoring farther downstream at the south fork of Chollas Creek monitoring station demonstrates compliance with receiving water limitations for the 2012-2013 storm season (City of San Diego et al., 2013). Both of these sets of results are based on the default WER value of 1.0. If the proposed higher WERs are adopted, the City of Lemon Grove's data would be even farther below the regulatory limits.

While the City of Lemon Grove does not consider the existing data set to show a long enough history that metals should no longer be a Highest Priority Condition for Lemon Grove at all, the data do suggest that the City's programs have been working and that the large amount of additional structural BMP implementation proposed in the CLRP is likely not necessary to meet metals compliance targets.

The City of Lemon Grove's initial focus for bacteria is on dry weather contributions, for which the TMDL numeric target deadlines arrive sooner than for the wet weather targets. The City of Lemon Grove has been taking action to reduce dry weather flow for several years and now has only one persistently flowing outfall. The remainder of the City's outfalls have been dry. The City's actions to reduce dry weather bacteria levels will primarily target the drainage area for the persistently flowing outfall, which encompasses a large area of the City along Broadway, plus a portion along Federal Boulevard.

While a relatively robust Lemon Grove-specific data set is in place for dry weather flow and for metals, somewhat less information is available for wet weather bacteria. Considering the gap between the metals load reduction suggested by the CLRP modeling effort and actual monitoring data at Lemon Grove's jurisdictional boundary, it is possible that the level of wet weather bacteria reduction proposed in the CLRP is also not representative of the conditions specific to Lemon Grove. During the current Municipal Permit term, the City will begin with non-structural strategies that target known sources of bacteria, such as grease bin and trash storage areas at restaurants. As more bacteria data becomes available and as the wet weather bacteria requirements are further clarified via the bacteria TMDL reopener process, Lemon Grove will be able to better define the level of structural strategies that may be necessary to meet TMDL compliance targets for bacteria in wet weather conditions. For this reason, most structural BMPs targeted at wet weather bacteria levels are currently listed as optional strategies in Appendix I.

Discussion of Specific Strategies

To address bacteria, metals, and other pollutants in MS4 discharges in wet weather during the current Municipal Permit term, Lemon Grove will concentrate efforts on areas of existing development. Targeted municipal operation and maintenance activities include street sweeping using more efficient equipment (e.g., vacuum-assisted street sweepers) at increased frequencies in commercial areas. Lemon Grove municipal property will also serve as demonstration projects for the implementation of storm water retrofits. City Hall and Civic Center Park will be evaluated for potential retrofits, such as downspout disconnects and routing storm water from parking lots to landscaped areas. As commercial and industrial facilities are inspected, they will also be evaluated for their potential to discharge high priority pollutants and for potential retrofit opportunities. Retrofit opportunities evaluated during the inspections include disconnecting downspouts, converting landscape to xeriscape, directing runoff from paved areas to landscaped areas, and installing rain barrels. The commercial inspection program will further specifically target eating and drinking establishments that store used cooking oil. Used cooking oil storage areas have been identified as a potential source of bacteria during past inspection programs. Lemon Grove will work with its food service establishments so that businesses store oil indoors or in covered areas, reducing the

potential for leakage and bacteria discharge during wet weather. Lemon Grove will work with grease rendering companies to provide education and indoor grease containers to business owners free of charge.

Dry weather issues are addressed similarly by implementing projects on public property and encouraging implementation of similar techniques on private property. Because irrigation runoff is often a major transport mechanism for bacteria and other pollutants to the MS4 and receiving waters during dry weather conditions, many of Lemon Grove's strategies will target irrigation runoff in existing development. Lemon Grove will facilitate residential and commercial landscaping retrofits and other outdoor water conservation behaviors through collaboration with Helix Water Department. This effort will also include increasing awareness about landscaping and sprinkler system retrofit incentive programs available to residents and businesses. Recognizing that Lemon Grove can further encourage private water conservation efforts by demonstrating its own commitment to water conservation, Lemon Grove will continue to convert additional road median landscaping to drip irrigation and will install Cal-Sense smart irrigation systems at municipal facilities such as parks. Through these efforts, Lemon Grove's goal is two-fold: (1) improve water conservation, which is especially important in ongoing drought conditions, and (2) reduce dry weather flows in its storm drain system.

Lemon Grove's complete list of strategies is provided in Appendix I. Optional strategies that will be considered upon need and as resources are available are also listed in Appendix I. Strategies and implementation schedules were identified using best information available on efficiency, effectiveness, and level of effort estimated to comply with numeric goals. The adaptive management process provides the framework to evaluate progress toward meeting the goals and allows for modification of strategies. As strategies are modified, the Water Quality Improvement Plan will be updated. The implementation of each strategy will be contingent upon annual budget approvals and funding availability.

Table 4-6 summarizes Lemon Grove's strategies and schedules for the Chollas Creek HSA.

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Table 4-6
Summary of Strategies for Chollas Creek—City of Lemon Grove

Strategy[1]	Sources of Bacteria or Metals Addressed By Strategy[2]	Priority WQCs Addressed					Implementation Schedule						
		Trash	Bacteria[3]	Nutrients	Sediment	Metals[3]	Previous Fiscal Year(s)	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20	Future Fiscal Year(s)
Municipal irrigation control system smart controllers (LG-21)	Municipal, Irrigation Runoff	X	X	X		X	X	X	X	X	X	X	X
Outreach, incentives, and enforcement to reduce irrigation runoff from private properties (LG-19, LG-20, LG-29, LG-34)	Commercial, Industrial, Residential, Irrigation Runoff	X	X	X		X		X	X	X	X	X	X
Require covered trash enclosures for development projects (LG-5)	Commercial, Industrial, Municipal, Residential	X	X	X	X	X		X	X	X	X	X	X
Pilot projects to disconnect downspouts and direct runoff from impervious areas to pervious areas at municipal facilities (LG-41, LG-42)	Municipal	X	X	X	X	X		X	X				
Enhanced street sweeping, including sweeping medians and using vacuum street sweepers (LG-24, LG-25, LG-36)	Roads and streets	X	X	X	X	X	X	X	X	X	X	X	X

Notes:

1. Strategy ID numbers from Appendix I are included in parentheses at the end of each strategy description. More information about each strategy, and information about additional strategies that are not referenced in this table, is available in Appendix I.
2. For more details on how sources of highest priority conditions are addressed by the City of Lemon Grove's strategies, see Appendix I.
3. Highest priority water quality conditions are highlighted in orange.
4. Because discharges from virtually all sources may reach the MS4, catch basin cleaning can also be considered a strategy that addresses all sources.

Table 4-6 (continued)
Summary of Strategies for Chollas Creek—City of Lemon Grove

Strategy[1]	Sources of Bacteria or Metals Addressed By Strategy[2]	Priority WQCs Addressed					Implementation Schedule						
		Trash	Bacteria[3]	Nutrients	Sediment	Metals[3]	Previous Fiscal Year(s)	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20	Future Fiscal Year(s)
Require BMPs to control metals and bacteria discharges from existing development (LG-11)	Commercial, Industrial, Municipal, Residential	X	X	X	X	X	X	X	X	X	X	X	
Higher frequency inspections for high priority sources of bacteria and metals (LG-35)	Commercial, Industrial		X			X		X	X	X	X	X	X
Require LID at development projects (LG-1, LG-2, LG-4, LG-8)	Commercial, Industrial, Municipal, Residential	X	X	X	X	X		X	X	X	X	X	X
Catch basin cleaning (LG-22)	Municipal[4]	X	X		X	X	X	X	X	X	X	X	X
Additional retrofits or structural BMPs to control discharges of metals and bacteria (LG-40, LG-43, LG-44, LG-45)	Commercial, Industrial, Municipal, Residential	X	X	X	X	X	See Appendix I for criteria for initiating these strategies.						

Notes:

1. Strategy ID numbers from Appendix I are included in parentheses at the end of each strategy description. More information about each strategy, and information about additional strategies that are not referenced in this table, is available in Appendix I.
2. For more details on how sources of highest priority conditions are addressed by the City of Lemon Grove's strategies, see Appendix I.
3. Highest priority water quality conditions are highlighted in orange.
4. Because discharges from virtually all sources may reach the MS4, catch basin cleaning can also be considered a strategy that addresses all sources.

4.3.3 City of San Diego

The City of San Diego's (San Diego) jurisdiction includes dense population and increased impervious land use types. Strategies such as education and outreach targeting irrigation runoff, rebate and incentive opportunities for rain barrels and downspout disconnections, and pilot green infrastructure projects and treatment basins are considered across San Diego's jurisdiction. San Diego's strategies are calibrated to meet the Water Quality Improvement Plan numeric goals for the TMDLs in Chollas Creek. In addition, many of the strategies are implemented across San Diego's jurisdiction throughout the WMA and will provide benefits to other Priority Conditions.

The San Diego jurisdiction-specific goals are presented in Section 4.3.3.1. A summary of strategies to address the Highest Priority Conditions in San Diego's jurisdiction are presented in Section 4.3.3.2. A complete list of jurisdictional strategies planned for implementation within the WMA is provided in Appendix I.

4.3.3.1 Goals and Schedules

In addition to the TMDL-derived goals applicable to San Diego presented in Tables 4-1 and 4-2, jurisdiction-specific interim Water Quality Improvement Plan wet and dry weather goals are presented in Table 4-7. Performance-based goals are included to measure the short-term jurisdictional progress toward achieving goals given that monitoring is required to demonstrate sustained water quality improvement over time.

Table 4-7
Goals for Chollas Creek (Wet and Dry Weather)—City of San Diego

Suite of Strategies to Measure Performance during First Permit Term	Baseline	Assessment Period
		Current Permit Term (FY 14-FY 18)
		FY 18
Develop a green infrastructure policy, attain City Council approval, and construct green infrastructure BMPs to improve water quality during wet and dry weather	0 acres treated in 2002, the year used as baseline in the Bacteria TMDL.	44.6 acres of drainage area treated through construction of 6 green infrastructure BMPs[1]
Implement runoff reduction programs that include targeted education and outreach efforts, enhanced inspections, additional rebate programs[2], and increased enforcement	Historical dry weather monitoring data will be used to establish a baseline in the first Water Quality Improvement Plan annual report.	10% prohibited[3] dry weather reduction in flow from baseline measured at persistently flowing outfalls in the WMA

4.3.3.2 Summary of Strategies and Schedules

San Diego has identified administrative policies, urban development management programs, and innovative pilot projects, and is investing in research for site locations for green infrastructure and other treatment BMPs throughout its jurisdiction in multiple watersheds. San Diego has identified water quality improvement strategies that are

expected to provide the greatest benefits to the watershed and its residents, businesses, and communities within San Diego's jurisdictional boundaries. San Diego is currently developing a framework to evaluate other[7] potential benefits that the recommended strategies may provide beyond improved water quality. These other benefits may be financial, environmental, or societal. The recommended strategies will be evaluated on the basis of the number of other benefits they may provide, and could guide future updates to the Water Quality Improvement Plan.

The strategies have also been selected on the basis of the compliance analysis initially completed for the CLRP Phase I and Phase II efforts and were recently updated during Water Quality Improvement Plan development. The CLRP Phase II report provided BMP modeling and cost-optimization analysis to quantify the most cost-effective strategies to reach TMDL compliance (City of San Diego, 2013). Recent updates to the compliance analysis considered a site-specific WER and an update to the estimated load reductions achieved from a larger suite of nonstructural strategies. Section 4.3.3.2.1 presents example strategies selected by San Diego to meet the Water Quality Improvement Plan final and interim goals. Section 4.3.3.2.2 presents the compliance analysis modeling results for each strategy category in terms of percent load reductions. This section also presents graphical summaries of load reductions expected over the compliance period. Appendix I provides the implementation date for each strategy.

4.3.3.2.1 Strategy Examples

Examples of strategies to address the Highest Priority Conditions in San Diego's jurisdiction within Chollas Creek, as well as other priorities throughout San Diego's jurisdiction, are summarized below. Figure 4-3 shows San Diego's jurisdiction within the Chollas Creek Highest Priority Condition where the strategies will be implemented.

[7] Other benefits refer to outcomes of a strategy beyond water quality improvements. Other benefits can include reduced air pollution, increased water conservation, aesthetics-induced property value increases, and increased business investments.

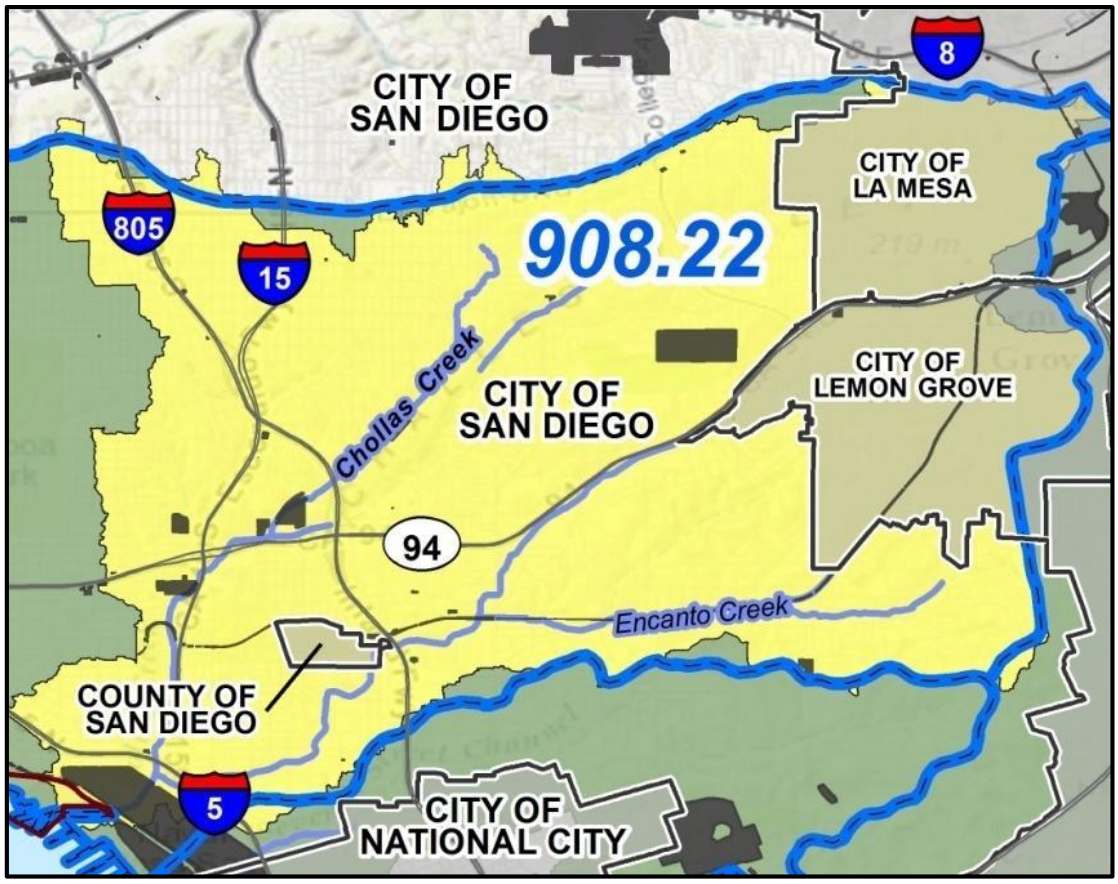

Figure 4-3
San Diego's Jurisdiction Within the Chollas Creek Highest Priority Condition

A complete list of jurisdictional strategies to be implemented within the WMA is provided in Appendix I. In Chollas Creek, a compliance analysis using a watershed model was conducted to identify the strategies required to be implemented to meet final and interim goals. The strategies and implementation schedules identified in Appendix I demonstrate that numeric goals will be met on the basis of that analysis. The adaptive management process provides the framework to evaluate progress toward meeting the goals and allows for modification of strategies, if necessary. If strategies are modified, the compliance analysis will be updated as needed to provide assurance that numeric goals will be met. These strategies will be implemented by San Diego; they are not intended to be implemented by private entities (e.g., development, business, industry, etc.). However, some of San Diego's strategies, such as development planning, may have implications for private entities.

San Diego will address discharges of metals, bacteria, and other pollutants through activities on public land across its jurisdiction. The following example strategies provide multiple benefits by addressing the Highest Priority Conditions of metals and bacteria, and also other water quality pollutants such as trash and sediment. During dry weather, implementation will focus on the reduction of irrigation runoff.

Development Planning—Development and Implementation of a Green Infrastructure Policy and Program

San Diego will begin developing a policy in Fiscal Year (FY) 16 that will require inclusion of green infrastructure features on all suitable projects, including non-Stormwater Mitigation Plan for Land Development and Public Improvement Projects (Standard Urban Stormwater Mitigation Plan [SUSMP]) projects. This policy will be coordinated with ongoing efforts to update San Diego design manuals and low-impact development (LID) design standards for public LID BMPs. The program will begin with research and recommendations for appropriate green infrastructure project siting and prioritization methods within San Diego. By FY 18, San Diego will complete construction of green infrastructure and/or green streets projects as detailed in San Diego's corresponding structural strategies.

Enhanced Street Sweeping

To target metals and sediment, San Diego plans to enhance street sweeping operations by sweeping additional miles of curb and gutter and using more efficient equipment. Over time, replacement of street sweeping equipment with high-efficiency Regen-Air and vacuum-assisted sweepers is expected to further increase load reductions (even if current sweeping routes and frequencies remain unchanged). Sweeping will also be initiated for median areas that are not currently subject to regular sweeping.

Enhanced Catch Basin Cleaning

To increase pollutant load removal, catch basins will be cleaned four times per year during the wet weather season, if feasible, to target metals and sediment in the Chollas Creek HSA. Currently, the catch basins are cleaned one time per year. San Diego's catch basin cleaning pilot study found that major pollutants vary from neighborhood to neighborhood (yard waste versus trash and sediment). Future catch basin cleaning practices may be adapted as a result of better record keeping and data analysis.

Existing Development—Enhanced Property-Based Inspection Program

To address bacteria and metals, by FY 16, San Diego plans to administer, as part of their existing development program, an enhanced property-based inspection program. The enhanced property-based inspection program is intended to increase the number of discharges prevented through property-based inspections and increased minimum BMP implementation. San Diego has conducted an extensive multi-year pilot study of its business inspection program and has found that more discharges were discovered and abated by inspecting large properties rather than individual businesses. For example, instead of inspecting one restaurant in a strip-mall, the entire strip-mall would be inspected as one property. Enhanced property-based inspections will be conducted at appropriate frequencies and using appropriate methods such as property- or area-based inspections, as specified in the Municipal Permit (Provision E.5). The program will also require implementation of minimum BMPs for existing development (commercial, industrial, municipal, and residential) that are specific to the facility, area types, and pollutant-generating activities (PGAs).

Existing Development—Increased Enforcement

San Diego intends to enhance enforcement responses by increasing the number of Code Compliance staff. Between FY 16 and FY 19, San Diego is planning to gradually hire additional Code Compliance Officers and support staff to increase compliance with statutes, ordinances, permits, contracts, orders, and other requirements for IDDE, development planning, construction management, and existing development as detailed in the San Diego's Enforcement Response Plan. This effort will target enhanced enforcement of irrigation runoff, water-using mobile businesses, and other entities contributing to the Highest Priority Conditions.

Source Reduction Initiatives

San Diego will continue to implement source reduction initiatives, where feasible. Bans or progressive phase-outs to be considered include pesticides and herbicides on landscapes, leaf blowers, plastic bags, and architectural copper (generally a legacy issue); vehicle washing will also be prohibited or regulated aggressively. San Diego will also consider legislative mandate and cooperative implementation of copper-free brake pads on City-owned vehicles to reduce pollutant deposition. Lastly, San Diego will consider a zinc reduction program and a roof replacement initiative program for source reduction initiatives if the prior strategies do not succeed in addressing the Highest Priority Conditions.

San Diego plans expansion of programs to target irrigation runoff and other dry weather pollutant sources. These strategies primarily target meeting dry weather goals, but may also have wet weather benefits. Because dry weather strategies tend to target the elimination of dry weather flows, they provide load reduction benefits to most water quality pollutants.

Existing Development—Residential and Commercial Rebate Programs Targeting Water Quality

San Diego plans to continue and expand its landscape-based rebate program to target Highest Priority Conditions, such as bacteria and metals, from residential and commercial areas in FY 16 and beyond. Expansion of this program may occur by providing for additional rebates and/or distribution of promotional and informational materials and brochures to community groups, libraries, and recreation centers. Educational material would emphasize watershed stewardship and encourage the implementation of designated BMPs through rebates for rain barrels, grass replacement, downspout disconnections, and micro-irrigation BMPs in residential and commercial areas.

Increased Public Education and Participation

San Diego conducts an extensive public education and outreach program through its Think Blue program. Examples include the following:

- San Diego will continue and expand several of its current outreach programs. Outreach programs would be widely implemented but targeted to home owner associations (HOAs), business owner associations (BOAs), maintenance districts, various community groups through organized community trash cleanup events, and water-using mobile businesses.
- Workshops will be held, community events will be organized, and informational material and brochures will be disbursed to reach community members and advise them of incentives, regulations, and training, and provide general information they need for implementation of good watershed stewardship practices or BMPs.

Cost of Service Study

San Diego plans to conduct a Cost of Service Study starting in FY 16. This study will examine the full cost of flood control and storm water strategies needed to comply with storm water regulations for San Diego. The City of San Diego's Watershed Asset Management Plan (WAMP) will be used as the basis for the study.

Table 4-8 summarizes a subset of San Diego's strategies to address bacteria and metals in Chollas Creek. A complete list of jurisdictional strategies to be implemented within the WMA is provided in Appendix I.

Sunset Cliffs Erosion Control Project

The City of San Diego is planning to implement the first phase of a project that will preserve and protect the coastal bluffs at Sunset cliffs Natural Park from storm water runoff and soil erosion. The project will involve restoration of natural areas to allow water percolation and installation of drainage devices. The project will include design and construction of drainage improvements that contribute drainage to the outfall at Sunset Cliffs Natural Park.

Table 4-8
Summary of Strategies for Chollas Creek—City of San Diego

Strategy	Jurisdictional Areas		Priority WQCs				Implementation Schedule						
	Jurisdiction-Wide	Chollas	Trash	Bacteria	Nutrients	Metals	Previous Fiscal Year(s)	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20	Future Fiscal Year(s)
Increased enforcement	X	X	X	X	X	X		X	X	X	X		
Enhanced street sweeping	X	X	X	X		X	X	X	X	X	X	X	X
Enhanced catch basin cleaning	X	X	X	X		X			X	X	X	X	X
Increased public education and participation	X	X	X	X	X	X		X	X	X	X	X	X
Source reduction initiatives	X	X	X	X	X	X	X	X	X	X	X	X	X
Enhanced property-based inspection program	X	X	X	X	X	X	X		X	X	X	X	X
Optional Jurisdictional Strategies[1]													
Participate in a regional social services effort for homelessness	X	X	X	X	X		See Appendix I for criteria for initiating strategies.						
Assess feasibility and effectiveness of implementing an Urban Tree Canopy (UTC) program	X	X											
Evaluate feasibility and effectiveness of Permeable Friction Course (PFC), a porous asphalt overlay	X	X	X	X		X							
Development and implementation of a green infrastructure policy and program	X	X	X	X	X	X							
Residential and commercial rebate programs targeting water quality	X	X	X	X	X	X							

Notes:
Highlighting denotes a Highest Priority Condition.
Implementation of strategies is dependent on approval of fiscal budgets and available resources.
1. A complete list of Optional Jurisdictional Strategies for the City of San Diego is included in Table I.4.2 of Appendix I.

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4.3.3.2.2 Compliance Analysis Results

Nonstructural and structural strategies were modeled to demonstrate progress toward attaining the numeric goals. The focus of the optimization analysis was to consider the cost-effectiveness of watershed-wide implementation of BMPs. Optimization incrementally considers costs of BMP implementation and accounts for progress toward achieving the load reduction goals. The targets for optimization are the percent load reduction goals for each TMDL presented in Tables 4-1 and 4-2.

Strategies were prioritized in order of those that are most cost-effective and considering the shortest practicable schedule to implement. Prioritization, beginning with those implemented immediately, is (1) non-modeled nonstructural strategies, (2) modeled nonstructural strategies, (3) multiuse treatment areas, and (4) green infrastructure. Most nonstructural strategies are planned for implementation before or upon approval of the Water Quality Improvement Plan. Structural BMPs can be cost-effective when greater load reductions are needed and treatment must occur after the pollutants enter the storm drain system, particularly when benefits other than water quality improvements are considered. However, planning for structural BMPs requires more time to secure resources, design BMPs, and obtain permits. Most of the structural BMPs are planned for later in the compliance period to allow more time to ensure that the implementation is necessary to meet numeric goals and is designed to achieve the load reductions required, and that alternatives to construction have been evaluated.

Non-Modeled Nonstructural Strategies

Most nonstructural strategies cannot be effectively modeled for load reductions because of their variable implementation, so these strategies are referred to as non-modeled nonstructural strategies. Because their benefits are not individually quantifiable, these strategies were assigned a conservative cumulative pollutant load reduction value of 10 percent. The 10 percent load reduction was estimated by averaging the range of measured and anticipated pollutant removal from the list of San Diego nonstructural strategies. Strategies were categorized as “high” percent removal, i.e., those with greater jurisdictional control (operation and maintenance of MS4 infrastructure), or “low” percent removal, i.e., those requiring public behavioral changes. The range of pollutant load reduction was as low as approximately 2 percent and as high as 72 percent. The overall average percent removal for all constituents and all activities is 10.1 percent (City of San Diego, 2014). Each of these non-modeled nonstructural strategies is described in further detail in the jurisdictional strategies table in Appendix I.

Modeled Nonstructural Strategies

Five of the nonstructural strategies selected for implementation in the Chollas Creek HSA were modeled: street sweeping, catch basin cleaning, Rain Barrels Incentive Program, Downspout Disconnection Incentive Program, and Irrigation Runoff Reduction Program. A description of the modeling analysis is provided in the CLRP Phase II report. A description of the level of implementation for each of the modeled nonstructural strategies is provided in the jurisdictional strategies table in Appendix I.

Structural Strategies

Structural strategies (BMPs) provide the opportunity to intercept runoff and filter, infiltrate, and treat storm water. These structures tend to be more expensive than nonstructural strategies, but they also tend to have predictable and reliable effectiveness in removing pollutant loads. Additionally, structural BMPs provide other multiuse benefits to the community, such as habitat, aesthetics, and recreational opportunities. Two major categories of potential structural BMPs were modeled in the Chollas Creek HSA: (1) multiuse treatment areas, and (2) green infrastructure, including green streets. Large treatment structural BMPs (referred to as multiuse treatment areas) are regional facilities that receive flows from neighborhoods or larger areas, which often serve dual purposes—flood control and groundwater recharge. These BMPs are often located in public spaces and can be co-located within parks or green spaces; these BMPs can provide excellent ecosystem services and aesthetic value to stakeholders. Green infrastructure uses vegetation, soils, and natural processes to manage water and create healthier urban environments. At the scale of a city, green infrastructure refers to the patchwork of natural areas that provide habitat, flood protection, and cleaner water, and may also benefit the environment through cleaner air. At the scale of a neighborhood or site, green infrastructure includes storm water management systems such as bioretention areas, permeable pavements, and green roofs that use natural processes to soak up, store, and treat water. A description of the modeling analysis is provided in the CLRP Phase II report. Structural project details are provided in the jurisdictional strategies table in Appendix I.

Table 4-9 provides the strategy category and the wet weather load reduction benefit for Highest Priority Conditions in addition to water quality benefits for other pollutants. The Water Quality Improvement Plan final goals are also presented to provide assurance that the final goals will be met. Figures 4-4 and 4-5 provide the schedules for implementation of each strategy category and the load reduction expected over the compliance period for wet and dry weather, respectively. In addition, the interim and final goals for the Highest Priority Conditions are presented to show the anticipated progress over the compliance time period.

Table 4-9
Wet Weather Load Reductions for the City of San Diego in Chollas Creek HSA

Strategy and Level of Implementation[1]	City of San Diego—Wet Weather Percentage Reductions									
	Total Zn	Fecal Coliform	*Entero-coccus*	Total Coliform	Total Sediment	Flow	Total Cu	Total Pb	Total N	Total P
Nonstructural, non-modeled	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Modeled nonstructural	1.4%	0.3%	0.3%	0.1%	0.6%	<0.1%	1.6%	0.8%	0.8%	0.6%
Street sweeping										
Catch basin cleaning	1.13%	<0.01%	<0.01%	<0.01%	0.01%	<0.01%	2.30%	1.23%	0.86%	1.04%
Rain barrel installations	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.02%	0.01%	0.01%
Downspout disconnect	0.2%	0.1%	0.2%	0.2%	0.1%	0.1%	0.1%	0.2%	0.1%	0.1%
Irrigation reduction	0.2%	0.3%	<0.1%	<0.1%	1.4%	1.7%	0.4%	0.6%	0.5%	1.5%
Multiuse Treatment Areas	2.2%	9.4%	10.9%	9.4%	1.3%	3.6%	2.4%	2.2%	6.0%	4.0%
4.9-acre BMP to treat a total drainage area of 360 acres with a total storage volume of 13.7 acre-feet										
Green Infrastructure	3.0%	5.3%	3.8%	1.1%	3.4%	3.5%	1.9%	2.9%	3.3%	4.6%
10.31-acre BMP to treat an impervious drainage area of 298.12 acres with a total storage volume of 13.56 acre-feet										

Notes:

1. These numbers are planning-level calculated at a subwatershed scale; structural BMPs should be designed to meet both jurisdictional standards and the numeric goals outlined above at each respective project site. Reported BMP sizes include projects that have already been implemented.
2. Orange-shaded cells indicate Highest Priority Conditions for the Chollas Creek HSA.
3. Nonstructural load reductions include both the modeled and non-modeled load reductions. Non-modeled load reductions are assumed to be 10% for all pollutants (City of San Diego, 2014) and modeled load reductions vary by strategy and pollutant.
4. Irrigation reduction strategies include the implementation of grass replacement projects, micro-irrigation system conversions, weather-based irrigation controllers, downspout disconnections, education and outreach and enforcement of regulations that prohibit runoff.
5. Load reduction totals that exceed the goals reflect coarseness in the model that can be improved with finer physical data at the parcel and/or street scale.

