San Diego Bay Watershed Urban Runoff Management Program Document

A Collaborative Effort of:

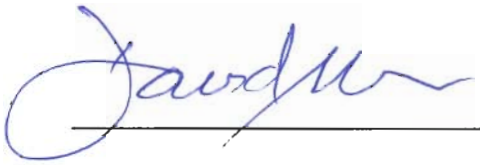
City of Chula Vista
City of Coronado
City of Imperial Beach
City of La Mesa
City of Lemon Grove
City of National City
City of San Diego
County of San Diego
Port of San Diego
San Diego County Regional Airport Authority

March 24, 2008

STATEMENT OF CERTIFICATION

San Diego Bay Watershed Urban Runoff Management Program Document

I certify under penalty of law that the San Diego Bay Watershed Urban Runoff Management Program Document for was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.



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Signed certification statements for the participating San Diego Bay Copermittees are located in Appendix A of this report.

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ACRONYMS AND ABBREVIATIONS

303(d)	Section of the Clean Water Act
ABLM	Ambient Bay and Lagoon Monitoring Program
BLTEA	Baseline Long-Term Effectiveness Assessment
BMP	Best Management Practices
BOD	Biologic Oxygen Demand
BWE	Baseline Watershed Evaluation
CBSM	Community Based Social Marketing
CDFG	California Department of Fish and Game
COC	Constituent of Concern
Copermittees	The 18 cities within San Diego County, the County of San Diego, the Port of San Diego, and the San Diego County Regional Airport Authority
CSDM	Coastal Storm Drain Monitoring Program
CWA	Clean Water Act
DFMP	Drainage Facilities Master Plan
DWM	Dry Weather Monitoring
DEH	County of San Diego Department of Environmental Health
DPR	Department of Parks and Recreation
EPA	Environmental Protection Agency
FY	Fiscal Year
GIS	Geographic Information Systems
HA	Hydrologic Area
HMP	Hydromodification Management Plan
HOA	Home Owners Association
HU	Hydrologic Unit
IBI	Index of Biological Integrity
ILACSD	I Love a Clean San Diego
IPM	Integrated Pest Management
JURMP	Jurisdictional Urban Runoff Management Program
LID	Low Impact Development
MBAS	Methylene Blue Active Substances
MLS	Mass Loading Station
MS4	Municipal Separate Storm Sewer System
MSCP	Multiple Species Conservation Plan
Municipal Permit	San Diego Regional Water Quality Control Board Order 2001-01
NPDES	National Pollution Discharge Elimination System
PCW	Project Clean Water
PSA	Public Service Announcement
RHMP	Regional Harbor Monitoring Program
RURMP	Regional Urban Runoff Management Plan
RWQCB	Regional Water Quality Control Board

SANDAG	San Diego Association of Governments
San Diego Bay Copermittees	The County of San Diego, the Port of San Diego, and the Cities of Chula Vista, Coronado, Imperial Beach, La Mesa, National City, San Diego, and SDCRAA
SDA	Special Drainage Area
SDCK	San Diego Coast Keeper
SDCRAA	San Diego County Regional Airport Authority
SIYB	Shelter Island Yacht Basin
SMC	Southern California Monitoring Coalition
SWAMP	Surface Water Ambient Monitoring Program
SWELL	Stewardship Watershed Education for Lifelong Leadership
SWRCB	State Water Resources Control Board
SWQMP	Storm Water Quality Master Plan
TDS	Total Dissolved Solids
TIE	Toxicity Identification Evaluation
TMDL	Total Maximum Daily Load
TSS	Total Suspended Solids
TTWQ	Threat to Water Quality
TWAS	Temporary Watershed Assessment Stations
USD	United States Dollar
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
WLA	Waste Load Allocation
WMA	Watershed Management Area
WQO	Water Quality Objective
WQP	Water Quality Priority
WURMP	Watershed Urban Runoff Management Program

Executive Summary

Since January 2002, the San Diego Bay Copermittees have been actively implementing a Watershed Urban Runoff Management Program (WURMP). The County of San Diego, Port of San Diego, San Diego County Regional Airport Authority, and the cities of Chula Vista, Coronado, Imperial Beach, La Mesa, Lemon Grove, National City, and San Diego (San Diego Bay Copermittees) are continuing their efforts to develop and implement watershed-based programs in the San Diego Bay Watershed Management Area (WMA). This document discusses the San Diego Bay Copermittees' efforts to meet the requirements of Section E of Municipal Stormwater Permit, Order Number R9-2007-0001, as well as reduce municipal separate storm sewer systems (MS4) discharge, and prevent urban runoff discharges from causing or contributing to a violation of water quality standards.

The Watershed Urban Runoff Management Program's primary goal is to cooperatively and through collaborative strategic planning decrease the sources and reduce the discharge of pollutants from the MS4 that have been identified as causing high priority water quality problems. The Program identifies five primary objectives to strive towards this goal: (1) develop and expand methods to assess and improve water quality within the watershed; (2) Implement activities to address the WMA high priority water quality problems; (3) integrate watershed principles into land use planning; (4) enhance public understanding of sources of water pollution within the watershed; and (5) encourage and enhance stakeholder involvement within the watershed. To help reach these goals and objectives, the San Diego Bay Watershed Workgroup will work to identify, implement, and assess appropriate watershed water quality, education, and public participation activities, as well as land use planning watershed-based mechanisms, to properly target high priority water quality problems and their sources.

Three major watersheds comprise the San Diego Bay WMA: Pueblo San Diego (908 HU), Sweetwater (909 HU), and Otay (910 HU). Each of the watersheds is further divided into three Hydrologic Areas (HAs). These watersheds vary greatly in size, land use, and population, and have different water quality issues as a result. Using data from several monitoring programs being conducted, the San Diego Bay WMA water quality assessment focuses on analyzing data from receiving water bodies under ambient conditions (a Level 6 outcome asssessment) and urban runoff discharges, which can provide information related to Load Reductions (Level 4 outcome) and changes in discharge quality (Level 5 outcome). The data obtained from these monitoring programs may indicate elevated pollutant levels, toxicity problems, and ecological impacts that may be influencing urban runoff contributions to the receiving water quality issues.

The San Diego Bay Copermittees utilized the Model Watershed Strategy to select activities appropriate for implementation within each HA. The information from the water quality assessments was used to identify the high priority water quality problems of the WMA, select watershed activities appropriate for each HA, and used in the subsequent effectiveness

assessments of those activities. In order to identify the high priority water quality problems in the San Diego Bay WMA, the Copermittees used both monitoring data and likely source information to conduct a Baseline Watershed Evaluation (BWE) for each HA. Those pollutant categories receiving an "A" BLTEA TTWQ rating coupled with a large number of likely or unknown sources were considered a high priority water quality problem for that HA. When pollutant categories received a "B" BLTEA TTWQ rating and also had likely sources present, the San Diego Bay Copermittees used their judgment to determine whether those pollutant categories should be considered high priority. High priority water quality problems for each HA in the San Diego Bay WMA were:

- 908.1: Bacteria, Gross Pollutants, Metals, Oil and Grease, and Pesticides
- 908.2: Bacteria, Metals, Sediment, Trash, Pesticides
- 908.3: Bacteria, Sediment, Trash
- 909.1: Bacteria
- 909.2: Pesticides
- 910.1: Bacteria and gross pollutants
- 910.2: Bacteria

The San Diego Bay Copermittees identified the jurisdictions representing each HA, their contributions to the HA's pollutant issues relative to their jurisdictional authority, and the management actions required for each pollutant category that is high priority water quality problems in their respective HA(s). This information has assisted the Copermittees in the effort to effectively and appropriately implement either load reducing, source identification, or additional monitoring types of activities to address the high priority water quality problems in each HA.

The San Diego Bay Copermittees utilized a Five-Year Strategic Plan to facilitate the coordinated selection of appropriate activities to address high priority water quality problems in each HA. The watershed activities selected for implementation will be pursuant to established schedules, with no less than two watershed water quality and two watershed education activities in active implementation in each Permit year. Four collaborative watershed-based activities were selected for enhanced coordination and standardization due to commonality in these jurisdictional activities. These include cleanup events, stormdrain litter control techniques, street sweeping enhancements, and municipal best management practices. These four collaborative activities overlapped in several HAs or were being implemented by multiple jurisdictions in the same fashion. Each jurisdiction retains control over implementing the activity and the manner of implementation will vary according to scale, location, and/or time. The San Diego Bay Copermittees will be able to achieve a watershed-level effectiveness assessment for these collaborative watershed activities.

The San Diego Bay Copermittees will conduct an effectiveness assessment for each watershed water quality and watershed education activity implemented and on the implementation of the

WURMP as a whole in terms of Outcome Levels 1-6. The Copermittees will detail the performance measures and review mechanism for each watershed activity in their particular jurisdiction as watershed activities may vary widely in the identified target outcomes applicable for each activity, and the pollutant(s), pollutant source(s) and HA addressed.

It is expected that the program objectives and management actions will be revised as the program evolves and matures. This will allow the Copermittees to respond to changing water quality conditions or adjust activities that have not performed as anticipated. The Copermittees are dedicated to evaluating water quality and pollutant trends which may occur in each HA, and assess whether management actions and/or activities are effective, or modifications and improvements are needed. Any changes or modifications to the San Diego WURMP will be described in WURMP Annual Reports. Therefore, over time, the WURMP and all Annual Reports will be considered one unified, living document.

Section 1: Introduction

Watersheds are "readily identifiable landscape units that integrate terrestrial, aquatic, geologic, and atmospheric processes" (Clements et al., 1996). Because water moves downstream in a watershed, any activity that affects water quality, quantity, or rate of movement at one location can affect the receiving waters at downstream locations and the rest of the watershed. Watershed-level planning is appropriate for water quality management as watersheds represent geographic units of hydrological processes and urban runoff does not recognize jurisdictional boundaries within a watershed. Watershed management practices can provide an integrated approach to protect water quality. A collaborative strategy among all municipalities within the watershed boundaries is critical to the success of the individual management efforts as well as the overall health of the watershed.

On January 24, 2007, the San Diego Regional Water Quality Control Board (RWQCB) adopted Order No. R9-2007-0001, NPDES No. CAS0108758, the third Municipal Stormwater Permit for San Diego County. This Order will be referred to throughout this document as the "Municipal Permit" or the "Permit". The Municipal Permit named 18 municipalities, the County of San Diego, the Port of San Diego, and the San Diego County Regional Airport Authority as Copermittees (collectively referred to throughout this document as "Regional Copermittees"). It requires the Regional Copermittees to collaboratively develop and implement a Watershed Urban Runoff Management Program (WURMP) for each of the ten San Diego Region Watershed Management Area (WMA). These WURMP programs must be designed to meet the requirements of Section E of the Permit, as well as reduce municipal separate storm sewer system (MS4) discharge, and prevent urban runoff discharges from causing or contributing to a violation of water quality standards.

1.1 Program Framework

The Copermittees within the San Diego Bay WMA (collectively referred to throughout this document as "San Diego Bay Copermittees") have been actively implementing a WURMP in the San Diego Bay WMA since January 2002. The San Diego Bay WURMP document presented herein incorporates many of the programs that were initially developed under the previous Permit (2001). These programs provided the initial structure for addressing urban runoff related problems on a watershed scale. As such, they have become the framework for this document. Where necessary, these programs have been updated, enhanced, or restructured to ensure that they fully comply with the new Municipal Permit requirements.

1.1.1 Goals and Objectives

The purpose of the WURMP is to cooperatively and through collaborative strategic planning decrease the sources and reduce the discharge of pollutants from the MS4 that have been identified as causing high priority water quality problems. The WURMP provides guidance and

coordination for water quality, education, land use planning activities, and program implementation to efficiently achieve the greatest protection of beneficial use of receiving water bodies. A key component of the WURMP is the development of a collective Watershed Strategy to guide the selection and implementation of appropriate watershed activities that adequately address the WMA's high priority water quality problems. Annual assessments of water quality through various monitoring programs during both wet and dry seasons provide results that are evaluated and placed within a historical context for trend analyses, which help determine whether or not watershed activities are working effectively to reduce and prevent water pollution.

The following objectives have been identified for the San Diego Bay WURMP:

- *Develop and/or expand methods to assess and improve water quality within the watershed*
- *Implement activities to address the WMA high priority water quality problems*
- *Integrate watershed principles into land use planning*
- *Enhance public understanding of sources of water pollution*
- *Encourage and develop stakeholder participation*

The San Diego Bay Copermittees will meet these objectives by working to identify, implement, and assess appropriate watershed water quality and education activities to properly target high priority water quality problems and their sources.

1.1.2 Watershed Collaboration

WURMP development and implementation is a collaborative effort by all of the San Diego Bay Copermittees, as the Municipal Permit lays emphasis on a watershed-based approach to urban runoff management. The Port of San Diego is the lead watershed Copermittee for the San Diego Bay WMA, serving as a liaison between the San Diego Bay Copermittees and RWQCB. The San Diego Bay Copermittees consist of the following ten jurisdictions:

- City of Chula Vista
- City of Coronado
- City of Imperial Beach
- City of La Mesa
- City of Lemon Grove
- City of National City
- City of San Diego
- County of San Diego
- Port of San Diego
- San Diego County Regional Airport Authority

The San Diego Bay Copermittees will meet on a quarterly basis (at a minimum) to discuss the status and implementation of the Watershed Strategy, potential watershed and outreach activities, water quality results, RWQCB updates, and items pertinent to watershed management. These meetings will take place at a site agreed upon by all members.

1.1.3 San Diego Bay WURMP Document

The San Diego Bay WURMP document represents the San Diego Bay Copermittees' collaborative efforts to develop a WURMP program to address watershed requirements and stormwater discharges from MS4s. This document was prepared in accordance with the Municipal Permit requirements in Section J. The format used herein is the standardized format for WURMPs developed by the Regional Copermittees, pursuant to Permit Section M.6. Specifically the document contains the following sections, the contents of which are summarized below.

Section 1 – Introduction. This section describes the purpose of the WURMP, identifies the San Diego Bay Copermittees, identifies the lead watershed Copermittee, discusses the overall collaborative process, and identifies how the Municipal Permit requirements are addressed in this document. The section also contains a general San Diego Bay WMA overview and map of the major watershed features.

Section 2 – Collective Watershed Strategy. This section describes both the regional and San Diego Bay-specific Collective Watershed Strategy, as mandated by Permit Section J.1.b.(4)(g). It includes Information on how the San Diego Bay Copermittees adapted the regional Model Watershed Strategy to assist with the identification of high priority water quality problems within each hydrologic area (HA) of the watershed, selecting and prioritizing activities, and filling existing data gaps. Finally, it details how the Watershed Strategy is being used to guide the selection and implementation of watershed water quality activities and watershed education activities.

Section 3 – Water Quality and Pollutant Source Assessment. This section will identify and describe the water quality data, reports, analyses, and other information that will be used to assess receiving water quality within the watershed, as well as explain how this information will be evaluated on an annual basis pursuant to Section I.2.b of the Permit. It will also discuss the methodology used to identify high priority water quality problems and likely pollutant sources within each HA of the San Diego Bay WMA.

Section 4 – Five-Year Strategic Plan. This section provides detail on how the Watershed Strategy was used to develop a five-year strategic plan to guide program implementation. This section also includes information on the watershed water quality, education, and public participation programs and activities that are proposed as part of the Five-Year Strategic Plan. Information on the activities that will be implemented during Year One and Year Two of the Permit is also contained in this section. Finally, this section includes the mechanisms

to be used to encourage collaborative, watershed-based, land-use planning among jurisdictional planning departments.

Section 5 – Program Effectiveness Assessment. This section discusses the approach that will be used to assess the effectiveness of watershed water quality and education activities, and the effectiveness of WURMP implementation as a whole. It should be noted that activity-specific discussions contained within this section will focus on the process used for assessment, while activity-specific assessment approaches will be described in individual Proposed Watershed Activity Summary Sheets and may vary widely from one activity to another. Where applicable, this section will also describe how Total Maximum Daily Load (TMDL) Best Management Practice (BMP) Implementation Plans will be assessed utilizing measurable targeted outcomes, assessment measures, and assessment methods.

Section 6 – Program Review and Modification. This section will describe the process for reviewing and modifying the San Diego Bay WURMP. The section will discuss how all changes to the WURMP (i.e., modified priorities, implementation schedule changes, map updates) will be described and justified in WURMP Annual Reports.

Section 7 – Conclusions and Recommendations. This section is required by the Permit and includes conclusions and recommendations as determined applicable by the San Diego Bay Copermittees.

This material is submitted pursuant to the Municipal Permit, and is subject to Attachment B Section 6 of the Municipal Permit concerning enforceability. In addition, the document includes material describing San Diego Bay Copermittees' plans to go beyond the requirements of the Municipal Permit.

1.2 San Diego Bay Watershed Description

The San Diego Bay WMA consists of three separate watersheds and encompasses a 415 square mile area that extends easterly 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 and reaches a maximum elevation of approximately 6,000 feet above sea level at the eastern boundary. The majority 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 west to the Pacific Ocean. The headwaters of the WMA begin in the unincorporated area of the County, and then transect all or portions of seven cities, namely San Diego, National City, Chula Vista, Imperial Beach, Coronado, Lemon Grove, and La Mesa. Table 1-1 provides data on the percentage of each jurisdiction within the WMA at the watershed and subwatershed level. The *Water Quality Control Plan for the San Diego Basin* (SDRWQCB, 1994) prepared by the RWQCB defines the San Diego Bay WMA as being comprised of three watersheds (or hydrological units), namely the Pueblo San Diego Watershed, the Sweetwater Watershed, and the Otay Watershed (Figure 1-1).

Table 1-1. San Diego Bay WMA Jurisdictional Breakdown (By Area)

Jurisdiction	Percentage of Jurisdictional Acreage per Hydrologic Unit			Percentage of Jurisdictional Acreage per San Diego Bay WMA
	Pueblo San Diego (35,941 ac.)	Sweetwater (148,040 ac.)	Otay (98,352 ac.)	
San Diego County Regional Airport Authority	1.29%			0.16%
Chula Vista		9.44%	17.71%	11.12%
Coronado			4.70%	1.64%
Imperial Beach			0.71%	0.25%
La Mesa	4.49%	0.77%		0.97%
Lemon Grove	4.58%	0.58%		0.89%
National City	6.93%	1.23%		1.53%
Port of San Diego	3.31%	0.47%	1.59%	1.22%
San Diego	79.07%	1.38%	5.77%	12.80%
Unincorporated	0.34%	86.12%	69.52%	69.42%

Source: SANDAG data included "Hydrologic Basins", "Watersheds", and "Cities" combined with the Port and Airport's Parcel Boundary.

San Diego Bay is the largest tidewater in San Diego County and has been extensively developed as a port. It covers 10,532 acres of water and 4,419 acres of tidelands. Only seventeen to eighteen percent (17 to 18%) of the original bay floor remains undisturbed by dredge or fill. The major watercourses feeding San Diego Bay include the Sweetwater River, the Otay River, Chollas Creek, Paleta Creek, Paradise Creek, and Switzer Creek. The majority of freshwater input to the Bay is from surface runoff from urban areas and intermittent flow from these rivers and creeks during rain events. It should also be noted that dams and extensive use of groundwater in the Sweetwater and Otay Rivers has reduced the input from these rivers to the Bay by seventy-six percent (76%). Additionally, there are over 200 storm drains that discharge into San Diego Bay. The current and forecasted population growth through 2030 within each subwatershed is displayed in Table 1-2.

Table 1-2. San Diego Bay Watershed Population

Watershed	2000 Census	Forecasted Population 2010	Forecasted Population 2020	Forecasted Population 2030
Pueblo San Diego	480,247	520,324	589,050	651,552
Sweetwater	303,768	343,578	370,489	402,953
Otay	124,271	204,508	247,064	267,583

Source: Developed by the County of San Diego.

