F E B R U A R Y 2 0 1 2

Calleguas Creek Watershed TMDL Compliance Monitoring Program

Third Year Annual Monitoring Report

TMDL Monitoring and Reporting Program for the Nitrogen and Related Effects; Organochlorine Pesticides, PCBs and Siltation; Toxicity; Salts; and Metals and Selenium Total Maximum Daily Loads

submitted to

LOS ANGELES REGIONAL WATER QUALITY CONTROL BOARD

prepared by

LARRY WALKER ASSOCIATES

~Page intentionally left blank~

Table of Contents

List of Tables

List of Figures

Appendices

~Page intentionally left blank~

Introduction and Program Background

INTRODUCTION

The Clean Water Act requires Total Maximum Daily Loads (TMDLs) be developed to restore 303(d) listed waterbodies, and the State of California Porter-Cologne Water Quality Act requires that an Implementation Plan be developed to achieve water quality objectives. States must develop water quality management plans to implement the TMDLs (40 CFR 130.6). The USEPA has oversight authority for the 303(d) program and is required to review and either approve or disapprove the TMDLs submitted by states. If the USEPA disapproves a TMDL submitted by a state, USEPA is required to establish a TMDL for that waterbody.

In the Calleguas Creek Watershed, the following six TMDLs are currently effective and include monitoring requirements in the implementation plans:

- Nitrogen Compounds and Related Effects in Calleguas Creek (Nitrogen or Nutrients TMDL)
- Organochlorine (OC) Pesticides, Polychlorinated Biphenyls (PCBs) and Siltation in Calleguas Creek, its Tributaries, and Mugu Lagoon (OC Pesticides TMDL)
- Toxicity, Chlorpyrifos, and Diazinon in the Calleguas Creek, its Tributaries and Mugu Lagoon (Toxicity TMDL)
- Metals and Selenium in Calleguas Creek, Its Tributaries, and Mugu Lagoon (Metals TMDL)
- Revolon Slough and Beardsley Wash Trash TMDL (Trash TMDL)
- Boron, Chloride, Sulfate and TDS (Salts) in the Calleguas Creek, its Tributaries and Mugu Lagoon (Salts TMDL)

To address the monitoring requirements of the TMDLs, the Calleguas Creek Watershed TMDL Compliance Monitoring Program (CCWTMP) was established and a Quality Assurance Project Plan (QAPP) developed and approved by the Los Angeles Regional Water Quality Control Board (Regional Water Board) Executive Officer. The QAPP currently addresses monitoring requirements for the Nitrogen, OC Pesticides, Toxicity, and Metals TMDLs only. The Trash TMDL is addressed through a separate monitoring plan.

The QAPP does not currently address monitoring requirements for the Salts TMDL. A monitoring approach for the Salts TMDL was submitted to the Regional Water Board in June 2009, but approval of the monitoring plan was not received during the monitoring period covered by this report. Conditional approval of the salts monitoring plan was not received until September 9, 2011. Although compliance monitoring for the Salts TMDL was not yet required, a year of preliminary salt monitoring was conducted between January 2011 and December 2011 to gather data to determine compliance with an interim TMDL milestone and evaluate monitoring approaches. Pertinent data from the preliminary monitoring conducted during Year 3 of the CCWTMP (August 2010 to July 2011) is included in this report. However, the compliance monitoring program for the Salts TMDL will not begin until September 9, 2012, as required by the TMDL. The CCWTMP QAPP will be revised during the first half of 2012 to incorporate the compliance monitoring approach for salts.

The primary purpose of this report is to document the third year monitoring efforts and results of the CCWTMP for the four TMDLs currently included in the QAPP. Results for six events sampled from August 2010 to May 2011 are presented for the TMDLs included in the QAPP. The report includes summaries for specific sampling events, data summaries and compliance assessment, as outlined in the QAPP. The report is specifically divided into the following sections:

- Introduction and Program Background
- Summary of Monitoring Events
- Summary of Toxicity Monitoring and Compliance
- Data Summary Tables
- Compliance Summary Tables and Discussion
- Trends Discussion
- Reduction Milestones Discussion
- Revisions/Recommendations to the CCWTMP
- Appendices

PROJECT ORGANIZATION

The CCWTMP is a coordinated effort with the various stakeholders that make up the Calleguas Creek Watershed TMDL Implementing Parties. Responsible parties identified in the TMDL have developed a Memorandum of Agreement (MOA) that outlines an agreement to implement the CCWTMP. The responsible parties identified in the organizational structure have formally joined together to fulfill their monitoring requirements as outlined in the Basin Plan Amendments (BPAs) for the following five effective TMDLs[1]:

- Nitrogen TMDL
- OC Pesticides TMDL
- Toxicity TMDL
- Metals TMDL
- Salts TMDL

The CCWTMP is intended to fulfill the monitoring requirements for only those parties that are part of the MOA and/or identified by the participants of the MOA. The parties to the MOA for which this report fulfills the TMDL monitoring requirements are as follows:

- **POTWs**: consisting of Camrosa Water District, Camarillo Sanitary District, Ventura County Waterworks District No. 1, and the Cities of Simi Valley and Thousand Oaks;

[1] Although the CCWTMP QAPP does not currently cover monitoring for salts, preliminary salt monitoring started in 2011 to provide information used to comply with the Year 3 interim milestone in the TMDL requiring demonstration of a 20% improvement in the watershed balance for chloride, sulfate, TDS, and boron. The Trash TMDL is addressed through a separate Regional Water Board approved monitoring plan.

- **Urban Dischargers**: consisting of the Cities of Simi Valley, Thousand Oaks, Camarillo, Moorpark and Oxnard, Ventura County Watershed Protection District, and the County of Ventura Public Works Agency;
- **Agricultural Dischargers**: consisting of the entities represented by the Ventura County Agricultural Irrigated Lands Group (VCAILG) within the Calleguas Creek Watershed, a subdivision of the Farm Bureau of Ventura County; and
- **Other Dischargers**: consisting of the U.S. Department of Navy and Caltrans.

Per the MOA, a Management Committee, consisting of one representative each from the POTWs, Urban Dischargers and Other Dischargers groups and two representatives from the Agricultural Dischargers group, oversees the CCWTMP and makes decisions to assure the CCWTMP is carried out in a timely, accountable fashion.

Prior to the initiation of the first required sampling event in 2008, the TMDL Implementing Parties contracted the day to day management of the CCWTMP activities and field sampling activities. The following contractors performed the following tasks during the third year monitoring effort:

- **General Project Management** - Larry Walker Associates, Inc. (LWA)
- **Field Monitoring Activities**
    - **Mugu Lagoon Water Quality Sampling** - MBC Applied Environmental Sciences (MBC)
    - **Freshwater Water Quality/Sediment Sampling** - Kinnetic Laboratories, Inc. (KLI), Fugro West, Inc. (Fugro), LWA
    - **Freshwater Fish Tissue –** Cardno ENTRIX
- **Water, Sediment, and Tissue Chemistry Analysis** - Physis Environmental Laboratories, Inc. (Physis)
- **Toxicity Analysis** - Pacific Eco Risk Laboratories (PacEco)

The aforementioned contractors performed all the management activities and sampling efforts covered by this annual report. All field contractors, with the exception of Cardno ENTRIX, are the same as from Year 1 and Year 2 sampling efforts. Cardno ENTRIX became involved starting with Year 2; they replaced the California Department of Fish and Game for freshwater fish tissue collection. Beginning this reported monitoring year, Physis replaced CRG Marine Laboratories as the chemistry analytical laboratory for the CCWTMP. As the monitoring program moves forward this list of contractors may continue to be amended to reflect new contractors hired on to perform required or new duties per the decision of the TMDL Implementing Parties.

WATERSHED BACKGROUND

Calleguas Creek drains an area of approximately 343 square miles from the Santa Susana Pass in the east to Mugu Lagoon in the southwest. The main surface water system drains from the mountains in the northeast part of the watershed toward the southwest where it flows through the Oxnard Plain before emptying into the Pacific Ocean through Mugu Lagoon. The watershed, which is elongated along an east-west axis, is approximately thirty miles long and fourteen miles wide. The Santa Susana Mountains, South Mountain, and Oak Ridge form the northern boundary of the watershed; the southern boundary is formed by the Simi Hills and Santa Monica Mountains.

Figure 1 depicts the CCW and Table 1 presents the reaches of the CCW as identified in the TMDLs covered by the CCWTMP.

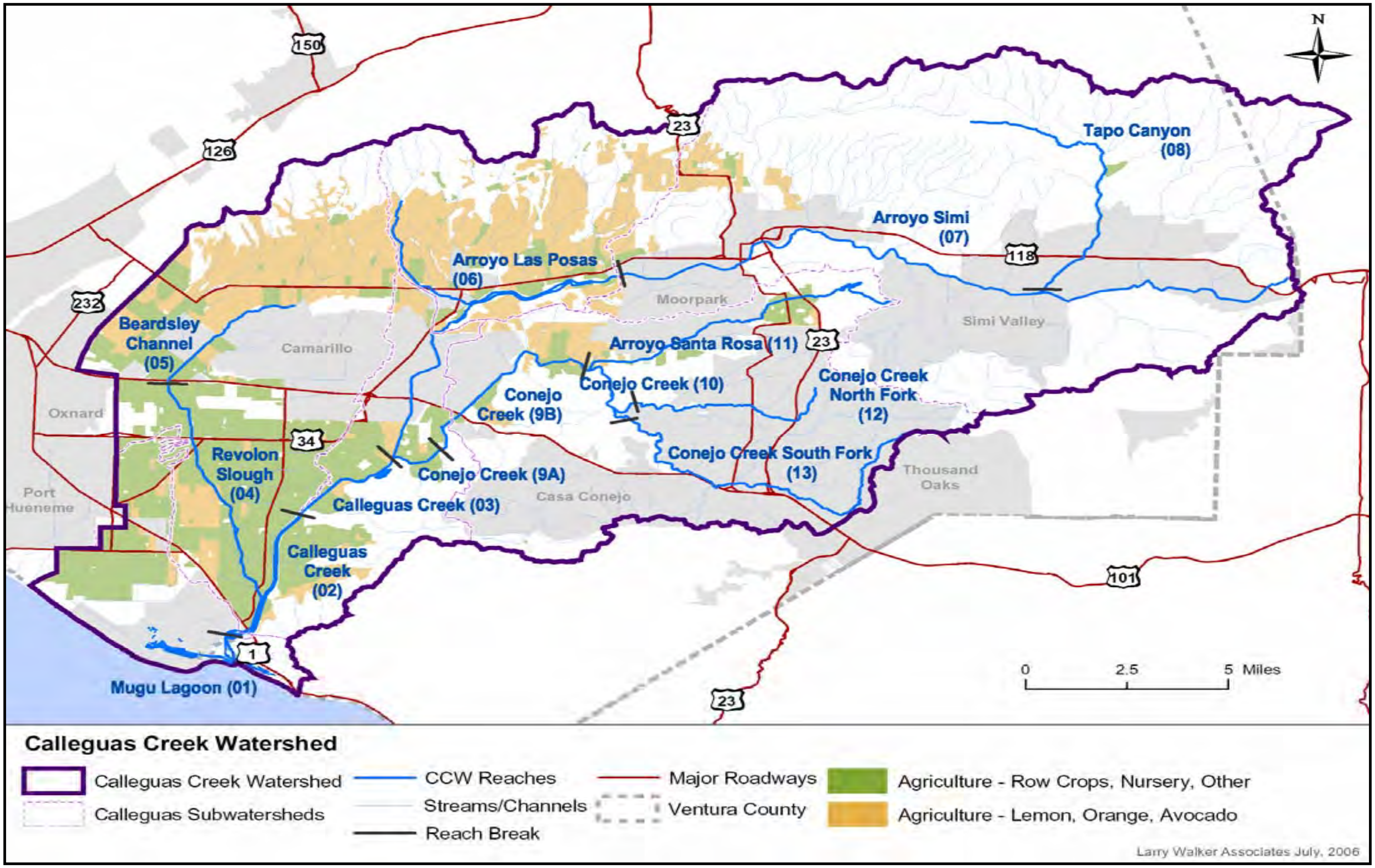


Figure 1. Calleguas Creek Watershed

Table 1. Description of CCW Reaches Based on 2002 303(d) List

Reach No.	Reach Name	OC Pesticides and Toxicity TMDLs Subwatershed	Reach Name Reach as Listed in the 1999 Consent Decree	Geographic Description
1	Mugu Lagoon	Mugu	Mugu Lagoon	Lagoon fed by Calleguas Creek
2	Calleguas Creek South	Calleguas	Calleguas Creek Reach 1 and Reach 2 (Estuary to Potrero Rd.)	Downstream (south) of Potrero Rd
3	Calleguas Creek North	Calleguas	Calleguas Creek Reach 3 (Potrero to Somis Rd.)	Potrero Rd. upstream to confluence Conejo Creek
4	Revolon Slough	Revolon	Revolon Slough Main Branch	Revolon Slough from confluence with Calleguas Creek to Central Ave
5	Beardsley Channel	Revolon	Beardsley Channel	Revolon Slough upstream of Central Ave.
6	Arroyo Las Posas	Las Posas	Arroyo Las Posas Reach 1 and Reach 2 (Lewis Somis Rd. to Moorpark Fwy (23))	Confluence with Calleguas Creek to Hitch Road
7	Arroyo Simi	Arroyo Simi	Arroyo Simi Reach 1 and Reach 2 (Moorpark Fwy (23) to Headwaters)	End of Arroyo Las Posas (Hitch Rd) to headwaters in Simi Valley.
8	Tapo Canyon	Arroyo Simi	Tapo Canyon Reach 1 and Reach 2	Confluence w/ Arroyo Simi up Tapo Cyn to headwaters
9A	Conejo Creek	Conejo	Conejo Creek Reach 1 (Confl with Calleguas Creek to Santa Rosa Rd.)	Extends from the confluence with Arroyo Santa Rosa downstream to the Camrosa Diversion.
9B	Conejo Creek	Conejo	Conejo Creek Reach 1 and Reach2 (Confl with Calleguas Creek to Tho. Oaks city limit)	Extends from Camrosa Diversion to confluence with Calleguas Creek.
10	Hill Canyon reach of Conejo Creek	Conejo	Conejo Creek Reach 2 and Reach 3 (Santa Rosa Rd. to Lynn Rd.)	Confluence w/ Arroyo Santa Rosa to confluence w/ N. Fork; and N. Fork to just above Hill Canyon WTP
11	Arroyo Santa Rosa	Conejo	Arroyo Santa Rosa	Confluence w/ Conejo Creek to headwaters
12	North Fork Conejo Creek	Conejo	Conejo Creek Reach 3 (Tho. Oaks city limit to Lynn Rd.)	Confluence w/Conejo Creek to headwaters
13	Arroyo Conejo (South Fork Conejo Creek)	Conejo	Conejo Creek Reach 4 (Above Lynn Rd.)	Confluence w/ N. Fork to headwaters —two channels

MONITORING QUESTIONS

The CCWTMP was developed to meet the monitoring requirements for the five aforementioned TMDLs. The goals of the CCWTMP include:

- To determine compliance with numeric targets, waste load and load allocations, and interim load reduction milestones.
- To test for sediment toxicity at sediment monitoring stations.
- To identify causes of unknown toxicity.
- To generate additional land use runoff data to better understand pollutant sources and proportional contributions from various land use types.
- To monitor the effect of implementation actions by urban, POTW, and agricultural dischargers on in-stream water, sediment, fish tissue quality, and watershed balances (salts).
- To implement the program consistent with other regulatory actions within the CCW.

The CCWTMP is intended to answer the following monitoring questions to meet the goals of the program:

- Are numeric targets and allocations met at the locations indicated in the TMDLs?
- Are conditions improving?
- What is the contribution of constituents of concern from various land use types?

Water, sediment, and fish tissue samples were collected and analyzed to determine whether targets and allocations are being met. Data collected through the CCWTMP will be used in conjunction with historical data to evaluate whether conditions are improving as this program moves forward. Samples collected at land use sites provide data to evaluate the contribution of constituents of concern from each type of land use to receiving waterbodies. The data collected by this program will be the basis for recommendations and/or revisions to current activities as outlined in the QAPP, and may include site relocations to more accessible/appropriate locations and modifications to constituents monitored. Lastly, data will be used to evaluate the CCWTMP's effectiveness at answering the monitoring questions and provide guidance for modifications as the implementation of the aforementioned TMDLs progress. Given this is the third year of the CCWTMP, not all monitoring questions can be fully addressed. As this program continues and subsequent data is collected, further information may assist in fully answering all of the monitoring questions and may be reported upon in future reports with more detailed, long-term analyses.

MONITORING PROGRAM DESCRIPTION

The CCWTMP was developed to address all necessary TMDL monitoring requirements and answer the monitoring questions mentioned previously using the following monitoring elements.

Required Monitoring Elements in the CCWTMP QAPP

The following environmental monitoring elements are required by the BPAs and are included in the CCWTMP:

- General water and sediment quality constituents;
- Water column and sediment toxicity;
- Metals and selenium in water, sediment, fish tissue, and bird eggs;
- Organic compounds in water, sediment, and fish tissue; and,
- Nitrogen and phosphorus compounds in water.

Table 2 lists the constituents for which analyses are conducted. Table 2 also provides a summary of sampled constituent groups and sampling frequency. The QAPP outlines in detail the justification of the process design, specific methodologies (both field and analytical), and QA/QC procedures.

Table 2. Constituents and Monitoring Frequency for CCWTMP (varies by site)

Constituent	Frequency
Chronic Aquatic Toxicity	Quarterly + Two wet events
General Water Quality Constituents (GWQC)	Quarterly based on location + Two wet events
Flow, pH, Temperature, Dissolved Oxygen, Conductivity, Total Suspended Solids (TSS), Hardness (at freshwater sites where metals samples are collected), and Dissolved Organic Carbon (at saltwater sites where metals samples are collected)	
Nutrients	Quarterly
Ammonia Nitrogen, Nitrate Nitrogen, Nitrite Nitrogen, Organic Nitrogen, Total Kjehdahl Nitrogen (TKN), Total Phosphorus, Orthophosphate-P	
Organic Constituents In Water	Quarterly + Two wet events
OC Pesticides[1] and PCBs[2], OP[3], Triazine[4], and Pyrethroid[5] Pesticides	
Metals and Selenium In Water[6]	Quarterly + Two wet events [7]
Copper, Mercury, Nickel, Zinc, and Selenium	
Chronic Sediment Toxicity	Annually (Every three years in Lagoon)
General Sediment Quality Constituents (GSQC)	Annually (Every three years in Lagoon)
Total Ammonia, Percent Moisture, Grain Size Analysis, Total Organic Carbon (TOC)	
Organic Constituents In Sediment	Annually (Every three years in Lagoon)
OC Pesticides[1] and PCBs[2], OP Pesticides[3], and Pyrethroids[5]	
Additional Constituents For Mugu Lagoon Sediment	Every three years
Metals[8]	
Tissue	Annually (Every three years in Lagoon)
Percent Lipids, OC Pesticides[1] and PCBs[9], OP Pesticides[3], and Metals[10]	

1. OC Pesticides considered: aldrin, alpha-BHC, beta-BHC, gamma-BHC (lindane), delta-BHC, chlordane-alpha, chlordane-gamma, 2,4'-DDD, 2,4'-DDE, 2,4'-DDT, 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, dieldrin, endosulfan I and II, endosulfan sulfate, endrin, endrin aldehyde, endrin ketone, and toxaphene
2. PCBs in water and sediment considered: Aroclors identified in the CTR (1016, 1221, 1232, 1242, 1248, 1254, and 1260).
3. OP Pesticides considered: chlorpyrifos, diazinon, and malathion. Chlorpyrifos is the only OP pesticide that will be measured in tissue, as it is the only OP listed in tissue.
4. Triazine Pesticides considered: atrazine, prometryn, and simazine. Analysis of triazines ceased after the first storm event as per the Revisions and Recommendations section of both the year 1 and year 1 annual reports.
5. Pyrethroid Pesticides considered: bifenthrin, cyfluthrin, cypermethrin, deltamethrin, and permethrin
6. Copper, mercury, nickel, selenium and zinc will be measured as dissolved and total recoverable.
7. Per the Metals TMDL BPA requires that "In-stream water column samples will be collected monthly for analysis of general water quality constituents (GWQC) and, copper, mercury, nickel, selenium, and zinc for the first year. After the first year, the Executive Officer will review the monitoring report and revise the monitoring frequency as appropriate." Monthly monitoring will be suspended until such time as the Executive Officer has reviewed the monitoring report and considered revisions to the monitoring frequency. Until the Executive Officer has considered the frequency, metals will be collected quarterly in conjunction with the other TMDLs.
8. Includes arsenic, cadmium, copper, lead, mercury, nickel, selenium and zinc. Arsenic, lead, and cadmium are included in addition to constituents required in the Metals TMDL as they have been found in previous sediment studies conducted in Mugu Lagoon to exceed guideline values used to interpret the relationship between sediment chemistry and biological impacts.
9. PCBs in tissue considered: individual congers.
10. Mercury and Selenium will be measured in fish tissue and bird eggs.

Optional Monitoring Elements

The QAPP outlines the optional monitoring efforts, all of which are considered above and beyond what is necessary to meet the requirements of the BPAs and answer the monitoring questions, again, described in detail in the QAPP.

Table 3 lists the constituents and analyses that are considered optional for the CCWTMP. These constituents and analyses are not considered critical and are not a BPA requirement but are important to meeting general program goals and answering program questions. Table 3 also provides a general sampling frequency for each constituent group.

Table 3. Optional Constituents and Monitoring Frequency for CCWTMP (varies by site)

Constituent	Frequency
Organic Constituents in Water – Grain Size Fractions [1]	One wet event annually
OC Pesticides and PCBs, OP, Triazine, and Pyrethroid Pesticides	
Organic Constituents in Sediment – Grain Size Fractions [1]	Annually (Every three years in Mugu Lagoon)
OC Pesticides and PCBs, OP, Triazine, and Pyrethroid Pesticides	
Additional Constituents for Mugu Lagoon Sediment	Every three years [2]
Macrobenthic community assessment	
Sediment Toxicity – Embryo Mytilus edulis or Crassostrea gigas	

1. Please see Table 2 for a list of individual constituents in each suite.
2. Mugu Lagoon assessments were conducted during the first year of monitoring and will be conducted again during year four.

Special Studies

The Nitrogen, Toxicity, OC Pesticides, and Metals TMDL Implementation Plans identify required and optional special studies to investigate a range of issues. No specific special studies results are incorporated into this annual report summary at this time as the results of all special studies conducted to date have been submitted as separate reports. As work plans are reviewed and efforts are made to complete each study, the results may be incorporated into the relevant annual report. Data may also be utilized to further answer not only the special studies questions, but also be applied to the overall CCWTMP goals and questions identified previously in this report. Special study and work plan status updates are provided in the Annual Progress Report, included as Appendix E.

Salt Monitoring Elements

The preliminary salt monitoring program ("Feasibility Study"), which started in January 2011, consists of the following five elements:

1. Installation of continuous sensors for depth, EC, and chloride at the five salt TMDL compliance points. Sensors produce time series of raw data at 5-min intervals.
2. Frequent manual measurements of flow at sensor sites to enable development and maintenance of stage/discharge relationships (rating curves) for each depth sensor. Rating curves allow time series of 5-min depth readings (cm) to be translated into time series of discharge (cfs).

3. Frequent grab samples for EC, chloride, sulfate, TDS and boron are taken at sensor sites. EC grabs are used to calibrate the continuous EC sensors. Chloride grabs are used to calibrate the continuous chloride sensors. EC, chloride, TDS, sulfate, and boron grabs are used to develop site-specific regression equations from which EC (as independent variable) is used to predict concentrations of chloride, sulfate, TDS, and boron.
4. Grab samples for salts are taken at pertinent land use sites once per month and additionally during the Quarterly Dry and Wet Events that occur as defined in the CCWTMP QAPP.
5. Concentrations of chloride, sulfate, TDS, and boron are measured once per month in effluent of the five POTWs in the watershed.

The results of the preliminary salt monitoring were used in two principal ways during Year 3 of the CCWTMP. First, monthly mean concentrations computed from time series of continuous salt concentrations for January-June, and monthly effluent concentrations from POTWs grab samples were used to evaluate compliance with interim WLAs and LAs for salts. Secondly, daily salt loads for January-August for two of the five compliance sites were derived from continuous sensor data and used to compute the dry weather stream export term of the current year salt balance. In the future, the salts monitoring program may be used to carry out one or more of the five optional special studies included in the Salts TMDL, in addition to the annual compliance comparison of water column samples with interim (and eventually final) WLAs and LAs. In addition, data from the salts monitoring program will be needed to address the next load reduction milestone in the TMDL (demonstration of a 40% improvement in the watershed salt balance by December 2, 2015) and to calculate the adjustment factors included in the final WLAs for POTWs. The exact nature of the salt monitoring program that becomes incorporated in the QAPP in 2012 may differ in some regards from the brief description above and the more detailed description included in the next section of this report.

Monitoring Program Structure

As outlined previously, the CCWTMP covers a broad range of TMDL monitoring requirements, including both required and optional efforts. The overall structure of these requirements per each event can be broken down into two categories, compliance monitoring and investigation monitoring. Compliance monitoring sites are typically located in receiving water bodies where 303(d) listings occur, and are considered points of compliance measurements. The investigational sites are located throughout the watershed, and include monitoring of drain outfalls. The purpose of these sites is not to measure compliance but to assist with evaluating land use specific contributions of various constituents to the watershed.

The CCWTMP effort is also divided into two monitoring efforts, required dry weather monitoring and wet weather storm water monitoring. The following sections describe in detail the basis for each monitoring effort, starting with the definitions of the compliance and investigation monitoring sites. Specific monitoring efforts associated with each sample site are included, including the frequency of sampling by site for both dry weather and wet weather events. The sites sampled by the CCWTMP are not sampled at a similar frequency, nor are all constituents monitored at each site. A more detailed description of each topic covered can be found in the appropriate element of the QAPP, including standard operating procedures (SOPs) for field collection and sample handing techniques and analytical procedures and protocols including minimum detection limit (MDLs) and reporting limit (RLs) requirements.

COMPLIANCE MONITORING

Compliance Monitoring for Toxicity, OC Pesticides, Metals, and Nitrogen TMDLs

For compliance monitoring to address the Toxicity, OC Pesticides, and Nitrogen TMDLs, dry weather in-stream water column samples were collected quarterly for water column toxicity, general water quality constituents (GWQC), target organic constituents, and nutrients. Target organic constituents for the OC Pesticides TMDL include the OC Pesticides and PCBs listed as a footnote in Table 2. Target organic constituents for the Toxicity TMDL include the OP, pyrethroid, and triazine pesticides listed as a footnote in Table 2.

For compliance monitoring to address the Metals TMDL, dry weather in-stream water column samples were collected quarterly during Year 3 of the CCWTMP for analysis of GWQC and target metals listed as a footnote in Table 2. The Metals TMDL became effective after the other TMDLs and monitoring was not required to begin until the Metals TMDL monitoring was incorporated into the QAPP for the CCWTMP. As a result, for quarterly events prior to the Metals TMDL QAPP approval, metals sampling was collected quarterly in conjunction with the other three TMDLs monitoring efforts. However, the Metals TMDL BPA required that instream water column samples be collected monthly for the first year once the QAPP is approved. In May 2009, after approval of the Metals monitoring additions to the QAPP, monthly metals monitoring began and continued through June 2010. The first year annual monitoring report recommended ceasing monthly metals monitoring after one year to allow time for data evaluation. Upon not receiving a response from the Regional Water Board, monthly metals monitoring ended as per the previously mentioned recommendation. Metals water column samples in Mugu Lagoon were collected quarterly. The BPA did not contain any requirements to collect samples within the lagoon except at the Ronald Reagan St Bridge (formally 11th St) and collection of metals samples within the lagoon is an optional element.

