



WATERSHED URBAN RUNOFF MANAGEMENT PROGRAM

SANTA MARGARITA WATERSHED



January 2003

Prepared by

County of San Diego
Land Use and Environment Group

In Partial Fulfillment of the
Requirements of the
Regional Water Quality Control Board,
San Diego Region
Municipal Stormwater Permit Order No. 2001-01

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WATERSHED URMP

FOR THE SANTA MARGARITA WATERSHED

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LIST OF COMMON ABBREVIATIONS

ABBREVIATION	DESCRIPTION
"BMI"	Benthic Macro Invertebrate
"BMP"	Best Management Practices
"BOD"	Biochemical Oxygen Demand
"CDFG"	California Department of Fish and Game
"COC"	Constituent of Concern
"COD"	Chemical Oxygen Demand
"GIS"	Geographical Information System
"JURMP"	Jurisdictional Urban Runoff Management Plan
"MLS"	Mass Loading Station
"MS4"	Municipal Separate Storm Sewer System
"Municipal Permit"	Municipal Storm Water Permit Order 2001-01
"NPDES"	National Pollutant Discharge Elimination System
"PCB"	Polychlorinated Biphenyls
"SDRWQCB"	San Diego Regional Water Quality Control Board
"SUSMP"	Standard Urban Stormwater Management Plan
"TDS"	Total Dissolved Solid
"TIE"	Toxicity Identification Evaluation
"Santa Margarita Watershed URMP"	Santa Margarita Watershed Urban Runoff Management Plan
"TMDL"	Total Maximum Daily Load
"Watershed URMP"	Watershed Urban Runoff Management Program

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WATERSHED URMP

FOR THE SANTA MARGARITA WATERSHED

EXECUTIVE SUMMARY

The San Diego Regional Water Quality Control Board issued Municipal Storm Water Permit Order 2001-01 (Municipal Permit) on February 21, 2001 in an attempt to control waste discharges in urban runoff from the Municipal Separate Storm Sewer Systems (MS4) that drain into the watersheds of the County of San Diego, incorporated cities of San Diego County and the San Diego Unified Port District.

This Watershed Urban Runoff Management Program prepared for the Santa Margarita Watershed (Santa Margarita Watershed URMP) includes material that describes the intended approach to meeting the watershed-related Municipal Permit obligations as specified under Sections J, K and L of the Municipal Permit. As the sole Copermittee within the Watershed, the County of San Diego is responsible for implementing all activities within the portions of the watershed that lie within the boundaries of the County. This material is submitted pursuant to the Municipal Permit, and is subject to Section R.2 of the Municipal Permit concerning enforceability. This document also includes material describing plans to go beyond the requirements of the Municipal Permit. This additional material is provided for information only and is not submitted pursuant to the Municipal Permit. These two kinds of material are interwoven in this document.

In order for a plan to be successful, clear goals and objectives must first be established, agreed to and implemented by the Tijuana River Watershed Copermittees. Otherwise, program activities and tasks are adopted without an understandable purpose or clear direction. The Tijuana River Copermittees have defined the following goal and objectives for this Watershed URMP:

- Program Goal:** To positively affect the water quality of the Tijuana River watershed while balancing economic, social and environmental constraints.
- Objective #1:** Develop/expand methods to assess and improve water quality within the watershed.
- Objective #2:** Integrate watershed principles into land use planning.
- Objective #3:** Enhance public understanding of sources of water pollution within the watershed.
- Objective #4:** Encourage and enhance stakeholder involvement within the watershed.

The Santa Margarita River watershed encompasses approximately 750 square miles (475,000 acres) in northern San Diego and southwestern Riverside counties. While the lower watershed

is largely undeveloped due to steep topography and public ownership, the upper watershed is rapidly urbanizing. Of the total area of the watershed, a relatively small percentage of the land (approximately 18%) is within the jurisdiction of the County San Diego, and subject to the requirements of the Municipal Permit. A discussion of the physical environment within the watershed is included in Chapter 2.

Existing data suggests that the principal water quality issues found in surface runoff include eutrophication, as indicated by low dissolved oxygen, altered pH levels, elevated phosphorus levels, and high levels of total dissolved solids (TDS) including sulfate. In addition, other identified impacts include elevated levels of diazinon and trash. These have been identified as issues due to their impacts to the habitat value of water bodies, the potential impact on municipal and domestic water supply, and potential for impact on recreation opportunities in inland and coastal waters within the watershed. Of these, only the eutrophication issue has been identified as a high priority. A complete discussion of the data sources and the first year analyses conducted as part of this program, including prioritization of impacts, is included in Section 3 and Section 4 of this document.

Based on the analysis presented, County staff has proposed various activities to be conducted to facilitate efforts in addressing high priority water quality issues. These activities include additional data management and collection activities. A complete discussion of these activities can be found in Section 5.

Section 6 of this Watershed URMP provides a discussion of how the County will be integrating watershed principles into land use planning, including providing information on inter-jurisdictional collaboration with non-Copermittees who have jurisdictional authority within the Santa Margarita Watershed.

Further, the Watershed URMP includes a description of the educational and public outreach efforts that are ongoing and proposed so that all stakeholders are kept informed and are encouraged to ultimately integrate their activities into a watershed-approach for improving water quality. A discussion of the educational activities and public participation efforts included in the Watershed URMP effort are discussed in Section 7 and Section 8 of this document.

The strategy to evaluate the effectiveness of the Watershed URMP includes developing objectives that are measurable, have an expected outcome and an established preliminary performance standard as an indicator of meeting or exceeding expectations. Section 9 of the document provides a discussion of the County of San Diego's evaluation strategy as well as discussion of the justification, expected outcome and performance measure for each of the defined Watershed URMP objectives.

Lastly, for ease of reference, a complete summary of all the activities, tasks, and task tracking activities identified in this Watershed URMP can be found in the in Table ES-1 below. In addition, this information is provided on Table 10-1 found in Section 10 of this Watershed URMP, which provides the summary and conclusions of the Santa Margarita Watershed URMP.

It should be noted that this document is not a complete description of all water quality-related or all watershed programs planned or implemented by the County of San Diego within the Watershed. The County's commitment to water quality and broader environmental quality policies encompasses many programs already in existence, many of which are working toward complementary objectives and policies. Further, the County of San Diego has had habitat or species protection, resource conservation, or regional planning programs in place for many years. These programs address many of the same issues that watershed management programs address.

Table ES-1: Summary of Activities

OBJECTIVE #1: DEVELOP/EXPAND METHODS TO IMPROVE WATER QUALITY WITHIN THE WATERSHED.	
Activity:	Nutrient Management and Reduction Plan (Refer to Section I.5.b.1 for details)
Activity Completion:	Plan Development by January 2004, with subsequent dates dependent on outcome of data collection and assessment.
Lead Agency:	County of San Diego ¹
Activity Tracking:	Task completion (Y/N)
Activity:	Data Analysis and Management Project. (Refer to Section 5.b.2 for details)
Activity Completion:	Part 1: January 2004 (Part 2 and 3 are dependent upon the outcome of Part 1, and therefore TBD).
Activity Tracking:	Task completion (Y/N)
Activity:	Develop an Integrated Pest Management Campaign (Refer to Section I.5.b.3 for details)
Activity Completion:	July 2003 – July 2004 (Guide Development). Distribution would be subsequent and ongoing task.
Activity Tracking:	Task completion (Y/N)
Activity:	Feasibility Study - SMER Remote Sensing Pilot Project (Refer to Section I.5.b.4 for details)
Activity Completion:	Part 1 – Initial feasibility study complete by January 2004. Part 2 Implementation plan based on results of plan 1.
Activity Tracking:	Task completion (Y/N)

¹ As sole Copermittee within the Watershed, the County of San Diego will serve as Lead Agency for all activities unless otherwise noted.

Activity:	Encourage inter-jurisdictional cooperation with other jurisdictions (non-Copermittees) (refer to Section I.6.b).
Activity Completion:	On-going
Activity Tracking:	Minutes and Attendee Lists

OBJECTIVE #2:	INTEGRATE WATERSHED PRINCIPLES INTO LAND USE PLANNING
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Activity:	County of San Diego General Plan Update (see Section 6.a.3 for discussion).
Activity Completion:	General Plan adoption March 2004 (estimate)
Activity Tracking:	Task Completion (Y/N) – Provide a list of the goals/policies.

Activity:	Integrate down-stream notification procedures for discretionary project review. (see Section 6.b for discussion).
Activity Completion:	On-Going (jurisdictions shall be notified as projects are proposed throughout the year)
Activity Tracking:	Track the notices that are distributed to the other jurisdictions.

Activity:	Data/Information sharing between planning departments (see Sections 1), Section I.5.b.5, and Section I.6.c.4 for discussion).
Activity Completion:	On-Going
Activity Tracking:	County of San Diego shall provide annual tracking information of the materials that have been shared.

Activity:	Establish new/attend existing forums to ensure effective communication within the watershed (see Section I.6.c.4).
Activity Completion:	On-Going
Activity Tracking:	Track the number of forums attended.

Activity:	Continued involvement with the Watershed Water Supply Augmentation, Water Quality Protection and Environmental Enhancement Program (see Section I.5.b.5 and Section I.6.c.2).
Activity Completion:	Estimated completion of initial assessment: September 2003; On-Going Involvement.
Activity Tracking:	Track the number of meetings attended.
OBJECTIVE #3:	ENHANCE PUBLIC UNDERSTANDING OF SOURCES OF POLLUTION WITHIN THE WATERSHED
Activity:	Incorporate general watershed concepts and principles into jurisdictional education activities (refer to Section I.8.e for details).
Activity Completion:	On-Going
Activity Tracking:	Task Completion (Y/N) – description of / List of the components of storm water related educational activities that reflect general watershed concepts, pollutions, etc..
Activity:	Establish bilingual (English/Spanish) water quality educational program for grades K-6. (Refer to Section I.8.e for details).
Activity Completion:	September 2002 – January 2005
Activity Tracking:	Task Completion (Y/N) – Number of schools visited.
Activity:	Develop region-wide watershed map (refer to Section I.8.e for details).
Activity Completion:	January 2004 – January 2005
Activity Tracking:	Task Completion (Y/N)
Activity:	Create a tailored, brochure (and other educational materials) based on data/information gathered from water quality assessment, surveys and feedback (refer to Section 8.d for details).
Activity Completion:	2004 – Beyond (Brochure development) Distribution would be a subsequent and ongoing task
Activity Tracking:	Was a brochure created (Y/N)?.

Activity:	Expand and further develop the Project Clean Water website to include watershed-specific information and related activities including volunteering opportunities (refer to Section I.8.e for details).
Activity Completion:	2004 – Beyond
Activity Tracking:	List of activities conducted.
Activity:	Identify and evaluate efforts by others in the region, which support the goals of the storm water program, and pursue partnerships for educational opportunities (Refer to Section I.8.e for details).
Activity Completion:	2004 – Beyond
Activity Tracking:	List of activities conducted.
OBJECTIVE #4:	ENHANCE PUBLIC UNDERSTANDING OF SOURCES OF POLLUTION WITHIN THE WATERSHED
Activity:	Collaborate with other jurisdictions on watershed and regional public participation activities (see Section I.6.b, Section I.6.c.1, and Section I.6.c.2 for discussion).
Activity Completion:	On-Going
Activity Tracking:	Track the number and purpose of the activities.
Activity:	Establish new/attend existing forums to solicit stakeholder input in the development/implementation of the Watershed URMP and other watershed management plans (see Section I.7.b for discussion).
Activity Completion:	On-Going
Activity Tracking:	Track the number and purpose of the activities.
Activity:	Continue utilizing the Project Clean Water website as venue where stakeholders can go to learn more about what the water quality issues are and how they can get involved in resolving them (see Section I.7.b.2 for discussion).
Activity Completion:	On-Going
Activity Tracking:	Identify Project Clean Water activities seeking stakeholder involvement.

Activity: Integrate down-stream notification procedures for discretionary project review. (see Section 6.b and Section 7.b.4 for discussion).

Activity Completion: On-Going (jurisdictions shall be notified as projects are proposed throughout the year)

Activity Tracking: Track the notices that are distributed to the other jurisdictions.

Activity: Report shall be presented in a publicly advertised forum before being submitted to the RWQCB (see Section I.7.b.3 for discussion).

Activity Completion: 2003 – Beyond

Activity Tracking: Task Completion (Y/N)? Minutes.

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WATERSHED URMP

FOR THE SANTA MARGARITA WATERSHED

INTRODUCTION AND WATERSHED DESCRIPTION

1. PROGRAM FRAMEWORK

This Watershed Urban Runoff Management Program for the Santa Margarita Watershed (Santa Margarita Watershed URMP) has been prepared in partial fulfillment of the requirements under the National Pollution Discharge Elimination System Municipal Storm Water Municipal Permit, which was issued by the San Diego Regional Water Quality Control Board under Order Number 2001-01 to the County of San Diego, the 18 incorporated cities within the County of San Diego, and the San Diego Unified Port District for their urban runoff discharges. The County of San Diego (as sole Copermittee within the Santa Margarita Watershed) has prepared the Santa Margarita Watershed URMP in order to address the requirements under Sections J, K, and L of the Municipal Permit.

This Watershed URMP for the Santa Margarita Watershed includes material that describes the intended approach to meeting the watershed-related Municipal Permit obligations as specified under Sections J, K and L of the Municipal Permit. As the sole Copermittee within the Watershed, the County of San Diego is responsible for implementing all activities within the portions of the watershed that lie within the boundaries of the County. This material is submitted pursuant to the Municipal Permit, and is subject to Section R.2 of the Municipal Permit concerning enforceability. Where possible, this document also describes collaborative plans and efforts to reduce the impacts of urban activity on receiving water quality within the Santa Margarita Watershed boundaries to the maximum extent practicable. In addition, this document also includes material describing plans to go beyond the requirements of the Municipal Permit. This additional material is provided for information only and is not submitted pursuant to the Municipal Permit. These two kinds of material are interwoven in this document.

The Santa Margarita Watershed URMP has been developed and authored by the county of San Diego and is based upon the Model Watershed URMP documents prepared by the various Copermittee/Project Clean Water working groups to ensure regional consistency, but has been tailored specifically to the Santa Margarita Watershed. The document is organized into three chapters and ten sections.

The following briefly summarizes the content of each chapter and section of the document:

Chapter 1: Introduction and Watershed Description

Section 1: This section provides a brief introduction to the Santa Margarita Watershed URMP, the plan organization, regulatory background, the goals and objectives of the Santa Margarita Watershed URMP, and regulatory requirements of the Municipal Permit.

Section 2: This section provides a description of the Santa Margarita Watershed including the topographical and drainage features, the jurisdictions encompassed by, the various water bodies throughout, and the types of land uses within this watershed.

Chapter 2: Watershed Assessment

Section 3 & 4: These sections are fundamental components of the watershed program and include first year assessment of the water quality at the watershed level and identification and prioritization of related issues.

Chapter 3: Plan of Action

Section 5: This section describes the proposed activities to be conducted by the County of San Diego to facilitate efforts in improving water quality.

Section 6: This section describes the existing framework and methods used in making land use planning decisions within the jurisdiction. This section also discusses the dependence of successful Santa Margarita Watershed URMP efforts on collaborative inter-jurisdictional land use planning.

Section 7: This section introduces mechanisms that help facilitate public participation within the Santa Margarita Watershed.

Section 8: This section describes the educational and public outreach efforts that are ongoing and required to ensure that all stakeholders are informed and encouraged to ultimately integrate their activities into a watershed-approach for improving water quality.

Section 9: This section summarizes the goals of the Santa Margarita Watershed URMP and defines how achievement of these goals will be measured.

Section 10: This section provides the summary and conclusions of the Santa Margarita Watershed URMP.

1.a. Background²

The Federal Clean Water Act was amended in 1987 to address urban runoff. Municipalities throughout the United States were directed to obtain National Pollutant Discharge Elimination System (NPDES) permits for discharges of urban runoff from their municipal separate storm sewer systems (MS4s) by specified dates. In response to the Clean Water Act amendment (and the pending federal NPDES regulations which would implement the amendment), the San Diego

² Source: San Diego Regional Water Quality Control Board (SDRWQCB) Fact Sheet/Technical Report For SDRWQCB Order No. 2001-01 Municipal Storm Water Permit For San Diego County And Cities. November 2001.

Regional Water Quality Control Board (SDRWQCB) issued an “early” municipal storm water permit, Order No. 90-42, in July 1990 to various jurisdictions for their urban runoff discharges:

As the name implies, this “early” permit was issued prior to the November 1990 promulgation of the final federal storm water regulations. Although Order No. 90-42 contained the “essentials” of the then-proposed 1990 regulations, the requirements were written in very broad terms. This Order did not require watershed-based programs but did require some regional cooperation and consistency among the Copermittees in each watershed.

Municipal Storm Water Permit Order No. 2001-01 (Municipal Permit) is the re-issuance of Order No. 90-42. The Municipal Permit address the basic requirement in federal law for a program that reduces pollutants discharged from municipal storm sewers to the maximum extent practicable, and also includes the specific program elements required by federal regulations. The Municipal Permit exceeds federal specification by also directing municipal storm water dischargers to meet water quality standards; by directing structural post-construction treatment best management practices (BMPs) of a specified size for new development and significant redevelopment without limitation by the MEP standard; and by directing the Copermittees to cooperate to develop watershed-based programs. The following is a complete list of the the jurisdictions that are Copermittee under the Municipal Permit:

<i>City of Carlsbad</i>	<i>City of Imperial Beach</i>	<i>City of San Marcos</i>
<i>City of Chula Vista</i>	<i>City of La Mesa</i>	<i>City of Santee</i>
<i>City of Coronado</i>	<i>City of Lemon Grove</i>	<i>City of Solana Beach</i>
<i>City of Del Mar</i>	<i>City of National City</i>	<i>City of Vista</i>
<i>City of El Cajon</i>	<i>City of Oceanside</i>	<i>County of San Diego</i>
<i>City of Encinitas</i>	<i>City of Poway</i>	<i>Unified Port District</i>
<i>City of Escondido</i>	<i>City of San Diego</i>	

Under the Municipal Permit, each Copermittee is required to address the following principal elements:

- 1) Establish and maintain adequate legal authority to control pollutant discharges into and from its municipal separate storm sewer systems;
- 2) Develop and implement a Jurisdictional Urban Runoff Management Program, which will reduce discharges of pollutants and runoff flow during each major phase of urban development (i.e., planning, construction, and use or operation phases) within its jurisdiction;

-
- 3) Collaborate with other Copermittees within its watershed(s) to develop and implement a Watershed Urban Runoff Management Program, which will identify and address the highest priority water quality issues/pollutants in their respective watershed(s);
 - 4) Collaborate with all other Copermittees to address common issues, promote consistency, and plan and coordinate urban runoff activities;
 - 5) Develop and implement a Receiving Waters Monitoring Program, which shall focus on the collection of monitoring data to be used for the achievement of water quality policies and the protection of beneficial uses; and,
 - 6) Submit various reports describing the measures it is undertaking to meet the requirements of the Municipal Permit.

1.b. Watershed URMP Goals and Objectives

In broad terms, the overall purpose of the Santa Margarita Watershed URMP is to address the water quality issues and any degradation ongoing within the Santa Margarita Watershed. Fundamental to both establishing specific Santa Margarita Watershed URMP goals and measuring achievement, is the understanding that long-term solutions to water quality issues will be more effective if the issues are correctly and comprehensively identified and characterized. Based upon the proper identification and targeted characterization, true “watershed-approach” solutions can in fact then be applied.

The following provides the program goal of the Watershed URMP and specific objectives that the County of San Diego, as sole Copermittee within the Santa Margarita Watershed, will strive to meet as part of this effort.

PROGRAM GOAL

TO POSITIVELY AFFECT THE WATER RESOURCES OF THE SANTA MARGARITA WATERSHED WHILE BALANCING ECONOMIC, SOCIAL AND ENVIRONMENTAL CONSTRAINTS.

Objective #1: Develop/expand methods to assess and improve water quality within the watershed.

Objective #2: Integrate watershed principles into land use planning.

Objective #3: Enhance public understanding of sources of water pollution within the watershed.

Objective #4: Encourage and enhance stakeholder involvement within the watershed.

Further discussion on the justification, rationale and expected outcome for these objectives (and associated tasks/activities) can be found in Section 9 (Program Effectiveness Strategy) of this document.

1.c. Regulatory Requirements

Urban runoff does not follow jurisdictional boundaries, and often travels through many jurisdictions while flowing to receiving waters. Therefore, the actions of various municipalities within a watershed regarding urban runoff can have a cumulative impact upon shared receiving waters. The Municipal Permit directs the Copermittees within each watershed to collaborate in developing and implementing a Watershed URMP for their watershed. The purpose of the Watershed URMP is to identify and address the highest priority water quality issues/pollutants in each watershed. In the Santa Margarita Watershed, only the County of San Diego is a Copermittee under the Municipal Permit. However, the watershed travels through several other jurisdictions. As such, the Santa Margarita Watershed presents some unique challenges for implementation of the requirements under the Municipal Permit.

Pursuant to Section J.2 of the Municipal Permit, as part of the Watershed URMP, Copermittees within a watershed are directed to:

- 1) Map the watershed and identify all receiving waters, all impaired receiving waters, land uses, highways, jurisdictional boundaries, and prepare an inventory of all commercial, industrial, construction, municipal sites, and residential areas;
- 2) Assess the water quality of all receiving waters in the watershed based on existing data, and transition from the existing county-wide based to a watershed based monitoring program within the life of the current Municipal Permit;
- 3) Identify and prioritize major water quality issues in the watershed caused or contributed to by discharges from municipal separate storm sewer system, including potential sources of the problems;
- 4) Develop and implement a time schedule of activities needed to address the highest priority water quality issues;
- 5) Identify the Copermittee responsible for implementing each recommended watershed activity;
- 6) Develop and implement a mechanism for public participation in watershed activities;
- 7) Develop and implement a watershed based education program; and
- 8) Develop a strategy for assessing the effectiveness of the Watershed URMP.