The San Diego Bay WMA contains a diverse assemblage of natural communities. Pine forests and oak woodlands are found in the mountains that form the headwaters of the Sweetwater and

Otay Rivers. These forests are managed primarily for recreation and preservation, with campgrounds, off-road biking and hiking trails, and scenic overlooks. The Cleveland National Forest and Cuyamaca Rancho State Park are other public lands found in the watershed. Grassland meadows in these areas provide vegetation for wildlife, horses, and cattle. In the central part of the watershed, riparian vegetation containing willow, cottonwood, and sycamore trees provides habitat for the endangered least Bell's vireo. Hillsides along the river are covered with dense growths of chaparral vegetation and coastal sage scrub vegetation. Coastal sage scrub in this area provides habitat for one of the largest known populations of the threatened California gnatcatcher. In the western part of the watershed, the confluence of the Sweetwater River and the San Diego Bay forms a coastal salt marsh and brackish marsh. These marshes provide habitat for the light-footed clapper rail, the western snowy plover, Belding's savannah sparrow, and brown pelicans. Ninety percent (90%) of the original salt marshes and fifty percent (50%) of the original mudflats around San Diego Bay have been filled or dredged for development. The endangered California least tern and the threatened green sea turtle are just two of the many species that find suitable habitat in and around San Diego Bay itself.

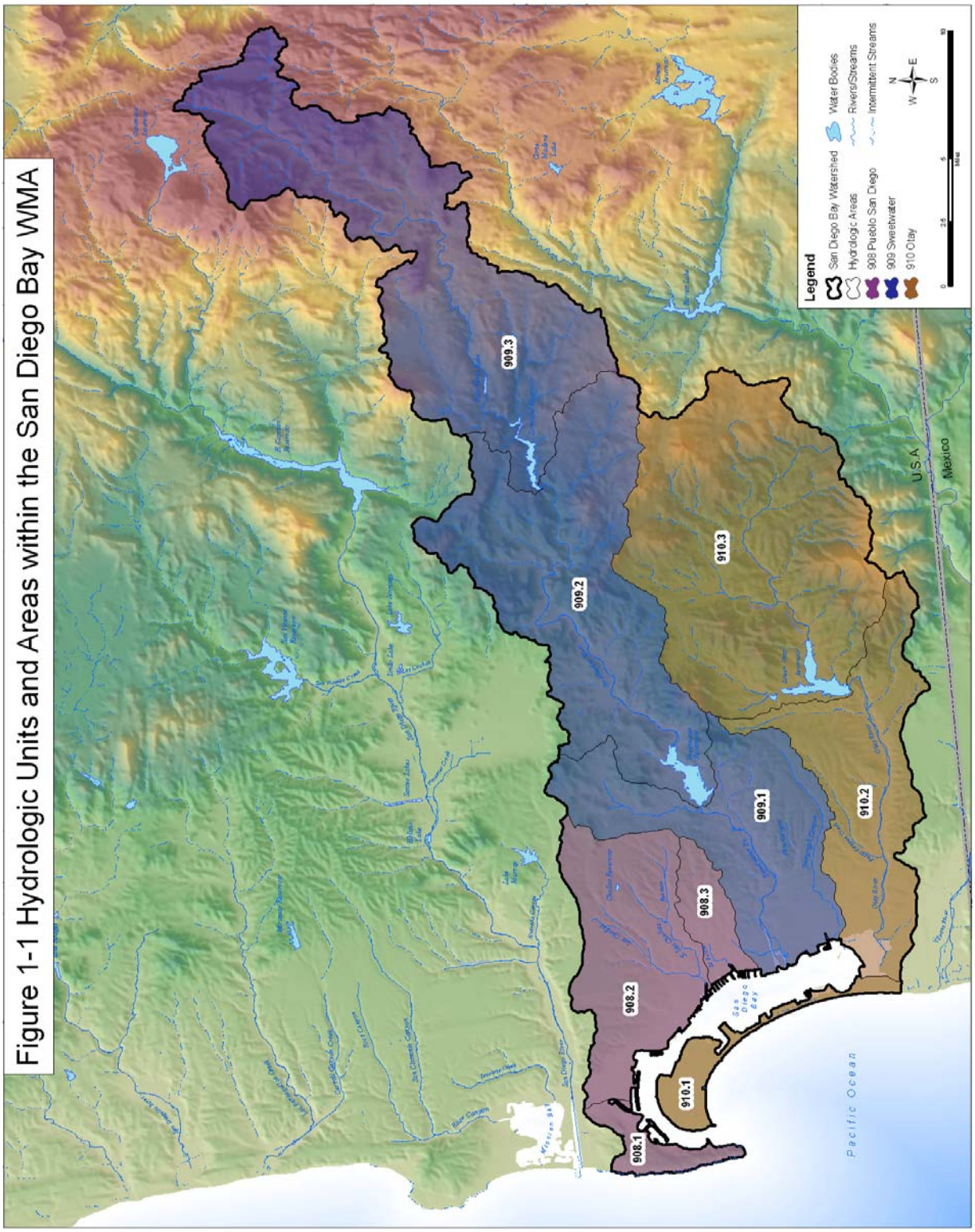

Figure 1-1 Hydrologic Units and Areas within the San Diego Bay WMA

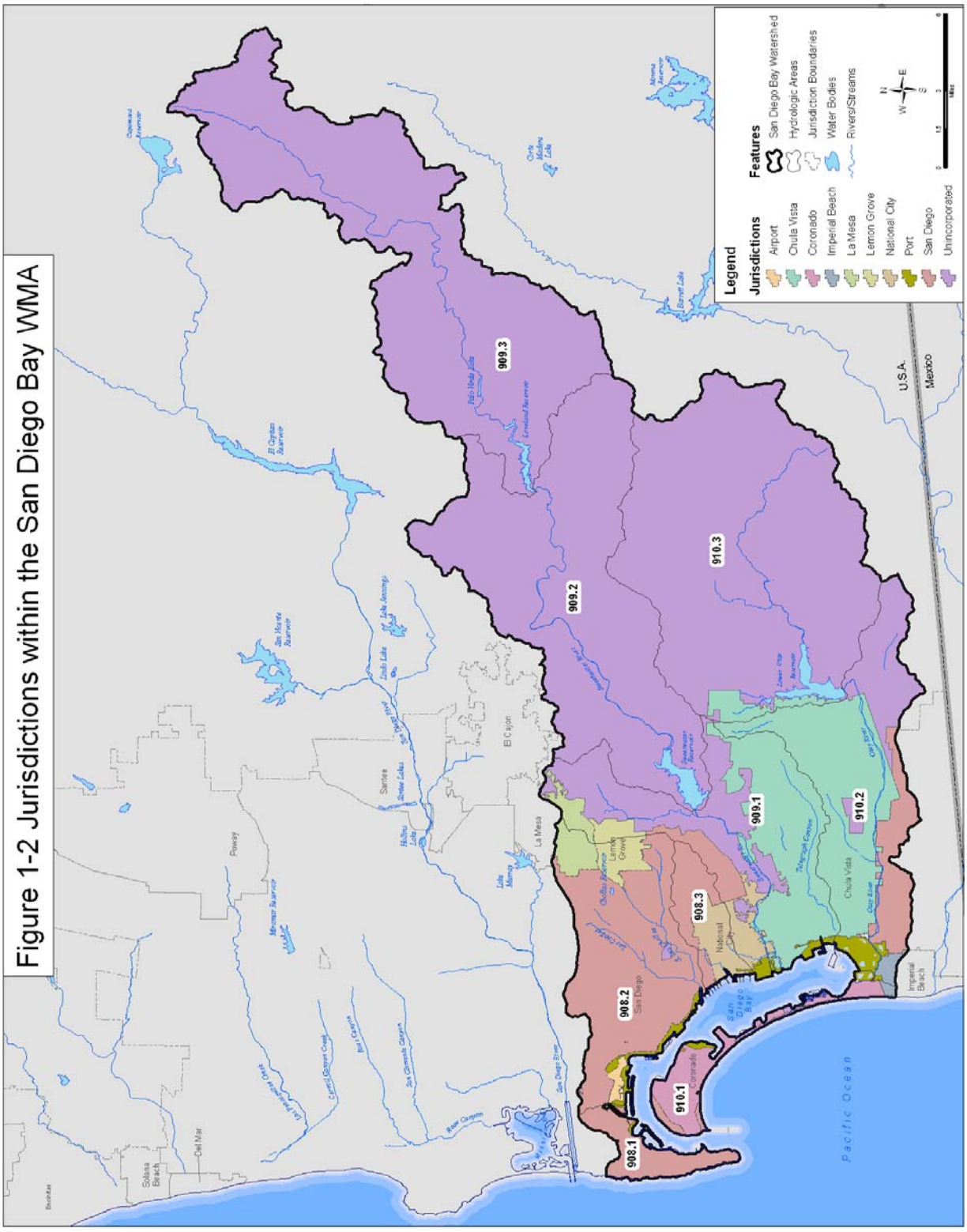

Figure 1-2 Jurisdictions within the San Diego Bay WMA

1.2.1 Pueblo San Diego Watershed

The Pueblo San Diego Watershed encompasses an area of approximately 60 square miles with no central stream system. San Diego River Watershed borders it to the north and the Sweetwater River Watershed borders it to the south (Figure 1-1). The major population center is the City of San Diego (Figure 1-2).

1.2.1.1 Pueblo San Diego Drainage (908)

The Basin Plan identifies the Pueblo San Diego Watershed as the smallest of the three San Diego Bay watersheds, covering approximately 36,000 acres. It is comprised of three HAs: Point Loma (908.1), San Diego Mesa (908.2), and National City (908.3). Major water features include Chollas Creek, Paleta Creek, and San Diego Bay. The majority of the water from the Pueblo San Diego Watershed drains to San Diego Bay, although a portion of the Point Loma HA drains directly to the Pacific Ocean.

1.2.1.2 Pueblo San Diego Land Use Inventory

Table 1-3 depicts the existing land use in the Pueblo San Diego Watershed at the HA level and is based on Year 2006 data from the San Diego Association of Governments (SANDAG). The dominant land uses within the HAs are as follows:

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.

According to Table 1-1, most of the Pueblo San Diego Watershed falls within the jurisdiction of the City of San Diego (79.1%). Other jurisdictions include within this watershed include: National City (6.9%), Lemon Grove (4.6%), La Mesa (4.5%), Port of San Diego (3.3%), the

Regional Airport Authority (1.3%), and the County of San Diego (0.3%). This watershed is the most developed and most densely populated watershed in the San Diego Bay WMA. The population in the Pueblo San Diego Watershed is expected to reach over 651,552 by the year 2030 (Table 1-2). Given the extent of existing development, there is little new development forecasted for the Pueblo San Diego Watershed over the next 15 years.

Table 1-3. Land Use Inventory for the Pueblo San Diego Watershed

HA	Land Use Category	Acreage	Percentage of Total Acreage
908.1	Commercial/Office	240.4	5.5%
	Industrial	7.6	0.2%
	Military	617.9	14.0%
	Open Space/Preserves	194.4	4.4%
	Parks	51.5	1.2%
	Public Facilities	200.1	4.5%
	Residential	1,400.4	31.8%
	Schools	154.8	3.5%
	Transportation	725.1	16.4%
	Under Construction	1.2	0.03%
	Undeveloped/Vacant	816.0	18.5%
	TOTAL	4,409.5	100%
908.2	Agriculture	14.8	0.1%
	Commercial/Office	1,963.1	7.6%
	Industrial	1,244.1	4.8%
	Military	429.9	1.7%
	Open Space/Preserves	1,504.0	5.8%
	Parks	574.2	2.2%
	Public Facilities	1,059.1	4.1%
	Residential	10,312.8	39.8%
	Schools	726.7	2.8%
	Transportation	7,289.9	28.2%
	Under Construction	68.2	0.3%
	Undeveloped/Vacant	703.5	2.7%
	TOTAL	25,890.3	100%
908.3	Commercial/Office	229.1	4.1%
	Industrial	143.3	2.5%
	Military	500.6	8.9%
	Open Space/Preserves	158.1	2.8%
	Parks	196.0	3.5%
	Public Facilities	115.1	2.0%
	Residential	2,592.1	46.1%
	Schools	258.5	4.6%
	Transportation	1,308.8	23.3%
	Under Construction	0.3	0.01%
	Undeveloped/Vacant	126.2	2.2%
	TOTAL	5,628.2	100%

Source: SANDAG Year 2006 Land Use data.

1.2.2 Sweetwater Watershed (909)

The Sweetwater Watershed encompasses approximately 230 square miles, with the Sweetwater River comprising the central drainage system. As shown in Figure 1-1, the Pueblo San Diego Watershed is located to the north of the Sweetwater Watershed and the Otay Watershed is located to the south. The most urbanized parts of the Sweetwater Watershed include portions of the City of Chula Vista, City of Lemon Grove, National City, and the unincorporated communities of Spring Valley and Rancho San Diego (Figure 1-2).

1.2.2.1 Sweetwater Watershed Drainage

The Basin Plan identifies the Sweetwater Watershed as the largest of the three San Diego Bay watersheds, encompassing over 148,000 acres. The watershed is comprised of three HAs: Lower Sweetwater (909.1), Middle Sweetwater (909.2), and Upper Sweetwater (909.3). Major water bodies within the Sweetwater Watershed include the Sweetwater River, Sweetwater Reservoir, Loveland Reservoir, and San Diego Bay, all of which support important wildlife habitat and provide public recreational opportunities.

1.2.2.2 Sweetwater Watershed Land Use Inventory

Table 1-4 shows the existing land use in the Sweetwater Watershed at the HA level based on Year 2006 data from SANDAG. The dominant land uses within the HAs are as follows:

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.

The majority of the Sweetwater Watershed lies within the County of San Diego's jurisdictional area (Table 1-1). Other jurisdictions within the subwatershed include the Port of San Diego and the cities of Chula Vista, La Mesa, Lemon Grove, National City, and San Diego. Approximately forty-one percent (41%) of the land within the Sweetwater Watershed is administered by state

and federal agencies, or is controlled by Indian tribes. The unincorporated communities of Jamul, Pine Valley, Descanso, and Alpine, the Cleveland National Forest, Cuyamaca Rancho State Park, and the Viejas Indian Reservation occupy much of the undeveloped land in the Sweetwater Watershed. Currently, the population of the Sweetwater Watershed is approximately 340,000, and is expected to grow to an estimated 403,000 people by the year 2030 (Table 1-2).

Table 1-4. Sweetwater Watershed Land Use Inventory

HA	Land-Use Category	Acreage	Percentage of Total Acreage
909.1	Agriculture	77.9	0.2%
	Commercial/Office	1,867.5	5.9%
	Industrial	837.3	2.6%
	Open Space/Preserves	4,072.5	12.8%
	Parks	994.2	3.1%
	Public Facilities	919.4	2.9%
	Residential	14,086.7	44.1%
	Schools	1,073.5	3.4%
	Transportation	5,829.9	18.3%
	Under Construction	90.8	0.3%
	Undeveloped/Vacant	2,069.7	6.5%
	TOTAL	31,919.5	100%
909.2	Agriculture	685.9	1.3%
	Commercial/Office	1,189.9	2.2%
	Industrial	441.0	0.8%
	Open Space/Preserves	13,215.5	24.7%
	Parks	216.5	0.4%
	Public Facilities	350.3	0.7%
	Residential	14,888.0	27.8%
	Schools	476.4	0.9%
	Transportation	1,788.6	3.3%
	Under Construction	29.8	0.1%
	Undeveloped/Vacant	20,206.3	37.8%
	TOTAL	53,488.3	100%
909.3	Agriculture	2,212.0	3.5%
	Commercial/Office	257.9	0.4%
	Industrial	7.8	0.01%
	Open Space/Preserves	19,959.7	31.9%
	Parks	11.7	0.02%
	Public Facilities	147.0	0.2%
	Residential	7,317.4	11.7%
	Schools	5.3	0.01%
	Transportation	1,207.1	1.9%
	Under Construction	19.2	0.03%
	Undeveloped/Vacant	31,443.9	50.2%
	TOTAL	62,589.0	100%

Source: SANDAG Year 2006 Land Use data.

1.2.3 Otay Watershed (910)

The Otay Watershed encompasses approximately 180 square miles, with the Otay River comprising the central drainage system (Figure 1-1). The Sweetwater Watershed is located to the north and the Tijuana River Watershed is located to the south. The major population centers for the Otay Watershed include the City of San Diego, City of Imperial Beach, and the City Chula Vista (Figure 1-2).

1.2.3.1 Otay Watershed Drainage

The *Basin Plan* identifies the Otay Watershed as the second largest of the three San Diego Bay watersheds. It is comprised of three HAs: Coronado (910.1), Otay (910.2), and Dulzura (910.3). The Otay Watershed consists of approximately 98,500 acres. Major water bodies include the Upper and Lower Otay Reservoirs, Otay River, and San Diego Bay. The two major reservoirs in the Otay Watershed supply water, important wildlife habitat, and recreational opportunities. A large percentage of the water within the Otay Watershed is actually imported from Morena and Barrett Reservoirs, which are physically located in the Tijuana River Watershed. The Dulzura flume delivers water from the Barrett Reservoir to Dulzura Creek in the Otay Watershed. Morena Reservoir is connected to Barrett Reservoir by Cottonwood Creek. Water in Dulzura Creek drains into the Lower Otay Reservoir, which is owned and operated by the City of San Diego.

1.2.3.2 Otay Watershed Land Use Inventory

Table 1-5 depicts the existing land use in the Otay Watershed at the HA level, and is based on Year 2006 data from SANDAG. The dominant land uses within the HAs are as follows:

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.

Over sixty-nine percent (69.5%) of the Otay Watershed is unincorporated area. The other thirty-one percent (30.5%) is divided between the following jurisdictions: the Port of San Diego, and the cities of Chula Vista, Coronado, Imperial Beach, National City, and San Diego. Land ownership within the Otay Watershed is predominantly private with a small percentage of local, state, and federally owned lands.

The Otay Watershed is one of the three least populated watersheds in San Diego County, with a population of approximately 200,000 people. This population is expected to increase to approximately 268,000 by the year 2030 (Table 1-2).

Table 1-5. Land Use Inventory for the Otay Subwatershed

HA	Land-Use Category	Acreage	Percentage of Total Acreage
910.1	Commercial/Office	431.2	7.9%
	Industrial	0.1	0.002%
	Military	2,822.8	51.6%
	Open Space/Preserves	295.6	5.4%
	Parks	234.4	4.3%
	Public Facilities	46.7	0.9%
	Residential	843.2	15.4%
	Schools	42.4	0.8%
	Transportation	634.7	11.6%
	Under Construction	5.8	0.1%
	Undeveloped/Vacant	115.0	2.1%
	TOTAL	5,471.8	100%
910.2	Agriculture	506.7	1.7%
	Commercial/Office	1,047.9	3.5%
	Industrial	2,685.2	9.1%
	Open Space/Preserves	7,166.1	24.2%
	Parks	646.9	2.2%
	Public Facilities	1,605.9	5.4%
	Residential	5,221.9	17.6%
	Schools	535.7	1.8%
	Transportation	2,738.8	9.2%
	Under Construction	7.1	0.02%
	Undeveloped/Vacant	7,460.8	25.2%
	TOTAL	29,623.1	100%
910.3	Agriculture	835.3	1.3%
	Commercial/Office	453.4	0.7%
	Industrial	112.8	0.2%
	Open Space/Preserves	30,342.1	48.0%
	Parks	70.6	0.1%
	Public Facilities	69.9	0.1%
	Residential	7,323.2	11.6%
	Schools	62.6	0.1%
	Transportation	588.9	0.9%
	Undeveloped/Vacant	23,398.4	37.0%
	TOTAL	63,257.3	100%

Source: SANDAG Year 2006 Land Use data.

1.3 Watershed Mapping

Section E.2.b of the Municipal Permit states that watershed Copermittees should develop a map of the WMA to facilitate planning, assessment, and collaborative decision making. The map should include features such as receiving waters, Clean Water Act (CWA) Section 303(d) impaired waters, MS4s, major roads, jurisdictional boundaries, and inventories as determined appropriate.

Appendix B of the San Diego Bay WURMP provides three maps of the San Diego Bay WMA, which are described below.