In-stream water column samples to measure compliance for the Toxicity, OC Pesticides, and Metals TMDLs are generally collected at the base of each of the subwatersheds used to assign waste load and load allocations, per the BPAs. In-stream water column samples to measure compliance for the Nitrogen TMDL are generally collected at the base of each listed reach. Toxicity Identification Evaluations (TIEs) are conducted on toxic samples as outlined in the Toxicity Testing and TIE section of the QAPP and results of these are discussed in the Toxicity Testing and TIE Evaluations Summary section of this report.

Additionally, POTW effluent was monitored for compliance with the effluent limits presented in the Toxicity, OC Pesticides, and Metals TMDL BPAs. Currently, POTWs collect data required by each of their individual monitoring requirements. For additional TMDL constituents not currently sampled by the plants, CCWTMP crews perform sampling as necessary (efforts vary by plant and constituent group). All BPA- required data for POTWs are compiled in this report.

All efforts were made to include two additional wet weather water sampling events for compliance monitoring for the OC Pesticides, Toxicity, and Metals TMDLs during targeted storm events between October and April. This effort was successful and results, including a brief summary of the storm events sampled are included in the Event Summary and Data Summary sections of this report.

Streambed sediment samples, collected annually in the freshwater portion of the watershed, were collected during the first event of this monitoring year and analyzed for sediment toxicity, general sediment quality constituents (GSQC), and target organics. Sediment samples in Mugu Lagoon are only to be collected every three years per the approved QAPP. Since samples were collected and reported in year one, this sediment sampling was not repeated in year three.

Similar to the sediment sampling frequency, fish tissue samples were collected in the freshwater portions of the watershed in September 2010, and will continue to be collected annually for the CCWTMP. Fish tissue and mussel samples were collected in Mugu Lagoon during the first year of monitoring and will be collected every three years. Therefore, fish tissue and mussel samples were not collected during this third year reporting period. The justification and rationale used for establishing sediments and fish/mussel tissue sampling frequency can be found in the QAPP.

INVESTIGATION MONITORING

Investigation monitoring focuses on identifying the contribution of constituents of concern from various land uses in the watershed and areas where toxicity has been observed to occur in the past that are not addressed by compliance monitoring. Additional investigation monitoring focused on evaluating nutrient loading during wet weather. These sites are meant to compliment compliance monitoring efforts, fill data gaps where identified, and assist in identification of sources of constituents that may be leading to non-compliant conditions. The following describes the various types of sites sampled during this (and subsequent) efforts.

Land Use Discharge Investigation

Land use discharge samples are generally collected concurrently (on the same day when possible) with compliance monitoring at representative agricultural and urban discharge sites generally located in each of the subwatersheds and analyzed for selected GWQC, metals, and target organic constituents (constituents monitored per site varies based upon sub-watershed).

Nutrient Investigation

Sampling in support of nutrient investigation monitoring focuses on evaluating urban land use and open space contributions of nutrients and nutrient loads in receiving waters during wet weather. The urban land use component of nutrient investigation monitoring is addressed through the land use discharge investigation discussed above. An open space site was selected at a location in the watershed where flows are generally present throughout the year from a drainage that is comprised primarily of open space. Nutrient investigation monitoring occurred during the first two years of the CCWTMP to meet a special study requirement, and is no longer occurring.

Toxicity Investigation

For water toxicity investigation monitoring, in-stream water column samples were collected at two sites where the cause(s) of water toxicity has not been identified. The CCWTMP was successful in collecting two additional samples via the wet weather water sampling events. For sediment toxicity investigation monitoring, streambed sediment samples were collected in two reaches of the CCW where the cause(s) of sediment toxicity have not been identified.

SALTS MONITORING

Overview

For the preliminary monitoring to address the Salts TMDL, continuous sensors for depth, chloride, and EC were installed at each of the five compliance sites designated in the Salts TMDL[2]. In-stream water column samples for salts, field measurement of EC, and manual flow measurements are performed monthly at three of the compliance sites, and twice per month at two of the compliance sites (chloride, TDS, and sulfate grab samples taken at all sites; boron grab samples taken at a subset of sites; see Table 7). In addition, grab samples for salts are taken monthly at each of seven land use sites. Finally, grab samples for salts (all four constituents) are taken at all five compliance sites and all land use sites during the quarterly dry and wet events conducted in accordance with the CCWTMP QAPP for other TMDLs. Salts (all four constituents) were measured monthly in the effluent of all five POTWs in the watershed. At three of the POTWs (Camarillo, Hill Canyon, and Simi Valley), some of the monthly samples coincide with Quarterly Dry effluent samples for other TMDLs, as specified in the QAPP. Monthly salt concentrations for the two POTWs that do not currently discharge to surface waters (Moorpark and Camrosa POTWs) were used for Salt Balance calculations for the current year, but are not compared to Interim WLAs in this report.

---

[2] The subwatersheds assigned WLAs and LAs in the Salts TMDL are: Simi, Las Posas, Conejo, Camarillo, Pleasant Valley-Calleguas, and Pleasant Valley-Revolon Slough. Compliance points are located at or near the base of the Simi, Conejo, Camarillo, Pleasant Valley-Calleguas, and Pleasant Valley-Revolon Slough subwatersheds.

Continuous Monitoring Equipment

The CCW salts continuous sensor units consist of a data logger, cellular modem, internal batteries, and sensors for water level, electrical conductivity, temperature, and chloride. The water level sensors used are General Electric Druck PDCR1830 vented pressure transducers; they are small and reliable with extremely low power consumption, making them a preferred option for compact battery powered remote sensing equipment. Two kinds of EC sensors are deployed in parallel at several sites: a standard EC sensor that uses an electric current to measure conductivity, and a non-contact inductive type EC sensor. This second type of EC sensor measures conductivity by inducing an electromagnetic field in the water instead of an electric current, and can be less sensitive to fouling and drift. Direct chloride sensor modules consist of two or more solid state ion-selective electrodes (ISE) paired with reference electrodes charged with KCl crystals.

The aerial portion of the units containing the electronic components is housed in non-descript PVC pipe and locked in place, an approach that has been successful to date in avoiding theft and vandalism. The units are mounted to existing bridge supports and creek side structures, or to metal stakes if suitable structures do not exist. The electronics enclosure is made from 4-inch PVC pipe and located at the top of the unit where it is relatively safe from storm damage. Sensor wires drop down from this enclosure to creek level through 2-inch PVC pipe or 1-inch flexible conduit. Figure 2 shows an example of the installation at 03_UNIV, including a photo of the electronics enclosure with cover removed. Figure 3 shows examples of the sensor end of the systems. The installation at each compliance site has one or two EC sensors, and one or two chloride sensor modules. The water level sensor at each site is typically placed closer to the electronics housing at a secure anchoring point under water, such that horizontal sensor conduit acts as a stilling well. Appendix C provides field photos and additional detail for all five installations. Data are recorded continuously at 5-minute intervals and transmitted to the Davis office of Larry Walker Associates by cellular telemetry. The raw sensor data are then calibrated using field data (EC) and laboratory data from grab samples (chloride).

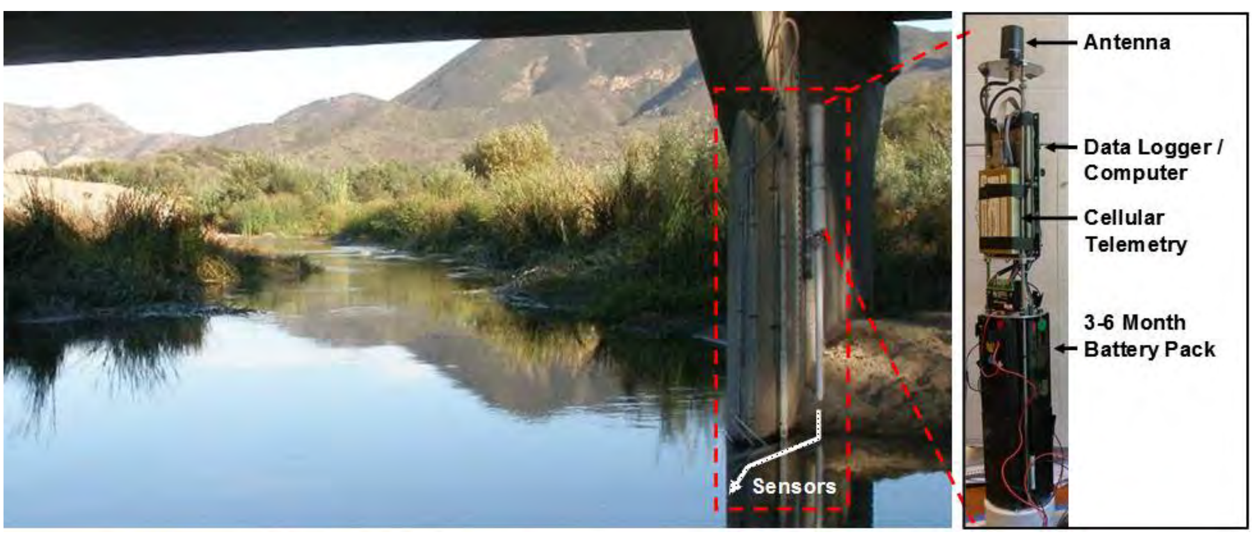


Figure 2. Left panel: Self-contained monitoring unit mounted to bridge at 03_UNIV site; Right panel; electronics with cover removed.

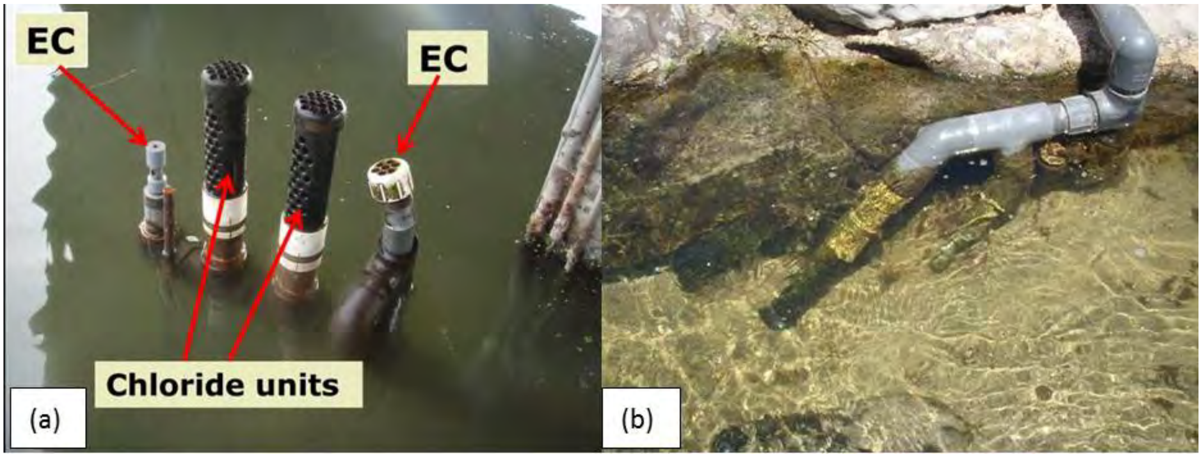


Figure 3. Examples of the sensor end of monitoring systems where 2 inch PVC conduit and perforated shields protect sensors and position them in the creek; (a) sensor head at 03_UNIV, rotated up for maintenance; (b) sensor head rotated down for monitoring.

Establishment of Stage/Discharge Relationships

Manual measurements of flow are performed at the compliance sites on a monthly basis (at three sites) or twice-monthly basis (at two sites). Each flow measurement is paired with the corresponding 5-min stage datum from the continuous depth sensor time series, and site-specific regression equations are produced that describe the relationship between stage (independent variable) and discharge (dependent variable) for each site ("rating curves"). Changes in the bathymetry of the stream cross sections containing the depth sensors (for example from scouring during high flows or shifting sand during base flow conditions) can cause changes in the rating curves over time. These changes are accounted for by a curve-fitting procedure ("shifting") that is employed over time as new manual flow measurements are added to the population of calibration data.[3] Each time a rating curve is "shifted", the raw stage data for an associated subset of the continuous depth records are adjusted by small increments to produce the best available estimates of discharge after application of the rating curve.

Prediction of Salt Concentrations from EC

Statistically significant, site-specific relationships exist between EC and each of the four constituents regulated by the Salts TMDL (herein, "surrogate relationships"). Consequently, continuous time series of chloride, sulfate, TDS, and boron concentrations can be produced for

---

[3] The shift-adjusted rating method used by USGS** is used to maintain the rating curves at the salt monitoring sites. The rating curves established for the salt monitoring sites take the common form Q=C*(Stage+A)^B, where Q is the discharge in cfs, Stage is water level in cm, and A, B, and C are constants. The shift-adjusted method modifies the equation to Q=C*(Stage + *Shift* +A)^B, where "Shift" is an adjustment to the stage values that varies over specific time periods to account for movement in the rating curve. A single base rating curve (coefficients A, B, C) is established for a site, and then field data is used to track the shift vs. time necessary to generate more accurate flow data.

** http://pubs.usgs.gov/wsp/wsp2175/pdf/chapter10_vol2.pdf "Measurement and Computation of Streamflow: Volume 2. Computation of Discharge", S.E. Rantz et al., USGS Geological Survey Water Supply Paper 2175. 1982.

each site where they are measured using calibrated 5-min EC data generated by the continuous EC sensors. Preliminary data from the feasibility study indicate that EC-modeled chloride is a good option for obtaining continuous records of chloride concentrations, and may have advantages over the use of direct sensors for chloride. For this Year 3 report, salt concentrations produced by 5-min EC sensor data and application of the surrogate relationships formed the basis for the mean monthly concentrations of chloride, sulfate, TDS, and boron reported in the data summary tables for continuous monitoring results. In addition, 5-minute EC-modeled salt concentrations were paired with 5-min discharge data (the latter produced by application of rating curves) to produce time series of 5-min salt loads. These loads (during dry weather) were used to estimate the stream export term of the current year salt balance. The surrogate relationships that were used to produce the approved time series of chloride, sulfate, TDS and boron concentrations for the January-June 2011 period are provided in Appendix D.

SAMPLING SITES

The QAPP details the justification and rationale for each of the sites sampled via the CCWTMP. Information on compliance monitoring sites and sample collection frequency is presented in Table 4. The general locations of the receiving water compliance monitoring sites (excluding Mugu Lagoon) for water, sediment, and fish tissue are presented in Figure 4 through Figure 6. The POTW effluent discharge sites are presented in Figure 7. The sampling locations within Mugu Lagoon for sediment and fish tissue are presented in Figure 8 and Figure 9, respectively. The sampling sites in each figure are separated by sampled constituent group.

The water and sediment toxicity investigation sampling sites coincide with current and previous sampling programs in the CCW. Water and sediment toxicity investigation sampling sites and sampling frequency are presented in Table 5, while the general locations of the water and sediment toxicity investigation sampling sites in the CCW are presented in Figure 10.

The salt monitoring sites correspond with compliance sites or land use sites already included in the QAPP for monitoring related to other TMDLs (Figure 4) with two exceptions;

1. One of the salt compliance points is only used for salt monitoring (Conejo Creek at Baron Brothers Nursery), and thus is not currently described in the QAPP.
2. The continuous monitoring equipment (and the location of salt grab samples) for the Simi subwatershed was installed approximately 0.9 miles upstream of the 07_HITCH site specified in the QAPP. The site used for salts monitoring is referred to herein as "07_HITCH-S" to distinguish it from the site specified in the QAPP for sampling for other TMDLs.

The CCWTMP efforts reviewed in the annual report correspond to the sites and locations listed below. As this program progresses, the number and location of sites may be revised if existing sites become inaccessible, if it is determined that alternative locations are needed, or if the number of land use stations needed to appropriately characterize discharges needs modification. A recommendation to revise the location of one site to better allow for a more coordinated effort with new requirements of the Ventura County Stormwater Program was included in the Revisions and Recommendations section of the previous annual report and is in the process of being evaluated by the Calleguas Creek TMDL Implementing Parties.

Table 4. CCWTMP Compliance Monitoring and Nutrient Investigation Sites and Annual Sampling Frequency

				GPS Coordinates		Water					Sediment			Tissue[2]	
Sub watershed	Site ID[1]	Reach	Site Location	Lat	Long	Tox[2]	Pests/ PCBs[3]	Nut[3]	Metal[3]	Gen Chem[3]	Tox	Pests /PCBs	Metal	Pests/ PCBs	Metal[4]
Mugu Lagoon	**01_RR_BR**	1	Ronald Reagan St Bridge	34.109	-119.0916	6	6	6	6	6	NA	NA	NA	NA	NA
	01_BPT_3	1	Located In Eastern Arm	General site locations are provided as each site represents a generalized sample collection zone In which a sample will be collected.		NA	NA	NA	4	4	Once Every Three Years			Once Every Three Years	
	01_BPT_6	1	Located In Eastern Part Of Western Arm			NA	NA	NA	4	4					
	01_BPT_14	1	Located In The Central Part Of The Western Arm			NA	NA	NA	4	4					
	01_BPT_15	1	Located In Central Lagoon			NA	NA	NA	4	4					
	01_SG_74	1	Located In Central Lagoon, South Of Drain #7			NA	NA	NA	4	4					
	Central Lagoon	1	Sampled In Central Lagoon			NA	NA	NA	NA	NA					
	Western Arm	1	Sampled In Western Arm Of The Lagoon			NA	NA	NA	NA	NA					
Revolon Slough	**04_WOOD**	4	Revolon Slough East Side Of Wood Road	34.1703	-119.0953	6	6	6	6	6	1	1	NA	1	1
	05_CENTR	5	Beardsley Wash At Central Avenue	34.2300	-119.1128	NA	NA	6	NA	6	NA	NA	NA	NA	NA
Calleguas	02_PCH	2	Calleguas Creek Northeast Side Of Hwy 1 Bridge	34.1119	-119.0818	NA	NA	4	NA	4	NA	NA	NA	NA	NA
	03_UNIV	3	Calleguas Creek At University Drive	34.1793	-119.0394	6	6	6	6	6	1	1	NA	1	NA
	03D_CAMR	3	Camrosa Water Reclamation Plant	34.1679	-119.053	4	4	NA	4	4	NA	NA	NA	NA	NA
	9A_HOWAR	9A	Conejo Creek At Howard Road Bridge	34.1931	-119.0025	NA	NA	4	NA	4	NA	NA	NA	NA	NA
	9AD_CAMA	9A	Camarillo Water Reclamation Plant	34.1938	-119.0017	4	4	NA	4	4	NA	NA	NA	NA	NA
Conejo	**9B_ADOLF**	9B	Conejo Creek At Adolfo Road	34.2125	-118.9894	6	6	6	NA	6	NA	1	NA	1	NA
	10_GATE	10	Conejo Creek Hill Canyon Below N Fork	34.2178	-118.9281	NA	NA	6	NA	6	NA	NA	NA	NA	NA
	10D_HILL	10	Hill Canyon Wastewater Treatment Plant	34.2131	-118.925	4	4	NA	4	4	NA	NA	NA	NA	NA

Table 4. CCWTMP Compliance Monitoring and Nutrient Investigation Sites and Annual Sampling Frequency continued

Sub watershed	Site ID[1]	Reach	Site Location	GPS Coordinates		Water					Sediment			Tissue[2]	
				Lat	Long	Tox[3]	Pests/ PCBs[3]	Nut[3]	Metal[3]	Gen Chem[3]	Tox	Pests /PCBs	Metal	Pests/ PCBs	Metal[4]
Conejo	12_PARK	12	Conejo Creek North Fork Above Hill Canyon	34.2144	-118.915	NA	NA	4	NA	4	NA	NA	NA	NA	NA
	13_BELT	13	Conejo Creek S Fork Behind Belt Press Building	34.2078	-118.9194	NA	NA	4	NA	4	NA	NA	NA	NA	NA
Las Posas	**06_SOMIS**	6	Arroyo Las Posas Off Somis Road	34.254	-118.9927	6	6	6	NA	6	NA	1	NA	1	NA
	06D_MOOR	6	Ventura County Wastewater Treatment Plant	34.269	-118.933	4	4	NA	NA	4	NA	NA	NA	NA	NA
Arroyo Simi	**07_HITCH**	7	Arroyo Simi East Of Hitch Boulevard	34.2717	-118.9228	6	6	6	NA	6	NA	1	NA	1	NA
	07_MADER	7	Arroyo Simi At Madera Avenue	34.2778	-118.7958	NA	NA	6	NA	6	NA	NA	NA	NA	NA
	07D_SIMI	7	Simi Valley Water Quality Control Plant	34.2814	-118.815	4	4	NA	NA	4	NA	NA	NA	NA	NA

1. Site IDs in **bold type** indicate the sites selected for the nutrient investigation monitoring conducted during the first two years of the monitoring program.
2. Tissue samples will be collected in the same location as water and sediment samples. Samples may be collected elsewhere if no fish are found at pre-established sample stations.
3. Includes two wet events per site except for POTWs.
4. Bird egg samples will be collected and analyzed for mercury and selenium in the Mugu Lagoon subwatershed.

NA – Not Analyzed

Tox – Samples will be analyzed for toxicity and OP, triazine, and pyrethroid pesticides as listed in Table 2. Toxicity in water will not be analyzed at 01_RR_BR or at the POTWs.

Pests/PCBs – Samples will be analyzed for OC pesticides and PCBs as listed in Table 2. Chlorpyrifos will be analyzed in tissue at 04_WOOD as it is listed in this reach.

Nutrients – Samples will be analyzed for Nutrients as listed in Table 2.

Metals – Samples will be analyzed for Metals as listed in Table 2.

Gen Chem – Samples will be analyzed for General Parameters as listed in Table 2.

Table 5. Toxicity Investigation Monitoring Sites and Sampling Frequency

Subwatershed	Site ID	Reach	Site Location	GPS Coordinates Lat	GPS Coordinates Long	Tox	Pests/PCBs	Gen Chem
Sediment Toxicity Investigation								
Calleguas	02_PCH	2	Calleguas Creek Northeast Side Of Highway 1 Bridge	34.1119	-119.0818	1	1	1
Calleguas	9A_HOWAR	9A	Conejo Creek At Howard Road Bridge	34.1931	-119.0025	1	1	1
Water Toxicity Investigation[1]								
Conejo	10_GATE	10	Conejo Creek Hill Canyon Below North Fork Of Conejo Creek	34.2178	-118.9281	5	5	5
Conejo	13_BELT	13	Conejo Creek South Fork Behind Hill Canyon Belt Press Building	34.2078	-118.9194	4	4	4

1. Includes two wet events per site.

Tox – Samples will be analyzed for toxicity, OP, triazine, and pyrethroid pesticides in water and toxicity, OP, and pyrethroid pesticides in sediment as listed in Table 2.

Pests/PCBs – Samples will be analyzed for OC pesticides and PCBs as listed in Table 2.

Gen Chem – Samples will be analyzed for General Parameters as listed in Table 2.

Table 6. CCWTMP Land Use Monitoring Sites and Sample Frequency

Sub watershed	Site ID[1]	Reach	Site Type	Site Location	GPS Coordinates Lat	GPS Coordinates Long	Pests/ PCBs[2]	Nutrients	Metals	Gen Chem[2]
Mugu Lagoon	**01T_ODD2_DCH**	1	Ag	Duck Pond/Mugu/Oxnard Drain #2 S. of Hueneme Rd	34.1395	-119.1183	6	6	6	6
Revolon Slough	04D_WOOD	4	Ag	Agricultural Drain on E. Side of Wood Rd N. of Revolon	34.1707	-119.0960	6	6	6	6
	05D_SANT_ VCWPD	5	Ag	Santa Clara Drain at VCWPD Gage 781 prior to confluence with Beardsley Channel	34.2425	-119.1114	6	6	NA	6
	04D_VENTURA	4	Urban	Camarilo Hills Drain at Ventura Blvd and Las Posas Rd at VCWPD Gage 835	34.2161	-119.0675	6	6	6	6
Calleguas	**02D_BROOM**	2	Ag	Discharge to Calleguas Creek at Broome Ranch Rd.	34.1434	-119.0711	NA	NA	6	NA
Conejo	**9BD_GERRY**	9B	Ag	Drainage ditch crossing Santa Rosa Rd at Gerry Rd	34.2369	-118.9473	6	6	6	6
	9BD_ADOLF	9B	Urban	Urban storm drain passing under N. side of Adolfo Rd approximately 300 meters from Reach 9B	34.2148	-118.9951	6	6	6	6
	13_SB_HILL	13	Urban	South Branch Arroyo Conejo on S. Side of W Hillcrest	34.1852	-118.9074	6	6	NA	6
Las Posas	**06T_FC_BR**	6	Ag	Fox Canyon at Bradley Rd - just north of Hwy 118	34.2646	-119.0115	6	6	NA	6
Arroyo Simi	07D_HITCH_ LEVEE_2	7	Ag	2nd corrugated pipe discharging on north side of Arroyo Simi flood control levee off of Hitch Blvd just beyond 1st power pole.	34.2714	-118.9205	6	6	NA	6
	07D_CTP	7	Urban	Flood control channel in Country Trail Park	34.2646	-118.9072	6	6	NA	6
	07T_DC_H	7	Urban	Dry Canyon at Heywood Street	34.2682	-118.7599	6	6	NA	6

Ag = Agricultural Land Use Site Urban = Urban Land Use Site Open = Open Space Land Use Site (Established for the nutrients investigation monitoring)

NA – Not Analyzed

1. Site IDs in **bold type** represent CCWTMP sites that correspond to sites identified in the Ventura County Agricultural Irrigated Lands Group QAPP (LWA 2006).
2. Includes two wet events per site.

Pests/PCBs – Samples will be analyzed for Organochlorine Pesticides and PCBs, OP, triazine, and pyrethroid pesticides as listed in Table 2.

Nutrients – Samples will be analyzed for Nutrients as listed in Table 2.

Metals – Samples will be analyzed for Metals as listed in Table 2.

Gen Chem – Samples will be analyzed for General Parameters as listed in Table 2.