Cu = copper; Pb = lead; Zn = zinc; N = nitrogen; P = phosphorus

Table 4-9 (continued)
Wet Weather Load Reductions for the City of San Diego in Chollas Creek HSA

Strategy and Level of Implementation[1]	City of San Diego—Wet Weather Percentage Reductions									
	Total Zn	Fecal Coliform	*Entero-coccus*	Total Coliform	Total Sediment	Flow	Total Cu	Total Pb	Total N	Total P
Green Streets										
25.52-acre BMP to treat a total drainage area of 7,260.34 acres with a total storage volume of 39.66 acre-feet	11.0%	11.2%	11.7%	11.4%	8.1%	2.7%	9.8%	8.2%	8.5%	10.0%
Total	**29.1%**	**36.6%**	**37.0%**	**32.1%**	**24.9%**	**21.6%**	**28.5%**	**26.0%**	**30.1%**	**31.8%**
	Goal = 29.1%	**Goal = 29%**	**Goal = 24%**	**Goal = 18%**						

Notes:

1. These numbers are planning-level calculated at a subwatershed scale; structural BMPs should be designed to meet both jurisdictional standards and the numeric goals outlined above at each respective project site. Reported BMP sizes include projects that have already been implemented.
2. Orange-shaded cells indicate Highest Priority Conditions for the Chollas Creek HSA.
3. Nonstructural load reductions include both the modeled and non-modeled load reductions. Non-modeled load reductions are assumed to be 10% for all pollutants (City of San Diego, 2014) and modeled load reductions vary by strategy and pollutant.
4. Irrigation reduction strategies include the implementation of grass replacement projects, micro-irrigation system conversions, weather-based irrigation controllers, downspout disconnections, education and outreach and enforcement of regulations that prohibit runoff.
5. Load reduction totals that exceed the goals reflect coarseness in the model that can be improved with finer physical data at the parcel and/or street scale.

Cu = copper; Pb = lead; Zn = zinc; N = nitrogen; P = phosphorus

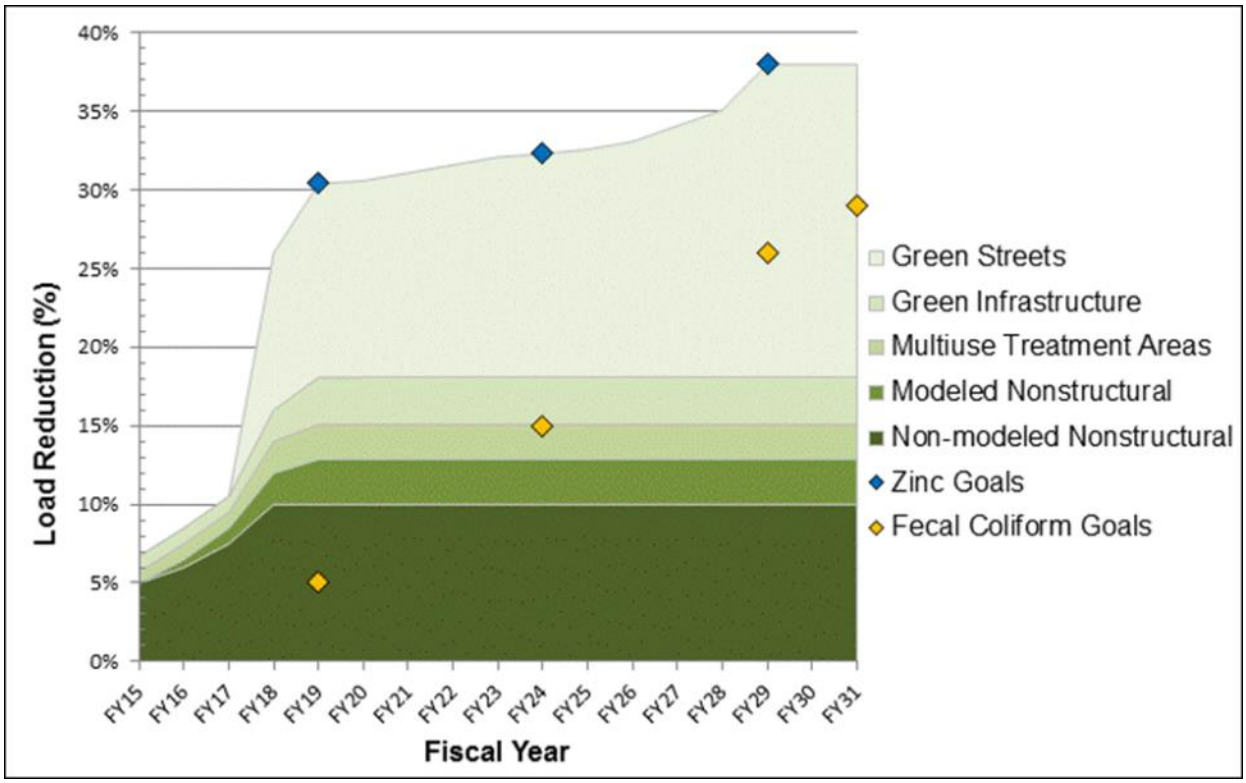

Figure 4-4
Anticipated Progress Toward Meeting Final and Interim Wet Weather Goals (Zinc and Fecal Coliform)

The primary strategy to reduce dry weather pollutant loading is to eliminate dry weather flows. The primary cause of dry weather flows in an arid environment is irrigation runoff. In California, outdoor water consumption exceeds 40 percent of overall urban water use (California Department of Water Resources [DWR], 2010). Reducing and ultimately eliminating irrigation runoff is not only a benefit to receiving water quality, but it also aligns with the state's 20x2020 Water Conservation Plan (20x2020 Plan). The 20x2020 Plan cites multiple benefits of reducing urban water use by 20 percent by the year 2020, including reduced costs of new water infrastructure, reduced water-related energy demands, better capacity to meet the challenge of California's growing population, and improved quality of receiving waters.

Progress toward eliminating dry weather flows will be addressed by a suite of strategies that may include good landscaping practices such as education and outreach and rebate programs supporting the use of micro-irrigation, grass replacement, and weather-based irrigation controllers. These practices, collectively, were modeled by adjusting (reducing) irrigation inputs to urban grass land uses and adjusting how irrigation overspray is allocated between impervious and pervious land uses. The model assumes truly dry conditions and does not include flow from small storm events under 0.2 inch of rainfall.

The model estimates the reduction in all indicator bacteria from the suite of irrigation reduction strategies and programmatic implementation to be over 99 percent for the City of San Diego within the Chollas Creek HSA, meeting the final indicator bacteria goals. Figure 4-5 presents the *Enterococcus*, fecal coliform, and total coliform load reductions anticipated over the compliance period through the non-modeled nonstructural and modeled irrigation reduction strategy discussed above.

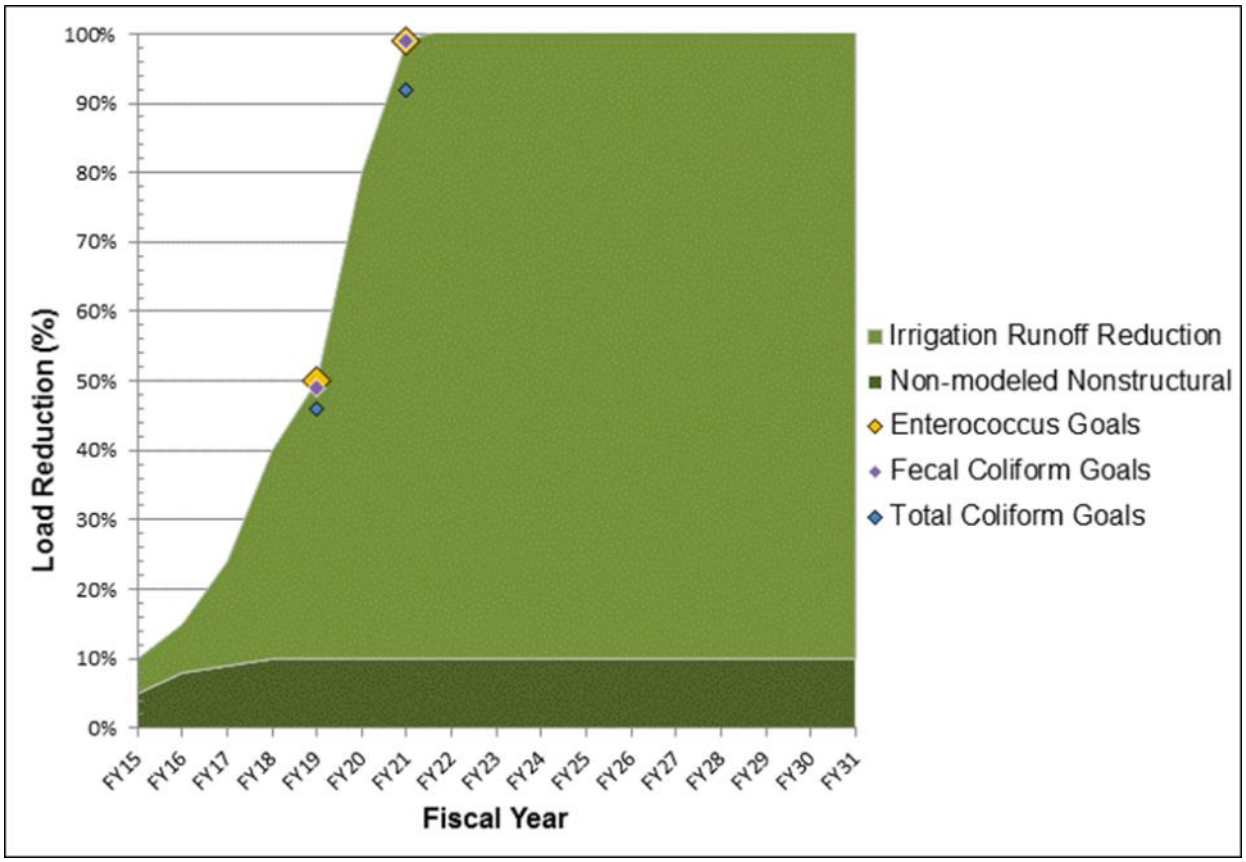

Figure 4-5
Anticipated Progress Toward Meeting Final and Interim Dry Weather Goals (*Enterococcus*, Fecal Coliform, and Total Coliform)

4.3.3.2.3 Alternative BMP Implementation Scenario for Refinement of Water Quality Regulations

The pollutant loads from Non-Phase I MS4s (non-MS4s) can be differentiated from Phase I MS4s (MS4s) loads to more accurately and fairly assess load reduction responsibilities within the Chollas Creek subwatershed. Load reduction responsibilities are assigned to responsible dischargers in a TMDL and are enforceable when adopted in a NPDES Permit. The Chollas Creek Dissolved Metals TMDL (R9-2007-0043) and the recently updated MS4 Permit (R9-2015-0001) identify responsible dischargers subject to the Metals TMDL. The responsible dischargers include Phase I MS4s, Phase II MS4s, industrial facilities, permitted construction activities, and groundwater extraction discharges in the subwatershed. By contrast, the Bacteria TMDL (R9-2010-0001) only

assigns load reduction responsibility to the MS4s, although non-MS4 areas are present within the watershed and contribute to bacteria loads. It is worth noting that pollutant loads from non-MS4 areas may discharge directly to a receiving water body or enter a MS4 before ultimately discharging to a receiving water body.

Given these inconsistencies and the lack of clarity on how responsible dischargers are identified in the TMDLs, the primary scenario included in this Water Quality Improvement Plan currently does not differentiate between MS4 loads and non-MS4 loads. To separate non-MS4 loads from MS4 loads, a preliminary alternative modeling analysis was performed and is presented in this section. The purpose of this analysis is to foster future discussions about accurate and fair apportionment of pollutant reduction responsibilities in the subwatershed to ensure that non-MS4 discharges are regulated before they enter a MS4 to improve water quality throughout the watershed. It is important to note that under the Alternative Scenario the MS4s would continue to implement programs to inspect and provide oversight of industrial discharges and detect illicit discharges.

The first step of the analysis was to update the watershed model to remove areas associated with the following non-MS4s: registered industrial permits, Phase II permits, Federal and State lands (and Indian lands, if present), and agricultural lands. Federal/State/Indian lands and agricultural lands were removed because these areas are also subject to separate regulatory requirements. Land areas involving pollutant loading from construction activities and groundwater extraction were not considered because the limited timeframe associated with construction permits and groundwater extraction impacts were assumed to be negligible. The second step was to optimize the proposed structural strategies in the remaining MS4 areas to achieve the required MS4 load reductions to meet the Water Quality Improvement Plan numeric goals while maintaining cost efficiencies.

The overall watershed load reduction goal would be met through both MS4 and non-MS4 reductions, maintaining equity among all dischargers. Estimated load reductions were based on the relative loading from each responsible discharger in the watershed.

Table 4-10 summarizes the current Water Quality Improvement Plan load reduction requirements (primary scenario) and the alternative scenario results which separate MS4 and non-MS4 loads. The Alternative Scenario allows cost efficiencies to be achieved while still meeting the watershed's overall load reduction goal. Although the MS4 load reduction difference between the primary and alternative scenarios is small, the total cost savings to the MS4s are significant. This is due to structural BMP optimization within MS4 areas and a greater proportion of the required load reduction being addressed by nonstructural programs which are less costly. Note that BMP optimization refers to the modeling analysis that was conducted to identify the "optimal" structural BMP opportunities (considering BMP size, type, and location in the watershed) that would achieve the load reduction with the lowest cost. BMP optimization was conducted for both scenarios; however, additional cost savings are provided in the alternative scenario because only MS4 areas are considered. Results of this analysis are shown for the City of San Diego in Table 4-11, as an example.

Table 4-10
Summary of Alternative Scenario Results

Primary Scenario (MS4 + Non-MS4 Areas Combined)		Alternative Scenario (Separate MS4 and Non-MS4 Areas)			
		MS4 Allocation		Non-MS4 Allocation	
Zn Load Reduction		Zn Load Reduction		Zn Load Reduction	
%	Pounds	%	Pounds	%	Pounds
29%	2,084	29%	2,047	29%	37

Table 4-11
Example of Cost and Load Reduction Summary for the City of San Diego

Cost Comparison Between Primary and Alternative Scenario	Primary Scenario (MS4 + Non-MS4 Areas Combined[1]; $Million)	Alternative Scenario (MS4 Only[2]; $Million)	Cost Savings from Primary Scenario ($Million)
	$171	$139	$33 (19%)
MS4 Load Reduction Summary for Alternative Scenario	MS4 Existing Load for Zn (Pounds)	Load Reduction Target for Zn (%)[3]	Load Reduction Target for Zn (Pounds)
	5,383	29.1%	1,566

Notes:
1. MS4 treats loads from other regulated sources.
2. MS4 treats loads within its jurisdiction.
3. Updated, based on proposed site-specific water effects ratios (WERs) and total-to-dissolved conversion factors

The MS4s assert that the Regional Board is ultimately responsible for regulating storm water discharges from non-MS4s to more accurately and fairly assign pollutant reduction responsibilities in the watershed. The MS4s support this regulatory approach as an effective tool for improving water quality, and are commented to participating in efforts to incorporate non-MS4s into current water quality regulations. To that end the MS4s will continue to refine and update the alternative scenario analysis, and engage stakeholders in a dialogue about how all the responsible parties within the watershed can work together to achieve the numeric goals in the Water Quality Improvement Plan. For example, the current list of Industrial General Permit (IGP) non-filers could be added to the analysis to more accurately estimate load reduction responsibilities for industrial dischargers within the watershed.

In addition, the Regional Board should work with the MS4s to identify potential updates to TMDLs, the MS4 Permit, and other responsible parties' NPDES permits, as appropriate, to more accurately and fairly assign load responsibilities among all the responsible parties in the watershed. The MS4s will provide the Regional Board with additional analysis and information necessary to facilitate future determinations by the Regional Board on load reduction responsibilities within the watershed. The Water Quality Improvement Plan may be revised in a future update to remove the non-MS4 loads.

4.3.4 County of San Diego

The County of San Diego (County) Water Quality Improvement Plan final and interim goals are presented in Section 4.3.4.1. The key strategies identified to address the Highest Priority Conditions in the County's jurisdiction are presented in Section 4.3.4.2. In the Chollas Creek HSA, the County's limited jurisdiction includes a cemetery, part of one road, one residence, a YMCA, and part of one MS4 outfall. The outfall discharges sheet flow from the cemetery during wet weather and is reported to be dry (i.e., no discharges) during dry weather. This will be verified through increased monitoring and visual surveillance. There are no catch basins in the County's area. In Chollas Creek, a compliance analysis using a watershed model was conducted to identify the strategies required to be implemented to meet final goals. The strategies and implementation schedules demonstrate that numeric goals will be met. The adaptive management process provides the framework to evaluate progress toward meeting the goals and allows for modification of strategies. As strategies are modified, the compliance analysis will be updated as needed to provide assurance that numeric goals will be met.

4.3.4.1 Goals and Schedules

The County of San Diego is located in eight watershed management areas and will need to prioritize between watersheds to make the best possible use of limited resources. To allow for prioritization of efforts, the County proposes alternative schedule for interim TMDL compliance dates and are presented in Tables 4-12 and 4-13. Key considerations to support moving the dry weather bacteria interim goal from 2017 to 2020 include allowing time to ramp up efforts and leverage strategies to comply with the Permit requirements to effectively prohibit discharge of dry weather flows from the stormdrain outfalls to the waterbodies. Key considerations to support moving wet weather interim goals from 2021 to 2028 include, the Copermittees opportunity to revisit the Bacteria TMDL beginning in 2016 and are in the process of conducting studies to provide scientific basis for proposed changes to the TMDL that could affect the number and/or sizing of the structural controls, if needed. The additional time will allow the necessary flexibility to have a staggered phasing plan in multiple watersheds, if needed.

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Table 4-12
Goals for Chollas Creek (Wet Weather)—County of San Diego

Compliance Pathways		Assessment Period and Fiscal Year					
		Baseline	Current Permit Term	FY 16–20	FY 21–25	FY 26–30[3]	FY 31–36
Wet Weather Metals							
			FY 18	FY 19[1,3]	FY 24	FY 29[1]	N/A
MS4 Discharges Allowable % Above Effluent Limitations	Copper Lead Zinc	100% allowable exceedance of effluent limitations in FY 09 (Year 1 of TMDL compliance)	See performance measures.	20%	15%	0%	
Or							
Receiving Water Allowable % Above Receiving Water Limitations	Copper Lead Zinc	100% allowable exceedance of receiving water limitations in FY 09 (Year 1 of TMDL compliance)	See performance measures.	0%	0%	0%	
Or							
Number of Direct or Indirect MS4 Discharges to Receiving Water		To be determined	See performance measures.	0	0	0	
Or							

Notes:
1. Denotes TMDL final and interim target.
2. Denotes existing wet weather frequency as modeled in the Bacteria TMDL. With limited baseline monitoring data available, this goal reflects a reasonable estimate considering the difficulty in demonstrating progress within the receiving water during wet weather in a short amount of time. Furthermore, development and redevelopment of the urban environment has occurred since the Bacteria TMDL baseline loads were calculated in 2001. As such, this goal demonstrates that progress has been made by the RPs by maintaining the existing wet weather exceedance frequency.
3. The County of San Diego has selected alternate interim schedules and goals for compliance with the Bacteria TMDL; alternative dry weather compliance in FY 20 and wet weather compliance in FY 28.
4. Demonstration of exceedances due to natural sources includes demonstration that pollutant loads from MS4s are not causing or contributing to exceedances.
5. 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.

Table 4-12 (continued)
Goals for Chollas Creek (Wet Weather)—County of San Diego

Compliance Pathways		Assessment Period and Fiscal Year					
		Baseline	**Current Permit Term**	**FY 16–20**	**FY 21–25**	**FY 26–30[3]**	**FY 31–36**
Implement Accepted Water Quality Improvement Plan Strategies to Reduce MS4 Discharges Will Result in % Load Reduction (Using WER Update 2014)	Metric for compliance analysis is MS4 discharge % load reduction. Interim compliance is implementation of strategies and schedule based on analysis results (Appendix I). Final compliance is implementation of BMPs based on analysis results and demonstration of compliance with any of the compliance pathways through monitoring and assessment.						
	Copper	0% Load Reduction (2003 TMDL Model)	See performance measures.	0%	0%	0%	
	Lead			0%	0%	0%	
	Zinc			23.3%	24.7%	29.1%	
Wet Weather Indicator Bacteria							
			FY 18	FY 19	FY 24	FY 28[1]	FY 31[1]
Receiving Water % Days Exceeding WQO	Fecal coliform	60% Days Exceeding WQO (2002 TMDL Model)	See performance measures.	60%[2]	54%	41%[3]	22%
	Enterococcus	63% Days Exceeding WQO (2002 TMDL Model)		63%[2]	57%	43%[3]	22%
Or							

Notes:
1. Denotes TMDL final and interim target.
2. Denotes existing wet weather frequency as modeled in the Bacteria TMDL. With limited baseline monitoring data available, this goal reflects a reasonable estimate considering the difficulty in demonstrating progress within the receiving water during wet weather in a short amount of time. Furthermore, development and redevelopment of the urban environment has occurred since the Bacteria TMDL baseline loads were calculated in 2001. As such, this goal demonstrates that progress has been made by the RPs by maintaining the existing wet weather exceedance frequency.
3. The County of San Diego has selected alternate interim schedules and goals for compliance with the Bacteria TMDL; alternative dry weather compliance in FY 20 and wet weather compliance in FY 28.
4. Demonstration of exceedances due to natural sources includes demonstration that pollutant loads from MS4s are not causing or contributing to exceedances.
5. 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.

Table 4-12 (continued)
Goals for Chollas Creek (Wet Weather)—County of San Diego

Compliance Pathways		Assessment Period and Fiscal Year					
		Baseline	Current Permit Term	FY 16–20	FY 21–25	FY 26–30[3]	FY 31–36
MS4 Discharges % Load Reduction	Fecal coliform	0% Load Reduction (2002 TMDL Model)	See performance measures.	5%	11%	15%[3]	29%
	Enterococcus			4%	9%	12%[3]	24%
Or							
MS4 Discharges **%** Days Exceeding WQO	Fecal coliform	Historical MS4 wet weather data will be used to identify the baseline in the first annual report	See performance measures.	22%	22%	22%	22%
	Enterococcus			22%	22%	22%	22%
Or							
Number of Direct or Indirect MS4 Discharges to Receiving Water		TBD	See performance measures.	0	0	0	0
Or							
% of Exceedances of Final Receiving Water WQOs due to Natural Sources[4]	Fecal coliform	Not available	100%	100%	100%	100%	100%
	Enterococcus		100%	100%	100%	100%	100%
Or							

Notes:
1. Denotes TMDL final and interim target.
2. Denotes existing wet weather frequency as modeled in the Bacteria TMDL. With limited baseline monitoring data available, this goal reflects a reasonable estimate considering the difficulty in demonstrating progress within the receiving water during wet weather in a short amount of time. Furthermore, development and redevelopment of the urban environment has occurred since the Bacteria TMDL baseline loads were calculated in 2001. As such, this goal demonstrates that progress has been made by the RPs by maintaining the existing wet weather exceedance frequency.
3. The County of San Diego has selected alternate interim schedules and goals for compliance with the Bacteria TMDL; alternative dry weather compliance in FY 20 and wet weather compliance in FY 28.
4. Demonstration of exceedances due to natural sources includes demonstration that pollutant loads from MS4s are not causing or contributing to exceedances.
5. 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.

Table 4-12 (continued)
Goals for Chollas Creek (Wet Weather)—County of San Diego

Compliance Pathways	Assessment Period and Fiscal Year					
	Baseline	Current Permit Term	FY 16–20	FY 21–25	FY 26–30[3]	FY 31–36
Implement Accepted Water Quality Improvement Plan	Metric for compliance analysis is MS4 discharge % load reduction. Interim compliance is implementation of strategies and schedule based on analysis results (Appendix I). Final compliance is implementation of BMPs based on analysis results and demonstration of compliance with any of the compliance pathways through monitoring and assessment.[5]					

Notes:
1. Denotes TMDL final and interim target.
2. Denotes existing wet weather frequency as modeled in the Bacteria TMDL. With limited baseline monitoring data available, this goal reflects a reasonable estimate considering the difficulty in demonstrating progress within the receiving water during wet weather in a short amount of time. Furthermore, development and redevelopment of the urban environment has occurred since the Bacteria TMDL baseline loads were calculated in 2001. As such, this goal demonstrates that progress has been made by the RPs by maintaining the existing wet weather exceedance frequency.
3. The County of San Diego has selected alternate interim schedules and goals for compliance with the Bacteria TMDL; alternative dry weather compliance in FY 20 and wet weather compliance in FY 28.
4. Demonstration of exceedances due to natural sources includes demonstration that pollutant loads from MS4s are not causing or contributing to exceedances.
5. 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.

Table 4-13
Goals for Chollas Creek (Dry Weather)—County of San Diego

Compliance Pathways		Baseline	Assessment Period and Fiscal Year		
			Current Permit Term	FY 16–20	FY 21–25
Dry Weather Metals					
			FY 18	FY 19[1]	FY 24
MS4 Discharges	Copper	% exceedance of effluent limitations (Monitoring and Assessment Program Section of the Final Water	See Performance Measures	20%	15%
	Lead				
	Zinc				
OR					
Receiving Water Allowable % Above Receiving Water Limitations	Copper	0% exceedance of receiving water limitations (Transitional Monitoring and Assessment Program 2012 – 2014)	See Performance Measures	0%	0%
	Lead				
	Zinc				
OR					
# of Direct or Indirect MS4 Discharges to Receiving Water		Number of flowing MS4 outfalls during dry weather monitoring (Monitoring and Assessment Program Section of the Final Water Quality Improvement Plan)	See Performance Measures	0	0
OR					

Notes:
1. Denotes TMDL final and interim target.
2. The existing exceedance frequency was calculated on the basis of available monitoring data between 1996 and 2002 per Municipal Permit requirements and presented in more detail in Appendix H.
3. The County of San Diego has selected alternate interim schedules and goals for compliance with the Bacteria TMDL; alternative dry weather compliance in FY 20 and wet weather compliance in FY 28.Total coliform effluent limitations only apply to MS4 outfalls that discharge to the Chollas Creek mouth.
4. Demonstration of exceedances due to natural sources includes demonstration that pollutant loads from MS4s are not causing or contributing to exceedances.
5. 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.

Table 4-13 (continued)
Goals for Chollas Creek (Dry Weather)—County of San Diego

Compliance Pathways		Baseline	Assessment Period and Fiscal Year		
			Current Permit Term	FY 16–20	FY 21–25
Implement Accepted Water Quality Improvement Plan Strategies to Reduce MS4 Discharges Will Result in % Load Reduction (Using WER Update 2014)	Metric for compliance analysis is MS4 discharge % load reduction. Interim compliance is implementation of strategies and schedule based on analysis results (Appendix I). Final compliance is implementation of BMPs based on analysis results and demonstration of compliance with any of the compliance pathways through monitoring and assessment.				
	Copper	0% Load Reduction (2003 TMDL Model)	See Performance Measures	0%	0%
	Lead		See Performance Measures	0%	0%
	Zinc		See Performance Measures	0%	0%
Dry Weather Indicator Bacteria					
			FY 18	FY 20[1,3]	FY 21[1]
Receiving Water % Days Exceeding WQO	Fecal coliform	100% (1996-2002[2])	See performance measures.	50%[3]	0%
	Enterococcus	100% (1996-2002[2])		50%[3]	0%
Or					
MS4 Discharges % Load Reduction	Fecal coliform	0% (2002 TMDL Model)	See performance measures.	49.4%[3]	98.8%
	Enterococcus			49.7%[3]	99.3%
	Total coliforms[4]			46.1%[3]	92.1%
Or					

Notes:
1. Denotes TMDL final and interim target.
2. The existing exceedance frequency was calculated on the basis of available monitoring data between 1996 and 2002 per Municipal Permit requirements and presented in more detail in Appendix H.
3. The County of San Diego has selected alternate interim schedules and goals for compliance with the Bacteria TMDL; alternative dry weather compliance in FY 20 and wet weather compliance in FY 28.
4. Total coliform effluent limitations only apply to MS4 outfalls that discharge to the Chollas Creek mouth.
5. Demonstration of exceedances due to natural sources includes demonstration that pollutant loads from MS4s are not causing or contributing to exceedances.

Table 4-13 (continued)
Goals for Chollas Creek (Dry Weather)—County of San Diego

Compliance Pathways		Baseline	Assessment Period and Fiscal Year		
			Current Permit Term	FY 16–20	FY 21–25
MS4 Discharges **%** Days Exceeding WQO	Fecal coliform	Historical MS4 dry weather data will be used to identify the baseline in the first annual report.	See performance measures.	0%	0%
	Enterococcus			0%	0%
	Total coliforms[4]			0%	0%
Or					
Number of Direct or Indirect MS4 Discharges to Receiving Water		To be determined	See performance measures.	0	0
Or					
% of Exceedances of Final Receiving Water WQOs due to Natural Sources[5]	Fecal coliform	Not Available	100%	100%	100%
	Enterococcus				
Or					
Implement Accepted Water Quality Improvement Plan	Metric for compliance analysis is MS4 discharge % load reduction. Interim compliance is implementation of strategies and schedule based on analysis results (Appendix I). Final compliance is implementation of BMPs based on analysis results and demonstration of compliance with any of the compliance pathways through monitoring and assessment.[6]				

6. 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.

Notes:
1. Denotes TMDL final and interim target.
2. The existing exceedance frequency was calculated on the basis of available monitoring data between 1996 and 2002 per Municipal Permit requirements and presented in more detail in Appendix H.
3. The County of San Diego has selected alternate interim schedules and goals for compliance with the Bacteria TMDL; alternative dry weather compliance in FY 20 and wet weather compliance in FY 28.
4. Total coliform effluent limitations only apply to MS4 outfalls that discharge to the Chollas Creek mouth.
5. Demonstration of exceedances due to natural sources includes demonstration that pollutant loads from MS4s are not causing or contributing to exceedances.
6. 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.

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4.3.4.2 Summary of Strategies and Schedules

The County has selected jurisdictional strategies that best suit the characteristics of its jurisdiction to comply with Municipal Permit requirements. A complete list of strategies planned for implementation within the WMA is provided in Appendix I. The following is a summary of the implementation approach and key strategies that have been identified to address the Highest Priority Conditions in the County's jurisdiction within the Chollas Creek HSA. Figure 4-6 shows the County's jurisdiction within the Chollas Creek Highest Priority Condition where the strategies will be implemented.