- Map 1: Identifies receiving waters; CWA Section 303(d) impaired waters, land uses, major highways, and jurisdictional boundaries.
- Map 2: Contains the San Diego Bay Copermittees' MS4 and other related features (receiving waters, 303(d) listed waters, major highways).
- Map 3: Includes inventoried commercial, industrial, and municipal sites.

It should be noted that the inventoried facility information was generated from the Baseline Long-term Evaluation Assessment (BLTEA) Document that was completed in 2005 because inventory information in geodatabase format is not readily available from all the Copermittees. As such, the mapped facilities represent only those facility types that had geocoded site location information. While this is a significant advancement from the last WURMP in which inventory information was presented only as land use data, it should not be interpreted to represent a complete list of all facilities operating within the San Diego Bay WMA.

Section 2: Collective Watershed Strategy

2.1 Model Watershed Strategy

Pursuant to the Municipal Permit, the Regional Copermittees have developed a Model Watershed Strategy to guide the selection and implementation of Watershed Activities. The goal of the Model Watershed Strategy is to provide regional consistency to the activity selection and implementation process in a manner that appropriately addresses each watershed Copermittees' contribution to the high priority water quality problems in their WMA. This document is included in the Regional Urban Runoff Management Plan (RURMP) Document as Attachment 3. It should be noted that all Model Watershed Strategy templates, tools, and worksheets are fully discussed in the RURMP Attachment 3 and not presented here.

The Model Watershed Strategy provides standard definitions for the types of activities that can be implemented within a watershed. It also distinguishes between those activities that can be used toward fulfilling Permit requirements, and those activities that watersheds may elect to implement and report upon to provide valuable watershed benefits that do not receive Permit compliance credit. By standardizing activity types, Copermittees can develop consistent reporting and data tracking practices that can further enhance watershed activity and programmatic assessments.

The Model Watershed Strategy also defines a standard approach for selecting activities appropriate for implementation within each watershed. This approach includes conducting a baseline analysis, identifying appropriate management actions, and selecting watershed activities. The Model Watershed Strategy identifies several tools that are valuable in the determination of management actions and activity selection. Where appropriate, the Model Watershed Strategy also discusses effective mechanisms to fill existing data gaps. The approach takes into consideration the appropriate scale at which a management action should be implemented as well as the identification of the Copermittees responsible for undertaking the determined management action. Finally, the Model Watershed Strategy presents a standard format for developing an implementation schedule for all watershed activities.

2.2 San Diego Bay Watershed Strategy

The San Diego Bay Copermittees have used the Model Watershed Strategy to conduct their baseline watershed evaluation, identify management actions to be conducted at a HA scale, and select watershed activities to address the high priority water quality problems within the San Diego Bay WMA. The San Diego Bay Copermittees used the standard activity types as defined in the Model Watershed Strategy and the standard planning tables/formats for presenting this information. The details on how the San Diego Bay Copermittees used the Model Watershed Strategy's activity selection process are discussed within this section.

2.2.1 Baseline Watershed Evaluation

The San Diego Bay Copermittees spent several meetings conducting a Baseline Watershed Evaluation (BWE), thoroughly evaluating each HA, each pollutant category and the likely sources present with respect to the pollutant category. The San Diego Bay Copermittees looked at the BLTEA information and additional recent monitoring information to identify the number of exceedances occurring within each HA and the exceedance rate (percentage) associated with each pollutant category. Water quality monitoring information for each of the pollutant categories was evaluated to confirm or contradict the BLTEA Water Quality Priority (WQP) ratings. A count of "Likely" and "Unknown" sources were also assessed to confirm whether pollutant sources within each HA were adequately characterized. The San Diego Bay Copermittees then compared this information to the identified geocoded likely and unlikely sources (Appendix C) to see whether the monitoring information was indicative of the pollutant sources within each HA.

2.2.2 Management Action Identification

Once the BWE information was compiled and assessed, the San Diego Bay Copermittees used the Model Watershed Strategy's *Watershed Activity Decision Matrix* and followed the guidance provided in the *Watershed Strategy Flowchart* to determine the appropriate management action required for each pollutant category in each HA. Upon determination of the proper management actions, appropriate specific activities addressing the high priority water quality problems can be selected (see Section 3.3. and 3.4). The matrix identified the appropriate management action based upon the amount of water quality data available, the exceedances present, existing BLTEA ratings, and the number of likely and unknown sources present. The following management actions were identified: Water Quality Activities (i.e. Load Reduction/Source Abatement Activities), Watershed Education Activities, Source Identification or Characterization Studies, and Additional Water Quality Monitoring. When there is sufficient information available, then the matrix would suggest Water Quality or Educational Activities. However, when gaps in either water quality information or known sources information existed, additional monitoring, source characterization, and/or investigations are recommended prior to initiating load reduction activities. When data indicated that the water quality data adequately conveyed the water quality conditions within the HA, and likely sources were present, load reduction or source abatement management actions were identified. Table 2-1 shows a list of pollutant categories within each HA and the suggested management action to be considered.

Table 2-1. Watershed Action for Pollutants for each Hydrologic Area

Watershed	Pollutant Category	BLTEA Rating	Action	BLTEA Rating	Action	BLTEA Rating	Action
		908.1		**908.2**		**908.3**	
Pueblo San Diego	Pesticides	B	Additional Monitoring	A	Source Identification	C	Source Identification
	Metals	A	Additional Monitoring	A	Load Reductions	C	Additional Monitoring
	Sediment	C	Source Identification	A	Source Identification	B	Source Identification
	Bacteria/Pathogens	A	Additional Monitoring	A	Load Reductions	A	Load Reductions
	Gross Pollutants	A	Additional Monitoring	B	Load Reductions	C	Additional Monitoring
	Nutrients	D	Source Identification	C	Source Identification	B	Source Identification
	Oil and Grease	B	Additional Monitoring	D	Additional Monitoring	C	Additional Monitoring
		909.1		**909.2**		**909.3**	
Sweetwater	Pesticides	B	Source Identification	A	Additional Monitoring	C	Additional Monitoring
	Metals	D	Additional Monitoring	D	Additional Monitoring	D	Additional Monitoring
	Sediment	C	Source Identification	C	Additional Monitoring	C	Source Identification
	Bacteria/Pathogens	A	Load Reductions	C	Additional Monitoring	C	Additional Monitoring
	Gross Pollutants	D	Additional Monitoring	D	Additional Monitoring	C	Additional Monitoring
	Nutrients	D	Source Identification	D	Source Identification	D	Additional Monitoring
	Oil and Grease	D	Additional Monitoring	D	Additional Monitoring	D	Additional Monitoring
		910.1		**910.2**		**910.3**	
Otay	Pesticides	D	Source Identification	D	Source Identification	D	Source Identification
	Metals	B	Additional Monitoring	C	Additional Monitoring	D	Additional Monitoring
	Sediment	C	Additional Monitoring	C	Additional Monitoring	C	Additional Monitoring
	Bacteria/Pathogens	A	Load Reductions	A	Source Identification	D	Additional Monitoring
	Gross Pollutants	B	Source Identification	C	Additional Monitoring	D	Additional Monitoring
	Nutrients	D	Source Identification	C	Source Identification	D	Additional Monitoring
	Oil and Grease	B	Additional Monitoring	D	Additional Monitoring	D	Additional Monitoring

Note: Trash, Dissolved Minerals, and Organics were not evaluated during this process.

2.2.3 Activity Selection

Upon identification of the HA management actions, the San Diego Bay Copermittees then took the following steps to select appropriate activities. First, the San Diego Bay Copermittees representing each HA were identified (Table 2-2). This step was important because it enabled each Copermittee to identify contributions relative to their jurisdictional authority. Next, Copermittees were directed to assess the management actions required for each pollutant in their respective HA(s). Each San Diego Bay Copermittee reviewed existing or previously identified activities (as noted in the 2006-2007 WURMP Annual Report) to determine whether they 1) were applicable to new Permit requirements, 2) would continue to be implemented (or in active implementation phase), and 3) addressed the respective HA high priority water quality problems.

Table 2-2. Hydrologic Area Responsibilities

Copermittee	San Diego Bay Watershed Hydrologic Areas								
	908.1	908.2	908.3	909.1	909.2	909.3	910.1	910.2	910.3
San Diego County Regional Airport Authority		■							
Chula Vista				■				■	■
County		■		■	■	■		■	■
Coronado							■		
Imperial Beach							■	■	
La Mesa		■		■					
Lemon Grove		■		■					
National City			■	■					
Port of San Diego	■	■	■	■			■		
San Diego	■	■	■	■				■	

Note: The shaded squares denotes the HA each jurisdiction occupies.

The San Diego Bay Copermittees selected activities feasible to implement in their jurisdictions and appropriate for their relative contribution to the HA's high priority water quality problems. In general, the Copermittees took the approach to consider pollution prevention and source control BMPs as the primary and best defense against water quality degradation, followed by selective implementation of treatment control BMPs where determined necessary. Activities included those that went above and beyond jurisdictional Permit requirements and addressed watershed high priority water quality problems and identified capital improvement projects as well that meet the requirements for watershed water quality activity. A key component of the activity selection was determining the appropriate mechanism(s) to assess effectiveness of the activity and ensuring that measurable outcomes could be obtained.

2.2.4 Collaborative Watershed-based Activities

During the workgroup activity review, San Diego Bay Copermittees discovered that many potential activities either 1) overlapped several HA, or 2) were being implemented by multiple jurisdictions in very similar fashion. Noting this commonality, the San Diego Bay Copermittees worked together to determine the most effective manner in which to present this information. From this, the "Collaborative Watershed-based Activities" concept was created.

The "Collaborative Watershed-based Activities" concept focuses on the coordination and standardization of common jurisdictional activities to identify watershed-based impacts from similar jurisdictional efforts, and improve upon overall watershed assessments from these efforts. It acknowledges that each Copermittee will be implementing the activity jurisdictionally and the manner in which efforts occur may vary. The benefits to using a collaborative concept are that the individual jurisdiction retains control over implementation (scale, location, and timing), while including an enhanced overall watershed assessment into its activities. By including some element of standardization into its activities, jurisdictional activities can be compared to one another and an overall load reduction for the collaborative effort(s) can be determined. The overall value of the activity to the watershed in meeting the required management actions and addressing the high priority water quality problems is better emphasized.

2.2.5 Activity Summary Sheets

The San Diego Bay Copermittees utilized the Model Watershed Strategy's *Standard Activity Summary Sheet* template to describe proposed activities for their jurisdiction. This format includes a comprehensive description of each activity, the proposed implementation timeline, the relationship and benefits to the watershed's high priority water quality problems, and an assessment mechanism to evaluate the activity's effectiveness. Each Copermittee was responsible for documenting their activities utilizing this format. Additionally, specific details on how each Copermittee will implement their efforts and individually assess the effectiveness of each of their activities are included in the Activity Sheet. Detailed discussions of activities, including the collaborative activities, are found in Section 4 of this document. Individual Activity Sheets are found in Appendix D.

2.2.6 Five Year Strategic Plan Development

The final step of the Watershed Strategy was the development of a Five-Year Strategic Plan for the San Diego Bay WMA. The San Diego Bay Copermittees used the Model Watershed Strategy's *Five-Year Strategic Plan* template to present the information in a manner consistent with other watersheds. The San Diego Bay Copermittees worked collaboratively during workgroup meetings to develop the San Diego Bay WMA Five-Year Strategic Plan. This involved: 1) reviewing activity templates; 2) ensuring that the activities were focused on addressing the high priority water quality problems; 3) ensuring that individual Copermittees were conducting activities that addressed their contributions to the high priority water quality

problems; and 4) ensuring that the Permit requirements for two water quality and two education activities in active implementation phase during each reporting period were met. It should be noted that individual activity implementation timelines were not decided as a workgroup; rather, they took into account individual Copermittee budgets, resources, and other relevant factors.

The San Diego Bay WMA Five-Year Strategic Plan contains information on each activity planned for implementation. It identifies the watershed activities planned for implementation during the ensuing year and also includes information on activity implementation beyond the first year of implementation, where appropriate. It also identifies the HA(s) in which the activity will occur, the pollutants it will address and the type of activity that will be implemented, as well as whether an activity is in active implementation phase to easily distinguish which activities can be considered towards Permit compliance. Finally, the San Diego Bay WMA Five-Year Strategic Plan provides a mechanism to provide general information on potential activities that could occur in the future. The San Diego Bay WMA Five-Year Strategic Plan is presented and discussed in detail in Section 4 of this document.

It should be noted that the San Diego Bay WMA Five-Year Strategic Plan is subject to change on an annual basis due to factors such as available funding, staffing issues, or new information regarding water quality or likely pollutant sources. The San Diego Bay Copermittees will review the San Diego Bay WMA Five-Year Strategic Plan annually as a group. When activities are completed, additional activities are identified, or timelines are modified, the plan will be updated as applicable. All updates to the San Diego Bay WMA Five-Year Strategic Plan will be described in the San Diego Bay WURMP Annual Reports submitted to the RWQCB in January of each year.

Section 3: Water Quality and Pollutant Source Assessment

3.1 Water Quality Assessment Approach

An assessment of existing water quality data and likely sources of watershed pollutants provides an initial understanding of the current status and long-term trends in receiving water body water quality conditions of the San Diego Bay WMA. The San Diego Bay Copermittees' approach to evaluating water quality and sources, and targeting high priority water quality problems, is discussed in this section.

Water quality assessments are useful in identifying high priority water quality problems and receiving water body conditions for the San Diego Bay WMA. Long-term assessments enable Copermittees to identify and prioritize water quality problems and source loading potential by comparing water quality data once every Permit cycle. It should be noted that sometimes years of data are necessary before trends in discharge water quality (Level 5 assessment) and/or receiving water quality (Level 6 assessment) can be observed. Annual assessments present the most current conditions, enabling the Copermittees to evaluate changes in pollutant loads and discharge water quality for each Permit year, evaluate the frequency of exceedance of Water Quality Objectives (WQO) for any particular pollutant, and enable Copermittees to identify emerging or continuing trends in water quality. The analysis of basic status and trend information over time is a continuous process that when assessed annually, will increase the knowledge of the type of management efforts required to address high priority water quality problems.

The watershed water quality assessment methodology used by the San Diego Bay Copermittees includes separate components for receiving waters and urban runoff discharges. This organization follows the general format of the Permit, making the results of the assessment more meaningful by providing a closer linkage to the Core Management Questions as well as avoiding mixing data sets from programs undertaken for very different reasons. Knowledge of baseline conditions through the various monitoring programs occurring within the watershed will allow Copermittees to evaluate current conditions and long-term trends in receiving water quality conditions.

3.1.1 Water Quality Monitoring Programs and Data

Monitoring data is one of the most useful pieces of information for assessing the pollutants within a watershed. Data collected under the Receiving Waters and Urban Runoff Monitoring and Reporting Program of the Permit can indicate the elevated pollutant levels, toxicity problems, or ecological impacts that may be influencing urban runoff contributions to the receiving water quality issues. The San Diego Bay Copermittees will utilize data from several

monitoring programs as part of the San Diego Bay WMA assessment, which are outlined in Table 3-1.

Table 3-1. San Diego Bay WMA Assessment Data

Program	Constituents Measured
Mass Loading Stations (MLS)	Toxicity, Chemistry
Toxicity Identification Evaluations (TIE)	Toxicity
Rapid Stream Bioassessments	Benthos
Dry Weather Monitoring (DWM)	Chemistry
Coastal Storm Drain Monitoring	Bacteria
Ambient Bay and Lagoon Monitoring (ABLM)	Sediment Chemistry, Toxicity, Benthos
Regional Harbor Monitoring Program (RHMP)	Sediment Chemistry, Toxicity, Benthos
Surface Water Ambient Monitoring Program (SWAMP)	Bacteria, Chemistry, Toxicity, Benthos
Temporary Watershed Assessment Stations	Sediment Chemistry, Toxicity, Benthos
Department of Environmental Heath (DEH) AB411 Program	Bacteria
Metals TMDL	Metals
Diazinon TMDL	Pesticides

As discussed in Section 1.2, the San Diego Bay WMA consists of three major watersheds that vary greatly in terms of size, population, and land use, and have different water quality issues as a result. Because the amount and type of data available in each watershed may not be the same, the San Diego Bay Copermittees have attempted to assess each watershed independently to provide a more accurate assessment of the San Diego Bay WMA as a whole.

For purposes of the San Diego Bay WMA water quality assessment, the San Diego Bay Copermittees plan to evaluate constituents from the following pollutant categories used in the Regional Urban Runoff Monitoring Report: Metals (includes Dissolved and Total), Dissolved Minerals, Organics, Oil and Grease, Sediments, Pesticides, Nutrients, Gross Pollutants, and Bacteria/Pathogens. Trash will also be evaluated by the San Diego Bay Copermittees. It should be noted that the data available for assessment may vary each year based upon the programs being conducted in each HA and the availability and quality of the data. The San Diego Bay Copermittees recognize that there are many other issues that are generally part of a typical watershed assessment that may have a negative impact on habitat. These issues may include invasive species, wildlife and habitat protection, climate change, and physical changes to natural conveyances due to hydromodification. Regionally, the Copermittees are developing a hydromodification management plan (HMP) to help address the hydromodification issues. All of these issues are often coupled with water quality and will be addressed herein whenever applicable and feasible.

3.1.2 Water Quality Problem Prioritization

Water quality problems will be identified and prioritized through the BWE process identified in Section 2 of this document. The BWE process utilizes both monitoring data and source information to determine whether a pollutant contributes to a high priority water quality problem. Water quality information consists of long-term trend assessment data and other data sets that comprise the BLTEA WQP ratings. Source information includes the likely and unknown sources and their potential Threat to Water Quality (TTWQ), both of which are taken from the BLTEA.

The San Diego Bay Copermittees conducted the BWE assessment for the San Diego Bay WMA to understand the constituents that most significantly exceed WQOs or impact beneficial uses. These constituents contribute to the high priority water quality problems and are considered pollutants. Using the Model Watershed Strategy as guidance, the San Diego Bay Copermittees intend to identify the high priority water quality problems specific to each HA, rather than for the entire watershed itself. By focusing on the HA level, efforts are able to be directed to the implementation of watershed activities that will have the most influence in abating the sources and reducing the discharge of pollutants contributing to the high priority water quality problems in question. Pollutants categories receiving an "A" BLTEA TTWQ rating coupled with a large number of likely or unknown sources were considered high priority water quality problems for that HA. In circumstances in which a pollutant category receives a "B" BLTEA TTWQ rating and there are likely sources present, the San Diego Bay Copermittees may elect to act conservatively and assign a high priority water quality problem rating. The A or B rated pollutants contributing to high priority water quality problems will be referred to as "high priority pollutants" in this document.

During annual monitoring assessments, the San Diego Bay Copermittees may identify other constituents that exhibit occasional exceedances of WQO or appear to be indicative of increasing trends. These constituents will be considered water quality problems, and as such, may be evaluated in conjunction with source category data during the next long-term BWE assessment process to determine whether a high priority rating is warranted.

3.1.3 Receiving Water Body Water Quality Assessment

One component of San Diego Bay WMA water quality assessment focuses on analyzing data collected from receiving water bodies under ambient conditions. This component will evaluate current receiving water conditions and track long-term changes in receiving water quality. Analysis of the data is intended to answer the Core Management Questions listed below, which are numbered as listed in the Municipal Permit. Note that the answer to Question 5 will also provide information on changes in receiving water quality (Level 6) of the effectiveness assessment. Core Management Questions 3 and 4 are addressed through urban runoff discharges monitoring, which is discussed below in 3.1.4.

1. Are conditions in receiving waters protective, or likely to be protective, of beneficial uses?

2. What is the extent and magnitude of the current or potential receiving water problems?
5. Are conditions in receiving waters getting better or worse?