Table 7. Salts TMDL Monitoring Sites and Grab Sample Frequency (per year) during the Feasibility Study

Sub watershed	Site ID(1)	Reach	Site Type(2)	Site Location	GPS Coordinates Lat	Long	Sampling Frequency(3) Chloride	Sulfate	TDS	Boron
Compliance Points										
Pleasant Valley-Reaches 4 and 5	**04_WOOD**	4		Revolon Slough East Side Of Wood Road	34.1703	-119.0953	24 (SE) 4 (QDRY) 2 (WET)	24 (SE) 4 (QDRY) 2 (WET)	24 (SE) 4 (QDRY) 2 (WET)	24 (SE) 4 (QDRY) 2 (WET)
Pleasant Valley – Calleguas Creek Reach 3	**03_UNIV**	3		Calleguas Creek At University Drive	34.1793	-119.0394	24 (SE) 4 (QDRY) 2 (WET)	24 (SE) 4 (QDRY) 2 (WET)	24 (SE) 4 (QDRY) 2 (WET)	4 (QDRY) 2 (WET)
Camarillo	**9A_HOWAR**	9A		Conejo Creek At Howard Road Bridge	34.1931	-119.0025	12 (SE) 4 (QDRY) 2 (WET)	12 (SE) 4 (QDRY) 2 (WET)	12 (SE) 4 (QDRY) 2 (WET)	4 (QDRY) 2 (WET)
Conejo	**9B_BARON**	9B		Conejo Creek At Baron Brothers Nursery	34.2365	-118.9643	12 (SE) 4 (QDRY) 2 (WET)	12 (SE) 4 (QDRY) 2 (WET)	12 (SE) 4 (QDRY) 2 (WET)	4 (QDRY) 2 (WET)
Simi	**07_HITCH-S**	7		Arroyo Simi above Hitch Blvd. (about 0.9 miles upstream of 07_Hitch from the QAPP)	34.2695	-118.9083	12 (SE) 4 (QDRY) 2 (WET)	12 (SE) 4 (QDRY) 2 (WET)	12 (SE) 4 (QDRY) 2 (WET)	12 (SE) 4 (QDRY) 2 (WET)
Land Use Sites										
Pleasant Valley - Reaches 4 and 5	04D_WOOD	4	Ag	Agricultural Drain on E. Side of Wood Rd N. of Revolon	34.1707	-119.0960	12 (SE) 4 (QDRY) 2 (WET)	12 (SE) 4 (QDRY) 2 (WET)	12 (SE) 4 (QDRY) 2 (WET)	4 (QDRY) 2 (WET)
	04D_VENTURA	4	Urban	Camarilo Hills Drain at Ventura Blvd and Las Posas Rd at VCWPD Gage 835	34.2161	-119.0675	12 (SE) 4 (QDRY) 2 (WET)	12 (SE) 4 (QDRY) 2 (WET)	12 (SE) 4 (QDRY) 2 (WET)	4 (QDRY) 2 (WET)
Camarillo	9BD_ADOLF	9B	Urban	Urban storm drain passing under N. side of Adolfo Rd approximately 300 meters from Reach 9B	34.2148	-118.9951	12 (SE) 4 (QDRY) 2 (WET)	12 (SE) 4 (QDRY) 2 (WET)	12 (SE) 4 (QDRY) 2 (WET)	4 (QDRY) 2 (WET)

Table 7. Salts TMDL Monitoring Sites and Grab Sample Frequency (per year) during the Feasibility Study (continued)

Sub watershed	Site ID(1)	Reach	Site Type(2)	Site Location	GPS Coordinates Lat	GPS Coordinates Long	Sampling Frequency(3) Chloride	Sulfate	TDS	Boron
Land Use Sites (continued)										
Conejo	13_SB_HILL	13	Urban	South Branch Arroyo Conejo on S. Side of W Hillcrest	34.1852	-118.9074	12 (SE) 4 (QDRY) 2 (WET)	12 (SE) 4 (QDRY) 2 (WET)	12 (SE) 4 (QDRY) 2 (WET)	4 (QDRY) 2 (WET)
Conejo	**9BD_GERRY**	9B	Ag	Drainage ditch crossing Santa Rosa Rd at Gerry Rd	34.2369	-118.9473	12 (SE) 4 (QDRY) 2 (WET)	12 (SE) 4 (QDRY) 2 (WET)	12 (SE) 4 (QDRY) 2 (WET)	4 (QDRY) 2 (WET)
Simi	07D_HITCH_ LEVEE_2	7	Ag	2nd corrugated pipe discharging on north side of Arroyo Simi flood control levee off of Hitch Blvd just beyond 1st power pole.	34.2714	-118.9205	12 (SE) 4 (QDRY) 2 (WET)	12 (SE) 4 (QDRY) 2 (WET)	12 (SE) 4 (QDRY) 2 (WET)	4 (QDRY) 2 (WET)
Simi	07D_CTP	7	Urban	Flood control channel in Country Trail Park	34.2646	-118.9072	12 (SE) 4 (QDRY) 2 (WET)	12 (SE) 4 (QDRY) 2 (WET)	12 (SE) 4 (QDRY) 2 (WET)	4 (QDRY) 2 (WET)
POTW Effluent Sites										
	9AD_CAMA	9A		Camarillo Water Reclamation Plant	34.1938	-119.0017	M 4 (QDRY)	M 4 (QDRY)	M 4 (QDRY)	M 4 (QDRY)
	07D_SIMI	7		Simi Valley Water Quality Control Plant	34.2814	-118.815	M 4 (QDRY)	M 4 (QDRY)	M 4 (QDRY)	M 4 (QDRY)
	10D_HILL	10		Hill Canyon Wastewater Treatment Plant	34.2131	-118.925	M 4 (QDRY)	M 4 (QDRY)	M 4 (QDRY)	M 4 (QDRY)
	03D_CAMR	3		Camrosa Water Reclamation Facility	34.1644	-119.0532	M	M	M	M
	06D_MOOR	6		Ventura County Waterworks District #1 Wastewater Treatment Plant	34.269	-118.933	M	M	M	M

(1) Site IDs in **bold type** represent CCWTMP sites that correspond to sites identified in the Ventura County Agricultural Irrigated Lands Group QAPP (LWA 2006)

(2) Ag = Agricultural Land Use Site; Urban = Urban Land Use Site; NA – Not Analyzed

(3) SE = Salt events conducted for the feasibility study; QDRY = Quarterly Dry Events conducted in accordance with the CCWTMP QAPP; WET = Wet Events conducted in accordance with the CCWTMP QAPP; M = Monthly (not required in the QAPP, but used for Salt Balance calculations), at three of the POTWs, four of the monthly samples correspond to Quarterly Dry Events

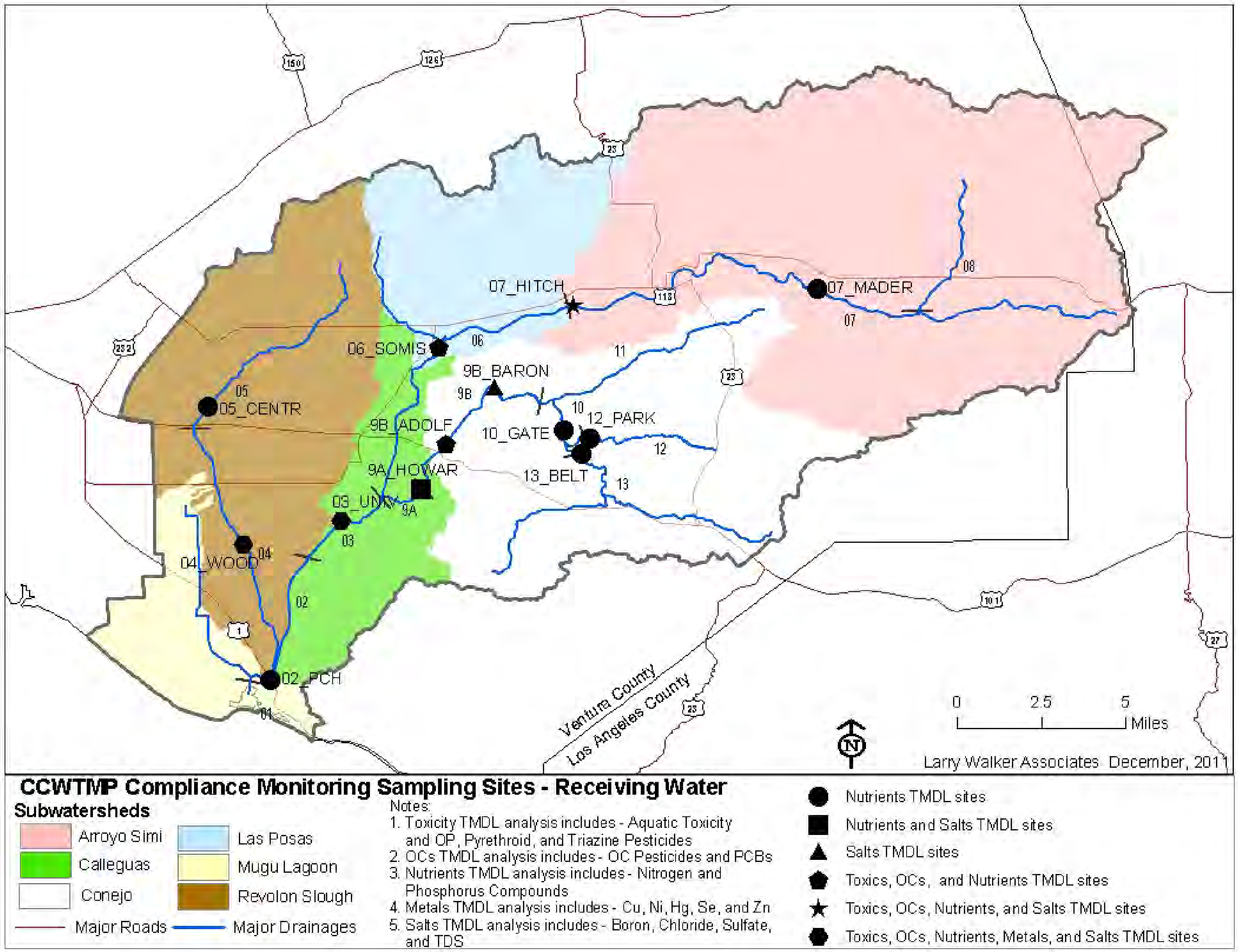


Figure 4. CCWTMP Compliance Monitoring Sampling Sites – Receiving Water

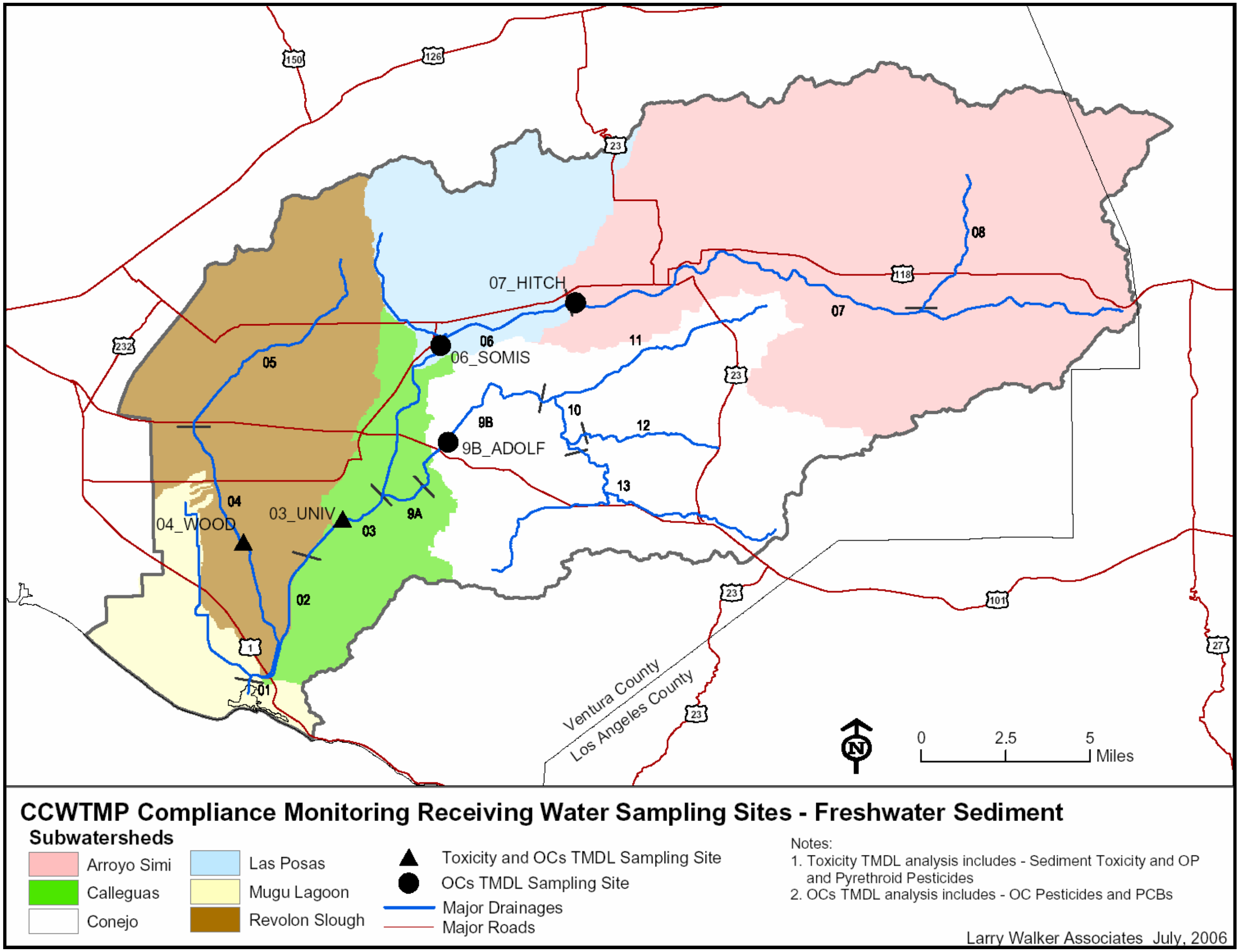


Figure 5. CCWMTP Compliance Monitoring Receiving Water Sampling Sites – Freshwater Sediment

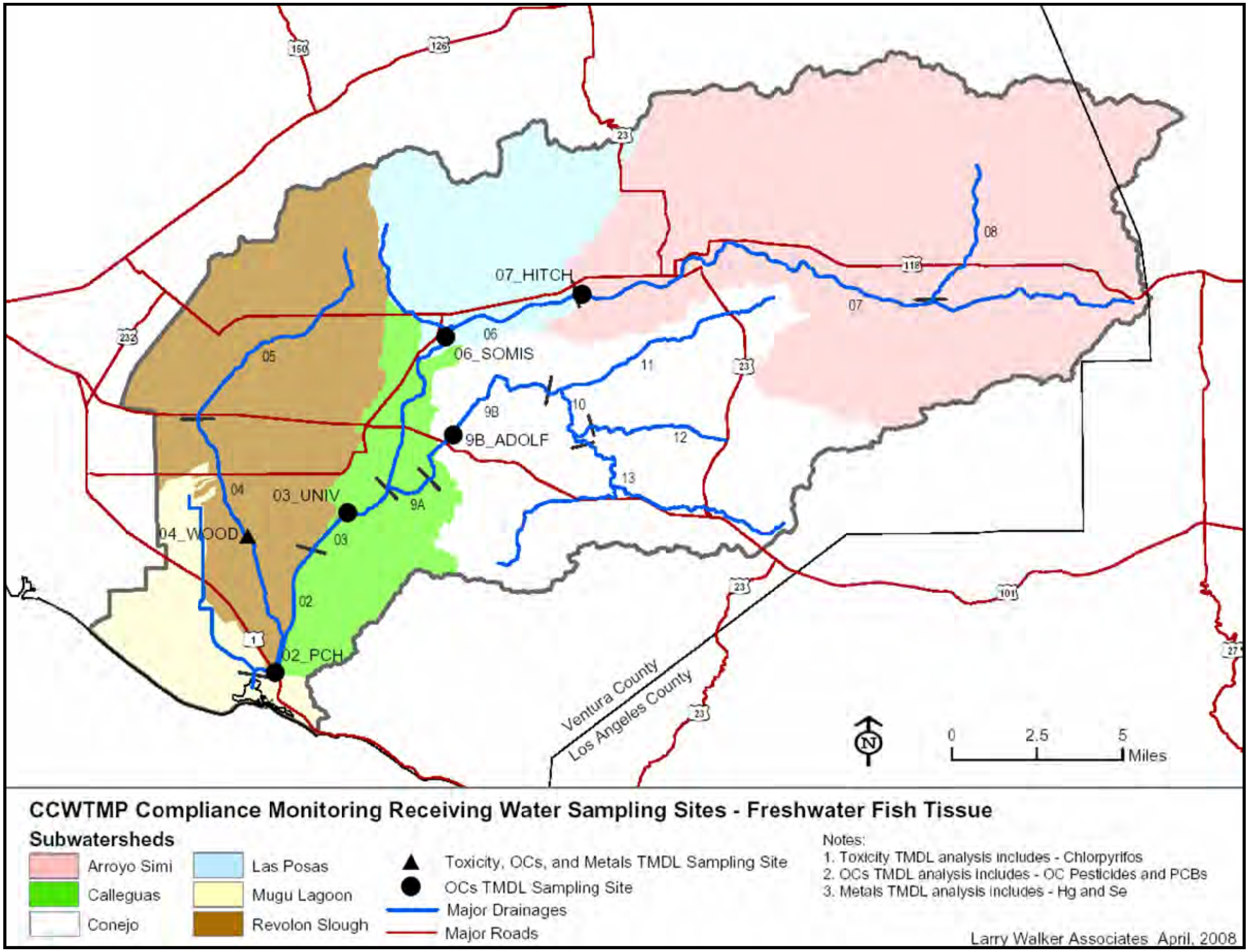


Figure 6. CCWMTP Compliance Monitoring Receiving Water Sampling Sites – Freshwater Fish Tissue

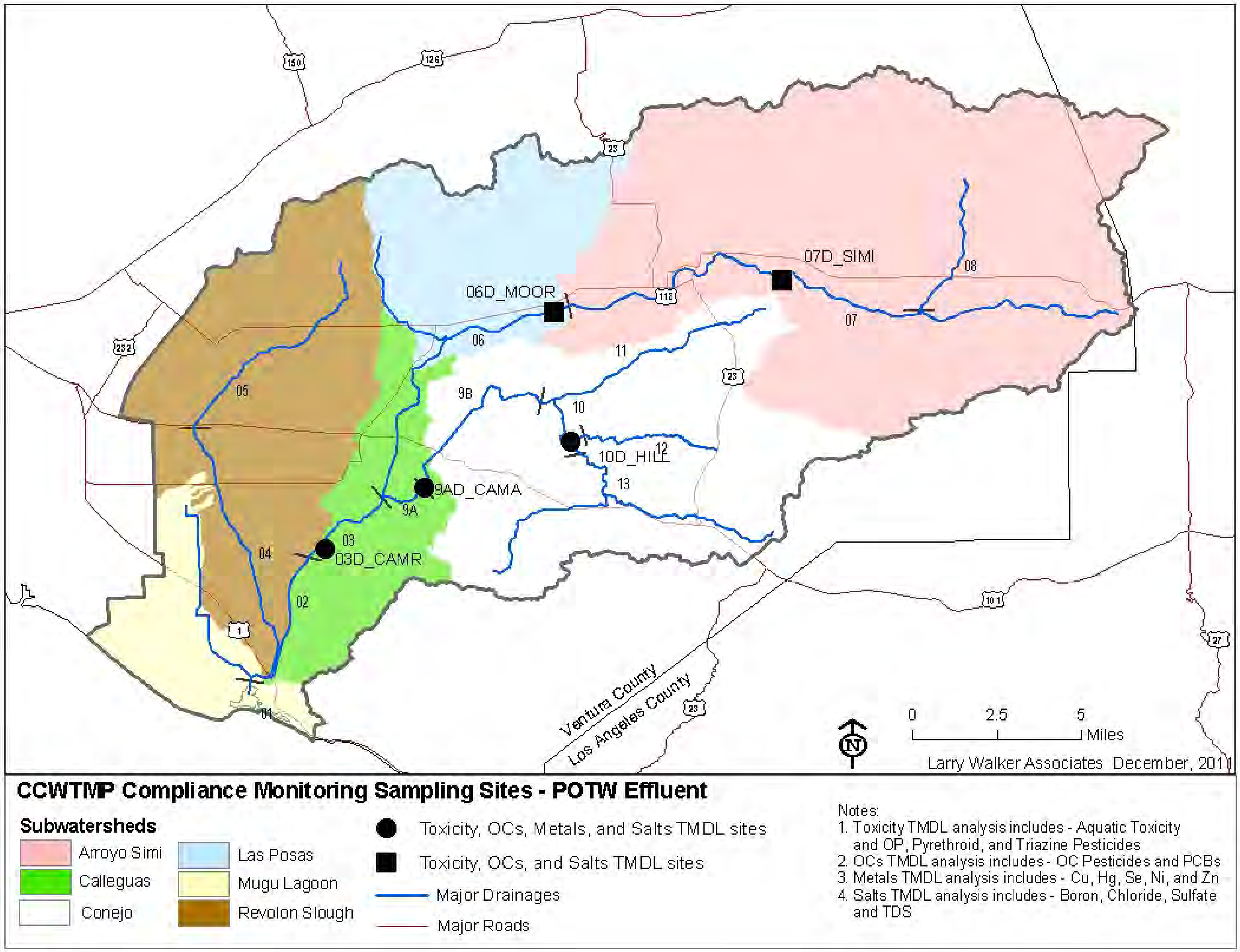


Figure 7. CCWMTP Compliance Monitoring Sampling Sites – POTW Effluent

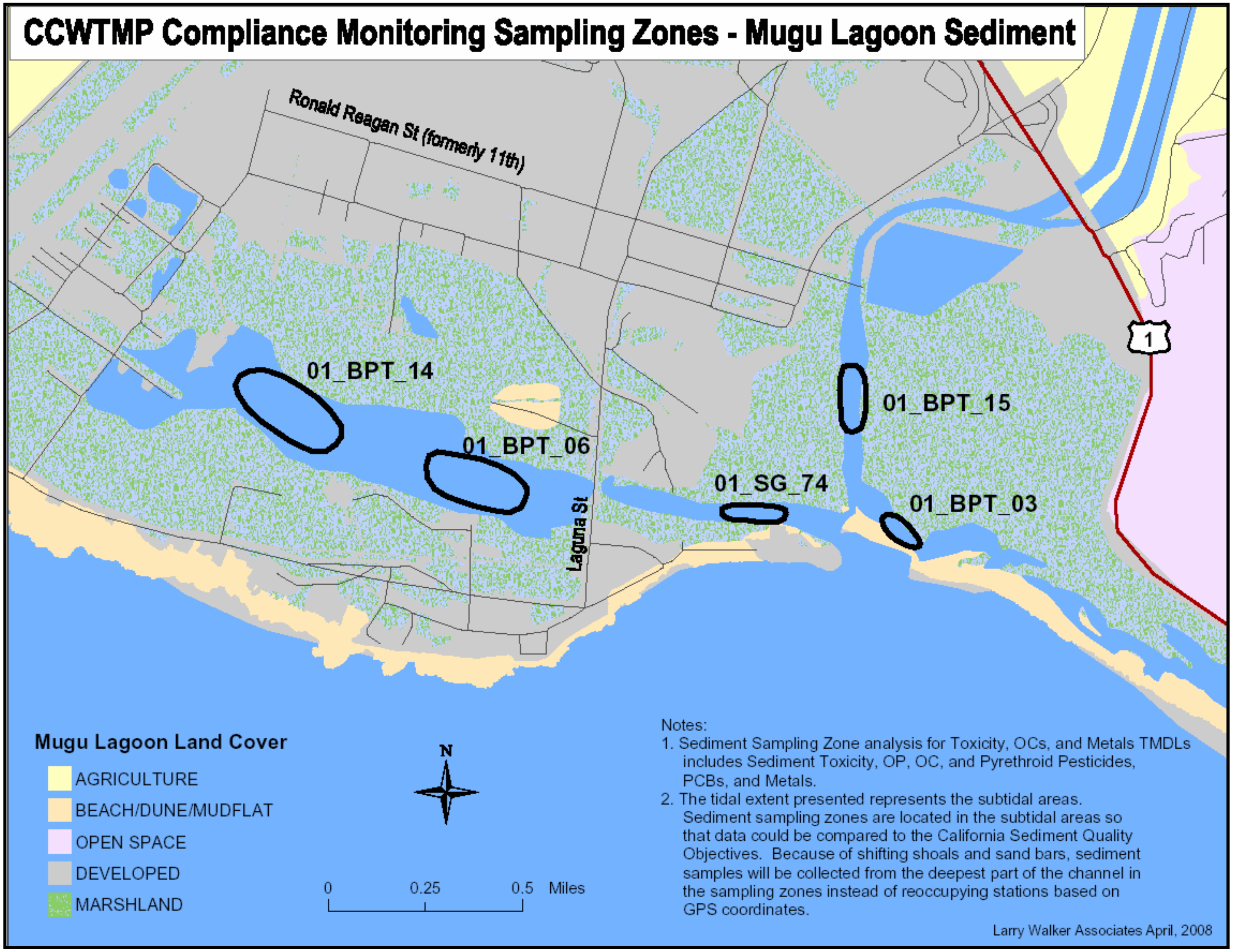


Figure 8. CCWMTP Compliance Monitoring Sampling Zones – Mugu Lagoon Sediment

Figure 9. CCWTMP Compliance Monitoring Sampling Zones – Mugu Lagoon Tissue

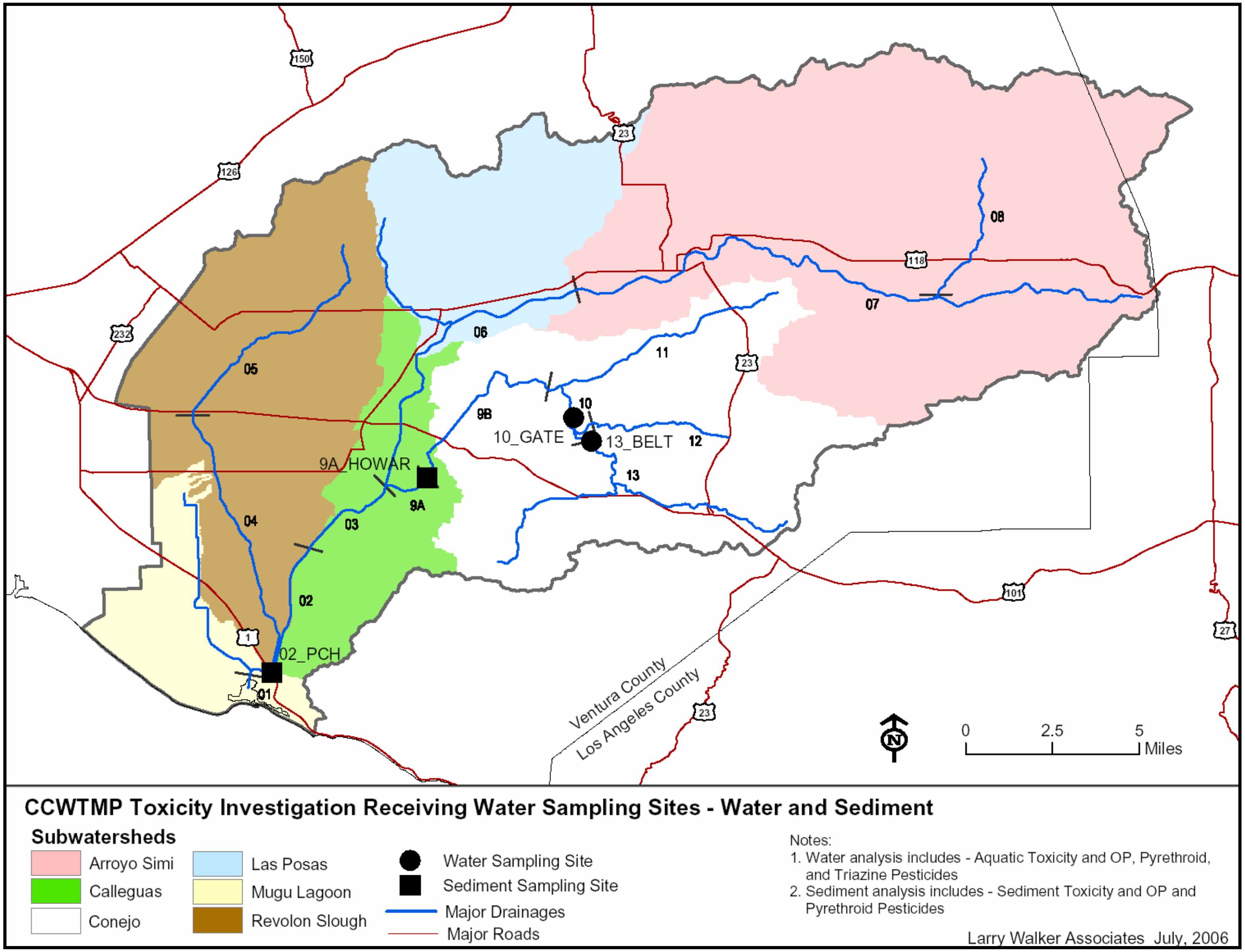


Figure 10. CCWTMP Toxicity Investigation Receiving Water Sampling Sites – Water and Sediment

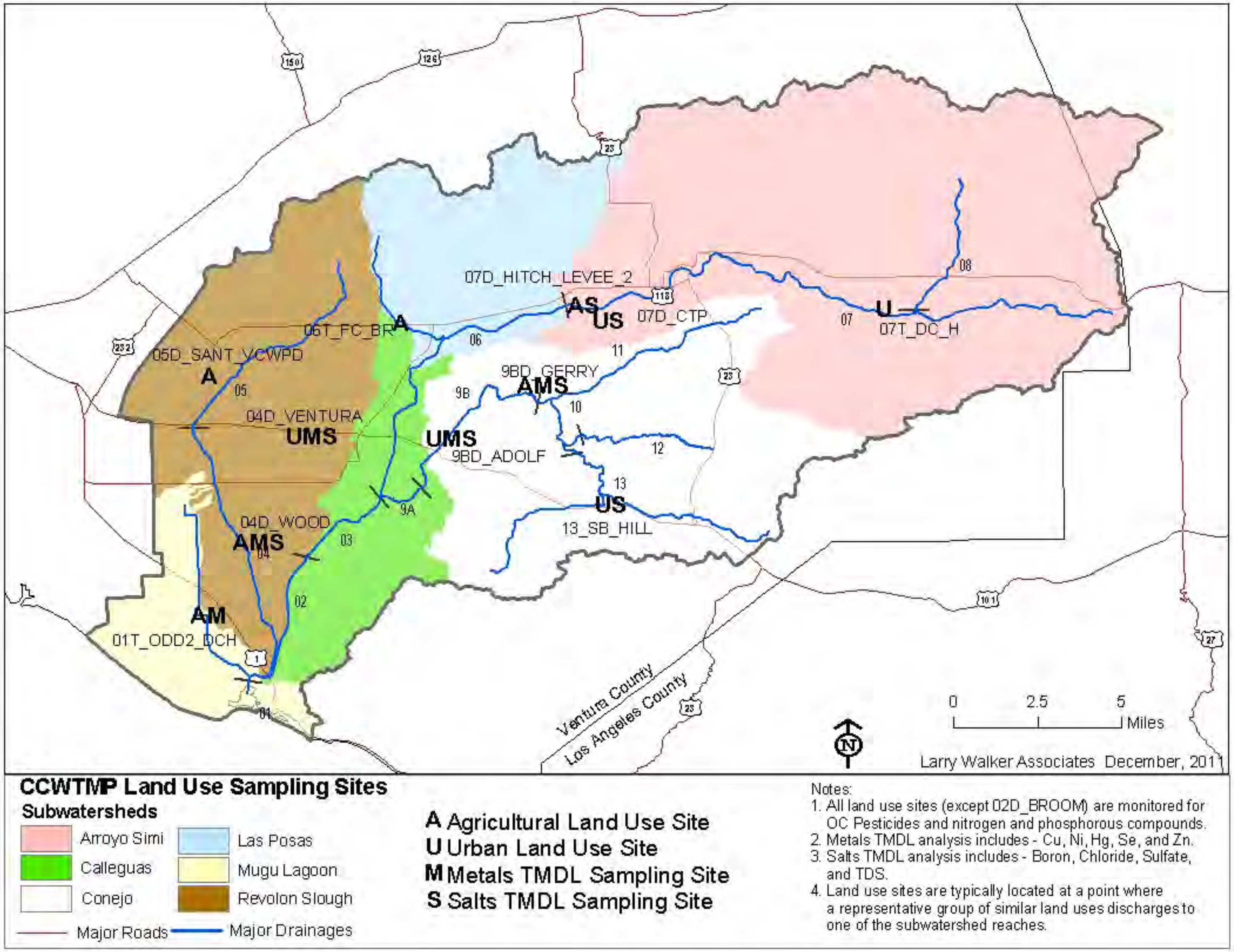


Figure 11. CCWTMP Land Use Sampling Sites

Monitoring Event Summaries for Toxicity, OC Pesticides, Nutrients, and Metals TMDLs

The following section provides a summary of both dry weather and wet weather monitoring events completed during the third year of monitoring for Toxicity, OC Pesticides, Nutrients, and Metals. Each event summary includes general data on the date of sampling, sites completed and/or not sampled, specific deviations from standard SOPs as outlined in the QAPP, and a general narrative of post event follow-up activities. The Data Summary section of this report includes field measurements and analytical results for each event.