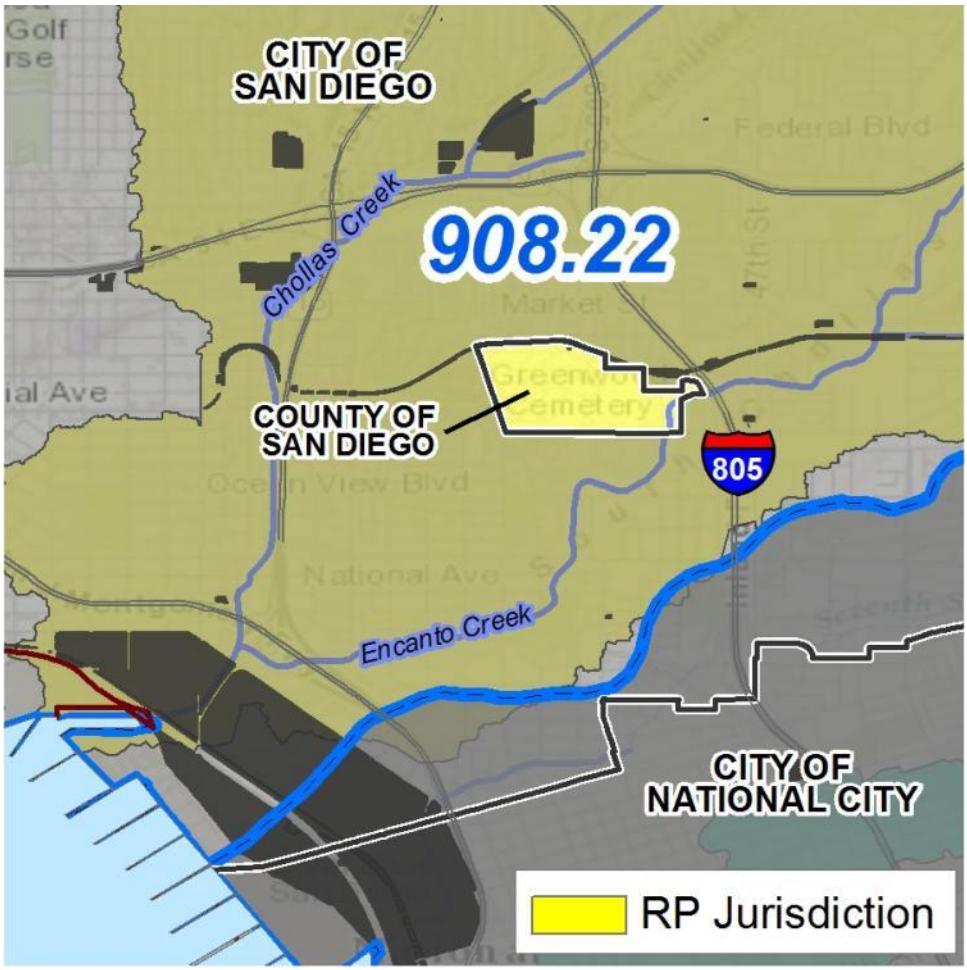

Figure 4-6
County's Jurisdiction Within the Chollas Creek Highest Priority Condition

Optional strategies that will be considered upon need and as resources are available are also summarized. In Chollas Creek, a compliance analysis using a watershed model was conducted to identify the strategies required to be implemented to meet final goals. The strategies and implementation schedules demonstrate that numeric goals will be met. The adaptive management process provides the framework to evaluate progress toward meeting the goals and allows for modification of strategies. As strategies are modified, the compliance analysis will be updated as needed to provide assurance that numeric goals will be met.

Potential dry weather flows will be evaluated through inspections of MS4 outfalls discharging to receiving waters. The County of San Diego has shifted to a more active field program to better locate and abate dry weather flow. Staff spend a greater frequency of time present in unincorporated communities identifying nuisance anthropogenic flows and addressing them through appropriate education and enforcement strategies. County of San Diego staff members have been trained to identify and report illicit discharges and illicit connections during required annual storm water training; this training has been updated to reflect recent Municipal Permit changes.

The County will also collaborate with watershed partners to implement watershed strategies to reduce pollutants in storm water runoff discharges from storm drain outfalls. To reduce metals in MS4 discharges, the County will increase the frequency of street sweeping for the jurisdictional public roadways within the watershed.

In two recent examples of retrofit projects that targeted potential runoff from County facilities, LID approaches were utilized in conjunction with drainage and parking improvements were completed at the Southeast Family Resource Center and Central Regional Public Health Center. The facilities consisted primarily of impervious areas consisting of rooftops and parking lots. The improvements effectively reduced flows during storm events and substantially reduced concentrations of metals.

Table 4-14 lists the key strategies and schedule for the County’s jurisdiction within the Chollas Creek HSA.

Table 4-14
Summary of Strategies for Chollas Creek—County of San Diego

Strategy Name	Jurisdictional Areas		Priority WQCs				Implementation Schedule						
	Jurisdiction-Wide	Chollas	Trash	Bacteria	Nutrients	Metals	Previous Fiscal Year(s)	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20	Future Fiscal Year(s)
Increased frequency of street sweeping		X	X	X		X				X	X	X	X
Enhanced outreach and education on reducing over-irrigation		X	X	X	X	X		X	X	X	X	X	X
Continued operation and maintenance of county retrofit projects in areas of existing development		X	X	X	X	X	X						
Optional Jurisdictional Strategies													
Implement sustainable landscapes program to encourage landscape retrofits	X	X		X	X	X	See Appendix I for criteria for initiating strategies.						
Collaborate with partners on watershed on potential rehabilitation projects	X	X	X	X	X	X							

Notes:
Implementation of strategies is dependent on approval of fiscal budgets and available resources.

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4.3.5 Port of San Diego

The Highest Priority Conditions in Chollas Creek within the Pueblo HU (908.2) are water quality impairments due to metals and bacteria. The Port has limited jurisdictional area within the Chollas Creek drainage area, as discussed below. The approach to developing strategies to address the high priority conditions takes this into account.

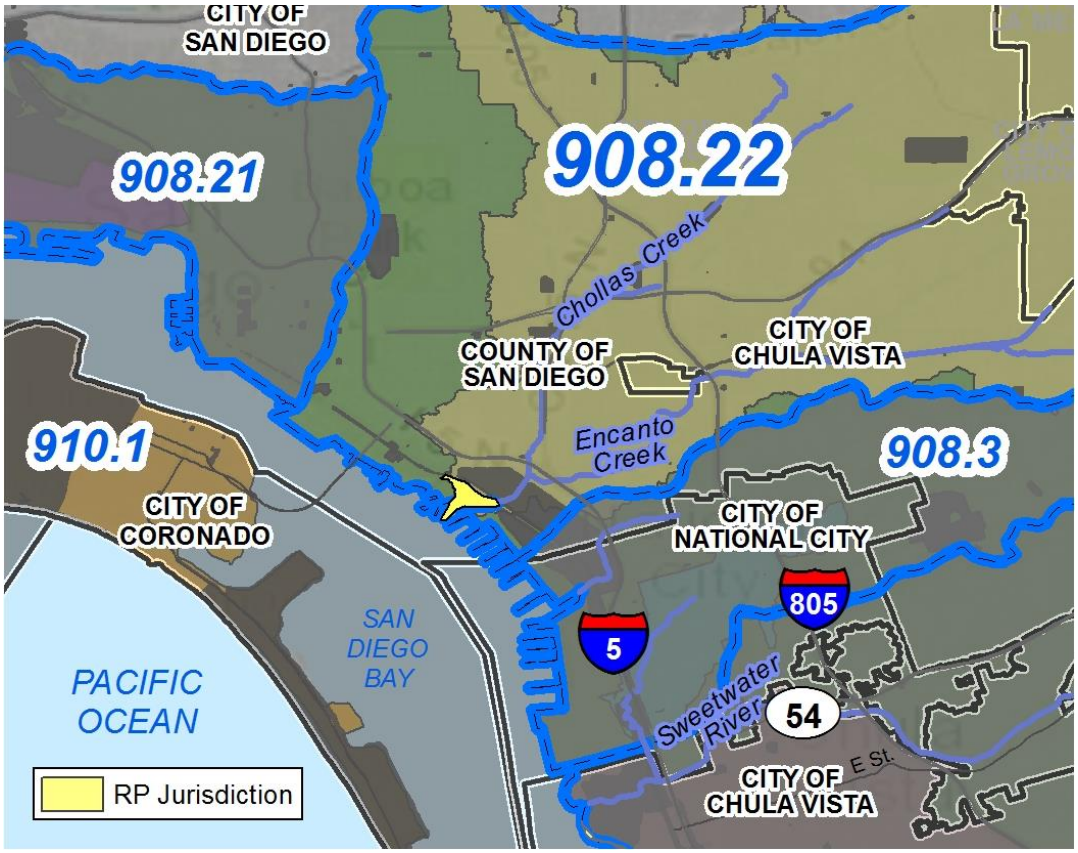
Within the Chollas Creek drainage area, the Port's only area of jurisdictional authority consists of a single tenant, General Dynamics National Steel and Shipbuilding Company (NASSCO) which is comprised of approximately 100 acres. This represents less than one-percent of the Chollas Creek drainage area. The NASSCO facility is under two long term leases, one with the Port and another portion of the facility under a lease with the U.S. Navy. The entire NASSCO facility is regulated by an individual NPDES permit (Permit). Since the mid-1980s, NASSCO has instituted BMPs and pollution prevention programs as required by their permit. The NASSCO Permit requires that any discharges from the facility meet stringent toxicity standards. As a result, NASSCO elected to install a self-contained retention/treatment system that captures and treats all storm water discharges. Therefore, NASSCO has minimized potential discharges to San Diego Bay and eliminated discharges from its facility to Chollas Creek. NASSCO does not discharge storm water or non-storm water from within NASSCO's containment area to the City of San Diego's 28th Street MS4 (which drains to the Chollas Creek mouth).

In addition, the watershed model used to calculate the TMDL's Waste Load Allocations incorrectly assumed that all land within the District's parcels are (1) ongoing point sources of discharges, and (2) all of the land within the Tidelands boundary is under the Port's authority. The Port submitted a jurisdictional analysis report to the Regional Board in December 2013 to provide information and clarify the potential for discharges from areas under the Port's jurisdictional authority to Chollas Creek (Port of San Diego, 2013). The report provided a detailed analysis that identified where the Port has jurisdictional authority within the Tidelands and where it does not[8]. The Port's approach and strategies to addressing the high priority conditions of metals and bacteria in Chollas Creek are based on the jurisdictional analysis identified in that report.

The area highlighted in yellow in Figure 4-7 shows the Port's boundaries within the Chollas Creek Highest Priority Condition.

[8] The Tidelands overlap with the City of San Diego's jurisdictional boundary

Figure 4-7
Port's Jurisdiction Within the Chollas Creek Highest Priority Condition



Note:
As set forth above, the Port District does not operate any segment of MS4 that discharges to Chollas Creek.

4.3.5.1 Summary of Strategies and Schedules

The Port's approach is to comply with the TMDL-derived goals. Since the Port's jurisdictional area (the NASSCO leasehold) does not currently discharge to Chollas Creek, the Port's strategies will focus on its core JRMP program activities within the NASSCO facility (facility inspections, IDDE, enforcement) along with increasing public awareness through education and outreach activities jurisdiction-wide, as presented in Table 4-15. The Port will work with other RPs and third parties, such as environmental organizations, to provide education and volunteer opportunities to a variety of audiences. The Port will also support regional efforts that address sources such as homeless encampments, as well as participating in cleanup and collection events, all of which address the priority pollutants metals and bacteria. However, it should be noted that it is often difficult to directly correlate education and outreach efforts to numeric improvements in water quality.

Table 4-15
Summary of Strategies for Chollas Creek – Port of San Diego[1]

Strategy	Jurisdictional Areas		Sources in Chollas Creek	Priority WQCs			Implementation Schedule						
	Jurisdiction-Wide	Chollas		Trash	Bacteria	Metals	Previous Fiscal Year(s)	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20	Future Fiscal Year(s)
Jurisdictional Strategies													
PO-7: Core JRMP Programs –Existing Development (Commercial/Industrial)	X	X	General Industrial;	X		X	X	X	X	X	X	X	X
PO-14: Core JRMP Programs –IDDE	X	X	General Industrial;	X	X	X	X	X	X	X	X	X	X
PO-15: Core JRMP Programs –Enforcement Response Plans	X	X	General Industrial;	X	X	X		X	X	X	X	X	X
PO-17: Core JRMP Programs –Public Education and Outreach[3]	X	X	General Industrial; Residential[2]	X	X	X	X	X	X	X	X	X	X
Optional Jurisdictional Strategies													
PO-29: Replace all Port-owned vehicle brake pads with copper-free brake pads as they become commercially available	X		Brake pad wear			X			X				
Optional WMAStrategies													
PO-35: Cleanup and collection events	X		Variable; Homeless encampments[3]; Eating and drinking establishments[3]; Illegal dumping	X	X	X	X	X	X	X	X	X	X
PO-37: Support organizations and regional social services effort for homelessness	X		Homeless encampments[3]	X	X			X	X	X	X	X	X
PO-38: Participation in San Diego Regional Reference Stream Study		X	Variable		X			X					
PO-43: Implement an offsite alternative compliance program (WMAA)	X	X	Variable	X	X	X			X	X	X	X	X

Note:

1. Table 4-15 represents the Port's strategies relating to the Highest Priority Conditions in Chollas Creek HSA. The table reflects the fact that the Port does not operate a MS4 that discharges to Chollas Creek, Additionally, there is limited, if any, capacity to implement BMPs. Refer to Table I.11.1 in Appendix I for a complete list of strategies the Port will implement to address Highest and Focused Priority Conditions.
2. Port of San Diego does not have residential land uses.
3. The location of the activity and/or sources in the Chollas Creek HSA is located outside of the Port's jurisdictional authority.

4.3.6 Caltrans

Caltrans is not regulated under the Municipal Permit; however, Caltrans is subject to similar requirements through its MS4 Permit (State Board, 2013) (Caltrans Permit). Caltrans has voluntarily contributed to the Water Quality Improvement Plan effort to provide a consistent and watershed-wide approach to meeting applicable TMDL requirements. The baseline strategies are continuously implemented and augmented as resources become available.

Attachment IV to the Caltrans MS4 Permit outlines a methodology for prioritizing stream segments included in TMDLs to which Caltrans is subject. The Caltrans Permit establishes BMP implementation requirements, evaluated in terms of compliance units. Caltrans is expected to achieve 1650 compliance units per year through the implementation of retrofit BMPs, cooperative implementation, and post construction treatment beyond permit requirements.

Impaired reaches throughout the state will be prioritized on the basis of several factors, including, but not limited to, percent reduction needed, Caltrans drainage area contributing to the reach, and proximity to receiving waters. Reaches with metals TMDLs will likely be prioritized. This prioritization list is currently under negotiation between Caltrans Headquarters and the State Water Quality Control Board.

Caltrans' jurisdiction areas include roadway, land adjacent to roadways, and facilities. Caltrans' jurisdictional strategies specifically focus on BMP implementation to reduce known pollutants within these areas. Caltrans' strategies vary from those of other RPs (in both type and name) to best address freeway characterization discharges from its Right-of-Way (ROW). Strategies include programs developed by Caltrans Headquarters for statewide execution and District 11 implementation. Caltrans' implementation of strategies with the WMA is dependent on legislative approval.

4.3.6.1 Goals and Schedules

For Bacteria TMDLs, Caltrans is expected to eliminate dry weather flows by implementing control measures to ensure effective prohibition (Provision B.2 of the Municipal Permit). For wet weather flows, Caltrans is expected to implement control measures or BMPs to prevent discharge of bacteria from the right-of-way (ROW); these can include source control and pre-emptive activities such as street sweeping, cleanup of illegal dumping, and public education on littering. Implementation of these controls is in accordance with the TMDL prioritization list currently under development.

Caltrans Water Quality Improvement Plan performance-based final and interim goals for wet weather are presented in Table 4-16. Caltrans Water Quality Improvement Plan performance-based final and interim goals for dry weather are presented in Table 4-17.

Table 4-16
Goals for Chollas Creek (Wet Weather)—Caltrans

Goals	Unit of Measure	Assessment Metric
MS4 Discharges	Cooperative implementation agreement	Achieve compliance units by contributing funds to a cooperative implementation agreement or grant program.
Or		
MS4 Discharges	Implement nonstructural BMPs.	Continued implementation of wet weather nonstructural BMP activities within the watershed
Or		
MS4 Discharges	Implement structural BMPs.	Continued implementation of wet weather structural BMP activities for proposed projects within the watershed

Table 4-17
Goals for Chollas Creek (Dry Weather)—Caltrans

Goals	Unit of Measure	Assessment Metric
MS4 Discharges	Reduce dry weather flow.	Eliminate dry weather flows by implementing control measure to ensure effective prohibition.
Or		
MS4 Discharges	Implement dry weather BMPs.	Implement drought-tolerant landscaping and conversion to smart irrigation controllers within the watershed.

4.3.6.2 Summary of Strategies and Schedules

Caltrans' jurisdiction areas include roadways, land adjacent to roadways, and facilities. Caltrans' jurisdictional strategies specifically focus on BMP implementation to reduce known pollutants within these areas. Caltrans is not permitted under the Municipal Permit; however, Caltrans is subject to TMDL requirements through its MS4 Permit (State Board, 2013). Caltrans has voluntarily contributed to the Water Quality Improvement Plan effort to provide a consistent and watershed-wide approach to meeting applicable TMDL requirements. The baseline strategies are continuously implemented and augmented as resources become available.

Impaired reaches throughout the state will be prioritized on the basis several factors, including, but not limited to, percent reduction needed, Caltrans drainage area contributing to the reach, and proximity to receiving waters. Reaches with metals TMDLs will likely be prioritized. This prioritization list is currently under negotiation between Caltrans Headquarters and State Board.

Caltrans has voluntarily contributed to the Water Quality Improvement Plan effort to provide a consistent and watershed-wide approach to meeting applicable TMDL requirements. The baseline strategies are continuously implemented and augmented as resources become available.

Attachment IV to the Caltrans MS4 Permit outlines a methodology for prioritizing stream segments included in TMDLs to which Caltrans is subject. The permit establishes BMP implementation requirements, evaluated in terms of compliance units. Caltrans is expected to achieve 1,650 compliance units per year through the implementation of retrofit BMPs, cooperative implementation, and post-construction treatment beyond permit requirements.

Impaired reaches throughout the state will be prioritized on the basis several factors, including, but not limited to, percent reduction needed, Caltrans drainage area contributing to the reach, and proximity to receiving waters. Reaches with metals TMDLs will likely be prioritized. This prioritization list is currently under negotiation between Caltrans Headquarters and State Board.

Caltrans' strategies vary from those of other RPs (in both type and name) to best address typical freeway characterization discharges from its right-of-way. Strategies include programs developed by Caltrans Headquarters for statewide execution and District 11 implementation. Caltrans' implementation of strategies within the WMA is dependent on legislative approval. A complete list of strategies and their anticipated implementation schedule is provided in Appendix I. The strategies and schedules are subject to change and are contingent upon annual budget approvals and funding availability. They will be modified through the adaptive management process as needed.

4.4 Water Quality Within Airport Authority Jurisdiction (908.21)

Water quality, in terms of copper and zinc concentrations in wet weather discharges from the Airport Authority, is a Focused Priority Condition in the Pueblo HU. The geographic extent of the Focused Priority Condition is the jurisdiction of the Airport Authority, which is the sole RP for the condition. The Airport Authority identified copper and zinc concentrations in wet weather discharges as a Focused Priority Condition based on a history of sampling results which shows that copper and zinc consistently exceeded the 2008 USEPA NPDES Multi-Sector General Permit (2008 MSGP) benchmark values. The Airport Authority has identified goals and strategies that will be implemented throughout its jurisdiction to address this Focused Priority. In addition, three drainage areas with historically higher concentrations of dissolved copper and zinc have been identified for targeted BMP implementation.

Section 4.4.1 presents final and interim goals and schedules. A summary of key strategies identified to meet the goals is presented in Section 4.4.2.

4.4.1 Goals and Schedules

Goals developed for the Focused Priority Condition target MS4 discharge concentrations. Table 4-18 lists the goals and schedule for meeting final and interim goals for this Focused Priority Condition. The interim concentration goals are based on the Numeric Action Levels (NALs) for copper and zinc established in the Industrial General Permit (IGP) (NPDES Permit No. CAS000001) (with the NALs themselves based on the 2008 MSGP benchmarks) and the final concentration goals are based on the California Toxics Rule (CTR) criteria for copper and zinc. The interim goals are expressed as the percentage of wet-weather discharge samples that exceed the NALs for copper and zinc, namely 33.2 ug/L and 260 ug/L, respectively. The final goals are expressed as the percentage of wet-weather discharge samples that exceed the CTR values for copper and zinc in saltwater, namely, 4.8 ug/L and 90 ug/L, respectively. Key strategies that will be implemented to achieve these goals are outlined in Appendix I; including biweekly runway and taxiway sweeping by FY 17, increasing street sweeping areas and implementing advanced structural BMPs (as defined by the IGP) by FY 18, and, as technologies become available, adopting new source reduction programs by FY 21. The outcomes of strategies are expected to help the Airport Authority comply with both the IGP (NPDES Permit No. CAS000001) and the Municipal Permit.

Table 4-18
Goals for Water Quality (Copper and Zinc)
Within Airport Authority Jurisdiction (908.21)

WATER QUALITY					
Numeric Goals		**Assessment Period and Fiscal Year**			
		Current Permit Term	**FY 16-20**	**FY 21-25**	**FY 26-30**
		FY 17	FY 18	FY 21	FY 26
		Interim Goal[1]			Final Goal[2]
MS4 Discharges Jurisdiction-wide % of Wet Weather Samples With Concentrations Exceeding Target)	Dissolved Copper	70%	30%	20%	0%
	Dissolved Zinc	65%	35%	25%	0%
OR					
Performance Metrics		FY 16	FY 18	FY 21	FY26
MS4 Discharges Sub-basins 1, 3, and 5 (in total) Area Treated with Street Sweeping	Acres/ Week	34 Acres/ Week (Current Frequency)	100 Acres/ Week (Approx. 3-fold increase in area)		

Notes:
1. Interim Goals are based on State Industrial General Permit (IGP) Numeric Action Levels (NALs), which are based on the 2008 USEPA NPDES Multi-Sector General Permit benchmark values. Benchmark values for copper and zinc are 33.2 ug/L and 260 ug/L, respectively, and were calculated based on the highest hardness as CaCO3 value in the 2008 MSGP hardness table.
2. Final Goals are based on the 1-hour average concentration for dissolved solids from the USEPA California Toxics Rule Criteria for Enclosed Bays and Estuaries. Criteria values for copper and zinc are 4.8 ug/L and 90 ug/L, respectively.

4.4.2 Summary of Strategies and Schedules

Strategies to meet the water quality goals for copper and zinc in wet weather discharges were selected to best suit the unique characteristics of the Airport Authority. For example, the airport is almost entirely paved, and space available for many traditional BMPs is severely limited.

The Airport Authority will continue to implement its core JRMP, which includes many strategies that have positive impacts on the water quality of MS4 discharges. To make progress toward its identified goals, the Airport Authority will enhance some existing JRMP strategies and will implement new strategies that concentrate on the Focused Priority Conditions.

The Airport Authority's approach focuses on areas that generate the Focused Priority Condition metals, namely, the airside impermeable surfaces (e.g., runways and taxiways) and parking lots. Removing pollutant materials from the ground surface and disposing of them properly before they are mobilized by rain runoff is fundamental. The Airport Authority plans to achieve this goal through enhanced source control BMPs, and in particular, an active street sweeping program on the airside to remove copper and zinc generated from aircraft and vehicle tires and brakes. The Airport Authority is also focusing on passenger parking lots, minimizing pollutants from runoff prior to discharge. The primary method to achieve this goal is the use of green infrastructure and treatment systems that collect and treat parking lot runoff.

Catch basin cleaning is another key to addressing general areas of discharge. The Airport Authority will increase the frequency of its basin inspection and cleaning. This step is anticipated to increase the amount of pollutants collected so that they are not discharged to receiving waters during rain events.

The Airport Authority's key strategies are summarized below. In addition, depending on the performance of near-term strategies and the availability of resources, optional strategies will be considered. A complete list of strategies to be implemented within the WMA is provided in Appendix I. Strategies and implementation schedules were identified using best information available on efficiency, effectiveness, and level of effort estimated to achieve compliance with numeric goals. The adaptive management process provides the framework to evaluate progress toward meeting the goals and allows for modification of strategies. As strategies are modified, the Water Quality Improvement Plan will be updated. The implementation of each strategy will be contingent upon annual budget approvals and funding availability.

Sweeping Airside Corridors

The Airport Authority has been sweeping the runway, taxiways, ramp areas, roads, and parking lots for several years, if not decades, prior to FY 16. Aircraft and vehicle tire and brake wear are sources of copper and zinc from these locations. Under the Water Quality Improvement Plan, sweeping on the eastern end of the airfield (in particular, the runway, taxiways, and vehicle service road) will be modified and enhanced to increase the effectiveness of sweeping. Modifications or enhancements are expected to result in an increase in the area swept and/or the frequency of sweeping, depending on available funding. The Airport Authority has obtained a Regen-Air vacuum sweeper, which has been shown to have performance better than that of mechanical broom sweepers for removing fine sediments, which often bind a higher proportion of heavy metals. In addition, the Airport Authority proposes to implement optimal sweeping locations and frequencies on runways, taxiways, and airfield service roads to maximize metals removal.

Green Infrastructure and Treatment Systems

Parking lots and building roofs are sources of copper and zinc at the airport. As such, the Airport Authority is focusing on the following green infrastructure and treatment system projects, as part of the SWMP/JRMP Development Planning and Priority Development project requirements to control these sources of heavy metals in stormwater runoff:

- More than $25 million has been expended to improve approximately 60 acres of public parking lots at San Diego International Airport. The improvements include small, strategically located areas of permeable pavement, three hydrodynamic separators, and a high-rate media filter that reduces metals concentrations and other conditions. This strategy was established in FY 13 and requires ongoing maintenance.
- The Green Build Terminal Expansion Project was completed in FY 14 at a cost of $1 billion. The project included installation of numerous structural BMPs. The reconfigured public parking lot received three high-rate media filters, a hydrodynamic separator, and an acre of permeable pavers and swales. In addition, a high-rate media filter and 1.75 acres of permeable artificial turf were added on the airfield. Overall, the project addresses metals and various other conditions.
- On the northern side of the airfield, a new 16-acre public parking lot was opened in June 2014. The project included installation of 12 modular wetland treatment systems to address heavy metals, including copper and zinc, and other pollutants.
- In August 2014, Landmark Aviation opened the new fixed-based operator facility (FBO), serving general aviation. Construction of the new 12.4-acre FBO included 2.9 acres of pervious pavement and bioswales to address heavy metals, including copper and zinc, and other pollutants.
- One facility under construction on the northern side of the jurisdiction is still under construction and will become the new Rental Car Center (RCC), scheduled to open in early 2016. Storm water treatment controls are being incorporated into the 25-acre project site, including a total of 1.25 acres of bioretention swales to address heavy metals, including copper and zinc, and other pollutants.

Catch Basin Cleaning

The Airport Authority plans to continue its current SWMP/JRMP program of cleaning priority catch basins at San Diego International Airport quarterly, and inspecting and cleaning all others annually, and cleaning them as necessary. High-priority areas tend to typically be closer to terminals. Additionally, the Airport Authority intends to verify the current high priority catch basins and to identify other high-priority areas that may benefit from more frequent inspection and cleaning. The Airport Authority will also determine and implement optimal frequencies for catch basin cleaning. An increased frequency of catch basin cleaning and designation of further high priority catch basins will be implemented, per results of this determination, in order to increase metals removal. On the southern side of the jurisdiction, screens were installed in front of curb inlets. These screens are easily cleaned by street sweepers and reduce pollutant loads in the catch basin. The Airport Authority will consider installing screens in front of additional curb inlets to protect a larger number of catch basin inlets. l.

Enhanced Tenant and Airport Operations BMP Inspections and Enforcement

The Airport Authority will enhance the inspection and enforcement of BMPs required for use in tenant and airport operational areas. The required BMPs are generally source controls designed to reduce pollutants, including copper and zinc, that are generated by tenant and airport operational activities. These BMPs are listed in Table I.1.2 in Appendix I. Inspections are conducted to ensure that BMPs are properly implemented and to detect and eliminate unauthorized non-stormwater discharges. Inspection results and enforcement actions (where necessary) can be issued to the responsible parties (tenants or Airport Authority employees) via the Airport Authority's web-based/interactive inspection response-and-enforcement database. Inspections will increase from quarterly to monthly and will be PGA-based. Tenant BMP education and enforcement will be achieved with various tools (see Public Education and Participation section below). Tenants and Airport Authority staff will be encouraged and incentivized to improve their implementation of current BMPs or implement additional BMPs to ensure compliance with the Airport Authority's SWMP/JRMP and this WQIP.

Public Education and Participation

The Airport Authority's SWMP/JRMP includes details on its Public Education and Participation Program, which encompasses the following elements:

- Identifying target audiences of Airport Authority departments and personnel, Airport industrial and commercial tenants, the traveling public using the airport, the general public and school children, and construction site project managers, developers, and contractors;
- Classroom and on the job training;
- Training via meetings, seminars, conventions, workshops, Airport Authority and Project Clean Water web pages, storm drain stenciling, posters and displays, brochures, public service announcements, community collaborative efforts, airport tours, special events (e.g., Earth Day), and tenant presentations;
- Printed and audio/visual guidance on BMPs and storm water management procedures;
- Topics include urban runoff concepts, impacts on receiving waters, NPDES permits, the Airport Authority SWMP/JRMP and WQIP, the Airport Authority's FPWQC, sources, goals, strategies, and FPWQC BMPs, impacts from construction and land development, inspections, hazardous materials, spill containment and response, preventative maintenance, minimum and advanced BMPs, integrated pest management, and the connections between daily airport operations and activities, construction activities, and water quality impacts;
- Public hotline;
- Public, Copermittee and Airport Authority Board meetings; and
- WQIP public workshops.

Source Identification Study for Highest Pollutant-Generating Areas/Activities

The Airport Authority will design, implement, and evaluate a source identification study to determine the highest potential pollutant generating areas and PGAs.

Increased Inspections of Highest Pollutant Generating Areas/Activities

The Airport Authority will increase inspection frequency for the highest potential pollutant generating areas and PGAs.