Receiving waters assessments will be conducted both annually and over several years to determine current receiving water conditions and long-term trends. The Regional Urban Runoff Monitoring Program will conduct the assessment of receiving waters conditions. The Regional Monitoring Program utilizes some or all of the following factors when attempting to answer the Core Management Questions. The factors include: 1) identification of the frequency, magnitude, and duration of water quality reference value exceedances; 2) the historical record of Mass Loading Stations (MLS) data; 3) statistical analysis to reveal any trends in exceedences; and 4) the weight-of-evidence approach or triad-decision matrix which evaluates chemistry, toxicity, and stream bioassessment. The details of how this assessment approach will be presented are still in development. This process is currently being revised to ensure that it adequately addresses all new Permit requirements. As such, the San Diego Bay Copermittees are collaboratively working with the regional monitoring contractor and the San Diego Regional Copermittees to maintain consistency in assessment methodology.

The monitoring programs that may be evaluated for receiving water condition by the Regional Urban Runoff Monitoring Program include the following:

- Bioassessment data
- Toxicity, chemistry, and trash assessment data from MLS and Temporary Watershed Assessment Stations (TWAS)
- Ambient Bay and Lagoon Monitoring Program (ABLM) data
- Surface Water Ambient Monitoring Program (SWAMP) data
- Regional Harbor Monitoring Program (RHMP) data
- Receiving water data from the Coastal Storm Drain Monitoring Program

Applicable data from third party sources, such as volunteer monitoring or water district monitoring, will also be included where the data is available and meets the quality control standards generally applied to data collected by State or Copermittee monitoring programs. Receiving water data from special Copermittee or RWQCB studies may also be included where it is comparable in purpose to the above listed programs and/or helps answer the Core Management Questions listed above. Data collected within 72 hours of a rain event that is not representative of the urban runoff response may also be incorporated as applicable. Each year, the watershed Copermittees will evaluate additional data sources beyond those listed above to determine what, if any, additional data is available and suited for inclusion in the water quality assessment data set.

3.1.4 Urban Runoff Discharges Water Quality Assessment

Monitoring and assessing urban runoff discharges from MS4s is the other component used in the San Diego Bay WMA assessment. This is further broken into two elements, evaluating dry

weather discharges and wet weather discharges. Both elements are targeted at answering the following Core Management Questions, which are numbered as listed in the Municipal Permit:

3. What is the relative urban runoff contribution to the receiving water problem(s)?
4. What are the sources of urban runoff that contribute to receiving water problem(s)?

Assessment of urban runoff discharge monitoring also can provide information related to Load Reductions (Level 4) and Changes in Discharge Quality (Level 5) of the effectiveness assessment.

Data collected for the urban runoff discharge component of the water quality assessment is separated into wet weather data and dry weather data because the mechanisms and extent of pollutant mobilization are somewhat different for the two types of conditions. For example, a facility with exposed pollutant sources may not have non-stormwater discharges that could transport pollutants during dry weather; therefore, under those conditions it might not be a significant pollutant source. During rain, however, pollutants from the exposed sources may be mobilized and transported. Also, it is possible that certain pollutants are discharged to a relatively large degree in wet weather but not in dry weather, or vice versa. These distinctions are important when attempting to identify the degree to which urban runoff affects receiving water bodies and what the sources of the urban runoff are.

Data collected in the MS4 as part of the following programs is used in the assessment of dry weather urban runoff discharges by the Regional Urban Runoff Monitoring Program:

- Coastal Storm Drain Monitoring Program (CSDM)
- Dry Weather Field Screening and Analytical Monitoring Programs (DWM), including trash assessment
- MS4 Monitoring
- Source Identification Monitoring

Special studies including TMDL monitoring and data from volunteer organizations may also be used where applicable and where it meets appropriate quality control standards.

The wet weather urban runoff discharge assessment is intended to provide data about the urban runoff discharges associated with storm events. Data used for this assessment comes from programs where sampling starts as the flow rate begins to rise at the beginning of the storm and ends as the urban runoff response is deemed to have subsided. As such, these monitoring programs are primarily targeted at measuring the quality of stormwater discharges from MS4s and non-point sources that may also contribute runoff to the sampling station. Data from programs primarily directed at assessing receiving water quality within 72 hours of a storm, but after the urban runoff response has subsided, are not included in the data set for this assessment. Data from the following sources is used in the assessment of wet weather urban runoff discharges:

- MS4 Monitoring
- MLS and TWAS monitoring in wet weather
- TMDL monitoring

Assessments of urban runoff discharges will be conducted annually and over several years to determine current conditions and long-term trends for high priority water quality problems, and are generally based on the evaluation of data from the monitoring programs as discussed in 3.1.3.

3.2 Water Quality Conditions

This section will provide information on the current condition of receiving waters within the three watersheds comprising the San Diego Bay WMA. The details regarding available receiving water analytical data results in the San Diego Bay WMA are described in the Regional Urban Runoff Monitoring Report (Weston Solutions, 2008) and only summarized here. Information on 303(d) listings and TMDLs will also be presented here.

3.2.1 San Diego Bay WMA BLTEA Ratings

As discussed in 3.1.2, water quality problems identified in one area of the WMA may not necessarily be appropriate for the rest of the San Diego Bay WMA. Therefore, identification of high priority water quality problems at the HA level allows for a better understanding of the overall baseline water quality conditions relative to pollutant sources. This information will enable the San Diego Bay Copermittees to develop activities addressing the high priority water quality problems in the HAs that fall within their jurisdictions. Table 3-2 shows the BLTEA ratings for each HA. Pollutant categories and stressor groups were ranked from A to D with A being the highest priority rating and D the lowest priority rating, and were based on the data record from 2001-2006.

Table 3-2. San Diego Bay Watershed BLTEA Ratings

Watersheds/ Subwatersheds	Percentage of Total Area	Priority Ratings*										
		Pollutant Categories									Stressor Groups	
		Metals	Dissolved Minerals	Organics	Oil and Grease	Sediments	Pesticides	Nutrients	Gross Pollutants	Bacteria/ Pathogens	Benthic Alterations	Toxicity
San Diego Bay WMA	100%	*D*	*B*	*D*	*D*	*C*	*C*	*D*	*D*	*B*	*C*	*B*
Point Loma HA (908.10)	2%	*A*	*D*	*D*	*B*	*C*	*B*	*D*	*D*	*A*	*A*	*A*
San Diego Mesa HA (908.20)	9%	*A*	*D*	*A*	*D*	*A*	*A*	*C*	*B*	*A*	*A*	*A*
National City HA (908.30)	2%	*C*	*D*	*D*	*C*	*B*	*C*	*B*	*C*	*A*	*A*	*A*
Lower Sweetwater HA (909.10)	11%	*D*	*A*	*D*	*D*	*C*	*B*	*D*	*D*	*A*	*A*	*B*
Middle Sweetwater HA (909.20)	19%	*D*	*B*	*D*	*D*	*C*	*A*	*D*	*D*	*C*	*B*	*B*
Upper Sweetwater HA (909.30)	22%	*D*	*B*	*D*	*D*	*C*	*C*	*D*	*C*	*C*	*B*	*B*
Coronado HA (910.10)	2%	*D*	*D*	*D*	*D*	*C*	*D*	*D*	*B*	*A*	*D*	*D*
Otay Valley HA (910.20)	10%	*D*	*D*	*D*	*D*	*C*	*D*	*C*	*C*	*A*	*D*	*D*
Dulzura HA (910.30)	22%	*D*	*B*	*D*	*D*	*C*	*D*	*D*	*D*	*D*	*D*	*C*
2006-07 High[1] Frequency of Occurrence Ratings		♦♦♦				♦♦♦				♦♦♦		
Constituents of Concern		Copper Lead Zinc				Turbidity				Total Coliform Fecal Coliform *Entero-coccus*		

[1] High frequency of occurrence ratings are derived from the constituent exceedances tables and are provided for comparison purposes.

Notes:

** = Rating Calculated Based on Area Weighted Averages of Score Value from the subwatershed areas.*

*** = Priority Level (Highest-A to Lowest-D)*

High Priority Level Based on Data

303d listing (Based on the 2002 303(d) List)

3.2.2 303(d) Listed Water Bodies

The San Diego Bay Copermittees also reviewed the 2006 303(d) listings within the San Diego Bay WMA to identify pollutants or stressors in the WMA. Table 3-3 lists the 303(d) listed pollutants or stressors based on the number of times it was listed within the WMA.

Table 3-3. Water Bodies on the SWRCB 303(d) List in the San Diego Bay WMA

Water Body Name	Hydrologic Sub Area (HSA)	HSA #	Pollutant/Stressor
San Diego Bay Shoreline, Near Sub Base	Point Loma	908.10	Benthic Community Effects, Sediment Toxicity
San Diego Bay Shoreline, Shelter Island Shoreline Park	Point Loma	908.10	Bacteria Indicators
San Diego Bay Shoreline, Harbor Island (West Basin)	Point Loma	908.10	Copper
San Diego Bay Shoreline, G St. Pier	Lindbergh	908.21	Bacteria Indicators
San Diego Bay Shoreline, Near Switzer Creek	Lindbergh	908.21	Chlordane, Lindane/Hexachlorocyclohexane, PAHs
San Diego Bay Shoreline, Vicinity of B St. and Broadway Piers	Lindbergh	908.21	Bacteria Indicators, Benthic Community Effects, Sediment Toxicity
San Diego Bay Shoreline, Downtown Anchorage	Lindbergh	908.21	Benthic Community Effects, Sediment Toxicity
San Diego Bay Shoreline, Harbor Island (East Basin)	Lindbergh	908.21	Copper
San Diego Bay Shoreline, Marriott Marina	Lindbergh	908.21	Copper
San Diego Bay Shoreline, America's Cup Harbor	Chollas	908.22	Copper
Chollas Creek	Chollas	908.22	Bacteria Indicators, Copper, Lead, Zinc
San Diego Bay Shoreline, Near Chollas Creek	Chollas	908.22	Benthic Community Effects, Sediment Toxicity
San Diego Bay Shoreline, 32nd St. Naval Station	Chollas	908.22	Benthic Community Effects, Sediment Toxicity
San Diego Bay Shoreline, Between Sampson and 28th Streets	Chollas	908.22	Copper, Mercury, PAHs, PCBs, Zinc
San Diego Bay Shoreline, Near Coronado Bridge	Chollas	908.22	Benthic Community Effects, Sediment Toxicity
San Diego Bay Shoreline, Seventh St. Channel	El Toyan	908.31	Benthic Community Effects, Sediment Toxicity
San Diego Bay Shoreline, North of 24th St. Marine Terminal	Paradise	908.32	Benthic Community Effects, Sediment Toxicity
San Diego Bay Shoreline, Bayside Park (J St.)	Telegraph	909.11	Indicator Bacteria
San Diego Bay Shoreline, Chula Vista Marina	La Nacion	909.12	Copper
Sweetwater Reservoir	Jamacha	909.21	Dissolved Oxygen
Loveland Reservoir	Loveland	909.31	Aluminum, Manganese, Dissolved Oxygen
Pacific Ocean Shoreline, Imperial Beach Pier	Coronado	910.10	PCBs
San Diego Bay	Coronado	910.10	PCBs
San Diego Bay Shoreline, Coronado Cays	Coronado	910.10	Copper
San Diego Bay Shoreline, Glorietta Bay	Coronado	910.10	Copper
Pogi Canyon Creek	Otay Valley	910.20	DDT
Otay Reservoir, Lower	Savage	910.31	Color, Iron, Manganese, Nitrogen ammonia (total ammonia), pH (high)

Source: SWRCB, 2006

3.2.3 San Diego Bay WMA TMDLs

Several TMDLs have been adopted or are under development for the listings presented in Table 3-3. These are listed below:

- Diazinon in Chollas Creek (August 2002).
- Dissolved copper in the Shelter Island Yacht Basin (SIYB) (February 2005).
- Dissolved copper, lead, and zinc in Chollas Creek (June 2005). The dissolved metals TMDL for Chollas Creek still requires State Board Office of Administrative Law and U.S. EPA approval for final adoption and Basin Plan amendment.
- TMDLs are currently being finalized for bacterial indicators in Chollas Creek.
- TMDLs for the mouths of Chollas Creek, Paleta Creek (Seventh Street Channel), and Switzer Creek are under development. These TMDLs are generally related to sediment toxicity.

3.2.4 Pueblo San Diego Watershed Water Quality

Mass Loading Stations (MLS) – Sixteen constituents exceeded WQO at least one time during MLS sampling at Chollas Creek during the 2006-2007 monitoring season. Total Suspended Solid (TSS), turbidity, total copper, total lead, total zinc, and dissolved copper concentrations exceeded WQO during all three monitoring events. Monitoring data showed only one WQO exceedance for diazinon, Biological Oxygen Demand (BOD), malathion, and dissolved lead. It should be noted that this was the first time that diazinon has exceeded the WQO in the past three monitoring years. *Hyalella* toxicity occurred during all monitoring events, while chronic toxicity to *Ceriodephnia* (7-day survival test) occurred during only a single monitoring event. Analytical data from the Chollas Creek MLS are included in Appendix E-1.

Toxicity Identification Evaluations (TIE) – Chollas Creek was identified as a site where TIEs were needed based on toxicity testing during previous years. The 2005-2006 monitoring season TIE indicated that synthetic pyrethroids were the likely causative agents of toxicity in Chollas Creek stormwater samples. Results of the 2006-2007 TIEs confirmed that synthetic pyrethroids were present in Chollas Creek stormwater samples, and that they are the likely cause of toxicity within the samples. This finding is consistent with recent changes in insecticide formulations where synthetic pyrethroids have replaced traditional organophosphate pesticides.

Dry Weather Monitoring (DWM) – A total of ninety-three (93) DWM sites were visited in the Pueblo San Diego Watershed during the 2006 dry weather season. The numbers of samples collected for each constituent were variable; for example, samples are submitted for analyses at approximately twenty-five percent (25%) of the sites visited for field screening. To allow for more meaningful comparisons, the results are presented here as exceedance percentages of dry weather action levels rather than raw numbers of exceedances. None of the constituents exceeded action levels in more than half of the samples. Total coliform exceeded the action level forty-seven percent (47%) of the time. *Enterococcus* and fecal coliform exceeded the

action levels thirty-two percent (32%) and twenty-six percent (26%) of the time, respectively. Exceedances were recorded in sixteen percent (16%) of MBAS samples, whereas oil and grease, pH, ammonia, orthophosphate, and nitrate exceeded in less than ten percent of the samples collected. There were no exceedances of dissolved zinc, dissolved lead, dissolved cadmium, dissolved copper, diazinon, hardness, or chlorpyrifos.

Rapid Stream Bioassessment – One bioassessment monitoring site was sampled in Chollas Creek within the Pueblo San Diego Watershed. The Index of Biotic Integrity (IBI) at this site was rated Poor in October 2006 and Very Poor in May 2007 with IBI scores of 15 and 10, respectively. It is estimated that the benthic community has lost fifty to fifty-four percent (50-54%) of the biodiversity expected to occur at this site.

Coastal Storm Drain Monitoring – Coastal monitoring (per Permit Section P.1) was conducted at four beach sites along San Diego Bay within the Pueblo San Diego Watershed. Each site was visited thirteen times during the reporting period. Of the sites visited, samples were only collected on two occasions at Shelter Island coastal outfalls. Storm drain samples did not exceed action levels during any event. A receiving water sample exceeded the fecal coliform WQO on one occasion at Shelter Island (6/18/07). A follow-up inspection was conducted on 6/21/07 and a receiving water sample was collected. The results did not exceed the WQO for any of the constituents sampled.

County DEH AB411 Monitoring – DEH sampled receiving water at four beach sites within the Pueblo San Diego Watershed (Spanish Landing, Shelter Island, Lawrence Street Beach, and Bessemer Street Beach). Bessemer Street Beach was sampled a total of six times whereas the other locations were each sampled approximately thirty-six times during the reporting period. There were no exceedences of total coliform recorded at any of the sites. Fecal Coliform exceeded the WQO on six occasions at Shelter Island and on five sampling dates at Spanish Landing. *Enterococcus* exceeded the WQO on six occasions at Shelter Island, four times at Spanish Landing, and once at Lawrence Street and Bessemer Street.

Diazinon TMDL – Diazinon monitoring for the Chollas Creek TMDL was conducted at two water quality sampling sites during three storm events. Diazinon was recorded above the TMDL waste load allocation (WLA) of 0.45 µg/L during the first storm event on 10/14/06 at site SD8(1). This instance represents the first exceedance of diazinon above the WLA in three reporting years. Diazinon was not detected at the second site (DPR2) during any of the 2006-2007 sampling events. Analytical data from the Chollas Creek TMDL are included in Appendix E-2.

Dissolved Metals TMDL – Monitoring for dissolved cadmium, copper, and zinc was conducted at two water quality sites during three storm events for the Chollas Creek Dissolved Metals TMDL. Dissolved cadmium and dissolved zinc were below their respective WQO during all three storm events. Dissolved copper was above the WQO during all three sampling events at SD8(1) and during one sampling event at site DPR2 on 2/19/07. Dissolved lead was measured above the WQO during one sampling event at site SD8(1) on 10/14/06 and one sampling event at site DPR2 on 2/19/07. Analytical data from the Chollas Creek TMDL are included in Appendix E-2.

3.2.5 Sweetwater Watershed Water Quality

Mass Loading Stations (MLS) – The Sweetwater River MLS had very few exceedances during the 2006-2007 monitoring season. Six constituents exceeded WQO over the three sampling events. Fecal coliform, TDS, and turbidity exceeded WQO during two of the three monitoring events, while BOD *Enterococcus* and total coliform exceeded on only a single occurrence. Toxicity was also present to *Ceridaphnia* (7-day reproduction) on a single occasion. None of the WQO for nutrients, pesticides, or total or dissolved metals were exceeded at the Sweetwater River MLS during 2006-2007. Analytical data from the Sweetwater River MLS are included in Appendix E-1.

Toxicity Identification Evaluations (TIE) – Toxicity was not observed for *Selenastrum, Hyalella, Ceriodaphnia 96-hr*, or *Ceriodaphnia* 7-day survival endpoint during any of the storm events during the 2006-2007 wet weather monitoring season. However, toxicity was observed for the *Ceriodaphnia* 7-day reproduction endpoint during the first monitoring event on October 14, 2006. A TIE was not initiated during the 2006-2007 monitoring season.

Dry Weather Monitoring (DWM) – A total of twenty-six (26) DWM sites were visited in the Sweetwater River Watershed during the 2006 dry weather season. The number of samples collected for each constituent were variable, therefore the results are presented here as exceedance percentages of dry weather action levels. Nitrate (NO3-N) exceeded the WQO in eleven percent (11%) of the samples. *Enterococcus*, fecal coliform, and total coliform exceeded in ten percent (10%) or less of the samples collected. There were no exceedances of MBAS, diazinon, chlorpyrifos, or any dissolved metals.

Rapid Stream Bioassessment – Two bioassessment monitoring sites were sampled in the Sweetwater River. Both monitoring sites had an IBI rating of Very Poor during the October 2006 and May 2007 surveys. It was estimated that the benthic community has lost forty-nine to sixty-three percent (49-63%) of the biodiversity expected to occur at each site.

Coastal Storm Drain Monitoring – Coastal monitoring was conducted at one beach site along San Diego Bay within the Sweetwater Watershed. The site was visited thirteen times during the reporting period. Samples were collected at Bayside Park on two occasions; the remaining monitoring events had dry storm drains, thus no samples were collected. Receiving water samples did not exceed the WQO during any event. Samples exceeded the storm drain action levels for total coliform and fecal coliform on one occasion, August 15, 2006. This exceedance, however, did not result in a receiving water exceedance.

County DEH AB411 Monitoring – DEH sampled receiving water at one beach site within the Sweetwater Watershed along San Diego Bay. The Bayside Park site was sampled thirty-five times during the reporting period. Exceedences of WQO were found for fecal coliform on a single occasion and for *Enterococcus* on two occasions. Total coliform did not exceed WQO on any occasion.