DRY WEATHER EVENTS

Dry weather sampling events required during the third year of TMDL monitoring included quarterly sampling events (Events 22, 23, 25, and 27). The following section details each dry weather event.

Events 24 and 26 were wet weather storm monitoring efforts and are covered following the dry weather section.

Event 22

Event 22 included sampling of Mugu Lagoon water quality, freshwater quality, freshwater sediment, and freshwater fish tissue. A summary of each monitoring effort is included below.

Mugu Lagoon Water Quality

Sampled – August 26, 2010

Table 8. Event 22 Mugu Lagoon Water Quality Sites Sampled

	Water Chemistry Constituents						
Site ID	General WQ Parameters	TOC	DOC	TSS	PCBs, OP, OC, Triazines, and Pyrethroid Pesticides	Nutrients	Metals w/ Hg
01_BPT_14 Central Western Arm	X		X	X			X
01_BPT_15 Central Lagoon	X		X	X			X
01_BPT_3 Eastern Arm	X		X	X			X
1_BPT_6 East Western Arm	X		X	X			X
01_RR_BR Ronald Reagan Bridge	X		X	X	X	X	X
01_SG_74 Central Lagoon S. of Drain #7	X		X	X			X

Table 9. Event 22 Mugu Lagoon Water Quality Deviations from QAPP

Site ID	Deviation
All	Sampling in August 2010 was later in the month than typical in order to sample during more favorable tidal conditions.
01_SG_74 Central Lagoon S. of Drain #7	In order to avoid harassment of harbor seals and comply with a NBVC biologist's request, site was accessed by land.

Freshwater Water Quality

Sampled – August 17 and 18, 2010

Table 10. Event 22 Freshwater Water Quality Sites Sampled

Site ID	Water Chemistry Constituents				
	General WQ Parameters	Toxicity	PCBs, OP, OC, Triazines, and Pyrethroid Pesticides	Nutrients	Metals
01T_ODD2_DCH	X		X		X
02_PCH	X	X		X	
03_UNIV	X	X	X	X	X
04_WOOD	X	X	X	X	X
04D_VENTURA	X		X		X
05_CENTR	X			X	
05D_SANT_VCWPD	X		X		X
06_SOMIS	X	X	X	X	
06T_FC_BR	X		X		
07_HITCH	X	X	X	X	
07_MADER	X			X	
07D_CTP	X		X		
07D_SIMI [1]	X		X		
07T_DC_H	X		X		
9A_HOWAR	X			X	
9AD_CAMA [2]	X		X	X	X
9B_ADOLF	X	X	X	X	
9BD_ADOLF	X		X		X
10_GATE	X	X	X	X	
10D_HILL [3]	X		X	X	X
12_PARK	X			X	
13_BELT	X	X	X	X	
13_SB_HILL	X		X		

1. Samples collected on August 10th by treatment plant staff.
2. Samples collected on August 4th by treatment plant staff.
3. Samples collected on August 5th by treatment plant staff.

Table 11. Event 22 Freshwater Water Quality Sites Not Sampled

Site ID	Reason for Omission
02D_BROOM	Site dry, no samples taken
03D_CAMR	Treatment plant not discharging, no sample taken
04D_WOOD	Site dry, no samples taken
06D_MOOR	Treatment plant not discharging, no sample taken
9BD_GERRY	Site dry, no samples taken
07D_HITCH_LEVEE_2	Site dry, no samples taken

Table 12. Event 22 Freshwater Water Quality Deviations from QAPP

Site ID	Deviation
06_SOMIS	Intermediate container (Organics Bottle) used to fill Toxicity containers.
07D_CTP	Intermediate container (Ziploc bag) used to fill sample bottles.
10_GATE	Flow was not measured due to flume and rocks.
04D_VENTURA	Intermediate container (Ziploc bag) used to fill sample bottles. Flow was not measured due to low flow.
9BD_ADOLF	Intermediate container (Ziploc bag) used to fill sample bottles.
02_PCH	Intermediate container (TSS Bottle) used to fill sample bottles. Flow was not measured due to strong tidal influence.
04_WOOD	The conductivity at the site (3,890 µS/cm) was greater than the accepted range for the designated test species (*Ceriodaphnia dubia*). The QAPP requires the use of *Americamysis bahia*. However, *Hylella azteca* is identified by SWAMP as an appropriate water test species when conductivity is greater than 3,000 µS/cm and is currently utilized by the Ventura County Irrigated Lands Group which conducts monitoring in the watershed. To maintain consistency with an existing watershed program, the toxicity testing lab (Pacific EcoRisk) utilized *Hylella azteca* in place of *Americamysis bahia*.

Freshwater Sediment

Sampled – August 18 and 19, 2010

Table 13. Event 22 Freshwater Sediment Sites Sampled

	Sediment Constituents		
Site ID	General Parameters	Toxicity	PCBs, OP, OC, and Pyrethroid Pesticides
04_WOOD	X	X	X
02_PCH	X	X	X
03_UNIV	X	X	X
9B_ADOLF	X		X
9A_HOWAR	X	X	X
06_SOMIS	X		X
07_HITCH	X		X

Table 14. Event 22 Freshwater Sediment Deviations from QAPP

Site ID	Deviation
03_UNIV, 9B_ADOLF, 06_SOMIS, and 07_HITCH	On 8-18-10 meter 6920 failed pH post calibration. The meter passed mid event check on 8-17-10. The meter was not used on 8-19-10. The pH results from these sites may have been affected.

Freshwater Tissue

Sampled – September 3, 2010

Table 15. Event 22 Freshwater Tissue Sites Sampled

Site ID	Fish collected at Site?	Tissue Constituents			
		% Lipids	PCBs and OC Pesticides	Mercury and Selenium	Chlorpyrifos
04_WOOD	No				
03_UNIV	Yes	X	X		
9B_ADOLF	Yes	X	X		
06_SOMIS	No				
07_HITCH	Yes	X	X		

Table 16. Event 22 Freshwater Tissue Sites Not Sampled

Site ID	Deviation
04_WOOD and 06_SOMIS	Field crew was unable to catch fish for analysis.

Event 23

Event 23 required sampling included Mugu Lagoon and freshwater quality sampling. A summary of each monitoring effort is described below.

Mugu Lagoon Water Quality

Sampled – November 8, 2010

Table 17. Event 12 Mugu Lagoon Water Quality Sites Sampled

	Water Chemistry Constituents						
Site ID	General WQ Parameters	TOC	DOC	TSS	PCBs, OP, OC, and Pyrethroid Pesticides	Nutrients	Metals w/ Hg
01_BPT_14 Central Western Arm	X		X	X			X
01_BPT_15 Central Lagoon	X		X	X			X
01_BPT_3 Eastern Arm	X		X	X			X
1_BPT_6 East Western Arm	X		X	X			X
01_RR_BR Ronald Reagan Bridge	X		X	X	X	X	X
01_SG_74 Central Lagoon S. of Drain #7	X		X	X			X

Table 18. Mugu Lagoon Water Quality Deviations from QAPP

Site ID	Deviation
All	Sampling event followed a minor rainfall the previous evening. No runoff or standing water was observed in the sampling areas.
01_SG_74 Central Lagoon S. of Drain #7	In order to avoid harassment of harbor seals and comply with a NBVC biologist's request, site was accessed by land.

Freshwater Water Quality

Sampled – November 9 and 10, 2010

Table 19. Event 23 Freshwater Water Quality Sites Sampled

	Constituents				
Site ID	**General Parameters**	**Toxicity**	**PCBs, OP, OC, Triazines and Pyrethroid Pesticides**	**Nutrients**	**Metals**
01T_ODD2_DCH	X		X		X
02_PCH	X			X	
02D_BROOM	X		X		X
03_UNIV	X	X	X	X	X
04_WOOD	X	X	X	X	X
04D_WOOD	X		X		X
04D_VENTURA	X		X		X
05_CENTR	X			X	
05D_SANT_VCWPD	X		X		X
06_SOMIS	X	X	X	X	
07_HITCH	X	X	X	X	
07_MADER	X			X	
07D_CTP	X		X		
07D_HITCH_LEVEE_2	X		X		
07D_SIMI[1]	X		X		
07T_DC_H	X		X		
9B_ADOLF	X	X	X	X	
9BD_ADOLF	X		X		X
9A_HOWAR	X			X	
9AD_CAMA[2]	X		X		X
10D_HILL[3]	X		X	X	X
13_SB_HILL	X		X		
10_GATE	X	X	X	X	
12_PARK	X			X	
13_BELT	X			X	

1. Samples collected on November 3rd by treatment plant staff.
2. Samples collected on November 4th by treatment plant staff.
3. Samples collected on November 2nd by treatment plant staff.

Table 20. Event 23 Freshwater Water Quality Sites Not Sampled

Site ID	Reason for Omission
9BD_GERRY	Site dry, no samples taken
06T_FC_BR	Site dry, no samples taken
03D_CAMR	Treatment plant not discharging during sampling event.
06D_MOOR	Treatment plant not discharging during sampling event.

Table 21. Event 23 Freshwater Water Quality Deviations from QAPP

Site ID	Deviation
02_PCH	Flow was not measured due to strong tidal influence.

Event 25

Event 25 required sampling included Mugu Lagoon and freshwater quality sampling. A summary of each monitoring effort is described below.

Mugu Lagoon Water Quality

Sampled – February 3rd, 2011

Table 22. Event 25 Mugu Lagoon Water Quality Sites Sampled

	Water Chemistry Constituents						
Site ID	General WQ Parameters	TOC	DOC	TSS	PCBs, OP, OC, Triazines, and Pyrethroid Pesticides	Nutrients	Metals w/ Hg
01_BPT_14 Central Western Arm	X		X	X			X
01_BPT_15 Central Lagoon	X		X	X			X
01_BPT_3 Eastern Arm	X		X	X			X
1_BPT_6 East Western Arm	X		X	X			X
01_RR_BR Ronald Reagan Bridge	X		X	X	X	X	X
01_SG_74 Central Lagoon S. of Drain #7	X		X	X			X

Table 23. Event 25 Mugu Lagoon Water Quality Deviations from QAPP

Site ID	Deviation
01_SG_74 Central Lagoon S. of Drain #7	In order to avoid harassment of harbor seals and comply with a NBVC biologist's request, site was accessed by land. For this event, the sampling site was located slightly south of the usual access point to ensure seals were not disturbed.

Freshwater Water Quality

Sampled – February 1 and 2, 2011

Table 24. Event 25 Freshwater Water Quality Sites Sampled

Site ID	Constituents				
	General Parameters	Toxicity	PCBs, OP, OC, Triazines, and Pyrethroid Pesticides	Nutrients	Metals
04D_WOOD	X		X		X
04_WOOD	X	X	X	X	X
04D_VENTURA	X		X	X	X
01T_ODD2_DCH	X		X		X
02_PCH	X			X	
02D_BROOM	X		X		X
03_UNIV	X	X	X	X	X
9B_ADOLF	X	X	X	X	
9BD_ADOLF	X		X		X
9A_HOWAR	X			X	
05D_SANT_VCWPD	X		X		X
05_CENTR	X			X	
9AD_CAMA [1]	X		X		X
10D_HILL [2]	X		X	X	X
13_SB_HILL	X		X		
10_GATE	X	X	X	X	
12_PARK	X			X	
13_BELT	X			X	
06_SOMIS	X	X	X	X	
07_HITCH	X	X	X	X	
07_MADER	X			X	
07D_SIMI [3]	X		X		
07D_CTP	X		X		
07T_DC_H	X		X		

1. Samples collected on February 2nd, by treatment plant staff.
2. Samples collected on February 10th, by treatment plant staff.
3. Samples collected on February 8th, by treatment plant staff.

Table 25. Event 25 Freshwater Water Quality Sites Not Sampled

Site ID	Reason for Omission
9BD_GERRY	Site dry, no samples taken.
07D_HITCH_LEVEE	Site dry, no samples taken.
06T_FC_BR	Site dry, no samples taken.
03D_CAMR	Treatment plant not discharging during sampling event.
06D_MOOR	Treatment plant not discharging during sampling event.

Table 26. Event 25 Freshwater Water Quality Deviations from QAPP

Site ID	Deviation
02_PCH	Flow was not measured due to strong tidal influence. Intermediate container (TSS Bottle) used to fill sample bottles.
02D_BROOM	Flow measurement was taken with flow meter and pipe diameter. Flow determined to be too strong for bucket test.
04_WOOD	The conductivity at the site (>3000 µS/cm) was greater than the accepted range for the designated test species (*Ceriodaphnia dubia*). The QAPP requires the use of *Americamysis bahia*. However, *Hylella azteca* is identified by SWAMP as an appropriate water test species when conductivity is greater than 3,000 µs/cm and is currently utilized by the Ventura County Irrigated Lands Group which conducts monitoring in the watershed. To maintain consistency with an existing watershed program, the toxicity testing lab (Pacific EcoRisk) utilized *Hylella azteca* in place of *Americamysis bahia*. The Jeri can that was sent to Pacific EcoRisk was broken upon arrival. Since KLI was still sampling in the field, LWA had them re-collect another Jeri can for Pacific EcoRisk and to match the toxicity sample, re-collect another set of Pesticide bottles to have analyzed. These pesticides were labeled bottle number "998".
04D_WOOD	Intermediate container (Ziploc bag) used to fill sample bottles.
05D_SANT_VCWPD	Intermediate container (Ziploc bag) used to fill sample bottles.
9BD_ADOLF	Intermediate container (Ziploc bag) used to fill sample bottles.
07T_DC_H	Intermediate container (Ziploc bag) used to fill sample bottles.
07D_CTP	Intermediate container (Ziploc bag) used to fill sample bottles.
05_CENTR	Intermediate container (Nitrate Bottle) used to fill sample bottles.
9AD_CAMA	Treatment plant pulled extra aliquots of water that we picked up and sent to Physis for analysis.
07D_SIMI	Treatment plant pulled extra aliquots of water that we picked up and sent to Physis for analysis.
10D_HILL	Treatment plant pulls extra samples and sends to their contract lab and we get the data.

Event 27

Event 27 required sampling included Mugu Lagoon and freshwater water quality sampling. A summary of each monitoring effort is described below.

Mugu Lagoon Water Quality

Sampled – May 16, 2011

Table 27. Event 27 Mugu Lagoon Water Quality Sites Sampled

	Water Chemistry Constituents						
Site ID	General WQ Parameters	TOC	DOC	TSS	PCBs, OP, OC, Triazines, and Pyrethroid Pesticides	Nutrients	Metals w/ Hg
01_BPT_14 Central Western Arm	X		X	X			X
01_BPT_15 Central Lagoon	X		X	X			X
01_BPT_3 Eastern Arm	X		X	X			X
1_BPT_6 East Western Arm	X		X	X			X
01_RR_BR Ronald Reagan Bridge	X		X	X	X	X	X
01_SG_74 Central Lagoon S. of Drain #7	X		X	X			X

Table 28. Event 27 Mugu Lagoon Water Quality Deviations from QAPP

Site ID	Deviation
01_SG_74 Central Lagoon S. of Drain #7	In order to avoid harassment of harbor seals and comply with a NBVC biologist's request, site was accessed by land. For this event, the sampling site was located slightly north of the usual access point to ensure seals were not disturbed.

Freshwater Water Quality

Sampled – May 4 and 5, 2011

Table 29. Event 27 Freshwater Water Quality Sites Sampled

	Constituents				
Site ID	General Parameters	Toxicity	PCBs, OP, OC, Triazines and Pyrethroid Pesticides	Nutrients	Metals
04_WOOD	X	X	X	X	X
04D_VENTURA	X		X	X	X
01T_ODD2_DCH	X		X		X
02_PCH	X			X	
02D_BROOM	X		X		X
03_UNIV	X	X	X	X	X
9B_ADOLF	X	X	X	X	
9BD_ADOLF	X		X	X	X
9A_HOWAR	X			X	
05D_SANT_VCWPD	X		X		X
05_CENTR	X			X	
9AD_CAMA [1]	X		X		X
10D_HILL [2]	X		X	X	X
13_SB_HILL	X		X		
10_GATE	X			X	
12_PARK	X			X	
13_BELT	X	X	X	X	
06_SOMIS	X	X	X	X	
07_HITCH	X	X	X	X	
07D_HITCH_LEVEE_2	X		X		
07_MADER	X			X	
07D_SIMI [3]	X		X		
07D_CTP	X		X		
07T_DC_H	X		X		

1. Samples were collected on May 4th by treatment plant staff.
2. Samples were collected on May 5th by treatment plant staff.
3. Samples were collected on May 3rd by treatment plant staff.

Table 30. Event 27 Freshwater Water Quality Sites Not Sampled

Site ID	Reason for Omission
04D_WOOD	Site was dry.
06T_FC_BR	Site was dry.
9BD_GERRY	Site was dry.
03D_CAMR	Treatment plant not discharging during sampling event.
06D_MOOR	Treatment plant not discharging during sampling event.

Table 31. Event 27 Freshwater Water Quality Deviations from QAPP

Site ID	Deviation
02_PCH	Flow was not measured due to strong tidal influence. Intermediate container (TSS Bottle) used to fill sample bottles.
02D_BROOM	Flow measurement was taken with flow meter and pipe diameter. Flow determined to be too strong for bucket test.
04_WOOD	The conductivity at the site (>3000 μS/cm) was greater than the accepted range for the designated test species (*Ceriodaphnia dubia*). The QAPP requires the use of *Americamysis bahia*. However, *Hylella azteca* is identified by SWAMP as an appropriate water test species when conductivity is greater than 3,000 us/cm and is currently utilized by the Ventura County Irrigated Lands Group which conducts monitoring in the watershed. To maintain consistency with an existing watershed program, the toxicity testing lab (Pacific EcoRisk) utilized *Hylella azteca* in place of *Americamysis bahia*.
04D_VENTURA	Intermediate container (Ziploc bag) used to fill sample bottles.
05D_SANT_VCWPD	Intermediate container (Ziploc bag) used to fill sample bottles.
9BD_ADOLF	Intermediate container (Ziploc bag) used to fill sample bottles.
07T_DC_H	Intermediate container (Ziploc bag) used to fill sample bottles.
07D_CTP	Intermediate container used to fill sample bottles.
9AD_CAMA	Treatment plant pulled extra aliquots of water that we picked up and sent to Physis for analysis.
07D_SIMI	Treatment plant pulled extra aliquots of water that we picked up and sent to Physis for analysis.
10D_HILL	Treatment plant pulls extra samples and sends to their contract lab and we get the data.

WET WEATHER EVENTS

As outlined in the QAPP, beyond the required dry weather quarterly sampling events, efforts were made to include two wet weather water sampling events for compliance monitoring for the OC Pesticides, Toxicity, Nutrients and Metals TMDLs during targeted storm events. Wet weather sampling efforts only covered water column monitoring and POTW sampling was not a requirement.

The monitoring effort for the 2010-2011 period covered by this report was successful in targeting and sampling two storms (Event 24 and Event 26). The following section includes a brief summary of each storm event and a description of the sampling effort.

Event 24

Storm Summary

On December 16th, 2010, a dramatic change in the weather pattern occurred, and the forecast called for a storm system approaching the Ventura County region. The forecast precipitation was 1.5 to 3.0 inches of rain, so the sampling team was mobilized. In the middle of the storm, sampling was initiated on December 19th, 2010. This storm turned out to be one of the wettest in recorded history.

Total rainfall during this event varied from 2.53 inches in the upper watershed (VCWPD Rain Gauge 246A, Simi Valley Sanitation Plant, 12/18/10-12/19/10 24 hour rain fall) to 2.955 inches in the lower area of the watershed (VCWPD Rain Gauge 505, Camarillo - CSUCI, 12/18/10-12/19/10 24 hour rain fall). As a result of this precipitation, elevated flows were recorded throughout the watershed, with the Calleguas Creek mean discharge for December 19th being 2,910 cubic feet per second (cfs) at USGS Gauge 11106550 near Camarillo, CA, at CSUCI University Road crossing. Flows were significantly higher than typical base flow conditions in the Calleguas Watershed allowing for this event to be characterized as a wet weather event.

Stormwater Water Quality

Sampled December 19, 2010.

Table 32. Event 24 Stormwater Water Quality Sites Sampled

Site ID	Constituents				
	General Parameters	Toxicity	PCBs, OP, OC, Triazines and Pyrethroid Pesticides	Nutrients	Metals
04D_WOOD	X		X		X
04_WOOD	X	X	X	X	X
04D_VENTURA	X		X		X
01T_ODD2_DCH	X		X		X
02D_BROOM	X		X		X
03_UNIV	X	X	X	X	X
9B_ADOLF	X	X	X	X	
9BD_ADOLF	X		X		X
9BD_GERRY	X		X		X
05D_SANT_VCWPD	X		X		X
05_CENTR	X			X	
13_SB_HILL	X		X		
10_GATE	X	X	X	X	
13_BELT	X	X	X		
06T_FC_BR	X		X		
06_SOMIS	X	X	X	X	
07D_HITCH_LEVEE _2	X		X		
07_HITCH	X	X	X	X	
07_MADER	X			X	
07D_CTP	X		X		
07T_DC_H	X		X	X	
12_PARK	X		X		

Table 33. Event 24 Stormwater Water Quality Deviations from QAPP

Site ID	Deviation
01T_ODD2_DCH	Flow measurements not done due to unsafe conditions.
03_UNIV	Flow measurements not done due to unsafe conditions.
04_WOOD	Flow measurements not done due to unsafe conditions.
04D_VENTURA	Intermediate container (Bottle) used to fill sample bottles.
05_CENTR	Intermediate container (Bottle) used to fill sample bottles. Turbidity was performed by the lab because it was above 1000 NTU which exceeds the meter's capability.
05D_SANT_VCWPD	Turbidity was performed by the lab because it was above 1000 NTU which exceeds the meter's capability.
06_SOMIS	Flow measurements not done due to unsafe conditions. Intermediate container (Bucket) used to fill sample bottles. Turbidity was performed by the lab because it was above 1000 NTU which exceeds the meter's capability.
06T_FC_BR	Turbidity was performed by the lab because it was above 1000 NTU which exceeds the meter's capability.
07_HITCH	Flow measurements not done due to unsafe conditions. Intermediate container (Bucket) used to fill sample bottles.
07D_HITCH_LEVEE	Flow measurements not done due to unsafe conditions.
07D_CTP	Flow measurements not done due to unsafe conditions.
07T_DC_H	Flow measurements not done due to unsafe conditions.
07_MADER	Flow measurements not done due to unsafe conditions.
9BD_GERRY	Flow measurements not done due to unsafe conditions.
9B_ADOLF	Flow measurements not done due to unsafe conditions.
10_GATE	Flow measurements not done due to unsafe conditions.
13_BELT	Flow measurements not done due to unsafe conditions.
13_SB_HILL	Flow measurements not done due to unsafe conditions.

The turbidity post calibration failed for meter 2692; because of previous issues with this meter, field crew collected grab samples during the event which were measured with meter 3760 the next day.

Turbidity at 4 sites (06_SOMIS, 06T_FC_BR, 05D_SANT_VCWPD, 05_CENTR) exceeded the capabilities of the field meter and samples were sent to lab for further analysis.

Event 26

Storm Summary

In mid-March, a significant storm system approached the Ventura County region and was identified as likely to provide adequate rainfall to produce runoff at a majority of sites targeted for wet weather sampling. The decision was made to initiate sampling, on March 20th 2011, to best target the peak flows associated with the storm. The predicted rainfall was well above significant levels, and crews were deployed at a time that allowed them to catch the height of the storm.

As predicted, total rainfall for this event were significant, with 24 hour rain totals of 2.65 inches in the upper watershed (VCWPD Rain Gauge 246A, Simi Valley Sanitation Plant, 03/20/11-03/21/11) to 3.43 inches in the lower area of the watershed (VCWPD Rain Gauge 505, Camarillo - CSUCI, 03/20/11-03/21/11). As a result of this precipitation, elevated flows were recorded throughout the watershed, with the Calleguas Creek mean discharge for March 20th to 21st being 4,940 cubic feet per second (cfs) at USGS Gauge 11106550 near Camarillo, CA, at CSUCI University Road crossing. Flows were significantly higher than typical base flow conditions in the Calleguas Watershed allowing for this event to be characterized as a wet weather event.