Following the development and first year of implementation of the Watershed URMP, the Municipal Permit requires the submittal of an annual Watershed URMP report that documents the Copermittee's watershed activities during the preceding year. The Municipal Permit requires that the annual report include the following:

- 1) A comprehensive description of all watershed activities conducted by the Copermittees for Municipal Permit compliance;
- 2) Public participation mechanisms utilized during implementation;
- 3) Watershed-based land use planning mechanism description;
- 4) Effectiveness assessment of the Watershed URMP;
- 5) A summary of watershed related data not already included in the annual monitoring report; and
- 6) Identification of water quality improvements or degradation.

As identified under the Municipal Permit, the County of San Diego is the only Copermittee located within the Santa Margarita Watershed, and is designated as the lead Copermittee in the watershed.

2. WATERSHED DESCRIPTION

Section J.2.a of the Municipal Permit requires that the Watershed URMP provide an accurate map of the watershed that identifies the following: All receiving waters (including the Pacific Ocean); Clean Water Act Section 303(d) impaired receiving waters (including the Pacific Ocean); Land Uses; MS4s; Major Highways; Jurisdictional Boundaries; and, Inventoried commercial, construction, industrial, municipal sites and residential areas.

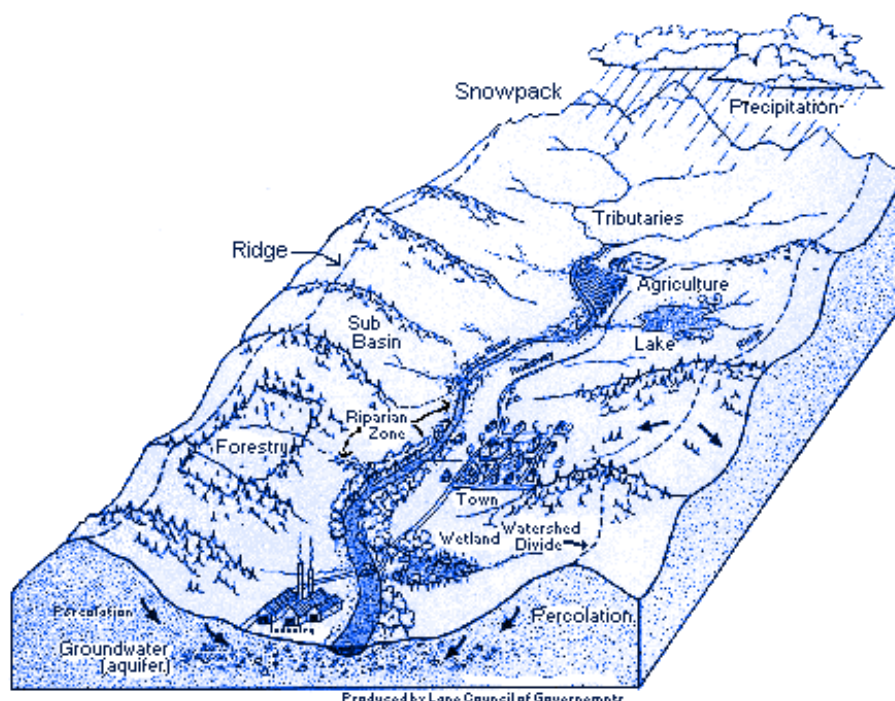
Most of this information can be found on the Geographical Information System (GIS) maps included in "map pockets" at the end of this Watershed URMP. Due to the limited time frame in which to complete this Watershed URMP, the attached maps are not entirely complete, as some of the information requested under the Municipal Permit is not readily available in a GIS format; specifically, the map showing the inventoried list of sources within the watershed.

As discussed above, Section J.2.a of the Municipal Permit states in part that each Copermittee must provide an accurate map that inventories commercial, construction, municipal and industrial facilities. As of the date of the document, the County of San Diego has been working diligently towards completing this requirement, but has not completed this task. The County of San Diego has discussed this issue with representatives from the SDRWQCB, who agreed that a work plan that completes this task be prepared and completed by the Copermittees. The work plan is discussed in the Unified Watershed URMP.

2.a. Introduction to the Watershed

A watershed can be loosely defined as an area of land that drains water, sediment and dissolved materials to a common receiving body or outlet. The term is not restricted to surface water runoff and includes interactions with subsurface water. A watershed can be very large (e.g. draining thousands of square miles to a major river or lake or the ocean), or very small, such as a 20-acre watershed that drains to a pond. A small watershed that nests inside of a larger watershed is sometimes referred to as a subwatershed. The term “watershed” is not restricted to surface water runoff and includes interactions with subsurface water.³ Figure 2-1, below provides an example of a typical watershed.

Figure 2-1: Typical Watershed⁴



The Santa Margarita River watershed encompasses approximately 750 square miles (475,000 acres) in northern San Diego and southwestern Riverside counties (see Figure 2-1). While the lower watershed is largely undeveloped due to steep topography and public ownership, the upper watershed is rapidly urbanizing. According to the Riverside County Southwest Area Community Plan, the population in these areas will exceed three-quarters of a million people by the year 2010. Portions of several jurisdictions with land use authority lie within the boundaries of the Santa Margarita Watershed. These jurisdictions include:

- The County of San Diego;
- The County of Riverside;

³ Environmental Protection Agency Website (www.epa.gov/owow/watershed/whatis.html).

⁴ Ibid.

-
- The City of Temecula;
 - The City of Murrieta;
 - The City of Hemet;
 - Marine Corps Base Camp Pendleton; and
 - The Fallbrook Naval Weapons Station.

Of these jurisdictions, only the County of San Diego is a Copermittee under the Municipal Permit.

The watershed contains a variety of nearly intact habitats including chaparral-covered hillsides, riparian woodlands, and coastal marshes. The watershed consists of nine specific hydrologic areas (HAs): Ysidora (HA 902.1); DeLuz (HA 902.2); Murrieta (HA 902.3); Auld (HA 902.4); Pechanga (HA 902.5); Wilson (HA 902.6); Cave Rocks (HA 902.7); Aguanga (HA 902.8); and Oakgrove (HA 902.9). Of the total watershed area, approximately 27% is within the boundaries of the County of San Diego, with only approximately 18% under the County's regulatory jurisdiction. The remaining 9% within the boundary of the County of San Diego lies within the jurisdiction of U.S. military reservations. Of the nine HA within the watershed, portions of five are within the boundaries of the County, with only portions of these under the land use authority of the County. Figure 2-2 below illustrates those hydrologic areas within the watershed that are within the boundaries of the County of San Diego (including the Federal lands that encompass Marine Corps Base Camp Pendleton and the Naval Weapons Station Fallbrook).

The Santa Margarita River is formed near the City of Temecula in Riverside County at the confluence of the Temecula and Murrieta creek systems. Once formed, the majority of the Santa Margarita River main stem flows within San Diego County through unincorporated areas, the community of Fallbrook, and the United States Marine Corps Base, Camp Pendleton. The cities of Murrieta and Temecula lie near the confluence of these creeks with the river's main stem, which flows southwesterly for 27 miles to the Pacific Ocean. The other major water bodies that make up the watershed includes: the Santa Margarita Lagoon, Vail Lake, Skinner Reservoir, and Diamond Valley Lake Reservoir. The lower river and estuary have largely escaped the development typical of other regions of coastal Southern California, and are therefore able to support a relative abundance of functional habitats and wildlife.

As discussed above, the upper watershed basin lies in Riverside County, one of the fastest growing areas in California. Presently, the Rainbow Creek tributary and the Santa Margarita Lagoon are listed on the Clean Water Act section 303(d) list due to excessive inputs of nutrients from a variety of sources including agriculture, nursery operations, municipal wastewater discharges, urban runoff, septic systems, and golf course operations. Other serious water quality and environmental concerns in the watershed include excessive sedimentation from development and agricultural areas, groundwater degradation and contamination

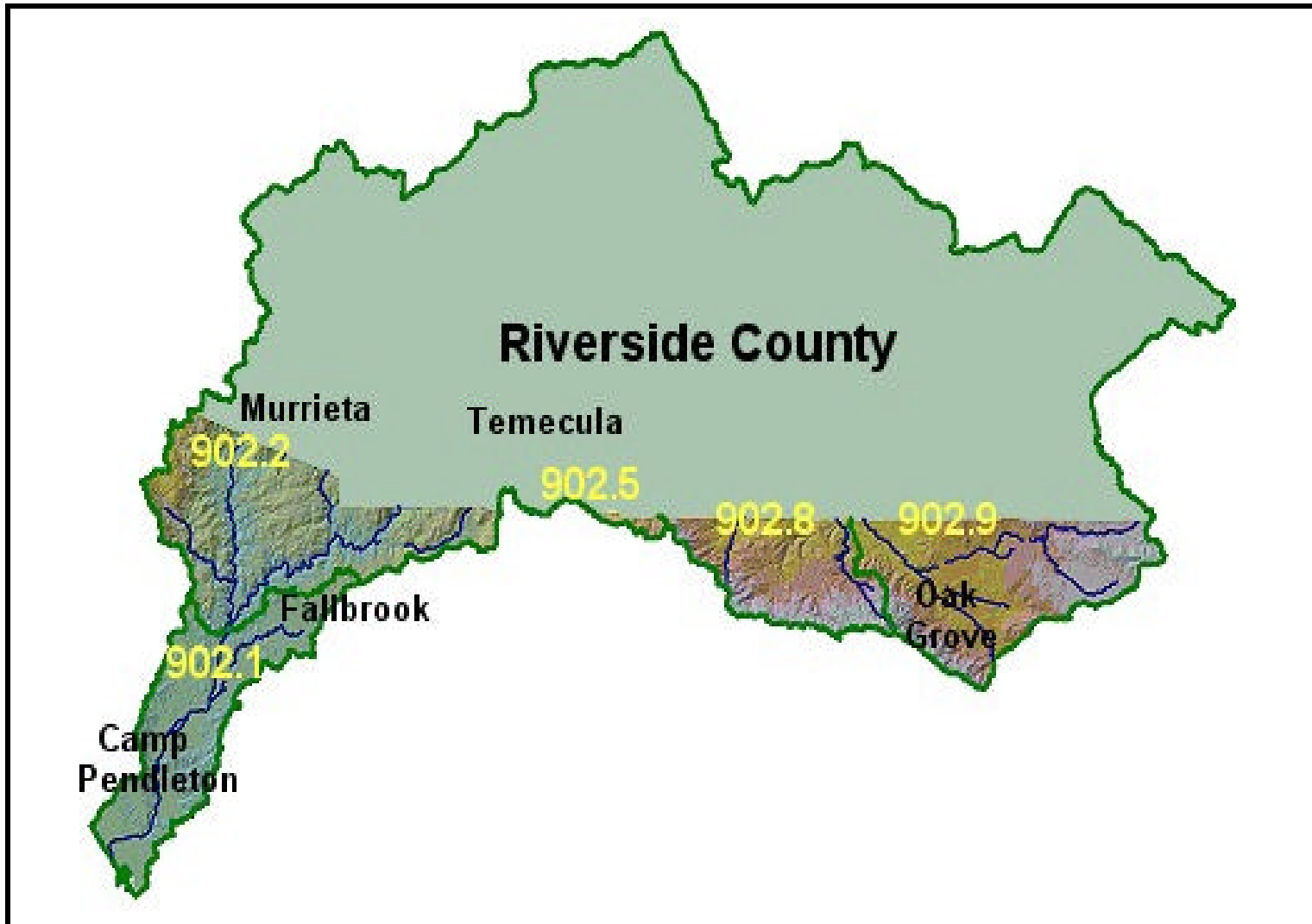


Figure 2-2: Santa Margarita Hydrologic Areas within the County of San Diego

with nitrates and other salts, habitat loss, channelization, flooding and scour, and the increase in invasive, non-native species.

2.b. Drainage

As discussed above, the Santa Margarita River is formed by the confluence of two major tributaries, Murrieta and Temecula Creek. The River flows southwesterly for about 27 miles to the Pacific Ocean. The stream course descends for 5 miles through a steep-sided gorge (Temecula Gorge) in a twisting course through the Santa Margarita Mountains, before passing through the “Narrows”, a bottleneck of coastal bluffs formed from sedimentary rock and more resistant marine deposits that constrict the river course for nearly a mile. Finally, the river washes into the Santa Margarita River Estuary.

The upper drainage of the Santa Margarita River is comprised almost entirely of ephemeral and intermittently flowing streams, with drainages that hold water primarily during the wetter winter months and after occasional storms in other seasons. Much of the upper watershed originates in lands of the Cleveland National Forest with Temecula Creek flowing from the eastern slope of the Palomar Mountains through a series of foothill valleys to its confluence with Murrieta Creek. Murietta Creek flows from the northern slope of the Santa Rosa Plateau across a wide valley at the foot of the eastern face of the Plateau, until it joins with Temecula Creek near the City of Temecula (in Riverside County).

In the Lower Canyon, the Santa Margarita River is perennial and joined by Sandia and DeLuz Creeks from the north and Rainbow and Fallbrook Creeks from the south, before entering the flat coastal alluvial drainage area. The River traverses flat alluvial topography mostly with a portion of the Marine Corps Base Camp Pendleton, several miles upstream from the saline estuary. The River enters a coastal gorge, and a Coastal Plain segment. The Coastal Plain segment is divided into the Upper, Chappo, and Ysidora Basins. The River terminates in the Pacific Ocean at the Santa Margarita River Estuary.

2.c. Watershed Beneficial Uses

The Water Quality Control Plan for the San Diego Basin (9) adopted by the SDRWQCB outlines specific beneficial use designations for the watersheds within the region. Beneficial use designations describe existing or potential uses of water bodies, and take into consideration the use and value of water for many purposes, including recreation in and on the water, protection and propagation of aquatic life and public water supplies. It is essential to review the beneficial uses identified within the watershed as part of the water quality assessment effort.

Beneficial uses designated for this watershed associated with water quality limited water bodies are summarized in Table 2-1. It should be noted that beneficial uses may be defined more specifically for each waterbody segment or sub-watershed in the San Diego Basin Plan. The beneficial uses for the watershed can be affected when water quality is limited or altered by a variety of factors.

Table 2-1: Beneficial Uses Within the Santa Margarita River Watershed

Hydrologic Unit (HU) Name	HU Basin No.	BENEFICIAL USE																				
		Municipal and Domestic Supply	Agricultural Supply	Industrial Service Supply	Industrial Process Supply	Navigation	Ground Water Recharge	Freshwater Replenishment	Contact Water Recreational	Non-Contact Water Recreational	Commercial and Sport Fishing	Biological Habitats	Warm Freshwater Habitat	Cold Freshwater Habitat	Estuarine Habitat	Wildlife Habitat	Rare, Threatened or Endangered Species	Marine Habitat	Aquaculture	Migration of Aquatic Organisms	Spawning, Reproduction, and/or Early Development	Shellfish Harvesting
Inland Surface Waters																						
Santa Margarita River	2.22	●	●	●				●	●			●	●		●	●						
Murrieta Creek	2.31	●	●	●	●			○	●			●			●							
Bundy Canyon	2.31	●	●	●	●			○	●			●			●							
Slaughterhouse Canyon	2.31	●	●	●	●			○	●			●			●							
Murrieta Creek	2.32	●	●	●	●			○	●			●			●							
Murrieta Creek	2.52	●	●	●	●		●	○	●			●			●							
Cole Canyon	2.32	●	●	●	●			○	●			●			●							
Miller Canyon	2.32	●	●	●	●			○	●			●			●							
Warm Springs Creek	2.36	●	●	●	●			○	●			●			●							

Hydrologic Unit (HU) Name	HU Basin No.	BENEFICIAL USE																						
		Municipal and Domestic Supply	Agricultural Supply	Industrial Service Supply	Industrial Process Supply	Navigation	Ground Water Recharge	Freshwater Replenishment	Contact Water Recreational	Non-Contact Water Recreational	Fishing	Commercial and Sport	Biological Habitats	Warm Freshwater Habitat	Cold Freshwater Habitat	Estuarine Habitat	Wildlife Habitat	Rare, Threatened or Endangered Species	Marine Habitat	Aquaculture	Migration of Aquatic Organisms	Spawning, Reproduction, and/or Early Development	Shellfish Harvesting	
Diamond Valley	2.36	●	●	●	●				○	●			●				●							
Goodhart Canyon	2.36	●	●	●	●				○	●			●				●							
Pixley Canyon	2.36	●	●	●	●				○	●			●				●							
Warm Springs Creek	2.35	●	●	●	●				○	●			●				●							
Domenigoni Valley	2.35	●	●	●	●				○	●			●				●							
Warm Springs Creek	2.34	●	●	●	●				○	●			●				●							
Warm Springs Creek	2.33	●	●	●	●				○	●			●				●							
French Valley	2.33	●	●	●	●				○	●			●				●							
Santa Gertrudis Creek	2.42	●	●	●	●			○	●	●			●	●			●							
Long Valley	2.42	●	●	●	●			○	●	●			●	●			●							
Glenoak Valley	2.42	●	●	●	●			○	●	●			●	●			●							

Hydrologic Unit (HU) Name	HU Basin No.	BENEFICIAL USE																						
		Municipal and Domestic Supply	Agricultural Supply	Industrial Service Supply	Industrial Process Supply	Navigation	Ground Water Recharge	Freshwater Replenishment	Contact Water Recreational	Non-Contact Water Recreational	Fishing	Commercial and Sport Fishing	Biological Habitats	Warm Freshwater Habitat	Cold Freshwater Habitat	Estuarine Habitat	Wildlife Habitat	Rare, Threatened or Endangered Species	Marine Habitat	Aquaculture	Migration of Aquatic Organisms	Spawning, Reproduction, and/or Early Development	Shellfish Harvesting	
Tucalota Creek	2.43	●	●	●	●		○		●	●			●	●			●							
Willow Canyon	2.44	●	●	●	●		○		●	●			●	●			●							
Tucalota Creek	2.41	●	●	●	●		○		●	●			●	●			●							
Crown Valley	2.41	●	●	●	●		○		●	●			●	●			●							
Rawson Canyon	2.41	●	●	●	●		○		●	●			●	●			●							
Tucalota Creek	2.42	●	●	●	●		○		●	●			●	●			●							
Santa Gertrudis Creek	2.32	●	●	●	●				○	●			●				●							
Long Canyon	2.32	●	●	●	●				○	●			●				●							
Temecula Creek	2.93	●	●	●	●		●		○	●			●				●							
Kohler Canyon	2.93	●	●	●	●		●		○	●			●				●							
Rattlesnake Creek	2.93	●	●	●	●		●		○	●			●				●							

Hydrologic Unit (HU) Name	HU Basin No.	BENEFICIAL USE																						
		Municipal and Domestic Supply	Agricultural Supply	Industrial Service Supply	Industrial Process Supply	Navigation	Ground Water Recharge	Freshwater Replenishment	Contact Water Recreational	Non-Contact Water Recreational	Fishing	Commercial and Sport Fishing	Biological Habitats	Warm Freshwater Habitat	Cold Freshwater Habitat	Estuarine Habitat	Wildlife Habitat	Rare, Threatened or Endangered Species	Marine Habitat	Aquaculture	Migration of Aquatic Organisms	Spawning, Reproduction, and/or Early Development	Shellfish Harvesting	
Temecula Creek	2.92	●	●	●	●		●		○	●			●				●							
Chihuahua Creek	2.94	●	●	●	●		●		○	●			●				●							
Chihuahua Creek	2.92	●	●	●	●		●		○	●			●				●							
Cooper Canyon	2.92	●	●	●	●		●		○	●			●				●							
Iron Spring Canyon	2.92	●	●	●	●		●		○	●			●				●							
Temecula Creek	2.91	●	●	●	●		●		○	●			●				●							
Culp Valley	2.91	●	●	●	●		●		○	●			●				●							
Temecula Creek	2.84	●	●	●	●		●		●	●			●	●			●							
Tule Creek	2.84	●	●	●	●		●		●	●			●	●			●							
Million Dollar Canyon	2.84	●	●	●	●		●		●	●			●	●			●							
Cottonwood Creek	2.84	●	●	●	●		●		●	●			●	●			●							

Hydrologic Unit (HU) Name	HU Basin No.	BENEFICIAL USE																						
		Municipal and Domestic Supply	Agricultural Supply	Industrial Service Supply	Industrial Process Supply	Navigation	Ground Water Recharge	Freshwater Replenishment	Contact Water Recreational	Non-Contact Water Recreational	Fishing	Commercial and Sport Fishing	Biological Habitats	Warm Freshwater Habitat	Cold Freshwater Habitat	Estuarine Habitat	Wildlife Habitat	Rare, Threatened or Endangered Species	Marine Habitat	Aquaculture	Migration of Aquatic Organisms	Spawning, Reproduction, and/or Early Development	Shellfish Harvesting	
Temecula Creek	2.83	●	●	●	●		●		●	●			●	●			●							
Long Canyon	2.83	●	●	●	●		●		●	●			●	●			●							
Wilson Creek	2.63	●	●	●	●		●		○	●			●				●							
Wilson Creek	2.61	●	●	●	●		●		○	●			●				●							
Cahuilla Creek	2.73	●	●	●	●		●		○	●			●				●							
Hamilton Creek	2.74	●	●	●	●		●		○	●			●				●							
Hamilton Creek	2.73	●	●	●	●		●		○	●			●				●							
Cahuilla Creek	2.72	●	●	●	●		●		○	●			●				●							
Cahuilla Creek	2.71	●	●	●	●		●		○	●			●				●							
Elder Creek	2.71	●	●	●	●		●		○	●			●				●							
Cahuilla Creek	2.61	●	●	●	●		●		○	●			●				●							