3.2.6 Otay Watershed Water Quality

Dry Weather Monitoring (DWM) – A total of thirty-four (34) DWM sites were visited in the Otay Watershed during the 2006 dry weather season. The numbers of samples collected for each constituent were variable, therefore the results are presented here as exceedance percentages of dry weather action levels. Total coliform was the only constituents that exceeded action levels in more than thirty percent (30%) of the samples, while dissolved copper exceeded action levels in just under thirty percent (30%) of the samples. *Enterococcus* and fecal coliform exceeded action levels in twenty-three percent (23%) and eighteen percent (18%) of the samples, respectively. Ammonia, nitrate, ortho-phosphate, pH, and MBAS exceeded in less than ten percent (10%) of the samples collected. There were no exceedances of oil and grease, diazinon, chlorpyrifos, or any of the dissolved metals except for dissolved copper.

Coastal Storm Drain Monitoring – Coastal monitoring was conducted at one beach site (Tidelands Park) within the Otay Watershed. The site was visited thirteen times during the reporting period. Samples were collected during two monitoring events. *Enterococcus* exceeded the storm drain action level on 12/4/06 and 5/21/07; however, exceedences were not found in the receiving water samples on either occasion. Total and fecal coliform did not exceed WQO or action levels in the receiving water or storm drain on any occasion.

County DEH AB411 Monitoring – DEH sampled receiving water at three beach sites (Glorietta Bay, Silver Strand, and Tidelands Park) within the Otay Watershed. The sites were sampled between twenty-six and thirty-one times. The fecal coliform WQO was exceeded on one occasion at Tidelands Park. There were two exceedances for *Enterococcus* at Tidelands Park and one exceedance for Glorietta Bay.

3.3 Likely Pollutant Sources

The Permit requires the Copermittees to identify potential sources of the high priority water quality problems that may impact water quality. Knowledge of potential sources will help the Copermittees develop activities to decrease pollutant discharges to the MS4 and receiving waters, target geographic areas and specific businesses for BMP implementation and education, and better correlate water quality conditions with surrounding land use. The San Diego Bay Copermittees have identified sources for the high priority water quality problems causing in the manner described below.

Table 3-4 provides details on five major pollutant source categories determined through the BLTEA to be significant sources of pollution within the San Diego Bay WMA. The categories are comparable to the categories in the Permit and include business sources (industrial and commercial), residential inputs, construction related inputs, streets and roadways, and parks. Municipal facilities other than parks, such as maintenance yards, are also potential sources. However, due to the comparatively small percentage of the WMA designated as municipal facilities that are not parks, they are not included on the list of major source categories. Each of these source categories represents a unique set of inputs or pollution generating activities which

may contribute to water impairment and which, by their nature, require a different approach to address/minimize their pollutant contributions. While this is not an exhaustive list of the potential sources of pollution, combined, these categories best represent the likely pollutant sources within each HA. Developing activities specific to address these sources provide the most effective means to reduce pollutants from these sources. It should be noted that dischargers not subject to regulation by the Municipal Permit, such as Caltrans and school districts, are also potential sources of pollution in the San Diego Bay WMA. However, these are not accounted for in this section, and will not be addressed in this document.

The extent of each of the five likely pollutant source categories within each HA based on total acreage by category is identified in Table 3-5. The San Diego Bay Copermittees are able to evaluate whether the sources of pollutants causing high priority water quality problems are adequately characterized through the understanding of the land use categories occurring within each HA (based on acreage) and BLTEA rating. This information enables the Copermittees to more effectively select and implement source appropriate activities to reduce pollutant discharges or to implement source identification and/or monitoring efforts necessary to achieve effective load reducing activities in the future.

Due to differences in pollutant generating activities and the accessibility of the source category to implement management actions, each source must be tracked and assessed individually. Some management activities can be quantified as to how much a pollutant load has been reduced. For example, pollutant loads collected at cleanup events within a park can be quantified. Other management activities regarding reduction of pollution loads may not be as easily quantifiable, though estimations via literature review, observation, etc. may be possible. For example, education to reduce pollution may only be measured by the number of employees or the general public who received training regarding stormwater pollution. The San Diego Bay Copermittees intend to work with the information presented in this chapter to develop appropriate assessment techniques within each activity that best addresses the pollutant source category and can show effectiveness in reducing loads.

Table 3-4. Likely Pollutant Source Categories in San Diego Bay Watershed

Source Category	Source Category Description	Likely Pollutants Generated	Pollutant Generating Activities	Management Approaches
Businesses	Business sources refer to commercial and industrial activities. Comprehensive lists of businesses, which may be potential sources of pollution, have been identified in the BLTEA report.	Various, depends on business type. See Appendix C-2 for details.	▪ Outdoor Operations ▪ Outdoor Storage ▪ Parking Areas ▪ Fueling ▪ Vehicle or Equipment Maintenance ▪ Waste Handling	▪ Regulation ▪ BMP Implementation ▪ Inspections ▪ Education ▪ Complaint Investigation ▪ ICID Detection Monitoring
Residential	Residential areas represent single- and multi-family residential areas, mobile home parks, and rural residential areas.	▪ Pesticides ▪ Nutrients ▪ Bacteria ▪ Metals ▪ Organics ▪ Oil and Grease ▪ Sediment ▪ Trash	▪ Over-irrigation of lawns/gardens ▪ Pet Waste ▪ Sewer Overflows ▪ Improper Disposal of HHWs ▪ Trash and Debris ▪ Home and Vehicle Maintenance	▪ BMP Implementation ▪ Education ▪ Hazardous Waste Collection
Construction	Construction activities refer to areas within the watershed which are currently under construction where development can occur.	▪ Sediment ▪ Gross Pollutants ▪ Trash	▪ Demolition ▪ Grading ▪ Storage and Disposal of Hazardous Materials ▪ Fueling ▪ Stockpiling of materials ▪ Loading/Unloading	▪ Regulation ▪ BMP Implementation ▪ Treatment Controls ▪ Inspections/Complaint Investigations ▪ ICID Detection Monitoring ▪ Education
Streets and Roadways	This category includes all local roadways maintained within the jurisdiction of the Copermittees. Due to their great linear extent, pollution caused by roadways is considered a significant threat to water quality within the watershed.	▪ Metals ▪ Organics ▪ Oil and Grease ▪ Sediment ▪ Gross Pollutants ▪ Bacteria ▪ Trash	▪ Vehicle Usage ▪ Trash ▪ Repair Work	▪ BMP Implementation ▪ Treatment Controls ▪ Cleanups
Parks	Parks include golf courses and club houses, active beaches, active parks, landscape open space, and residential recreation.	▪ Metals ▪ Organics ▪ Oil and Grease ▪ Sediment ▪ Gross Pollutants ▪ Bacteria ▪ Nutrients ▪ Pesticides	▪ Storage/Disposal of hazardous materials ▪ Landscape maintenance ▪ Cleaning Facilities	▪ Regulation ▪ BMP Implementation ▪ Inspections/Complaint Investigations ▪ ICID Detection Monitoring ▪ Education

Source: BLTEA (Weston, MOE, & LWA, 2005)

Table 3-5. Major Pollutant Source Category Acreage

Watershed	Business (Acres)[1]	Residential (Acres)[2]	Construction (Acres)[3]	Parks (Acres)[4]	Streets/Roadways (Acres)[5]
San Diego Bay	13,159.58 (5%)	63,985.75 (23%)	222.45 (0.08%)	5,175.87 (2%)	21,569.91 (8%)
Pueblo San Diego (908)	3,827.59 (11%)	14,305.29 (40%)	69.71 (0.19%)	1,040.22 (3%)	8,992.05 (25%)
908.1	247.99 (6%)	1,400.44 (32%)	1.21 (0.03%)	73.88 (2%)	725.09 (16%)
908.2	3,207.19 (12%)	10,312.77 (40%)	68.2 (0.26%)	769.11 (3%)	6,994.78 (27%)
908.3	372.41 (7%)	2,592.08 (46%)	0.3 (0.01%)	197.22 (4%)	1,272.18 (23%)
Sweetwater (909)	4,601.36 (3%)	36,292.15 (25%)	139.8 (0.09%)	2,600.57 (2%)	8,703.94 (6%)
909.1	2,704.81 (8%)	14,086.71 (44%)	90.82 (0.28%)	1,534.75 (5%)	5,720.11 (18%)
909.2	1,630.89 (3%)	14,888.03 (28%)	29.79 (0.06%)	1,054.08 (2%)	1,782.07 (3%)
909.3	265.67 (0.42%)	7,317.4 (12%)	19.19 (0.03%)	11.74 (0.02%)	1,201.77 (2%)
Otay (910)	4,730.62 (5%)	13,388.32 (14%)	12.94 (0.01%)	1,535.08 (2%)	3,873.93 (4%)
910.1	431.26 (8%)	843.24 (15%)	5.8 (0.11%)	484.76 (9%)	632.62 (12%)
910.2	3,733.11 (13%)	5,221.9 (18%)	7.14 (0.02%)	979.71 (3%)	2,652.40 (9%)
910.3	566.25 (1%)	7,323.18 (12%)	0 (0.00%)	70.61 (0.11%)	588.91 (1%)

Source: SANDAG Land Use Data 2006. Percentages represent proportion of land use acreage to watershed unit acreage.
[1] Business Sources consist of a summation of Commercial/Office and Industrial acreage.
[2] Residential Sources consist of a summation of Rural Residential and Residential acreage.
[3] Construction Sources consist of a summation of Under Construction acreage.
[4] Parks Sources consist of the following land uses: Golf Courses and Clubhouses, Active Beaches, Active Parks, Landscape Open Space, and Residential Recreation.
[5] Streets/Roadways is a summation of the following land uses: Freeways, Parking lots-surface, and road right of ways.

3.4 Water Quality Problems

Using the process identified in Section 3.1.2, the San Diego Bay Copermittees have identified the following high priority water quality problems for the San Diego Bay WMA (Table 3-6). This table identifies the BLTEA "A" ratings that were also coupled with a large presence of likely sources (or unknown) within that HA. There were also four instances when BLTEA "B" ratings were considered high priority due to other factors that went into the BWE process. In these circumstances, the San Diego Bay Copermittees assigned a high priority rating to the HA's recommended action. Additionally, Table 3-6 identifies the appropriate jurisdictions within each HA and the management action(s) needed to address the high priority water quality problem. It should be noted that in HAs where the majority of the sources were classified as "Unknown", the action identified was the need for additional source identification or characterization.

Table 3-6. San Diego Bay WMA High Priority Water Quality Problems

HA with High Prioritization		Pollutant Category	Recommended Action	Jurisdictions in HA
Pueblo San Diego	908.1	Bacteria *	Additional Monitoring	Port of San Diego City of San Diego
		Gross Pollutants	Additional Monitoring	
		Metals	Additional Monitoring	
		Oil and Grease *	Additional Monitoring	
		Pesticides	Additional Monitoring	
	908.2	Bacteria	Load Reductions	Port of San Diego City of San Diego Airport Authority County of San Diego City of La Mesa City of Lemon Grove
		Metals	Load Reductions	
		Sediment	Source Identification	
		Trash	Load Reductions	
		Pesticides	Source Identification	
	908.3	Bacteria	Load Reductions	Port of San Diego City of San Diego National City
		Sediment *	Source Identification	
		Trash	Load Reductions	
Sweetwater	909.1	Bacteria	Load Reduction	Port of San Diego City of San Diego National City City of Chula Vista County of San Diego City of La Mesa City of Lemon Grove
	909.2	Pesticides	Additional Monitoring	County of San Diego
Otay	910.1	Bacteria	Load Reduction	Port of San Diego City of Coronado City of Imperial Beach
		Gross Pollutants *	Source Identification	
	910.2	Bacteria	Source Identification	City of San Diego City of Chula Vista County of San Diego City of Imperial Beach

* Denotes pollutant category with a "B" BLTEA TTWQ rating

A brief summary of each HA is presented below describing the high priority water quality problems and the likely pollutant generating activities. Also described are the recommended management actions suggested by the Watershed Activity Decision Matrix in Section 2 to enhance the San Diego Bay WURMP's ability to address the effectiveness questions and the Core Management Questions as discussed in Sections 3.1.3. and 3.1.4.

Pueblo San Diego HU (908)

Point Loma HA (908.1) – The high priority water quality problems in the HA are bacteria, metals, gross pollutants, oil and grease. There are a high number of likely sources of these pollutants. The major categories of likely sources for all of these pollutants in this HA are residential areas, commercial/office businesses, and parks. Fifty-six percent (56%) of the business types consist of food establishments, while boat-related businesses (boat repair and marinas) accounted for approximately twenty-six percent (26 %). Transportation areas (streets and roadways) are also a source of metals, oil, and grease. Effective management efforts will likely require additional monitoring to assess water quality and likely sources to aid in the selection of future load reducing activities designed to properly address the high priority water quality problems.

San Diego Mesa HA (908.2) – Bacteria, metals, pesticides, trash, and sediment are high priority water quality problems in the HA. Businesses (industrial and commercial), parks, and residential areas are likely sources for all of the pollutants causing high priority pollutants in the HA. Likely sources of bacteria include food establishments, which account for seventy-six percent (76%) of the business sources in the HA, landscaping, and nurseries. Landscaping and nurseries are also likely business sources for pesticides and sediment in the San Diego Mesa HA. Metals have a high number of likely sources, while streets/roadways are additional sources of metals and sediment. The RWQCB issued a 13267 order to the cities along Chollas and Paleta Creeks requiring trash cleanup measures and programs to be implemented to address trash and other pollutants that may be associated with trash. Efforts will focus on load reduction and source abatement activities for bacteria and metals due to the high proportion of likely sources. In some cases, source identification studies and/or source characterization studies are necessary to identify the high proportion of unknown sources of pesticides and sediment in the HA in order to implement effective load reduction activities in the future.

National City HA (908.3) – The high priority water quality problems in the HA are bacteria, sediment, and trash. A high proportion of likely sources of bacteria are identified from businesses, parks, and residential source categories. Sixty-eight percent (68%) of the commercial businesses were food establishments, while approximately twenty-one percent (21%) of the businesses were auto-related. Streets and roadways are additional likely sources of sediment. Load reduction and source abatement activities are appropriate to address bacteria and trash, as a high proportion of likely sources have been identified. The RWQCB issued a 13267 order to the cities along Chollas and Paleta Creeks requiring trash

cleanup measures and programs to be implemented to address trash and other pollutants that may be associated with trash. The identification of sources is the recommended action for sediment.

Sweetwater HU (909)

Lower Sweetwater HA (909.1) – Bacteria is identified as a high priority water quality problem in the HA, with a high proportion of likely sources originating from residential, commercial/office businesses, and parks. Likely sources originating from businesses include food establishments, landscaping, and nurseries. A number of likely sources of bacteria have been identified, and load reduction and source abatement activities will be implemented in strategic areas in the HA.

Middle Sweetwater HA (909.2) – Pesticides are identified as a high priority water quality problem in this HA. In addition to likely sources of this pollutant category from residential areas and parks, likely sources also include landscaping and nursery businesses. Agriculture occurring in this HA is also a potential source of the pesticide pollutants. Construction has been recognized as a potential source of pesticides, but accounts for less than one percent (1%) of the HA's source category acreage. Identification of the likely source of the pesticide is important to applying the proper measures to reduce loads. There is a high proportion of unknown sources in this HA. In order to implement effective load reducing or source abatement activities, additional monitoring and/or source identification efforts should be completed.

Lower Sweetwater HA (909.3) – None of the pollutant categories were identified as a high priority water quality problems for this HA.

Otay HU (910)

Coronado HA (910.1) – Bacteria is the only high priority water quality problem in the HA. Residential land use, commercial/office businesses, and parks are likely sources of bacteria in the HA. Likely commercial business sources of bacteria include food establishments, landscaping, and nurseries. BMP activities focusing on reducing pollutant loads may be implemented to address the high proportion of likely sources of bacteria.

Otay HA (910.2) – Bacteria is the only high priority water quality problem in the HA. A high proportion of likely sources of bacteria are present in the HA and may originate from residential areas, businesses such as food establishments, and agriculture land uses. Construction activities are a major source category in this HA and may be a likely source of the pollutant. Identification of bacteria sources from likely and unknown sources of bacteria in the HA, such as motor freight and recycling businesses, will enable effective selection and placement of BMPs to reduce pollutant loads.

Dulzura HA (910.3) – None of the pollutant categories were identified as a high priority water quality problem for this HA.

Proper implementation of the San Diego Bay Watershed Strategy discussed in Section 2 requires knowledge of the historical and current water quality issues of the WMA and the potential sources of the high priority pollutants within each HA. As discussed earlier in this section, water quality data and land use assessment of the San Diego Bay WMA at the HA level enables Copermittees to tailor management actions to address high priority water quality problems and pollutant generating activities within each HA. Section 4 will present how the San Diego Bay Copermittees are developing and implementing watershed activities in an integrated manner through the Five-Year Strategic Plan to address the pollutant categories causing the high priority water quality problems identified in this section.

Section 4: Five-Year Strategic Plan

The Municipal Permit requires San Diego Bay Copermittees to work together to develop and implement a WURMP that identifies and implements watershed activities to address the high priority water quality problems identified in Section 3.4. As stated in the Municipal Permit, a watershed water quality activity is in an active implementation phase when significant pollutant load reductions, source abatement, or other quantifiable benefits to discharge or receiving water quality can reasonably be established in relation to the watershed's high priority water quality problem(s). The Permit requires that no less than two watershed water quality and two watershed education activities shall be in active implementation phase in each Permit year. For the purposes of implementation, San Diego Bay Copermittees are required to identify watershed activities to implement pursuant to established schedules. It should be noted that capital projects are in active implementation phase, and as such, can be counted toward Permit compliance for the first year of implementation only.

The San Diego Bay Copermittees will collaborate to address the high priority water quality problems in the San Diego Bay WMA, and are taking the initiative to develop and implement appropriate activities based on the pollutant(s) target audiences and pollutant sources. The Model Watershed Strategy presents a standardized method of identifying activities and creating a strategic plan to be implemented over the Municipal Permit cycle. By conducting a BWE to identify high priority water quality problems and the management actions needed to address pollutant sources within each HA, effective management decisions can be made. With the goal of improving receiving water conditions in the WMA, the San Diego Bay Copermittees have used the Watershed Activity Decision Matrix to determine the proper actions (Additional Monitoring, Source Investigation, Load Reduction/Source Abatement) necessary to address high priority water quality problems. San Diego Bay Copermittees recognize that appropriately selected source abatement and load reduction activities can result in decreases of pollutants both in the receiving waters and the MS4 discharges.

This section will discuss how the San Diego Bay Copermittees will select, develop, and implement activities to maintain compliance with the Permit. This section includes a Five-Year Strategic Plan with discussion on the three types of watershed activities.

1. Watershed Water Quality Activities (4.1) **–** This section describes how the San Diego Bay Copermittees will choose, implement, and report water quality activities, such as load reduction/source abatement activities, source ID activities, and additional monitoring and/or data collection activities.
2. Education Activities Section (4.2) **–** This section describes the Education Program that will be implemented to enhance the public's understanding of basic watershed principles and sources of surface water pollution, make notable changes in the public's knowledge

and behavior toward pollution generating activities, and address the watershed's high priority water quality problems.

3. Public Participation Activities Section (4.3) **–** This section provides a description of opportunities available to the public to participate in decisions and activities that affect the San Diego Bay WMA.
4. Land Use Planning (4.4) **–** This section will discuss how the San Diego Bay Copermittees will update the General Plan, the notification mechanisms used, and the watershed planning mechanisms to integrate watershed management into programs that can be implemented across jurisdictional boundaries.

4.1 Development and Presentation of the Five-Year Strategic Plan

The San Diego Bay WMA Five-Year Strategic Plan is the result of the process described in the Model Watershed Strategy to select, implement, and assess, in an integrated manner, activities that appropriately address each Copermittees' contribution to the high priority water quality problems. The watershed activities proposed by the San Diego Bay Copermittees for the first two years of the Five-Year Strategic Plan are presented in Table 4-1. The table shows the nature of the activity conducted, the pollutants and the HA(s) the activity addresses, and the anticipated time schedule for implementation over year one and two. Each Copermittee is able to identify water quality activities to address the high priority water quality problems within the HA or portions of the HA that their jurisdiction controls. The selected activities identified within this section are consistent with the overall Model Watershed Strategy to reduce high priority water quality problems.