The key strategies to be implemented to achieve the specified goals in Table 4-18 are as follows:

(1) Determine and implement optimal street sweeping;

(2) Determine and implement optimal catch basin cleaning;

(3) Continue to identify and target high priority areas for enhanced inspections, and BMP implementation and enforcement, and incentivize compliance;

(4) Continue to implement green infrastructure at San Diego International Airport;

(5) Continue the Airport Authority's public education and participation efforts; and

(6) Implement source reduction initiatives, such as copper-free brake pads, as technology becomes available.

Optional strategies will be implemented as described in Table I.1.1 in Appendix I, and per the triggers listed in that table. Optional strategies include enhanced runway rubber removal activities (as described below); collaboration with local agencies on habitat restoration; source reduction initiatives such as the copper-free brake pads; and collaboration on regional education and outreach activities.

Rubber Removal and Power Washing

One of the optional jurisdictional strategies identified by the Airport Authority is runway rubber removal and power washing. Aircraft tires and brakes, known to contain heavy metals, are considered likely to be major sources of copper and zinc. When a plane lands, the tires are not spinning initially but instead are dragging on the runway as well as being put under pressure by the weight of the airplane. The heat generated by friction on the tires is enough to melt the rubber and leave hardened rubber deposits on the runway. Aircraft brakes, which are also likely sources of metals, are applied shortly after landing. Runway rubber removal is a critical maintenance technique for maintaining an adequate friction coefficient on the runway. The portion of the runway that requires routine rubber removal is the aircraft touchdown area (not the entire runway) on the eastern end of the airport, because that end of the runway is predominantly used by landing aircraft.

Rubber removal is currently conducted using methods and equipment similar to those for power washing, except that the water pressure used for rubber removal is much greater than that used for power washing. Water pressures used for rubber removal can approach

10,000 pounds per square inch (psi), while water pressures used for power washing are typically closer to 3,000 psi on asphalt surfaces. The Airport Authority wants to determine optimal runway rubber removal frequencies, equipment, methods, and locations to maximize pollutant removal if increased airside sweeping is not successful in meeting interim goals. Expanding rubber removal and/or power washing to a larger portion of the runway, beyond the touchdown zone, is expected to improve runoff water quality.

Collaboration with Local Agencies on Habitat Rehabilitation in San Diego Bay

The San Diego International Airport now includes properties that were once major industrial aircraft manufacturing facilities on Port of San Diego tidelands and lands that were once part of the US Navy's Naval Training Center. The historic uses at these locations have been identified as potential sources of pollutants to San Diego Bay, and in particular, the Navy Boat Channel, Convair Lagoon, and the Laurel-Hawthorn Embayment. The Airport Authority has and will continue to work with the Port of San Diego, the US Navy, and other local agencies to investigate these potential source areas and eliminate the sources and restore habitats as necessary and appropriate.

Table 4-19 summarizes the key strategies identified for meeting final and interim goals for this Focused Priority Condition.

Table 4-19
Summary of Strategies for Water Quality (Copper and Zinc) Within Airport Authority Jurisdiction (908.21)

Strategy	Sources of Priority WQCs Addressed By Strategy	Priority WQCs Addressed					Implementation Schedule						
		Metals	Bacteria	Nutrients	Sediment	Trash	Previous Fiscal Year(s)	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20	Future Fiscal Year(s)
Green infrastructure and treatment systems — parking lot BMPs	Parking Lots	X	X	X	X	X	X	X	X	X	X	X	X
Green infrastructure and treatment systems —green build terminal expansion project	Aircraft Remain-Overnight (RON) parking, Ramp	X	X	X	X	X	X						
Green infrastructure and treatment systems —north side BMPs	Parking Lots	X	X	X	X	X		X	X	X	X	X	X
Enhanced tenant and airport operational area BMP inspections and enforcement, with incentives for improved BMP implementation	Tenant and Airport Operational Areas, Parking Lots	X	X	X	X	X	X	X	X	X	X	X	X
Source identification study for highest pollutant-generating areas/activities	Tenant and Airport Operational Areas, Parking Lots	X				X				X	X	X	X
Increased inspections of highest pollutant-generating areas/activities	Tenant and Airport Operational Areas, Parking Lots	X			X	X					X	X	X

Note:
Implementation of strategies is dependent on approval of fiscal budgets and available resources.

Table 4-19 (continued)
Summary of Strategies for Water Quality (Copper and Zinc) Within Airport Authority Jurisdiction (908.21)

Strategy	Sources of Priority WQCs Addressed By Strategy	Priority WQCs Addressed					Implementation Schedule						
		Metals	Bacteria	Nutrients	Sediment	Trash	Previous Fiscal Year(s)	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20	Future Fiscal Year(s)
Catch basin cleaning	Tenant and Airport Operational Areas	X	X	X	X	X	X	X	X	X	X	X	X
Sweeping of airside corridors	Runway, Taxiways, Ramps	X	X	X	X	X	X	X	X	X	X	X	X
Identify candidate areas for retrofit projects	Tenant and Airport Operational Areas, Parking Lots	X	X	X	X	X		X	X	X	X	X	X
Continue IDDE Program	Tenant and Airport Operational Areas, Parking Lots	X	X	X	X	X	X	X	X	X	X	X	X
Continue public education, participation and staff and tenant storm water training	Tenant and Airport Operational Areas, Parking Lots	X	X	X	X	X	X	X	X	X	X	X	X
Continue Enforcement	Tenant and Airport Operational Areas, Parking Lots	X	X	X	X	X	X	X	X	X	X	X	X

Note:
Implementation of strategies is dependent on approval of fiscal budgets and available resources.

Table 4-19 (continued)
Summary of Strategies for Water Quality (Copper and Zinc) Within Airport Authority Jurisdiction (908.21)

Strategy	Sources of Priority WQCs Addressed By Strategy	Priority WQCs Addressed					Implementation Schedule						
		Metals	Bacteria	Nutrients	Sediment	Trash	Previous Fiscal Year(s)	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20	Future Fiscal Year(s)
Optional Strategies													
Enhanced Rubber Removal Program	Runway	X			X	X	See Appendix I for criteria for initiating strategies.						
Investigation and research of emerging BMP technology	Tenant and Airport Operational Areas, Parking Lots	X			X	X							
Preserve naturally functioning areas	Least Tern Taxiway Area; Erodible Areas	X	X	X	X								
Reduce storm water runoff volume with capture and re-use	Tenant and Airport Operational Areas, Parking Lots, Roofs	X	X	X	X	X							
Implement source reduction initiatives as technologies become available	Tenant and Airport Operational Areas	X											
Phase in advanced BMPs (as defined in the IGP) in priority areas	Tenant and Airport Operational Areas, Parking Lots	X	X	X	X	X							
Collaborate with regional education and outreach activities	Airport Authority Jurisdiction	X	X	X	X	X							

Note:
Implementation of strategies is dependent on approval of fiscal budgets and available resources.

Table 4-19 (continued)
Summary of Strategies for Water Quality (Copper and Zinc) Within Airport Authority Jurisdiction (908.21)

Strategy	Sources of Priority WQCs Addressed By Strategy	Priority WQCs Addressed					Implementation Schedule						
		Metals	Bacteria	Nutrients	Sediment	Trash	Previous Fiscal Year(s)	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20	Future Fiscal Year(s)
Collaborate on habitat rehabilitation	Contaminated Sediment	X											
Additional Green Infrastructure and Proprietary BMPs	Tenant and Airport Operational Areas, Parking Lots	X	X	X	X	X							
Implement an alternative compliance program for offsite structural BMP implementation	Tenant and Airport Operational Areas, Parking Lots	X	X	X	X	X							

Note:
Implementation of strategies is dependent on approval of fiscal budgets and available resources.

4.5 Riparian Area Habitat in Paradise Creek (909.1)

Riparian area habitat in Paradise Creek is a Focused Priority Condition in the Lower Sweetwater HA. The geographic extent of the Focused Priority Condition is the drainage area of Paradise Creek within the jurisdiction of the City of National City (National City), which is the sole RP for the condition. National City has identified goals and strategies that will be implemented throughout its jurisdiction. In addition, particular areas in Paradise Creek and the area that drains to it have been identified for targeted BMP implementation.

Section 4.5.1 presents final and interim goals and schedules. A summary of key strategies identified to meet the goals is presented in Section 4.5.2.

4.5.1 Goals and Schedules

Goals developed for the Focused Priority Condition target MS4 discharge concentrations and creek restoration outcomes. Paradise Creek was chosen as the focused area because it was deemed to have the greatest potential for improvements benefiting both water quality and the community. While most of the other water bodies within National City are channelized and fenced off to prevent public access, several segments of Paradise Creek are directly accessible to the public in National City parks. In Paradise Creek, impacts on riparian area quality include a concrete channel bottom and non-native bank vegetation in the Kimball Park area and occasional trash at various points along the Creek.

Improving riparian area quality along Paradise Creek is part of National City's larger vision to provide residents in the central and western portions of its jurisdiction with improved access to natural environments and green spaces. National City expects that improvements to riparian area quality in Paradise Creek will positively impact the downstream Paradise Marsh portion of the Sweetwater Marsh Complex, which is part of the San Diego Bay National Wildlife Refuge. In addition, Paradise Creek is on the 303(d) List for selenium and one of National City's goals is to implement strategies that will lead to its removal from the 303(d) List. As detailed in Table 4-20, National City will assess existing selenium data during the current Municipal Permit term, submit data during the earliest available solicitation period, and finally achieve removal of Paradise Creek from the 303(d) List for selenium. Table 4-21 presents the goals and schedule for meeting final and interim goals for this Focused Priority Condition.

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Table 4-20
Delisting Goals for Riparian Area Habitat in Paradise Creek (909.1)

Riparian Area Quality				
		Assessment Period and Fiscal Year		
		Current Permit Term (FY 14 – FY 18)	FY 16 – FY 20	FY 21 – FY 25
Goal Type/Performance Metrics		FY 16	FY 18	FY 22
Water Body Delisting	Removal of Paradise Creek 303(d) Selenium Listing	Collect and analyze 48 samples for selenium, with 0 exceedances of the water quality objective.[1]	If data support removal of segment from 303(d) List, submit data during earliest available solicitation period (1 data submission).	Removal of Paradise Creek from 303(d) List for selenium (1 delisting)

Note:

1. These numbers are designed such that the when analyzed together with the historical data upon which the current 303(d) Listing is based, the entire data set (current study data plus historical data) will meet the delisting criteria in the State listing policy (State Board, 2004).

Table 4-21
Habitat Restoration Goals for Riparian Area Habitat in Paradise Creek (909.1)

Riparian Area Quality							
	Create Restored Areas		Establish and Maintain Restored Areas[1]				
		Current Permit Term (FY 14 – FY 18)			FY 16 – FY 20		
Goal Type	Performance Metrics	FY 17	Performance Metrics		FY 18	FY 19	FY 20[2]
Restore Native Riparian Vegetation and Wetlands	Remove concrete bottom from Paradise Creek	1,000 Linear Feet	Riparian Woodland and Riparian Scrub Areas	% Survival of Plantings[3]	100	90	90
				% Minimum Native Cover[4]	50	60	70
	Wetland restoration	6,000 Square Feet		% Maximum Allowable Non-Native Weed Cover[5]	5	5	5
	Total native plant restoration, including wetlands	35,000 Square Feet		% Bare Ground	45	35	25
			Brackish Marsh and Salt Marsh Areas	% Survival of Plantings[3]	100	90	90
				% Minimum Native Cover[4]	40	50	60
	Provide treatment for tributary urbanized areas	130 Treated Acres		% Maximum Allowable Non-Native Weed Cover[5]	5	5	5
				% Bare Ground	55	45	35

Notes:

1. These success criteria are taken from the Wetland and Riparian Habitat Restoration, Maintenance, and Monitoring Plan submitted as part of the resource agency permitting process for the Paradise Creek restoration project.
2. Monitoring will also be completed to confirm continued attainment of the final (FY 20) goals in FY 21 and FY 22. The City of National City owns the property where the creek restoration is being completed and will protect the restored area in perpetuity.
3. Denotes container planted species, with percentage based upon original planting quantities.
4. Percentages based upon absolute cover values from transect data collected in year 3 after restoration completion (anticipated to be FY 20), visual estimates only in years 1 and 2 (FY 18 and FY 19).
5. Percentages are for annual weed species. The site shall also remain free of invasive exotic/noxious weed species as identified by the California Invasive Plant Pest Council (Cal IPPC), and shall have 0% cover of noxious species by the end of year 3 after restoration completion (anticipated to be FY 20).

4.5.2 Summary of Strategies and Schedules

To make progress toward its identified goals, National City will implement new strategies and enhance existing JRMP strategies to address its Focused Priority Condition, riparian area quality in Paradise Creek. Figure 4-8 shows National City's jurisdiction within the Sweetwater Focused Priority Condition, where the strategies will be implemented.

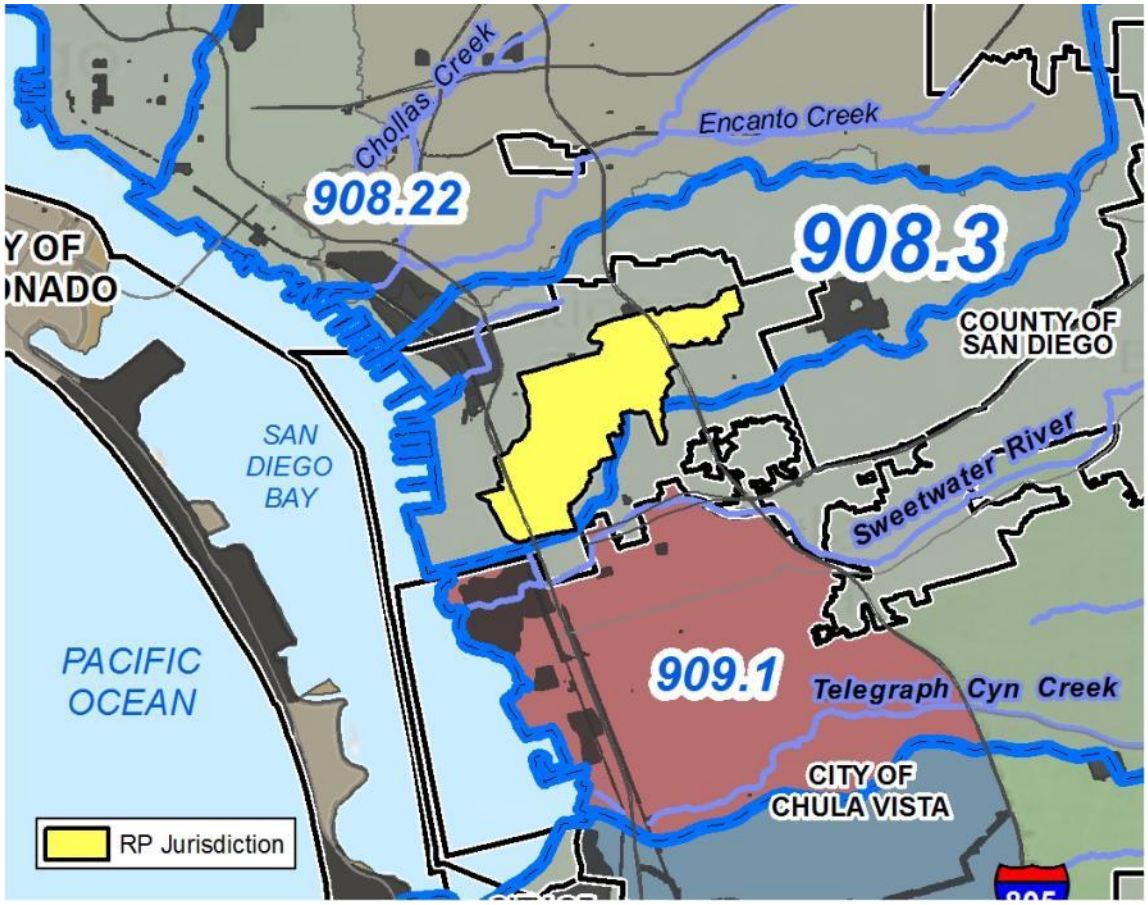

Figure 4-8
National City's Jurisdiction Within the Sweetwater Riparian Area Habitat Focused Priority Condition

National City's strategies will provide improved aesthetics and better access to green space and natural habitats in a highly urbanized area, improve pedestrian access and walkability, and benefit riparian habitat and water quality. Water quality benefits include reducing runoff volume and levels of bacteria, metals, trash, and other pollutants. Key strategies are summarized below, and a complete list of National City's strategies is included in Appendix I.

National City's approach is to implement improvements directly in Paradise Creek and in areas tributary to the Creek. National City plans to restore the approximately 1,000-linear-foot reach of Paradise Creek that runs through Kimball Park by replacing the existing concrete-bottom channel with a natural-bottom channel and replacing turf grass and invasive plant species with native plants along the banks. National City will also retrofit surrounding areas that drain to this creek reach with LID measures, including bioretention areas, and a cistern to harvest water for irrigation within Kimball Park. National City has successfully obtained Proposition 84 grant awards from the State of California to help fund these creek restoration and LID retrofit projects.

National City will also convert its existing Public Works maintenance yards, which directly border Paradise Creek, to a transit-oriented residential housing project and a public park. In addition to converting these areas to land uses with lower pollutant discharge potential, water quality treatment measures will be incorporated into the project design.

With the help of a community group, Paradise Creek Educational Park, Inc., National City was able to secure a grant for Paradise Creek Educational Park that provides the resources to remove existing impervious area and replace it with native vegetation. As part of the project, a bioretention area, educational garden, and cistern to harvest water for the garden will also be installed at Paradise Creek Educational Park. Paradise Creek Educational Park, Inc. also maintains native vegetation along portions of Paradise Creek and completes regular creek cleanups.

In addition, depending on the performance of near-term strategies and the availability of resources, optional strategies will be considered. Strategies and implementation schedules were identified using best information available on efficiency, effectiveness, and level of effort estimated to comply with numeric goals. The adaptive management process provides the framework to evaluate progress toward meeting the goals and allows for modification of strategies. As strategies are modified, the Water Quality Improvement Plan will be updated. The implementation of each strategy will be contingent upon annual budget approvals and funding availability.

Table 4-22 summarizes the key strategies identified for meeting final and interim goals for this Focused Priority Condition.

Table 4-22
Summary of Strategies for Riparian Area Habitat in Paradise Creek (909.1)[1]

Strategy	Focused Priority Sources Addressed By Strategy							Priority Conditions Addressed						Implementation Schedule						
	Concrete Channel	Non-Native Plants	Commercial[1]	Multi-Family	Homeless	Roads/Streets	Municipal Facilities	Bacteria	Nutrients	Habitat/Wildlife[2]	Trash	Sediment	Metals	Previous Fiscal Year(s)	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20	Future Fiscal Year(s)
Paradise Creek Restoration in Kimball Park (NC-32)	X	X	X	X		X	X	X	X	X	X	X			X	X	X	X	X	X
Green infrastructure and other structural BMPs (NC-29 through 31, NC-34)			X	X		X		X	X	*x*	X	X		X	X	X	X	X	X	X
Impervious surface reduction (NC-33)		X				X	X	X	X	X	X	X			X	X	X	X	X	X
Community partnerships to address trash (NC-35, NC-38)					X					*x*	X			X	X	X	X	X	X	X
Catch basin cleaning (NC-14)						X	X[3]	X	X	*x*	X	X		X	X	X	X	X	X	X
Enhanced street sweeping, including using vacuum street sweepers (NC-18)						X		X	X	*x*	X	X		X	X	X	X	X	X	X
Inspections of existing development, including higher frequency inspections for sources of trash (NC-9, NC-36)			X	X			X	X	X	*x*	X	X			X	X	X	X	X	X
Outreach, incentives, and enforcement to reduce irrigation runoff from private properties, partnering with Sweetwater Authority (NC-23, NC-25, NC-26)			X	X			X	X	X	*x*	X	X			X	X	X	X	X	X

Notes:
1. Commercial facilities include eating and drinking establishments
2. Trash may contribute to FPWQC, as mentioned in Section 3. Strategies that help address habitat/wildlife by reducing trash are marked with an "*x*".
3. Because discharges from virtually all sources may reach the MS4, catch basin cleaning can also be considered a strategy that addresses all sources.

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4.6 Physical Aesthetics in Lower Sweetwater HA (909.1)

Physical aesthetics impairment due to trash is a Focused Priority Condition in the Lower Sweetwater HA. Trash assessment data, public input, and anticipated future development along the bayfront were factors that elevated Physical Aesthetics impairments due to trash to a Focused Priority Condition in this area. In addition, the RPs proactively aligned their goals and strategies to address the upcoming state-led Trash Amendments.

Trash not only affects the physical aesthetics of an area, but also can pose a health risk to humans and wildlife and can affect the beneficial uses of waterways. By focusing on physical aesthetics, the RPs can increase public awareness and education about proper waste disposal, which will ultimately reduce amounts of trash, leading to improvements in water quality. The RPs worked collaboratively to identify final and interim goals for this Priority Condition. Each RP has identified strategies to reduce amounts of trash, improve water quality, and increase public awareness and education within their jurisdictions. In addition, BMPs that focus on trash also have the potential to address other pollutants, such as bacteria and sediment, thus achieving multiple pollutant benefits.

The geographic extent of the Focused Priority Condition is the jurisdiction of the City of Chula Vista (Chula Vista) west of Interstate 805 and the Port of San Diego (Port) south of Sweetwater River to the northern boundary of the site of the former South Bay Power Plant (collectively called the RPs).

4.6.1 Goals and Schedules

The RPs identified final and interim goals to reduce trash from MS4 discharges in the Lower Sweetwater River HA (909.1); these goals are presented in Table 4-23. The RPs identified two goals to improve trash assessment scores and increase the drainage areas treated by trash BMPs that will demonstrate reductions in trash over multiple permit cycles. Interim goals were identified to measure short-term progress toward achieving the final goals. Efforts to address the goals will focus on identifying (1) known sources of trash in each jurisdiction, (2) appropriate strategies to reduce trash, and (3) locations where BMPs can be strategically placed to achieve the greatest trash reductions.

The first goal identified in Table 4-23 is to increase the number of sites within the priority area having “optimal” trash scores. This goal incorporates a visual quantification of trash at a site. The methodology is based on the assessment process currently used by the RPs to assess trash from MS4 discharges. The RPs’ storm water monitoring programs assess trash at MS4 outfalls during dry weather. Locations are categorized under one of five categories (optimal, sub-optimal, marginal, sub-marginal, or poor) based on the amount of trash visually observed at the site. An “optimal” rating indicates that the site has little to no trash. Using this process, the RPs will assess MS4 outfalls within the Focused Priority Condition area to identify the percent of MS4 outfalls that receive optimal trash assessment scores during each assessment period (as identified in Table 4-23).

Areas falling below "optimal" will be targeted with strategies to clean up existing trash and prevent future trash buildup. Using historical trash assessment data as a baseline, the RPs' goal is to incrementally increase the percentage of sites consistently meeting the optimal criteria. This will serve to demonstrate that RPs are reducing the amount of trash from their MS4s in the Focused Priority Condition areas and will allow them to adjust their programs as needed to continue to show improvement over time.

The second goal identified in Table 4-23 focuses on incrementally increasing the drainage area treated by trash BMPs (structural control BMPs) in each jurisdiction. This goal was selected to demonstrate how the RPs will prioritize high-volume trash-generating areas within their own jurisdictions and implement appropriate BMP retrofits to address various sources of trash within these areas.

The final and interim goals were based on the RP's current knowledge of high-volume trash areas in their jurisdictions. The RPs recognize that data gaps exist to properly prioritize areas needing retrofits in the near term. A thorough assessment of all available trash and source data, drainage areas, and potential locations is needed in high-volume trash-generating areas to feasibly implement partial or full capture trash devices. Then, site-specific conditions, types of trash, and available resources for maintenance and operation within each RP's jurisdiction, each RP may implement a combination of structural (i.e., full capture systems or other treatment controls, where feasible), and non-structural strategies to control the discharge of trash.

Each RP will then be able to identify the appropriate approach to use to comply with the Trash Amendments once the amendments are incorporated in the next Municipal Permit reissuance process. The interim goals in Table 4-23 are based on best available information and current jurisdictional knowledge. Once the feasibility study to determine where BMP retrofits may be implemented is completed, the RPs may use adaptive management to modify the goals, if needed. The approach for Physical Aesthetics within the Lower Sweetwater HA (909.1) and Otay River HA (910.2) may potential serve as a model the RPs can use in other areas of their jurisdictions.

Table 4-23
Goals for Physical Aesthetics in Lower Sweetwater HA (909.1)

PHYSICAL AESTHETICS						
Numeric Goal	**Unit of Measure**	**Baseline**	**Assessment Period and Fiscal Year**			
			Current Permit Term (FY 14 – FY 18)	**FY 16-20**	**FY 21-25**	**FY 26-30**
			FY 18	FY 20	FY 24	FY 28
MS4 Discharges % Optimal[1] Trash Assessment Scores	MS4 Outfalls Assessed for Trash	60%[2]	65%	75%	85%	95%
OR						
MS4 Discharges % of High Volume Trash Drainage Area Treated for Trash within 910.2[3]	% Drainage Area Feasible for BMP retrofit	Historical trash assessment data[4]	10%	20%	50%	100%[5]

Notes:
1. Historically, an optimal score was given to sites meeting the following requirements: "On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris." This definition may change in the future and will be noted in Water Quality Improvement Plan updates.
2. Based on the RPs' cumulative number of site visits of major MS4 outfalls in the Focused Priority Condition area for dry weather and MS4 outfall monitoring during FY 12 through FY 14
3. These values are based on best available information and current jurisdictional knowledge. A feasibility study is required to determine where BMP retrofits can be implemented. The interim goals may be adapted if needed.
4. An assessment is needed and will incorporate review of all available trash and source assessment data, drainage areas, and potential locations in high volume trash generating areas to feasibly implement structural control BMPs to identify or verify High Volume Trash Areas and % area feasible to retrofit with trash BMPs. The goals may be updated accordingly and provided in a future annual report.
5. The final numeric goal is in line with the State Trash Amendments compliance tracks and time schedule requirements to demonstrate compliance ten years after the trash amendments are incorporated into the next Municipal Permit.

4.6.2 Summary of Strategies and Schedules

The RPs will continue to implement their core JRMP, which includes many strategies that have positive impacts on the water quality of MS4 discharges. To make progress toward their identified goals, the RPs will enhance some existing JRMP strategies and implement optional strategies focused on the Focused Priority Conditions.

The RPs' approach to improving the physical aesthetics within the Focused Priority Condition is to identify targeted areas within their jurisdictions and implement strategies focused primarily on trash. An initial assessment built upon available historical maintenance and monitoring data will be used to identify high trash-generating areas within the geographic extent of the Focused Priority Condition for Chula Vista and the Port. From this assessment, the opportunities for retrofits or other treatment methods will be identified and prioritized. Retrofits may be structural BMPs such as trash guards or

catch basin inserts within the MS4. Other structural BMP options may include requiring retrofits of trash enclosures on private and public property, and providing targeted education and outreach within high priority source areas.

It is anticipated that a combination of specific strategies will allow the RPs to make progress toward, and ultimately achieve, the established goals for this Focused Priority Condition. Part of the RPs' long-term strategy for addressing physical aesthetics is to collaborate with other RPs in Sweetwater and Otay HUs to conduct public perception surveys and adapt programs in response to public input. The surveys are intended both to inform strategy selection and to assess progress over time. Data available currently to assess high-volume trash areas may not reflect areas most important to the public. Including the public in the assessment and prioritization process will engage residents, visitors, and business owners. It will be an integral first step towards true source control for trash and other pollutants that are expected to improve physical aesthetics.

A complete list of strategies to be implemented within the WMA is provided in Appendix I by jurisdiction. Subsets of each RP's strategies are also summarized below. In addition, depending on the performance of near-term strategies and the availability of resources, optional strategies will be considered in the future. Strategies and implementation schedules were identified using best information available on efficiency, effectiveness, and level of effort estimated to achieve compliance with numeric goals. The adaptive management process provides the framework to evaluate progress toward meeting the goals and allows for modification of strategies. As strategies are modified, the Water Quality Improvement Plan will be updated. The implementation of each strategy will be contingent upon annual budget approvals and funding availability.

4.6.1.1 City of Chula Vista

Chula Vista's approach to improving the physical aesthetics within the Lower Sweetwater HA is to identify targeted areas within its jurisdiction and implement strategies focused primarily on trash. Figure 4-9 shows Chula Vista's jurisdiction within the Sweetwater Focused Priority Condition, where the strategies will be implemented.