Hydrologic Unit (HU) Name	HU Basin No.	BENEFICIAL USE																						
		Municipal and Domestic Supply	Agricultural Supply	Industrial Service Supply	Industrial Process Supply	Navigation	Ground Water Recharge	Freshwater Replenishment	Contact Water Recreational	Non-Contact Water Recreational	Fishing	Commercial and Sport Fishing	Biological Habitats	Warm Freshwater Habitat	Cold Freshwater Habitat	Estuarine Habitat	Wildlife Habitat	Rare, Threatened or Endangered Species	Marine Habitat	Aquaculture	Migration of Aquatic Organisms	Spawning, Reproduction, and/or Early Development	Shellfish Harvesting	
Wilson Creek	2.81	●	●	●	●		●		●	●			●	●			●							
Lewis Valley	2.62	●	●	●	●		●		○	●			●				●							
Arroyo Seco Creek	2.81	●	●	●	●		●		●	●			●	●			●							
Arroyo Seco Creek	2.82	●	●	●	●		●		●	●			●	●			●							
Kolb Creek	2.81	●	●	●	●		●		●	●			●	●			●							
Temecula Creek	2.81	●	●	●	●		●		●	●			●	●			●							
Temecula Creek	2.51	●	●	●	●		●		○	●			●				●							
Temecula Creek	2.52	●	●	●	●		●		○	●			●				●							
Pechanga Creek	2.52	●	●	●	●		●		○	●			●				●							
Rainbow Creek	2.23	●	●	●					●	●			●	●			●							
Rainbow Creek	2.22	●	●	●					●	●			●	●			●							

Hydrologic Unit (HU) Name	HU Basin No.	BENEFICIAL USE																						
		Municipal and Domestic Supply	Agricultural Supply	Industrial Service Supply	Industrial Process Supply	Navigation	Ground Water Recharge	Freshwater Replenishment	Contact Water Recreational	Non-Contact Water Recreational	Fishing	Commercial and Sport Fishing	Biological Habitats	Warm Freshwater Habitat	Cold Freshwater Habitat	Estuarine Habitat	Wildlife Habitat	Rare, Threatened or Endangered Species	Marine Habitat	Aquaculture	Migration of Aquatic Organisms	Spawning, Reproduction, and/or Early Development	Shellfish Harvesting	
Sandia Canyon	2.22	●	●	●				●	●				●	●			●							
Walker Basin	2.22	●	●	●				●	●				●	●			●							
Santa Margarita River	2.21	●	●	●				●	●				●	●			●	●						
Deluz Creek	2.21	●	●	●				●	●				●	●			●	●						
Cottonwood Creek	2.21	●	●	●				●	●				●	●			●							
Camps Creek	2.21	●	●	●				●	●				●	●			●							
Fern Creek	2.21	●	●	●				●	●				●	●			●							
Santa Margarita River	2.13	●	●	●	●			●	●				●	●			●	●						
Wood Canyon	2.13	●	●	●	●			●	●				●	●			●							
Santa Margarita River	2.12	●	●	●	●			●	●				●	●			●	●						
Santa Margarita River	2.11	●	●	●	●			●	●				●	●			●	●						

Hydrologic Unit (HU) Name	HU Basin No.	BENEFICIAL USE																						
		Municipal and Domestic Supply	Agricultural Supply	Industrial Service Supply	Industrial Process Supply	Navigation	Ground Water Recharge	Freshwater Replenishment	Contact Water Recreational	Non-Contact Water Recreational	Fishing	Commercial and Sport Fishing	Biological Habitats	Warm Freshwater Habitat	Cold Freshwater Habitat	Estuarine Habitat	Wildlife Habitat	Rare, Threatened or Endangered Species	Marine Habitat	Aquaculture	Migration of Aquatic Organisms	Spawning, Reproduction, and/or Early Development	Shellfish Harvesting	
Pueblitos Canyon	2.11	●	●	●	●				●	●			●	●			●	●						
Newton Canyon	2.11	●	●	●	●				●	●			●	●			●							
Coastal Waters																								
Pacific Ocean				●		●			●	●	●	●					●	●	●	●	●	●	●	●
Santa Margarita Lagoon	2.11								●	●					●		●	●	●		●			
Reservoirs and Lakes																								
O'Neill Lake	2.13	●	●	●			●		●				●	●			●	●						
Lake Skinner	2.42	●	●	●		○	●	1	●				●				●							
Vail Lake	2.81	●	●	●		●	●	1	●				●				●							

Hydrologic Unit (HU) Name	HU Basin No.	BENEFICIAL USE																						
		Municipal and Domestic Supply	Agricultural Supply	Industrial Service Supply	Industrial Process Supply	Navigation	Ground Water Recharge	Freshwater Replenishment	Contact Water Recreational	Non-Contact Water Recreational	Fishing	Commercial and Sport Fishing	Biological Habitats	Warm Freshwater Habitat	Cold Freshwater Habitat	Estuarine Habitat	Wildlife Habitat	Rare, Threatened or Endangered Species	Marine Habitat	Aquaculture	Migration of Aquatic Organisms	Spawning, Reproduction, and/or Early Development	Shellfish Harvesting	
Ground Water																								
Ysidora	2.10	●	●	●	●																			
Deluz	2.20	●	●	●																				
Murrieta	2.30	●	●	●	●																			
Alud	2.40	●	●	●																				
Pechanga	2.50	●	●	●																				
Wilson	2.60	●	●	○																				
Cave Rocks	2.70	●	●																					
Aguanga	2.80	●	●	●																				
Oakgrove	2.90	●	●																					

- Existing Beneficial Use
- Potential Beneficial Use

Source: San Diego Regional Water Quality Control Board – Basin Plan, 1994.

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WATERSHED URMP

FOR THE SANTA MARGARITA WATERSHED

WATER QUALITY ASSESSMENT

3. WATER QUALITY ASSESSMENT

Objective #1 of the Santa Margarita Watershed URMP, as defined in the Introduction of the document, is to “develop/expand methods to improve water quality within the watershed.” This objective closely coincides with Section J.2.b of the Municipal Permit, which requires that the Watershed URMP provide an assessment of the water quality of all receiving waters in the watershed based upon 1) existing water quality data; and, 2) annual watershed water quality monitoring that satisfies the watershed monitoring requirements established in Attachment ‘B’ of the Municipal Permit. Program components, as described in Chapters 3 and 4 have been developed in response to this objective.

3.a. Overview

The San Diego Copermittees have been required to implement water quality monitoring programs since 1993 under the previous municipal storm water permit. The initial copermittee monitoring program generally called for the collection, analysis and reporting of water quality data at the countywide level.

As noted earlier, the current Municipal Permit (effective February 21st, 2001 through February 21st, 2006) requires that the previous jurisdictional efforts be expanded to incorporate runoff management activities (including monitoring) at the watershed level, within the boundaries of 9 watershed management areas as delineated under the Municipal Permit. Additionally, under the Municipal Permit, monitoring program requirements (collection, analysis and reporting of water quality data) are also expected to transition during the five-year permit period from the current countywide approach to a watershed-based approach.

There are numerous water quality monitoring programs in the region, including collection and analysis of groundwater and reservoirs’ data. In their efforts to assess the effects of urban runoff on receiving waters, the Copermittees’ monitoring programs make use of a variety of methodologies to document the physical, chemical, and biological characteristic of streams, creeks, rivers, enclosed bays, lagoons, estuaries and beaches.

This document is designed to outline a uniform assessment strategy to link disparate monitoring programs to provide an evaluation of watershed conditions. At the present time, urban runoff is assessed and evaluated in a comprehensive

fashion for wet weather impacts (chemistry, toxicity) and indicators of relative watershed health from an ecological perspective (rapid stream bioassessment). Other monitoring programs conducted by individual Copermittees (such as the dry weather or the coastal outfall monitoring programs) are yet to be considered.

3.b. Monitoring Programs

Issues concerning watershed health and ecological diversity, including water quality of receiving waters, span a variety of spatial and time scales. Many questions related to these issues are generally governed under the Municipal Permit and fall primarily within the realm of one of three categories of monitoring research programs as described below:

Regional Monitoring Programs encompass a large spatial area (e.g., Southern California Bight), and look at many elements potentially impacted by storm water runoff. This type of monitoring includes the Regional Monitoring Program conducted by the Southern California Coastal Waters Research Project (SCCWRP) once every 5 years, and takes a longer-term view of the ultimate receiving waters, the coastal bays, lagoons, and the ocean. Regional monitoring is designed to answer questions concerning the ecological health of the entire Southern California coastline and encompass numerous components, including water and sediment quality, fish, benthos, birds, etc.

Core Monitoring refers to several long-term monitoring activities conducted by the Copermittees minimally on an annual basis. This is focused monitoring which concentrates on fewer parameters than Regional Monitoring efforts and serves to provide data to assess long-term trends within and across watersheds. Most of the Core Monitoring program activities (data collection, analysis, and reporting) will transition into a watershed-based approach within the next four years and have been designed under an adaptive strategy subject to review as warranted by new data or information.

Process Studies supplement both the Core and the Regional Monitoring activities described above. Process Studies are short-term evaluations designed to answer specific questions. Some examples of Process Studies include evaluation of the link between storm water discharges and Toxic Hot Spots, conducting DNA-ribotyping for bacterial source identification in a watershed, and source identification studies used for the development of Total Maximum Daily Loads (TMDLs) for 303(d) listed bodies of water. The Regional Board, Copermittees, educational institutions and other agencies generally collaborate in providing funding, management, and technical support for these types of focused investigations.

All these monitoring efforts are interrelated and are designed to allow and support complementary data collection and analysis. Periodic and detailed review of all findings in a structured manner is needed to ensure copermittee programs' objectives are met.

At the present time there is not one single assessment strategy to link these diverse programs together to get a "view" of watershed conditions. The water quality assessment conducted as part of this watershed based program has been

designed and will be refined in the future to serve as the vehicle for this data integration effort.

3.b.1 Core Monitoring

The Core Monitoring Program is designed to achieving an understanding of the impacts of urban runoff on the water quality and ecological health of receiving waters within each San Diego watershed through an evaluation of chemical, physical, and biological evidence.

The components of the Core Program are intimately linked and the evaluation of these components together allows for the long-term assessment of changes in water quality in individual watersheds. Components of the Core Program to be implemented during the life of the current Municipal Permit include:

- Mass Loading Station Monitoring;
- Urban Stream Bioassessment Monitoring;
- Coastal Storm Drain Outfall Monitoring;
- Dry Weather Monitoring;
- Ambient Bay, Lagoon, and Coastal Receiving Water Monitoring; and,
- Toxic Hot Spots Monitoring in San Diego Bay

The Core Monitoring program, currently conducted on a countywide basis, has been designed as a adaptive program and is scheduled to transition to a watershed-based program by the end of the life of the current Municipal Permit in early 2006.

3.b.2 Core Monitoring Program: 2001 – 2002 Monitoring Season

The Core Monitoring Program implemented in October 2001 during 2001-2002 monitoring period included several activities identified in Section 3.b.1 above. Those activities conducted during the 2001-2002 Season are described in Table 3-1, below.

Table 3-1: Copermittee Monitoring Program

Monitoring Activities	Location	Season	Number of Sites	Analytes
Mass Loading Monitoring	River	Oct 1- April 30	12	Chemistry, Bacteria, Toxicity
Urban Stream Bioassessment	Creeks, Streams, Rivers	Spring and Fall	TBD	Chemistry, Biology
Coastal Storm Drain Monitoring	Coastal Storm Drain Outfalls and Ocean	Year Round	TBD	Bacteria
Dry Weather Monitoring	Storm Drains	Summer	TBD	Chemistry, Bacteria
Bay, Lagoon, and Coastal Receiving Waters Monitoring	Bays and Lagoons	Summer	TBD	Chemistry, Bacteria

* It should be noted, the Coastal Storm Drain Monitoring program does not include the Santa Margarita Watershed, since the coastal waters for the watershed are within jurisdiction/boundaries of Marine Core Base Camp Pendleton.

(1) *Mass Loading Monitoring*

Twelve regional mass loading stations (MLS) scheduled to be monitored during the 2001-2002 wet-weather season over three separate viable storm events. A viable storm event is considered a minimum of 0.1 inches of rainfall. However, no viable storm event was recorded at the Otay River MLS, with flow at the MLS insufficient to enable a sample. Also, the MLS on the Santa Margarita River, located on Camp Pendleton, was only sampled during one viable storm event due to security reasons.

The twelve regional MLS within the County of San Diego operated during the 2001-2002 season are located within the following streams:

- Santa Margarita River
- San Luis Rey River
- Agua Hedionda Creek
- Escondido Creek
- San Dieguito Creek
- Peñasquitos Creek
- Tecolote Creek
- San Diego River
- Chollas Creek
- Sweetwater River
- Otay River
- Tijuana River

A graphical representation of the location of the twelve regional MLS is provided in Figure 3-1, below. It should be noted that presently, only 11 stations are operating. Given the low flow during the 2001-2002 wet-weather season at the Otay station, this station has been eliminated.

All sampling and analyses conducted for MLS was in accordance with applicable USEPA regulations and Regional Board staff guidance. One flow-weighted composite was collected along with one grab sample at each station during each storm.

The flow-weighted composite water samples were analyzed for the following parameters:

- *Inorganic chemicals* – Ammonia, chemical oxygen demand (COD), total and dissolved phosphorus, nitrate, nitrite, total hardness, total Kjeldahl nitrogen, total dissolved solids, total suspended solids, turbidity, MBAS (detergents).
- *Metals* (Total and Dissolved Metals) – Antimony, arsenic, cadmium, chromium, copper, lead, nickel, selenium, zinc.
- *Organophosphate pesticides* – Diazinon, chlorpyrifos.
- *Toxicity Testing* - At each station using *Ceriodaphnia dubia*, *Selenastrum capricornutum*, and *Hyalella azteca*.



Figure 3-1: Regional Mass Loading Stations in San Diego County

The grab samples were analyzed for the following parameters:

- Temperature;
- pH;
- Specific conductance;
- Biochemical Oxygen Demand (BOD);
- Oil and grease;
- Total coliform;
- Fecal coliform; and
- *Enterococcus*.

Additionally, storm water runoff samples collected at mass loading stations were also subject to toxicity tests. Toxicity testing is performed to assess the potential impact of complex mixtures of unknown constituents on aquatic life according to EPA standards. Toxicity testing can provide information on potential short-term “acute” effects, as well as longer-term “chronic” effects.

Toxicity was tested using flow weighted composite samples that characterize the runoff into the stream throughout the storm. Laboratory test organisms were placed in small containers of effluent sample and monitored over time to compare the response of organisms placed in non-toxic control water to the sample water. The sample water was diluted (with control water) to several known concentrations before the test, and test organisms were added to each concentration. Acute, short term effects, were tested using a freshwater amphipod (*Hyalella azteca*) and chronic, long term effects, were tested using both the freshwater cladoceran (*Ceriodaphnia dubia*) and algae *Selenastrum capricornutum*. These species represent aquatic life that are sensitive to constituent(s) of concern such as metals, pesticides, nutrients and organic compounds.

Persistent toxicity is defined as a recurring toxic response by the test organisms during each of the three storm events monitored. If persistent toxicity is detected, specialized toxicity identification evaluations (TIE) may be used to help characterize and identify constituent(s) causing toxicity.

(2) Rapid Stream Bioassessment Monitoring

Macroinvertebrate and fish communities are considered excellent indicators of water quality. The residents of a water body function as continual monitors of environmental quality. Biological, chemical and physical stresses imposed on an aquatic ecosystem manifest their impact on the biological organisms present in that ecosystem⁵.

Biological assessments evaluate the condition of water bodies using surveys and other direct measurements of resident biological organisms (such as macroinvertebrates, fish, and

⁵ Fox and Ashber 2002.

plants). Biological assessment data are used to evaluate whether water bodies support survival and reproduction of desirable fish, shellfish, and other aquatic species (in other words, if the water bodies meet their designated aquatic-life beneficial uses).

To date, the rapid stream bioassessment sites have been sampled in June and October of 2001 and May of 2002 as part of the copermittee monitoring program. The assessment was undertaken utilizing a protocol that samples and analyzes population of *benthic macroinvertebrates*⁶. A total of 23 stream sites located throughout the County were assessed. Sampling and analysis of protocols followed the California Stream Bioassessment Procedure, as standardized procedure developed for California by the Department of Fish and Game. This approach yields an enumeration of a stream's benthic community and assesses the quality and condition of habitat. Over time, this information is useful to identify ecological trends.

Sampling of substrate samples for benthic infauna was conducted by MEC Analytical Systems (consultant team contracted by the Copermittees) in June and October 2001 from each of 20 bioassessment monitoring stations and three reference stations (established in 2001) as shown in Figure 3-2, below. Reference sites serve to provide data representative of generally undisturbed habitat within the watershed.

Bioassessment data considered to date exclude the 2002 surveys. These samples will be reported on as part of the 2002-2003 monitoring report. Field measures included pH, temperature, dissolved oxygen, conductivity, flow rate, percent gradient, sampling area physiography, and overall assessment of physical habitat (e.g., vegetative cover, bank stability) at each station.

Sample data from all Rapid Stream Bioassessment Monitoring stations were analyzed to simultaneously evaluate all the populations of benthic invertebrates and develop a relative assessment of ecological health by comparing survey stations against pre-determined reference stations. A Benthic Macro Invertebrate (BMI) ranking score was calculated from varied metrics and standardized to a zero point to allow for comparability amongst stations. A ranking score greater than zero indicates better stream health relative to the other streams sampled, whereas a score less than zero indicates deteriorated stream health. Streams are said to have an above average rating when the score is positive, that is, stream health is better than the average; and a rating below average is an relative indication of poor stream health.

⁶ Bottom-dwelling (benthic) animals without backbones (invertebrate) that are visible with the naked eye (macro).

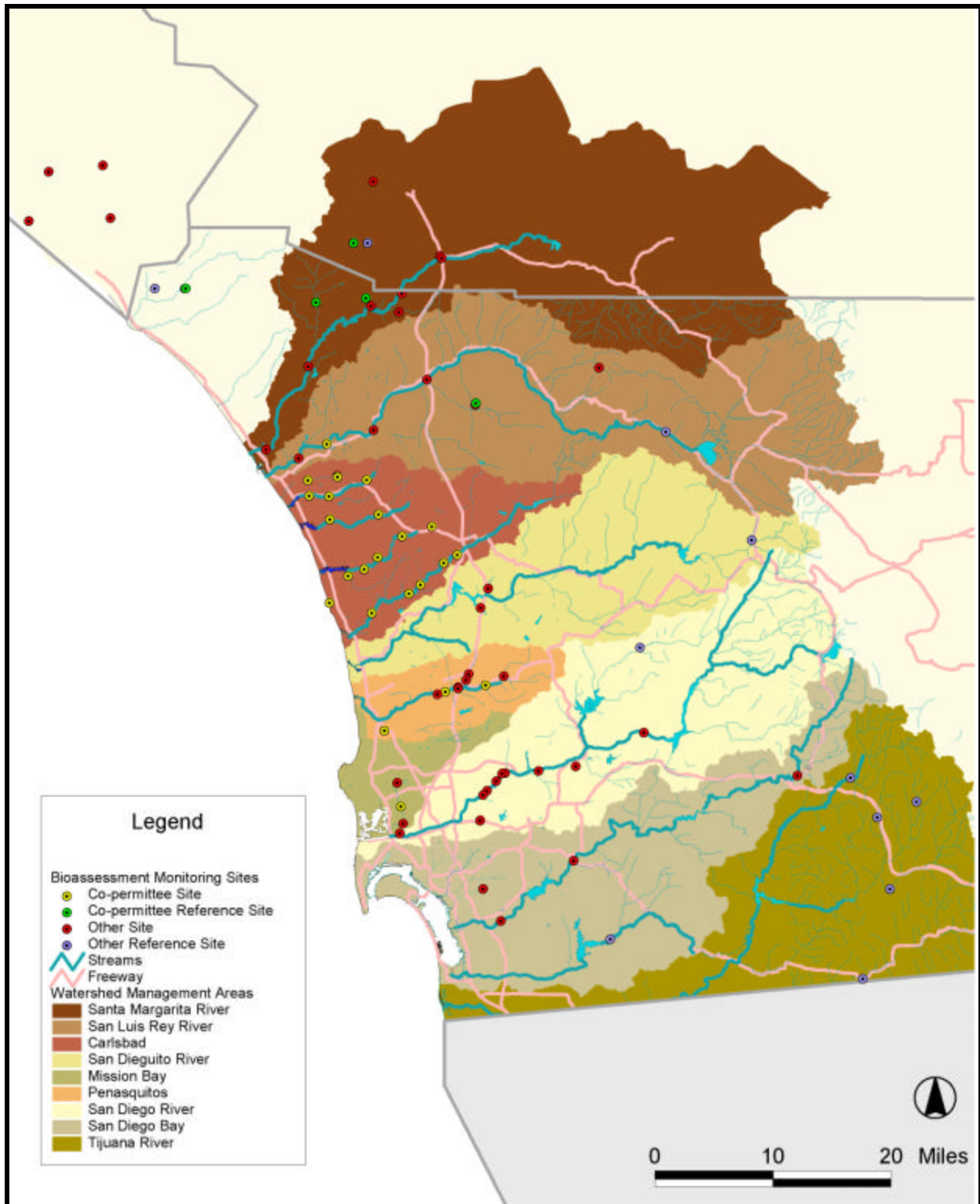


Figure 3-2: Regional Bioassessment Monitoring Sites (including Copermittee Sites)

In order to provide a general characterization of benthic communities within each watershed longer trend data sets than just the two surveys conducted by MEC in 2001, are preferred. For this reason, historic information from prior California Department of Fish and Game (CDFG) surveys was reviewed and summarized to prepare the benthic community assessment for each watershed. Bioassessment monitoring results from CDFG surveys conducted between May 1998 and May 2001⁷, and MEC surveys of June 2001 and October 2001 were considered to assess overall health of benthic communities of watersheds in the San Diego region.