It should be noted that the Five-Year Strategic Plan also identifies monitoring and source identification activities. Where the BWE has determined that there are data gaps that must be filled before successful implementation of a load reduction activity can occur, monitoring and/or source identification activities are necessary to fill the data gap. While the San Diego Bay Copermittees recognize that these are not considered for credit toward Permit compliance, their importance to the overall success of the Watershed Strategy and to address high priority water quality problems cannot be overlooked. They will support future management decisions regarding the planning, implementation, and assessment of watershed activities. As such, the San Diego Bay Copermittees have elected to keep them in the Five-Year Strategic Plan and discuss them within this section of the report. It is also important to note that activities beyond year two of the Permit are contingent upon Copermittee budget approvals and are not considered final until that fiscal year budget is approved.

Table 4-1. Proposed San Diego Bay Watershed Activities for Fiscal Years 2007-2008 and 2008-2009

San Diego Bay Watershed	Hydrologic Area									Pollutants										Fiscal Year					
	908.1	908.2	908.3	909.1	909.2	909.3	910.1	910.2	910.3	Bacteria	Dissolved Minerals	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash	2007-2008			2008-2009		
Watershed Activities Planned for Implementation																									
Municipal BMPs (1)	X	X		X			X	X	X	X				X			X	X		WQ			WQ		
Storm Drain Litter Control Techniques (2)		X	X	X														X	X	WQ			WQ		
Street Sweeping (3)	X	X	X	X			X						X					X	X	WQ			WQ		
Cleanup Events (4)		X	X	X			X	X											X	WQ	PP		WQ	PP	
Enhanced Dry Weather Monitoring Program (5)		X								X	X	X	X	X	X	X	X	X	X	S			S		
Enhanced Construction Oversight (6)		X																X		WQ			WQ		
BMP Effectiveness Monitoring Program (7)		X										X	X		X			X		M			M		
Outdoor Special Event Oversight (8)		X																	X	WQ			WQ		
Trash Disposal Area Capital Improvements (9)		X								X									X	WQ			WQ		
Treatment Control BMP Pilot Projects (10)		X											X							WQ			WQ		
Provide Homeowner's Association Education About Pet Waste Disposal (11)				X				X	X	X										WE			PP	WE	
Stormwater Education Booth at Annual Pet Festival & Doggy Dash (12)				X				X	X	X										WE			WE		
Fats, Oils, and Grease (FOG) Program (13)				X				X	X	X					X					WE			WE		
Storm Drain Stenciling (14)				X				X	X	X	X	X	X	X	X	X	X	X	X	WQ	WE		WQ	WE	
Update Recycling and Solid Waste Ordinance (15)				X				X	X	X				X					X	P			WQ		
Large Special Event Inspection and Cleanup (16)							X			X			X		X				X	WQ	WE		WQ	WE	
Educational Stickers for Public Works Vehicles (17)																				WE			WE		
Inspection Audit (18)																				S			S		
Restaurant Outreach (19)																				S			WE	S	
Policy and Procedure Audit for Illegal Dumping (20)										X			X		X	X			X	S	P		S	P	
Evaluate Code Enforcement Policy for Parking Lot Hosing (21)											X		X		X				X	P			WQ	WE	
Collaborate with Stakeholders for Chollas Creek TMDLs (22)										X			X			X			X	WQ	WE	M	WQ	WE	M
La Mesa Wet Weather & Additional Dry Weather Monitoring Program (23)		X								X	X	X	X	X	X	X	X	X		M			M		
La Mesa Park Kiosk (24)		X								X	X	X	X	X	X	X	X	X	X	WE					
Clean Community Program (25)			X							X		X							X	WQ	WE	S	WQ	WE	S
Additional Dry Season Construction Inspections (26)			X	X														X	X	WQ			WQ		
Chollas Creek WQ Protection & Habitat Enhancement Project (27)		X								X	X	X	X	X	X	X	X	X		WQ	WE	M			
Targeted Auto-Related Facility Inspections (28)		X											X							WQ	WE	S			
Targeted Metals-Related Industrial Facility Inspections 29)		X											X							WQ	WE	S			
Targeted Restaurant Facility Inspections (30)	X	X	X	X				X		X										WQ	WE	S			
Dalbergia "Green Mall" Infiltration Retrofit (31)		X								X			X										WQ	WE	M
Memorial Park “Green Lot” Infiltration Retrofit (32)		X								X			X							M			WQ	WE	M
Targeted Municipal Facility Inspections (33)		X								X			X	X						WQ	WE	S	WQ	WE	S
Karma/Karma Second Chance Public Service Announcements (34)	X	X	X	X				X	X	X		X							X	WE			WE		

San Diego Bay Watershed	Hydrologic Area									Pollutants										Fiscal Year					
	908.1	908.2	908.3	909.1	909.2	909.3	910.1	910.2	910.3	Bacteria	Dissolved Minerals	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash	2007-2008			2008-2009		
Watershed Activities Planned for Implementation																									
Community Based Social Marketing Outreach Pilot Project—Chollas Creek Community (35)	X	X	X	X				X	X	X		X	X						X	WQ	WE		WQ	WE	
Outdoor Billboards/Transit Shelters (General; Bacteria) (36)	X	X	X	X				X	X	X									X	WE			WE		
Mobile Advertising (General; Bacteria) (37)	X	X	X	X				X	X	X		X	X		X		X	X	X	WE			WE		
Regional Harbor Monitoring Program (38)	X	X	X	X			X						X					X		M			M		
Inspect All Restaurants (39)							X			X		X		X	X				X				WQ	WE	S
Outreach Booths During Fire Open House (40)							X			X	X	X	X	X	X	X	X	X	X				WE		
Safer Alternatives to Copper Antifoulant Paints Project (41)	X												X							WQ			WQ		
Coordinated Dry Weather Monitoring Programs (42)	X	X								X			X	X		X	X	X	X	M			M		
LID and Watershed Planning Education for Community Planning/Sponsor Groups (43)				X	X	X			X	X	X	X	X	X	X	X	X	X	X	WE			WE		
Clean-up Events, City-wide Volunteer Sponsored (44)		X		X															X	WE			WE		
Potential Watershed Activities Planned for Implementation																									
Municipal Rain Barrel Installation and Downspout Disconnects (45)	X	X	X	X				X		X				X	X		X	X		Dependent upon length of procurement process/installation					
Installation of Trident Curbscreens (46)																X		X	X	Dependant upon grant funding					
Chollas Creek Runoff Reduction and Groundwater Recharge Project (47)		X											X							Contingent upon receipt of IRWM grant funding					
Land Acquisitions (48)				X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	Unable to project land acquisitions in advance					
Special Drainage Area (SDA) 1 Spring Valley Area Stormwater Quality Master Plan (49)				X	X	X			X											Contingent upon Board approval of SDA fee increase					

WQ	Watershed Water Quality Activity
WE	Watershed Education Activity
PP	Watershed Public Participation Activity
LU	Watershed-based Land Use Planning Activity
WQ	Watershed Water Quality Activity (Not Active Implementation)
WE	Watershed Education Activity (Not Active Implementation)
M	Watershed Water Quality Monitoring Activity
S	Source ID/Characterization Study
D	Watershed Data Management/Assessment Activity
P	Watershed Planning Activity

* Collective Activity, please refer to the individual activity summary sheets to identify which Copermittees are implementing this activity during this reporting period.

4.2 Proposed Watershed Water Quality Activities

The San Diego Bay Copermittees relied heavily on the Model Watershed Strategy to guide the selection of watershed water quality activities. As stated previously, each Copermittee has individually decided the activities that are feasible to institute in their jurisdiction, and has selected watershed water quality activities for implementation that are appropriate for their relative contribution to the watershed's high priority water quality problems.

The Copermittees have identified four common jurisdictional water quality activities and will coordinate and standardize these activities at the watershed level. This collaborative approach was utilized because these activities were identified as being beneficial to address the high priority water quality problems, and can be applied within different locations and at different scales of implementation as determined appropriate by each Copermittee within their respective HA. These collaborative activities include:

Municipal Best Management Practices **–** Municipal areas and related activities have the potential to contribute to the high priority water quality problems within the watershed. The San Diego Bay Copermittees have identified that implementation of BMPs that go above jurisdictional requirements may result in additional watershed benefits and reduce pollutant loading within the watershed. Multiple activities are suggested to be implemented at parks and/or recreational areas to address high priority water quality problems through a variety of mechanisms throughout the HAs. These include:

1. Pet Waste Bags – Providing pet waste bags to citizens enables proper disposal of pet waste and associated pollutant categories such as bacteria and nutrients, resulting in a load reduction.
2. Porous Pavement – The replacement of impervious surfaces with porous pavement will facilitate load reductions of metals, sediment, oil and grease, and bacteria by reducing urban runoff over impervious surfaces.
3. Irrigation Management – Optimizing current irrigation methods or installing more efficient mechanisms will aid in reducing pollutant loads associated with irrigational runoff, such as nutrient, sediment, pesticide, and bacteria.
4. Xeriscaping – This landscaping technique enables Copermittees to convert sections of municipal areas from impermeable surfaces, such as concrete or pavement, to highly permeable California-friendly landscaping. This activity is beneficial in that it reduces pollutant loads associated with urban runoff over impervious surfaces.

Storm Drain Litter Control Techniques **–** Bacteria, sediment, and trash are present in multiple HAs and are often associated with urban runoff. This activity will go above JURMP requirements by implementing the storm drain litter techniques (i.e. inserts, filters, or other techniques designed to capture and reduce pollutants from entering storm drains) in high input areas within HAs in their jurisdiction. Assessments of the weight or type of litter collected by this activity may enable a watershed-level evaluation of the effectiveness of this activity.

Copermittees recognize that several of these activities are capital projects, and as such, will only consider them in active implementation phase during the first year of implementation.

Street Sweeping Enhancements **–** The San Diego Bay Copermittees have identified that the San Diego Bay WMA has a large number of roads and streets which can contribute to loading of sediments and metals. While sediments are a high priority water quality problem in only 908.2 HA, metals are high priority water quality problem in multiple HAs. Therefore, increasing street sweeping efforts will address input from these likely pollutant sources. Jurisdictional efforts may go above and beyond the JURMP street sweeping requirements by maintaining a coverage area and/or a frequency greater than what is required in the parts of HAs under their control.

Cleanup Events – Trash was designated as a high priority water quality problem throughout the San Diego Bay WMA, and cleanup events directly address the issue of trash in the watershed. Trash is a common problem in all HAs, and the removal of trash has the added benefit of reducing the source of several high priority water quality problems associated with trash such as metals and bacteria. A watershed-level evaluation to estimate the amount of trash removed from the San Diego Bay WMA during cleanup events is also possible. Cleanup events also provide an opportunity for education through the promotion of the watershed awareness message.

Table 4-1 identifies both the collaborative and individual water quality activities that will be planned and/or implemented during year one and two of the Permit. The collaborative and jurisdictional activities will be implemented by San Diego Bay Copermittees on schedules and in locations that the individual Copermittees deem appropriate to best address the high priority water quality problems within their respective HAs.

Specific details on how each Copermittee intends to implement any activity within their jurisdiction are contained in the Copermittee Activity Summary Sheets in Appendix D. Collaborative activities will be discussed in general terms in this section, though the manner in which the activity is conducted may vary. Information specific to each activity can be found in each separate activity summary sheet, and it is suggested to refer to the activity summary sheets for detailed information. Activities other than the collaborative activities San Diego Bay Copermittees could implement may vary depending on the water quality problems within their HAs and cannot be described in general terms within this section.

Each watershed activity summary sheet will contain the following information:

A. A description of the activity.
B. A time schedule for implementation of the activity, including key milestones.
C. An identification of the specific responsibilities of San Diego Bay Copermittees in completing the activity.
D. A description of how the activity will address the identified high priority water quality problem(s) of the watershed.

E. A description of how the activity is consistent with the collective Watershed Strategy.
F. A description of the expected benefits of implementing the activity.
G. A description of how implementation effectiveness will be measured.

The collaborative water quality activities and individual Copermittee water quality activities will be assessed annually to verify their effectiveness. As stated above, information on how each activity will be assessed is located within the activity summary sheets. Please note that for collaborative activities, Copermittees will individually assess the effectiveness of their portion of the collaborative activity separately. The overall watershed effectiveness assessment will be done by comparing measurable results, such as quantity of trash collected during cleanup events or debris collected at storm drain inserts.

4.3 Proposed Watershed Education Activities

San Diego Bay Copermittees recognize that due to the very nature of non-point source pollution, public education is an essential element for a successful watershed protection strategy. In order to reduce pollution, all those who live, visit, and conduct business within the San Diego Bay watershed must become informed and involved. Making the public aware of the importance of individual actions in protecting our water resources and promoting watershed stewardship are crucial components for the success of this program.

The goal of the San Diego Bay WURMP education program is to enhance public understanding of sources of water pollution. The main objectives needed to meet this goal are to capture audience attention, to impart messages that are understood and retained, and to ultimately prompt behavioral changes. Establishing key messages – or succinct, easily understandable and motivational information – is crucial to program success. As time evolves, these core messages are built upon with new and more detailed information. Generally, educational messages and methods are similar at the jurisdictional, watershed, and regional levels. The overlap between these various program levels is intended to maximize the benefits that can be achieved which will become more apparent in the discussion and tables within this section.

Order 2007-0001 states that a watershed education activity “is in an active implementation phase when changes in attitudes, knowledge, awareness, or behavior can be reasonably established in target audiences”. The Permit requires that the Copermittees identify the education activities that will be implemented during the first year of the Permit Cycle and provide plans for activity implementation beyond the first year. Additionally, the Permit requires that the Copermittees explain why activities were chosen, and how the activities are expected to directly target the sources and discharges of pollutants causing the high priority water quality problems. A list of the education activities that will be implemented during the first year by each Copermittee, as well as a tentative schedule for future activities, will also be included within this section.

4.3.1 San Diego Bay Education Program

Over the past five years, San Diego Bay Copermittees made enormous strides to develop an appropriate education strategy to meet the needs of the watershed (San Diego Bay WURMP, 2003). The San Diego Bay Copermittees have updated the previous WURMP Education Action Plan to be consistent with the newly developed collective Watershed Strategy. Updates to this education approach have also been incorporated to ensure that it meets all new Permit elements. The updated WURMP Education Action Plan will herein be referred to as the San Diego Bay Education Program.

The San Diego Bay Education Program outlined in Table 4-2 describes the types of WMA education activities to be developed and implemented by the San Diego Bay Copermittees over the short and long-term. The headings in the table relate directly to the Permit requirements for watershed education, including target audiences, the WMA issues addressed, and the assessment method that will be used to assess each general education category. The specific subcategories of activities within each program element are identified in the table as well. Additionally, the table illustrates the relationship of these activities to surface water pollutants, primarily those high priority water quality problems in the San Diego Bay WMA.

The following target audiences have been identified in the Municipal Permit as having the most significant impact on the high priority water quality problems in the San Diego Bay WMA: general public, residents, school children, businesses, municipal staff, and construction-related workers. As such, reaching these audiences will enable San Diego Bay Copermittees to best address the high priority water quality problems for San Diego Bay. While key/core program messages remain consistent throughout all communication vehicles, where appropriate, they will be tailored for individual target audiences. For example, an overall message to “identify and isolate potential flows to a storm drain” is refined for residents to identify typical flow sources around the house. For the business community, the message is focused on typical commercial and industrial activities that result in potential flow to storm drains. As such, it is essential that appropriate activities be implemented to encourage behavior changes within these groups.

Additional details on various tasks and elements of the San Diego Bay Education Program are provided in the summaries that follow. Annual assessments of the education activities implemented by the San Diego Bay Copermittees will also be conducted in a manner similar to that described above. Please note that in an effort to include only watershed activities as defined earlier in this WURMP document, jurisdictional events that did not specifically discuss the San Diego Bay WMA and/or high priority pollutants are not included as WURMP education activities.

Table 4-2. San Diego Bay Education Program

					Concepts/Pollutant Categories Addressed					
Tasks from the WURMP Education Action Plan	**Target audience**	**Program Elements ***	**Assessment Mechanism**	**Jurisdictional, Watershed, or Regional Program**	**Watershed concepts**	**General Surface Water concepts**	**Metals (Copper/Zinc)**	**Pesticide (Diazinon)**	**Bacteria**	**Sediment (Turbidity/TSS)**
Public Presentations and Media - Watershed Element	General Public, Residential, Commercial/ Industrial, Construction, Municipal	Jurisdiction Stormwater-specific Events	Pre- and post-tests	J, W	x	x	x	x	x	x
		Jurisdiction-Hosted Events	Pre- and post-tests; surveys	J	x	x	x	x	x	x
		Community-Hosted Events	Surveys	J	x	x		x	x	
		Festival Participation	Surveys; County-wide surveys	J, W, R	x	x		x		
		Print Media	County-wide surveys	J, W	x	x	x	x	x	x
		Public Service Announcements	County-wide surveys	R	x	x		x	x	
School Programs	K - 12 children	Jurisdiction Staff Presentations	Pre- and post-tests	W	x	x		x	x	x
		Jurisdiction-Sponsored Presentations	Pre- and post-tests	W	x	x		x		
		Field Trips	Pre- and post-tests	J, W	x	x			x	
		Project SWELL	Pre- and post-tests; surveys	W	x	x	x	x	x	x
Integrated Pest Management	General Public, Residential, Commercial/ Industrial, Municipal	Jurisdictional IPM Seminars	Pre- and post-tests; surveys	J, W, R	x	x		x		
		San Diego Regional IPM Program	County-wide surveys	W, R	x	x		x		
Project Clean Water Watersheds Website	General Public	Website with information related to surface water quality issues, watersheds, and pollutants	County-wide surveys, number of website hits	W, R	x	x	x	x	x	x

					Concepts/Pollutant Categories Addressed					
Tasks from the WURMP Education Action Plan	**Target audience**	**Program Elements ***	**Assessment Mechanism**	**Jurisdictional, Watershed, or Regional Program**	**Watershed concepts**	**General Surface Water concepts**	**Metals (Copper/Zinc)**	**Pesticide (Diazinon)**	**Bacteria**	**Sediment (Turbidity/TSS)**
Partners in Clean Water	General public	Cleanup Events	Surveys, amount of waste collected	J	x	x			x	
		Citizen Monitoring/Training	Pre- and post-tests; surveys	J, W	x	x	x	x	x	x
		Storm Drain Stenciling Events	Pre- and post-tests; surveys, number of drains stenciled	J	x	x			x	x
		Grant Projects	County-wide surveys	W	x	x	x	x	x	x
Watershed Education for Municipal Staff	Municipal Staff	Presentations during staff meetings	Pre- and post-tests	J	x	x		x	x	x
Chollas Creek Enhancement Project	General Public and Commercial/ Industrial	Chollas Creek Enhancement Project		J, W	x	x	x	x	x	x

4.3.1.1 Public Presentations and Media for Watersheds

This element of the San Diego Bay Watershed Education Program was designed to incorporate general watershed, receiving water, and stormwater pollution prevention concepts and principles into existing and planned public presentation and media opportunities at the jurisdictional level, and when appropriate, at the watershed and/or regional level.

Generally, public presentations and media provide an effective means to get a general message to large audiences. Because we are in control of the content and how it is presented, it can be focused on broad watershed-concept based messages, or for smaller audiences, tailored to address specific sources and high priority water quality problems. Specific opportunities for public presentations and media will be evaluated as they become available to determine the appropriate message for the specific target audience. Those opportunities that can provide education concerning San Diego Bay WMA's high priority water quality problems to the target audiences will be selected for inclusion. The Public Presentations and Media element of the San Diego Bay Watershed Education Program has been subcategorized under the six sub-headings described below.