Stormwater Water Quality

Sampled – March 20, 2011

Table 34. Event 26 Stormwater Water Quality Sites Sampled

Site ID	Constituent				
	General Parameters	Toxicity	PCBs, OP, OC, Triazines and Pyrethroid Pesticides	Nutrients	Metals
01T_ODD2_DCH	X		X		X
02D_BROOM	X		X		X
03_UNIV	X	X	X	X	X
04_WOOD	X	X	X	X	X
04D_WOOD	X		X		X
04D_VENTURA	X		X		X
05_CENTR	X			X	
05D_SANT_VCWPD	X		X		X
06_SOMIS	X	X	X	X	
06T_FC_BR	X		X		
07_MADER	X			X	
07_HITCH	X	X	X	X	
07D_HITCH_LEVEE	X		X		
07D_CTP	X		X		
07T_DC_H	X		X`		
9A_HOWAR	X				
9BD_GERRY	X		X		X
9B_ADOLF	X	X	X	X	
9BD_ADOLF	X		X		X
10_GATE	X	X	X	X	
13_BELT	X	X	X		
13_SB_HILL	X		X		

Table 35. Event 26 Stormwater Water Quality Deviations from QAPP

Site ID	Deviation
01T_ODD2_DCH	Flow measurements not done due to unsafe conditions. Turbidity was performed by the lab because it was above 1000 NTU which exceeds the meter's capability.
02D_BROOM	Turbidity was performed by the lab because it was above 1000 NTU which exceeds the meter's capability.
03_UNIV	Flow measurements not done due to unsafe conditions. Turbidity was performed by the lab because it was above 1000 NTU which exceeds the meter's capability.
04_WOOD	Flow measurements not done due to unsafe conditions. Turbidity was performed by the lab because it was above 1000 NTU which exceeds the meter's capability.
04D_WOOD	Flow measurements not done due to unsafe conditions. Turbidity was performed by the lab because it was above 1000 NTU which exceeds the meter's capability.
04D_VENTURA	Flow measurements not done due to unsafe conditions. Intermediate container (TSS) used to fill sample bottles.
05_CENTR	Flow measurements not done due to unsafe conditions. Intermediate container (TSS) used to fill sample bottles. Turbidity was performed by the lab because it was above 1000 NTU which exceeds the meter's capability.
05D_SANT_VCWPD	Flow measurements not done due to unsafe conditions. Intermediate container (TSS Bottle) used to fill sample bottles. Turbidity was performed by the lab because it was above 1000 NTU which exceeds the meter's capability.
06_SOMIS	Flow measurements not done due to unsafe conditions. Turbidity was performed by the lab because it was above 1000 NTU which exceeds the meter's capability.
06T_FC_BR	Turbidity was performed by the lab because it was above 1000 NTU which exceeds the meter's capability.
07_MADER	Flow measurements not done due to unsafe conditions.
07_HITCH	Flow measurements not done due to unsafe conditions. Intermediate container (Clean Bucket) used to fill sample bottles. Turbidity was performed by the lab because it was above 1000 NTU which exceeds the meter's capability.
07D_HITCH_LEVEE	Flow measurements not done due to heavy flow out of outfall.
07D_CTP	Flow measurements not done due to unsafe conditions.
07T_DC_H	Flow measurements not done due to unsafe conditions. Intermediate container (TSS Bottle) used to fill sample bottles.
9A_HOWAR	Flow measurements not done due to unsafe conditions.
9B_ADOLF	Flow measurements not done due to unsafe conditions.
9BD_ADOLF	Flow measurements not done due obstructed flow. Intermediate container (TSS Bottle) used to fill sample bottles.
9B_BARON	Flow measurements not done due to unsafe conditions.
10_GATE	Flow measurements not done due to unsafe conditions.
13_BELT	Flow measurements not done due to unsafe conditions.
13_SB_HILL	Flow measurements not done due to unsafe conditions.

Turbidity at 10 sites (01T_ODD2_DCH, 02D_BROOM, 03_UNIV, 04_WOOD, 04D_WOOD, 05_CENTR, 05D_SANT_VCWPD, 06_SOMIS, 06T_FC_BR and 07_HITCH) exceeded the capabilities of the field meter and samples were sent to lab for further analysis.

Water quality meter 6920 used by team 2 failed pH post calibration. pH of 8.0 measured 8.24. pH 7.0 was measured at 7.14.

Event Summary Conclusions

In summary, all required monitoring events were completed as required in the QAPP at all sites where adequate flow was present to allow sampling. Deviations from the QAPP were limited to sample collection using secondary containers, toxicity testing species adjustments to account for high conductivity conditions, and access to one Mugu Lagoon site has been permanently changed from boat to walk-in to avoid any harassment of harbor seals. Fish tissue analysis was not performed at two of the sites (04_WOOD and 06_SOMIS) because crews were not able to catch fish needed for analysis.

Monitoring Event Summaries for Salts

As described above, monitoring for salts was conducted using a combination of continuous sensors and grab samples. This section summarizes the dates of operation of the sensors and the grab sample collection for salts. Salts monitoring is not yet included in the QAPP, but the monitoring that was conducted is consistent with the Salts Monitoring Plan submitted to the Regional Water Board in 2009.

Table 36. Dates of Operation of Continuous Sensors at Salt TMDL Compliance Points during January-June, 2011.

Sub watershed	Site ID[1]	Reach	Site Location	GPS Coordinates Lat	GPS Coordinates Long	Dates of Operation(1)
Pleasant Valley- Reaches 4 and 5	**04_WOOD**	4	Revolon Slough East Side Of Wood Road	34.1703	-119.0953	1/21/11-6/30/11
Pleasant Valley – Calleguas Creek Reach 3	**03_UNIV**	3	Calleguas Creek at University Drive	34.1793	-119.0394	1/19/11-3/20/11 4/27/11-6/30/11
Camarillo	**9A_HOWAR**	9A	Conejo Creek at Howard Road Bridge	34.1931	-119.0025	1/27/11-6/30/11
Conejo	**9B_BARON**	9B	Conejo Creek at Baron Brothers Nursery	34.2365	-118.9643	1/31/11-3/20/11 4/28/11-6/30/11
Simi	**07_HITCH-S**	7	Arroyo Simi above Hitch Blvd. (about 0.9 miles upstream of 07_Hitch from the QAPP)	34.2695	-118.9083	1/28/11-3/20/11 4/28/11-6/30/11

(1) Approved continuous data (5-min concentrations for chloride, sulfate, TDS, and boron, and 5-min discharge) are available within these date ranges. Provisional data for 04_WOOD and 03_UNIV for July-August, 2011 was used for the watershed salt balance calculation. The continuous monitoring equipment was damaged at 9B_BARON and 07_HITCH-S, and lost at 03_UNIV, during a large storm on March 20, 2011, and had to be repaired or replaced. Dates of operation reflect the periods when the continuous monitoring equipment was absent during the repairs at these sites.

Table 37. Salts TMDL Compliance Sites, Receiving Water and Land Use Sites, Grab Samples Only

Site	Event No. >>>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	Date Sampled>>>	1/31/11	2/1-2/11	2/15/11	2/28/11	3/14/11	3/20/11	3/30/11	4/14/11	4/28/11	5/4-5/11	5/18/11	5/31/11	6/14/11	6/30/11	7/18/11	7/28/11
Site	Constituents																
Compliance Sites																	
Revolon Slough – Wood Road (04_WOOD)	Boron	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Chloride, Sulfate, TDS	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Calleguas Creek – University Drive CSUCI (03_UNIV)	Boron		X				X				X						
	Chloride, Sulfate, TDS	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Conejo Creek at Howard Bridge (9A_HOWAR)	Boron		X				X				X						
	Chloride, Sulfate, TDS	X	X	X		X	X		X		X	X		X		X	
Conejo Creek at Baron Brothers Nursery (9B_BARON)	Boron		X				X				X						
	Chloride, Sulfate, TDS	X	X		X		X	X		X	X		X		X		X
Arroyo Simi above Hitch Boulevard (07_HITCH-S)	Boron	X	X		X		X	X		X	X		X		X		X
	Chloride, Sulfate, TDS	X	X		X		X	X		X	X		X		X		X
Land Use Sites																	
04D_VENTURA	Boron		X				X				X						
	Chloride, Sulfate, TDS	X	X	X		X	X		X		X	X		X		X	
04D_WOOD	Boron		X				X				X						
	Chloride, Sulfate, TDS	X	X	X		X	X		X		X	X		X		X	
07D_CTP	Boron		X				X				X						
	Chloride, Sulfate, TDS	X	X		X		X	X		X	X		X		X		X
07D_HITCH_LEVEE_2	Boron		X				X				X						
	Chloride, Sulfate, TDS	X	X		X		X	X		X	X		X		X		X
13_SB_HILL	Boron		X				X				X						
	Chloride, Sulfate, TDS	X	X		X		X	X		X	X		X		X		X
9BD_ADOLF	Boron		X				X				X						
	Chloride, Sulfate, TDS	X	X	X		X	X		X		X	X		X		X	
9BD_GERRY	Boron		X				X				X						
	Chloride, Sulfate, TDS	X	X		X		X	X		X	X		X		X		X

Toxicity Testing and Toxicity Identification Evaluations (TIE) Summary

TOXICITY TESTING PROCEDURES

For the CCWTMP, toxicity testing at various locations is conducted to meet TMDL requirements. The following is a brief summary of the procedures for the analytical methods used by the CCWTMP. Specific details concerning the SOPs followed by field crews collecting applicable samples and laboratory analysis are found in the QAPP.

For the CCWTMP toxicity measures, standard test species were utilized for toxicity testing. *Ceriodaphnia dubia* was used for the aquatic toxicity testing, *Hyalella azteca* for the bulk sediment and porewater toxicity testing. *Eohaustorius estuarius* was used for aquatic, bulk sediment, and porewater toxicity at sampling locations where salinity levels adversely affect the other test species. *Hyalella azteca* was used to conduct aquatic toxicity testing if sample salinity exceeded 1.5 part per thousand (PPT) but was less than 15 PPT. *Americamysis bahia* (formerly *Mysidopsis bahia*) was used for aquatic toxicity testing if sample salinity exceeded 15 PPT. All test species are standard USEPA test species and considered the most applicable for the various types of pollutants impacting the watershed, and all analytical testing procedures were conducted using standard USEPA methods.

The results of each toxicity test are used to trigger further investigations to determine the cause of observed laboratory toxicity if necessary per the QAPP. If testing indicates the presence of significant toxicity in the sample, toxicity identification evaluations (TIEs) procedures are initiated to investigate the cause of toxicity. For the purpose of triggering TIE procedures, significant toxicity is defined as at least 50% mortality. The 50% mortality threshold is consistent with the approach recommended in guidance published by USEPA for conducting TIEs (USEPA, 1996), which recommends a minimum threshold of 50% mortality because the probability of completing a successful TIE decreases rapidly for samples with less than this level of toxicity. Similar thresholds for the reburial of *Eohaustorius estuarius* after test treatments are utilized in the final decision to initiate a TIE effort. A component of the compliance requirement when significant toxicity is found is to initiate a targeted phase 1 TIE and test to determine the general class of constituent (*i.e.*, non-polar organics) causing toxicity. The targeted TIE focuses on classes of constituents anticipated to be observed in drainages dominated by urban and agricultural discharges and those previously observed to cause toxicity. Phase 2 TIEs may also be utilized to identify specific constituents causing toxicity if warranted. TIE methods will generally adhere to USEPA procedures documented in conducting TIEs (USEPA, 1991, 1992, 1993a-b). For samples exhibiting toxic effects consistent with carbofuran, diazinon, or chlorpyrifos, TIE procedures follow those documented in Bailey *et al*. (1996). To address toxicity of unknown causes in sediment, sediment porewater was extracted and tested for toxicity when significant toxicity, defined as at least 50% mortality,was observed in the bulk sediment sample. If the subsequent sediment porewater toxicity testing resulted in greater than 50% mortality, a Phase 1 TIE was initiated on the sediment porewater.

The decision to initiate TIE procedures on any sample, including samples exceeding the mortality threshold, as well as the focus and scope of TIE procedures, was determined by the Project Manager and toxicity laboratory staff. When deciding whether to initiate TIE procedures for a specific site and monitoring event, a number of factors were considered, including the level of toxicity, the magnitude of sample mortality and/or reburial levels as compared to lab control results, history of toxicity at the site, the species and endpoints exhibiting toxic effects, as well as the primary technical basis for triggering TIEs described above. A summary of the toxicity results and subsequent TIE actions, including the rationale for initiating TIE procedures for a specific sample are described below.

TOXICITY RESULTS SUMMARY

Toxicity samples were collected at the sites and frequencies outlined in Table 2 and Table 5. Monitored sites include the following:

- **Sediment Toxicity**
    - 04_WOOD
    - 02_PCH
    - 03_UNIV
    - 9A_HOWAR
- **Water Column Toxicity**
    - 04_WOOD
    - 03_UNIV
    - 9B_ADOLF
    - 06_SOMIS
    - 07_HITCH
    - 10_GATE
    - 13_BELT

During Event 22 toxicity samples for both sediment and water column were collected. All other dry weather water column toxicity testing was conducted during Events 23, 25, and 27, and wet weather stormwater samples were collected during Events 24 and 26. The following section describes the toxicity samples collected at each site for each event, the results of the tests, and a summary of applicable TIEs initiated per the requirements in the QAPP.

Event 22 Sediment Toxicity

Table 38. Sediment Toxicity Event 22 - *Hyalella azteca*

Site ID	Toxicity Results	
	Observed Significant Mortality	TIE Initiated
04_WOOD	**YES**	**YES**
02_PCH	NO	NO
03_UNIV	NO	NO
9A_HOWAR	NO	NO

Event 22 Water Column Toxicity

Table 39. Water Column Toxicity Event 22 - *Ceriodaphnia dubia and Hyalella azteca*

Site ID	Toxicity Results			
	Ceriodaphnia dubia		*Hyalella azteca*	
	Observed Significant Mortality	Observed Significant Reduced Reproduction	Observed Significant Mortality	TIE Initiated
04_WOOD			NO	NO
9B_ADOLF	NO	NO		NO
03_UNIV	NO	NO		NO
10_GATE	NO	NO		NO
06_SOMIS	NO	NO		NO
13_BELT	NO	NO		NO
07_HITCH	NO	**YES**		NO

Event 22 Toxicity and TIE Summary (Both Sediment and Water Column)

Significant toxicity was not found at the majority of the sites sampled during Event 22 for both sediment and water chemistry analysis. The following details summary outcomes for each analysis.

Sediment Toxicity Summary

- No significant survival reductions were observed in the test species *Hyalella azteca* for all sites except **04_WOOD**. For all other sites, no TIEs were initiated.
- For the **04_WOOD** site, both a Sediment Porewater Phase I TIE and a Bulk-Sediment Phase I TIE were performed. Both tests utilized *Hyalella azteca* for analysis. Results are as follows:
    - The following trends were observed for the bulk-sediment TIE:
        - Quartz addition and SIR-300 addition treatments in the bulk sediment test increased survival, but the observed reductions were likely due to sample dilution by the treatments themselves.
        - Amberlite addition also increased survival, indicating that non-polar organic compound(s) were contributing to sediment toxicity.

        - Zeolite manipulation did not significantly change sediment toxicity to *Hyallella azteca*

    - There was no significant toxicity observed in the porewater baseline test. PBO addition to the porewater identified that compounds which are detoxified by the Cytochrome-P450 system were present in the sediment porewater at sub-lethal concentrations. These types of compounds include carbamates and pyrethroids.

- Findings for both sediment TIE efforts at the **04_WOOD** site, while inconclusive in truly identifying a specific constituent causing toxicity, indicate that compounds similar to pyrethroids may potentially be contributing to toxicity at this site.

Water Column Toxicity Summary

- No significant reductions in survival were observed for *Ceriodaphnia dubia* tests at any of the sites but significant reductions in reproduction were observed at **07_HITCH**. The mortality level for this site was not significant and did not trigger the initiation of a TIE per the QAPP.

Event 23 Water Quality Toxicity

Table 40. Water Quality Toxicity Event 23 - *Ceriodaphnia dubia* and *Hyalella azteca*

Site ID	Toxicity Results			
	Ceriodaphnia dubia		*Hyalella azteca*	
	Observed Significant Mortality	Observed Significant Reduced Reproduction	Observed Significant Mortality	TIE Initiated
04_WOOD			NO	NO
9B_ADOLF	NO	NO		NO
03_UNIV	NO	NO		NO
10_GATE	NO	NO		NO
06_SOMIS	NO	NO		NO
07_HITCH	NO	NO		NO

Event 23 Toxicity and TIE Summary

- No significant reductions in survival were observed for *Ceriodaphnia dubia* and *Hyalella azteca* tests.
- No TIE efforts were initiated for any sites sampled during Event 23.

Event 24 Water Quality Toxicity

Table 41. Water Quality Toxicity Event 24 - *Ceriodaphnia dubia*

Site ID	Toxicity Results		
	Observed Significant Mortality	Observed Significant Reduced Reproduction	TIE Initiated
04_WOOD[1]	**YES**	**YES**	NO
9B_ADOLF	NO	NO	NO
03_UNIV	NO	NO	NO
07_HITCH	NO	NO	NO
10_GATE	NO	NO	NO
06_SOMIS	NO	**YES**	NO
13_BELT	NO	NO	NO

1. Field measures for specific conductance did not exceed the trigger warranting the use of *Hyalella azteca*.

Event 24 Toxicity and TIE Summary

- No significant survival reductions were observed in the test species *Ceriodaphnia dubia* for all sites except **04_WOOD**. A Phase I TIE was not initiated because continued TIE efforts at the 04_WOOD have been suspended for the quarterly sampling efforts. Continual toxicity has been identified at this site and stakeholders have chosen to invest resources into source control measures (in lieu of TIE efforts) to address the identified toxicity issue, primarily resulting from pesticides.
- Significant reduced reproduction was observed at **06_SOMIS** yet the mortality level was not significant and did not trigger the initiation of a TIE efforts per the QAPP.
- No TIE efforts were initiated for any sites sampled during Event 24.

Event 25 Water Quality Toxicity

Table 42. Water Quality Toxicity Event 25 - *Ceriodaphnia dubia* and *Hyalella azteca*

Site ID	Toxicity Results			
	Ceriodaphnia dubia		***Hyalella azteca***	
	Observed Significant Mortality	Observed Significant Reduced Reproduction	Observed Significant Mortality	TIE Initiated
04_WOOD			NO	NO
9B_ADOLF	NO	**YES**		NO
03_UNIV	NO	NO		NO
10_GATE	NO	NO		NO
06_SOMIS	NO	NO		NO
07_HITCH	NO	NO		NO

Event 25 Toxicity and TIE Summary

- No significant reductions in survival were observed for *Ceriodaphnia dubia* and *Hyalella azteca* tests.
- Significant reduced reproduction was observed at **9B_ADOLF** yet the mortality level was not significant and did not trigger the initiation of TIE efforts per the QAPP.
- No TIE efforts were initiated for any sites sampled during Event 25.

Event 26 Water Quality Toxicity

Table 43. Water Quality Toxicity Event 26 - *Ceriodaphnia dubia*

Site ID	Toxicity Results		
	Observed Significant Mortality	Observed Significant Reduced Reproduction	TIE Initiated
04_WOOD[1]	**YES**	**YES**	NO
9B_ADOLF	NO	NO	NO
03_UNIV	NO	NO	NO
07_HITCH	**YES**	**YES**	**YES**
10_GATE	NO	NO	NO
06_SOMIS	NO	**YES**	NO
13_BELT	NO	**YES**	NO

1. Field measures for specific conductance did not exceed the trigger warranting the use of *Hyalella azteca*.

Event 26 Toxicity and TIE Summary

- No significant reductions in survival were observed for *Ceriodaphnia dubia* for all sites except **04_WOOD** and **07_HITCH** where both survival and reproduction were significantly reduced.
- Significant reduction in reproduction was also observed at **06_SOMIS** and **13_BELT** but the mortality level was not significant and did not trigger the initiation of TIE efforts at these sites per the QAPP.
- A Phase I TIE was not initiated for **04_WOOD** because continued TIE efforts at this site have been suspended for the quarterly sampling efforts. Continual toxicity has been identified at this site and stakeholders have chosen to invest resources into source control measures (in lieu of TIE efforts) to address the identified toxicity issue, primarily resulting from pesticides.
- No TIEs were triggered for the majority of the sites with the exception of **07_HITCH**, where a TIE was initiated with the following results:
    - Initial results indicated that non-polar organic compounds were responsible for the observed toxicity.
    - Further testing indicated that compounds similar to OP-Pesticides were contributing to toxicity, yet final results were inconclusive to the specific compounds that may be contributing to or causing toxicity (including the possibility that other compounds including Pyrethroids could be contributing to toxicity).

Event 27 Water Quality Toxicity

Table 44. Water Quality Toxicity Event 27 - *Ceriodaphnia dubia and Hyalella azteca*

Site ID	Toxicity Results			
	Ceriodaphnia dubia		***Hyalella azteca***	
	Observed Significant Mortality	Observed Significant Reduced Reproduction	Observed Significant Mortality	TIE Initiated
04_WOOD			NO	NO
9B_ADOLF	NO	**YES**		NO
03_UNIV	NO	NO		NO
06_SOMIS	NO	NO		NO
13_BELT	NO	NO		NO
07_HITCH	NO	**YES**		NO

Event 27 Toxicity and TIE Summary

- No significant reductions in survival were observed for *Ceriodaphnia dubia* and *Hyalella azteca* tests.
- Significant reduced reproduction was observed at **9B_ADOLF** and **07_HITCH** yet the mortality levels were not significant and did not trigger the initiation of TIE efforts at these sites per the QAPP.
- No TIE efforts were initiated for any sites sampled during Event 27.

Toxicity Review

The following is a summary of the toxicity results to date for water column and freshwater sediment sampling. Mugu Lagoon sediment toxicity is not included since this sampling only occurs once every three years and therefore only one event has been reported.

Table 45. Water Column Toxicity For All CCWTMP Monitoring Events and Sites (Significant Mortality Toxicity Denoted by "X")

Events / Site ID	CCWMTP Year 1						CCWMTP Year 2						CCWMTP Year 3					
Site ID	**1**	**2**	**3**	**4**	**5**	**6**	**9**	**12**	**14**	**16**	**17**	**20**	**22**	**23**	**24**	**25**	**26**	**27**
04_WOOD	X	X	X	X	X			X	X	X					X		X	
9B_ADOLF			X															
03_UNIV			X						X	X		X						
10_GATE																		
06_SOMIS									X									
13_BELT																		
07_HITCH			X		X					X							X	

Sites shown in **bold** are also toxicity investigation monitoring sites.

Table 46. Sediment Toxicity For All CCWTMP Freshwater Monitoring Events and Sites (Significant Mortality Toxicity Denoted by "X")

Events / Site ID	CCWMTP Year 1	CCWMTP Year 2	CCWMTP Year 3
Site ID	**1**	**9**	**22**
04_WOOD	X	X	X
02_PCH			
03_UNIV			
9A_HOWAR			

Sites shown in **bold** are also toxicity investigation monitoring sites.

Table 45 displays significant water column mortality test results for three years of CCWTMP events, including both dry and storm (highlighted in grey) weather events. Significant mortality found in freshwater sediments is shown in Table 46. As previously mentioned, toxicity has continually been identified at the 04_WOOD site, and responsible parties have chosen to invest resources into source control efforts to address sources potentially contributing to the toxicity issue. This is being accomplished through the implementation of the Agricultural Water Quality Management Plan (AWQMP) developed by the Ventura County Agricultural Irrigated Lands Group (VCAILG) as part of the Conditional Waiver for Irrigated Agricultural Lands.

During dry weather water column sampling, only one monitoring site other than 04_WOOD has been identified as causing significant mortality (03_UNIV during event 20). Toxicity has been identified during at least one wet weather monitoring event at all sites, except for 13_BELT, during the three year monitoring period.

Both water column and sediment TIE efforts have been initiated as described previously, and outcomes of these efforts have had limited success in identifying the true cause of toxicity. While not identifying the specific constituents causing toxicity, the TIEs have identified:

- Most initial TIE analysis has identified non-polar organic compounds as contributing to the observed toxicity.
- Compounds similar to organophosphorus (OP) pesticides are continually being identified as possible contributors to the observed toxicity.
- Pyrethroids may also be a continually contributing to the observed toxicity conditions.

The results of future CCWTMP toxicity testing will continue to assist in the identification of when and where conditions are toxic in the Calleguas Creek watershed, and help responsible parties better target areas in the watershed that show continual toxicity and focus limited resources to address the problems. It is important to note that instances of observed mortality in water samples have decreased since the beginning of the CCWTMP. There were nine instances of significant mortality in water column samples during the first year of monitoring, followed by eight occurrences in the second year, and only three in the third year. Sediment toxicity has only been found at one monitoring site.

As per the CCWTMP QAPP, additional investigation monitoring took place at 10_GATE and 13_BELT for water column toxicity and at 02_PCH and 9A_HOWAR for sediment toxicity. As shown in the tables above, significant mortality did not occur at these sites during any of the investigation monitoring. Therefore, the additional effort to pursue this toxicity investigation is no longer warranted since significant mortality that would enable TIEs to determine the cause of toxicity has not been observed during the three years of monitoring.

Data Summary Tables

The following series of tables summarize both field and analytical measures per site. This section is intended as a general summary of the sampling results for the required reported constituents as described previously in this report. A summary dealing with specific compliance requirements and comparisons follows this section. The Compliance and Analysis Discussion includes summary tables of these findings compared to applicable waste load and load allocations and numeric targets for the TMDLs.

When applicable, numerous events are included for comparison in the following tables. As mentioned previously, the constituents and frequency of monitoring per site may vary during each event.