(3) *Ambient Bay And Lagoon Monitoring Program*

The overall objectives of the Ambient Bay And Lagoon Monitoring Program (ABLM) are to develop and implement an environmental study to assess the overall health of receiving bays and lagoons and monitor the impact of urban runoff on ambient water quality. The first step in fulfilling these objectives was to conduct a literature review to determine what information and data were available that could be used to design an appropriate monitoring ABLM program. As such, ABLM activities during the 2001-2002 monitoring season were limited to research and development of the program for subsequent monitoring seasons.

The ABLM Program consists of sediment chemistry and toxicity, and benthic assemblage characterizations of 12 bays and lagoons (13 outfalls) in San Diego County. The Santa Margarita Lagoon will be monitored as part of the ABLM Program beginning in Summer 2003. This program will also contribute information to the Southern California Coastal Waters Research Project Bight 2003 coastal survey and will allow the prioritization of lagoon outfall areas for additional investigation in subsequent years of the monitoring program.

(4) *Coastal Storm Drain Outfall Monitoring*

The overall objective of the Coastal Monitoring Program is to assess the effects of storm drain runoff on coastal (beach) recreational contact (e.g., surfing and swimming) through prescriptive paired sampling. Paired sampling consists of collecting a water sample at select storm drain outlets and a second sample from the surf-zone 75-feet down current where runoff water and ocean waves meet and mix. Paired samples are collected twice monthly between April 1st and October 30th, and once monthly between Nov 1st and March 31st. Samples are analyzed for 3 bacterial indicators: total coliform, fecal coliform, and enterococcus. If an exceedance of recreational use standards occurs, the coastal municipality contacts the County

⁷ SDRWQCB 1999; SDRWQCB 2001; CDFG unpublished data.

Department of Environmental Health so that signs can be posted on the beach notifying bathers that the ocean water near the mixing zone does not meet applicable standards (as required under State Assembly Bill 411). It should be noted that since the coastal waters of the Santa Margarita Watershed lie within the boundaries of Camp Pendleton, this monitoring program does not include the Santa Margarita Watershed. Camp Pendleton Personnel would conduct any coastal monitoring done within the watershed.

(5) *Dry Weather Monitoring*

The primary objectives of the County of San Diego Dry Weather Field Screening and Analytical Monitoring Program are the following:

- 1) Detect and eliminate illicit connections and illegal discharges to the MS4, and
- 2) Characterize dry weather discharges in the MS4 system and dry weather baseline water quality conditions.

Secondary program objectives include:

- 1) Identify isolated and watershed-scale pollutants of concern to focus education efforts
- 2) Evaluate BMP effectiveness, and
- 3) Provide basic pollutant characterization information for Watershed Urban Runoff Management Plans

Dry weather monitoring is conducted between May 1st and September 30th during non-rainy periods when storm water runoff is negligible and sources of water are likely of typical urban origin (i.e. washing, hosing, irrigation). Additional information and data collected from monitoring activities provide baseline runoff characteristics over fairly extensive spatial and temporal scales.

Data monitored and sampled include:

- 1) General observations such as color, clarity, odor, floatables, discharge (flow), and atmospheric conditions;
- 2) Field screening for pH, electrical conductivity, nitrate, phosphate, ammonia, temperature, and turbidity; and,
- 3) Analytical laboratory analysis for dissolved metals (cadmium, copper, lead, and zinc), bacterial indicators, grease and oil, detergents (MBAS), and pesticides (diazinon and chlorpyrifos).

3.c. Water Quality Assessment Strategy and Methodology

As part of the watershed-based water quality assessment, the following steps are generally taken in the data evaluation and analysis:

- 1) Identify constituents of concern that have been found to exceed administrative water quality reference standards and Basin Plan water quality objectives as well as the frequency, magnitude and duration of such exceedances;
- 2) Isolate constituents of concern shown to exceed reference values in a persistent and/or recurrent manner;
- 3) As data permits, evaluate whether there are any potential effects that could be a result of co-mingling and/or bioaccumulation effects of recorded constituents (such as those effects resulting from high concentrations of both nitrogen and phosphorus).
- 4) Examine how any of the constituents of concern identified in step (2) above, may contribute to water quality degradation which would negatively impact designated beneficial uses; and,
- 5) As a longer historical record is developed over multiple years of monitoring, assess constituent of concern data to see if there are any increasing or decreasing trends through time applying statistical analysis.

Figure 3-3 below provides a graphic presentation of the assessment and prioritization process.

The triad of data (storm water chemistry, storm water toxicity and rapid stream bioassessment data) collected under the Core Monitoring program is also evaluated using the triad decision matrix. This triad of monitoring data is utilized in a 'weight of evidence' approach. Storm water chemistry and storm water toxicity data provide an indication of the pollutant loads during a storm event and potential aquatic impacts during storm events to organisms. The stream bioassessment provides information related to the ecological health of the watershed and an indication of stream health effects from urban runoff. Stream bioassessment data not only provide information about the benthic invertebrate community present in the watershed, but also the quality and condition of the physical habitat.

The triad decision matrix is primarily intended to direct changes in the monitoring program using a consistent and scientific approach. The triad decision matrix is used as one step in the process of identifying additional monitoring needs, such as performing a Toxicity Identification Evaluation (TIE) study to identify the constituents causing toxicity.

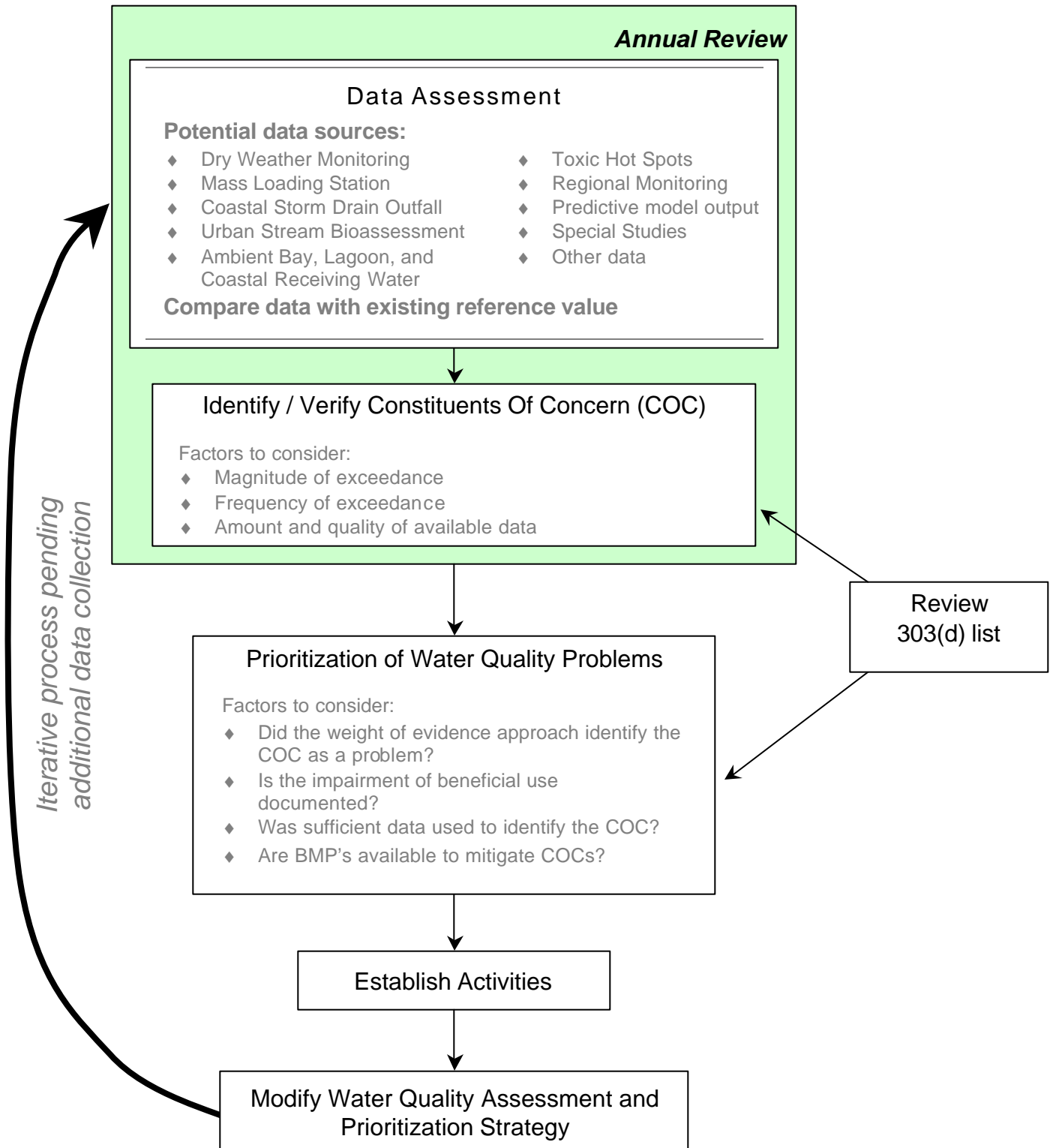


Figure 3-3: Water Quality Assessment & Prioritization Process

Two constituents of concern not considered in the triad approach are fecal coliform and total dissolved solids (TDS). The bacteria parameters are not considered in the triad because they are not believed to influence toxicity responses in bioassay test organisms. Water quality objectives applied to bacterial indicators are the human health objectives for water contact recreation or non-water contact recreation. Total dissolved solids are not considered because, while this parameter may exceed water quality objectives in the Basin Plan, the objectives were set for municipal drinking water supply and not ecological impacts.

Bacterial indicators and TDS are considered as constituents of concern and assessed by looking at all applicable factors (303(d) listings, beneficial uses, economic impact, etc.) and included as appropriate in the prioritized strategy. Bacterial indicators and TDS may not have the benefit of the added evidence of benthic community and toxicity, yet they may lead to watershed activities when considered with all other constituents of concern in the watershed

3.c.1 Historical Data Trend Assessment

Future water quality assessments are expected to rely more on a historical record that allows for trends analysis using numerous data sources instead of individual seasonal data sets. In most watersheds, including the Santa Margarita Watershed, data collected and considered to date represent a snap shot in time and limit the analysis that can be performed.

In future analysis of mass loading station long-term data sets, the statistical methods that may be used may vary depending on the question or issue at hand. As noted in the Monitoring Report, scatter plots and trend analysis graphs of constituents of concern can be used as a starting point when comparing levels in different watersheds. It is anticipated that in future years, as the historical record for each mass loading station is built, watershed Copermittees will transition to using these and similar tools to assess water quality issues.

Where longer-term data are obtained from the monitoring program, data can be evaluated for trends over time. Evaluating concentrations of a potential constituent of concern over time will determine whether the levels are decreasing. The assessment of a long-term data set can be accomplished through two statistical tools; regression and power analyses.

Linear regression analysis can be performed after applying appropriate data transformations to the data. This regression analyses determines the slope of the trend line to assess either a decreasing or increasing trend. Care must be taken to examine each data set for outliers or influential data points that unduly influence the results of the analysis. For example, an uncharacteristically high value early in the sampling history could make a downward trend line appear very significant when in fact the line is not significantly downward without that data value.

In addition to determining whether there are significant trends for each of the potential constituents of concern, it is also important to know the power of the regression line, or in other words, the confidence one has in

the regression results based on the slope of the regression and the number of data points (times) in the analysis. Typically, power estimates of 80% or greater (at an alpha level [error] of 0.05) are desired to be able to make strong statements about statistical results. Power analysis is also used to determine the number of data points that are necessary to achieve the desired power for a trend line that has power below the desired level.

3.c.2 Data Sources to Identify Constituents of Concern

Two comprehensive reports provided most of the water quality data and related information that was evaluated as part of this watershed assessment:

- 1) San Diego Regional Previous Storm Water Monitoring Review and Future Recommendations Report (MEC August 20, 2001): This report contains a summary of significant findings from copermittee monitoring programs implemented from 1993 to 2000. However, this report contains data and analysis pertinent to the historic monitoring sites (Chollas Creek, Tecolote Creek and Agua Hedionda Creek) and therefore only applies to the San Diego Bay Watershed, Mission Bay Watershed, and Carlsbad Watershed.
- 2) Urban Runoff Monitoring Report (MEC, October 2002): This report summarizes all data and findings associated with mass loading station and rapid stream bioassessment monitoring activities conducted during the 2001-2002 season. (This report applies to all watersheds.)

Additionally, the most current (Year 1998) and proposed (Year 2002) Clean Water Act Section 303(d) Lists of Water Quality Limited Segments and associated list of constituents of concern in the watershed were considered as data sources⁸.

Generally, salient constituents of concern were identified from the data sources listed above and evaluated against water quality objectives and designated beneficial uses as identified under the San Diego Basin Plan.

4. MAJOR WATER QUALITY ISSUES

Section J.2.c of the Municipal Permit further requires that the Copermittees identify and prioritize major water quality problem(s) in the watershed caused or contributed to by MS4 discharges and the likely source(s) of the problem(s). This requirement also falls within parameters of Objective #1 in that identifying and prioritizing major water quality problem(s) is the next logical step in developing methods to improve water quality through the reduction of MS4 pollutant loads within the watershed

4.a. Water Quality Assessment Strategy and Methodology

As noted earlier, limited data is currently available and will be available in the initial years as the program evolves. The data set considered to date may be too limited to draw strong conclusions about high priority water quality issues and

⁸ Id reports (Fact Sheet 2002 and watershed doc)

associated actions. To develop an effective list of activities that properly identifies and addresses significant water quality issues, there may be a need to obtain additional validation. Validation is pursued through the yearly watershed-based water quality assessment and program evaluation process that are part of this plan.

Once the constituents of concern are identified, the high priority water quality issues are identified using a qualitative process that considers watershed-specific conditions using the weight of the evidence approach as well as best professional judgment to interpret the relationships between exceedances, regulatory mechanisms, and beneficial uses. Factors considered include:

- 1) Availability of sufficient qualified data (may include detection levels, number of sample(s), spatial and temporal characteristics);
- 2) Need to integrate additional data;
- 3) Ability to determine conditions at the sub-watershed level;
- 4) Current related concerns and/or priorities expressed by local jurisdictions;
- 5) Stakeholder input;
- 6) Human health and ecological health considerations; and
- 7) Grant funding opportunities.

Priority water quality issues are addressed by implementing actions that are designated as short and/or long-term activities. Short-term activities are completed within the life of the current Municipal Permit (years 2003-2005). Long-term activities extend beyond the life of the current permit (years 2006 and beyond). The high priority issues as well as other salient constituents of concern are tracked and reassessed through the yearly assessment and reporting process.

4.b. Santa Margarita Watershed Data Review

The data set for the Santa Margarita River Watershed is inadequate and represents an unusual storm year in which rainfall was significantly below average for the San Diego Region. The objectives of the Regional Monitoring Program are as follows:

- 1) To identify variations in storm water runoff and ecological health across the entire county including variations with specific watersheds from headwaters to ultimate receiving waters;
- 2) Determine linkages between dry-season and wet-season runoff; assess how and where toxic chemicals accumulate; estimate natural background concentrations of COCs; and

-
- 3) Track annual variations in storm water runoff as they relate to annual storm patterns (e.g. wet years versus dry years).

All of these objectives are feasible when several years of data are available from the MLS, which is not the case at this new location. Yet, tentative assertions can be made in the context of identifying preliminary COCs for which the County will assemble and analyze additional existing, relevant data that may confirm and refine sources or causes.

4.b.1 Monitoring Locations within the Santa Margarita Watershed

As discussed in Chapter 3 above, there are currently eleven (11) Mass Loading Stations, and numerous Bioassessment Monitoring Sites located throughout the San Diego Region. The Santa Margarita MLS is located on Camp Pendleton, north of Vandegrift Boulevard, under the Basilone Road Bridge. The Santa Margarita River is a natural channel at the sampling point. Within the Santa Margarita Watershed, there are three Bioassessment Monitoring Sites. One of these sites is located on De Luz Creek, while the remaining two are located on Sandia Creek. All three sites are within the western reaches of the watershed. A map of the approximate location of these monitoring locations within the Santa Margarita Watershed is included as Figure 4-1, below.

4.b.2 Observations Based On MLS and Bioassessment Data

The Santa Margarita watershed was monitored by the US Marine Corps Base, Camp Pendleton, for the San Diego Municipal Storm Water Copermittees for the first time in 2001 as part of the Wet Weather Urban Runoff Monitoring Program. The data represents only one storm event monitored at the MLS on Santa Margarita River on 29 November 2001. Due to security concerns following 11 September 2001, Camp Pendleton Office of Environmental Security utilized their own contractor to collect storm water samples. The resultant data was then provided to San Diego County Copermittees to be analyzed and reported with all Copermittee data in the 2001-2002 Urban Runoff Monitoring Report (MEC 2002).

The bioassessment monitoring in tributaries of the Santa Margarita River had BMI scores that varied from low scoring sites at Rainbow Creek, Murietta Creek, and Temecula Creek to high scoring sites at Sandia Creek and De Luz Creek. The bioassessment monitoring reaches on Santa Margarita River generally scored above average, making this watershed among the least impacted in the San Diego region.

Data from one the 2001-2002 storm event monitored at the mass loading station on Santa Margarita River was reviewed to determine the list of COCs, and subsequently compared to reference values or similar water quality standards. Table 4-1, below, lists the COC's tracked for the Santa Margarita Watershed.

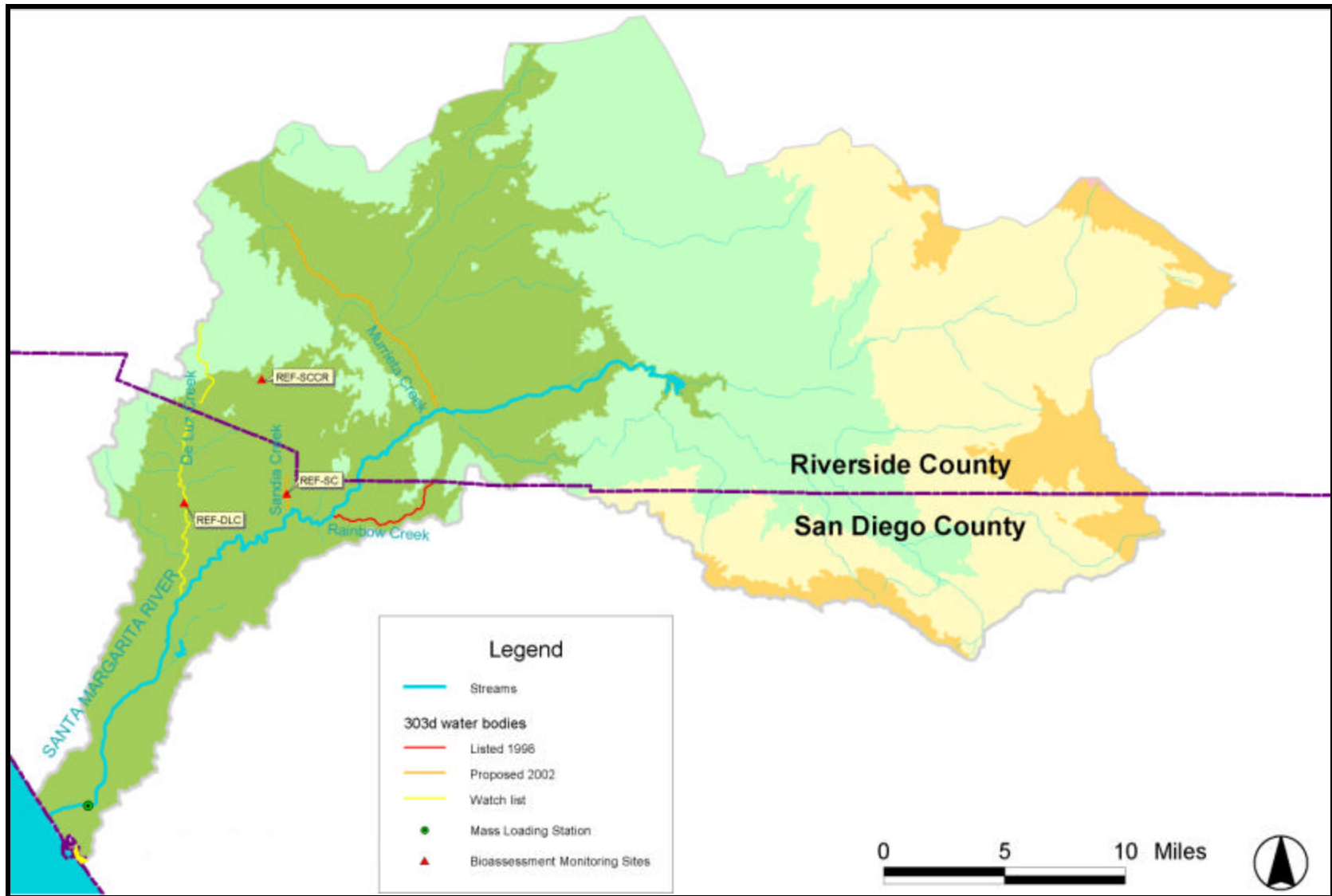


Figure 4-1: Monitoring Sites within the Santa Margarita Watershed

Table 4-1: Constituents of Concern Measured in the Santa Margarita River

Analyte	Units	Reference Value	Source	Santa Margarita 11/29/01
General / Physical / Organic				
Electrical Conductivity	umhos/cm			1410
Oil And Grease	mg/L	15	USEPA Multi-Sector General Permit	<10
pH	pH Units	6.5-8.5	Basin Plan	7.9
Bacteriological				
Enterococci	MPN/100 mL			No data
Fecal Coliform	MPN/100 mL	400	Basin Plan	No data
Total Coliform	MPN/100 mL			No data
Wet Chemistry				
Ammonia As N	mg/L	0.025 (a)	Basin Plan	<0.1
BOD	mg/L	30	USEPA Multi-Sector General Permit	<5
Chemical Oxygen Demand	mg/L	120	USEPA Multi-Sector General Permit	<30
Dissolved Phosphorus	mg/L	2	USEPA Multi-Sector General Permit	0.12
Nitrate As N	mg/L	10	Basin Plan (b)	0.5
Nitrite As N	mg/L	1	Basin Plan (b)	<0.1
Surfactants (MBAS)	mg/L	0.5	Basin Plan (b)	0.05
Total Dissolved Solids	mg/L	750	Basin Plan by watershed	814
Total Kjeldahl Nitrogen	mg/L			<0.5
Total Phosphorus	mg/L	2	USEPA Multi-Sector General Permit	<0.2
Total Suspended Solids	mg/L	100	USEPA Multi-Sector General Permit	<5
Turbidity	NTU	20	Basin Plan	2.5
Pesticides				
Chlorpyrifos	µg/L	0.02	CA Dept. of Fish & Game	<0.01
Diazinon	µg/L	0.08	CA Dept. of Fish & Game	0.08
Hardness				
Total Hardness	mg CaCO ₃ /L			423
Total Metals				
Antimony	mg/L	0.006	Basin Plan	<0.002
Arsenic	mg/L	0.34/0.05	40 CFR 131/ Basin Plan	<0.002
Cadmium	mg/L	0.0046	40 CFR 131	<0.001
Chromium	mg/L	0.016	CTR (Cr VI)	0.004
Copper	mg/L	0.0135	40 CFR 131	0.01
Lead	mg/L	0.082	40 CFR 131	<0.005
Nickel	mg/L	0.47/0.1	40 CFR 131/ Basin Plan	<0.005
Selenium	mg/L	0.02	40 CFR 131	<0.005
Zinc	mg/L	0.122	40 CFR 131	0.04

Analyte	Units	Reference Value	Source	Santa Margarita 11/29/01
Dissolved Metals				
Antimony	mg/L	(f)	40 CFR 131	<0.002
Arsenic	mg/L	0.34 (d)	40 CFR 131	<0.002
Cadmium	mg/L	(c)	40 CFR 131	<0.001
Chromium	mg/L	(c)	40 CFR 131	0.003
Copper	mg/L	(c)	40 CFR 131	0.005
Lead	mg/L	(c)	40 CFR 131	<0.005
Nickel	mg/L	(c)	40 CFR 131	<0.005
Selenium	mg/L	0.2 (e)	40 CFR 131	<0.005
Zinc	mg/L	(c)	40 CFR 131	<0.01
Toxicity				
<i>Ceriodaphnia</i> 96-hr	LC ₅₀ (%)	100		>100
<i>Ceriodaphnia</i> 7-day survival/reproduction	NOEC (%)	100		100
<i>Hyalella</i> 96-hr	NOEC (%)	100		100
<i>Selenastrum</i> 96-hr	NOEC (%)	100		100

(a) Water Quality Objective is for unionized ammonia; insufficient information is available to calculate unionized ammonia.