- Jurisdiction Stormwater-Specific Events – These efforts are typically jurisdictional staff presentations to civic and business groups that specifically discuss watershed issues, stormwater water quality problems, BMPs, and stormwater regulatory requirements.
- Jurisdiction-Hosted Events – Efforts to present stormwater and watershed education information at various functions hosted by other departments within a respective jurisdiction, such as a municipal Fire Station Open House.
- Community-Hosted Events – Presentation of watershed and stormwater education at various events hosted by community and private groups within a jurisdiction, such as hosting an information booth at local walking/running race events or trade association conferences.
- Festival Participation – Opportunities to share education materials at events hosted by local community groups or the jurisdictions themselves, community festivals, such as the San Diego County Fair.
- Print Media – Efforts to attract media attention. For example, gaining print media coverage for watershed and stormwater management efforts and the results of jurisdictional programs.
- Public Service Announcements – The THINK BLUE media campaign and other public service announcements (PSAs) broadcast over radio and television.

Public presentations and media opportunities can be assessed in several ways. Some types of public presentations provide an occasion to measure effectiveness through the administration of pre- and post-tests or surveys. Festival participation, print media, and PSAs are more challenging to assess, but opportunities can be identified from watershed-wide and county-wide public opinion surveys in order to determine effectiveness.

4.3.1.2 School Programs: San Diego Bay Watershed

School children are a major focus of the San Diego Bay Watershed Education Program. The San Diego Bay Copermittees continue to focus on efforts to effectively promote watershed awareness and to initiate positive behavioral changes in children. School-related programs will be evaluated for inclusion in the San Diego Bay Watershed Education Program according to their focus on San Diego Bay WMA high priority water quality problems. Those activities that most effectively increase knowledge and/or change behaviors related to the high priority pollutants will be selected. Education programs focusing on BMPs, such as proper cleanup of pet waste and natural pest control methods, will be expected to directly target sources and discharges of high priority pollutants. There are four main subcategories to describe the education/outreach efforts directed at school children.

- Staff Presentations – Staff from the jurisdictions making presentations at schools throughout the watershed can tailor the presentations to address the high priority water quality problems that most impact their jurisdiction.
- Jurisdiction-sponsored Presentations – San Diego Bay Copermittees believe that efforts to partner with others, such as the County Office of Education or the Resource Conservation District of Greater San Diego, to bring watershed awareness opportunities to school children throughout the San Diego Bay Watershed will enhance education efforts, help keep educational messages consistent, and increase community involvement in spreading watershed stewardship.
- Field Trips – San Diego Bay Copermittees efforts to provide local schools with field trip opportunities, such as trips to the Chula Vista Nature Center, the Maritime Museum of San Diego, and local wetlands, as an effective hands-on means of increasing watershed and water quality awareness in students. During field trips, specific pollutants, their sources, and focused pollution prevention information relating specifically to the high priority water quality problems will be disseminated. These details will be tailored to each individual effort as appropriate.
- Project SWELL – Project SWELL is a collaborative effort between San Diego City Schools, the City of San Diego, the Port of San Diego, the San Diego County Regional Airport Authority, and various non-profit organizations to establish comprehensive water quality and pollution prevention curricula in San Diego City schools. This curriculum is designed to focus on high priority pollutants found throughout the City of San Diego, and mainly focuses on high priority water quality problems such as bacteria, pesticides, and sediment, all of which are high priority water quality problems for the San Diego Bay WMA.

Many of the school programs currently provide some level of assessment indicating that children have incurred either a change in knowledge or a behavior change. Some methods to document changes include the use of pre- and post-tests prior to and following the implementation of a program, or the use of a “commitment-based” method in which students are

asked to commit to implementing one of the identified pollutant prevention measures that were taught within their homes in the future. It is also expected that many children will share information they have learned with their families, thereby expanding the range of the San Diego Bay Education Program.

4.3.1.3 Project Clean Water Watershed Website

The Project Clean Water (PCW) website provides a venue for public education and outreach about the San Diego Bay WMA. In addition, the San Diego Bay Copermittees continue to link their individual jurisdictional websites to PCW. Both the PCW website and the individual Copermittee websites present additional mechanisms for educating the public about watershed issues in general. These may also provide information on BMPs and/or strategies to reduce the loading of high priority pollutants.

This website was selected as an integral part of the San Diego Bay Education Program because it provides specific information on the San Diego Bay WMA's high priority water quality problems, as well as BMPs designed to reduce loading of those contaminants. Therefore, this activity is expected to directly target the sources and discharges of high priority pollutants due to the opportunity to display targeted information geared towards specific watersheds. Although the assessment of websites presents a challenge, opportunities may be available to draw conclusions from county-wide survey results. Additionally, the number of hits for the San Diego Bay WMA portion of the webpage can provide an indication of the number of people that are receiving information about San Diego Bay high priority water quality problems, thus indicating a change in awareness.

4.3.1.4 Partnerships in Clean Water

The San Diego Bay Copermittees continue to focus on efforts to nurture existing partnerships, and to develop new partnerships within our communities. Community involvement is one way of spreading the watershed message more effectively. Additionally, studies have indicated that people are more apt to change a behavior if others within the community are also changing through the establishment of cultural "norms".

In general, activities that fall within these categories will be determined to be effective because they are all geared towards the general public, a target audience of concern. Additionally, the implementation of programs falling within the subcategories listed below will result in decreased high priority pollutant loading, such as bacteria, thereby directly targeting the sources and discharges of pollutants. There are four subcategories to describe the education/outreach efforts focused on community involvement.

- Cleanup Events – In addition to the obvious public participation aspects of a cleanup event, these events provide an opportunity to conduct education and outreach about watershed issues and general stormwater pollutants of concern.

- Citizen Monitoring/Training – Citizen Monitoring Training and Citizen Monitoring events provide opportunities for public participation, as well as education and outreach about watershed issues and general stormwater water quality problems.
- Storm Drain Stenciling Events – Efforts to conduct storm drain stenciling events with the general public. These events are an effective means for increasing watershed and water quality awareness in the community.
- Grants – Grants provide an opportunity to partner with other municipalities, governmental agencies, and non-profit organizations to conduct joint efforts with a common goal. Many grants are available to fund education and outreach projects to target San Diego Bay high priority water quality problems throughout target communities of the San Diego Bay WMA. Efforts will be made to identify potential grant opportunities for the San Diego Bay Watershed Education Program.

Assessment of Partners in Clean Water activities can be achieved through direct measurements, such as the amount of trash removed during a cleanup event, or the amount of storm drains labeled during a stenciling event. Other opportunities may be available to ask participants to fill out post-activity surveys in order to further assess changes in knowledge or behavior.

4.3.1.5 Municipal Staff Training on Watershed Elements

While municipal training is a required JURMP element, the San Diego Bay Copermittees recognize the benefit that can occur by integrating certain watershed elements into municipal staff training as feasible. Watershed-specific training can help target and bring more emphasis on the watershed high priority water quality problems into jurisdictional programs. Additionally, an aggressive program to educate municipal staff has been undertaken by each jurisdiction in the region. It is expected that public agencies will incorporate watershed-specific issues into their training as feasible while the San Diego Bay Copermittees develop a greater understanding of these challenges.

Municipal staff training provides an effective means to get a general message to large audiences, or a specific message out to particular staff that may have an influence on pollutant loads. Messages can either focus on broad watershed-concept based messages, or for more specific audiences, focus on specific sources and pollutants. Specific opportunities for municipal training will be assessed as they become available to determine the appropriate message for the particular target audience. Those opportunities which provide an avenue to provide education concerning San Diego Bay high priority water quality problems to the target audiences will be given priority. Since municipal staff training will usually take place during staff meetings, assessment can be achieved through the administration of pre- and post-tests to determine the level of knowledge gained as a result of the training.

4.3.1.6 Integrated Pest Management (IPM)

IPM promotes the use of integrated, ecologically sound pest management programs. The San Diego Bay Copermittees believe that educating the public to use IPM is an effective way to protect the beneficial uses of receiving waters throughout the watershed from the impacts of diazinon and other pesticides. IPM-focused programs have been selected for inclusion in the San Diego Bay Education Program because these activities specifically target pesticides, one of the San Diego Bay high priority water quality problems. Therefore, funding IPM-focused programs is an effective method by which to target one specific source and discharge of a watershed pollutant. There are two main subcategories to describe the education/outreach efforts related to IPM.

- Jurisdictional IPM Seminars/Events – Efforts to educate the public to use IPM as a way to protect the beneficial uses of receiving waters throughout the watershed. Copermittee efforts to organize or participate in local seminars or events regarding IPM for local residents, businesses, and public agency staff.
- San Diego Regional Program – Monies used on behalf of all the Regional Copermittees to implement an educational program aimed primarily towards the residential sector in order to induce positive changes in residents' attitudes and behaviors concerning pesticide use around their homes. Portions of this regional effort conducted within the San Diego Bay WMA will be considered and reported on during Annual Reports.

Some IPM-focused programs such as Jurisdictional Seminars/Events may provide the opportunity for assessment through the use of pre- and post-tests or surveys. The assessment of the San Diego Regional Program presents a bigger challenge; however, changes in knowledge and behavior can be measured through the implementation of County-wide or watershed-wide surveys.

4.4 Proposed Public Participation Activities

Public participation is encouraged to ensure that stakeholder interests and creative solutions are considered. Public participation involves evaluating input from the public as part of the decision-making process. It includes all aspects of identifying problems and opportunities, developing alternatives, and making decisions. In this definition, the public is any individual or group of individuals, organization, or political entity with an interest in a decision's outcome. They are often referred to collectively as stakeholders.

Broad participation is critical to further development and implementation of the watershed program. While San Diego Bay Copermittees aim to improve coordination among their own agencies, the watershed approach calls upon these agencies to engage diverse stakeholders in this process. Furthermore, the participating municipalities recognize that no single agency has the capacity to address water quality issues on its own, and that broad partnerships are essential to positively affect the water resources in the watershed. It is only through a

collaborative approach that the San Diego Bay Copermittees will develop a better understanding of these issues and processes affecting water quality in our watersheds.

Utilizing an effective stakeholder public participation process enhances the effectiveness of the San Diego Bay WURMP Program for the following reasons:

1. It encourages appropriate modification of policies and procedures before problems develop.
2. It contributes to sustainable decision making.
3. It provides an early warning system for public concerns and needs.
4. It presents an opportunity for communication between decision makers and the public.
5. It promotes understanding and acceptance of potentially controversial issues by the public.
6. It helps increase public understanding and support for the Port's environmental goals.

The following section is divided into two parts in order to summarize the activities that the San Diego Bay Copermittees will undertake to encourage public participation. The first part, entitled "Public Participation in the Decision-Making Process", provides a description of opportunities in which the general public can play a role in decisions that affect the San Diego Bay WMA. The second part, entitled "Public Involvement in Watershed Events", provides a description of opportunities in which the general public can take part in activities that benefit the San Diego Bay WMA. Many of these programs overlap with those already described in Section 4-2; therefore, extensive detail is not provided in this section. Please note that this section only discusses the activities that are specific to the San Diego Bay watershed.

4.4.1 Public Participation in the Decision-Making Process

Public participation is a critical part of the decision-making process for governmental agencies because many decisions made on a daily basis have the potential to affect the public on a variety of levels. U.S. EPA guidelines recommend that the public be included in developing, implementing, and reviewing stormwater management programs, and that the public participation process should make efforts to reach out and engage various socioeconomic groups. This section will provide descriptions of the known opportunities for members of the public to participate in decisions associated with the San Diego Bay Watershed Education Program and Land Use Activities. As other opportunities arise, these will be identified and discussed within this section of WURMP updates and within WURMP Annual Reports.

4.4.1.1 Project Clean Water – San Diego Bay Watershed Website

The Project Clean Water website (www.projectcleanwater.org) provides a means of public participation on San Diego Bay water quality issues. Each of the three subwatersheds which drain to San Diego Bay—Otay, Pueblo, and Sweetwater—have web pages devoted to them. Each web page includes relevant data on the watershed, a list of projects in the watershed, a link to the San Diego Bay WURMP, and an activities section. The activities section lists groups conducting

projects such as cleanups and citizen monitoring, and provides contact information for those groups. The website also acts as a clearinghouse for opportunities by which the public can be involved in the decision-making process, thereby serving as a critical link between the public and the San Diego Bay Copermittees. Other groups conducting water quality activities related to the watershed are also invited to contact the webmaster for inclusion on the site listing.

4.4.1.2 San Diego Bay WURMP Meetings

San Diego Bay WURMP meetings are held regularly to enhance communication among San Diego Bay Copermittees and other interested stakeholders. These meetings provided a venue for public participation by allowing Copermittees and other stakeholders to interact and discuss local watershed efforts. The meeting dates will be advertised on the county-wide Project Clean Water website, allowing any member of the community to attend and provide input to watershed-wide decisions.

4.4.1.3 Integration and Participation in Local Planning Activities

In recent years water quality management efforts have become increasingly watershed-focused, and several planning activities have been initiated. San Diego Bay Copermittees and other stakeholders in the San Diego Bay WMA are participating in the development of planning and/or guidance documents that are intended to improve the water quality in San Diego Bay. Stakeholders in the areas in which these plans focus are given the opportunity to attend regular meetings and can provide valuable input on plan direction.

4.4.1.4 Direct Interaction

In addition to the specific activities and programs described above, the San Diego Bay Copermittees' personnel also interact with the public on a daily basis. Municipal employees receive stormwater training on an ongoing basis, as described in each Copermittee's JURMP. Municipal employees interact with the public within their jurisdictions through a variety of avenues, such as the discretionary permit review process, building permit process, building inspections, public presentations, and outreach campaigns. These activities allow municipal staff to receive public comments about stormwater issues and regulations, as well as answer questions and provide guidance.

4.4.1.5 Assessment of Public Participation in Decision-Making

Effective public participation is driven by ensuring that the stakeholders are engaged at the appropriate level of decision-making. Public input into any decision-making process can be as simple as providing public notification that an initiative will occur, or a complex process that requires them to be intrinsically involved and responsible for the final decision-based outcome, or any level in between. The proper identification of the role of the public is crucial to ensuring the success of any initiative for which public input is sought. Table 4-3 provides a description of

the possible levels of public participation, ranging from simple notifications to empowerment of full decision-making.

Table 4-3. Levels of Public Participation

Public Participation Objectives				
INFORM	**CONSULT**	**INVOLVE**	**COLLABORATE**	**EMPOWER**
To provide the public with balanced and objective information to assist them in understanding the problem, alternatives, opportunities, and/or solutions.	To obtain public feedback on analysis, alternatives, and/or decisions.	To work directly with the public throughout the process to ensure that public concerns and aspirations are consistently understood and considered.	To partner with the public in each aspect of the decision including the development of alternatives and the identification of the preferred solution.	To place final decision-making in the hands of the public.

An opportunity for assessing public participation is available through the identification of the appropriate level at which to involve stakeholders in decision-making. Prior to embarking on a public participation opportunity, the San Diego Bay Copermittees will establish an objective defining the level at which the public is invited to be involved. The effectiveness of public participation in decisions affecting the San Diego Bay WMA will be assessed through an update on the status of that objective in Annual Reports, the numbers of stakeholders reached through each decision-making opportunity (where applicable), and summaries describing how stakeholders participated in each opportunity.

4.4.2 Public Involvement in Watershed Events

Involving the public in watershed-focused events increases knowledge and awareness throughout the watershed's communities. This involvement can also create cultural "norms" throughout the public, thereby increasing the participation in community events that benefit the watershed. This section will provide descriptions of opportunities for members of the public to participate in events associated with the San Diego Bay Watershed Education Program. Further details on these types of programs are discussed in Section 4.2

4.4.2.1 Workshops, Presentations and Conferences

The San Diego Bay Copermittees regularly conduct educational workshops and presentations addressing stormwater issues. These workshops target representatives from businesses, construction, the general public, and students. Other opportunities for involvement in events include displays or booths at conferences. During these types of events, those in attendance are given opportunities to ask questions, thereby serving as a method for involvement.

4.4.2.2 Community Events

The San Diego Bay Copermittees participate in a number of community events. Many of these events address regional water quality issues that span several watersheds. The San Diego Bay Copermittees feel such broad-based activities play an important role in engaging the public on important water quality issues and that such involvement positively impacts water quality.

4.4.2.3 Clean-up Events and Waste Collection

The San Diego Bay Copermittees sponsor and organize a number of cleanup and waste collection events annually. These events give the public a chance to actively participate in improving the water bodies in their neighborhoods. In addition to the obvious benefits to water quality, such events also give residents a tangible understanding of the link between their actions and impacts on receiving water quality. Active, hands-on experience tends to foster a sense of ownership and deepen participants' sense of responsibility for their local water bodies.

4.4.2.4 Assessment of Public Involvement in Watershed Events

The establishment of cultural "norms" for participating in watershed events can be assessed by examining the number of people in attendance for each event. An increasing number of participants will reveal that the San Diego Bay Copermittees' outreach efforts are effective in achieving public involvement. Assessment of these numbers will occur in Annual Reports by reporting the number of people reached through each event. Increasing numbers in subsequent Annual Reports will reveal the effectiveness of the Public Involvement Component.

It should be noted that public participation activities largely overlap with what is discussed in Section 4.2, Education Activities. For the purposes of assessing public participation effectiveness, annual assessments focused on public participation will only address the numbers of people reached. Other assessment information pertaining to knowledge increases or behavior changes are accounted for within the education assessments.

4.5 Proposed Land-Use Activities

Effective land use planning can provide important water quality protections by controlling the type and placement of activities allowed in critical areas, and by providing a framework within which site-specific control measures may be identified and imposed during land development and redevelopment activities. Cities and counties "plan" in order to identify important community issues, project future demand for services, anticipate potential problems, and to establish goals and policies for directing and managing growth. Individual jurisdictions use a variety of tools in the planning process including the general plan and a number of different federal, state, and local ordinances (e.g. zoning, subdivision, grading, etc.) and policies.

The Permit requires Copermittees to develop and implement a program for encouraging collaborative, watershed-based land use planning in their jurisdictional departments. Traditional

land use planning is difficult to coordinate across jurisdictional boundaries and using a watershed-based approach. To meet this challenge, the San Diego Bay Copermittees continue to develop and implement alternate mechanisms that address watershed planning issues. The discussion within the following sections explains how the San Diego Bay Copermittees are working together to develop and implement collaborative, watershed-based land use planning mechanisms.

4.5.1 General Plan Updates

State law requires that each jurisdiction adopt "a comprehensive, long-term general plan for [its] physical development." A General Plan is the official city or county policy regarding the potential size and distribution of the jurisdiction's future population – balancing housing, employment, and infrastructure needs with resource protection. The legislative body of each city (the City Council) and each county (Board of Supervisors) adopts zoning, subdivision, and other ordinances to regulate land uses and to carry out the policies of its general plan.

One of the ways that the San Diego Bay Copermittees intend to implement watershed based land-use planning is the incorporation of watershed requirements and/or principles into jurisdictional general plans. To date, many of the San Diego Bay Copermittees have addressed water quality, water protection, and jurisdictional collaboration in their General Plan updates. The San Diego Bay Copermittees continue to incorporate watershed concepts in jurisdictional policies, such as general plans. As updates occur, San Diego Bay Copermittees will provide information to WURMP Annual Reports as to how watershed principles were incorporated.

4.5.2 Notification Mechanisms

Before certain discretionary projects are developed, proposals must be reviewed for conformance with local regulations, environmental effects, and public testimony. Generally speaking, such review is conducted by all jurisdictions (there may be minor procedural differences between municipalities, but the review process is basically the same). The process provides cross-jurisdictional opportunity to comment on developmental projects, as well as increase the awareness in stakeholders of projects so they may have the opportunity to provide comments on the issue.

4.5.3 Watershed Planning and Management Mechanisms

Alternative planning mechanisms used by the San Diego Bay Copermittees focus on consideration for watershed management in programs that can be implemented across jurisdictional boundaries. In general, this includes participation in watershed management plans, watershed workgroups, increasing overall awareness of planning staff, and increasing public participation opportunities. Long-term planning ensures the protection of beneficial uses, preservation of open space lands, and ensures a balance of land uses when planning future development. As noted, several of the mechanisms encourage and/or rely on stakeholder input and utilize this input to guide the program.