The summary tables are organized in the following order:

- Sediment Sampling Results
  - Freshwater Sediment
- Tissue Sampling Results
  - Freshwater Tissue
- Water Chemistry Results
  - Mugu Lagoon
  - Freshwater
  - POTW

Acronyms are utilized throughout the tables and the following list can be used as a reference during the review:

DNQ Detected Not Quantified

EST Estimated Result

ND Not Detected

NM Not Measured

NR Not Required

NS Not Sampled

FRESHWATER SEDIMENT SAMPLING DATA

Table 47. Arroyo Simi – Hitch Boulevard (07_HITCH)

Constituent	Units	Event 22 8/18/2010		
General Water Quality Constituents				
pH		NR		
Temperature	°C	22		
Dissolved Oxygen	mg/L	8.16		
Electrical Conductivity	µS/cm	1865		
Grain Size Analysis				
Clay <0.0039 mm	%	0		
Silt 0.0039 to <0.0625 mm	%	0		
Fine <0.0625 mm	%	0		
Sand 0.0625 to <2.0 mm	%	100.00		
Granule 2.0 to <4.0 mm	%	0		
General Sediment Quality Constituents		**Sediment**	**63µm to 2mm**	**<63 µm**
Ammonia-N (dry weight)	mg/kg dw	DNQ	NR	NR
Percent Moisture	%	22.7	87.2	21.4
Total Organic Carbon (TOC)	%	DNQ	NR	NR
Organic Constituents in Sediment				
OC Pesticides		**Sediment**	**63µm to 2mm**	**<63 µm**
Aldrin	ng/g dw	ND	ND	ND
Alpha-BHC (HCH)	ng/g dw	ND	ND	ND
Beta-BHC (HCH)	ng/g dw	ND	ND	ND
Gamma-BHC (HCH)	ng/g dw	ND	ND	ND
Delta-BHC (HCH)	ng/g dw	ND	ND	ND
Chlordane-alpha	ng/g dw	ND	ND	ND
Chlordane-gamma	ng/g dw	ND	ND	ND
Total Chlordane	ng/g dw	ND	ND	ND
2,4'-DDD	ng/g dw	ND	ND	ND
2,4'-DDE	ng/g dw	ND	ND	ND
2,4'-DDT	ng/g dw	ND	ND	ND
4,4'-DDD	ng/g dw	ND	ND	ND
4,4'-DDE	ng/g dw	DNQ	DNQ	ND
4,4'-DDT	ng/g dw	ND	ND	ND
Dieldrin	ng/g dw	ND	ND	ND
Endosulfan I	ng/g dw	ND	ND	ND
Endosulfan II	ng/g dw	ND	ND	ND

Table 47. Arroyo Simi – Hitch Boulevard (07_HITCH) continued

Constituent	Units		Event 22 08/18/2010	
OC Pesticides		**Sediment**	**63µm to 2mm**	**<63 µm**
Endosulfan Sulfate	ng/g dw	ND	ND	ND
Endrin	ng/g dw	ND	ND	ND
Endrin Aldehyde	ng/g dw	ND	ND	ND
Endrin Ketone	ng/g dw	ND	ND	ND
Toxaphene	ng/g dw	ND	ND	ND
PCBs		**Sediment**	**63µm to 2mm**	**<63 µm**
Aroclor 1016	ng/g dw	ND	ND	ND
Aroclor 1221	ng/g dw	ND	ND	ND
Aroclor 1232	ng/g dw	ND	ND	ND
Aroclor 1242	ng/g dw	ND	ND	ND
Aroclor 1248	ng/g dw	ND	ND	ND
Aroclor 1254	ng/g dw	ND	ND	ND
Aroclor 1260	ng/g dw	ND	ND	ND
OP Pesticides		**Sediment**	**63µm to 2mm**	**<63 µm**
Chlorpyrifos	ng/g dw	ND	ND	ND
Diazinon	ng/g dw	ND	ND	ND
Malathion	ng/g dw	ND	ND	ND
Pyrethroid Pesticides		**Sediment**	**63µm to 2mm**	**<63 µm**
Bifenthrin	ng/g dw	ND	DNQ	ND
Cyfluthrin	ng/g dw	ND	ND	ND
Cypermethrin	ng/g dw	ND	ND	ND
Deltamethrin	ng/g dw	ND	ND	ND
Permethrin	ng/g dw	ND	ND	ND

Table 48. Conejo Creek – Howard Road Bridge (9A_HOWAR)

Constituent	Units	Event 22 08/19/2010		
General Water Quality Constituents				
pH		8.33		
Temperature	°C	26.4		
Dissolved Oxygen	mg/L	10.3		
Electrical Conductivity	µS/cm	1390		
Grain Size Analysis				
Clay <0.0039 mm	%	3.89		
Silt 0.0039 to <0.0625 mm	%	25.07		
Fine <0.0625 mm	%	21.18		
Sand 0.0625 to <2.0 mm	%	74.93		
Granule 2.0 to <4.0 mm	%	0.00		
General Sediment Quality Constituents		**Sediment**	**63µm to 2mm**	**<63 µm**
Ammonia-N (dry weight)	mg/kg dw	DNQ	NR	NR
Percent Moisture	%	22.7	59.4	19.7
Total Organic Carbon (TOC)	%	26	NR	NR
Organic Constituents in Sediment				
OC Pesticides		**Sediment**	**63µm to 2mm**	**<63 µm**
Aldrin	ng/g dw	ND	ND	ND
Alpha-BHC (HCH)	ng/g dw	ND	ND	ND
Beta-BHC (HCH)	ng/g dw	ND	ND	ND
Gamma-BHC (HCH)	ng/g dw	ND	ND	ND
Delta-BHC (HCH)	ng/g dw	ND	ND	ND
Chlordane-alpha	ng/g dw	ND	ND	ND
Chlordane-gamma	ng/g dw	ND	ND	ND
Total Chlordane	ng/g dw	ND	ND	ND
2,4'-DDD	ng/g dw	ND	ND	ND
2,4'-DDE	ng/g dw	ND	ND	ND
2,4'-DDT	ng/g dw	ND	ND	ND
4,4'-DDD	ng/g dw	ND	DNQ	ND
4,4'-DDE	ng/g dw	DNQ	31.9	DNQ
4,4'-DDT	ng/g dw	ND	ND	ND
Dieldrin	ng/g dw	ND	ND	ND
Endosulfan I	ng/g dw	ND	ND	ND
Endosulfan II	ng/g dw	ND	ND	ND
Endosulfan Sulfate	ng/g dw	ND	ND	ND
Endrin	ng/g dw	ND	ND	ND

Table 48. Conejo Creek – Howard Road Bridge (9A_HOWAR) continued

Constituent	Units		Event 22 08/19/2010	
OC Pesticides		**Sediment**	**63µm to 2mm**	**<63 µm**
Endrin Aldehyde	ng/g dw	ND	ND	ND
Endrin Ketone	ng/g dw	ND	ND	ND
Toxaphene	ng/g dw	ND	ND	ND
PCBs		**Sediment**	**63µm to 2mm**	**<63 µm**
Aroclor 1016	ng/g dw	ND	ND	ND
Aroclor 1221	ng/g dw	ND	ND	ND
Aroclor 1232	ng/g dw	ND	ND	ND
Aroclor 1242	ng/g dw	ND	ND	ND
Aroclor 1248	ng/g dw	ND	ND	ND
Aroclor 1254	ng/g dw	ND	ND	ND
Aroclor 1260	ng/g dw	ND	ND	ND
OP Pesticides		**Sediment**	**63µm to 2mm**	**<63 µm**
Chlorpyrifos	ng/g dw	ND	ND	ND
Diazinon	ng/g dw	ND	ND	ND
Malathion	ng/g dw	ND	ND	ND
Pyrethroid Pesticides		**Sediment**	**63µm to 2mm**	**<63 µm**
Bifenthrin	ng/g dw	DNQ	16.7	ND
Cyfluthrin	ng/g dw	ND	ND	ND
Cypermethrin	ng/g dw	ND	ND	ND
Deltamethrin	ng/g dw	ND	ND	ND
Permethrin	ng/g dw	ND	ND	ND

Table 49. Conejo Creek – Adolfo Road (9B_ADOLF)

Constituent	Units	Event 22 08/18/2010		
General Water Quality Constituents				
pH		NR		
Temperature	°C	24.4		
Dissolved Oxygen	mg/L	12.25		
Electrical Conductivity	µS/cm	1251		
Grain Size Analysis				
Clay <0.0039 mm	%	2.45		
Silt 0.0039 to <0.0625 mm	%	18.78		
Fine <0.0625 mm	%	16.32		
Sand 0.0625 to <2.0 mm	%	81.23		
Granule 2.0 to <4.0 mm	%	0.00		
General Sediment Quality Constituents		**Sediment**	**63µm to 2mm**	**<63 µm**
Ammonia-N (dry weight)	mg/kg dw	2.26	NR	NR
Percent Moisture	%	33	31	90
Total Organic Carbon (TOC)	%	0.9	NR	NR
Organic Constituents in Sediment				
OC Pesticides		**Sediment**	**63µm to 2mm**	**<63 µm**
Aldrin	ng/g dw	ND	ND	ND
Alpha-BHC (HCH)	ng/g dw	ND	ND	ND
Beta-BHC (HCH)	ng/g dw	ND	ND	ND
Gamma-BHC (HCH)	ng/g dw	ND	ND	ND
Delta-BHC (HCH)	ng/g dw	ND	ND	ND
Chlordane-alpha	ng/g dw	ND	ND	ND
Chlordane-gamma	ng/g dw	ND	ND	ND
Total Chlordane	ng/g dw	ND	ND	ND
2,4'-DDD	ng/g dw	ND	ND	ND
2,4'-DDE	ng/g dw	ND	ND	ND
2,4'-DDT	ng/g dw	ND	ND	ND
4,4'-DDD	ng/g dw	ND	ND	ND
4,4'-DDE	ng/g dw	DNQ	13.6	DNQ
4,4'-DDT	ng/g dw	ND	ND	ND
Dieldrin	ng/g dw	ND	ND	ND
Endosulfan I	ng/g dw	ND	ND	ND
Endosulfan II	ng/g dw	ND	ND	ND
Endosulfan Sulfate	ng/g dw	ND	ND	ND
Endrin	ng/g dw	ND	ND	ND

Table 49. Conejo Creek – Adolfo Road (9B_ADOLF) continued

Constituent	Units	Event 22 08/18/2010		
OC Pesticides		**Sediment**	**63µm to 2mm**	**<63 µm**
Endrin Aldehyde	ng/g dw	ND	ND	ND
Endrin Ketone	ng/g dw	ND	ND	ND
Toxaphene	ng/g dw	ND	DNQ	ND
PCBs		**Sediment**	**63µm to 2mm**	**<63 µm**
Aroclor 1016	ng/g dw	ND	ND	ND
Aroclor 1221	ng/g dw	ND	ND	ND
Aroclor 1232	ng/g dw	ND	ND	ND
Aroclor 1242	ng/g dw	ND	ND	ND
Aroclor 1248	ng/g dw	ND	ND	ND
Aroclor 1254	ng/g dw	ND	ND	ND
Aroclor 1260	ng/g dw	ND	ND	ND
OP Pesticides		**Sediment**	**63µm to 2mm**	**<63 µm**
Chlorpyrifos	ng/g dw	ND	ND	ND
Diazinon	ng/g dw	ND	ND	ND
Malathion	ng/g dw	ND	ND	ND
Pyrethroid Pesticides		**Sediment**	**63µm to 2mm**	**<63 µm**
Bifenthrin	ng/g dw	DNQ	22.7	ND
Cyfluthrin	ng/g dw	DNQ	ND	ND
Cypermethrin	ng/g dw	DNQ	ND	ND
Deltamethrin	ng/g dw	ND	ND	ND
Permethrin	ng/g dw	ND	ND	ND

Table 50. Arroyo Las Posas – Somis Road (06_SOMIS)

Constituent	Units	Event 22 08/18/2010		
General Water Quality Constituents				
pH		NR		
Temperature	°C	22.1		
Dissolved Oxygen	mg/L	8.48		
Electrical Conductivity	µS/cm	1906		
Grain Size Analysis				
Clay <0.0039 mm	%	4.04		
Silt 0.0039 to <0.0625 mm	%	23.45		
Fine <0.0625 mm	%	19.41		
Sand 0.0625 to <2.0 mm	%	76.55		
Granule 2.0 to <4.0 mm	%	0.00		
General Sediment Quality Constituents		**Sediment**	**63µm to 2mm**	**<63 µm**
Ammonia-N (dry weight)	mg/kg dw	1.71	NR	NR
Percent Moisture	%	23.8	63.2	20.6
Total Organic Carbon (TOC)	%	0.58	NR	NR
Organic Constituents in Sediment				
OC Pesticides		**Sediment**	**63µm to 2mm**	**<63 µm**
Aldrin	ng/g dw	ND	ND	ND
Alpha-BHC (HCH)	ng/g dw	ND	ND	ND
Beta-BHC (HCH)	ng/g dw	ND	ND	ND
Gamma-BHC (HCH)	ng/g dw	ND	ND	ND
Delta-BHC (HCH)	ng/g dw	ND	ND	ND
Chlordane-alpha	ng/g dw	ND	ND	ND
Chlordane-gamma	ng/g dw	ND	ND	ND
Total Chlordane	ng/g dw	ND	ND	ND
2,4'-DDD	ng/g dw	ND	DNQ	ND
2,4'-DDE	ng/g dw	ND	DNQ	ND
2,4'-DDT	ng/g dw	ND	ND	ND
4,4'-DDD	ng/g dw	ND	40.9	ND
4,4'-DDE	ng/g dw	DNQ	169.0	ND
4,4'-DDT	ng/g dw	ND	ND	DNQ
Dieldrin	ng/g dw	ND	ND	ND
Endosulfan I	ng/g dw	ND	ND	ND
Endosulfan II	ng/g dw	ND	ND	ND
Endosulfan Sulfate	ng/g dw	ND	ND	ND
Endrin	ng/g dw	ND	ND	ND

Table 50. Arroyo Las Posas – Somis Road (06_SOMIS) continued

Constituent	Units	Event 22 08/18/2010		
OC Pesticides		**Sediment**	**63µm to 2mm**	**<63 µm**
Endrin Aldehyde	ng/g dw	ND	ND	ND
Endrin Ketone	ng/g dw	ND	ND	ND
Toxaphene	ng/g dw	ND	DNQ	ND
PCBs		**Sediment**	**63µm to 2mm**	**<63 µm**
Aroclor 1016	ng/g dw	ND	ND	ND
Aroclor 1221	ng/g dw	ND	ND	ND
Aroclor 1232	ng/g dw	ND	ND	ND
Aroclor 1242	ng/g dw	ND	ND	ND
Aroclor 1248	ng/g dw	ND	ND	ND
Aroclor 1254	ng/g dw	ND	ND	ND
Aroclor 1260	ng/g dw	ND	ND	ND
OP Pesticides		**Sediment**	**63µm to 2mm**	**<63 µm**
Chlorpyrifos	ng/g dw	ND	ND	ND
Diazinon	ng/g dw	ND	ND	ND
Malathion	ng/g dw	ND	ND	ND
Pyrethroid Pesticides		**Sediment**	**63µm to 2mm**	**<63 µm**
Bifenthrin	ng/g dw	DNQ	18.3	ND
Cyfluthrin	ng/g dw	ND	ND	ND
Cypermethrin	ng/g dw	ND	DNQ	ND
Deltamethrin	ng/g dw	ND	ND	ND
Permethrin	ng/g dw	ND	ND	ND

Table 51. Calleguas Creek – University Drive CSUCI (03_UNIV)

Constituent	Units	Event 22 08/18/2010		
General Water Quality Constituents				
pH		NR		
Temperature	°C	27.47		
Dissolved Oxygen	mg/L	7.72		
Electrical Conductivity	µS/cm	760		
Grain Size Analysis				
Clay <0.0039 mm	%	0.00		
Silt 0.0039 to <0.0625 mm	%	0.00		
Fine <0.0625 mm	%	0.00		
Sand 0.0625 to <2.0 mm	%	100.00		
Granule 2.0 to <4.0 mm	%	0.00		
General Sediment Quality Constituents		**Sediment**	**63µm to 2mm**	**<63 µm**
Ammonia-N (dry weight)	mg/kg dw	ND	NR	NR
Percent Moisture	%	20.4	93.85	23.6
Total Organic Carbon (TOC)	%	DNQ	NR	NR
Organic Constituents in Sediment				
OC Pesticides		**Sediment**	**63µm to 2mm**	**<63 µm**
Aldrin	ng/g dw	ND	ND	ND
Alpha-BHC (HCH)	ng/g dw	ND	ND	ND
Beta-BHC (HCH)	ng/g dw	ND	ND	ND
Gamma-BHC (HCH)	ng/g dw	ND	ND	ND
Delta-BHC (HCH)	ng/g dw	ND	ND	ND
Chlordane-alpha	ng/g dw	ND	ND	ND
Chlordane-gamma	ng/g dw	ND	ND	ND
Total Chlordane	ng/g dw	ND	ND	ND
2,4'-DDD	ng/g dw	ND	ND	ND
2,4'-DDE	ng/g dw	ND	ND	ND
2,4'-DDT	ng/g dw	ND	ND	ND
4,4'-DDD	ng/g dw	ND	ND	ND
4,4'-DDE	ng/g dw	ND	DNQ	ND
4,4'-DDT	ng/g dw	ND	ND	ND
Dieldrin	ng/g dw	ND	ND	ND
Endosulfan I	ng/g dw	ND	ND	ND
Endosulfan II	ng/g dw	ND	ND	ND
Endosulfan Sulfate	ng/g dw	ND	ND	ND
Endrin	ng/g dw	ND	ND	ND

Table 51. Calleguas Creek – University Drive CSUCI (03_UNIV) continued

Constituent	Units	Event 22 08/18/2010		
OC Pesticides		**Sediment**	**63µm to 2mm**	**<63 µm**
Endrin Aldehyde	ng/g dw	ND	ND	ND
Endrin Ketone	ng/g dw	ND	ND	ND
Toxaphene	ng/g dw	ND	ND	ND
PCBs		**Sediment**	**63µm to 2mm**	**<63 µm**
Aroclor 1016	ng/g dw	ND	ND	ND
Aroclor 1221	ng/g dw	ND	ND	ND
Aroclor 1232	ng/g dw	ND	ND	ND
Aroclor 1242	ng/g dw	ND	ND	ND
Aroclor 1248	ng/g dw	ND	ND	ND
Aroclor 1254	ng/g dw	ND	ND	ND
Aroclor 1260	ng/g dw	ND	ND	ND
OP Pesticides		**Sediment**	**63µm to 2mm**	**<63 µm**
Chlorpyrifos	ng/g dw	ND	ND	ND
Diazinon	ng/g dw	ND	ND	ND
Malathion	ng/g dw	ND	ND	ND
Pyrethroid Pesticides		**Sediment**	**63µm to 2mm**	**<63 µm**
Bifenthrin	ng/g dw	ND	ND	ND
Cyfluthrin	ng/g dw	ND	ND	ND
Cypermethrin	ng/g dw	ND	ND	ND
Deltamethrin	ng/g dw	ND	ND	ND
Permethrin	ng/g dw	ND	ND	ND

Table 52. Revolon Slough – Wood Road (04_WOOD)

Constituent	Units	Event 22 08/19/2010		
General Water Quality Constituents				
pH		7.91		
Temperature	°C	21.5		
Dissolved Oxygen	mg/L	10.92		
Electrical Conductivity	µS/cm	4420		
Grain Size Analysis				
Clay <0.0039 mm	%	2.50		
Silt 0.0039 to <0.0625 mm	%	14.72		
Fine <0.0625 mm	%	12.22		
Sand 0.0625 to <2.0 mm	%	85.28		
Granule 2.0 to <4.0 mm	%	0.00		
General Sediment Quality Constituents		**Sediment**	**63µm to 2mm**	**<63 µm**
Ammonia-N (dry weight)	mg/kg dw	4.97	NR	NR
Percent Moisture	%	31.7	46.5	29.6
Total Organic Carbon (TOC)	%	0.28	NR	NR
Organic Constituents in Sediment				
OC Pesticides		**Sediment**	**63µm to 2mm**	**<63 µm**
Aldrin	ng/g dw	ND	ND	ND
Alpha-BHC (HCH)	ng/g dw	ND	ND	ND
Beta-BHC (HCH)	ng/g dw	ND	ND	ND
Gamma-BHC (HCH)	ng/g dw	ND	ND	ND
Delta-BHC (HCH)	ng/g dw	ND	ND	ND
Chlordane-alpha	ng/g dw	ND	DNQ	ND
Chlordane-gamma	ng/g dw	DNQ	DNQ	ND
Total Chlordane	ng/g dw	DNQ	DNQ	ND
2,4'-DDD	ng/g dw	DNQ	DNQ	DNQ
2,4'-DDE	ng/g dw	DNQ	DNQ	ND
2,4'-DDT	ng/g dw	ND	ND	ND
4,4'-DDD	ng/g dw	13.9	16.8	8.47
4,4'-DDE	ng/g dw	70.4	161	50.9
4,4'-DDT	ng/g dw	ND	ND	ND
Dieldrin	ng/g dw	ND	ND	ND
Endosulfan I	ng/g dw	ND	ND	ND
Endosulfan II	ng/g dw	ND	ND	ND
Endosulfan Sulfate	ng/g dw	ND	ND	ND
Endrin	ng/g dw	ND	ND	ND

Table 52. Revolon Slough – Wood Road (04_WOOD) continued

Constituent	Units	Event 22 08/19/2010		
OC Pesticides		**Sediment**	**63µm to 2mm**	**<63 µm**
Endrin Aldehyde	ng/g dw	ND	ND	ND
Endrin Ketone	ng/g dw	ND	ND	ND
Toxaphene	ng/g dw	75.2	DNQ	DNQ
PCBs		**Sediment**	**63µm to 2mm**	**<63 µm**
Aroclor 1016	ng/g dw	ND	ND	ND
Aroclor 1221	ng/g dw	ND	ND	ND
Aroclor 1232	ng/g dw	ND	ND	ND
Aroclor 1242	ng/g dw	ND	ND	ND
Aroclor 1248	ng/g dw	ND	ND	ND
Aroclor 1254	ng/g dw	ND	ND	ND
Aroclor 1260	ng/g dw	ND	ND	ND
OP Pesticides		**Sediment**	**63µm to 2mm**	**<63 µm**
Chlorpyrifos	ng/g dw	ND	DNQ	ND
Diazinon	ng/g dw	ND	ND	ND
Malathion	ng/g dw	ND	ND	ND
Pyrethroid Pesticides		**Sediment**	**63µm to 2mm**	**<63 µm**
Bifenthrin	ng/g dw	6.68	26.6	4.46
Cyfluthrin	ng/g dw	ND	ND	ND
Cypermethrin	ng/g dw	DNQ	DNQ	ND
Deltamethrin	ng/g dw	ND	ND	ND
Permethrin	ng/g dw	ND	ND	ND

Table 53. Calleguas Creek – Hwy 1 Bridge (02_PCH)

Constituent	Units		Event 22 8/19/2010	
General Water Quality Constituents				
pH			8.03	
Temperature	°C		21.85	
Dissolved Oxygen	mg/L		8.9	
Electrical Conductivity	µS/cm		2880	
Grain Size Analysis				
Clay <0.0039 mm	%		3.42	
Silt 0.0039 to <0.0625 mm	%		46.32	
Fine <0.0625 mm	%		42.90	
Sand 0.0625 to <2.0 mm	%		53.68	
Granule 2.0 to <4.0 mm	%		0.00	
General Sediment Quality Constituents		**Sediment**	**Sediment**	**Sediment**
Ammonia-N (dry weight)	mg/kg dw	19.9	NR	NR
Percent Moisture	%	25.8	77.4	17.9
Total Organic Carbon (TOC)	%	1.05	NR	NR
Organic Constituents in Sediment				
OC Pesticides		**Sediment**	**Sediment**	**Sediment**
Aldrin	ng/g dw	ND	ND	ND
Alpha-BHC (HCH)	ng/g dw	ND	ND	ND
Beta-BHC (HCH)	ng/g dw	ND	ND	ND
Gamma-BHC (HCH)	ng/g dw	ND	ND	ND
Delta-BHC (HCH)	ng/g dw	ND	ND	ND
Chlordane-alpha	ng/g dw	ND	ND	ND
Chlordane-gamma	ng/g dw	ND	ND	ND
Total Chlordane	ng/g dw	ND	ND	ND
2,4'-DDD	ng/g dw	ND	ND	ND
2,4'-DDE	ng/g dw	ND	ND	ND
2,4'-DDT	ng/g dw	ND	ND	ND
4,4'-DDD	ng/g dw	DNQ	ND	ND
4,4'-DDE	ng/g dw	6.63	79.8	DNQ
4,4'-DDT	ng/g dw	ND	ND	ND
Dieldrin	ng/g dw	ND	ND	ND
Endosulfan I	ng/g dw	ND	ND	ND
Endosulfan II	ng/g dw	ND	ND	ND
Endosulfan Sulfate	ng/g dw	ND	ND	ND
Endrin	ng/g dw	ND	ND	ND

Table 53. Calleguas Creek – Hwy 1 Bridge (02_PCH) continued

Constituent	Units		Event 22 08/19/2010	
OC Pesticides		**Sediment**	**63µm to 2mm**	**<63 µm**
Endrin Aldehyde	ng/g dw	ND	ND	ND
Endrin Ketone	ng/g dw	ND	ND	ND
Toxaphene	ng/g dw	ND	ND	ND
PCBs		**Sediment**	**63µm to 2mm**	**<63 µm**
Aroclor 1016	ng/g dw	ND	ND	ND
Aroclor 1221	ng/g dw	ND	ND	ND
Aroclor 1232	ng/g dw	ND	ND	ND
Aroclor 1242	ng/g dw	ND	ND	ND
Aroclor 1248	ng/g dw	ND	ND	ND
Aroclor 1254	ng/g dw	ND	ND	ND
Aroclor 1260	ng/g dw	ND	ND	ND
OP Pesticides		**Sediment**	**63µm to 2mm**	**<63 µm**
Chlorpyrifos	ng/g dw	ND	ND	ND
Diazinon	ng/g dw	ND	ND	ND
Malathion	ng/g dw	ND	ND	ND
Pyrethroid Pesticides		**Sediment**	**63µm to 2mm**	**<63 µm**
Bifenthrin	ng/g dw	DNQ	52.5	ND
Cyfluthrin	ng/g dw	ND	15	ND
Cypermethrin	ng/g dw	ND	12.8	ND
Deltamethrin	ng/g dw	ND	ND	ND
Permethrin	ng/g dw	ND	ND	ND

FRESHWATER TISSUE DATA

Table 54. Calleguas Creek – University Drive CSUCI (03_UNIV)

Sample Date: 9/3/2010		**Arroyo Chub (*Gila orcuttii*)**		**Common Carp (*Cyprinus carpio)***
Constituent	**Units**	***G. orcuttii* 0-85 mm**	***G. orcuttii* 86-112 mm**	***C. carpio***
Lipids in Fish Tissue				
Percent Lipids	%	4.29	6.96	4.34
Organic Constituents in Fish Tissue				
OC Pesticides				
Aldrin	ng/g ww	ND	ND	ND
Alpha-BHC (HCH)	ng/g ww	ND	ND	ND
Beta-BHC (HCH)	ng/g ww	ND	ND	ND
Gamma-BHC (HCH)	ng/g ww	ND	ND	ND
Delta-BHC (HCH)	ng/g ww	ND	ND	ND
Chlordane-alpha	ng/g ww	DNQ	DNQ	DNQ
Chlordane-gamma	ng/g ww	DNQ	DNQ	DNQ
2,4'-DDD	ng/g ww	ND	DNQ	DNQ
2,4'-DDE	ng/g ww	DNQ	12.1	ND
2,4'-DDT	ng/g ww	DNQ	30	DNQ
4,4'-DDD	ng/g ww	DNQ	43.5	21.2
4,4'-DDE	ng/g ww	167	1300	247
4,4'-DDT	ng/g ww	16.2	19.9	32.4
Dieldrin	ng/g ww	ND	ND	ND
Endosulfan I	ng/g ww	ND	ND	ND
Endosulfan II	ng/g ww	ND	ND	ND
Endosulfan Sulfate	ng/g ww	ND	ND	ND
Endrin	ng/g ww	ND	ND	ND
Endrin Aldehyde	ng/g ww	ND	ND	ND
Endrin Ketone	ng/g ww	ND	ND	ND
Toxaphene	ng/g ww	ND	646	403
PCBs				
Aroclor 1016	ng/g ww	ND	ND	ND
Aroclor 1221	ng/g ww	ND	ND	ND
Aroclor 1232	ng/g ww	ND	ND	ND
Aroclor 1242	ng/g ww	ND	ND	ND
Aroclor 1248	ng/g ww	ND	DNQ	ND
Aroclor 1254	ng/g ww	ND	ND	ND

Table 55. Conejo Creek – Adolfo Road (9B_ADOLF)

Sample Date: 9/3/2010		Arroyo Chub (*Gila orcuttii*)	
Constituent	**Units**	***G. orcuttii*** **0-85 mm**	***G. orcuttii*** **86-112 mm**
Lipids in Fish Tissue			
Percent Lipids	%	4.93	6.61
Organic Constituents in Fish Tissue			
OC Pesticides			
Aldrin	ng/g ww	ND	ND
Alpha-BHC (HCH)	ng/g ww	ND	ND
Beta-BHC (HCH)	ng/g ww	ND	ND
Gamma-BHC (HCH)	ng/g ww	ND	ND
Delta-BHC (HCH)	ng/g ww	ND	ND
Chlordane-alpha	ng/g ww	DNQ	DNQ
Chlordane-gamma	ng/g ww	ND	DNQ
2,4'-DDD	ng/g ww	DNQ	ND
2,4'-DDE	ng/g ww	DNQ	DNQ
2,4'-DDT	ng/g ww	10.5	DNQ
4,4'-DDD	ng/g ww	21	DNQ
4,4'-DDE	ng/g ww	626	137
4,4'-DDT	ng/g ww	17.3	14.1
Dieldrin	ng/g ww	ND	ND
Endosulfan I	ng/g ww	ND	ND
Endosulfan II	ng/g ww	ND	ND
Endosulfan Sulfate	ng/g ww	ND	ND
Endrin	ng/g ww	ND	ND
Endrin Aldehyde	ng/g ww	ND	ND
Endrin Ketone	ng/g ww	ND	ND
Toxaphene	ng/g ww	487	ND
PCBs			
Aroclor 1016	ng/g ww	ND	ND
Aroclor 1221	ng/g ww	ND	ND
Aroclor 1232	ng/g ww	ND	ND
Aroclor 1242	ng/g ww	ND	ND
Aroclor 1248	ng/g ww	ND	DNQ
Aroclor 1254	ng/g ww	ND	ND