(b) The underlying water quality objective in the Basin Plan is "Inland surface waters...shall not contain biostimulatory substances in concentrations that promote aquatic growth to the extent that such growths cause nuisance or adversely affect beneficial uses." The Basin Plan also states a goal of 0.1 mg/L for total phosphorous to support this objective. The reference value for nitrogen/nitrates in this table entry is derived from this phosphorous goal, using a ratio suggested by RWQCB staff. This reference value is not a Basin Plan water quality objective.

(c) Water Quality Objective for dissolved metal fractions are based on total hardness and are calculated as described by the USEPA Federal Register Doc. 40 CFR Part 131, May 18, 2000.

(d) Water Quality Objectives for dissolved metal fractions are based on water effects ratios (WER) and are calculated as described by the USEPA Federal Register Doc. 40 CFR Part 131, May 18, 2000.

(e) Water Quality Objective is based on the total recoverable form as described by the USEPA Federal Register Doc. 40 CFR Part 131, May 18, 2000.

(f) USEPA has not published an aquatic life criterion value

BLUE text - exceeds identified reference value.

Sources

USEPA National Pollutant Discharge Elimination System (NPDES) Storm Water Multi-Sector General Permit for Industrial Activities, 65 Federal Register (FR) 64746, Final Reissuance, October 30, 2000.

California Department of Fish and Game. Office of Spill Prevention and Emergency Response, Hazard Assessment and Water Quality Criteria documents for pesticides (various dates).

San Diego Regional Water Quality Control Board Basin Plan Water Quality Objectives.

USEPA Federal Register Document 40 CFR Part 131, May 18, 2000.

4.b.3 Triad Decision Matrix

The data for the Santa Margarita Watershed results were analyzed using all three elements of the weight-of-evidence or triad approach.

The triad decision matrix results are inconclusive for Santa Margarita River because only one set of wet-weather data is available. There is an inadequate amount of information to identify persistence in either chemical constituents or toxicity. Further, there is no indication of benthic alteration within the watershed. The resulting recommendations are to continue monitoring all elements of the program to gather additional data for assessment and long-term analysis. Table 4-2 is a summary table of the triad decision results for the Santa Margarita River Watershed for assessment years 2001-2002.

Total Dissolved Solids (TDS) was the only chemical constituent to exceed Basin Plan water quality objectives and the concentration of diazinon equaled the water quality objective stated by the CA department of Fish and Game. (The TDS objective was set for protection of the beneficial use of municipal and domestic water supply and not ecological impacts.)

At the MLS, the storm water from Santa Margarita River did not cause any toxicity to bioassay test organisms.

Table 4-2: Triad Decision Matrix Results for Santa Margarita Watershed (2001-2002)

Chemistry	Toxicity	Benthic Alteration	Possible Conclusion(s)	Possible Actions or Decisions
No persistent exceedance of water quality objectives	No persistent evidence of toxicity	No indications of alteration	Inconclusive	Continue monitoring

4.b.4 Constituents of Concern Identified Under Regulatory Mechanisms

The next step in the review process involved comparing the available water quality information with the regulatory drivers for the watershed. There are three main regulatory tools: 1) 303(d) listings from 1998; 2) proposed listings for 2002; and 3) the "Monitoring List" (previously referred to as the "Watch List") for potential COCs as defined by the San Diego RWQCB.

A review of the 1998, 303(d) list of impaired segments in this watershed indicate that eutrophic conditions exist in the Santa Margarita Lagoon and Rainbow Creek. Proposed listings in the 2002 update of the 303(d) list that are located within the Santa Margarita River Watershed include total dissolved solids and total phosphorus in the Santa Margarita River. Table 4-3 provides a summary of the existing and proposed 303(d) Listed Waterbodies in the Santa Margarita Watershed.

It should be noted that the San Diego RWQCB has proposed amending the existing Rainbow Creek 303 (d) listing for eutrophic conditions to listing the water body for elevated nitrogen and phosphorus. Since 1998, studies conducted by the San Diego RWQCB have not established that eutrophic conditions exist in Rainbow Creek.

Table 4-3: 303(d) Proposed/Listed Waterbodies in the Santa Margarita Watershed

Water Body Name	Hydrologic Sub Area (HSA)	HSA #	Pollutant/Stressor	Year Proposed/ Listed
Santa Margarita Lagoon	Lower Ysidora	902.11	Eutrophic	1998
Rainbow Creek	De Luz (HA)	902.20	Eutrophic	1998
Upper Santa Margarita River	Gavilan	902.22	Phosphorus	2002
Sandia Creek	Gavilan	902.22	Total Dissolved Solids	2002
Murrieta Creek	Wolf	902.52	Phosphorus	2002

Source: RWQCB 2002

In addition, waterbodies in the Santa Margarita Watershed are on the 303(d) "Monitoring List" for several contaminants. This Monitoring List contains waterbodies that were identified by the RWQCBs noted minimal, contradictory, or anecdotal information suggests standards are not met but the available data or information is inadequate to draw a conclusion. In many cases, the data or information is not of adequate quality and quantity to support a listing and subsequent TMDL regulatory process. In these cases, a finding is warranted that more information must be collected to resolve whether objectives and beneficial uses are attained. The waters on the Monitoring List are high priorities for SWRCB and RWQCB monitoring before the next section 303(d) list is completed. The RWQCBs use these priorities for implementation of the site-specific monitoring programs and, to the extent possible, use other authorities to obtain the needed data.⁹ Table 4-4 presents the current "watch list" for the Santa Margarita Watershed, and the pollutant or stressor of concern.

⁹ SWRCB Staff Report, October 2002

Table 4-4: 303(d) Monitoring List by Hydrologic Sub Area

Water Body Name	Hydrologic Sub Area (HSA)	HSA #	Pollutant/Stressor
Deluz Creek	De Luz Creek	902.21	Sulfate, Total Dissolved Solids
Fallbrook Creek			Iron, Manganese, Phosphorus
Murrieta Creek	Wolf	902.52	Iron, Manganese, Total Dissolved Solids
Oceanside Harbor	Lower Ysidora	902.11	Copper (dissolved)
Rainbow Creek	De Luz (HA)	902.20	Sediment Toxicity, Sulfate, Total Dissolved Solids, Trash
Sandia Creek	Gavilan	902.22	Lead, Sulfate
Entire Santa Margarita River and Tributaries	Santa Margarita (HU)	902	Sedimentation/siltation
Santa Margarita River (Upper)	Aguanga (HA)	902.8	Iron, Manganese, Sulfate, Total Dissolved Solids
Santa Margarita River (Lower)	De Luz (HA)	902.2	Iron, Manganese, Sulfate, Total Dissolved Solids

Source: RWQCB 2002

The information contained on the existing and proposed 303(d) listings, as well as the “monitoring list” suggests that eutrophication is a primary water quality issue or problem in the watershed.

4.c. Data Analysis Summary and Prioritization of Water Quality Issues

The information reviewed from the storm water monitoring data considered as well as existing and proposed 303(d) listings suggests that eutrophication (associated with low dissolved oxygen, and the presence of solids and excessive nutrients), toxic substances (trace elements and synthetic organics), diazinon contamination, and high levels of TDS are potential water quality issues in the watershed.






As indicated in Table 43, five (5) water bodies within the Santa Margarita Watershed have been identified as eutrophic, and/or identified as having excessive levels of nutrients/phosphorus/TDS. As discussed above, eutrophication is associated with these constituents of concern. For those waterbodies, which have not been identified as eutrophic, the potential for degradation based on high levels of contributory pollutants exists. As such, based on a review of the data available, the County believes that the only water quality issue that should be ranked as a “High” priority is eutrophication.

Although, diazinon levels in the watershed were identified as “at” goal levels for the watershed, this detection was based on a single data source. Since this level was based on a single observation, the County has ranked diazinon as a “medium” priority. Further analysis and data collection are recommended to confirm any higher prioritization.

Similarly, the 2002 303(d) list and “monitoring” list identifies water bodies throughout the watershed that may be impacted to COCs such as TDS,

phosphorus, nitrogen, dissolved oxygen and sulfate. These COCs may have detrimental impacts to the beneficial uses in the watershed. Since phosphorus and nitrogen are some of the causative factors for eutrophication, already a problem in the watershed, the County has also ranked this issue as a “medium” priority, and believes that further data collection and assessment should be made in order to substantiate concerns. By monitoring these COCs in the sub-watersheds, the additional data retrieved will assist the County in future planning efforts to address this water quality issue. The evaluation of these potential issues, and their prioritization, is outlined in Table 4-5.

Table 4-5: Prioritization of Potential Water Quality Issues/Problems

Parameters, constituents of concern, and/or indicator addressed	Potential Water Quality Issue/Beneficial Use Impairment(s)	Priority	Comments
Eutrophication, nitrogen, and phosphorus	MUN, REC1, REC2, WARM, COLD, WILD, and RARE		<p>Water bodies on the 1998 and 2002 303(d) lists include the Santa Margarita Lagoon (eutrophic), Rainbow Creek (N & P), and the Santa Margarita River (P). This activity will mainly involve data collection, reviewing existing data, source investigation, and public education. Subsequently, grant funding may be sought to implement specific remediation projects.</p> <p>Activity: The creation and phased implementation of a Nutrient Reduction Management Plan for the Santa Margarita River Watershed</p>
Toxic Substances - Diazinon	WARM, COLD, WILD, and RARE		<p>Diazinon was detected in only one sample at the reference level (0.08 ug/L) during the 2001-2002 wet weather sampling at the Santa Margarita MLS. In addition, the USEPA has phased out the production of diazinon-containing pesticides. However, data collected in other watersheds indicates that Copermittees should consider addressing the use of pesticides in the region as an important component of proactive storm water runoff management activities. The County of San Diego will lead and coordinate development and implementation of the regional campaign in cooperation with interested stakeholders.</p> <p>Activity: Regional Integrated Pest Management Campaign</p>
Total dissolved solids (including sulfate)	MUN and AGR		<p>Municipal and agricultural water supplies can be compromised by a variety of factors that include urban runoff, imported water, irrigation practices, etc. The 2002 303(d) list and Monitoring List identifies water bodies throughout the watershed that may be impacted by TDS and its component constituents (e.g. sulfate, iron, and manganese).</p> <p>Activity: Data collection and analysis, source identification</p>
Toxic substances – Other	WARM, COLD, WILD, and RARE		<p>The 303(d) “watch” list includes dissolved copper and lead. Data collection and management from existing efforts including the County of San Diego Dry Weather Monitoring Program and the MLS monitoring will help determine the status of these COCs in the watershed.</p> <p>Activity: Data collection and analysis</p>
Trash	REC1, REC2, WARM, COLD, WILD, and RARE		<p>Trash is identified as a pollutant in the 303(d) “watch” list. Data collection and management along with community outreach programs will help the County address this water quality issue.</p> <p>Activity: Outreach and Education with Public Participation including clean-up events and stewardship.</p>



WATERSHED URMP

FOR THE SANTA MARGARITA WATERSHED

PLAN OF ACTION

5. PROPOSED ACTIVITIES TO ADDRESS PRIORITIZED ISSUES

As discussed in Chapter 1, Objective #1 of this URMP is to “develop/expand methods to improve water quality within the watershed.” This objective closely ties in with Section J.2.d of the Municipal Permit, which requires an implementation time schedule of short and long-term recommended activities (individual and collective) needed to address the highest priority water quality problem(s). Section J.2.e of the Municipal Permit further requires an identification of the individual Watershed Copermittees responsible for implementing each recommended activity, including the selection of the Lead Permittee(s) and the time schedule for implementation.

As discussed in Section 3 and 4, the identification and prioritization of major water quality issues resulted in a list of constituents of concern to be addressed in the watershed. These concerns are to be addressed by implementing specific activities. It must be recognized that water quality data is very limited, both now and in the immediate future. As such, to develop effective short and long-term strategies that address water quality, County of San Diego (as sole Copermittee in the Watershed) may need to obtain additional validation.

5.a. Mitigation Activities to Address Major Water Quality Issues

Once constituents of water quality issues and associated COCs are identified, validated, and prioritized, the County of San Diego will identify a means to mitigate the water quality problem. Mitigating the problem will be a long-term project. It should be noted that through this mechanism, water quality issues might be identified at several levels: jurisdictional (municipal, county or other governmental entity), inter-jurisdictional, or regional. Generally, a water quality problem that is determined to be specific to a jurisdiction (including those jurisdictions not subject to the Municipal Permit) would be referred to that agency and addressed through their existing program or Jurisdictional Urban Runoff Management Plan (JURMP).

In other cases, the pollution source(s) may be found to originate from two or more jurisdictions, in which case the problem would be addressed as part of the watershed program. Lastly, the issue may be considered a regional one (impacting two or more watersheds) and would be referred to the appropriate regional technical committee (Monitoring, Outreach, Budget, etc.) for their

consideration and recommendations. Implementation of regional activities that address water quality issues identified in the watershed would subsequently be incorporated as part of the jurisdictional program or the watershed program as appropriate. Water quality issues specific to a watershed would generally be addressed through both mechanisms. Updates to this program will be submitted as part of the annual report and will include the annual evaluation of high priority and other potential water quality issues, describe any changes to the priority listing of water quality issues, and include any revisions to the list of activities.

Activities implemented to address water quality issues across the watershed may be similar and applicable across jurisdictions. The County of San Diego will work within its current program (JURMP) rather than creating a new program. In addition, the County will seek to work with other jurisdictions in the watershed that are not subject to the Municipal Permit (e.g. the Marine Corps Base Camp Pendleton, the County of Riverside, and the Cities of Temecula and Murrieta) to create a watershed-based program which can focus efforts and bring consistency to approaches through a systematic evaluation of water quality issues, prioritization and activity implementation. These projects may be small, for instance adopting consistent ordinances, or large, such as developing additional strategic or, upstream monitoring to determine sources. The responsibilities and funding for these projects will vary significantly depending on the list of activities and the complexity of the problems.

The general steps used to implement activities and address water quality issues vary significantly, but may include the following as time and resources permit:

- 1) Determining the extent of each water quality problem (spatial, temporal and magnitude) and identify unknowns.
- 2) Determining the need for additional data or studies when data or information gaps are identified.
- 3) Identifying existing activities in the watershed related to water quality issues, extent of implementation, planned duration of activities, and scheduled time to assess effectiveness in resolving the problem.
- 4) Identifying potential mechanisms to reduce pollutant load and its concentration (structural and non-structural BMPs, education and outreach, etc.).
- 5) Evaluating the feasibility or appropriateness of urban runoff mitigation, treatment, detention, and MS4 Operation and Maintenance improvements.
- 6) Assessing, as appropriate, the efficacy, economical impact, and technical feasibility of potential BMP(s) known to mitigate problems and other activities under consideration.
- 7) Identifying funding sources for all activities under consideration, including grants.

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- 8) Assessing the efficacy of past short and long-term activities and revising as needed.
 - 9) Determining an implementation schedule taking into consideration: funding sources (grants, etc.), economic impact, technical feasibility, benefit to cost analysis, the number of activities proposed, complexity of implementation, and experience by watershed copermittees with implementation of the activity, seasonal factors, etc..
 - 10) Considering the results of these complementary efforts: Illicit Discharge Detection and Elimination Program, Dry Weather Monitoring, and Ambient, Bay and Lagoon monitoring data. Constituents of concern that may have been identified as problematic may have been mitigated by identifying illicit discharges or connections and spills (caused by sewer overflows, accidents or other identified sources). Copermittees should use best professional judgment and experience to determine if previously identified sources (sewer overflows, spills from accidents or disasters, etc.) have been corrected and/or if the existing correction plan(s) satisfy the requirement of an “activity”.

The process of planning actual implementation and scheduling of activities will be iterative, cooperative and likely to change over the course of time as the program develops.

The list of activities and a detailed implementation schedule will be included in the annual update of the Watershed URMP. Short and long-term activities may be designated for consideration in future years and labeled as tentative projects. This takes into account all the factors listed above. Short-term activities may in some cases, due to the ease of implementation, be scheduled within a year or two, but staggered to allow for ease of project and workload management. The County of San Diego is the responsible party for submittal of the Watershed URMP for 2002-03 and other general activities associated with implementation strategy and reporting.

It should be noted that the Short and Long-Term Activities outlined in Section 5 only deal with direct chemical/physical issues within the watershed. Secondary activities, such as educational programs, outreach/stakeholder involvement, and land use planning activities, can indirectly (and in some cases directly) help mitigate impacts to water quality as well. These are addressed in Sections 6, 7, and 8 of this Watershed URMP.

5.b. Short and Long-Term Activities

Below are the proposed short and long-term activities for the Santa Margarita Watershed URMP. For this section, “short-term activities” shall mean those activities that are to be completed during the life of Municipal Permit. “Long-term activities” shall mean those activities that are to be completed beyond the life of the Municipal Permit. As sole Copermittee within the watershed, the County of San Diego would be responsible for the implementation of these activities.

Section J.2.d of the Municipal Permit only requires Copermittees to identify activities, which address those water quality issues, which have been identified as “High” priority. As discussed in Sections 1 and 2, this Watershed URMP identifies activities that go beyond the scope of the requirements of the Municipal Permit. Below, staff has identified activities that go beyond the scope of the Municipal Permit, and address issues that have not been designated as “high” priority. Where funding and staffing are available, the County will implement these activities. The following activities have been broken out into categories that address “High” Priority issues and those that address “Medium” and “Low” Priority issues.

Activities Addressing “High” Priority Issues

The following activities address those issues that have been identified as “high” priority issues, and provide for identification of additional “high” priority issues in the future:

5.b.1 Nutrient Management and Reduction Plan (NMRP)

As indicated in Section 4, four water bodies within the Santa Margarita Watershed (Santa Margarita Lagoon, Rainbow Creek, Murrietta Creek, and the Upper Santa Margarita River) have been identified as eutrophic, and/or identified as having excessive levels of nutrients/phosphorus. Two of these water bodies, Santa Margarita Lagoon and Rainbow Creek are located entirely within San Diego County. At present, a TMDL is being developed for Rainbow Creek to address elevated phosphorus and nitrogen levels. As discussed above, eutrophication is associated with these constituents of concern. For those waterbodies, which have not been identified as eutrophic, the potential for degradation based on high levels of contributory pollutants still exists.

The County of San Diego believes there is a need to investigate nutrient sources in the Santa Margarita River Watershed and to develop an appropriate management strategy to effectively address the nutrient enrichment problem. As TMDLs are identified for causative pollutants, these will be taken into consideration as part of the NMRP.

The study could include tasks designed to identify specific sources, the magnitude and extent of nutrient contamination, and the temporal and spatial extent of eutrophic conditions in the Watershed. These tasks could include the following:

- 1) Identification of collaborative efforts and interested stakeholders;
- 2) Identification of available data from all jurisdictions and entities (Wet and Dry Weather, water district, Camp Pendleton, etc.)
- 3) Verification of beneficial uses and water quality objectives for the Watershed;
- 4) Identification of existing BMPs and an assessment of their effectiveness; and

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- 5) Implementation of nutrient-mitigating BMPs to the MEP and an assessment of their long-term effectiveness (or other mechanism(s) based on findings).