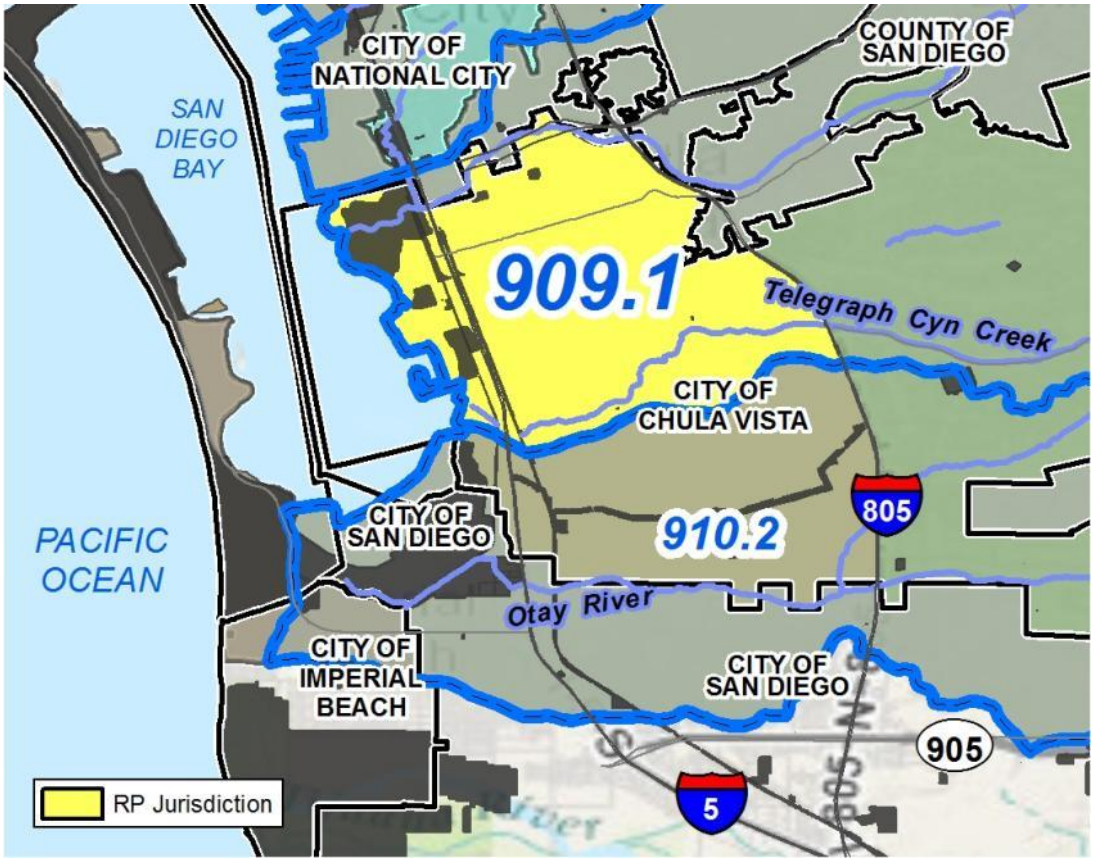

Figure 4-9
Chula Vista's Jurisdiction Within the Sweetwater Physical Aesthetics Focused Priority Condition

To identify high trash-generating areas within the geographic extent of the Focused Priority Condition, Chula Vista will build upon historical catch basin data and additional monitoring and assessment results by FY 17. Based on previous knowledge from trash monitoring and commercial and industrial inspection findings, the area west of I-805 is known to be a high density commercial, industrial, and residential area, with homeless encampments, and illegal dumping issues. Performing a baseline trash assessment study and identifying trash "hot spots" will help to prioritize the areas that are in the most need of strategy implementation to addresses trash. Using the hot spot maps created in this effort, Chula Vista plans to revise its current facilities-based inspection program to focus on trash pollutant-generating activities, collect additional information about trash management BMPs from businesses, and provide additional education and enforcement as needed. Inspections, including education and outreach during the inspection, are intended to aid in the reduction and elimination trash discharges from existing development by assisting facility operators in implementing appropriate trash BMPs. Chula Vista's voluntary CLEAN Business Program, with 200 businesses already certified, is one example of an education effort to encourage environmental stewardship by reducing trash pollution and improving a business's water and energy conservation.

The hot spots maps may also be used to target outreach to residents, including HOAs. As with reducing waste from commercial entities, reducing trash from residential areas and encouraging behavioral change is true source control. Chula Vista will continue to identify opportunities to educate the public and businesses via Chula Vista's website, bill inserts, door hangers, community events, school programs, and collaboration with the Otay Water District and Sweetwater Authority.

Changing the behavior of residents, business owners, and visitors takes time. Chula Vista will continue to remove trash and other pollutants from publicly maintained facilities such as MS4 infrastructure and roadways, and continue to support source reduction initiatives. By performing a baseline trash assessment study, the City of Chula Vista will be able to identify full/partial trash capture retrofit opportunities in high volume trash generating areas. Installation of these systems will improve MS4 discharges and downstream water quality.

4.6.1.2 Port of San Diego

The Focused Priority Condition in the Sweetwater River HA (909.1) is physical aesthetics due to trash pollution. The Port of San Diego's jurisdictional area in this HA is approximately 347 acres of the Tidelands overlaying portions of the City of Chula Vista. Figure 4-10 shows the Port's jurisdiction within the Sweetwater Focused Priority Condition, where the strategies will be implemented.

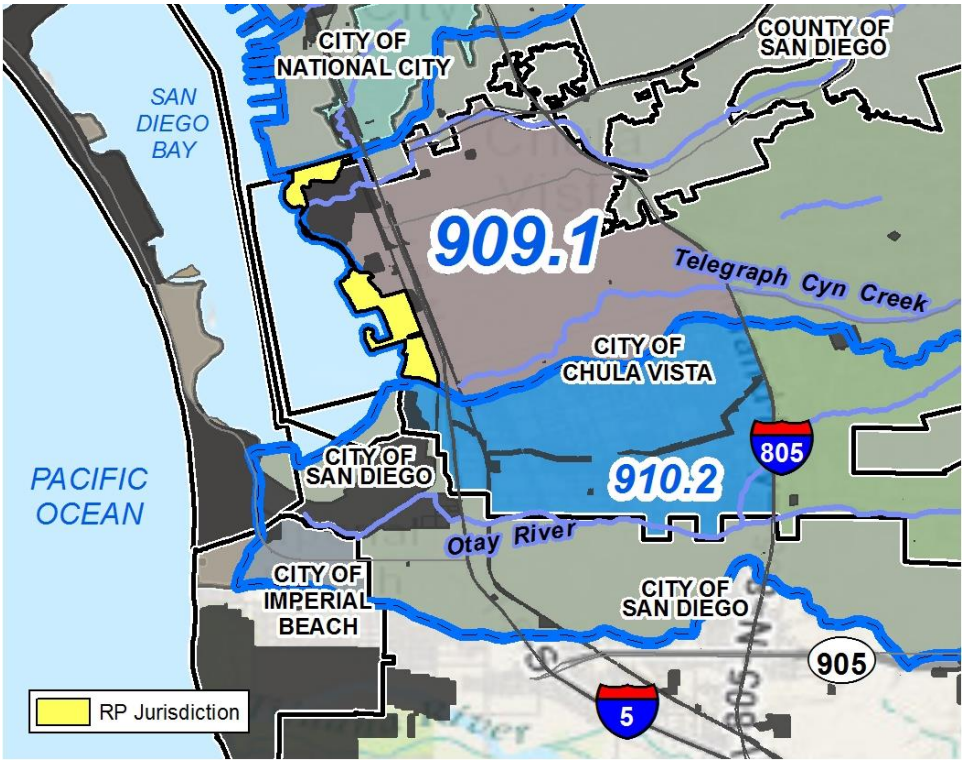

Figure 4-10
Port's Jurisdiction Within the Sweetwater Physical Aesthetics Focused Priority Condition

Facilities or land uses that may be potential sources of trash in this area include six commercial facilities, seven industrial facilities, two municipal facilities, and two parks. In addition to identifying strategies to address the current sources, the Port is also identifying how to address trash in the future development of the Chula Vista Bayfront area as part of the Port's Chula Vista Bayfront Master Plan.

In Table 3-12, high ranking potential sources of trash were listed as controllable and not controllable to assist the RPs in preparing and prioritizing their jurisdictional and sub-watershed strategies. For the Port of San Diego, the sources are all considered in the jurisdictional strategies to varying degrees based on best professional judgement. The inventory provides a good representation and highlights the focus of the Port's strategies:

- General retail/commercial areas

Also, Table 3-14 provides a list of medium ranking sources to consider of which the Port will be addressing, as appropriate:

- General industrial areas
- Homeless encampments (unknown, variable, transient)
- Illegal dumping
- Roads and parking lots

Based on knowledge of potential sources of trash in the Port's jurisdiction, the Port's strategies in this HA will also address development, construction, and sources considered to be low priority in Table 3-12, such as municipal facilities and parks. The strategies identified by the Port focus on reducing the amount of trash, adding structural controls where feasible, improving water quality, and increasing public awareness through education and outreach. The Port will continue to implement their core JRMP program, is updating its program, and has identified new strategies to further address trash jurisdiction-wide and on a targeted basis. As presented in Table I.11.1 in Appendix I, the types of strategies include jurisdictional program type of activities (i.e., permit-required administrative type JRMP updates, permit-required JRMP implementation efforts, and potential enhancements to the Port's JRMP program), as well as optional strategies.

To effectively target potential problem areas, address the potential sources identified above, and prioritize efforts, the Port will evaluate available trash data from past JRMP activities (such as dry weather monitoring, street sweeping, MS4 maintenance, and park maintenance), cleanup events, and other data sources relevant to this area to identify high-volume trash-generating areas and locations where implementation of Trash BMP retrofits may be feasible. The Port will then be able to prioritize areas and have a targeted implementation approach for the selected strategies, ranging from source control activities to partial- and full-capture trash BMPs.

Municipal-Permit-required JRMP implementation efforts include activities that effectively reduce trash and, to a lesser extent, bacteria. These activities include, but are not limited to, MS4 infrastructure cleaning, street sweeping, and industrial, commercial, and municipal facility inspections. The Port will continue to inspect and remove trash and other pollutants from publicly maintained facilities such as MS4 infrastructure, roadways, and parks. In addition, the Port will assess the feasibility of installing trash capture devices (structural BMPs) to address industrial, commercial, and municipal land uses within high-volume trash-generating areas. In combination, these strategies will prevent trash and other pollutants from reaching the receiving waters. The Port may also do a pilot project to assess the effectiveness of using trash skimmers in marina basins along the Chula Vista Bayfront.

Source control strategies to target trash will include education and outreach, as well as an internal assessment of trash and waste diversion measures (i.e., strategies to reduce the amount of waste going to local landfills or contributing to littering) currently in place to identify structural or source control improvements for high-volume trash-generating areas. In addition to reducing trash, implementing these strategies will also address bacteria and other water quality pollutants (e.g., sediment and metals), and will protect wildlife from harmful debris.

Table 4-24 summarizes a subset of the RPs' strategies identified for meeting interim and final goals for this Focused Priority Condition.

Table 4-24
RPs' Strategies Identified for Meeting Interim and Final Goals for This Focused Priority Condition

Strategy	Jurisdiction		Priority Sources of Trash Addressed By Strategies	
	Chula Vista (West of I–805)	Port of San Diego	Chula Vista	Port of San Diego
Jurisdictional Strategies [JRMP (E.2-E.7) Strategies (E.3.b.(1)(a))]				
Development Planning	CV-4, CV-5, CV-6, CV-7, CV-8	PO-1, PO-2, PO-3, PO-4, PO-5	Commercial, Industrial	General Retail/commercial Areas, General Industrial Areas, Roads and Parking Lots, Development, Parks
Construction Management	CV-9	PO-6	Construction	Construction, General retail/commercial Areas, General Industrial Areas, Roads and Parking Lots, Illegal Dumping
Existing Development -Commercial/Industrial/Residential (Residential – Chula Vista)	CV-10, CV-11, CV-12, CV-13, CV-17,	PO-7	Commercial, Industrial, Residential (CV), Illegal Dumping	General Retail/commercial Areas, General Industrial Areas, Roads and Parking Lots
Existing Development – Municipal	CV-10, CV-11	PO-8 PO-9	Municipal facilities – parks, recreation centers	Homeless, Roads and Parking Lots, Parks, Municipal Facilities

Table 4-24 (continued)
RP's Strategies Identified for Meeting Interim and Final Goals
Physical Aesthetics in Lower Sweetwater HA (909.1)

Strategy	Jurisdiction		Priority Sources of Trash Addressed By Strategies	
	Chula Vista (West of I–805)	Port of San Diego	Chula Vista	Port of San Diego
Existing Development – MS4 Infrastructure	CV-14, CV-15,	PO-10	General Retail/commercial Areas, General Industrial Areas, Municipal, Roads and Parking Lots.	General Retail/commercial Areas, General Industrial Areas, Municipal, Roads and Parking Lots.
Existing Development – Roads, Streets, and Parking Lots	CV-16	PO-11	Roads and highways, parking lots	General Retail/commercial Areas, General industrial areas, Roads and Parking Lots, Municipal facilities, Parks
Retrofit and Rehabilitation in Areas of Existing Development	CV-16	PO-13	Variable	General Retail/commercial Areas, General industrial areas, Development, Municipal facilities, Parks
IDDE	CV-1, CV-2, CV-3, CV-13	PO-14	Commercial, Industrial, Illegal Dumping	General Retail/commercial Areas, General industrial areas, Development, Illegal Discharges and Connections, Illegal Dumping

Table 4-24 (continued)
RP's Strategies Identified for Meeting Interim and Final Goals
Physical Aesthetics in Lower Sweetwater HA (909.1)

Strategy	Jurisdiction		Priority Sources of Trash Addressed By Strategies	
	Chula Vista (West of I–805)	Port of San Diego	Chula Vista	Port of San Diego
Enforcement Response Plan	CV-20, CV-21	PO-15 PO-16	Commercial, Industrial, Illegal Dumping, Roads and Highways	Variable, Illegal discharges and connections
Public Education and Participation	CV-22, CV-23	PO-17	Commercial, Industrial	General Retail/commercial Areas, General industrial areas, Development, Construction, Municipal facilities, Parks
Optional Strategies, B.3.b(1)(b))				
Retrofit Programs	CV-29, CV-30, CV-32	PO-44	Commercial, Industrial	General Retail/commercial Areas, General industrial areas, Municipal facilities, Parks
Require installation of shutoff irrigation sensors for MM/CIP Development Projects, where applicable	-	PO-19	-	Municipal facilities, Parks, Development, Construction
Develop BMP guidance document and train general services staff on proper BMP implementation during minor maintenance operations	-	PO-24 PO-25	-	Roads and Parking Lots, Municipal facilities, Parks

Table 4-24 (continued)
RP's Strategies Identified for Meeting Interim and Final Goals
Physical Aesthetics in Lower Sweetwater HA (909.1)

Strategy	Jurisdiction		Priority Sources of Trash Addressed By Strategies	
	Chula Vista (West of I–805)	Port of San Diego	Chula Vista	Port of San Diego
Incentive Programs	CV-29	PO-44	Commercial, Industrial, Illegal dumping	General Retail/commercial Areas, General industrial areas, Development
Enhanced commercial, industrial, and/or municipal inspections	CV-24	PO-21	Commercial, Industrial	General Retail/commercial Areas, General industrial areas, Municipal facilities, Parks
Replace/upgrade current street sweeping equipment to new, more efficient and effective options (e.g., vacuum sweeper)	-	PO-28	-	General Retail/commercial Areas, General industrial areas, Roads and Parking Lots, Municipal Facilities
Source reduction initiatives	CV-25	PO-20	Various	Development, Construction
Storm drain stenciling	CV-26	-	Various	-
Enhanced street sweeping	CV-28	-	Roads and Highways	-

Table 4-24 (continued)
RP's Strategies Identified for Meeting Interim and Final Goals
Physical Aesthetics in Lower Sweetwater HA (909.1)

Strategy	Jurisdiction		Priority Sources of Trash Addressed By Strategies	
	Chula Vista (West of I–805)	Port of San Diego	Chula Vista	Port of San Diego
Enhanced trash monitoring	CV-31	PO-26, PO-27 PO-30	Variable	General retail/commercial areas, General industrial areas, Roads and Parking Lots, Municipal Facilities, Parks
Installation of structural controls (partial/full capture trash BMPs), where feasible	CV-32	PO-45	Variable	General retail/commercial areas, General industrial areas, Homeless, Land Development, Municipal Facilities, Parks
WMA Strategies [B.3.b(2)]				
San Diego Bay Watershed Education Initiatives	CV-38, CV-27, CV-40, CV25e	PO-35, PO-36 PO-37	Illegal Dumping	General retail/commercial areas, General industrial areas, Municipal Facilities, Parks, Illegal Dumping
Trash clean ups	CV-27, CV-37	PO-35	Illegal Dumping	General retail/commercial areas, Homeless, Parks, Waste disposal, Illegal Dumping
Baseline Trash Assessment Study	CV-33	PO-34	Variable	Variable

Table 4-24 (continued)
RP's Strategies Identified for Meeting Interim and Final Goals
Physical Aesthetics in Lower Sweetwater HA (909.1)

Strategy	Jurisdiction		Priority Sources of Trash Addressed By Strategies	
	Chula Vista (West of I–805)	Port of San Diego	Chula Vista	Port of San Diego
San Diego Bay Debris Study	CV-39b	PO-39	Variable	Variable
Regional efforts to address pollutants associated with homelessness	CV-36	PO-37	Homeless Encampments, Illegal dumping	Homeless Encampments, Waste disposal, Illegal Dumping
Alternative compliance program	CV-35	PO-42 PO-43	Variable	Development
San Diego Bay WMA restoration efforts	-	PO-49, PO-50	-	Development

4.7 Swimmable Waters (Beaches) in the Coronado HA (910.1)

Swimmable water at beaches is a Focused Priority Condition in the Otay HU. For the purposes of this Water Quality Improvement Plan, swimmable waters relates to use of the receiving water for recreational activities involving body contact with water where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water-skiing, skin and scuba diving, surfing, and fishing. Bacteria typically is the pollutant of concern for protecting public health during recreational activities; however, the RPs will adapt this focused priority condition to address other pollutants of concern as they are identified in the future.

The geographic extent of the Focused Priority Condition is the jurisdictional boundaries of the City of Coronado (Coronado) and the Port of San Diego (Port) (collectively, RPs) within the Coronado HA (910.1) in the Otay HU. Swimmable waters (beaches) strategies apply only to the areas within the RPs' jurisdictions and exclude federal properties (e.g., U.S. Navy facilities).

4.7.1 Goals and Schedules

The RPs identified final and interim goals toward maintaining swimmable waters at beaches in their respective jurisdictions in the Coronado HA (Table 4-25). Goals were developed for the Focused Priority Condition target, bacteria, in MS4 discharges and illicit discharges. The RPs identified two goals that will demonstrate reductions in bacteria over multiple permit cycles.

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Table 4-25
Goals for Swimmable Waters (Beaches) in the Coronado HA (910.1)

SWIMMABLE WATERS				
Numeric Goal	**Unit of Measure**		**Assessment Period and Reporting Year**	
		Baseline	**Current Permit Term (FY 16 – FY 18)**	**FY 19-23**
			FY 18	**FY 21**
Receiving Water Removal from the List of Impaired Water Quality Impaired Segments of one 303(d) Listing for Recreation Water Contact (REC-1 Beneficial Use)	% of Samples Exceeding Single-Sample *Enterococcus* WQO[1]	Below 15% for dry weather monitoring[2] 44% for wet weather monitoring[3]	Below 15% for dry weather monitoring 33% for wet weather monitoring	• Below 15% for dry weather monitoring[4] • 22% for wet weather monitoring[5] • Submit data to Regional Board to support the delisting of one segment - San Diego Bay Shoreline, Tidelands Park from 303(d) List for *Enterococcus* (REC-1)[6]
OR				
		Baseline	**FY 18**	**FY 23**
Water Quality Report Card – Achieve grade and inform the public	% Water Quality Report Card Grade Achieved (Dry Weather)[7]	80% – Grade A[8]	85% - Grade A	90% - Grade A
	% Water Quality Report Card Grade Achieved (Wet Weather)	58% – Grade A[9]	67% - Grade A	87% - Grade A

Table 4-25 (continued)
Goals for Swimmable Waters (Beaches) in the Coronado HA (910.1)

SWIMMABLE WATERS				
Numeric Goal	Unit of Measure		Assessment Period and Reporting Year	
		Baseline	Current Permit Term (FY 16 – FY 18)	FY 19-23
			FY 18	FY 21

Notes:

1. In order to include wet weather and wet season (November-March) data in the assessment, which are not collected frequently enough for a geometric mean calculation, single sample WQOs for *Enterococcus* will be used for assessment purposes.
2. Cumulative data from 1999-2014 showed a dry weather exceedance rate below the allowable threshold for 303(d) de-listing consideration. Due to this finding, the interim and final goals are focused on maintaining the current dry weather exceedance rate, while simultaneously lowering the exceedance rate of wet weather samples.
3. Baseline determined from line of evidence 27343 in the Final California 2010 Integrated Report 303(d) List/305(b) Report), which found 4 out of 9 wet weather receiving water samples exceeded the *Enterococcus* WQO. At the time the baseline was established, no other wet weather data was available to the RPs.
4. The Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List states that WQOs for bacteria are not exceeded using a binomial distribution methodology. The Policy also allows use of a reference beach to compare results. The binomial distribution allows approximately 15% of samples to exceed WQO.
5. Final wet weather exceedance rate is based on the use of a Reference System Approach (Resolution No. R9-2008-0028) for impaired segments included in the Beach and Creeks Bacteria TMDL (RWQCB, 2012) and provided as a final TMDL target in Attachment E to the MS4 Permit. This approach authorizes allowable exceedances of REC-1 WQOs based on the exceedance frequencies observed in reference systems.
6. The goal reflects the RPs actions to submit a scientifically sound delisting that fully meets the delisting policy *Water Quality Control Policy, for Developing California's Clean Water Act Section 303(d) List (2004)*. In requesting the re-evaluation, the RPs will state the reason(s) the listing is no longer appropriate; and will provide valid data and information necessary to enable the Regional Board and State Water Resources Control Board to conduct the review. It should be noted that compliance with this goal is not dependent on the Regional Board's final adoption or delisting since that decision is fully dependent on Regional Board staff and funding responsibilities.
7. Percentage of beaches will be calculated using a five-year rolling average of two beaches, Tidelands Park and North Beach within in the Coronado HA (910.1), using the report card methodology from Heal the Bay.
8. Baseline for dry weather was calculated using a five-year rolling average (Years 10-11 through 14-15) for Tidelands Park from the Heal the Bay report cards. Results: Four As all years except for one B in 2012-13 yield the 80% baseline. Data will be collected for North Beach starting in 2015-16. Interim and final targets are based on the five-year rolling average grade card scores received for Tidelands Park and North Beach locations using the Heal the Bay methodology.
9. Using the Heal the Bay Annual Reports, the baseline for wet weather was calculated using a five-year rolling average for approximately 40 San Diego County Beaches in the Heal the Bay reports. However, the five-year rolling average scores include data collected during drought conditions as noted in the Heal the Bay Report for 2014-15. Using a five-year rolling average is anticipated to attenuate variability between drought and normal/high rainfall years. Wet weather data to be collected to determine percentage of years the beaches (Tidelands and North Beach) achieve water quality report grade of A.

4.7.1.1 Delisting of Tidelands Park

Removal of one water body from the 303(d) List is the first goal identified in Table 4-25 for the Swimmable Waters condition. The goal reflects the RPs actions to submit a delisting request that is supported by scientifically sound data that demonstrates reduced bacteria levels for the Tidelands Park beach segment and which fully meets the *Water Quality Control Policy, for Developing California's Clean Water Act Section 303(d) List (2004)* delisting policy (Delisting Policy) by 2023 or sooner. In requesting the re-evaluation, the RPs will state the reason(s) the listing is no longer appropriate and will provide data and other necessary information to enable the Regional Board and State Water Resources Control Board to conduct the review. Any subsequent re-submittal to address any comments or questions by the Regional Water Board or State Water Board will be addressed by the RPs as appropriate. However, the final goal of delisting the Tidelands Park beach segment will be considered achieved and completed when the RPs submit the delisting request.

The final goal for dry weather for delisting Tidelands Park was based on the Delisting Policy using the binomial distribution methodology. Based on this methodology, achieving 15 percent or fewer exceedances of REC-1 water quality objectives will demonstrate that the MS4 discharge does not cause or contribute to impairments and will protect beneficial uses. The historical DEH AB411 data was used to determine a baseline for the Tidelands Park beach segment. The assessment metric for delisting Tidelands Park is to have the number of dry weather samples exceeding single-sample WQOs less than 15 percent (%). Cumulative dry weather data from 1999-2014 showed an exceedance rate below the 15% allowable threshold for 303(d) de-listing consideration. Due to this finding, the final and interim goals for dry weather are focused on continuing to be below the allowable threshold for delisting.

The final wet weather goal for delisting Tidelands Park is 22% of samples exceeding single sample WQOs. The exceedance frequency was based on the use of the Reference System Approach (Resolution No. R9-2008-0028) that authorizes allowable exceedances of REC-1 WQOs based on the exceedance frequencies observed in reference systems. The data from line of evidence #27343 in the Final California 2010 Integrated Report (303(d) List/305(b) Report) was used to determine the baseline exceedance frequency for wet weather. At the time the baseline was established, no other wet weather data was available to the RPs. This line of evidence included only nine wet weather receiving water samples, with four or 44% of the samples exceeding the Enterococcus WQO.

The RPs also developed interim goals for both dry and wet weather. The interim goals enable RPs to measure short-term progress toward achieving the final goals by identifying an incremental increase in the percentage of water quality samples meeting water quality objectives for *Enterococcus* (REC-1) was compared to the baseline. The interim goals for dry weather is to continue to be below 15% of samples exceeding single sample WQOs, while the interim goal for wet weather is 33% of samples exceeding single sample WQOs by FY18.

Both dry and wet weather monitoring will be conducted at Tidelands Park (see MAP; Section K.4.5 in Appendix K). Data collected through the DEH AB411 program will continue to be used in the RPs' monitoring program to assess dry weather exceedance frequencies. DEH's monitoring program will monitor the beach segment during the dry weather season (April 1st – September 30th). As described in the MAP, dry weather receiving water monitoring will also be conducted monthly during the wet season (October 1st – March 30th). Wet weather/wet season receiving water sampling will be conducted during three storm events each year.

In addition to monitoring to demonstrate water quality improvement, the RPs will continue to address potential sources of bacteria in this area by implementing various types of BMPs and pollution prevention measures that will reduce bacteria from identified sources. The RPs will use an adaptive management approach to periodically re-evaluate their approaches. Each RP will identify potential modifications that may be needed to existing strategies and/or additional BMPs to assist in pollutant reduction or elimination that will help the RPs meet the final dry weather and wet weather goals.

4.7.1.2 Annual Water Quality Report Card

The second goal involves using a public-friendly way to show water quality at the beaches through the use of an annual Water Quality Report Card (Table 4-26). Public perception and awareness of water quality is a key component of the RPs' approach to promoting swimmable waters (REC-1 beneficial use) at their beaches. Current efforts, such as the one developed by the non-profit organization, *Heal the Bay*, use an annual report card system to provide grades to beach areas. The report card approach will provide the public an annual assessment of how the beaches are doing and a long term assessment of the percentage of "A" ratings received over time in both dry and wet weather. The RPs will evaluate two beaches (Tidelands Park and North Beach) in the Coronado HA (910.1).

The RPs will use the Heal the Bay methodology for the beach report cards during dry and wet weather. The basis of the Heal the Bay report card methodology is a point system assigned to each beach segment according to the results of bacterial indicator test data in the receiving waters. Results are evaluated to determine if they exceed the water quality objectives by a margin from "slight", which poses a minimal or negligible risk of illness, to "extreme" with a very high risk of illness from water contact (REC-1 beneficial use). The points assigned, based on water quality test data, translate to a grade (A or A+ to F) that can be more meaningful to the general public than regulatory standards and laboratory test data alone (Heal the Bay).

For dry weather conditions, the baseline was determined by using the results of the annual report cards by Heal the Bay for Tidelands Park for the past five years. The date range from 2010-11 through 2014-15 yielded four "A" grades and one "B" grade (or 80% "A" grades) as a baseline. The RPs determined that in addition to implementing BMPs and source reduction strategies, the monitoring approach described in the MAP in Section K.4.5 will assist by collecting additional data to include in future rating determinations for the two beaches. The RPs estimated that Tidelands Park and North Beach will be able to attain 90% "A" grades for dry weather by 2023.

The baseline for wet weather was determined using the San Diego County Grade average for approximately 40 locations annually reported by Heal the Bay because no wet weather grades existed for either the Tidelands Park or North Beach locations in the Heal the Bay reports. The baseline grade average was calculated by taking the five-year rolling average for the past five years (2011-2015). This approach identified that 58% of all San Diego County beaches have an "A" rating during wet weather. As such, 58% was determined to be a logical baseline for this WQIP goal. Achieving an incremental increase in the number of "A" grades will indicate an improvement in water quality. The RPs estimated that Tidelands Park or North Beach will receive eight wet weather annual grades each between 2015 and 2023. The RPs estimated that 14 of the 16, or 87%, wet weather grades will be an "A" grade by 2023.

The RPs' interim goals reflect an approach to progressively increase the percentage of time that the beaches consistently meet the "A" rating criteria in dry and wet weather during each annual assessment period (as identified in Table 4-25). This approach will also serve to demonstrate that the RPs are adequately addressing sources of bacteria and discharges from their MS4s are progressively improving.

The RPs recognize, as noted in the Heal the Bay 2014-15 Annual Report, that extreme drought conditions are likely to influence wet weather conditions and monitoring for bacteria. The five-year rolling average report card methodology employed by Heal the Bay allows for such fluctuations to be attenuated and provides a better long-term understanding and assessment of beach water quality. The approach and goals for wet weather are subject to change if weather and climate conditions prove to be a significant factor and impact on these goals.

4.7.2 Summary of Strategies and Schedules

The RPs will continue to implement their updated core JRMP, which includes many strategies that have positive impacts on the water quality of MS4 discharges. To make progress toward their identified goals, the RPs will both enhance specific JRMP strategies and implement new strategies that target bacteria stressors to the Focused Priority Condition.

The RPs' approach to improving swimmable beaches is to implement strategies to reduce sources of bacteria, and to obtain a better understanding of the public's perception of water quality conditions. It is anticipated that a combination of specific strategies will allow the RPs to make progress toward, and ultimately achieve, the established goals for this Focused Priority Condition. In Coronado, most of the MS4 outfalls, including major outfalls, within the Focused Priority Condition area have low-flow and first-flush diversions to the sanitary sewer to prevent bacteria from entering the receiving waters during dry weather and during the initial portions of storms.

Examples of strategies include continued and potentially enhanced MS4 infrastructure and public road operation and maintenance activities. These strategies are effective in reducing trash, sediment, and metals, and have a potential benefit of bacteria reduction.

The RPs have been continuously implementing and progressively improving their jurisdictional programs and strategies for over the last 12 years to improve water quality. In addition to gathering data to support the delisting effort at Tidelands Park, the RPs will implement BMPs to attain load reductions by continuing to address potential sources of bacteria in the HA. The process will also help identify where additional or optional strategies may be needed to adequately address MS4 sources so that the beach can be delisted in the future. Public perception of water quality will also be assessed. The public's perception of water quality is equally as important to the RPs within the Coronado HA as is the impairment assessment. The public perception surveys are intended both to refine the strategies and to assess progress over time. Monitoring data alone may not identify the areas of public concern or perception. Survey results will be used within the adaptive management framework to assess the effectiveness of current strategies and to determine changes that may be needed.

A complete list of strategies to be implemented within the WMA is provided in Appendix I by jurisdiction. Examples of the RPs' strategies are also summarized below. In addition, depending on the performance of near-term strategies and progress towards meeting interim and final goals (Table 4-25) and the availability of resources, certain optional strategies will be considered in the future.