Table 56. Arroyo Simi – Hitch Boulevard (07_HITCH)

Sample Date: 9/3/2010

Constituent	Units	Arroyo Chub (*Gila orcuttii*)
Lipids in Fish Tissue		
Percent Lipids	%	7.77
Organic Constituents in Fish Tissue		
OC Pesticides		
Aldrin	ng/g ww	ND
Alpha-BHC (HCH)	ng/g ww	ND
Beta-BHC (HCH)	ng/g ww	ND
Gamma-BHC (HCH)	ng/g ww	ND
Delta-BHC (HCH)	ng/g ww	ND
Chlordane-alpha	ng/g ww	ND
Chlordane-gamma	ng/g ww	ND
2,4'-DDD	ng/g ww	DNQ
2,4'-DDE	ng/g ww	DNQ
2,4'-DDT	ng/g ww	18.6
4,4'-DDD	ng/g ww	19.2
4,4'-DDE	ng/g ww	673
4,4'-DDT	ng/g ww	DNQ
Dieldrin	ng/g ww	ND
Endosulfan I	ng/g ww	ND
Endosulfan II	ng/g ww	ND
Endosulfan Sulfate	ng/g ww	ND
Endrin	ng/g ww	ND
Endrin Aldehyde	ng/g ww	ND
Endrin Ketone	ng/g ww	ND
Toxaphene	ng/g ww	ND
PCBs		
Aroclor 1016	ng/g ww	ND
Aroclor 1221	ng/g ww	ND
Aroclor 1232	ng/g ww	ND
Aroclor 1242	ng/g ww	ND
Aroclor 1248	ng/g ww	ND
Aroclor 1254	ng/g ww	ND

MUGU LAGOON WATER QUALITY DATA

Table 57. Mugu Lagoon – Central Part of the Western Arm (01_BPT_14)

Constituent	Units	Event 22 Dry 8/26/2010	Event 23 Dry 11/8/2010	Event 25 Dry 2/3/2011	Event 27 Dry 5/16/2011
General Water Quality Constituents					
Flow	cfs	NM	NM	NM	NM
pH		8.61	8.39	8.41	8.39
Temperature	°C	12.76	17.06	13.39	12.77
Dissolved Oxygen	mg/L	6.57	8.03	8.27	6.65
Electrical Conductivity	µS/cm	51300	51300	50800	51500
TSS	mg/L	2.75	13.1	DNQ	10.6
DOC	mg/L	ND	5.5	4.5	3.5
Metals & Selenium in Water					
Dissolved Copper	µg/L	ND	0.406	DNQ	0.24
Total Copper	µg/L	0.0641	0.42	0.51	0.89
Dissolved Mercury	µg/L	0.0031	0.0011	ND	DNQ
Total Mercury	µg/L	0.0058	ND	ND	0.0011
Dissolved Nickel	µg/L	0.561	0.387	0.3	0.461
Total Nickel	µg/L	0.677	0.47	0.56	1.045
Dissolved Zinc	µg/L	5.7	3.819	1.49	1.626
Total Zinc	µg/L	8.12	3.427	1.37	4.348
Dissolved Selenium	µg/L	ND	0.015	ND	0.02
Total Selenium	µg/L	ND	0.016	ND	0.06

Note: field measurements are from the surface depth

Table 58. Mugu Lagoon – Central Lagoon (01_BPT_15)

Constituent	Units	Event 22 Dry 8/26/2010	Event 23 Dry 11/8/2010	Event 25 Dry 2/3/2011	Event 27 Dry 5/16/2011
General Water Quality Constituents					
Flow	cfs	NM	NM	NM	NM
pH		8.29	8.23	8.36	7.95
Temperature	°C	12.19	16.95	13.51	11.21
Dissolved Oxygen	mg/L	6.39	7.28	8.24	5.55
Electrical Conductivity	µS/cm	51100	51100	50800	51500
TSS	mg/L	1.25	DNQ	DNQ	DNQ
DOC	mg/L	ND	8.1	3.2	2.5
Metals & Selenium in Water					
Dissolved Copper	µg/L	ND	0.264	DNQ	0.14
Total Copper	µg/L	ND	0.585	0.4	0.3
Dissolved Mercury	µg/L	0.004	DNQ	ND	0.001
Total Mercury	µg/L	0.0059	ND	ND	DNQ
Dissolved Nickel	µg/L	0.55	0.337	0.28	0.273
Total Nickel	µg/L	0.602	0.49	0.82	0.393
Dissolved Zinc	µg/L	4.89	2.38	1.22	1.243
Total Zinc	µg/L	5.17	2.21	0.75	1.869
Dissolved Selenium	µg/L	ND	DNQ	ND	0.02
Total Selenium	µg/L	ND	0.016	ND	0.02

Note: field measurements are from the surface depth

Table 59. Mugu Lagoon – Eastern Arm (01_BPT_3)

Constituent	Units	Event 22 Dry 8/26/2010	Event 23 Dry 11/8/2010	Event 25 Dry 2/3/2011	Event 27 Dry 5/16/2011
General Water Quality Constituents					
Flow	cfs	NM	NM	NM	NM
pH		8.25	8.39	8.37	7.98
Temperature	°C	12.05	17.45	13.55	11.19
Dissolved Oxygen	mg/L	6.51	8.04	8	5.23
Electrical Conductivity	µS/cm	51000	51000	50900	51500
TSS	mg/L	1.0	DNQ	8.5	DNQ
DOC	mg/L	ND	8.1	4.5	3.1
Metals & Selenium in Water					
Dissolved Copper	µg/L	0.0211	0.317	DNQ	0.15
Total Copper	µg/L	0.0417	0.428	0.37	0.31
Dissolved Mercury	µg/L	0.0044	DNQ	ND	0.0011
Total Mercury	µg/L	0.0064	ND	ND	DNQ
Dissolved Nickel	µg/L	0.55	0.361	0.28	0.284
Total Nickel	µg/L	0.596	0.492	0.58	0.406
Dissolved Zinc	µg/L	4.72	2.178	1.34	1.185
Total Zinc	µg/L	17.3	2.05	1.16	1.955
Dissolved Selenium	µg/L	ND	DNQ	ND	ND
Total Selenium	µg/L	ND	0.017	ND	0.04

Note: field measurements are from the surface depth

Table 60. Mugu Lagoon – Eastern Part of the Western Arm (01_BPT_6)

Constituent	Units	Event 22 Dry 8/26/2010	Event 23 Dry 11/8/2010	Event 25 Dry 2/3/2011	Event 27 Dry 5/16/2011
General Water Quality Constituents					
Flow	cfs	NM	NM	NM	NM
pH		8.52	8.37	8.39	8.13
Temperature	°C	13.24	16.69	13.6	11.84
Dissolved Oxygen	mg/L	6.77	7.32	8.1	5.74
Electrical Conductivity	µS/cm	51000	51300	50900	51500
TSS	mg/L	4.0	DNQ	DNQ	7.3
DOC	mg/L	ND	6.8	3.8	2.3
Metals & Selenium in Water					
Dissolved Copper	µg/L	0.137	0.217	DNQ	0.14
Total Copper	µg/L	0.146	0.301	0.64	0.68
Dissolved Mercury	µg/L	0.0026	DNQ	ND	0.0013
Total Mercury	µg/L	0.0058	ND	ND	0.002
Dissolved Nickel	µg/L	0.549	0.295	0.32	0.305
Total Nickel	µg/L	0.686	0.392	0.58	0.715
Dissolved Zinc	µg/L	2.26	2.414	4.33	1.49
Total Zinc	µg/L	4.09	1.969	4.8	3.607
Dissolved Selenium	µg/L	ND	0.015	ND	ND
Total Selenium	µg/L	ND	0.018	ND	0.05

Note: field measurements are from the surface depth

Table 61. Mugu Lagoon – Central Lagoon, South of Drain #7 (01_SG_74)

Constituent	Units	Event 22 Dry 8/26/2010	Event 23 Dry 11/8/2010	Event 25 Dry 2/3/2011	Event 27 Dry 5/16/2011
General Water Quality Constituents					
Flow	cfs	NM	NM	NM	NM
pH		8.48	8.42	8.58	8.13
Temperature	°C	16.92	18.21	13.49	14.28
Dissolved Oxygen	mg/L	7.04	7.36	10.25	7.26
Electrical Conductivity	µS/cm	51000	51200	50300	51500
TSS	mg/L	41.5	177.7	DNQ	5.7
DOC	mg/L	ND	9.3	5.0	2.8
Metals & Selenium in Water					
Dissolved Copper	µg/L	0.31	0.465	0.63	0.27
Total Copper	µg/L	1.46	4.539	0.92	0.94
Dissolved Mercury	µg/L	0.0021	ND	ND	0.0015
Total Mercury	µg/L	0.0094	0.011	ND	0.0041
Dissolved Nickel	µg/L	0.872	0.619	0.69	0.421
Total Nickel	µg/L	2.06	4.149	1.02	0.835
Dissolved Zinc	µg/L	5.31	7.326	2.97	10.006
Total Zinc	µg/L	9.67	24.504	3.11	14.506
Dissolved Selenium	µg/L	ND	0.024	ND	0.02
Total Selenium	µg/L	DNQ	0.046	ND	0.04

Note: field measurements are from the surface depth

Table 62. Mugu Lagoon – Oxnard Drain #2 S. of Hueneme Rd (01T_ODD2_DCH)

Constituent	Units	Event 22 Dry 8/17/2010	Event 23 Dry 11/9/2010		Event 24 Wet 12/19/2010		Event 25 Dry 2/1/2010	Event 26 Wet 3/20/2011	Event 27 Dry 5/4/2011
General Water Quality Constituents									
Flow	cfs	3.0335	2.453		NM		3.94565	NM	3.467825
pH		7.82	7.74		7.41		7.6	7.63	7.68
Temperature	°C	20.87	17.49		15.28		18.84	12.31	17.2
Dissolved Oxygen	mg/L	12.72	8.26		9.21		8.52	9.54	9.65
Electrical Conductivity	µS/cm	3617	3920		1627		3790	638	3820
TSS	mg/L	2.75	17.4		312.0		31.0	1344.0	8.2
Total Hardness	mg/L	945.0	1819.6		595.3		1832.8	215.7	1934.0
Organic Constituents in Water									
OC Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Aldrin	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Alpha-BHC (HCH)	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Beta-BHC (HCH)	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Gamma-BHC (HCH)	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Delta-BHC (HCH)	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Chlordane-alpha	µg/L	ND	ND	ND	DNQ	ND	DNQ	ND	ND
Chlordane-gamma	µg/L	ND	ND	ND	DNQ	ND	DNQ	0.0298	ND
Total Chlordane	µg/L	ND	ND	ND	DNQ	ND	DNQ	0.0298	ND
2,4'-DDD	µg/L	ND	ND	ND	ND	ND	ND	0.0282	ND
2,4'-DDE	µg/L	ND	ND	ND	ND	ND	ND	0.0144	ND
2,4'-DDT	µg/L	ND	ND	ND	0.0438	ND	0.011	0.1792	ND
4,4'-DDD	µg/L	ND	ND	ND	0.0234	ND	ND	0.1595	ND
4,4'-DDE	µg/L	ND	0.0195	0.0087	0.1238	0.0135	0.0221	0.5486	ND

Table 62. Mugu Lagoon – Oxnard Drain #2 S. of Hueneme Rd (01T_ODD2_DCH) continued

Constituent	Units	Event 22 Dry 8/17/2010	Event 23 Dry 11/9/2010		Event 24 Wet 12/19/2010		Event 25 Dry 2/1/2010	Event 26 Wet 3/20/2011	Event 27 Dry 5/4/2011
OC Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
4,4'-DDT	µg/L	ND	ND	ND	0.1082	ND	ND	0.2424	ND
Dieldrin	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan I	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan II	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan Sulfate	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endrin	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endrin Aldehyde	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endrin Ketone	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Toxaphene	µg/L	DNQ	ND	ND	ND	ND	ND	ND	ND
PCBs				**<63µm**	**63µm to 2mm**	**Filtrate**			
Aroclor 1016	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1221	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1232	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1242	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1248	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1254	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1260	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
OP Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Chlorpyrifos	µg/L	0.0518	ND	1.4368	ND	ND	0.204	0.524	0.0115
Diazinon	µg/L	ND	ND	0.0282	ND	ND	ND	0.0631	ND
Malathion	µg/L	ND	ND	ND	ND	ND	0.0965	ND	ND

Table 62. Mugu Lagoon – Oxnard Drain #2 S. of Hueneme Rd (01T_ODD2_DCH) continued

Constituent	Units	Event 22 Dry 8/17/2010	Event 23 Dry 11/9/2010		Event 24 Wet 12/19/2010		Event 25 Dry 2/1/2010	Event 26 Wet 3/20/2011	Event 27 Dry 5/4/2011
Triazine Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Atrazine	µg/L	ND	NM		ND		NM	NM	NM
Prometryn	µg/L	ND	NM		0.4297		NM	NM	NM
Simazine	µg/L	ND	NM		0.0169		NM	NM	NM
Pyrethroid Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Bifenthrin	µg/L	ND	0.0078	ND	0.0415	0.011	0.0054	0.1322	ND
Cyfluthrin	µg/L	ND	ND	ND	0.0046	ND	ND	ND	ND
Cypermethrin	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Deltamethrin	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Permethrin	µg/L	ND	ND	ND	0.1189	ND	ND	0.3292	ND
Permethrin, cis-	µg/L	NM	NM	ND	0.0976	ND	ND	0.3292	ND
Permethrin, trans-	µg/L	NM	NM	ND	DNQ	ND	ND	ND	ND
Metals & Selenium in Water									
Dissolved Copper	µg/L	3.26	3.879		3.033		2.97	5.95	3.82
Total Copper	µg/L	3.29	4.964		14.167		4.53	101.26	4.31
Dissolved Mercury	µg/L	0.0016	ND		0.0014		DNQ	ND	0.0019
Total Mercury	µg/L	0.0044	0.0024		0.0303		0.0014	0.0753	0.0016
Dissolved Nickel	µg/L	9.46	6.489		3.008		6.23	2.59	7.8
Total Nickel	µg/L	9.4	7.054		8.525		7.3	50.72	8.19
Dissolved Zinc	µg/L	3.76	4.442		4.85		4.16	4.32	5.21
Total Zinc	µg/L	2.55	6.118		49.221		5.78	322.42	5.93
Dissolved Selenium	µg/L	6.86	6.357		1.465		5.65	0.62	7.57
Total Selenium	µg/L	6.83	6.26		1.396		5.63	0.98	9.23

Table 63. Mugu Lagoon – Ronald Reagan Bridge (01_RR_BR)

Constituent	Units	Event 22 Dry 8/26/2010	Event 23 Dry 11/8/2010		Event 24 Wet 12/19/2010		Event 25 Dry 2/3/2010	Event 26 Wet 3/20/2011	Event 27 Dry 5/16/2011
General Water Quality Constituents									
Flow	cfs	NM	NM		NM		NM	NM	NM
pH		8.6	8.11		NM		8.3	NM	7.93
Temperature	°C	12.51	17.33		NM		13.09	NM	12.43
Dissolved Oxygen	mg/L	6.39	7.28		NM		5.59	NM	7.92
Electrical Conductivity	µS/cm	51200	49200		NM		50600	NM	43400
TSS	mg/L	2.0	7.2		348.0		7.4	2720.0	7.8
Total Hardness	mg/L	ND	12.6		9.49		4.8	7.67	6.0
Nutrients									
Ammonia-N	mg/L	ND	0.31		0.0977		DNQ	0.26	0.22
Nitrate-N	mg/L	0.248	13.77		26.22		0.16	2.82	17.94
Nitrite-N	mg/L	ND	DNQ		0.07		ND	0.08	0.13
Organic N	mg/L	ND	1.09		4.3423		0.79	8.62	1.89
TKN	mg/L	ND	1.4		4.44		0.82	8.88	2.11
Total Phosphorus-P	mg/L	ND	1.39		1.86		0.03	5.29	0.79
Orthophosphate-P	mg/L	0.0531	0.256		0.392		0.501	0.562	0.666
Organic Constituents in Water									
OC Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Aldrin	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Alpha-BHC (HCH)	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Beta-BHC (HCH)	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Gamma-BHC (HCH)	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Delta-BHC (HCH)	µg/L	ND	ND	ND	ND	ND	ND	ND	ND

Table 63. Mugu Lagoon – Ronald Reagan Bridge (01_RR_BR) continued

Constituent	Units	Event 22 Dry 8/26/2010	Event 23 Dry 11/8/2010		Event 24 Wet 12/19/2010		Event 25 Dry 2/3/2010	Event 26 Wet 3/20/2011	Event 27 Dry 5/16/2011
OC Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Chlordane-alpha	µg/L	ND	ND	0.0102	DNQ	ND	ND	ND	ND
Chlordane-gamma	µg/L	ND	ND	0.0096	DNQ	ND	ND	ND	ND
Total Chlordane	µg/L	ND	ND	0.0198	DNQ	ND	ND	ND	ND
2,4'-DDD	µg/L	ND	ND	0.0158	ND	ND	ND	ND	ND
2,4'-DDE	µg/L	ND	ND	0.0081	ND	ND	ND	ND	ND
2,4'-DDT	µg/L	ND	ND	0.0352	ND	ND	ND	ND	ND
4,4'-DDD	µg/L	ND	ND	0.0324	ND	ND	ND	0.0677	ND
4,4'-DDE	µg/L	ND	ND	0.3637	ND	DNQ	ND	0.2803	ND
4,4'-DDT	µg/L	ND	ND	0.1641	ND	ND	ND	ND	ND
Dieldrin	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan I	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan II	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan Sulfate	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endrin	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endrin Aldehyde	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endrin Ketone	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Toxaphene	µg/L	ND	ND	ND	DNQ	ND	ND	ND	ND
PCBs				**<63µm**	**63µm to 2mm**	**Filtrate**			
Aroclor 1016	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1221	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1232	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1242	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1248	µg/L	ND	ND	ND	ND	ND	ND	ND	ND

Table 63. Mugu Lagoon – Ronald Reagan Bridge (01_RR_BR) continued

Constituent	Units	Event 22 Dry 8/26/2010	Event 23 Dry 11/8/2010		Event 24 Wet 12/19/2010		Event 25 Dry 2/3/2010	Event 26 Wet 3/20/2011	Event 27 Dry 5/16/2011
PCBs				**<63µm**	**63µm to 2mm**	**Filtrate**			
Aroclor 1254	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1260	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
OP Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Chlorpyrifos	µg/L	ND	ND	1.1798	ND	ND	ND	0.2291	ND
Diazinon	µg/L	ND	0.2325	ND	ND	ND	ND	0.1168	ND
Malathion	µg/L	ND	ND	0.2041	ND	ND	ND	ND	ND
Triazine Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Atrazine	µg/L	ND	NM		ND		NM	NM	NM
Prometryn	µg/L	ND	NM		0.135		NM	NM	NM
Simazine	µg/L	ND	NM		0.034		NM	NM	NM
Pyrethroid Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Bifenthrin	µg/L	ND	ND	0.0173	0.0148	DNQ	ND	0.0311	ND
Cyfluthrin	µg/L	ND	ND	ND	DNQ	ND	ND	ND	ND
Cypermethrin	µg/L	ND	ND	ND	DNQ	ND	ND	ND	ND
Deltamethrin	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Permethrin	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Metals & Selenium in Water									
Dissolved Copper	µg/L	0.319	2.118		4.299		0.28	2.21	1.64
Total Copper	µg/L	0.143	2.691		15.929		0.4	100.02	2.52
Dissolved Mercury	µg/L	0.0032	0.0011		0.0016		ND	ND	0.0019
Total Mercury	µg/L	0.0033	ND		0.02		ND	0.0569	0.0025

Table 58. Mugu Lagoon – Ronald Reagan Bridge (01_RR_BR) continued

Constituent	Units	Event 22 Dry 8/26/2010	Event 23 Dry 11/8/2010	Event 24 Wet 12/19/2010	Event 25 Dry 2/3/2010	Event 26 Wet 3/20/2011	Event 27 Dry 5/16/2011
Metals & Selenium in Water							
Dissolved Nickel	µg/L	0.564	3.869	4.87	0.28	2.95	2.778
Total Nickel	µg/L	0.63	4.793	12.61	0.58	78.73	3.636
Dissolved Zinc	µg/L	1.95	8.414	2.679	1.54	3.69	5.075
Total Zinc	µg/L	2.95	9.697	35.684	1.2	283.07	6.813
Dissolved Selenium	µg/L	ND	0.189	4.759	ND	0.96	0.17
Total Selenium	µg/L	ND	0.193	4.785	ND	2.14	0.18

FRESHWATER QUALITY DATA

General Water Quality Constituents, OC Pesticides, Metals, Nutrients

Table 64. Calleguas Creek – Discharge at Broome Ranch Rd. (02D_BROOM)

Constituent	Units	Event 22 Dry 8/17/2010	Event 23 Dry 11/9/2010	Event 24 Wet 12/19/2010			Event 25 Dry 2/1/2010	Event 26 Wet 3/20/2011	Event 27 Dry 5/4/2011
General Water Quality Constituents									
Flow	cfs	NS Site Dry	1.01		0.67		NM	NM	0.45
pH			7.29		7.01		7.69	7.65	7.61
Temperature	°C		19.23		16.75		14.45	11.02	15.81
Dissolved Oxygen	mg/L		7.82		7.51		10.05	9.75	8.7
Electrical Conductivity	µS/cm		4330		3976		4004	755	3200
TSS	mg/L		DNQ		31.2		30.5	1466.7	17.5
Total Hardness	mg/L		1347.1		1138.9		1737.2	168.7	1422.7
Organic Constituents in Water									
OC Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Aldrin	µg/L	NS Site Dry	ND	ND	ND	ND	ND	ND	ND
Alpha-BHC (HCH)	µg/L		ND	ND	ND	ND	ND	ND	ND
Beta-BHC (HCH)	µg/L		ND	ND	ND	ND	ND	ND	ND
Gamma-BHC (HCH)	µg/L		ND	ND	ND	ND	ND	ND	ND
Delta-BHC (HCH)	µg/L		ND	ND	ND	ND	ND	ND	ND
Chlordane-alpha	µg/L		ND	ND	ND	ND	0.0067	ND	ND
Chlordane-gamma	µg/L		ND	ND	ND	ND	0.0098	ND	ND
Total Chlordane	µg/L		ND	ND	ND	ND	0.0165	ND	ND
2,4'-DDD	µg/L		ND	ND	ND	ND	ND	ND	ND
2,4'-DDE	µg/L		ND	ND	ND	ND	ND	ND	ND

Table 64. Calleguas Creek – Discharge at Broome Ranch Rd. (02D_BROOM) continued

Constituent	Units	Event 22 Dry 8/17/2010	Event 23 Dry 11/9/2010	Event 24 Wet 12/19/2010			Event 25 Dry 2/1/2010	Event 26 Wet 3/20/2011	Event 27 Dry 5/4/2011
OC Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
2,4'-DDT	µg/L	NS Site Dry	ND	ND	ND	ND	0.0228	ND	ND
4,4'-DDD	µg/L		ND	ND	ND	ND	ND	ND	0.0148
4,4'-DDE	µg/L		0.0118	0.017	ND	ND	0.0429	0.0707	0.0543
4,4'-DDT	µg/L		ND	ND	ND	ND	0.0349	ND	ND
Dieldrin	µg/L		ND	ND	ND	ND	ND	ND	ND
Endosulfan I	µg/L		ND	ND	ND	ND	ND	ND	ND
Endosulfan II	µg/L		ND	ND	ND	ND	ND	ND	ND
Endosulfan Sulfate	µg/L		ND	ND	ND	ND	ND	ND	ND
Endrin	µg/L		ND	ND	ND	ND	ND	ND	ND
Endrin Aldehyde	µg/L		ND	ND	ND	ND	ND	ND	ND
Endrin Ketone	µg/L		ND	ND	ND	ND	ND	ND	ND
Toxaphene	µg/L		ND	ND	ND	ND	ND	ND	ND
PCBs				**<63µm**	**63µm to 2mm**	**Filtrate**			
Aroclor 1016	µg/L	NS Site Dry	ND	ND	ND	ND	ND	ND	ND
Aroclor 1221	µg/L		ND	ND	ND	ND	ND	ND	ND
Aroclor 1232	µg/L		ND	ND	ND	ND	ND	ND	ND
Aroclor 1242	µg/L		ND	ND	ND	ND	ND	ND	ND
Aroclor 1248	µg/L		ND	ND	ND	ND	ND	ND	ND
Aroclor 1254	µg/L		ND	ND	ND	ND	ND	ND	ND
Aroclor 1260	µg/L		ND	ND	ND	ND	ND	ND	ND

Table 64. Calleguas Creek – Discharge at Broome Ranch Rd. (02D_BROOM) continued

Constituent	Units	Event 22 Dry 8/17/2010	Event 23 Dry 11/9/2010	Event 24 Wet 12/19/2010			Event 25 Dry 2/1/2010	Event 26 Wet 3/20/2011	Event 27 Dry 5/4/2011
OP Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Chlorpyrifos	µg/L		ND	0.0759	ND	ND	0.0076	ND	ND
Diazinon	µg/L	NS Site Dry	ND	ND	ND	ND	ND	0.6038	ND
Malathion	µg/L		ND	ND	ND	ND	ND	ND	ND
Triazine Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Atrazine	µg/L		NM		ND		NM	NM	NM
Prometryn	µg/L	NS Site Dry	NM		ND		NM	NM	NM
Simazine	µg/L		NM		0.0139		NM	NM	NM
Pyrethroid Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Bifenthrin	µg/L		ND	ND	ND	ND	ND	0.0119	ND
Cyfluthrin	µg/L		ND	ND	ND	ND	ND	ND	ND
Cypermethrin	µg/L		ND	ND	ND	ND	ND	ND	ND
Deltamethrin	µg/L	NS Site Dry	ND	ND	ND	ND	ND	ND	ND
Permethrin	µg/L		ND	ND	ND	ND	ND	ND	ND
Permethrin, cis-	µg/L		NM	ND	ND	ND	ND	ND	ND
Permethrin, trans-	µg/L		NM	ND	ND	ND	ND	ND	ND
Metals & Selenium in Water									
Dissolved Copper	µg/L		2.388		6.373		2.23	14.49	3.8
Total Copper	µg/L		2.682		7.537		3.26	114.25	4.65
Dissolved Mercury	µg/L	NS Site Dry	ND		0.002		DNQ	0.003	0.0016
Total Mercury	µg/L		ND		0.0043		0.0011	0.0473	0.0031
Dissolved Nickel	µg/L		7.942		11.643		8.23	5.65	9

Table 64. Calleguas Creek – Discharge at Broome Ranch Rd. (02D_BROOM) continued

Constituent	Units	Event 22 Dry 8/17/2010	Event 23 Dry 11/9/2010	Event 24 Wet 12/19/2010	Event 25 Dry 2/1/2010	Event 26 Wet 3/20/2011	Event 27 Dry 5/4/2011
Metals & Selenium in Water							
Total Nickel	µg/L	NS Site Dry	8	12.754	9.56	113.49	9.87
Dissolved Zinc	µg/L		2.371	3.834	2.81	4.53	6.15
Total Zinc	µg/L		1.007	5.582	3.4	220.06	2.27
Dissolved Selenium	µg/L		7.848	7.462	9.48	1.07	9.39
Total Selenium	µg/L		7.51	7.692	10.1	1.23	7.62

Table 65. Calleguas Creek – Hwy 1 Bridge (02_PCH)