The County of San Diego will develop a focused plan of action, including anticipated timelines for the implementation of the Plan, for the Santa Margarita River Watershed to address the problem by January 2004.

5.b.2 Data Analysis and Management Project

Data is the driving force behind responsible management decisions. A valid and comprehensive baseline assessment is imperative to quantify changes in water quality. To this end, the County of San Diego will execute the following steps to ensure accurate representation of the water quality in the Santa Margarita Watershed:

(1) Inventory available sources of data

- Obtain raw data (identify source, quality of data)
- Develop GIS coverages of monitoring locations
- Potential sources of data:
 - Dry Weather Monitoring
 - Mass Loading Station
 - Urban Stream Bioassessment
 - Ambient Bay, Lagoon, and Coastal Receiving Water
 - Other jurisdictional data (County of Riverside, Cities of Temecula and Murrieta, Camp Pendleton)
 - Special studies (universities, research agencies, etc.)
 - Other sources
- Data may be stored in a centralized repository to expedite analyses.

(2) Analyze the available data and determine if additional monitoring stations and/or additional data is necessary to develop a baseline assessment

- Perform spatial analyses to ensure adequate representation of the various geographic, hydrologic, and meteorological conditions in the watershed. The monitoring locations in the Santa Margarita River Watershed must be able to distinguish between pollution originating in the Riverside, San Diego Counties, Camp Pendleton, of Fallbrook Naval Weapons Station.
- Perform statistical analyses on comparable data to identify constituents of concern in the watershed.

(3) ***Based on the results of (2) above:***

- If additional monitoring stations are necessary to capture the spatial variability in the watershed, establish new stations and develop a monitoring schedule.
- If additional data is required to perform statistical analyses, establish a monitoring protocol to collect the necessary data.

(4) ***These steps will be repeated as necessary to accurately characterize the water quality of the Watershed. As sufficient data is collected, trend analyses will also be conducted to assess temporal patterns of pollutant concentrations in the watershed.***

This data analysis and management protocol will allow for a scientifically-valid characterization of the water quality and, over time, a long-term assessment of the watershed management strategies. The completion of these activities is dependent upon funding and resource availability.

Activities Addressing “Medium” and “Low” Priority Issues

As discussed in Sections 1 and 2, this Watershed URMP identifies activities that go beyond the scope of the requirements of the Municipal Permit. The following activities have been identified by staff go beyond the scope of the Municipal Permit, and address issues that have not been designated as “high” priority. Where funding and staffing are available, the County will implement these additional activities. The following activities specifically address “Medium” and “Low” priority Issues:

5.b.3 Regional Integrated Pest Management Campaign

The San Diego Regional Water Quality Control Board has identified education as the single most effective best management practice (BMP) to address water quality degradation related to pesticide use¹⁰. While organophosphate pesticides have been identified as regularly exceeding water quality objectives in several watersheds throughout the region, education efforts in relation to pesticide use will focus on promoting responsible practices in irrigation and use of pesticides as well as providing information about alternative pest-control techniques.

A Pest Management Guide will be produced for use within San Diego county at the regional level at many diverse outreach events. Additional, other targeted outreach opportunities such as Point of Purchase campaigns will be explored and integrated with existing efforts as appropriate. The guide along with other general educational materials will be widely distributed to residents and businesses within the region regardless of jurisdictional boundaries. As part of the campaign, outreach effort will be implemented through a series of public workshops and/or visits and presentations to existing stakeholders' meetings.

¹⁰ SDRWQCB 2002b.

It is anticipated that the Pest Management Guide will be produced within the short term as a regional effort. Distribution and outreach is expected to occur over the long run and beyond the life of the current Municipal Permit. The County of San Diego will lead and coordinate development and implementation of the regional campaign in cooperation with interested stakeholders.

5.b.4 *SMER Remote Sensing Project*

Within the Santa Margarita Watershed, the California State University and the Scripps Institution of Oceanography has developed a primary research station at the Santa Margarita Ecological Reserve (SMER). The County of San Diego will work with staff and researches associated with SMER to examine how the SMER-developed technologies, including broadband, remote sensing systems can be best used to facilitate data collection within the watershed. The long-term application of this program could facilitate the long-term assessment of the watershed management strategies. If determined to be financially feasible, the County will work to implement a small-scale pilot test of the system, prior to deploying such technology on a broader scale. The completion of these activities is dependent upon funding and resource availability. The County of San Diego anticipates completion of a feasibility study by January 2004. Implementation of the pilot study and other components of the project will be dependent on the results of this feasibility study, and availability of resources.

5.b.5 *The Santa Margarita Watershed Water Supply Augmentation, Water Quality Protection and Environmental Enhancement Program*

The County of San Diego will continue to be involved with the development of the Santa Margarita Watershed Water Supply Augmentation, Water Quality Protection and Environmental Enhancement Program; a modeling and monitoring program that encompasses the entire watershed. This project is being developed under a proposed agreement with the Bureau of Reclamation, US Marine Corps and several water districts within the Santa Margarita River to develop. With this program, issues relating to water quality and quantity in the surface and groundwater can be identified. Furthermore, the water quality modeling effort can address issues relating to total maximum daily load (TMDL) development and assimilative capacity. The estimated completion date of the program is September 30, 2003.

6. LAND USE PLANNING CONTEXT & PROCESSES

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.

State law requires that each jurisdiction adopt "a comprehensive, long-term General Plan for [its] physical development." This general plan is the official city or county policy

regarding the development of housing, business, industry, roads, parks, and other land uses. The Plan also provides guidelines for the protection of the public from noise and other environmental hazards, as well as the conservation of natural resources. 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. This Plan can be described as the city's or county's blueprint for future development. It represents the community's view of its future; a constitution made up of goals and policies upon which the city council, board of supervisors and planning commission will base their land use decisions.

For the purposes of developing policies and planning related to land-uses that directly affect watersheds, two elements in particular must be examined. The first, the **land use element**, designates the general location and intensity of housing, business, industry, open space, education, public buildings and grounds, waste disposal facilities, and other land uses. The second, the **conservation element**, addresses the conservation, development, and use of natural resources including water, forests, soils, rivers, and mineral deposits. Within these documents typically lie the identification of water quality-related land use planning goals, objectives, and policies that guide long-range and current planning decisions.

As mentioned in the Introduction, Objective #2 of this Watershed URMP is to incorporate watershed principles into land use planning. The objective closely follows the requirement under Section J.2.f of the Municipal Permit, which requires Copermittees develop a mechanism to facilitate collaborative “watershed-based” land use planning with neighboring local governments in the watershed.

6.a. Copermittee Jurisdictional Planning Goals

Unlike the other watersheds, the County of San Diego is the sole Copermittee within the Santa Margarita Watershed. Further, the County's jurisdiction only covers approximately 18% of the total area of the watershed (see Table 6-1). Efforts are underway, however, to facilitate such collaborative watershed-based land use planning with neighboring local governments and other stakeholders within the watershed. This cooperative effort is discussed further in Section 6.c below.

Table 6-1: Percentage of Watershed by Major Jurisdiction

Jurisdiction	Acreage	% of Watershed
County of San Diego	89,838	18.9%
County of Riverside and Incorporated Cities within Riverside County (Murrieta & Temecula)	348,885	73.4%
U.S. Military Installations (Marines Corps Base Camp Pendleton and Fallbrook Naval Weapons Station)	36,703	7.7%
TOTALS	475,426	100%

Data Source: SANGIS Database

The Regional Land Use Element of the County of San Diego's existing General Plan sets as its overall goal the requirement that planning in the County will

“accommodate population growth and influence its distribution” in such a way as to “protect and use scarce resources wisely” and to “preserve the natural environment.” The County’s Regional Land Use Element also states that one of its Government Structure Goals (Goal 5.4) is to “coordinate planning efforts within the cities of the region... to develop compatible land use strategies.”

Portions of the Santa Margarita Watershed, within the County of San Diego, lie in the following community and subregional planning areas:

- Fallbrook Community Plan Area;
- North Mountain Subregional Plan Area;
- Pala/Pauma Subregional Plan Area; and
- Rainbow Community Plan Area.

After reviewing these documents, it was found that while the existing plans had references to jurisdictional collaboration, water quality, watershed protection, and stormwater pollution principles, they were scattered throughout the documents. It was also found that this language was not standardized, and was included in some community plans, but not others. As such, efforts are currently underway to modify the General Plan (GP2020) to improve upon this jurisdictional collaboration to make the language more standardized and consistent. The proposed work plan with associated estimated due dates are included in the County’s Jurisdictional URMP.

As part of the GP2020 update, the County of San Diego is developing land use goals and policies that are intended to maintain a built environment that is compatible with and sensitive to its natural setting and retains communities and country towns of unique local character. Appropriately identified land uses should enhance, serve, and contribute to an existing communities character as well as protect natural resources while maintaining the public safety and public and private property rights of landowners.

New developments shall be consistent with a community’s character and meet the needs for a diverse range of ages, incomes, abilities and lifestyles. New development shall also provide for the protection of the County’s natural resources including ground-water resources, dark skies, cultural and historical resources, agriculture, natural floodplains, wetlands, environmentally sensitive lands, air quality, and water quality through the creation of greenbelts and, wildlife corridors and other open space areas. County of San Diego’s General Plan includes goals and polices that provide mechanisms intended to preserve open spaces for conservation of natural resources, recreational and educational activities.

The ultimate goal of the County of San Diego’s General Plan update is to allow for efficient, economical, coordinated, and timely provision of public facilities and services including water, sewer, roads, drainage and storm-water runoff, schools, parks, libraries, police, fire protection, and emergency medical.

6.b. Current Inter-jurisdictional Planning Collaborative Mechanism

State law requires that local governments hold public hearings prior to most planning actions. At the hearing, the council, board, or advisory commission will explain the proposal (whether a development proposal, ordinance amendment or general plan update), consider it in light of local regulations and environmental effects, and listen to testimony from interested parties.

Jurisdictions (as well as the public at large) have the opportunity to comment on and to participate in hearings relating to land use actions including development. Most development projects within the State of California are considered to require a discretionary review by the jurisdiction with the lead permit approval authority for the project. Therefore, pursuant to the California Environmental Quality Act (CEQA), before a project can be approved by a jurisdiction, most projects must undergo some form of environmental review, a process, which includes a public notification and comment opportunities. Also several types (not all) of these projects require that the jurisdiction hold a notified public hearing prior to approval of a project.

As part of the County of San Diego Watershed Protection, Stormwater Management and Discharge Control Ordinance (WPO) (Ordinance No. 9426) which went into effect on February 20, 2002, discretionary projects and some ministerial projects are required to prepare a Stormwater Management Plan (SWMP) for review prior to approval by the appropriate hearing body/bodies. The purpose of the SWMP is to provide all the information needed to fully and adequately characterize the existing water quality, analyze the drainage, develop effective post-construction stormwater protection and ensure the effectiveness of the Best Management Practices (BMP) through proper maintenance and long-term fiscal responsibility. Prior to being approved by a hearing body, the environmental documents including SWMP, and the BMP's prepared for a project will be available for a pre-determined public review period ranging from 21 - 45 days.

6.c. Watershed-Based Land Use Planning Mechanisms

As discussed above, the Municipal Permit identifies the County of San Diego as the sole Copermittee in the Santa Margarita Watershed. However, the County, in cooperation with other jurisdictions within the watershed, is utilizing other mechanisms to facilitate a Watershed-based approach to land use planning. As part of this effort, combinations of practices are utilized to facilitate the integration of watershed data and information into their land use decision-making processes. This process is intended to ensure the protection of the water quality within the watershed and receiving water bodies. The mechanisms used to facilitate cross-jurisdictional land use planning to ensure consideration of the health of the watershed include:

- 1) The Santa Margarita Proposition 13 Watershed Management Plan;
- 2) The Santa Margarita Watershed Water Supply Augmentation, Water Quality Protection and Environmental Enhancement Program; and,

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- 3) Watershed-based Water Quality Assessment
 - 4) Information & Materials Sharing
 - 5) Jurisdictional Planning

The most appropriate degree that each of these methods will be employed will be determined on a jurisdictional basis.

6.c.1 *Costa-Machado Water Act of 2000 – Proposition 13*

As part of efforts pursued under Costa-Machado Water Act of 2000 (Proposition 13) for watershed planning and other water quality projects, the County of San Diego with support from numerous stakeholders within the watershed, have been given the responsibility of developing a comprehensive watershed management plan for the Santa Margarita Watershed (SWRCB #02-040-259-0). The plan components include developing a watershed management workgroup, stakeholder database development, watershed resource inventory, watershed analysis, management goals and strategies and ultimately, the watershed management plan. As part of the long and short-term strategies that will eventually be developed as part of the management plan, the feasibility of developing a mechanism to facilitate land use planning will be examined in order to potentially provide a vehicle in which the jurisdictions can work together to adopt the goals and polices outlined in the watershed management plan.

6.c.2 *The Santa Margarita Watershed Water Supply Augmentation, Water Quality Protection and Environmental Enhancement Program*

The County of San Diego is presently involved with the development of a Memorandum of Agreement with the Bureau of Reclamation, US Marine Corps and several water districts within the Santa Margarita River to develop the Santa Margarita Watershed Water Supply Augmentation, Water Quality Protection and Environmental Enhancement Program; a modeling and monitoring program that encompasses the entire watershed. With this program, issues relating to water quality and quantity in the surface and groundwater can be identified. Furthermore, the water quality modeling effort can address issues relating to total maximum daily load (TMDL) development and assimilative capacity. The estimated completion date of the program is September 30, 2003.

6.c.3 *Water Quality Assessment*

An annual watershed-based water quality assessment conducted collaboratively by the storm water programs in each jurisdiction will form the informational basis for all watershed activities and programs later initiated by jurisdictions, including land use planning. Jurisdictional storm water programs will consider the role of land use planning during the development of their overall control strategies for specific issues and problems identified as priorities for the watershed. On an annual basis, as appropriate, specific data, information, and/or recommendations will be developed or compiled during the water quality assessment process and

distributed to each jurisdiction's respective planning departments for consideration by land use planners and other decision makers to ensure adequate consideration of watershed-level problems and solutions.

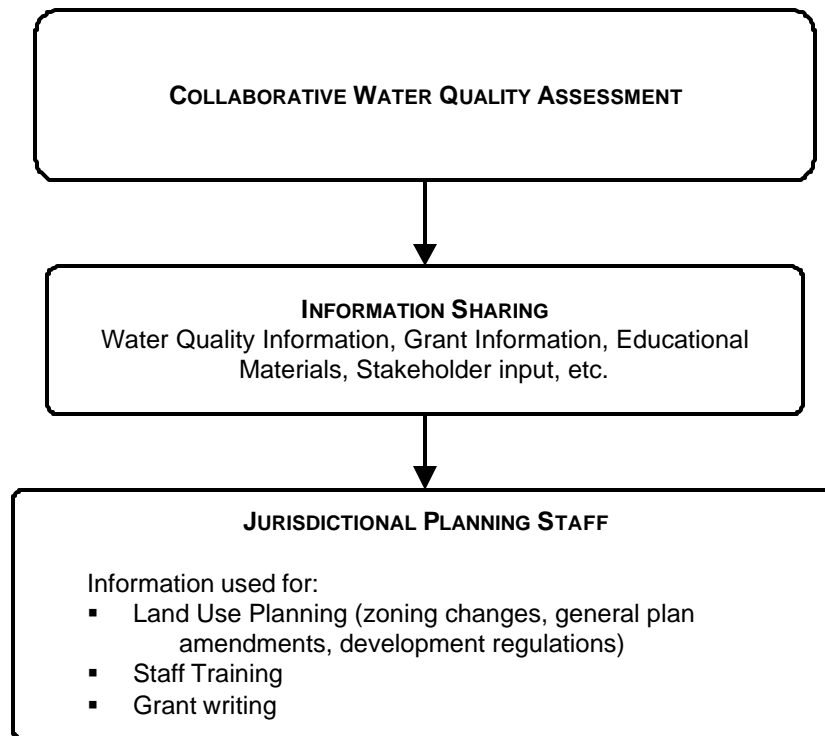
6.c.4 Information/ Materials Sharing

For watershed issues to be successfully integrated into the land use planning process, effective dialogue must be established between the jurisdiction's storm water programs, planning staff, and other stakeholders. To this end, storm water managers (e.g., the Copermittee staff with primary responsibility for completion and implementation of the Watershed URMP) will establish forums as they determine necessary to ensure effective communication with planning staff both jurisdictionally and on a watershed basis. In both instances, the purpose of the meetings will be to facilitate the exchange of pertinent watershed-specific information and to explore the collaborative development of planning strategies between storm water managers and planners. These meetings would be attended by representatives from each jurisdiction in the watershed, other interested agencies, and the public, and will provide a general forum for discussions regarding projects that may impact water quality within other watershed jurisdictions, as well as collaborative opportunities for grant fund applications, coordination of natural resource planning, and mitigation within watersheds. Land-use planning departments will annually evaluate the effectiveness of these and other mechanisms of collaborative land-use planning to enhance their effectiveness.

Continued collaboration on the development of Watershed URMPs will necessarily result in the identification and/or generation of various written and/or electronic forms of data and information (data, reports, etc.) relevant to land use planning. As appropriate, the County of San Diego will ensure that such materials are shared with land use planning staff within their individual jurisdictions as well as other jurisdictions within a particular watershed.

Examples of relevant information, materials, or work products which may be shared periodically include grant proposals, restoration or BMP development projects, approvals for unique (such as projects approved with SUSMP waivers) or large development projects, monthly meeting notices, and information on various other activities such as mitigation or structural BMP efforts, educational activities, and grant proposals.

Figure 6-1: Collaboration Flow Chart



6.c.4 Jurisdictional Planning

As additional watershed information and data is developed it will be shared with each jurisdiction's planning department. It is intended that there would be collaboration between the planning staff and the storm water program staff within each jurisdiction to discuss potential land use planning changes, training, and grant opportunities that may be appropriate for the issues identified in the water quality assessment. For example, information gathered during the water quality assessment phase described above will form the basis of watershed-specific training elements developed either individually or collaboratively by the jurisdictions. Planning staff may also be encouraged to participate in grant writing and implementation with watershed stakeholders. In addition, relevant water quality data and findings generated through the water quality assessment may be used to determine whether new development regulations, zoning regulations, or land use policies are needed to address specific water quality.

7. PUBLIC PARTICIPATION COMPONENT

In accordance with section J.2.f of the Municipal Permit, public participation during the Santa Margarita Watershed URMP development and implementation process will continue to be encouraged to ensure that stakeholder interests and creative solutions are considered. This direction follows the fourth objective (Objective #4), which is to "Encourage and enhance stakeholder involvement within the watershed."

Broad participation is critical to the success, further development and implementation of the watershed program. While participating jurisdictions aim to improve coordination among their own agencies, the watershed approach calls upon these agencies to engage diverse stakeholders in this process, including other regulatory agencies, environmental groups, educational institutions, landowners, and private citizens. Further, the participating jurisdictions recognize that no single agency has the capacity to address water quality issues on its own and broad partnerships are essential to positively affect the water resources in our region. It is only through a collaborative approach, that we will develop a better understanding of the issues and processes affecting water quality in our watersheds and subsequently select and address priorities.

7.a. Public Participation To Date

The current watershed program, as described in this document, has been developed based on a set of model guidelines that were produced with public input. All San Diego Copermittees held a series of meetings which were open to the public and noticed through the County of San Diego Project Clean Water website beginning in early 2002. The County of San Diego and all other copermittees via email and personal communication also provided additional notice to numerous stakeholders. The County has provided leadership in outreach efforts by compiling a list of interested stakeholders that currently contains over 700 names. All other jurisdictions have also identified other stakeholders and submitted contact information to County staff for inclusion in their master distribution list. To further encourage public participation, related meeting agendas and minutes were also promptly made available through the County's website. Lastly, the model guidelines were also posted online in early August of 2002 along with contact information for each watershed.

To ensure further participation during program development, the draft watershed plans have also been made available for public review through the County's web site. Notice has taken place via e-mail communication (using the County's master distribution list) as well as through other numerous means, including announcements at public meetings, legal advertisements in newspapers of general circulation, and personal phone calls.

Further, as part of the County's Proposition 13 Watershed Management Plan activities, information regarding this Watershed URMP has been made available to the stakeholders for review and comment, and was presented at the first quarterly stakeholder meeting held in early December 2002.

7.b. Future Public Participation

The County of San Diego will continue to pursue a strategy to actively encourage the participation and input of diverse stakeholders. The County's Project Clean Water has been identified as the principal forum for future public participation. Other mechanisms identified to foster public participation include copermittee collaboration & community workshops as well as integration and participation in local planning activities. The following mechanisms are being proposed/pursued:

- 1) Integration and participation in local planning activities

-
- 2) Project Clean Water;
 - 3) Other Public Mechanisms;
 - 4) Discretionary Project Review Process; and
 - 5) Direct Interaction

7.b.1 Integration and Participation in Local Planning Activities

Watershed planning has become an issue of increasing importance over the past few years. Various local planning efforts provide forums for exploring both the development of watershed and jurisdictional activities and programs. The relationship of these efforts to the Watershed URMP development and implementation cannot be overstated since they address complementary policies and all rely on public participation for success. Watershed management planning is multi-faceted in that it considers the correlation of many elements, including water quality and quantity, habitat and wetlands, and flood and fire management. Water quality can be used as an indicator of the health of the watershed. This Watershed URMP is another key element to the overall watershed management planning process.

Efforts are currently underway that will not only look into a mechanism to facilitate land use planning, but also provide a vehicle for stakeholder input (Costa-Machado Water Act of 2000 – Proposition 13). As part of the contract for the Santa Margarita Watershed Management Plan, stakeholders of the Watershed will have the opportunity to provide input on a comprehensive watershed management plan for the entire watershed. While this project will not always be directed specifically at storm water permit compliance, it addresses complementary policies and provide opportunities for consolidation of efforts and economies of scale.