Strategies and implementation schedules were identified using best information available on efficiency, effectiveness, and level of effort estimated to achieve compliance with numeric goals. The adaptive management process provides the framework to evaluate progress toward meeting the goals and allows for modification of strategies. As strategies are modified, the Water Quality Improvement Plan will be updated. The implementation of each strategy will be contingent upon annual budget approvals and funding availability.

4.7.2.1 City of Coronado

Coronado's approach to improving swimmable beaches is to implement strategies focused on sources of bacteria and trash, and to obtain a better understanding of the public's perception of water quality conditions. Figure 4-11 shows Coronado's jurisdiction within the Coronado HA Focused Priority Condition, where the strategies will be implemented.

Figure 4-11
Coronado's Jurisdiction Within the Coronado HA Swimmable Beaches Focused Priority Condition

In Table 3-14, high ranking potential sources of bacteria were listed as controllable and not controllable to assist the RPs in preparing and prioritizing their jurisdictional and sub-watershed strategies. For Coronado, the four high ranking sources are all considered in the jurisdictional strategies to varying degrees based on Best Professional Judgement. The inventory (the number of sources is shown in parenthesis) within the jurisdiction (June 2015) provides a good representation and highlights the focus of Coronado's strategies:

- Animal facilities, including veterinary hospitals, pet care, etc. (4)
- Eating and drinking establishments, including municipal facilities (118)[9]
- Pet waste, includes recreational areas (3) and owners (as target audience)
- Sewage infrastructure (16 facilities, 14 diverters), plus pipelines & activities (staff as target audience)

[9] The eating and drinking establishment inventory is very dynamic and ranges from 120-85 at any time. The most up-to-date inventory is maintained by the City as part of the JRMP Existing Development component in Appendix 6-A of the Storm Water Standards Manual.

Also, Table 3-14 provides a list of medium ranking sources to consider of which Coronado has placed emphasis on the following:

- Residential areas (3)
- Homeless encampments (variable, transient)
- Groundwater contribution [one (1) known; others: unknown, variable, transient]
- Over-irrigation/runoff (variable, transient)

Other medium ranking sources non-existent or not considered in Coronado include nurseries/greenhouses. The City may collaborate or refer to the Port of San Diego about potential non-MS4 sources from boat waste, homeless encampments, and groundwater contribution if suspected or believed to be a potential source depending on jurisdictional authority or boundaries. Coronado may consider low ranking sources as part of its strategies at its discretion and may add them as part of its adaptive management approach to achieve interim or final goal metrics for swimmable waters.

Frequent maintenance of public areas and engaging the public to implement best practices and desirable behaviors (e.g, pet waste collection and disposal) is a key approach for Coronado including parks, beaches and special events. Specifically, jurisdictional strategies include daily beach patrols for trash and debris removal and weekly street sweeping and hardscape cleaning in the commercial corridor where eating and drinking establishments are primarily located. There are 13 low-flow and first-flush diversions from the MS4 to the sanitary sewer throughout Coronado that are inspected bimonthly. Coronado has an extensive, comprehensive operation and maintenance program of its storm drain (or MS4) and sewage infrastructure that is instrumental to achieving and maintaining swimmable beaches. Examples include daily restroom inspections/cleaning and twice a week inspections at pump stations at beach restrooms. Staff's activities in the operation, maintenance and response to incidents focuses on health and safety of the employees, the public and the environment with emphasis on preserving beach water quality.

The continuous maintenance of public areas and facilities reduces the amounts of trash, bacteria, sediment, and other pollutants on beaches and in receiving waters. In addition, Coronado administers surveys to collect data to inform targeted education and outreach campaigns and to evaluate municipal services. Collaboration with the other RPs to assess public perception will build upon historical data to guide adaptive management for Coronado.

4.7.2.2 Port of San Diego

The Focused Priority Condition in the Coronado HA (910.1) is Swimmable Waters (beaches). The Port of San Diego's jurisdictional area in the Coronado HA (910.1) is approximately 242 acres. The Port will implement various JRMP activities to reduce or eliminate bacteria with respect to its MS4. A targeted effort will focus on potential MS4

discharges from the Port's boundaries within the Tidelands Park drainage area, which is currently on the 303(d) List of impaired water bodies. Figure 4-12 shows the Port's jurisdiction within the Coronado HA Focused Priority Condition, where the strategies will be implemented. In Table 3-14, high ranking potential sources of bacteria were listed as controllable and not controllable to assist the RPs in preparing and prioritizing their jurisdictional and sub-watershed strategies. For the Port of San Diego, the sources are all considered in the jurisdictional strategies to varying degrees based on BPJ. The inventory within the Port's jurisdiction of known or suspected areas or sources causing or contributing to the Focused Priority Condition provides a good representation and highlights the focus of the strategies:

- Pet waste (parks)
- Sewage infrastructure

Also, Table 3-14 provides a list of medium ranking sources to consider of which the Port will be addressing, as appropriate:

- Homeless encampments (unknown, variable, transient)
- Over-irrigation/runoff (variable, transient)

There are 32 commercial facilities (including eating and drinking establishments, marinas, general retail, and hotels) and three parks in the Port's jurisdiction in the HA. While the majority of the Port's strategies to address sources of bacteria will be applied throughout the Port's jurisdiction in this HA, the Port will particularly focus on addressing potential sources of bacteria to Tidelands Park. Tidelands Park is a 22-acre waterfront park that offers a small beach, recreational fields, picnic areas and open space for a variety of outdoor activities. The Port's strategies identified for Tidelands Park focus on reducing bacteria and trash, improving water quality, obtaining a better understanding of the public's perception of water quality conditions, and increasing public awareness through education and outreach.

Although the ICID program (PO-14) may assist in identifying potential discharges from boats, these discharges do not originate from the MS4 and will be addressed outside of the WQIP. The Port may collaborate or refer to the City of Coronado regarding potential sources from nurseries/greenhouses, residential, and groundwater contribution if suspected or believed to be a potential source depending on jurisdictional authority or boundaries. The Port may consider low ranking sources as part of its strategies at its discretion and may add them as part of its adaptive management approach to achieve interim or final goal metrics for swimmable waters.

In addition to addressing water quality, the Port is also interested in identifying ways to increase the use of the park by residents, visitors and the local community and promoting the park as a venue for safe waterside activities. The Port's approach for Swimmable Waters (bacteria) within the Tidelands Park drainage area may also potentially serve as a model to address other San Diego Bay beach areas within the Port's jurisdiction.

Figure 4-12
Port's Jurisdiction Within the Coronado HA Swimmable Beaches
Focused Priority Condition

The Port currently implements a number of permit required JRMP activities as well as other jurisdictional programs that address potential sources of bacteria within the Tidelands Park drainage area. These activities include, but are not limited to, MS4 infrastructure inspection and cleaning, municipal park inspections, storm drain inlet inserts, and street and parking lot sweeping. Non-permit required strategies that are currently being implemented in Tidelands Park include, but are not limited to, the Port's preventative maintenance program at park restrooms and the pet waste bag program. Additional strategies that may be implemented include, but are not limited to, delisting studies or other special studies and public surveys. In addition to addressing bacteria, implementing these strategies will also address trash and potentially other water quality pollutants (e.g., sediment, metals).

The Port will coordinate with the City of Coronado to ascertain whether potential sources of bacteria have been adequately addressed, whether removal of Tidelands Park from the 303(d) List is possible, and, if not, what actions would likely need to be taken for delisting to be achieved. The Port is also aware of the importance of public perception and awareness of water quality when promoting swimmable waters (REC-1) uses at beaches like Tidelands Park. The Port will collaborate with the City of Coronado to use a report card system to provide a public-friendly mechanism for reporting water quality conditions at the beaches during each assessment period.

Table 4-26 summarizes a subset of the RPs' strategies identified for meeting interim and final goals for this Focused Priority Condition.

Table 4-26
Summary of Strategies for Swimmable Waters in Coronado HA (910.1)

Strategy	Jurisdiction		Potential Sources of Bacteria* Addressed By Strategy		Additional WQCs Addressed by Strategy			
	Coronado	Port of San Diego	Coronado	Port of San Diego	Trash	Nutrients	Sediment	Metals
Jurisdictional Strategies [JRMP (E.2-E.7) Strategies (E.3.b.(1)(a))]								
Development Planning	CO-1, CO-2, CO-3, CO-4	PO-1, PO-2, PO-3, PO-4, PO-5	Eating and drinking establishments; animal care facilities, pet waste, over-irrigation/runoff, groundwater	Over-irrigation/runoff, Sewage (Sanitary/Septic waste management)	X		X	X
Construction Management	CO-5	PO-6	Over-irrigation/runoff, groundwater	Over-irrigation/runoff, Sewage (Sanitary/septic waste management), Construction, Roads and Parking Lots	X		X	X
Existing Development (Municipal)	CO-6, CO-13	PO-8 PO-9	Pet waste; Sewage infrastructure and activities; Over-irrigation/ runoff, homeless	Pet waste, Sewage (Sanitary/septic waste management at parks and special events), Eating and drinking establishments (special events), Over-irrigation/runoff, Homeless, Roads and Parking Lots	X	X	X	X
Existing Development (Commercial/Industrial)	CO-7, CO-9	PO-7	Eating and drinking establishments, animal facilities	Over-irrigation/runoff, Commercial, Pet waste, Eating and drinking establishments	X	X	X	X
Existing Development–Roads, Roads, and Parking Lot	CO-19, CO-21	PO-11	Eating and drinking establishments, residential areas	Roads and Parking Lots, Parks	X		X	X
MS4 Infrastructure	CO-15, CO-17	PO-10	Sewage infrastructure and activities	Sewage infrastructure and activities, Over-irrigation/runoff, Roads and Parking lots			X	X

Table 4-26 (continued)
Summary of Strategies for Swimmable Waters (Beaches) in the Coronado HA (910.1)

Strategy	Jurisdiction		Potential Sources of Bacteria* Addressed By Strategy		Additional WQCs Addressed by Strategy			
	Coronado	Port of San Diego	Coronado	Port of San Diego	Trash	Nutrients	Sediment	Metals
Retrofit and rehabilitation of existing development	CO-1, CO-9	PO-13	Eating and drinking establishments, residential areas	Eating and drinking establishments; Over-irrigation	X	X	X	X
IDDE	CO-23, CO-24	PO-14	Over-irrigation runoff, groundwater	Pet waste, Over-irrigation/runoff, Illegal Discharges and Connections, Illegal Dumping	X	X	X	X
Enforcement Response Plans	CO-36	PO-15 PO-16	Eating and drinking establishments, animal facilities pet waste, over-irrigation/runoff, residential areas	Over-irrigation/runoff, Illegal discharges and connections	X	X	X	X
Public Education and Outreach	CO-2, CO-22 CO-25 – CO-35	PO-17	Eating and drinking establishments; Pet Waste, sewage infrastructure and activities, over-irrigation/runoff	Pet Waste, Sewage (Sanitary/septic waste management at parks and special events), Over-irrigation, Swimming, Illegal discharges and connections	X	X	X	X
Optional Strategies, B.3.b(1)(b))								
Implement/promote retrofit program to encourage installation of water conservation, rainwater harvesting measures in existing businesses and/or residences	CO-11	PO-44	Residential areas, over-irrigation/runoff	Eating and drinking establishments; Over-irrigation	X	X	X	X
Trash receptacle assessments and targeted replacements as identified by jurisdiction	CO-1,3,4,9,13	PO-26	Eating and drinking establishments, animal care facilities, pet waste	Pet Waste, Homeless Municipal Facilities, Parks	X	X		

Table 4-26 (continued)
Summary of Strategies for Swimmable Waters (Beaches) in the Coronado HA (910.1)

Strategy	Jurisdiction		Potential Sources of Bacteria* Addressed By Strategy		Additional WQCs Addressed by Strategy			
	Coronado	Port of San Diego	Coronado	Port of San Diego	Trash	Nutrients	Sediment	Metals
Pet waste bag dispensers in parks/beaches, promote desirable behavior through public outreach	CO-10,13,29	PO-22	Pet waste	Pet waste	X			
Provide list of BMPs for special events and ensure compliance through inspections	CO-14	PO-10	Sewage infrastructure and activities (indirect)	Sewage (Sanitary/septic waste management at parks and special events), Eating and drinking establishments (special events at Parks)	X			X
Implement inspection and/or preventative maintenance program to prevent sewer system backups in public restrooms	CO-13	PO-23	Sewage infrastructure and activities	Sewage infrastructure and activities; Municipal facilities, Parks		X		X
Train staff on proper BMP implementation during maintenance operations	CO-33	PO-25	Sewage infrastructure and activities; pet waste, over-irrigation/runoff, residential areas	Sewage infrastructure and activities, Over-irrigation/runoff, Municipal facilities, Parks	X		X	X
Enhanced existing development inspections	CO-7,12	PO-21	Eating and drinking establishments, sewage infrastructure and activities	Sewage infrastructure and activities, Over-irrigation/runoff, Eating and drinking establishments; Parks	X	X	X	X
Increased MS4 inspections and cleaning	CO-15	PO-30	Sewage infrastructure and activities; pet waste, over-irrigation/runoff, residential areas	Sewage infrastructure and activities, Over-irrigation/runoff, Roads and Parking lots	X	X	X	X
Low-flow and first-flush diversions to sewerage system	CO-15,16	-	Sewage infrastructure and activities; pet waste, over-irrigation/runoff, residential areas	-		X		X
Installation of structural BMPs in storm drains in high priority areas	-	PO-45	-	Eating and drinking establishments, Over-irrigation	X	X		

Table 4-26 (continued)
Summary of Strategies for Swimmable Waters (Beaches) in the Coronado HA (910.1)

Strategy	Jurisdiction		Potential Sources of Bacteria* Addressed By Strategy		Additional WQCs Addressed by Strategy			
	Coronado	Port of San Diego	Coronado	Port of San Diego	Trash	Nutrients	Sediment	Metals
Retrofit trash enclosures, where applicable, in municipal areas	CO-1,3,4,9,13, 37	PO-46	Pet waste	Pet waste/Parks, Homeless	X	X		
Replace/upgrade current street sweeping equipment to new, more efficient and effective options (e.g., vacuum sweeper)	-	PO-28	-	Roads and Parking Lots	X		X	X
WMA Strategies [B.3.b(2)]								
Offsite Alternative Compliance Program and Watershed Management Area Analysis (WMAA)	-	PO-42 PO-43	-	Variable	X	X	X	X
Public perception surveys in targeted areas	CO-34	PO-36	Eating and drinking establishments; Pet Waste; Sewage infrastructure and activities; Over-irrigation/runoff	Pet Waste/Parks, Sewage infrastructure and activities, Over-irrigation/runoff	X			
Cleanup events for beaches/parks	CO-27	PO-35	Pet waste	Eating and drinking establishments, Homeless, Waste disposal, Parks	X	X		
Support organizations and regional social services effort for homelessness	CO-38	PO-37	Homeless, pet waste	Homeless, Waste disposal	X			

Table 4-26 (continued)
Summary of Strategies for Swimmable Waters (Beaches) in the Coronado HA (910.1)

Strategy	Jurisdiction		Potential Sources of Bacteria* Addressed By Strategy		Additional WQCs Addressed by Strategy			
	Coronado	Port of San Diego	Coronado	Port of San Diego	Trash	Nutrients	Sediment	Metals
Participation in the San Diego Regional Reference Stream Study		PO-38	Variable					
Delisting studies (Tidelands Park Listed Segment)	CO-39	PO-40	Variable					

Note:
*High and medium sources identified in Table 3-14 and Appendix I.

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4.8 Physical Aesthetics in the Otay River HA (910.2)

Physical aesthetics impairment due to trash is a Focused Priority Condition in the Otay River HA (910.2). Previous trash monitoring data, existing management plans such as the Otay River Watershed Management Plan (ORWMP), public input, and anticipated future development along the San Diego Bay were factors that elevated Physical Aesthetics due to trash to a Focused Priority Condition in this area. In addition, the RPs proactively aligned their goals and strategies to address the upcoming state-led Trash Amendments.

By focusing on physical aesthetics, the RPs can increase public awareness and education about proper waste disposal, which will ultimately reduce amounts of trash, leading to improvements in water quality. The RPs worked collaboratively to identify final and interim goals for this Priority Condition. Each RP has identified strategies to reduce amounts of trash, improve water quality, and increase public awareness and education within their jurisdictions. Trash not only affects the physical aesthetics of an area, but also can pose a health risk to humans and wildlife and can affect the beneficial uses of waterways. BMPs that focus on trash also have the potential to address other pollutants, such as bacteria and sediment, thus achieving multiple pollutant benefits.

The geographic extent of the Focused Priority Condition is the jurisdiction of the City of Chula Vista (Chula Vista) west of Interstate 805, the eastern portion of the City of Imperial Beach (IB), and the Port of San Diego jurisdiction from the site of the former South Bay Power Plant to Pond 20 (collectively the RPs).

4.8.1 Goals and Schedules

The RPs identified final and interim goals to reduce trash from MS4 discharges in the Otay River HA (910.2), which are presented in Table 4-27. The RPs identified two goals that will demonstrate reductions in trash over multiple permit cycles. The RPs also developed interim goals improving trash assessment scores and increasing the drainage areas treated by trash BMPs to measure short-term progress toward achieving the final goals. Efforts to address the goals will focus on identifying (1) known sources of trash in each jurisdiction, (2) appropriate strategies to reduce trash, and (3) locations where BMPs can be strategically placed to achieve the greatest trash reductions.

The first final goal identified in Table 4-27 is to increase the number of sites within the priority area having “optimal” trash scores. This goal incorporates a visual quantification of trash at a site. The methodology is based on the assessment process currently used by the RPs to assess whether a MS4 requires cleaning based on the amount of accumulated material (trash and debris) in the structure. The RPs’ storm water monitoring programs assess trash at MS4 outfalls during dry weather. Locations are categorized under one of five categories (optimal, sub-optimal, marginal, sub-marginal, or poor) based on the amount of trash visually observed at the site. An “optimal” rating indicates that the site has little to no trash. Using this process, the RPs will assess MS4 outfalls within the Focused Priority Condition area to identify the percent of MS4 outfalls that receive optimal trash assessment scores during each assessment period (as identified in Table 4-27). Areas falling below “optimal” will be targeted with strategies to clean up existing trash and

prevent future trash buildup. Using historical trash assessment data as a baseline, the RPs' goal is to incrementally increase the percentage of sites consistently meeting the optimal criteria. This will serve to demonstrate that RPs are reducing the amount of trash from their MS4s in the Focused Priority Condition areas and will allow them to adjust their programs as needed to continue to show improvement over time.

The second final goal focuses on incrementally increasing the drainage area treated by trash BMPs (structural control BMPs) in each jurisdiction. This goal was selected to demonstrate how the RPs will prioritize high-volume trash-generating areas within their own jurisdictions and implement appropriate BMP retrofits to address various sources of trash within these areas.

The final and interim goals were based on the RP's current knowledge of high-volume trash areas in their jurisdictions. However, the RPs recognize that there are data gaps that will need to be addressed in the near term. A thorough assessment of all available trash and source data, drainage areas, and potential locations in high-volume trash-generating areas is needed to feasibly implement partial or full capture trash devices. The assessments will assist the RPs in prioritizing areas suitable for retrofit.

Each RP will then be able to identify the appropriate approach to use to comply with the trash amendments once the amendments are incorporated in the next Municipal Permit reissuance process. Due to site-specific conditions, types of trash, and available resources for maintenance and operation within each RP's jurisdiction, each RP may implement a combination of structural (i.e., full capture systems or other treatment controls, where feasible), and non-structural strategies to control the discharge of trash. The interim goals in Table 4-27 are based on best available information and current jurisdictional knowledge. Once the feasibility study to determine where BMP retrofits may be implemented is completed, the RPs may use adaptive management to modify the goals, if needed. The approach for Physical Aesthetics within the Lower Sweetwater HA (909.1) and Otay River HA (910.2) may potential serve as a model the RPs can use in other areas of their jurisdictions.

Table 4-27
Goals for Physical Aesthetics in Otay River HA (910.2)

PHYSICAL AESTHETICS						
Numeric Goal	**Unit of Measure**	**Baseline**	**Assessment Period and Fiscal Year**			
			Current Permit Term (FY 14 – FY 18)	**FY 16-20**	**FY 21-25**	**FY 26-30**
			FY 18	FY 20	FY 24	FY 28
MS4 Discharges % Optimal[1] Trash Assessment Scores	MS4 Outfalls Assessed for Trash	60%[2]	65%	75%	85%	95%
OR						
MS4 Discharges % of High Volume Trash Drainage Area Treated for Trash within 910.2[3]	% Drainage Area Feasible for BMP retrofit	Historical trash assessment data[4]	10%	20%	50%	100%[5]

Notes:
6. Historically, an optimal score was given to sites meeting the following requirements: "On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris." This definition may change in the future and will be noted in Water Quality Improvement Plan updates.
7. Based on the RPs' cumulative number of site visits of major MS4 outfalls in the Focused Priority Condition area for dry weather and MS4 outfall monitoring during FY 12 through FY 14
8. These values are based on best available information and current jurisdictional knowledge. A feasibility study is required to determine where BMP retrofits can be implemented. The interim goals may be adapted if needed.
9. An assessment is needed and will incorporate review of all available trash and source assessment data, drainage areas, and potential locations in high volume trash generating areas to feasibly implement structural control BMPs to identify or verify High Volume Trash Areas and % area feasible to retrofit with trash BMPs. The goals may be updated accordingly and provided in a future annual report.
10. The final numeric goal is in line with the State Trash Amendments compliance tracks and time schedule requirements to demonstrate compliance ten years after the trash amendments are incorporated into the next Municipal Permit.

4.8.2 Summary of Strategies and Schedules

The RPs will continue to implement their core JRMP, which includes many strategies that have positive impacts on the water quality of MS4 discharges. To make progress toward their identified goals, the RPs will enhance some existing JRMP strategies and implement optional strategies focused on the Focused Priority Conditions.

The RPs' approach to improving the physical aesthetics within the Focused Priority Condition is to identify targeted areas within their jurisdictions and implement strategies focused primarily on trash. An initial assessment built upon available historical maintenance and monitoring data will be used to identify high trash-generating areas within the geographic extent of the Focused Priority Condition for Chula Vista, Imperial Beach, and the Port. From this assessment, the opportunities for retrofits or other treatment methods will be identified and prioritized. Retrofits may be structural BMPs such as trash guards or catch basin inserts within the MS4. Other structural BMP options may

include requiring retrofits of trash enclosures on private and public property, and providing targeted education and outreach within high priority source areas.

It is anticipated that a combination of specific strategies will allow the RPs to make progress toward, and ultimately achieve, the established goals for this Focused Priority Condition. Part of the RPs' long-term strategy for addressing physical aesthetics is to collaborate with other RPs in Sweetwater and Otay HUs to conduct public perception surveys and adapt programs in response to public input. The surveys are intended both to inform strategy selection and to assess progress over time. Data available currently to assess high-volume trash areas may not reflect areas most important to the public. Including the public in the assessment and prioritization process will engage residents, visitors, and business owners. It will be an integral first step towards true source control for trash and other pollutants that are expected to improve physical aesthetics.

A complete list of strategies to be implemented within the WMA is provided in Appendix I by jurisdiction. Subsets of each RP's strategies are also summarized below. In addition, depending on the performance of near-term strategies and the availability of resources, optional strategies will be considered in the future. Strategies and implementation schedules were identified using best information available on efficiency, effectiveness, and level of effort estimated to achieve compliance with numeric goals. The adaptive management process provides the framework to evaluate progress toward meeting the goals and allows for modification of strategies. As strategies are modified, the Water Quality Improvement Plan will be updated. The implementation of each strategy will be contingent upon annual budget approvals and funding availability.

4.8.2.1 City of Chula Vista

Chula Vista's approach to improving the physical aesthetics within the Otay River HA is to identify targeted areas within its jurisdiction and implement strategies focused primarily on trash. Figure 4-13 shows Chula Vista's jurisdiction within the Otay Focused Priority Condition, where the strategies will be implemented.

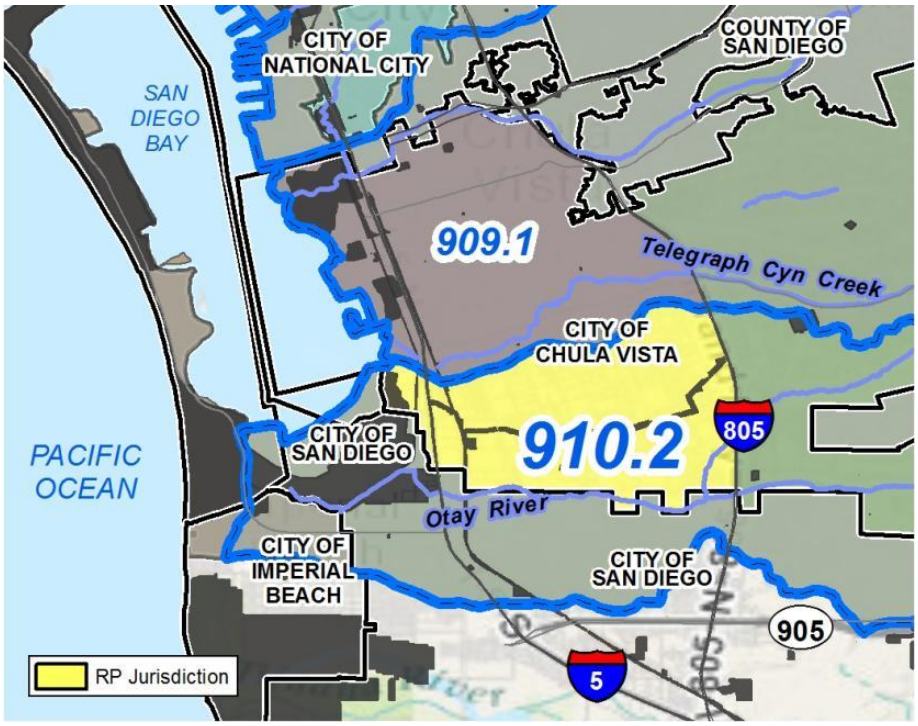

Figure 4-13
Chula Vista's Jurisdiction Within the Otay River HA Physical Aesthetics Focused Priority Condition

To identify high trash-generating areas within the geographic extent of the Focused Priority Condition, Chula Vista will build upon historical catch basin data and additional monitoring and assessment results by FY 17. Based on previous knowledge from trash monitoring and commercial and industrial inspection findings, the area west of I-805 is known to be a high density commercial, industrial, and residential area, with homeless encampments, and illegal dumping issues. Performing a baseline trash assessment study and identifying trash "hot spots" will help to prioritize the areas that are in the most need of strategy implementation to addresses trash. Using the hot spot maps created in this effort, Chula Vista plans to revise its current facilities-based inspection program to focus on trash pollutant-generating activities, collect additional information about trash management BMPs from businesses, and provide additional education and enforcement as needed. Inspections, including education and outreach during the inspection, are intended to aid in the reduction and elimination trash discharges from existing development by assisting facility operators in implementing appropriate trash BMPs. Chula Vista's voluntary CLEAN Business Program, with 200 businesses already certified, is one example of an education effort to encourage environmental stewardship by reducing trash pollution and improving a business's water and energy conservation.

The hot spots maps may also be used to target outreach to residents, including HOAs. As with reducing waste from commercial entities, reducing trash from residential areas and encouraging behavioral change is true source control. Chula Vista will continue to identify opportunities to educate the public and businesses via Chula Vista's website, bill

inserts, door hangers, community events, school programs, and collaboration with the Otay Water District and Sweetwater Authority.

Changing the behavior of residents, business owners, and visitors takes time. Chula Vista will continue to remove trash and other pollutants from publicly maintained facilities such as MS4 infrastructure and roadways, and continue to support source reduction initiatives. By performing a baseline trash assessment study, the City of Chula Vista will be able to identify full/partial trash capture retrofit opportunities in high volume trash generating areas. Installation of these systems will improve MS4 discharges and downstream water quality.

4.8.2.2 City of Imperial Beach

Imperial Beach's approach to improving the physical aesthetics within the Otay River HA is to identify targeted areas within its jurisdiction and implement strategies focused primarily on trash. The City maintains 2 major outfalls (H-line and K-line) in the Otay River HA that have known sources of trash from commercial areas, Hwy 75, and illegal dumping. Figure 4-14 shows Imperial Beach's jurisdiction within the Otay Focused Priority Condition, where the strategies will be implemented.

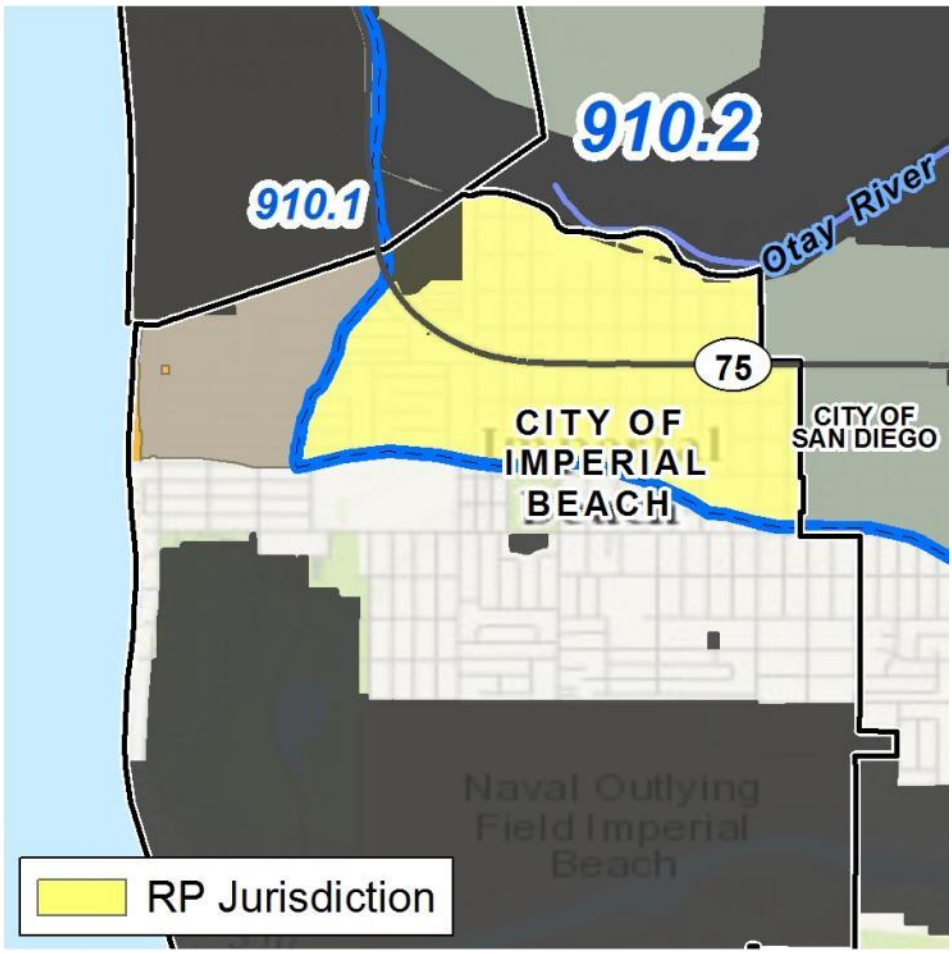

Figure 4-14
Imperial Beach's Jurisdiction Within the Otay River HA Physical Aesthetics Focused Priority Condition

Collaboration with other watershed stakeholders is integral to Imperial Beach's approach to water quality improvement. Imperial Beach is bordered to the north by the South San Diego Bay Unit of the National Wildlife Refuge that includes 2,620 acres of important intertidal mudflats, eel grass beds, salt marshes, and submerged tidelands. The City partners with the U.S. Fish and Wildlife Service and other agencies to protect and enhance wildlife habitat in and around South San Diego Bay, which also serves to provide water quality benefits to the upper watershed. There are several ongoing or planned restoration projects for the South San Diego Bay tidelands and Otay River flood plain that the City supports through WMA strategies.