For watershed issues to be successfully integrated into the land use planning process, effective dialogue must be established between the responsible parties. To this end, stormwater managers within the San Diego Bay WMA (e.g., the Copermittee staff with primary responsibility for completion and implementation of the WURMP) have begun to establish forums to ensure effective communication with planning personnel, both intra- and inter-jurisdictionally. In both instances, the purpose of the forums will be to facilitate the exchange of pertinent watershed-specific information, and to explore the collaborative development of planning strategies between stormwater managers and planners.

Additionally, watershed workgroups such as the San Diego Bay WURMP Workgroup are tasked with developing a watershed based stormwater management plan for the San Diego Bay WMA that identifies high priority water quality problems within the watershed. Once the San Diego Bay WURMP has been submitted to the RWQCB, the group will continue to meet as necessary to coordinate and collaborate on the implementation of the activities outlined in the document that will address the high priority water quality problems.

Section 5: Program Effectiveness Assessment

The requirements of the Municipal Permit specify that the San Diego Bay Copermittees shall annually assess the effectiveness of each Watershed Water Quality Activity, Watershed Education Activity, and the overall Urban Runoff Management Program within the San Diego Bay WMA. This section outlines the approach that the San Diego Bay Copermittees will use to assess the effectiveness of their efforts at improving surface water quality within the San Diego Bay WMA.

This section will focus on general principles of watershed activity assessment, including:

- A description of how the San Diego Bay Copermittees will incorporate Implementation Assessment, Water Quality Assessment, and Integrated Assessment into activity assessments.
- Identification of measurable targeted outcomes, assessment measures, and assessment methods.
- How to determine whether Outcome Levels 1-6 are applicable to specific watershed activities.
- A description of the steps that will be taken to utilize monitoring data to assess the effectiveness of watershed activities.

The common thread throughout the various stages of WURMP effectiveness assessment is the Targeted Outcome Levels 1-6. The 2003 Regional Copermittee document, "*A Framework for Assessing the Effectiveness of Jurisdictional Urban Runoff Management Programs*" (Framework), provides a complete description of the effectiveness assessment process and the target outcome concept (County of San Diego, 2003). Table 5-1 below identifies each outcome level and expected methods to measure effectiveness.

Table 5-1. Target Outcomes and Potential Assessment Measures and Methods

Outcome Level	Potential Assessment Measures and Methods
Level 1: Compliance with Activity-based Permit Requirements	Verification that required activities were implemented.
Level 2: Changes in Knowledge / Awareness	Measure of changes in targeted audiences knowledge and awareness potentially through the use of pre- and post-surveys and observations.
Level 3: Behavioral Change / BMP Implementation	Measure of changes in behavior or BMP implementation potentially through the use of observations or inspections.
Level 4: Load Reductions	Measured or calculated load reductions as a result of changes in behavior or BMP Implementation. Measurements may be supported by water quality data, and calculations may be supported by information and data related to the pollutant generating activities.
Level 5: Changes in Discharge Quality	Historical and statistically supportive trends in the levels of pollutants in the discharges from the MS4. This will be assessed periodically using the results of regional, WMA, and jurisdictional water quality monitoring data.
Level 6: Changes in Receiving Water Quality	Historical and statistically supportive trends in the levels of pollutants in the receiving waters. This will be assessed periodically using the results of regional, WMA, and jurisdictional water quality monitoring data.

It is important to note that as a part of activity/program implementation, data is collected and assessed to determine the measurable outcome. Each activity or program action is unique and their impacts on water quality are equally distinctive. As a result, their measurable outcomes do not follow a linear path (assessing effectiveness at every level) through the Levels 1-6. Instead, activities and their impacts may have only one or two of the targeted outcome levels apply to their assessment. For example, a capital project activity's impact may only be related to a direct load reduction (Level 4) and does not have a change in awareness or change in behavior impact; therefore, the activity would only be assessed for Level 4 targeted outcomes.

5.1 Watershed Activity Assessment

This section describes the San Diego Bay Copermittees' approach to assessing the effectiveness of watershed water quality and education activities. The San Diego Bay Copermittees intend to utilize the standard Activity Summary Sheet template identified in the Model Watershed Strategy to conduct activity assessments. All watershed water quality activities identified within this document have an associated activity summary sheet. Activity-specific approaches, target outcomes, and assessment measures and methods will be described in the Activity Summary Sheets and should include information in the following categories:

- Activity Description – Information here should provide a brief overview of the activity/project, including a description of the project location. It should also state why

the project is being conducted and what will be accomplished. Project history and other relevant watershed information may also be included.

- TMDL Applicability – Identifies whether the activity is planned for implementation in compliance with the TMDL. If it is, identify the TMDL.
- Time Schedule – A proposed time schedule for implementation of the activity and any key milestones will be included here.
- Participating Watershed Copermittees – This portion will identify the specific responsibilities of San Diego Bay Copermittee(s) conducting or participating in the activity.
- Other Participating Entities – This portion will identify any other participating organizations and their responsibilities for completing the activity.
- High Priority Water Quality Problem(s) Addressed – This portion will describe how the activity will address the identified high priority water quality problem(s) of the HA(s) in which it is implemented.
- Consistency with the Collective Watershed Strategy – A description of how the activity is consistent with the Watershed Strategy will be discussed in this section.
- Expected Benefits – This portion will describe the expected benefits of implementing this activity.
- Effectiveness Measurements – This section will describe how implementation effectiveness will be measured. It will identify the targeted outcomes, assessment measures, and assessment methods that will be used to gauge effectiveness. It will also describe how outcome levels 1-6 will be used to assess the effectiveness of the activity. Finally, any monitoring data and analysis from the Receiving Waters Monitoring Program or other applicable studies will be described here to assess the higher outcome levels (Levels 4-6) of activity effectiveness.

Each San Diego Bay Copermittee will evaluate their activities using the above categories as a guide. Annually, the San Diego Bay Copermittees will report progress on their activities using Activity Report Sheets that follow the layout of the Activity Summary Sheet categories described above. The activities and their assessments may vary widely from one activity to another based on the identified targeted outcomes applicable for each activity, the pollutant(s), pollutant source(s) it addresses, and the hydrologic area in which it is located. As stated earlier, it should be noted that each activity is not anticipated to achieve all of the higher target outcomes (Level 4 or higher), but when used in conjunction with other activities or as a stepping stone, those levels for the overall program may be achieved.

The San Diego Bay Copermittees intend to develop and implement effective activities that address the high priority water quality problems. The San Diego Bay Copermittees' approach utilizes the individual Copermittee jurisdictional efforts to achieve a holistic result. The San Diego Bay WMA is large, widespread, and contains numerous subwatersheds. Therefore, watershed activities in general, are easier to implement on a jurisdictional basis. The San Diego

Bay Copermittees are working collaboratively to plan and coordinate programs at the watershed scale, with the understanding that implementation will occur at the jurisdictional level. Each Copermittee is then provided the freedom to evaluate their specific target audience and desired outcome while working within the collective goals. In doing so, it places the responsibility of activity selection, implementation, and assessment on the Copermittee(s) responsible for the high priority water quality problem(s) within the HA. This encourages them to create truly effective activities that can fit into their budgets and priorities. As a result, a vast amount of information is gathered from jurisdictional efforts that the group can utilize when choosing watershed-wide activities. Using this approach, data from individual Activity Report Sheets could also lead to further evaluation and possible additional studies, monitoring, and large scale activities when needed.

Section 4 of this WURMP Document states that activities can be conducted on an individual or collaborative basis. Activities can also be evaluated on numerous levels using both individual and collaborative assessments. The Creek to Bay Cleanup Event is an example of both individual and collaborative participation. The San Diego Bay Copermittees have collaboratively participated as sponsors of the overall event and evaluate the overall results of the efforts as a whole. However, individual Copermittees manage local cleanup sites. As such, activity assessments may include a combination of individual and collective information, when applicable.

Education activities will be assessed using the mechanisms identified in Section 4.3 of this WURMP Document. The San Diego Bay Copermittees initiated this process during the previous Permit; it was determined to be an effective means to identify individual Copermittee efforts and also evaluate entire education programs as a whole. The San Diego Bay Copermittees have reviewed this process and compared it to the requirements in the new Permit, and have determined that it adequately addresses all requirements. As such, tables similar to those education (and public participation) tables currently found in the WURMP Annual Report will be completed for all education efforts. The raw data tables will comprise the individual assessments, when compiled; the summary tables form the program assessment.

At the end of each reporting period, the San Diego Bay Copermittees will complete detailed Activity Report Sheets for each activity. These Activity Report Sheets will identify how effectively the activity met the target outcomes, the measures achieved, and what target levels was achieved. As feasible and deemed appropriate by the Copermittees, certain activities may be chosen for additional assessment regarding efficiency (i.e., load reduction per cost) in addition to the assessments previously stated. This will help in future program planning and assessment. The data from the individual Activity Report Sheets will be included in the WURMP Annual Report and the results will be compiled into the WURMP programmatic assessment as discussed below. Activities will be continued or discontinued at the discretion of the participating Copermittee(s) based on data contained in the Activity Report Sheets, changes in monitoring data, TMDLs, and future unknown impacts on water quality.

5.2 Overall WURMP Assessment

This section describes how the San Diego Bay Copermittees will assess the effectiveness of WURMP implementation as a whole. Overarching management questions are the cornerstone of the San Diego Bay Copermittees' programmatic assessment as it allows for exploring, in detail, the effectiveness of programs and activities. The questions below are designed to assist in evaluating and compiling the activity assessments into a comprehensive WURMP assessment.

- Are the San Diego Bay Copermittees making progress towards achieving their program goals and objectives in a way that maximizes resources, is cost effective, and achieves the maximum water quality benefit possible?
- How well have the San Diego Bay Copermittees maximized the effectiveness of individual activities?
- Are the San Diego Bay Copermittees effectively targeting identified pollutant sources of the identified high priority water quality problems?
- Are the San Diego Bay Copermittees observing an improvement in the water quality – both of urban runoff/discharge and of receiving waters – of the WMA as shown through water quality assessments?

The San Diego Bay Copermittees will utilize the questions presented above and the Activity Report Sheets to analyze the overall program. Overall WURMP Assessment will consider the collective impact of all watershed activities on the high priority water quality problems at the HA scale, as well as how well the collaborative WURMP process is working. Appropriate emphasis will be placed on assessing whether watershed activities are focused on the appropriate high priority water quality problems and sources, or whether additional data is needed to reach such conclusions.

The San Diego Bay Copermittees will compile and evaluate data at a programmatic level using the following potential approaches where applicable. One approach would be to evaluate the overall impacts from numerous activities designed to achieve the same goal, whether it is addressing the same pollutant or the same sources. An example of this type of evaluation would be compiling activity information for both doggie bag dispenser and decreasing homeless encampments activities. Both activities are designed to address bacteria loads, but address different pollutant sources. The programmatic assessment would assess these activities collectively to determine their overall impact on reducing bacteria loads.

The second approach evaluates similar activities occurring on a jurisdictional basis but taking place in various watershed locations. An example of this type of evaluation would be compiling street sweeping or cleanup event data to create a watershed picture of load reductions. The San Diego Bay Copermittees could also utilize this data to create targeted outcomes for future reporting periods.

The San Diego Bay Copermittees will also evaluate monitoring data (both dry and wet weather), where applicable, to determine if the activities can be linked to improvements in discharges and/or receiving water quality. A complete description of the data evaluation approach is described in Section 3 of this Document. The San Diego Bay Copermittees will focus initially on urban run-off discharge assessments to evaluate potential links to sources and high priority pollutants. Urban run-off data is the first indication that a pollutant load is decreasing and may be the best indication of activity effectiveness. That reduction should then become evident in the receiving water monitoring data. The reductions in Diazinon are a good example of this trend. If the programs and activities do not show a decrease in pollutant loads in a certain area, the need for a special study, more monitoring data, or further source identification will be evaluated and implemented if needed.

The reverse is also true. Perhaps a certain area shows a spike in pollutant levels or a growth in potential sources. The San Diego Bay Copermittees would then take that data and develop a series of pilot programs to address the pollutants identified in the monitoring data. These programs might be chosen based on the results of an individual Copermittee activity or perhaps another watershed. By compiling individual data, the San Diego Bay Copermittees broaden their options when new problems are discovered or new TMDLs are issued.

The San Diego Bay Copermittees believe in a chained program approach. Certain activities lead to other activities, which in the end lead to changes in receiving water quality. The overall WURMP assessment aims to achieve Levels 5 and 6, changes in urban runoff discharge quality and changes in receiving water quality, where applicable. A chain approach may be necessary to achieve the higher outcome levels. By keeping this principle in mind during activity selection and implementation, overall improvements in water quality should be achieved.

5.3 TMDL BMP Implementation Plan Assessment

There are currently two approved Total Maximum Daily Loads (TMDLs) in the San Diego Bay WMA:

- Chollas Creek Diazinon TMDL
- Shelter Island Yacht Basin (SIYB) TMDL

The Municipal Permit lists these TMDLs under Section H and requires the Copermittees involved in the implementation of the TMDLs to integrate their TMDL- and WURMP-related efforts. In particular, implementation and assessment of TMDL efforts must be reported in the WURMP Annual Report.

Shelter Island Yacht Basin (SIYB) TMDL

The Shelter Island Yacht Basin TMDL contains a BMP Implementation Plan recommending efforts that stakeholders can implement to achieve compliance with the TMDL. The RWQCB is meeting and working with stakeholders to begin implementation of the said plan. The goal of the

TMDL will be to maintain a total annual copper discharge load of less than or equal to 30 kg per year into the SIYB.

As the relevant Copermittees plan and implement activities pursuant to the SIYB TMDL, they will develop activity summary sheets for each one and incorporate them into the San Diego Bay WURMP Five-Year Strategic Plan. These activities will be assessed by the Copermittees using the same methodology described in Sections 5.1 for assessing individual activities. Because they will be integrated into the WURMP, the activities will also be part of the overall WURMP assessment to be conducted using the methodology described in Section 5.2. BMPs will be assessed for effectiveness and efficiency and modified accordingly. Those found to be effective (i.e., in reducing pollutant loads) and efficient (i.e., in reducing pollutant loads per cost) will be considered for broader implementation, while those found to be less so may be considered for modification and further refinement or dropped in favor of other activities more effective and efficient.

In addition, WURMP activities being implemented pursuant to the SIYB TMDL will be assessed separately as a group at Outcome Level 4 (load reduction) in order to determine the progress in meeting the established numeric pollutant discharge limit requirement per the established schedule. These activities will likely include a special monitoring component that will help the Copermittees accurately determine the activities' effectiveness. The separate assessment of SIYB TMDL-related activities will be reported in the San Diego Bay WURMP Annual Report.

Chollas Creek Diazinon TMDL

The Chollas Creek Diazinon TMDL contains a BMP Implementation Plan to address Diazinon in Chollas Creek. Because the U.S. EPA has banned the further manufacture and sale of Diazinon, the said plan is focused on monitoring the condition of Chollas Creek with regards to the pesticide impairment, and on conducting an IPM campaign to inform residents and businesses regarding the proper use of pesticides so as not to pollute the region's receiving waters. Per the Copermittees' past monitoring data, Diazinon has been significantly reduced in Chollas Creek.

The San Diego Bay Copermittees involved with the Chollas Creek Diazinon TMDL will continue to implement their IPM campaign, not only to target the Chollas Creek area, but also other areas in the WMA that have been identified for pesticide-related impairment. As the relevant Copermittees plan and implement activities pursuant to the TMDL, they will develop activity summary sheets for each one and incorporate them into the San Diego Bay WURMP Five-Year action plan. These activities will be assessed by the Copermittees using the same methodology described in Sections 5.1 for assessing individual activities. Because they will be integrated into the WURMP, the activities will also be part of the overall WURMP assessment to be conducted using the methodology described in Section 5.2. BMPs will be assessed for effectiveness and efficiency and modified accordingly. Those found to be effective (i.e., in reducing pollutant loads) and efficient (i.e., in reducing pollutant loads per cost) will be considered for broader

implementation, while those found to be less so may be considered for modification and further refinement or dropped in favor of other activities more effective and efficient.

In addition to being reported in the San Diego Bay WURMP Annual Report, these efforts will be reported in the annual Response to Monitoring in Chollas Creek, Investigation Order No. R9-2004-0277 (Response), and appended to the San Diego Bay WURMP Annual Report. The Response reports on BMPs and monitoring activities implemented pursuant to the Chollas Creek Diazinon TMDL, and provides water quality-based conclusions as to the progress on meeting the established Diazinon waste load allocations (WLAs) per the established schedule.

Other TMDLs

As other TMDLs are developed to address other issues in the San Diego Bay WMA, the Copermittees will work to integrate TMDL activities with WURMP activities to maximize resources and achieve efficiencies. TMDL efforts affecting the San Diego Bay WMA will be described and integrated in the WURMP, and progress will be reported in the San Diego Bay WURMP Annual Reports.

Section 6: Program Review and Modification

6.1 Program Review

It is expected that the program objectives and management actions stated earlier in this document will be revised as the program evolves and matures. The objectives outlined in this section represent the continuing effort to establish a feedback-loop program that addresses both Municipal Permit compliance and evaluation of management actions relating to water quality issues.

The San Diego Bay Copermittees will submit any amendments and/or revisions to the San Diego RWQCB for review as part of the annual reporting process requirement.

6.2 Annual Reports

As required by the Permit, the Annual Monitoring Report is an annual evaluation of historical and current water quality data carried out to identify high priority water quality problems, and prioritize pollutants and problem areas within the San Diego Bay WMA. The Copermittees are dedicated to evaluating water quality and pollutant trends which may occur in each HA, and assess if management actions and/or activities are effective or if modifications and improvements are needed.

Each WURMP Annual Report will serve as an amendment to the WURMP itself. Consistent with the Municipal Permit, all changes to the WURMP (i.e., modified priorities, implementation schedule changes, map updates) will be described and justified in WURMP Annual Reports. Therefore, over time, the WURMP and all Annual Reports will be considered one unified, living document.

Section 7: Conclusion

The San Diego Bay Copermittees have been actively implementing a WURMP since 2002 to provide a watershed-based approach to addressing high priority water quality problems in the San Diego Bay WMA. The Copermittees have developed the WURMP document to meet the requirements of the Municipal Permit, with the goal to cooperatively and through collaborative strategic planning decrease the sources and reduce the discharge of pollutants from the MS4 that have been identified as causing high priority water quality problems.. The ten San Diego Bay Copermittees are continuing to take steps to gather information on receiving water conditions, pollutant sources, and improve management approaches through coordinated jurisdictional efforts. This collaborative strategy among all municipalities within the watershed boundaries is critical to the success of the individual management efforts as well as the overall health of the watershed.

The WURMP has been developed as an iterative process of watershed assessment, prioritizing water quality problems, establishment of appropriate management actions, monitoring, activity implementation, and assessment. The program framework described in this document provides guidance to the San Diego Bay Copermittees in their efforts to evaluate and prioritize pollutants, improve coordination between jurisdictions, develop appropriate activities to address high priority water quality problems in each HA, and assess the ability to obtain program goals. Even though high priority water quality problems will be targeted in a focused manner, it will take time for management activities to produce a quantifiable improvement in receiving water quality (Level 6 outcome). As such, the San Diego Bay WURMP includes performance measures and a review mechanism for each activity as well as for the program overall. At the conclusion of each yearly cycle, the process begins anew, allowing Copermittees to respond to changing conditions or adjust strategies that have not performed as anticipated. The WURMP and watershed activities will continue to evolve, leading to future activities as new information becomes available regarding the watershed's water quality conditions and effectiveness of previous activities.

This document exemplifies the San Diego Bay Copermittees' commitment to improved water quality, in particular, and environmental policies, in general. Moreover this dedication to environmental concerns is demonstrated by many of the policies and programs that have already been implemented by the Copermittees in their respective jurisdictions, including habitat or species protection, resource conservation, and regional planning efforts. Collectively, these existing policies and programs provide a solid foundation to address the overall WURMP objectives and the goal to positively affect the water resources in the San Diego Bay WMA.

Section 8: References

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