7.b.2 Project Clean Water

Project Clean Water, which initiated in July 2000, established a framework for the broad-based and collaborative development of solutions to local water quality issues. The relationship of Project Clean Water policies to Municipal Permit compliance is important. An underlying tenet of this effort is that Municipal Permit compliance alone cannot achieve clean water. As such, Project Clean Water seeks to actively involve a multitude of stakeholders in exploring water quality issues, their causes, and their solutions. This significantly broadens the base of stakeholder input available to consider issues directly related to Municipal Permit compliance. As with Copermittee meetings, all Project Clean Water meetings are open to the public and participation is encouraged through a variety of avenues including a website, electronic notifications and personal phone calls.

Project Clean Water is generally organized according to two types of working bodies: Technical Advisory Committees (TACs) and Technical

Workgroups¹¹. TACs are responsible for the overall coordination and exploration of four broad subject areas crucial to water quality management; (1) Comprehensive Planning, (2) Legislative and Regulatory Issues, (3) Science and Technology, and (4) Education and Resource Development. Each TAC compiled a baseline inventory and initial assessment of activities and issues for its respective subject area during the first phase of the project, and is now conducting a more intensive issues characterization and implementing specific action items identified in the June 2001 Clean Water Strategic Plan. Technical Workgroups generally explore more focused issues. During 2001, Technical Workgroups emphasized stormwater permit compliance, and developed eight model program guidance and other work products intended to ensure public input during the development of these programs. Technical Workgroups will continue to deal with specific focused issues.

To provide information on meetings, work products, and other valuable links to the public and interested parties, a Project Clean Water website (www.projectcleanwater.org) was launched in January 2001. To date, interested parties have extensively utilized the site to post various work products for review and comment. It is the goal of the program to establish this site as a centralized source of water quality information for the San Diego region.

In December 2002, a draft copy of the Watershed URMP was placed on the website. Project Clean Water stakeholders were notified via e-mail and encouraged to review and comment on the document. The County of San Diego will continue to use Project Clean Water as a vehicle to update stakeholders and encourage feedback as the workgroup continues to develop and implement the Watershed URMP and other watershed related management plans.

7.b.3 Other Public Mechanisms

Watershed planning has become an issue of increasing importance over the past few years. Various local planning efforts provide existing forums for exploring both the development of watershed and jurisdictional activities and programs.

Discretionary Project Review Process. As previously discussed in Section 6, the public has the opportunity to comment on and to participate in hearings related to stormwater compliance by proposed discretionary (development) projects. All such projects require some form of California Environmental Quality Act (CEQA) compliance, with related public notice and comment opportunities. The consideration of projects by any hearing body involves public hearing and notification procedures.

Direct Interaction. In addition to those methods already described, the County of San Diego relies heavily on the interaction of their staff with members of the public during their job duties. Staff members with program implementation responsibilities will receive targeted training to

¹¹ During 2001, all Copermittees and SDRWQCB staff participated in one or more Project Clean Water TACs or Technical Workgroups.

increase their understanding of urban runoff issues as part of their Jurisdictional Urban Runoff Management Programs. The interaction of these staff with the public through various means (e.g., permitting, inspections, presentations, etc.) will provide an additional avenue for obtaining direct feedback from watershed stakeholders.

8. EDUCATIONAL PROGRAM

Objective #3 of this Watershed URMP is to enhance public understanding of sources of water pollution within the watershed. This objective closely coincides with Section J.2.g of the Municipal Permit, which requires that Watershed Copermittees establish a watershed-based education program. Section 8 below outlines how the County of San Diego, as sole Copermittee in the Santa Margarita Watershed, is complying with the objective and Municipal Permit requirement.

8.a. Overview / Introduction

Education is the foundation of an effective URMP and the basis for change in behavior. Education is provided through passive modes such as written material, video, and Public Service Announcements (PSAs), and active modes such as workshops and educational forums. Both modes increase the target audience's knowledge of how to reduce stormwater pollution. Active participation is encouraged, as public involvement is a pivotal force to change behavior. All education efforts conducted are documented in appropriate accounting systems.

The watershed-based education program builds on existing URMP educational activities. To this end, watershed-based educational components target sources of pollution and how land use relates to water quality. The watershed-based education program will:

- 1) Emphasize watershed concepts;
- 2) Pursue watershed-level activities with jurisdictional and regional approaches; and
- 3) Aim to create community stewardship for water resources.

8.b. Current Educational Activities

Currently, storm water education within the region are conducted on two levels: countywide and the jurisdictional level. Examples of ongoing educational activities at each of these levels are identified in Table 8-1 below. Education practices within the region are generally coordinated among jurisdictions and stakeholders to ensure that the messages are consistent. The main stakeholders within the San Diego County portion of the watershed are the Mission Resource Conservation District, Friends of the Santa Margarita River, USMC Base Camp Pendleton, and the Fallbrook Naval Weapons Station. The County plans to coordinate outreach efforts with these and other interested stakeholders. Additionally, an aggressive program to educate municipal staff has been undertaken. It is expected that public agency employees will become

ambassadors within their communities. Where possible, coordination of educational activities will be expanded to include the County of Riverside, as well as the Cities of Temecula and Murrieta.

Table 8-1: Current On-going Educational Activities in the Watershed

Educational Activity	Description
Regional	
Project Clean Water	County initiated effort provides the forum for information sharing to promote regional collaboration and consistency in outreach. The Education and Resource Development Technical Advisory Committee has been meeting since November 1, 2000. This TAC, which broadly encompasses a variety of outreach topics, works closely with the Copermittees' Education Technical Workgroup on stormwater and urban runoff outreach activities.
Think Blue Media Campaign	Bilingual (English/Spanish) television and radio Public Service Announcement advertising campaign airing on 33 local broadcast outlets. Campaign developed and administered by the City of San Diego with financial support from the County and Port of San Diego as well as California Department of Transportation – San Diego Office.
Industrial/Commercial Workshops	Series of industry specific workshops scheduled throughout the region under the leadership of County staff. Featured speakers and panelists provide attendees with the most up-to-date information about storm water requirements and Best Management Practices (BMP's). Automotive, mobile businesses, landscaping and restaurant industries have been targeted to date.
Jurisdictional	
Community Events	Water Festival, Avocado Festival, Keep Fallbrook Clean & Green, Watershed Awareness Day, Camp Pendleton Community Family Day, and Earth Day.
Printed Material Distribution	The Mission Resource Conservation District, a partner with the County, currently distributes educational and informational materials at community events, workshops and presentations. Materials include: "We All Live In A Watershed", "The Santa Margarita River Watershed", "Santa Margarita River Home – 2 – Ocean, A Citizens Water Quality Monitoring Program", "Irrigation Water Management", "Stormwater Pollution", "Refuge in an Urbanizing Land – The Santa Margarita River – Cultural and Natural Resource Value", "Septic Sense", "Estimating Orchard Water Use with CIMIS", "Phinnious J. Greene presents.... Watershed Friendly".
Customized Public Presentations (Unincorporated County)	Presentations are made to community business and trade associations as requested. Presentations are tailored to meet the needs of the audience and specific Best Management Practices (BMP's) are identified.
School Presentations (Unincorporated County)	Bilingual (English/Spanish) water quality educational program for grades K-6. Participation at middle and high schools is available through fairs or assemblies. Curriculum for these grade levels is being developed.
General Public Presentations	Presentations are given to community planning groups and other interested groups. Presentation content consists of general information about the municipal storm drain system, sources of non-point pollution, BMPs, and good housekeeping practices.

8.c. Watershed Based Education Program

The main objective of the watershed based education component is to capture the audience's attention, and impart messages that are understood, retained, and, ultimately, prompt behavioral changes. Establishing key messages (e.g. succinct, attention grabbing, easily understood, and motivational information) is crucial to program success. It is important to note that successful communication

campaigns begin with key, core messages, which are repeated often and given time to become “common knowledge” with target audiences. As time evolves, these core messages are built upon with new and more detailed information. In this manner, messages are not disseminated into the public arena simultaneously, possibly causing confusion and resulting in a lack of attention and recognition. This staged approach will be particularly important under the education program due to the extensive amount of information required to be covered and the long term need to address watershed-specific issues as the program evolves.

While core program messages remain consistent throughout all communication vehicles, where appropriate, these messages are tailored for individual target audiences. For example, an overall message to “identify and isolate potential flows to a storm drain” is refined for homeowners 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. These messages provide a baseline from which watershed concepts can be threaded into current educational efforts.

A strong watershed program element is important for establishing ownership in the minds of the target audience. Residents are more likely to respond to education when they understand the impacts of upstream activities on downstream areas. The County will refine current baseline education programs to integrate watershed-based components as described below:

8.d. Strategy

Watershed education will be generally focused in order to meet the needs of different sub-regions and associated land uses within the watershed. Specific and focused outreach will be targeted at land uses and activities that can contribute to nutrient loads in Rainbow Creek.

Over the short term, the education program will focus on three basic principles:

- 1) What is a watershed?
- 2) We all live in watersheds.
- 3) Watershed stewardship (all individual actions within our watersheds add up in a cumulative way to influence the health of our water resources).

Suitable Best Management Practices (BMPs) will be incorporated into the short-term education program as appropriate to the target audience. Additionally, it is widely recognized that California creeks and rivers are being contaminated with pesticides, primarily *diazinon* and *chlorpyrifos*. Within the San Diego region, available data indicates that this is a widespread challenge and will be the first constituent of concern addressed under the watershed education element.

Over the long term, the watershed message will be further developed to address other specific constituents of concern within the watershed based on the yearly water quality assessment performed as part of the annual reports associated with

the overall program. The watershed education strategy will be built as a multi-phased approach that is driven by achievement of milestones, as determined through annual assessments.

8.e. Education Action Plan

The following table identifies the actions that participating jurisdictions will undertake over the short and long term in order to further develop and implement the watershed based education element:

Table 8-2: Education Element - Action Plan

Tasks/ Program	Description	Target Audience(s)	Responsible Party	Schedule
Public Presentations and Media – Watershed Element	Incorporate general watershed concepts and principles into jurisdictional education activities including public presentations and media opportunities. Where appropriate incorporate watershed specific components including constituents of concern and the identification of receiving waters.	General public including residents and business community	County and Stakeholders	Ongoing
De Luz Ecology Center (Fallbrook School District)	Integrate stormwater pollution prevention into existing water quality curriculum. Give class presentations and participate in school fairs.	3rd & 5th grade children	County and Stakeholders	2003
Integrated Pest Management Efforts	Educational materials will be replicated and widely distributed. Explore other targeted outreach opportunities such as Point of Purchase campaigns and integrate with existing efforts as appropriate.	Single family homes and related businesses (landscaping, nurseries, agriculture)	Co-permittees in partnership with the Farm and Home Advisor	Feb 03 – Dec 04 (guide development) Distribution would be ongoing task
What Watershed Do You Live In?	Expand existing watershed map to include land uses and receiving waters; to be used in outreach events.	General public; children in particular	County and Stakeholders	Jan 04
Watershed Brochure	Tailor messages based upon data/information gathered from water quality assessment, surveys and feedback, and create a unified information piece, such as a brochure which includes a map and highlights the watershed's critical needs.	General Public	County and Stakeholders	Jul. 04 – Jun. 05 (Brochure development) Distribution would be ongoing task
Educational Materials	Expand on existing and develop new educational materials to be shared by the County and Stakeholders. Items such as bags with water quality messages and watershed labels are planned.	General Public	County and Stakeholders	2003

Tasks/ Program	Description	Target Audience(s)	Responsible Party	Schedule
Target Pollutants and Sources of Concern	Develop educational outreach plan in partnership with the Department of Agriculture to target high nitrate levels in Rainbow Creek. Targeted audiences will include general agriculture, residential uses such as home and garden care, livestock and equestrian activities, and septic system users.	General Public	County and Stakeholders	2003 - beyond
Project Clean Water	Expand and further develop the regional website to include bulletin boards for each watershed that provides up to date information about the region's watersheds and related activities including volunteering opportunities.	General Public	County	2004 - beyond
Partners in Clean Waters	Identify and evaluate efforts by others in the region which support the goals of the storm water program (e.g., water conservation, citizen monitoring efforts, clean-up events) and pursue partnerships as appropriate.	General Public	County and Stakeholders	2004 – beyond
Community Events – Focus on Local Water Body	Develop activities/materials specific to the watershed that identifies receiving waters as well as addresses specific constituents of concern through a series of recommended actions/behaviors. May include distribution of materials through partnerships.	General public; children in particular	County and Stakeholders	2006 - beyond

9. PROGRAM EFFECTIVENESS STRATEGY

In order for a plan to be successful, clear goals and objectives must first be established, agreed to and implemented by the Copermittees. Otherwise, program activities and tasks are adopted without an understandable purpose or clear direction. As discussed in Section 1, and echoed throughout the body of the document, the Copermittees have identified a program goal and four underlying objectives that will guide decision-making as the Copermittee develop and implement the Watershed URMP.

PROGRAM GOAL

To Positively Affect the Water Resources of the Santa Margarita Watershed While Balancing Economic, Social and Environmental Constraints.

Objective #1: Develop/expand methods to assess and improve water quality within the watershed.

Objective #2: Integrate watershed principles into land use planning.

Objective #3: Enhance public understanding of sources of water pollution within the watershed.

Objective #4: Encourage and enhance stakeholder involvement within the watershed.

It is the intent of this section to establish an evaluation strategy to determine the effectiveness of these objectives.

9.a. Evaluation Strategy

The strategy to evaluate the effectiveness of the Watershed URMP includes developing objectives that are measurable, have an expected outcome, and an established preliminary performance standard as an indicator of meeting or exceeding expectations. This process is supported by the EPA, whose literature indicates, *"For a watershed management plan to be effective, it should have measurable goals describing desired outcomes and methods for achieving those goals"*¹². Therefore, on an annual basis, Copermittees will assess data collected for each of the objectives listed above to assist in the annual Watershed URMP assessment.

In addition, annual results from the water quality assessment will be integrated into the Watershed URMP policies and the program effectiveness evaluation where practical. This will provide meaningful feedback to the Copermittees as to whether or not programmatic activities are useful in meeting the overriding goal of the Permit – to improve water quality in the region (The term "Water Quality" is defined as including the triad characteristics identified by the Copermittees (these include the benthic community assessment, toxicity levels, and water chemistry [chemical and physical data])).

In each future year, the program effectiveness evaluation strategy will consider linkages between water quality and programmatic activities, and the results will be used to alter program delivery, operations, goals, objectives, expected outcomes or other programmatic actions where possible. As the water quality assessment is expanded, the results will be used to develop targeted mitigation activities where and when appropriate, which may also alter the stated objectives. Therefore, the objectives outlined herein are considered to be

¹² Guidance Specifying Management Measures for Sources of Nonpoint Pollution, 1993

dynamic, and will likely be updated each year. It must be noted that the ability of the Copermittees within this watershed to meet or exceed stated objectives, activities, and performance indicators does not itself suggest that the program is effective. Rather, the question that must ultimately be answered in evaluating the effectiveness of the program is *“Are program activities an effective method to improve water quality?”*

In order to answer that question, water quality monitoring data must be collected over a long period of time; longer than the life of the Permit. Although the stated purpose of the program effectiveness evaluation strategy is to address the long-term effectiveness of selected program activities and elements; intermediate, or short-term activities will also be tracked and assessed. This will provide important feedback on more frequent intervals, allowing the Copermittees to make adjustments each year. For this reason, both short-term and long-term activities are discussed together throughout the remainder of this section.

The long-term goal of the program effectiveness evaluation will be to develop and refine programmatic activities that have a positive affect on improving water quality. However, the first few years of the program effectiveness evaluation strategy will examine several key “first steps” (short-term activities) toward meeting this long-term goal. Thereafter, objectives and activities will be assessed annually and modified when linkages to water quality are developed or when modification is appropriate.

The short-term activities will be addressed in each annual report and will answer the following questions:

- 1) Are the Copermittees able to implement new methods for working together as a watershed group?
- 2) Are the Copermittees able to implement a community outreach program and provide a mechanism for community participation?
- 3) Are the Copermittees able to determine the effect, if any, of programmatic activities on water quality?

The answers to these questions, coupled with the water quality assessment, will provide a means to assess the program through a continuous feedback-loop of implementation, assessment, and evaluation.

In order to develop a meaningful program effectiveness strategy, a needs assessment, baseline data collection to measure “pre-implementation” levels, the formation of program elements targeting the needs identified in the assessment and “post-implementation” data collection to ultimately determine the affect of programmatic activities on changes in water quality has been prepared – this process is also a means for using direct measurements of program activities. Effectiveness assessment measures are generally divided into two types, direct and indirect, which are more fully discussed below:

Direct measures. Direct measures are those that focus on characterizing the quality of water bodies receiving discharges from Copermittee MS4s or on

assessing other parameters with an immediate or well-established nexus to changes in the quality of those waters. Examples of direct measurement include receiving waters monitoring, estimation of pollutant loadings from specified areas (catchments, municipalities, watersheds, etc.), and focused evaluations of structural BMPs. Direct measures generally include actual measurement or quantification of pollutants (e.g., reductions in concentrations of chemicals of concern, etc.) or of the amount of materials extracted or diverted by a BMP (e.g., through household hazardous waste collection, etc.).

Indirect measures. Because direct measures can be difficult and expensive to obtain, and because they often require long assessment periods to fully assess, a variety of indirect measures are generally used to evaluate storm water program effectiveness. Indirect measures are based on the assumption that the use of specific program activities is effective in decreasing storm water pollution and therefore in protecting water quality. They are typically used to assess the performance of non-structural source control BMPs such as storm drain stenciling and public education programs. Indirect measures typically focus on degrees of implementation or comparison to standards or goals rather than actual water quality assessment or measures of pollutant loading. By measuring the degree or success of implementation of BMPs, it may therefore be possible to make *inferences* about water quality benefits. Inferences, however, are assumptions and should not be given the same weight as direct measures, which provide *direct-impact data*. Indirect measures should be pursued in combination with more broadly focused direct measures to allow Copermittees to prioritize limited resources, conduct meaningful assessments on intermediate time frames, and focus their efforts on particular BMPs and program elements.

Whether using direct or indirect measures of effectiveness, baseline conditions must be defined. All future comparisons showing improvements could then be made relative to these baseline conditions. In the absence of a well-defined baseline, improvements cannot be adequately measured. A suite of measures that allows for assessment on a variety of levels and time frames will be developed if resources and time permit.

Because program requirements are being implemented and the effectiveness strategies formulated prior to a developed nexus between expected outcome (improved water quality) and program activities, the effectiveness of “permit compliance” will be the measured outcome during the first few years of program implementation rather than “effectiveness of program activities on water quality.” Basically, the process is the reverse of best practices for program-impact evaluations. Therefore, in an effort to reduce measurement deficiencies in the program effectiveness strategy due to the flaws in the evaluation process, the goals and objectives will be evaluated and modified as linkages to improved water quality are developed. In other words, once a program activity is established as having a link to improved water quality, the Copermittees will work towards implementing those types of programmatic changes, when possible.

Therefore, it is expected that the program objectives and activities will change as each annual evaluation and assessment is conducted. The objectives outlined in this section are the Copermittees first attempt to establish a feedback-loop program evaluation process that addresses both permit-compliance and water

quality impacts at this very early stage of program evaluation. The feedback loop is illustrated in Figure 9-1 and demonstrates the estimated time frame for achieving each goal, the expected time frame before the impact on water quality will be available (estimated to be 2012) and the annual feedback process for assessing linkages between activities and water quality impacts.

In summary, the best measure of program effectiveness is improvement in the quality of receiving waters. Where possible, measurement of such changes will be pursued. However, three important limitations should be acknowledged here.

- 1) Measuring the “quality” of any receiving water is not a straightforward exercise. In many cases, baseline conditions have yet to be reliably established, and considerably more time may be required to do so;
- 2) Water quality changes in response to program implementation are likely to be very slow and not measurable within this or other near-term Permit cycles (as shown on the program effectiveness strategy illustration); and
- 3) Establishing a nexus between targeted program activities and water quality improvement is difficult, if not often impossible.

The following sections describe the objectives, activities, and expected outcomes for the first annual program effectiveness strategy in an effort to evaluate the effectiveness of their program on water quality within the Watershed.

9.b. Review of Watershed URMP Goals, Objectives, & Activities

Each objective, the justification for selecting the objective, how the objective ties back to the program goal and the expected outcome are discussed in more detail below.

Annually, each objective and the ability of the Copermittees to meet the stated activities/tasks that were assigned to each objective will be evaluated for effectiveness in terms of impact on water quality when data for the assessment is available and reliable. This will allow a mechanism for modifications to the program. It must be stressed that this is a living document and the objectives, activities and tasks proposed may need to be modified in the coming years.

The process for assessing program effectiveness will be a multivariate approach integrating direct and in-direct measures, jurisdictional activities, statistical analysis (when available) and performance measures. The overall effectiveness of the entire program will be addressed in the annual narrative report to the RWQCB using all relevant information and examining the ability of the Copermittees to meet or exceed the stated goals and performance indicators. It is not likely that *program effectiveness on water quality* will be available within the life of this permit cycle; however the Copermittees remain hopeful that the goals as presented will move the evaluation a step closer with each annual assessment.