In addition to supporting WMA strategies, the City implements a green streets program that incorporates LID and storm water treatment facilities where feasible into capital improvement program projects. Numerous projects are currently being implemented or under design in the Otay River HA section of the City and will provide addition storm water treatment and retention opportunities before discharging into San Diego Bay.

Imperial Beach also implements an effective source control program to maintain MS4 infrastructure, public roadways, and address discharges from existing development to reduce bacteria, trash, and other pollutants from MS4s to meet the physical aesthetics goals. Effective jurisdictional strategies for trash include street sweeping, annual MS4 O&M, and targeted cleanup activities. The City also maintains numerous trash capture devices throughout the City and is investigating the opportunity to expand the program. For the Otay River HA, the City is investigating the feasibility of a new trash capture system for the H-outfall drainage basin. The careful consideration of the appropriate trash capture devise for any location in the City is a necessity because the flat grade and proximity to sea level can result in the flooding of public and private property. The City plans to add additional structural treatment controls for trash where feasible.

4.8.2.3 Port of San Diego

The Focused Priority Condition in the Otay River HA (910.2) is physical aesthetics due to trash. The Port of San Diego's jurisdictional area in this HA is approximately 241 acres. The Port of San Diego has focused its efforts on trash because the ORWMP and public input identified trash as a priority issue in the Otay River HA. Although current use of the property within the Port of San Diego in this area is limited, the future Chula Vista Bayfront development will likely require the implementation of a variety of strategies to address trash from both development and existing development sources. Figure 4-15 shows the Port of San Diego's boundaries within the Otay Focused Priority Condition, where the strategies will be implemented.

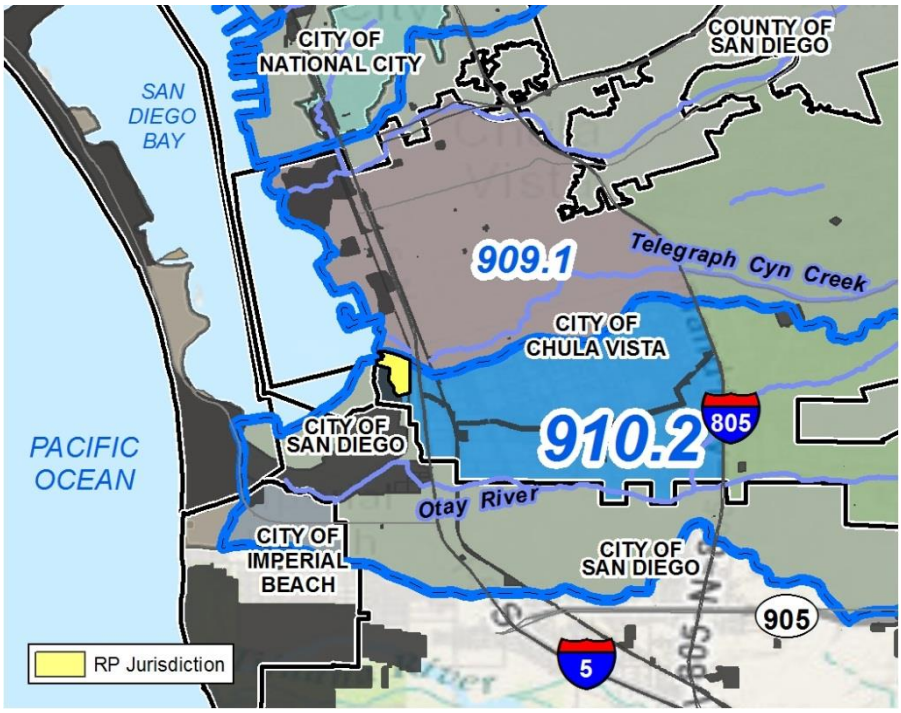

Figure 4-15
Port's Jurisdiction Within the Otay River HA Physical Aesthetics Focused Priority Condition

Facilities or land uses that may be potential sources of trash in this area of the Port's boundaries include one commercial facility and the site of the former South Bay Power Plant. In Table 3-13, high ranking potential sources of trash were listed as controllable and not controllable to assist the RPs in preparing and prioritizing their jurisdictional and sub-watershed strategies. For the Port of San Diego, the sources are all considered in the jurisdictional strategies to varying degrees based on BPJ. The inventory provides a good representation and highlights the focus of the Port's strategies:

- General retail/commercial areas

Also, Table 3-14 provides a list of medium ranking sources to consider of which the Port will be addressing, as appropriate:

- General industrial areas
- Homeless encampments (unknown, variable, transient)
- Illegal dumping
- Roads and parking lots

Based on knowledge of potential sources of trash in the Port's jurisdiction, the Port's strategies in this HA will also address development, construction, and sources considered to be low priority in Table 3-12 and 3-13, such as municipal facilities and parks. The strategies identified by the Port focus on reducing the amount of trash, adding structural controls where feasible, improving water quality, and increasing public awareness through education and outreach. The Port will continue to implement its core JRMP program, is updating its program, and has identified new strategies to further address trash with respect to its MS4. As presented in Table I.11.1 in Appendix I, the types of strategies include jurisdictional program type of activities (i.e., permit-required administrative type JRMP updates, permit-required JRMP implementation efforts, and potential enhancements to the Port's JRMP program), as well as optional strategies.

To effectively target potential problem areas, address the potential sources identified above, and prioritize efforts to address trash, the Port will use the same approach as in the Sweetwater River HA and will evaluate available past JRMP activities (such as dry weather monitoring, inspections, street sweeping, and MS4 maintenance), cleanup events, and other data sources relevant to this area. This effort will allow the Port to identify whether high-volume trash-generating areas are present in this area within the Port's boundaries and be able to locate where implementation of trash BMP retrofits may be feasible. The Port will then be able to prioritize areas and have a targeted implementation approach of strategies ranging from source control activities to partial and full capture trash BMPs.

Municipal Permit-required JRMP implementation efforts include activities that effectively reduce trash and, to a lesser extent, bacteria. The JRMP activities relevant to trash include, but are not limited to, MS4 infrastructure cleaning, street sweeping, and

commercial facility inspections. The Port will continue to inspect and remove trash and other pollutants from publicly maintained facilities such as MS4 infrastructure and roadways. The Port will also assess the feasibility of installing trash capture devices (structural BMPs) to address industrial, commercial, and municipal land uses within the high-volume trash-generating areas.

Source control strategies will include education and outreach, as well as an internal assessment of trash and waste diversion measures (i.e., strategies to reduce the amount of waste going to local landfills or contributing to littering) currently in place to identify structural or source control improvements for high volume trash generating areas. In addition to reducing trash, implementing these strategies will also address bacteria and other water quality pollutants (e.g., sediment and metals), and will protect wildlife from harmful debris. A summary of strategies is presented in Table 4-28.

Table 4-28
RP's Strategies Identified for Meeting Interim and Final Goals
Physical Aesthetics in Otay River HA (910.2)

Strategy	Jurisdiction			Sources of Trash Addressed By Strategy		
	Chula Vista (West of I–805)	Imperial Beach	Port of San Diego	Chula Vista	Imperial Beach	Port of San Diego
Jurisdictional Strategies [JRMP (E.2-E.7) Strategies (E.3.b.(1)(a))]						
Development Planning	CV-4, CV-5, CV-6, CV-7, CV-8	IB-05, IB-06, IB-07	PO-1, PO-2, PO-3, PO-4, PO-5	Commercial, Industrial	Land Development, trash storage areas	General Retail/commercial Areas, General Industrial Areas, Roads and Parking Lots, Development
Construction Management	CV-9	IB-14, IB-15	PO-6	Construction	Construction activity	Construction, General retail/commercial Areas, General Industrial Areas, Illegal Dumping, Roads and Parking Lots
Existing Development – Commercial/Industrial Residential (Resident – Chula Vista and Imperial Beach)	CV-10, CV-11, CV-12, CV-13, CV-17	IB-17, IB-19, IB-20 IB-30, IB-32, IB-24, IB-34, IB-34b, IB-35, IB-37	PO-7	Commercial, Industrial, Residential, Illegal Dumping	Commercial areas, Streets, Residential	General Retail/commercial Areas, General Industrial Areas, Roads and Parking Lots

Table 4-28 (continued)
RP's Strategies Identified for Meeting Interim and Final Goals
Physical Aesthetics in Otay River HA (910.2)

Strategy	Jurisdiction			Sources of Trash Addressed By Strategy		
	Chula Vista (West of I–805)	Imperial Beach	Port of San Diego	Chula Vista	Imperial Beach	Port of San Diego
Existing Development – Municipal	CV-10, CV-11		PO-8 PO-9	Municipal facilities – parks, recreation centers		Roads and Parking Lots, Homeless Parks, Municipal Facilities
Existing Development – MS4 Infrastructure	CV-14, CV-15		PO-10	General Retail/commercial Areas, General Industrial Areas, Municipal, Roads and Parking Lots		General Retail/commercial Areas, General Industrial Areas, Municipal, Roads and Parking Lots.
Existing Development – Roads, Streets, and Parking Lots	CV-16		PO-11	Roads and Highways		General Retail/commercial Areas, General industrial areas, Roads and Parking Lots, Municipal facilities, Parks

Table 4-28 (continued)
RP's Strategies Identified for Meeting Interim and Final Goals
Physical Aesthetics in Otay River HA (910.2)

Strategy	Jurisdiction			Sources of Trash Addressed By Strategy		
	Chula Vista (West of I–805)	Imperial Beach	Port of San Diego	Chula Vista	Imperial Beach	Port of San Diego
Retrofit and Rehabilitation in Areas of Existing Development	CV-18, CV-19		PO-13	Variable		General Retail/commercial Areas, General industrial areas, Development, Municipal facilities, Parks
IDDE	CV-1, CV-2, CV-3, CV-13	IB-01, IB-04	PO-14	Commercial, Industrial, Illegal Dumping	MS4 outfalls	General Retail/commercial Areas, General industrial areas, Development, Illegal Discharges and Connections, Illegal Dumping
Enforcement Response Plan	CV-20, CV-21	IB-42	PO-15 PO-16	Commercial, Industrial, Illegal Dumping, Roads and Highways	Variable	Variable; Illegal discharges and connections

Table 4-28 (continued)
RP's Strategies Identified for Meeting Interim and Final Goals
Physical Aesthetics in Otay River HA (910.2)

Strategy	Jurisdiction			Sources of Trash Addressed By Strategy		
	Chula Vista (West of I–805)	Imperial Beach	Port of San Diego	Chula Vista	Imperial Beach	Port of San Diego
Public Education and Participation	CV-22, CV-23	IB-43, IB-44, IB-46, IB-47, IB-48	PO-17	Commercial, Industrial	Commercial areas, illegal dumping	General Retail/commercial Areas, General industrial areas, Development, Construction, Municipal facilities, Parks
Optional Jurisdictional Strategies [B.3.b(1)(b))]						
Retrofit Programs	CV-29, CV-30, CV-32	-	PO-44	Commercial, Industrial	-	General Retail/commercial Areas, General industrial areas, Municipal facilities, Parks
Incentive Programs	CV-29	IB-26, IB-62	PO-44	Commercial, Industrial, Illegal dumping	Illegal dumping	General Retail/commercial Areas, General industrial areas, Development
Require installation of shutoff irrigation sensors for MM/CIP Development Projects, where applicable	-	-	PO-19	-	-	Municipal facilities, Parks, Development, Construction

Table 4-28 (continued)
RP's Strategies Identified for Meeting Interim and Final Goals
Physical Aesthetics in Otay River HA (910.2)

Strategy	Jurisdiction			Sources of Trash Addressed By Strategy		
	Chula Vista (West of I–805)	Imperial Beach	Port of San Diego	Chula Vista	Imperial Beach	Port of San Diego
Develop BMP guidance document and train general services staff on proper BMP implementation during minor maintenance operations	-	-	PO-24 PO-25	-	-	Roads and Parking Lots, Municipal facilities, Parks
Neighborhood inspection program	-	IB-21	-	-	Commercial areas, streets	-
Green Streets Program	-	IB-13, IB-38, IB-65	-	-	Streets	-
Alley improvement BMPs	-	IB-53	-	-	Streets, illegal dumping	-
Bikeway Village redevelopment project	-	IB-58	-	-	Commercial area	-
Palm Ave (Hwy 75) Master Plan	-	IB-61	-	-	Streets	-
Implement full trash capture or equivalent for H-outfall drainage basin	-	IB-63	-	-	Commercial areas, streets	-
Enhanced commercial, industrial, and/or municipal inspections	CV-24	-	PO-21	Commercial, Industrial	-	General Retail/commercial Areas, General industrial areas, Municipal facilities, Parks

Table 4-28 (continued)
RP's Strategies Identified for Meeting Interim and Final Goals
Physical Aesthetics in Otay River HA (910.2)

Strategy	Jurisdiction			Sources of Trash Addressed By Strategy		
	Chula Vista (West of I–805)	Imperial Beach	Port of San Diego	Chula Vista	Imperial Beach	Port of San Diego
Replace/upgrade current street sweeping equipment to new, more efficient and effective options (e.g., vacuum sweeper)	-	-	PO-28	-	-	General Retail/commercial Areas, General industrial areas, Roads and Parking Lots, Municipal Facilities
Source reduction initiatives	CV-25	-	PO-20	Various	-	Development, Construction
Storm drain stenciling	CV-26	-	-	Various	-	-
Enhanced street sweeping	CV-28	-	-	Roads and Highways	-	-
Enhanced trash monitoring	CV-31	-	PO-26, PO-27, PO-30	Variable	-	General retail/commercial areas, General industrial areas, Roads and Parking Lots, Municipal Facilities, Parks
Install fence along southern parameter of Pond 20 and grates at stormdrain inlets	-	-	PO-41	-	-	Waste Disposal, Illegal Dumping, Homeless, Roads and Parking Lots

Table 4-28 (continued)
RP's Strategies Identified for Meeting Interim and Final Goals
Physical Aesthetics in Otay River HA (910.2)

Strategy	Jurisdiction			Sources of Trash Addressed By Strategy		
	Chula Vista (West of I–805)	Imperial Beach	Port of San Diego	Chula Vista	Imperial Beach	Port of San Diego
Installation of structural controls (partial/full capture trash BMPs), where feasible	CV-32	-	PO-45	Variable	-	General retail/commercial areas, General industrial areas, Homeless, Land Development, Municipal Facilities, Parks
Installation of trash skimmers in marinas	-	-	PO-48	-	-	General retail/commercial areas, Waste disposal
WMA Strategies [B.3.b(2)]						
San Diego Bay Watershed Education Initiatives	CV-38, CV-27, CV-40, CV-25e	IB-43b	PO-35, PO-36, PO-37	Illegal Dumping	Illegal Dumping	General retail/commercial areas, General industrial areas, Municipal Facilities, Parks, Illegal Dumping

Table 4-28 (continued)
RP's Strategies Identified for Meeting Interim and Final Goals
Physical Aesthetics in Otay River HA (910.2)

Strategy	Jurisdiction			Sources of Trash Addressed By Strategy		
	Chula Vista (West of I–805)	Imperial Beach	Port of San Diego	Chula Vista	Imperial Beach	Port of San Diego
Trash clean ups	CV-37	IB-25, IB-26	PO-35	Illegal Dumping	Illegal dumping, streets	General retail/commercial areas, Homeless, Parks, Waste disposal, Illegal Dumping
Baseline Trash Assessment Study	CV-33	-	PO-34	Variable	-	Variable
Regional efforts to address pollutants associated with homelessness	CV-36	IB-68	PO-37	Homeless Encampments, Illegal dumping	Homeless encampments, illegal dumping	Homeless Encampments, Waste disposal, Illegal Dumping
San Diego Bay Debris Study	CV-39b	IB-66	PO-39	Variable	Variable	Variable
Alternative compliance program	CV-35	IB-12	PO-42 PO-43	Variable	Variable	Land Development
San Diego Bay WMA restoration efforts	-	IB-54	PO-49, PO-50, PO-51	-	Variable	Land Development

4.9 Watershed Management Area Strategies

As described in Sections 4.1 through 4.8, each RP individually implement extensive water quality strategies to address the Highest Priority Conditions and Focused Priority Conditions in the San Diego Bay WMA. In addition, a number of strategies will be implemented collaboratively, either at a regional, watershed or multijurisdictional level. Collaboration potentially increases efficiency through streamlined resources and potentially increases effectiveness through a combined targeted implementation. Table 4-29 highlights key WMA optional strategies that will be implemented in the San Diego Bay, and identifying the RPs participating in each strategy.

More specific information on the WMA strategies listed in Table 4-29 and how the RPs will implement them will be in Appendix I. In addition to the strategies highlighted in Table 4-29, the RPs are also collaborating on other multi-jurisdictional strategies to be implemented on varying levels, such as sub-watershed or HA level. Each RP is participating in at least two San Diego Bay WMA strategies. Details for each WMA and multi-jurisdictional optional strategy are provided in Appendix I.

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Table 4-29
Watershed Management Area Strategies

Strategy	Jurisdiction									
	San Diego Regional Airport Authority	City of Chula Vista	City of San Diego	City of Coronado	County of San Diego	City of Imperial Beach	City of La Mesa	City of Lemon Grove	City of National City	Port of San Diego
Offsite Alternative Compliance Option (WMAA)	AA-26	CV-35	WMA-2	-	CoSD-Opt10	IB-12	LM-6	LG-39	-	PO-43
Implement an incentive program for BMP Retrofits	-	CV-29	CSD-15	CO-43, CO-44	CoSD-32, CoSD-Opt2	-	-	-	-	PO-44, PO-45
Implement Sustainable Landscapes Program to encourage landscape retrofits	-	CV-34	CSD-10	-	CoSD-Opt 1, WMA-1	IB-64	-	LG-19, LG-20	NC-26	-
Implement wetland restoration, habitat restoration, and public access improvements to support multiple benefits in the San Diego Bay WMA through public-private partnerships and partnerships with other state, federal, and local agencies	AA-24	-	CSD-27, CSD-47	-	CoSD-Opt11, CoSD-Opt 12, CoSD-Opt 13, WMA-2	IB-54	-	-	NC-32	PO-49, PO-50, PO-51
Cleanup events	-	CV-37	CSD-33	CO-27	CoSD-57	IB-26, IB-47c	LM-20	LG-31	NC-38	PO-35
Support regional effort to address trash and other water quality issues from homeless encampments	-	CV-36	CSD-37, CSD-41	CO-38	Co-SD-40	-	LM-27	LG-38	NC-38	PO-37
Collaborate with the Regional Board	*	*	WMA-2	CO-40, CO-41, CO-45	CoSD-62, CoSD-63	*	*	*	NC-13	*

Table 4-29 (continued)
Watershed Management Area Strategies

Strategy	Jurisdiction									
	San Diego Regional Airport Authority	City of Chula Vista	City of San Diego	City of Coronado	County of San Diego	City of Imperial Beach	City of La Mesa	City of Lemon Grove	City of National City	Port of San Diego
Reference Watershed Study	AA-27	CV-39a	CSD-39.1	CO-39	**	IB-67	LM-25	LG-37	**	PO-38
San Diego Bay Trash Study	-	CV-39b	-	-	-	IB-66	-	-	-	PO-39

Notes:
1. The strategies provided may be implemented as either jurisdictional strategies or as optional strategies, depending on the jurisdiction. Further information for each strategy is provided in the individual jurisdiction tables in Appendix I.
* Collaborating with the Regional Board is included as a part of several of the RP's JRMP strategies, such as inspections of industrial businesses and construction sites.
** The jurisdiction is participating in this study as a regional wide effort, but it was not included as a strategy.

5 Monitoring and Assessment

Provision D of the Municipal Permit requires that a Monitoring and Assessment Program be developed as part of the Water Quality Improvement Plan and implemented to assess impacts of MS4 discharges on receiving water conditions. Monitoring data comprises all information collected under the Monitoring and Assessment Program, and includes diverse sets of scientific and programmatic results. Examples include water quality data (e.g., chemistry, toxicity), trash assessments, bioassessments, hydromodification measurements, and sediment sampling. This section summarizes the Monitoring and Assessment Program; the complete program is attached as Appendix K.

Collection and assessment of monitoring data helps to guide future implementation of management actions by the RPs as part of the Water Quality Improvement Plan process. Monitoring during wet and dry weather is conducted to collect observational and analytical data. These data are used to help RPs determine whether receiving water conditions are improving, degrading, or staying the same.

The Monitoring and Assessment Program provides the vehicle for determination of whether intended outcomes are being realized or whether adaptations of RPs' programs are necessary to achieve the intended outcomes. RPs assess the data, in combination with their management actions, to determine what actions are improving receiving water conditions and where additional actions are necessary to improve conditions. The Municipal Permit supports this outcome-based approach, as implemented and adapted through the Water Quality Improvement Plan process.

5.1 Purpose of the Monitoring and Assessment Program

The Monitoring and Assessment Program incorporates requirements of Provision D of the Municipal Permit along with the specific monitoring and assessment requirements for applicable TMDLs listed in Attachment E of the Municipal Permit and specific monitoring for Focused Priority Conditions. The purpose of the Monitoring and Assessment Program is to monitor and assess the impact on the conditions of receiving waters caused by discharges from MS4s.

Based on the requirements of the Municipal Permit, the RPs in the San Diego Bay WMA have developed an integrated Monitoring and Assessment Program that:

(1) Measures the progress toward addressing the Highest Priority Conditions and Focused Priority Conditions;

(2) Assesses the progress toward achieving the Water Quality Improvement Plans numeric goals and schedules; and

(3) Evaluates each RP's overall efforts to implement the Water Quality Improvement Plan.

The Monitoring and Assessment Program for the San Diego Bay WMA includes three primary monitoring components:

(1) Receiving water and MS4 outfall monitoring per Municipal Permit Provision D;

(2) Highest and Focused Priority Condition monitoring; and

(3) Special studies and additional TMDL monitoring.

The Assessment Program includes an annual analysis of the monitoring data and an integrated analysis that combines all previously performed evaluations at the end of the Municipal Permit term. The program also reviews metrics collected through programmatic assessments and strategic implementation.

5.2 Monitoring and Assessment Program Schedule

Since adoption of the Municipal Permit in June, 2013, the RPs have implemented a regional transitional monitoring program. Per the Municipal Permit, the transitional monitoring program remains in place until Regional Board approval of the Final Water Quality Improvement Plan. When the Final Water Quality Improvement Plan is approved by the Regional Board, the RPs will implement the Monitoring and Assessment Program. The program will be implemented jurisdictionally, on a watershed-wide basis, and regionally, as applicable. Approval of the Final Water Quality Improvement Plan is anticipated in summer 2015. The transitional monitoring program is anticipated to continue until the end of the monitoring year (September 30, 2015). The RPs expect to implement the Monitoring and Assessment Program beginning October 1, 2015.

Annual monitoring assessments are to be included as part of the Water Quality Improvement Plan Annual Report. Six months prior to the end of the Municipal Permit term, the RPs are to submit a regional monitoring and assessment report in collaboration with other Copermittees in the San Diego Region. At the same time, the RPs also submit the Report of Waste Discharge, which includes an integrated assessment of both this Monitoring and Assessment Program and RPs respective JRMPs.

5.3 Monitoring Program Overview

Table 5-1 presents an overview of planned monitoring activities for the San Diego Bay WMA. The overview includes key monitoring elements, sampling types, monitoring locations, and monitoring frequency by program. Figure 5-1 presents an overview of the San Diego Bay WMA's various monitoring programs and station locations including the Long-Term Receiving Water Monitoring, the MS4 Outfall Monitoring, the Highest and Focused Priority Condition programs, and Additional Monitoring Programs.

Table 5-1
Summary of Monitoring Programs

Monitoring Program	Temporal Extent	Monitoring Elements[1]	Timeline (Fiscal Year)[2]
Receiving Water Monitoring			
Long-Term Receiving Water Monitoring	Wet and dry weather	Chemistry/FIB	2013-2014
		Toxicity	
		Trash assessment	
		Bioassessment	
		Hydromodification	
Regional Southern California Bight Monitoring	Dry weather	Chemistry	2013-2014
		Toxicity	
		Bioassessment	
Regional Stormwater Monitoring Coalition (SMC)	Dry weather	To be determined (bioassessment)	2013-TBD
Regional Hydromodification Monitoring Program	Wet weather	Rain gauge analysis	2013-2015 (TBD)
		Stream gauge analysis	
		Channel assessment	
		Flow	
		Sediment transport	
Sediment Quality	Dry weather	Chemistry	2013[4]-2018
		Toxicity	
		Bioassessment	
		Trash assessment	
Regional Harbor Monitoring Program (RHMP)	Dry weather	Chemistry	2013-2014
		Bioassessment	
		Trash assessment	

Notes:

AB411 = California Assembly Bill 411; BOD = biological oxygen demand; CRAM = California Rapid Assessment Method; FIB = fecal indicator bacteria; HMP = Hydromodification Monitoring Program; IC/ID = illicit connection and/or illicit discharge; RHMP = Regional Harbor Monitoring Program; SMC = Southern California Stormwater Monitoring Coalition; TBD = to be determined

* Dry weather metal monitoring in Chollas Creek has been completed as part of the Regional Monitoring Program.

1. Some monitoring elements may not be conducted under the entire temporal extent of the program. See Appendix K for details.
2. The TBD has been assigned if the program has not been developed or monitoring plans are not complete.
3. The AB411 program monitoring is conducted during the dry season by the County of San Diego Department of Environmental Health will be tracked and incorporated into bacteria-related receiving water assessments. Monitoring under AB411 is not required under Provision D of the Municipal Permit, but bacteria monitoring is required as part of the Bacteria TMDL (Municipal Permit Attachment E.6). AB411 monitoring may be used to augment RP monitoring and will be reviewed as part of the data assessment. RPs will be doing dry weather monitoring during wet weather season starting in FY 2016.
4. Completed under the Ambient Bay and Lagoon Monitoring (ABLM) Program, as part of Bight '13.
5. Airport monitoring for metals will be conducted as part of the Industrial General Permit monitoring. Additional constituents are monitored under that program.
6. Monitoring is paired. Receiving Water and MS4 Outfall will be monitored the same day.

Table 5-1 (continued)
Summary of Monitoring Programs

Monitoring Program	Temporal Extent	Monitoring Elements[1]	Timeline (Fiscal Year)[2]
MS4 Monitoring			
MS4 Field Screening	Dry weather	Flow	2013-2018
		Trash	
		IC/ID	
		Condition	
MS4 Outfall Monitoring	Wet and dry weather	Chemistry/FIB	2013-2018
		Visual observations	
		In-situ measurements	
Highest Priority Condition Monitoring			
Chollas Creek Metals TMDL	Wet and dry weather*	Chemistry/FIB	2013-2018
Chollas Creek Bacteria TMDL	Wet and dry weather	FIB	2013-2018
Focused Priority Condition Monitoring			
Airport Metals[5]	Wet weather	Chemistry (metals)	2013-2018
Riparian Area Monitoring (Paradise Creek)	Dry weather	Bioassessment (CRAM), Plant communities	2014 (TBD)-2018
Physical Aesthetics (Sweetwater and Otay)[6]	Wet weather (post-storm) and dry weather	Trash assessments	2016–2018
Swimmable Waters—Beaches (Otay)[3]	Wet weather	FIB	2016–2018
	Dry weather		1999-2018
Additional TMDL Monitoring			
Shelter Island Yacht Basin Copper TMDL—Receiving Water	See Regional Board Investigative Order No. No. R9-2011-0036.		
Shelter Island Yacht basin Copper TMDL—MS4 Outfall	Wet and dry weather	Chemistry (dissolved copper)	2013-2018
Shelter Island Shoreline Park Bacteria TMDL	Wet and dry weather	FIB	2013-2018

Notes:
AB411 = California Assembly Bill 411; BOD = biological oxygen demand; CRAM = California Rapid Assessment Method; FIB = fecal indicator bacteria; HMP = Hydromodification Monitoring Program; IC/ID = illicit connection and/or illicit discharge; RHMP = Regional Harbor Monitoring Program; SMC = Southern California Stormwater Monitoring Coalition; TBD = to be determined

* Dry weather metal monitoring in Chollas Creek has been completed as part of the Regional Monitoring Program.

1. Some monitoring elements may not be conducted under the entire temporal extent of the program. See Appendix K for details.
2. The TBD has been assigned if the program has not been developed or monitoring plans are not complete.
3. The AB411 program monitoring is conducted during the dry season by the County of San Diego Department of Environmental Health will be tracked and incorporated into bacteria-related receiving water assessments. Monitoring under AB411 is not required under Provision D of the Municipal Permit, but bacteria monitoring is required as part of the Bacteria TMDL (Municipal Permit Attachment E.6). AB411 monitoring may be used to augment RP monitoring and will be reviewed as part of the data assessment. RPs will be doing dry weather monitoring during wet weather season starting in FY 2016.
4. Completed under the Ambient Bay and Lagoon Monitoring (ABLM) Program, as part of Bight '13.
5. Airport monitoring for metals will be conducted as part of the Industrial General Permit monitoring. Additional constituents are monitored under that program.
6. Monitoring is paired. Receiving Water and MS4 Outfall will be monitored the same day.

Table 5-1 (continued)
Summary of Monitoring Programs

Monitoring Program	Temporal Extent	Monitoring Elements[1]	Timeline (Fiscal Year)[2]
Special Studies and AB411 Monitoring			
San Diego Regional Reference Streams and Beaches	Wet and Dry Weather	Chemistry/FIB	2013-2016 (TBD)
		Flow	
		Bioassessment	
San Diego Bay Debris Study	Dry Weather	Trash Assessment	TBD
		Physical Habitat	
Pueblo HU Refuse Assessment Program	Dry Weather	Trash Assessment	2013-2018
Chollas Jurisdictional Boundary Study	Wet Weather	Chemistry	2013-2015 (TBD)
Regional Beach Water Quality (AB411)[3]	Dry Weather	FIB	1999-2018
Riparian Area Selenium Study	Wet and Dry Weather	Chemistry (selenium)	2013-2015 (TBD)

Notes:

AB411 = California Assembly Bill 411; BOD = biological oxygen demand; CRAM = California Rapid Assessment Method; FIB = fecal indicator bacteria; HMP = Hydromodification Monitoring Program; IC/ID = illicit connection and/or illicit discharge; RHMP = Regional Harbor Monitoring Program; SMC = Southern California Stormwater Monitoring Coalition; TBD = to be determined

* Dry weather metals monitoring in Chollas Creek has been completed as part of the Regional Monitoring Program.

1. Some monitoring elements may not be conducted under the entire temporal extent of the program. See Appendix K for details.
2. The TBD has been assigned if the program has not been developed or monitoring plans are not complete.
3. The AB411 program monitoring is conducted during the dry season by the County of San Diego Department of Environmental Health will be tracked and incorporated into bacteria-related receiving water assessments. Monitoring under AB411 is not required under Provision D of the Municipal Permit, but bacteria monitoring is required as part of the Bacteria TMDL (Municipal Permit Attachment E.6). AB411 monitoring may be used to augment RP monitoring and will be reviewed as part of the data assessment. RPs will be doing dry weather monitoring during wet weather season starting in FY 2016.
4. Completed under the Ambient Bay and Lagoon Monitoring (ABLM) Program, as part of Bight '13.
5. Airport monitoring for metals will be conducted as part of the Industrial General Permit monitoring. Additional constituents are monitored under that program.
6. Monitoring is paired. Receiving Water and MS4 Outfall will be monitored the same day.

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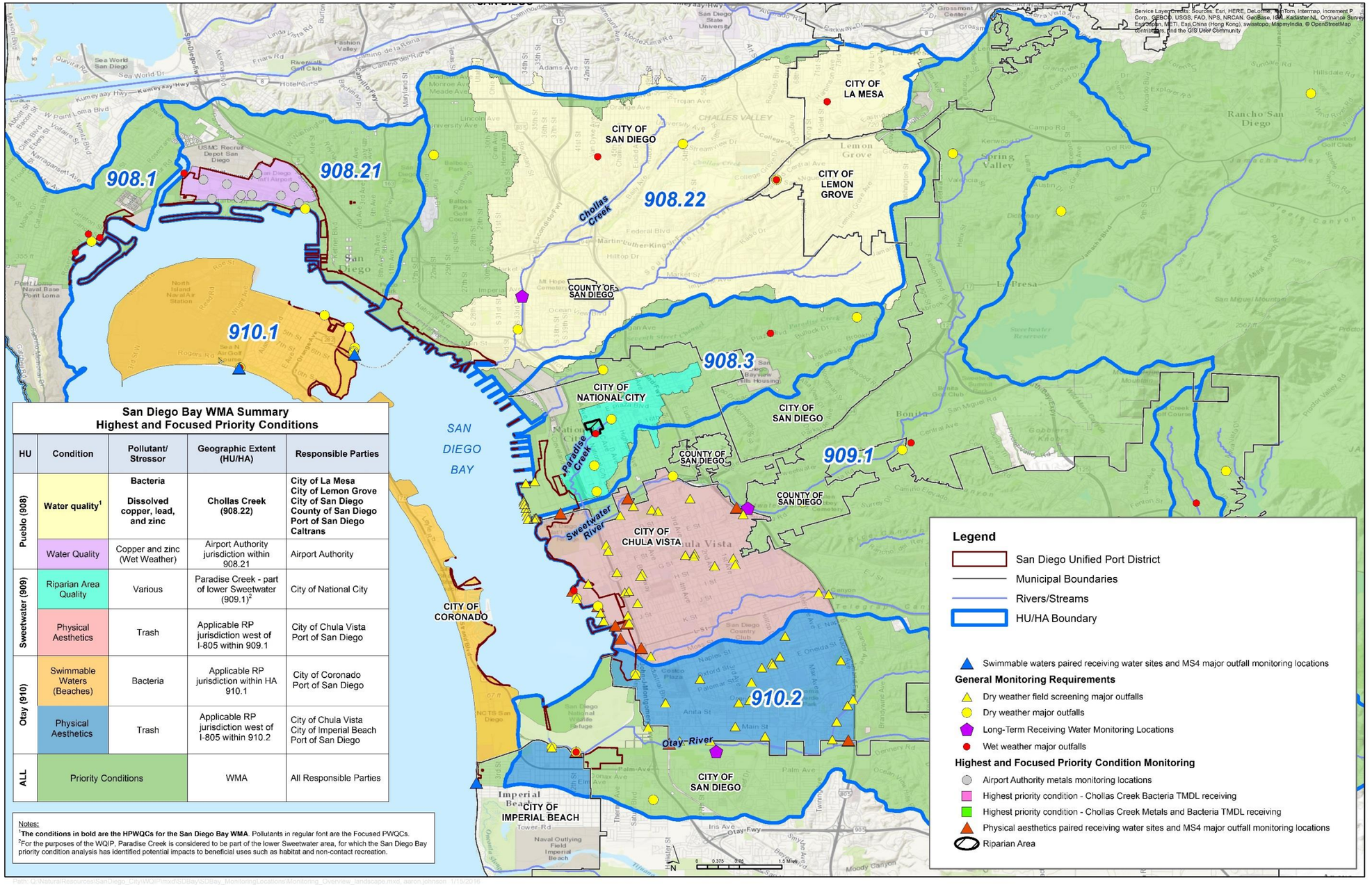

San Diego Bay WMA Summary
Highest and Focused Priority Conditions

HU	Condition	Pollutant/ Stressor	Geographic Extent (HU/HA)	Responsible Parties
Pueblo (908)	**Water quality[1]**	**Bacteria** **Dissolved copper, lead, and zinc**	**Chollas Creek (908.22)**	**City of La Mesa** **City of Lemon Grove** **City of San Diego** **County of San Diego** **Port of San Diego** **Caltrans**
	Water Quality	Copper and zinc (Wet Weather)	Airport Authority jurisdiction within 908.21	Airport Authority
Sweetwater (909)	Riparian Area Quality	Various	Paradise Creek - part of lower Sweetwater (909.1)[2]	City of National City
	Physical Aesthetics	Trash	Applicable RP jurisdiction west of I-805 within 909.1	City of Chula Vista Port of San Diego
Otay (910)	Swimmable Waters (Beaches)	Bacteria	Applicable RP jurisdiction within HA 910.1	City of Coronado Port of San Diego
	Physical Aesthetics	Trash	Applicable RP jurisdiction west of I-805 within 910.2	City of Chula Vista City of Imperial Beach Port of San Diego
ALL	Priority Conditions		WMA	All Responsible Parties

Notes:
[1]**The conditions in bold are the HPWQCs for the San Diego Bay WMA**. Pollutants in regular font are the Focused PWQCs.
[2]For the purposes of the WQIP, Paradise Creek is considered to be part of the lower Sweetwater area, for which the San Diego Bay priority condition analysis has identified potential impacts to beneficial uses such as habitat and non-contact recreation.

Figure 5-1
Summary of Monitoring Locations

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5.4 Assessment Summary

The assessment portion of the Monitoring and Assessment Program evaluates the data collected under the monitoring programs summarized in Section 5.3, as well as the information collected as part of the JRMP. The data collected from these programs are used to assess the progress toward achieving the Water Quality Improvement Plan numeric goals and schedules and to measure the progress toward addressing the Highest and Focused Priority Conditions. Programmatic assessment includes:

- General permit-required assessment (assessment requirements prescribed in Provision D of the Municipal Permit);
- Highest and Focused Priority Condition assessment (analysis intended to inform programs and assess progress toward the goals outlined in the Water Quality Improvement Plan Second Interim Deliverable);
- Additional assessment (assessments toward achieving the waste load allocations (WLAs) outlined in applicable TMDLs, where the TMDL is not a Highest or Focused Priority Condition, and special studies assessments); and
- An integrated assessment (an assessment incorporating data collected from the assessments above, requirements as part of the JRMP program(s) under Provision E of the Municipal Permit, and additional regional assessment requirements required under Provision F of the Municipal Permit).

Figure 5-2 presents an overview of the general approach for assessment of monitoring data.

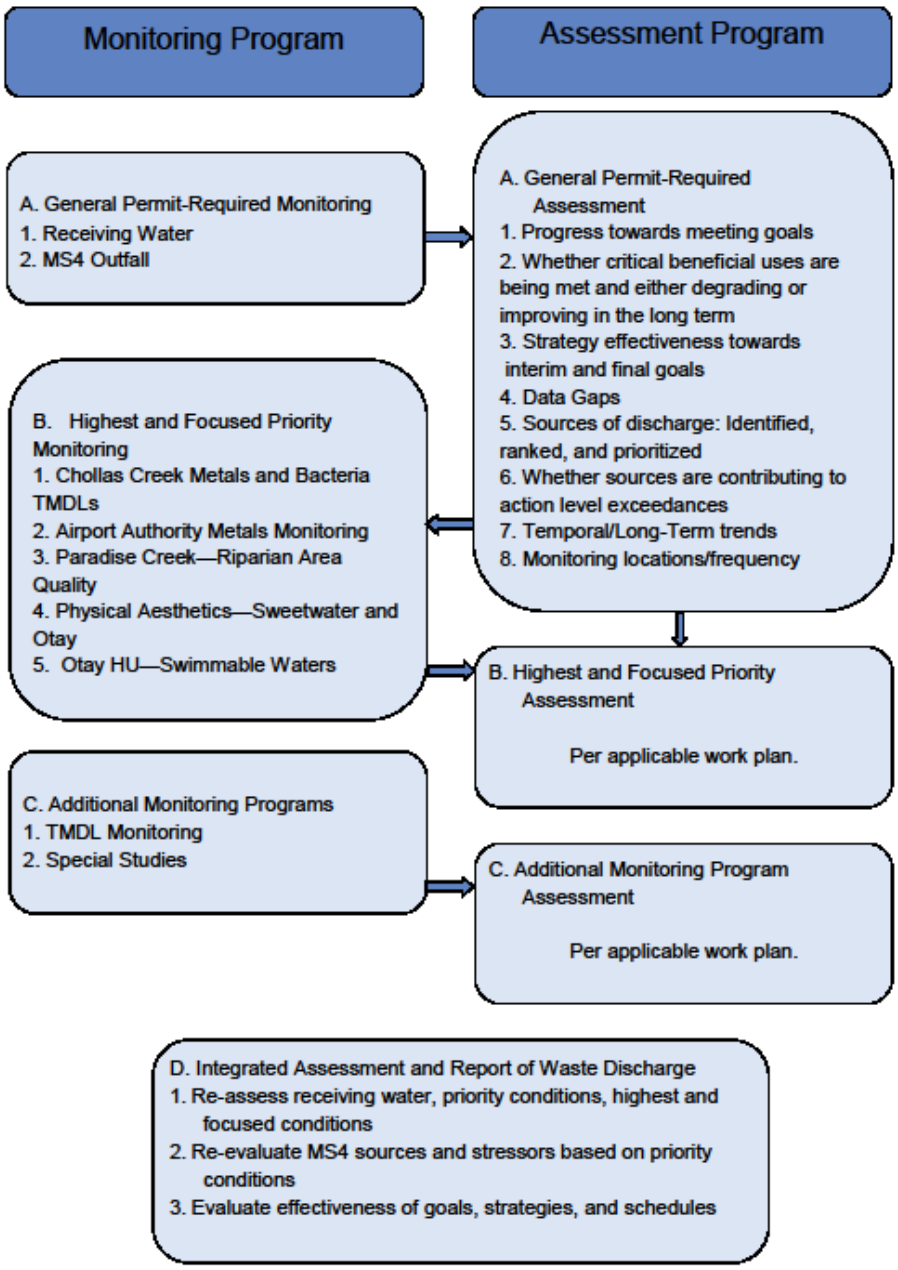

Figure 5-2
Monitoring and Assessment Approach

5.5 TMDL Assessment Summary

This section summarizes monitoring to assess progress towards achieving goals related to the Highest Priority Condition, which is water quality due to bacteria and metals in Chollas Creek, as described in Section 3.2. Goals are based on the multiple compliance pathways set forth for the Metals TMDL and for the Bacteria TMDL in Attachment E.6 of the Municipal Permit. Compliance with the TMDL may be demonstrated via one of the compliance pathways identified in the Municipal Permit. The proposed compliance dates for both the TMDL's interim goals and final goals are set outside of the permit cycle.

Table 5-2 presents the compliance options for the interim TMDL goals and the monitoring that may be used to track progress toward achieving these goals.

Each RP in the Chollas Creek subwatershed has established both wet and dry weather jurisdictional goals for bacteria and metals during the Municipal Permit term to demonstrate progress towards compliance with the TMDL requirements. Generally, RPs have identified near-term goals to address potential bacteria and metals sources and/or to reduce anthropogenic dry weather flow in storm drain outfalls. Data collection or monitoring elements that go beyond the prescribed Municipal Permit activities are tailored to measure progress towards meeting each goal. These elements, which are further detailed in the following subsections, may include visual surveys, inspections, physical sampling or measurements, and development of new outreach and source control programs related to bacteria and metals reduction.

Table 5-2
Monitoring Related to TMDL Interim and Final Goals[1]

Compliance Pathway		TMDL Goal	Monitoring Elements
1 **Or**	Receiving Water Conditions	Meet allowable exceedance frequency of the interim or final Receiving Water Limitations (RWLs) in the receiving water.	Bacteria data collected at compliance points as described in Section 5.1.2, TMDL Monitoring Program
			Metals TMDL
2 **Or**	MS4 Outfall Discharges	Meet allowable exceedance frequency in MS4 outfall discharges.	Bacteria and flow data collected at outfalls as described in Section 5.1.3, MS4 Outfall Monitoring Program
			Metals TMDL

Notes:
1. The County of San Diego proposed schedule to meet the TMDL interim goals in Attachment E.6 of the Municipal Permit is 2021 for dry weather and 2028 for wet weather. All other Copermittees propose to meet the TMDL interim goals by 2019 for dry weather and 2024 for wet weather.
2. Does not include allowable discharges as defined in Municipal Permit Provision A and Provision E.2.a.

Table 5-2 (continued)
Monitoring Related to Bacteria TMDL Interim and Final Goals[1]

Compliance Pathway		TMDL Goal	Monitoring Elements
3 **Or**	MS4 Outfall Discharges	Pollutant load reductions for discharges from the Responsible Parties' MS4 outfalls greater than or equal to the final load reductions	Bacteria and flow data collected at outfalls as described in as described in Section 5.1.3, MS4 Outfall Monitoring Program
4 **Or**	MS4 Outfall Discharges	No direct or indirect discharge from the Responsible Parties' MS4 outfalls to the receiving water[2]	Visual observation of flow from outfalls to receiving waters as described in Section 5.1.3, MS4 Outfall Monitoring Program
			Metals TMDL
5 **Or**	Receiving Water Conditions	Exceedances of the final receiving water limitations in the receiving waters due to loads from natural sources	Data from Sections 5.1.1, 5.1.2, 5.1.4, and Jurisdictional Runoff Management Programs.
6	Water Quality Improvement Plan	Implementation of Water Quality Improvement Plan and use of adaptive management (Interim Goal)	Data from Jurisdictional Runoff Management Programs
			Metals TMDL
		Or	
		Implementation of Water Quality Improvement Plan and use of adaptive management (Final Goal)	Data from monitoring and Jurisdictional Runoff Management Programs
			Metals TMDL

Notes:
1. The County of San Diego proposed schedule to meet the TMDL interim goals in Attachment E.6 of the Municipal Permit is 2021 for dry weather and 2028 for wet weather. All other Copermittees propose to meet the TMDL interim goals by 2019 for dry weather and 2024 for wet weather.
2. Does not include allowable discharges as defined in Municipal Permit Provision A and Provision E.2.a.

6 Iterative Approach and Adaptive Management Process

The iterative approach that facilitates the adaptive management process for the San Diego Bay WMA is presented in this section. The iterative approach involves re-evaluating the water quality conditions and priorities, goals, and strategies. The adaptive management process details how the Water Quality Improvement Plan (including the Monitoring and Assessment Plan) may be revised when goals may need to be adjusted or new goals added, strategies need to be modified, or when goals for current priorities are met and new priorities may be added.

The adaptive management approach includes program planning, implementation, monitoring, and assessment, illustrated in Figure 6-1. The Monitoring and Assessment Program will collect data and information that feeds into the assessment process. The assessment processes evaluate the data and information from the monitoring programs to make status determinations on water quality conditions, goals, strategies and programs. Assessment includes a variety of calculations, comparisons, and determinations that may or may not support Water Quality Improvement Plan component adaptations.

Figure 6-1
Iterative Process to Inform Adaptive Management

Each iteration of the cycle is intended to apply what has been learned from data collected to inform program planning and implementation. The RPs will use the outcomes of the monitoring and assessment processes to determine whether Water Quality Improvement Plan components warrant adaptation.

Components may be dynamic during the initial cycles of implementation, assessment, and iteration. However, the intent of the iterative process is to improve program planning and implementation and provide a process RPs may use to modify the Priority Conditions to focus on as conditions are being addressed. Through plan modifications the Water Quality Improvement Plan components are expected to stabilize and allow programs to operate more effectively and efficiently to ultimately achieve beneficial use attainment.

The Municipal Permit describes various triggers that may require program adaptation, including exceedances of water quality standards in receiving waters, new information, Regional Board recommendations, and public participation. The results of effectiveness assessments of JRMP programs and strategies may also trigger adaptations to the Water Quality Improvement Plan. Adaptations may occur for one or more of the following plan elements:

- Priority, Highest Priority, and Focused Priority Conditions;
- Water Quality Numeric Goals and Schedules;
- Water Quality Improvement Strategies and Schedules;
- Monitoring Program; and
- Assessment Program.

The Water Quality Improvement Plan components are interrelated; a balance amongst all elements must be maintained during the iterative process. When changes occur within one of the elements, it necessitates changes in other elements. For example, adaptations in strategies may require modifications to the data collection (monitoring) for the strategies and also how the collected data is assessed.

Section F.2.c of the Municipal Permit describes the process the RPs must follow when updating the Water Quality Improvement Plan. Accordingly, the RPs will follow the following steps for implementing changes to the plan:

(1) The RPs will convene the Consultation Panel for a public meeting at least annually as needed to present proposed changes and solicit input from the public.

(2) After consideration of pubic and Consultation Panel feedback, the RPs will propose changes to the plan, including supporting rationale, in the Water Quality Improvement Plan Annual Reports or Report of Waste Discharge.

(3) The RPs will implement the changes and post a revised Water Quality Improvement Plan to the Regional Clearinghouse unless notified in writing by the San Diego Water Board Executive Officer within 90 days of submittal of the proposed changes.

6.1 Re-evaluation of Priority Water Quality Conditions

The RPs will re-evaluate water quality conditions on a regular basis to determine potential changes to the Priority Water Quality Conditions based on available data and information. Any proposed changes to the plan will be either reported in a Water Quality Improvement Plan Annual Report or in the Report of Waste Discharge (ROWD), due to the Regional Board no later than December 2017. In the absence of such findings, the RPs maintain that the existing Priority Conditions, Highest Priority Conditions, and Focused Priority Conditions should remain the focus of the Water Quality Improvement Plan and JRMP implementation.

Examples of Prompts for Adaptation of Water Quality Conditions (Focused Priority Conditions and Highest Priority Conditions)

- Numeric goals have been attained
- Beneficial use(s) in receiving waters are attained
- Water quality monitoring data show that the MS4 is not causing or contributing to water quality conditions in receiving waters
- Regulatory conditions change: new or developing TMDLs, new policies (e.g., trash)

Re-evaluation of the water quality conditions will consider the best available data and information as identified in Figure 2-1, Priority Condition and Highest Priority Condition Selection Process in Section 2 of this Water Quality Improvement Plan. In addition to the data and information collected and evaluated in the initial Water Quality Improvement Plan development process, the RPs will, at a minimum, consider:

- Whether water quality improvement outcomes were achieved in MS4 discharges and/or receiving waters;
- Data, information, and recommendations provided by the public;
- Water quality monitoring collected after initial Water Quality Improvement Plan development, including transitional monitoring data collected in 2013 and 2014;
- Special studies results related to water quality conditions or MS4 sources of pollutants and/or stressors;
- New and developing regulations related to water quality conditions, e.g., TMDLs and policies;
- Revised 303(d) Listings;
- Basin plan amendments related to water quality conditions; and
- Regional Board recommendations.

Based on the outcomes of the re-evaluation process, the RPs will determine whether adaptations to the Priority Water Quality Conditions are justified. Changes to the Priority Conditions, Highest Priority Conditions, and Focused Priority Conditions will be made if new conditions are identified or conversely, if assessments identify that conditions are being addressed effectively and the data supports removal of conditions from the current listings.

6.2 Adaption of Goals and Schedules

Examples of Outcomes from Re-Evaluating Water Quality Conditions

- Changing Priority Conditions
- Changing Highest and Focused Priority Conditions
- Changes in Priority Areas within the WMA

Interim and final numeric goals and the associated schedules may be modified. Assessment of the goals and compliance pathways is performed using data collected per the Monitoring and Assessment Program and JRMP, along with the schedules developed in conjunction with each goal. Achieving goals is accomplished through successful implementation of effective strategies and then appropriately monitoring and assessing the effects of the strategies. The integrated assessment processes described in the Monitoring and Assessment Program (Appendix K) will provide the necessary data to evaluate the progress toward achieving the interim and final numeric goals.

Depending on the results of the assessment, it may be appropriate to adjust either the numeric goals or the schedules associated with each goal, or both. The exception is where the interim or final numeric goals and schedules are based on approved TMDL compliance schedules. In this case, interim schedules may be modified. However, numeric targets (interim and final) and final schedules cannot be modified without changes to the TMDL.

At a minimum, a re-evaluation of goals and schedules will be performed and reported in the ROWD.

Re-evaluation of the goals and schedules will consider:

- Progress toward achieving interim and final goals;
- New and developing regulations related to the established goals;
- Water quality and conditions assessments;
- Changes to Priority Conditions, Highest Priority Conditions, or Focused Priority Conditions based on re-evaluations;
- Data, information, and recommendations provided by the public;
- Special studies results related to goals;

- Regional Board recommendations;
- Amount of resources applied in areas of associated established goals; and
- Effectiveness of strategies implemented in areas of associated established goals.

The established goals and schedules are based upon existing conditions. It is anticipated that the goals and schedules may be dynamic in the first few years of implementation as the RPs continue to collect effectiveness and efficiency data and information. However, through the iterative process, the goals and schedules are expected to stabilize, along with other components of the Water Quality Improvement Plan.

Using a combination of assessments, RPs will compare the anticipated (identified in goal schedules) and actual measured rates of progress to determine whether adjustments to the goals or schedules are warranted.

Examples of Outcomes from Adapting Goals and Schedule

- Changing timelines to achieve interim and final goals/targets
- Modifying goals/targets
- Changing locations of where goals/targets are focused

RPs may consider the following potential prompts for adaptations to the goals and schedules:

- When the level of effort expended (implemented strategies) does not correlate well with the rate of progress toward achieving interim and final goals; and
- When it is determined that the selected goals (i.e., interim goals) do not demonstrate progress towards meeting ultimate goals of eliminating MS4 non-storm water discharges, eliminating pollutants in MS4 storm water discharges, or restoring or protecting beneficial uses in downstream receiving waters.

6.3 Adaptation of Strategies and Schedules

Strategies and associated schedules are subject to adaptation through the iterative process. Modifying programs to implement the most effective and efficient strategies is conceptually easy to understand. When strategies are more efficient and effective, their application in larger geographic scales or greater frequencies is expected to yield measureable outcomes identified through the assessments. However, assessing strategies to determine adaptations can be challenging. In general, the greatest challenge is linking implementation of strategies to change in water quality conditions.

Evaluating strategies and schedules will consider many factors, including:

Factors for consideration when evaluating strategies and schedules	Progress toward achieving interim and final goals;
	Water quality and conditions assessments;
	Changes to Priority Conditions, Highest Priority Conditions, or Focused Priority Conditions based on re-evaluations;
	Data, information, and recommendations provided by the public;
	Special studies results related to strategies;
	Regional Board recommendations;
	Amount of resources applied in areas of associated established goals; and,
	New advances in science and technology, including watershed modeling and development of local or site-specific conditions.

Although the Municipal Permit identifies steps to be taken for re-evaluation of strategies (Provision D.4.d.(2)), the RPs will also look beyond those minimum required steps and evaluate the relative effectiveness and efficiency of multiple strategies. By comparing effectiveness and efficiencies of strategies, RPs will be better equipped to prioritize resource allocation among strategic options.

The process for adapting strategies and schedules will include a review of the monitoring data assessments, JRMP implementation and special studies results. Receiving water data may be used to evaluate the collective effectiveness of the Water Quality Improvement Plan strategies. This information provides a “big picture” assessment of the success of the strategies over the long term. MS4 outfall data and special studies results may provide information that is more directly linked to the implementation of individual strategies. Where appropriate, these assessments may include a comparison of the data with the non-storm water action levels (NALs) and storm water action levels (SALs) as required per Municipal Permit Provision C. These data provide the foundation for the MS4 outfall discharge assessments described in Section 5, which examine the results of RP IDDE Programs and MS4 Outfall Discharge Monitoring Programs.

The RPs will perform a comparative analysis where relative comparisons of strategies and methods of strategy implementation will be conducted to determine those that are effective and efficient to address specific water quality conditions. Where strategies can be linked to measurable or demonstrable reductions of non-storm water discharges or of pollutants in storm water, appropriate modifications will be made.

Modifications to strategies may include, but are not limited to:

- Removal or addition of strategies from the suite of strategies implemented; and
- Modifications to the methods of strategy implementation (e.g., methods for conducting inspections).

6.4 Adaptation of Monitoring and Assessment Program

As previously stated, the Water Quality Improvement Plan elements are interrelated: changes to one of the elements will impact the other elements. As part of the Report of Waste Discharge, the RPs consider modifications to the Monitoring and Assessment Program, consistent with the requirements in Municipal Permit Provision D.4.d.(3). During the Municipal Permit term, modifications must be consistent with the requirements of Provisions D.1, D.2, and D.3 (receiving water, MS4 outfall, and special study monitoring requirements, respectively), which limit the amount of adaptation that is possible. However, recommendations within the Report of Waste Discharge provide an opportunity to make more meaningful modifications to the Monitoring and Assessment Program.

At a minimum, a re-evaluation of the Monitoring and Assessment Program will be performed and discussed in the ROWD.

The RPs will modify the Monitoring and Assessment Program based upon the following considerations, at a minimum:

- Sufficiency of the existing monitoring program to generate required findings, in particular, the existence of data gaps that prevent completion of assessments;
- Sufficiency of existing monitoring program to adequately capture changes in water quality conditions or the established goal metrics; and
- Sufficiency of existing assessments to provide findings to provide rationale for adaptations or to justify maintaining plan elements.

The RPs will evaluate the Monitoring and Assessment Program by reviewing the data collected and the assessments performed. For each assessment identified in the Monitoring and Assessment Plan, the following will be determined:

(1) Is there adequate data to perform the assessment?
(2) Does the outcome of the assessment provide rationale for adaptations or to justify maintaining plan elements?

Based on the assessment of the Monitoring and Assessment Plan, RPs may elect to adapt monitoring elements (while maintaining consistency with Municipal Permit requirements) as well as modify the assessments.

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7 Conclusion

This Water Quality Improvement Plan is the culmination of two years of RP efforts since the adoption of the Municipal Permit in 2013. The goal of the Water Quality Improvement Plan is to further the Clean Water Act's objective to protect, preserve, enhance, and restore the water quality and designated beneficial uses of waters of the state by achieving the outcome of improved water quality in MS4 discharges and receiving waters.

Priority water quality conditions and their sources in discharges to the San Diego Bay were identified through public input and an evaluation of more than 20 years of research. For this plan, the RPs developed a methodology to further prioritize these conditions as Highest and Focused Priorities. These include water quality related to metals and bacteria in Chollas Creek, which is subject to TMDLs, riparian area quality, swimmable beaches, and physical aesthetics due to trash in two subwatersheds.

Numeric goals and associated schedules for achievement were established for each of the Highest and Focused Priority conditions. Strategies were identified to meet these goals, and preference was given to strategies that provide multiple benefits and will address water quality conditions that were not elevated to a Highest or Focused Priority. Thus, the strategies and jurisdictional programs in this Water Quality Improvement Plan are expected to improve the quality of MS4 discharges (or eliminate them altogether during dry weather) throughout the entire San Diego Bay WMA.

In order to measure progress toward achieving the goals, the RPs developed a Monitoring and Assessment Plan. The MAP details several different types of monitoring, including water quality evaluations of MS4 outfall discharges and receiving waters, trash assessments, bioassessments and habitat evaluations, and special studies that focus on a particular concern. The monitoring is primarily watershed-based, and is focused on water quality outcomes as opposed to an accounting of activities. The MAP describes the methods for assessing the monitoring data and evaluating progress towards achieving the established water quality goals.

Finally, the Water Quality Improvement Plan will be updated in the future according to an Iterative Approach and Adaptive Management process. As progress towards achieving goals is made, the water quality conditions in the San Diego Bay will be re-evaluated, and new priorities will be identified where appropriate. Where goals and schedules are not mandated by a TMDL, they may be adapted based on the success of implemented strategies and additional public input.

The Water Quality Improvement Plan is a new, watershed- and outcome-based framework for managing the quality and quantity of discharges to the San Diego Bay and receiving waters throughout the WMA within the limits of the RP's jurisdictions. This process also involves substantial public involvement. It is designed to be adapted based on actual progress toward improved water quality as well as regular input from the public.

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