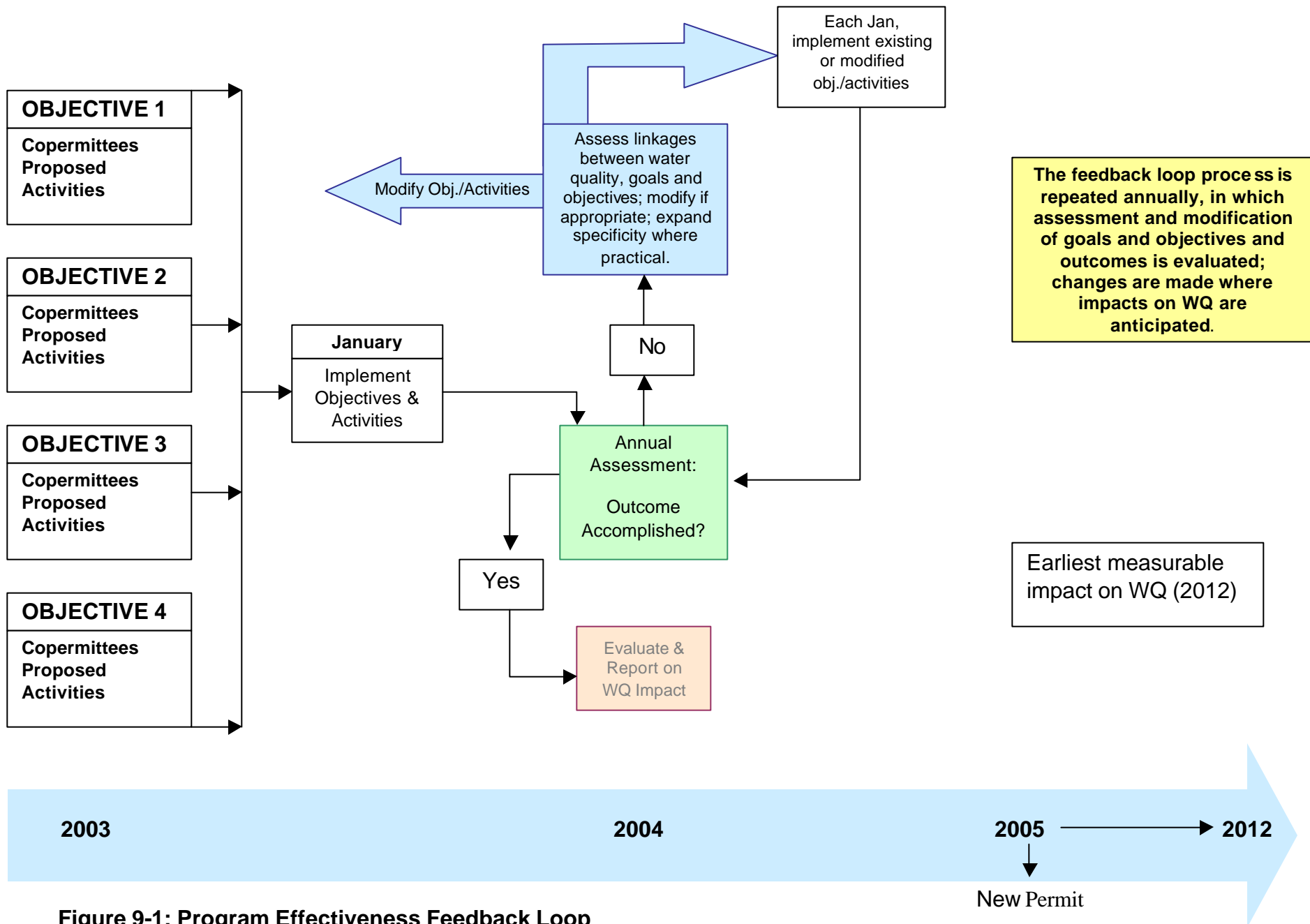


Figure 9-1: Program Effectiveness Feedback Loop

OBJECTIVE #1: Develop/expand methods to assess and improve water quality within the watershed.

Justification

The justification for this objective is obvious in that the purpose of a jurisdictional or watershed stormwater program is to ultimately improve the quality of the water in the watershed. In order to accomplish this, we must expand upon existing methods or develop new methods to improve our understanding of the problems and ultimately the water quality within the watershed. By developing and expanding methods to improve water quality, stakeholders will be able to validate preliminary water quality concerns and possibly find new COCs within the watershed. As more information becomes available, it is anticipated that people's actions (behavior) will change in an effort to minimize impacts to water quality.

Expected Outcome

Over time, the expected outcome of this objective will be multi-faceted:

- Develop an understanding (characterization) of the water bodies within the Watershed;
- Develop and/or verify a list of constituents of concern (COC) for the Watershed;
- Prioritize the COCs for potential improvement;
- Develop an action plan to mitigate harmful effects of COCs; and
- Transition to watershed-based monitoring program.

Using the triad of benthic community assessment, toxicity levels, and water chemistry, measure changes on water quality; however water quality changes are not expected to be statistically significant within the life of this permit.

Performance Measure

It cannot be overstated that direct measures are the most definitive way of determining an objective's (as well as program's) overall effectiveness. However, as echoed throughout this document, establishing useful direct measures are not only costly, but time consuming.

As stated in the Copermittees's respective JURMPs, the jurisdictions are required to gather water quality information on the watershed(s). However, this is a new process for most jurisdictions and all relevant water quality information has yet to be collected and/or reviewed. In fact, in some cases, the COCs identified in the Watershed URMPs are based on only one year's worth of water quality data. In these instances, the expenditure of public funds towards unconfirmed issues is often unjustified until issues can be validated and clearly identified. As stated in Section 5 of the Watershed URMP, several activities are proposed to obtain this additional water quality data and validate COCs. Once this information is collected, a baseline can be established, which will act as the measure for all future activities and tasks.

OBJECTIVE #2: Integrate watershed principles into land use planning.

Justification

Urban runoff does not follow jurisdictional boundaries, and often travels through many jurisdictions while flowing to receiving waters. However, cities and counties have traditionally exercised their land use authority independently, with limited consideration of the chemical, biological, and physical processes that govern the generation, transport, and fate of contaminants and stressors at the watershed scale. Land use policies of individual municipalities have the potential to affect water quality in water bodies well beyond jurisdictional boundaries. One of the overriding purposes of the Watershed URMP is to change the region's approach to planning, and integrate watershed-based planning principles into what is often a jurisdictional-based, often fragmented, planning exercise.

Expected Outcome

The expected outcome of this objective and related tasks is to improve collaborative efforts among watershed Copermittees. This outcome is not expected to measurably improve water quality in the near term. However, increased stakeholder and Copermittee coordination within watersheds will likely have a synergistic effect on water quality efforts, thereby indirectly making positive contributions towards water quality.

Performance Measure

In order to measure the effectiveness of this objective, a baseline to which all Copermittee activities will be measured must be established. As previously discussed in Section 6, prior to the issuance of the Permit, jurisdictions were applying little if any watershed principles in land use planning. Therefore, it is assumed that with the exception of discretionary project review, no watershed principles were regularly being applied. Under this approach, the Copermittees assume that an increase in the use of watershed principles will result in an effective program objective (e.g. year one, 2 of 5 jurisdictions apply 'X' watershed principles into land use planning, year two , 4 of 5...).

As discussed in Section 6, several activities and tasks have been established for this objective. However, trying to measure program effectiveness on activities or tasks that are not easily quantifiable is virtually impossible. The Copermittees will track, and report to the regional board as part of the annual report, the various activities/tasks that have been identified for this objective. The performance measure for these tasks may be a simple response (task completion? Yes/No) to something more tangible (tracking shared document).

OBJECTIVE #3: Enhance public understanding of sources of water pollution within the watershed.

Justification

Education is the foundation of an effective URMP and the basis for changes in behavior at the individual and societal levels. Stormwater quality topics can be very focused (identification of the types of source control BMPs) or general (answering the question: What is a watershed?) and can target many audiences to inform them of how individual actions impact water quality and how these impacts can be avoided.

Expected Outcome

The long-term outcome expected from this objective is to improve water quality through a change in human behavior and increased knowledge among community residents and business owners. Measurable changes in water quality may not be realized during the life of this permit. In the interim, the short-term outcome is that a consistent message regarding watershed concepts, urban runoff and pollutant-causing activities will be developed with the assumption that (over time) the educational program will produce a change in human behavior which improves the quality of water and thus the beneficial use/and quality of life.

Performance Measure

Surveys are an effective performance measure to determine a population's knowledge or understanding of water quality issues. Under this approach, however, an inference must be made that an increase in awareness translates into a change in public behavior. Through the use of surveys, the effectiveness of program activities can be assessed within a shorter period of time (2-3 years), allowing the Copermittees to adjust the activities/tasks accordingly to maximize program effectiveness. The Copermittees will conduct a baseline assessment that targets the residential population. A survey or other measurement tool will assess current levels of knowledge relating to water pollution issues within the watershed.

The Copermittees have also established an extensive list of activities/tasks that are to be completed as part of this objective. As stated in previous sections, measuring specific task/activity effectiveness is virtually impossible to tie to improved water quality. As such, an inference must be made that completing the activities/tasks will indirectly impact water quality within the watershed. The Copermittees will track, and report to the regional board as part of the annual report, the various activities/tasks that have been identified for this objective. The performance measure for these tasks may be a simple response (task completion? Yes/No) to something more tangible (was an educational brochure created and distributed?).

OBJECTIVE #4: Encourage and enhance stakeholder involvement within the watershed.

Justification

The objectives, policies and activities found in watershed management plans ultimately impact current as well as proposed land uses. In order to develop an effective plan, the importance of stakeholder input cannot be overstated. There are three important reasons for the need of stakeholder involvement.

1. Stakeholders can provide jurisdictions with a different perspective on watershed issues. Because stakeholders have varying backgrounds and experience levels, they are sometimes able to identify issues and solutions not previously identified by jurisdictions.
2. Water quality data is collected by a number of different stakeholders for a number of different reasons. Copermittees can work with stakeholders to pull their data together in an attempt to develop a useful water quality database that helps identify and validate water quality issues as well as possible solutions.
3. It is a prudent planning principle to involve the public in comprehensive plan development as a watershed plan ultimately impacts stakeholders. As such, it is imperative that stakeholders are clear on the intent and purpose of the plan as well as the activities being identified.

Expected Outcome

The short-term expected outcome is to increase the amount of current stakeholder involvement in watershed related issues. It is assumed that an increase in stakeholder involvement will ultimately lead to improved water quality, which is the long-term expected outcome for this objective. While we will be able to measure the short-term outcomes, the long-term outcome will be difficult, as measurable changes in water quality are not expected within the life of the Permit.

Performance Measure

In order to measure the effectiveness of this objective, a presumption must be made that an increase in stakeholder involvement equates to improved water quality. Once this inference is made, the next step is to establish a baseline to which all other activities will be measured. However, it is infeasible to trying to identify the number of stakeholder groups that have had involvement in watershed plans prior to the issuance of the Permit. As such, it is assumed for this evaluation that there was no previous stakeholder involvement and the issuance of the Permit represents the starting point for this effort. Under this approach, the Copermittees assume that increases in stakeholder involvement will result in an effective program objective.

As discussed in Section 7, several activities and tasks have been established for this objective. To measure this objective, an inference must be made that completing the activities and tasks will indirectly impact water quality within the watershed. The Copermittees will track, and report to the regional board as part of the annual report, the various activities/tasks that have been identified for this objective. The performance measure for these tasks may be a simple response (task completion? Yes/No) to something more tangible (copy of meeting agendas).

9.c. Performance Indicators

Standard performance indicators for achieving the objectives would commonly include percent-changes in pollutant loading, water quality, community knowledge, etc. Performance indicators are typically established based upon *baseline level data, which is not available at this time* (as discussed in the Section 1, Introduction). Without baseline data, it would be immature to set the performance markers at this time. However, the Copermittees have agreed on the following standard performance indicators:

By the end of 2003:

- 1) Completion of the Water Quality Assessment and Prioritization – initial (2002) and comparative data in 2003;
- 2) Development of the list of COCs with linkage to potential contributors; and,
- 3) Implementation of each of the policies for 2003 as presented (efforts will also be evaluated among Copermittees regarding collaboration and cooperation).

2003 and on-going:

- 1) Ability to utilize the feedback-loop method for modification of goals and policies;
- 2) Continued watershed workgroup meetings; and,
- 3) The Copermittees will conduct a baseline assessment that targets the residential population. A survey or other measurement tool will assess current levels of knowledge relating to water pollution issues within the watershed.

Performance of policies are predicated on the ability of the individual jurisdictions to provide wet and dry weather monitoring data, follow jurisdictional protocols, obtain jurisdictional support, cooperate together to find solutions, opportunities and methods for change. The inability to achieve policies is **not** indicative of “program ineffectiveness,” but discussion and assessment will be included in the annual reports to the RWQCB; the program is adaptive in nature to accommodate increased knowledge about the linkages between program activities and water quality. Goals and policies and performance indicators, although somewhat inadequate at this time, are expected to become more meaningful as knowledge and scientific data is generated over time.

9.d. Data Collection and Reporting

Data Collection. At this time, it is expected that data to support direct measures will be collected mostly through wet and dry weather monitoring both regionally and within each jurisdiction (including coastal). Specific water quality data

collection is discussed in Section Four and will be included in the annual reporting.

Data to measure pre-post BMP and/or program implementation will be collected by the best available means, which may include site-specific testing, monitoring data, pollutant loading, or any other means that is available. More specific measures will be developed as the program becomes more defined. Again, because the program evaluation is required to be submitted at the same time that program activities are being developed, some specifics are not known at the time of this writing.

Reporting. The first annual report to the RWQCB will address the following questions:

- 1) Are the Copermittees able to implement new methods for working together as a watershed group?
- 2) Are the Copermittees able to implement a community outreach program and provide a mechanism for community participation?
- 3) Are the Copermittees able to determine the effect, if any, of programmatic activities on water quality?

In addition, the first annual report will address the ability of the Copermittees to implement the various tasks described in each objective and achieve first-year performance indicators; modifications to policies and or tasks as deemed prudent to move closer toward the ultimate goal of improving water quality.

Thereafter, each annual report will include modifications that have been identified, processes and practices that have been altered as the transition to a watershed-based approach is realized. The reports will include comments from Copermittee storm water program managers as to the efficacy of the program and its related policies, an assessment of the ability to develop linkages between activities and water quality impacts, and any other relevant information that is deemed necessary and helpful to the RWQCB, other watersheds, and other Copermittees to share information to drive future development of water quality permits, program requirements, and practices.

10. SUMMARY/CONCLUSION

Participating jurisdictions recognize that they face several significant challenges in developing and implementing this program. Further, the cities and county consider this watershed based effort to be in its infancy and expect this program will be refined and augmented over the long term as we develop a better understanding of the complex issues affecting our watersheds and learn to identify and pursue joint opportunities to positively affect the water resources in the region.

In order to further build on this initial watershed program, the program has been developed as a cyclical process of watershed assessment, priority setting, monitoring, and implementation. At the conclusion of each yearly cycle, the process begins anew, allowing participants to respond to changing conditions or adjust strategies that have not

performed as anticipated. This framework establishes mechanisms for the participants to evaluate priorities, improve coordination, assess program goals, and allocate finite resources within geographic areas. It will also better address the issue of impaired water quality caused by nonpoint sources. For ease of reference, all of the activities and tasks and task tracking are summarized in the Table 10-1 below.

Adaptive management is a key requirement for the process to work. Adaptive management allows adjustments in the management direction as new information becomes available. The combination of natural variability in the hydrologic cycle and the uncertainty associated with a complex system requires that watershed managers be flexible enough to modify implementation approaches based on progress and available information. Combinations of watershed characteristics, sources of pollutants, and management approaches are unique, and therefore, management efforts may not proceed exactly as planned. Adaptive management does not mean that the watershed's water quality goals would be modified based upon lack of progress, but that the results would be used to modify management policies, strategies, practices, and operation and maintenance procedures to reach goals.

Even though priorities will be targeted in a focused manner, it will take time for management activities to produce a quantifiable improvement in water quality. As such, the program includes performance measures and a review mechanism. Performance data collected in subsequent cycles will be used to determine the effectiveness of previous management activities.

The challenge for watershed planning and watershed-based environmental protection is to invigorate local support by addressing local problems, and do so in a coordinated manner that enhances mutual benefits and makes progress on regional problems.

Table 10-1: Summary of Proposed Activities

OBJECTIVE #1: DEVELOP/EXPAND METHODS TO IMPROVE WATER QUALITY WITHIN THE WATERSHED.	
Activity:	Nutrient Management and Reduction Plan (Refer to Section 5.b.1 for details)
Activity Completion:	Plan Development by January 2004, with subsequent dates dependent on outcome of data collection and assessment.
Lead Agency:	County of San Diego ¹³
Activity Tracking:	Task completion (Y/N)
Activity:	Data Analysis and Management Project. (Refer to Section 5.b.2 for details)
Activity Completion:	Part 1: January 2004 (Part 2 and 3 are dependent upon the outcome of Part 1, and therefore TBD).
Activity Tracking:	Task completion (Y/N)
Activity:	Develop an Integrated Pest Management Campaign (Refer to Section 5.b.3 for details)
Activity Completion:	July 2003 – July 2004 (Guide Development). Distribution would be subsequent and ongoing task.
Activity Tracking:	Task completion (Y/N)
Activity:	Feasibility Study - SMER Remote Sensing Pilot Project (Refer to Section 5.b.4 for details)
Activity Completion:	Part 1 – Initial feasibility study complete by January 2004. Part 2 Implementation plan based on results of plan 1.
Activity Tracking:	Task completion (Y/N)

¹³ As sole Copermittee within the Watershed, the County of San Diego will serve as Lead Agency for all activities unless otherwise noted.

Activity:	Encourage inter-jurisdictional cooperation with other jurisdictions (non-Copermittees) (refer to Section 6.b).
Activity Completion:	On-going
Activity Tracking:	Minutes and Attendee Lists

OBJECTIVE #2:	INTEGRATE WATERSHED PRINCIPLES INTO LAND USE PLANNING
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Activity:	County of San Diego General Plan Update (see Section 6.a.3 for discussion).
Activity Completion:	General Plan adoption March 2004 (estimate)
Activity Tracking:	Task Completion (Y/N) – Provide a list of the goals/policies.

Activity:	Integrate down-stream notification procedures for discretionary project review. (see Section 6.b for discussion).
Activity Completion:	On-Going (jurisdictions shall be notified as projects are proposed throughout the year)
Activity Tracking:	Track the notices that are distributed to the other jurisdictions.

Activity:	Data/Information sharing between planning departments (see Sections 1), Section 5.b.5, and Section 6.c.4 for discussion).
Activity Completion:	On-Going
Activity Tracking:	County of San Diego shall provide annual tracking information of the materials that have been shared.

Activity:	Establish new/attend existing forums to ensure effective communication within the watershed (see Section 6.c.4).
Activity Completion:	On-Going
Activity Tracking:	Track the number of forums attended.

Activity:	Continued involvement with the Watershed Water Supply Augmentation, Water Quality Protection and Environmental Enhancement Program (see Section 5.b.5 and Section 6.c.2).
Activity Completion:	Estimated completion of initial assessment: September 2003; On-Going Involvement.
Activity Tracking:	Track the number of meetings attended.

OBJECTIVE #3:	<i>ENHANCE PUBLIC UNDERSTANDING OF SOURCES OF POLLUTION WITHIN THE WATERSHED</i>
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Activity:	Incorporate general watershed concepts and principles into jurisdictional education activities (refer to Section 8.e for details).
Activity Completion:	On-Going
Activity Tracking:	Task Completion (Y/N) – description of / List of the components of storm water related educational activities that reflect general watershed concepts, pollutions, etc..

Activity:	Establish bilingual (English/Spanish) water quality educational program for grades K-6. (Refer to Section 8.e for details).
Activity Completion:	September 2002 – January 2005
Activity Tracking:	Task Completion (Y/N) – Number of schools visited.

Activity:	Develop region-wide watershed map (refer to Section 8.e for details).
Activity Completion:	January 2004 – January 2005
Activity Tracking:	Task Completion (Y/N)

Activity:	Create a tailored, brochure (and other educational materials) based on data/information gathered from water quality assessment, surveys and feedback (refer to Section 8.d for details).
Activity Completion:	2004 – Beyond (Brochure development) Distribution would be a subsequent and ongoing task
Activity Tracking:	Was a brochure created (Y/N)?.

Activity:	Expand and further develop the Project Clean Water website to include watershed-specific information and related activities including volunteering opportunities (refer to Section 8.e for details).
Activity Completion:	2004 – Beyond
Activity Tracking:	List of activities conducted.
Activity:	Identify and evaluate efforts by others in the region, which support the goals of the storm water program, and pursue partnerships for educational opportunities (Refer to Section 8.e for details).
Activity Completion:	2004 – Beyond
Activity Tracking:	List of activities conducted.
OBJECTIVE #4:	<i>ENHANCE PUBLIC UNDERSTANDING OF SOURCES OF POLLUTION WITHIN THE WATERSHED</i>
Activity:	Collaborate with other jurisdictions on watershed and regional public participation activities (see Section 6.b, Section 6.c.1, and Section 6.c.2 for discussion).
Activity Completion:	On-Going
Activity Tracking:	Track the number and purpose of the activities.
Activity:	Establish new/attend existing forums to solicit stakeholder input in the development/implementation of the Watershed URMP and other watershed management plans (see Section 7.b for discussion).
Activity Completion:	On-Going
Activity Tracking:	Track the number and purpose of the activities.
Activity:	Continue utilizing the Project Clean Water website as venue where stakeholders can go to learn more about what the water quality issues are and how they can get involved in resolving them (see Section 7.b.2 for discussion).
Activity Completion:	On-Going
Activity Tracking:	Identify Project Clean Water activities seeking stakeholder involvement.

Activity: Integrate down-stream notification procedures for discretionary project review. (see Section 6.b and Section 7.b.4 for discussion).

Activity Completion: On-Going (jurisdictions shall be notified as projects are proposed throughout the year)

Activity Tracking: Track the notices that are distributed to the other jurisdictions.

Activity: Report shall be presented in a publicly advertised forum before being submitted to the RWQCB (see Section 7.b.3 for discussion).

Activity Completion: 2003 – Beyond

Activity Tracking: Task Completion (Y/N)? Minutes.



WATERSHED URMP

FOR THE SANTA MARGARITA WATERSHED

APPENDICES

Appendix A: Bibliography and Works Cited

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