Constituent	Units	Event 22 Dry 8/18/2011	Event 23 Dry 11/9/2010	Event 25 Dry 2/2/2011	Event 27 Dry 5/5/2011
General Water Quality Constituents					
Flow	cfs	NM	NM	NM	NM
pH		7.82	8.01	7.94	8.81
Temperature	°C	19.88	17.09	9.17	16.67
Dissolved Oxygen	mg/L	5.19	8.73	10.76	7.12
Electrical Conductivity	µS/cm	7750	4760	15300	3150
TSS	mg/L	40.0	9.5	25.6	12.8
Nutrients					
Ammonia-N	mg/L	0.0766	0.12	0.17	0.06
Nitrate-N	mg/L	9.98	9.06	18.4	11.03
Nitrite-N	mg/L	0.105	0.06	0.35	0.18
Organic N	mg/L	ND	1.34	1.55	2.07
TKN	mg/L	DNQ	1.46	1.72	2.13
Total Phosphorus-P	mg/L	1.78	2.21	1.2	1.761
Orthophosphate-P	mg/L	1.98	0.778	0.911	1.501

Table 66. Calleguas Creek – University Drive CSUCI (03_UNIV)

Constituent	Units	Event 22 Dry 8/17/2010	Event 23 Dry 11/9/2010		Event 24 Wet 12/19/2010		Event 25 Dry 2/1/2010	Event 26 Wet 3/20/2011	Event 27 Dry 5/4/2011
General Water Quality Constituents									
Flow	cfs	6.75	13.57		14.53		6.44	NM	6.44
pH		8.11	7.85		7.85		7.91	7.86	8.14
Temperature	°C	21.64	16.25		16.25		15.04	11.77	22.47
Dissolved Oxygen	mg/L	7.54	8.05		8.05		8.02	10.44	9.76
Electrical Conductivity	µS/cm	1510	1590		1590		1560	261	1520
TSS	mg/L	4.25	8.0		940		6.0	1325.0	DNQ
Total Hardness	mg/L	259.0	437.5		86.1		426.4	71.8	454.2
Nutrients									
Ammonia-N	mg/L	0.0582	0.19		0.0835		0.11	0.34	DNQ
Nitrate-N	mg/L	7.11	7.91		1.75		9.71	1.83	6.31
Nitrite-N	mg/L	0.071	0.37		DNQ		0.07	DNQ	0.21
Organic N	mg/L	DNQ	2.7		3.4665		2.16	4.14	1.7
TKN	mg/L	DNQ	2.89		3.55		2.27	4.48	1.74
Total Phosphorus-P	mg/L	2.39	2.54		1.88		2.38	2.369	1.627
Orthophosphate-P	mg/L	2.4	1.033		0.566		2.028	0.573	1.612
Organic Constituents in Water									
OC Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Aldrin	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Alpha-BHC (HCH)	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Beta-BHC (HCH)	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Gamma-BHC (HCH)	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Delta-BHC (HCH)	µg/L	ND	ND	ND	ND	ND	ND	ND	ND

Table 66. Calleguas Creek – University Drive CSUCI (03_UNIV) continued

Constituent	Units	Event 22 Dry 8/17/2010	Event 23 Dry 11/9/2010		Event 24 Wet 12/19/2010		Event 25 Dry 2/1/2010	Event 26 Wet 3/20/2011	Event 27 Dry 5/4/2011
OC Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Chlordane-alpha	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Chlordane-gamma	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Total Chlordane	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
2,4'-DDD	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
2,4'-DDE	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
2,4'-DDT	µg/L	ND	ND	ND	ND	ND	ND	0.0791	ND
4,4'-DDD	µg/L	ND	ND	ND	ND	ND	ND	0.0554	ND
4,4'-DDE	µg/L	ND	ND	0.0126	0.024	DNQ	0.009	0.3333	ND
4,4'-DDT	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Dieldrin	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan I	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan II	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan Sulfate	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endrin	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endrin Aldehyde	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endrin Ketone	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Toxaphene	µg/L	ND	ND	ND	DNQ	ND	ND	ND	ND
PCBs				**<63µm**	**63µm to 2mm**	**Filtrate**			
Aroclor 1016	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1221	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1232	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1242	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1248	µg/L	ND	ND	ND	ND	ND	ND	ND	ND

Table 66. Calleguas Creek – University Drive CSUCI (03_UNIV) continued

Constituent	Units	Event 22 Dry 8/17/2010	Event 23 Dry 11/9/2010		Event 24 Wet 12/19/2010		Event 25 Dry 2/1/2010	Event 26 Wet 3/20/2011	Event 27 Dry 5/4/2011
PCBs				**<63µm**	**63µm to 2mm**	**Filtrate**			
Aroclor 1254	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1260	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
OP Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Chlorpyrifos	µg/L	ND	ND	0.0947	ND	ND	ND	0.4773	ND
Diazinon	µg/L	ND	ND	ND	ND	ND	ND	0.1369	ND
Malathion	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Triazine Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Atrazine	µg/L	ND	NM		ND		NM	NM	NM
Prometryn	µg/L	ND	NM		ND		NM	NM	NM
Simazine	µg/L	0.0447	NM		0.1336		NM	NM	NM
Pyrethroid Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Bifenthrin	µg/L	ND	ND	ND	0.0262	ND	ND	0.0436	ND
Cyfluthrin	µg/L	ND	ND	ND	0.0079	ND	ND	0.018	ND
Cypermethrin	µg/L	ND	ND	ND	0.0041	ND	ND	ND	ND
Deltamethrin	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Permethrin	µg/L	ND	ND	ND	ND	ND	ND	DNQ	ND
Metals & Selenium in Water									
Dissolved Copper	µg/L	2.13	3.015		3.219		3.72	4.18	3.1
Total Copper	µg/L	2.5	3.683		19.852		4.03	70.12	3.35
Dissolved Mercury	µg/L	0.0017	DNQ		0.0029		0.002	ND	0.001
Total Mercury	µg/L	0.0041	ND		0.0661		0.0013	0.0812	0.0016

Table 66. Calleguas Creek – University Drive CSUCI (03_UNIV) continued

Constituent	Units	Event 22 Dry 8/17/2010	Event 23 Dry 11/9/2010	Event 24 Wet 12/19/2010	Event 25 Dry 2/1/2010	Event 26 Wet 3/20/2011	Event 27 Dry 5/4/2011
Metals & Selenium in Water							
Dissolved Nickel	µg/L	4.47	4.295	2.31	4.4	1.78	4.16
Total Nickel	µg/L	4.95	4.464	20.826	4.72	62.63	4.42
Dissolved Zinc	µg/L	17.1	14.632	3.996	19.81	2.96	13.5
Total Zinc	µg/L	17.2	14.646	73.879	19.4	199.66	13.44
Dissolved Selenium	µg/L	0.865	1.343	0.685	1.49	0.56	3.12
Total Selenium	µg/L	1.05	1.338	0.52	1.53	1.27	2.82

Table 67. Revolon Slough – Wood Road (04_WOOD)

Constituent	Units	Event 22 Dry 8/17/2010	Event 23 Dry 11/9/2010		Event 24 Wet 12/19/2010		Event 25 Dry 2/1/2010	Event 26 Wet 3/20/2011	Event 27 Dry 5/4/2011
General Water Quality Constituents									
Flow	cfs	0.78	9.63		NM		6.88	NM	6.22
pH		8.02	8.38		7.4		7.85	7.99	7.87
Temperature	°C	17.48	19.67		14.29		11.38	11.85	14.68
Dissolved Oxygen	mg/L	6.91	16.92		10.13		9.48	10.35	8.73
Electrical Conductivity	µS/cm	3890	3610		758		3720	348	4310
TSS	mg/L	10.0	56.0		942		97.1	7715.0	14.3
Total Hardness	mg/L	1000.0	1585.6		214.1		1641.5	104.0	2063.9
Nutrients									
Ammonia-N	mg/L	0.256	0.093		0.209		0.26	0.47	0.44
Nitrate-N	mg/L	36.2	39.54		8.9		43.93	6.43	51.86
Nitrite-N	mg/L	0.667	DNQ		0.051		0.09	DNQ	0.51
Organic N	mg/L	ND	3.347		3.401		1.52	11.83	4.16
TKN	mg/L	DNQ	3.44		3.61		1.78	12.3	4.6
Total Phosphorus-P	mg/L	DNQ	0.2		1.8		0.221	6.022	0.48
Orthophosphate-P	mg/L	0.021	ND		0.533		ND	0.527	ND
Organic Constituents in Water									
OC Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Aldrin	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Alpha-BHC (HCH)	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Beta-BHC (HCH)	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Gamma-BHC (HCH)	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Delta-BHC (HCH)	µg/L	ND	ND	ND	ND	ND	ND	ND	ND

Table 67. Revolon Slough – Wood Road (04_WOOD) continued

Constituent	Units	Event 22 Dry 8/17/2010	Event 23 Dry 11/9/2010		Event 24 Wet 12/19/2010		Event 25 Dry 2/1/2010	Event 26 Wet 3/20/2011	Event 27 Dry 5/4/2011
OC Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Chlordane-alpha	µg/L	ND	ND	ND	ND	ND	ND	0.0807	ND
Chlordane-gamma	µg/L	ND	ND	ND	ND	ND	ND	0.0943	ND
Total Chlordane	µg/L	ND	ND	ND	ND	ND	ND	0.175	ND
2,4'-DDD	µg/L	ND	ND	ND	ND	ND	ND	0.1811	ND
2,4'-DDE	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
2,4'-DDT	µg/L	ND	0.0063	ND	ND	ND	0.0132	0.6982	ND
4,4'-DDD	µg/L	ND	0.0088	ND	ND	ND	ND	0.6482	DNQ
4,4'-DDE	µg/L	DNQ	0.0623	0.0185	0.0298	0.025	0.0567	3.6331	0.0144
4,4'-DDT	µg/L	ND	ND	ND	ND	ND	DNQ	0.3589	ND
Dieldrin	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan I	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan II	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan Sulfate	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endrin	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endrin Aldehyde	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endrin Ketone	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Toxaphene	µg/L	DNQ	ND	ND	DNQ	ND	ND	ND	ND
PCBs				**<63µm**	**63µm to 2mm**	**Filtrate**			
Aroclor 1016	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1221	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1232	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1242	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1248	µg/L	ND	ND	ND	ND	ND	ND	ND	ND

Table 67. Revolon Slough – Wood Road (04_WOOD) continued

		Event 22	Event 23		Event 24		Event 25	Event 26	Event 27
		Dry	Dry		Wet		Dry	Wet	Dry
Constituent	Units	8/17/2010	11/9/2010		12/19/2010		2/1/2010	3/20/2011	5/4/2011
PCBs				**<63µm**	**63µm to 2mm**	**Filtrate**			
Aroclor 1254	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1260	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
OP Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Chlorpyrifos	µg/L	ND	ND	1.3126	ND	ND	0.0811	2.9397	0.0069
Diazinon	µg/L	ND	0.0881	0.0554	ND	ND	ND	0.1863	ND
Malathion	µg/L	ND	ND	ND	ND	ND	ND	0.3336	ND
Triazine Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Atrazine	µg/L	ND	NM		ND		NM	NM	NM
Prometryn	µg/L	0.0844	NM		0.0926		NM	NM	NM
Simazine	µg/L	ND	NM		0.8655		NM	NM	NM
Pyrethroid Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Bifenthrin	µg/L	ND	0.0047	ND	0.0905	0.0027	0.0042	0.1865	ND
Cyfluthrin	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Cypermethrin	µg/L	ND	ND	ND	0.0031	ND	ND	0.0685	ND
Deltamethrin	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Permethrin	µg/L	ND	ND	ND	ND	ND	ND	0.9168	ND
Metals & Selenium in Water									
Dissolved Copper	µg/L	1.97	1.683		3.722		1.21	3.61	3.01
Total Copper	µg/L	2.47	3.703		23.758		5.2	263.57	3.55
Dissolved Mercury	µg/L	0.0022	ND		0.0016		DNQ	ND	0.0014
Total Mercury	µg/L	0.005	0.0032		0.0595		0.0028	0.2653	0.0023

Table 67. Revolon Slough – Wood Road (04_WOOD) continued

Constituent	Units	Event 22 Dry 8/17/2010	Event 23 Dry 11/9/2010	Event 24 Wet 12/19/2010	Event 25 Dry 2/1/2010	Event 26 Wet 3/20/2011	Event 27 Dry 5/4/2011
Metals & Selenium in Water							
Dissolved Nickel	µg/L	5.35	4.982	3.078	4.42	1.93	5.93
Total Nickel	µg/L	5.73	6.056	17.944	5.86	166.96	6.27
Dissolved Zinc	µg/L	ND	1.839	3.404	3.82	2.1	1.33
Total Zinc	µg/L	1.72	8.557	63.131	15.46	693.52	1.59
Dissolved Selenium	µg/L	23.3	16.251	2.023	14.98	0.73	21.28
Total Selenium	µg/L	25	15.797	1.783	16.18	2.41	23.61

Table 68. Camarillo Hills Drain at Ventura Blvd. & Las Posas Rd. (04D_VENTURA)

Constituent	Units	Event 22 Dry 8/17/2010	Event 23 Dry 11/9/2010		Event 24 Wet 12/19/2010		Event 25 Dry 2/1/2010	Event 26 Wet 3/20/2011	Event 27 Dry 5/4/2011
General Water Quality Constituents									
Flow	cfs	NM	0.015		2.54		0.093	NM	0.043
pH		10.29	10.65		7.93		8.25	7.72	10.14
Temperature	°C	33.08	22.36		14.83		7.93	11.99	31.33
Dissolved Oxygen	mg/L	8.13	14.33		11.47		11.42	10.43	11.5
Electrical Conductivity	µS/cm	1421	1208		235		1251	132	961
TSS	mg/L	3.71	7.3		31.6		DNQ	757.5	5.1
Total Hardness	mg/L	122.0	268.4		52.4		333.9	32.4	240.0
Organic Constituents in Water									
OC Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Aldrin	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Alpha-BHC (HCH)	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Beta-BHC (HCH)	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Gamma-BHC (HCH)	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Delta-BHC (HCH)	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Chlordane-alpha	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Chlordane-gamma	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Total Chlordane	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
2,4'-DDD	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
2,4'-DDE	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
2,4'-DDT	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
4,4'-DDD	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
4,4'-DDE	µg/L	ND	ND	0.0067	DNQ	ND	ND	0.0435	ND

Table 68. Camarillo Hills Drain at Ventura Blvd. & Las Posas Rd. (04D_VENTURA) continued

Constituent	Units	Event 22 Dry 8/17/2010	Event 23 Dry 11/9/2010		Event 24 Wet 12/19/2010		Event 25 Dry 2/1/2010	Event 26 Wet 3/20/2011	Event 27 Dry 5/4/2011
OC Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
4,4'-DDT	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Dieldrin	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan I	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan II	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan Sulfate	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endrin	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endrin Aldehyde	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endrin Ketone	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Toxaphene	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
PCBs				**<63µm**	**63µm to 2mm**	**Filtrate**			
Aroclor 1016	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1221	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1232	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1242	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1248	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1254	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1260	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
OP Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Chlorpyrifos	µg/L	ND	ND	0.0292	ND	ND	ND	ND	ND
Diazinon	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Malathion	µg/L	ND	ND	0.1093	ND	ND	ND	ND	ND

Table 68. Camarillo Hills Drain at Ventura Blvd. & Las Posas Rd. (04D_VENTURA) continued

Constituent	Units	Event 22 Dry 8/17/2010	Event 23 Dry 11/9/2010		Event 24 Wet 12/19/2010		Event 25 Dry 2/1/2010	Event 26 Wet 3/20/2011	Event 27 Dry 5/4/2011
Triazine Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Atrazine	µg/L	ND	NM		ND		NM	NM	NM
Prometryn	µg/L	ND	NM		ND		NM	NM	NM
Simazine	µg/L	ND	NM		ND		NM	NM	NM
Pyrethroid Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Bifenthrin	µg/L	0.0197	0.0293	0.0056	0.0145	ND	0.0124	ND	ND
Cyfluthrin	µg/L	DNQ	ND	ND	0.0059	ND	ND	ND	ND
Cypermethrin	µg/L	ND	ND	ND	DNQ	ND	ND	ND	ND
Deltamethrin	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Permethrin	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Permethrin, cis-	µg/L	NM	NM	ND	ND	ND	ND	ND	ND
Permethrin, trans-	µg/L	NM	NM	ND	ND	ND	ND	ND	ND
Metals & Selenium in Water									
Dissolved Copper	µg/L	122.0	21.818		4.317		5.76	4.29	7.04
Total Copper	µg/L	154.0	23.118		5.666		6.66	34.63	7.93
Dissolved Mercury	µg/L	0.0023	0.0041		0.0064		0.0019	DNQ	0.0038
Total Mercury	µg/L	0.0051	0.0031		0.0116		0.0018	0.0357	0.0039
Dissolved Nickel	µg/L	4.51	2.624		1.488		1.54	1.26	1.79
Total Nickel	µg/L	5.24	2.993		2.403		1.71	25.73	2.03
Dissolved Zinc	µg/L	1.48	11.722		16.33		8.6	3.92	2.99
Total Zinc	µg/L	20.6	16.94		29.333		9.83	131.32	5.51
Dissolved Selenium	µg/L	DNQ	DNQ		0.227		DNQ	DNQ	ND
Total Selenium	µg/L	DNQ	DNQ		0.174		DNQ	DNQ	ND

Table 69. Revolon Slough – Ag Drain, E. Side of Wood Rd N. of Revolon (04D_WOOD)

Constituent	Units	Event 22 Dry 8/17/2010	Event 23 Dry 11/9/2010	Event 24 Wet 12/19/2010			Event 25 Dry 2/1/2010	Event 26 Wet 3/20/2011	Event 27 Dry 5/4/2011
General Water Quality Constituents									
Flow	cfs		0.191696		7.778		0.04895	NM	
pH			8.09		7.45		8.26	7.90	
Temperature	°C		17.08		14.67		8.64	11.26	
Dissolved Oxygen	mg/L	NS Site Dry	9.14		9.75		17.84	10.55	NS Site Dry
Electrical Conductivity	µS/cm		2.33		2238		4670	431	
TSS	mg/L		120.4		408.8		17.7	2820.0	
Total Hardness	mg/L		917.8		845.0		2145.8	137.2	
Organic Constituents in Water									
OC Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Aldrin	µg/L		ND	ND	ND	ND	ND	ND	
Alpha-BHC (HCH)	µg/L		ND	ND	ND	ND	ND	ND	
Beta-BHC (HCH)	µg/L		ND	ND	ND	ND	ND	ND	
Gamma-BHC (HCH)	µg/L		ND	ND	ND	ND	ND	ND	
Delta-BHC (HCH)	µg/L		ND	ND	ND	ND	ND	ND	
Chlordane-alpha	µg/L		ND	ND	ND	ND	ND	ND	
Chlordane-gamma	µg/L	NS Site Dry	ND	ND	ND	ND	ND	0.0494	NS Site Dry
Total Chlordane	µg/L		ND	ND	ND	ND	ND	0.0494	
2,4'-DDD	µg/L		ND	ND	ND	ND	ND	0.2348	
2,4'-DDE	µg/L		ND	ND	ND	ND	ND	0.0856	
2,4'-DDT	µg/L		ND	ND	ND	ND	0.0135	1.1679	
4,4'-DDD	µg/L		ND	ND	ND	ND	ND	1.0607	
4,4'-DDE	µg/L		0.0226	0.015	0.3431	0.037	0.0345	4.3847	

Table 69. Revolon Slough – Ag Drain, E. Side of Wood Rd N. of Revolon (04D_WOOD) continued

Constituent	Units	Event 22 Dry 8/17/2010	Event 23 Dry 11/9/2010	Event 24 Wet 12/19/2010			Event 25 Dry 2/1/2010	Event 26 Wet 3/20/2011	Event 27 Dry 5/4/2011
OC Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
4,4'-DDT	µg/L	NS Site Dry	ND	ND	ND	ND	DNQ	1.1914	NS Site Dry
Dieldrin	µg/L		ND	ND	ND	ND	ND	ND	
Endosulfan I	µg/L		ND	ND	ND	ND	ND	ND	
Endosulfan II	µg/L		ND	ND	ND	ND	ND	ND	
Endosulfan Sulfate	µg/L		ND	ND	ND	ND	ND	ND	
Endrin	µg/L		ND	ND	ND	ND	ND	ND	
Endrin Aldehyde	µg/L		ND	ND	ND	ND	ND	ND	
Endrin Ketone	µg/L		ND	ND	ND	ND	ND	ND	
Toxaphene	µg/L		ND	ND	0.089	ND	ND	ND	
PCBs				**<63µm**	**63µm to 2mm**	**Filtrate**			
Aroclor 1016	µg/L	NS Site Dry	ND	ND	ND	ND	ND	ND	NS Site Dry
Aroclor 1221	µg/L		ND	ND	ND	ND	ND	ND	
Aroclor 1232	µg/L		ND	ND	ND	ND	ND	ND	
Aroclor 1242	µg/L		ND	ND	ND	ND	ND	ND	
Aroclor 1248	µg/L		ND	ND	ND	ND	ND	ND	
Aroclor 1254	µg/L		ND	ND	ND	ND	ND	ND	
Aroclor 1260	µg/L		ND	ND	ND	ND	ND	ND	
OP Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Chlorpyrifos	µg/L	NS Site Dry	ND	0.1416	ND	ND	0.1868	0.2802	NS Site Dry
Diazinon	µg/L		ND	ND	ND	ND	ND	ND	
Malathion	µg/L		ND	ND	ND	ND	ND	ND	

Table 69. Revolon Slough – Ag Drain, E. Side of Wood Rd N. of Revolon (04D_WOOD) continued

Constituent	Units	Event 22 Dry 8/17/2010	Event 23 Dry 11/9/2010	Event 24 Wet 12/19/2010			Event 25 Dry 2/1/2010	Event 26 Wet 3/20/2011	Event 27 Dry 5/4/2011
Triazine Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Atrazine	µg/L		NM		ND		NM	NM	
Prometryn	µg/L	NS Site Dry	NM		0.0419		NM	NM	NS Site Dry
Simazine	µg/L		NM		ND		NM	NM	
Pyrethroid Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Bifenthrin	µg/L		ND	ND	0.0362	0.0029	DNQ	0.0316	
Cyfluthrin	µg/L		ND	ND	ND	ND	ND	ND	
Cypermethrin	µg/L		ND	ND	0.0083	ND	ND	0.032	
Deltamethrin	µg/L	NS Site Dry	ND	ND	ND	ND	ND	ND	NS Site Dry
Permethrin	µg/L		ND	ND	0.2224	ND	ND	1.2909	
Permethrin, cis-	µg/L		NM	ND	0.1662	ND	ND	1.2909	
Permethrin, trans-	µg/L		NM	ND	0.0562	ND	ND	ND	
Metals & Selenium in Water									
Dissolved Copper	µg/L		2.423		8.205		3.54	6.77	
Total Copper	µg/L		2.599		15.242		4.61	140.78	
Dissolved Mercury	µg/L		DNQ		0.0028		DNQ	ND	
Total Mercury	µg/L		ND		0.026		0.0021	0.1599	
Dissolved Nickel	µg/L	NS Site Dry	5.582		41.521		22.59	2.56	NS Site Dry
Total Nickel	µg/L		5.767		49.431		25.83	111.16	
Dissolved Zinc	µg/L		2.995		9.574		2.92	1.97	
Total Zinc	µg/L		2.187		52.072		4.21	439.83	
Dissolved Selenium	µg/L		3.362		1.918		4.57	0.38	
Total Selenium	µg/L		3.554		1.815		5.04	1.36	

Table 70. Beardsley Wash – Central Avenue (05_CENTR)

Constituent	Units	Event 22 Dry 8/18/2010	Event 23 Dry 11/10/2010	Event 24 Wet 12/19/2010	Event 25 Dry 2/2/2011	Event 26 Wet 3/20/2011	Event 27 Dry 5/5/2011
General Water Quality Constituents							
Flow	cfs	0.823	2.498	13.074	0.650	NM	0.979
pH		8.55	8.38	7.81	8.34	7.76	8.46
Temperature	°C	29.85	15.59	14.52	4.78	12.12	18.83
Dissolved Oxygen	mg/L	11.89	15.56	10.29	13.61	10.62	16.02
Electrical Conductivity	µS/cm	3220	3860	736	4390	80	3510
TSS	mg/L	18.2	76.6	1674.0	35.0	6113.3	5.4
Nutrients							
Ammonia-N	mg/L	ND	DNQ	0.125	ND	0.77	DNQ
Nitrate-N	mg/L	40.5	45.08	10.71	71.3	5.8	50.1
Nitrite-N	mg/L	0.36	DNQ	0.066	0.08	DNQ	0.23
Organic N	mg/L	DNQ	4.242	5.555	0.48	8.95	5.39
TKN	mg/L	DNQ	4.28	5.68	0.48	9.72	5.44
Total Phosphorus-P	mg/L	DNQ	0.119	2.51	0.049	6.256	0.768
Orthophosphate-P	mg/L	0.023	ND	0.641	ND	0.817	ND

Table 71. Revolon Slough – Santa Clara Drain prior to confluence with Beardsley Channel (05D_SANT_VCWPD)

Constituent	Units	Event 22 Dry 8/17/2010	Event 23 Dry 11/9/2010		Event 24 Wet 12/19/2010		Event 25 Dry 2/1/2010	Event 26 Wet 3/20/2011	Event 27 Dry 5/4/2011
General Water Quality Constituents									
Flow	cfs	2.303	9.693		6.334		1.346	NM	1.263
pH		8.07	8.53		7.86		8.52	7.96	9
Temperature	°C	17.39	17.15		14.62		19.61	11.74	25.76
Dissolved Oxygen	mg/L	11.4	9.59		9.96		21.63	10.41	12.83
Electrical Conductivity	µS/cm	2193	2690		469		3710	221	3080
TSS	mg/L	5.75	42.3		1122.0		38.5	8880.0	DNQ
Total Hardness	mg/L	529.0	1060.4		145.1		1404.7	77.8	1200.5
Organic Constituents in Water									
OC Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Aldrin	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Alpha-BHC (HCH)	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Beta-BHC (HCH)	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Gamma-BHC (HCH)	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Delta-BHC (HCH)	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Chlordane-alpha	µg/L	ND	ND	ND	DNQ	ND	ND	0.0204	ND
Chlordane-gamma	µg/L	ND	ND	ND	DNQ	ND	ND	0.0237	ND
Total Chlordane	µg/L	ND	ND	ND	DNQ	ND	ND	0.0441	ND
2,4'-DDD	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
2,4'-DDE	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
2,4'-DDT	µg/L	ND	ND	ND	ND	ND	ND	0.2233	ND
4,4'-DDD	µg/L	ND	ND	ND	0.0279	ND	ND	0.1907	ND
4,4'-DDE	µg/L	ND	0.0258	0.0235	0.1735	0.0188	0.0124	0.9192	ND

Table 71. Revolon Slough – Santa Clara Drain prior to confluence with Beardsley Channel (05D_SANT_VCWPD) continued

Constituent	Units	Event 22 Dry 8/17/2010	Event 23 Dry 11/9/2010		Event 24 Wet 12/19/2010		Event 25 Dry 2/1/2010	Event 26 Wet 3/20/2011	Event 27 Dry 5/4/2011
OC Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
4,4'-DDT	µg/L	ND	0.0224	ND	0.0698	ND	ND	ND	ND
Dieldrin	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan I	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan II	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan Sulfate	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endrin	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endrin Aldehyde	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endrin Ketone	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Toxaphene	µg/L	DNQ	ND	ND	DNQ	ND	ND	ND	ND
PCBs				**<63µm**	**63µm to 2mm**	**Filtrate**			
Aroclor 1016	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1221	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1232	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1242	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1248	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1254	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1260	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
OP Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Chlorpyrifos	µg/L	0.0694	0.0938	1.6643	ND	ND	0.1135	0.5661	0.0042
Diazinon	µg/L	ND	0.0726	0.3931	ND	ND	ND	1.6397	ND
Malathion	µg/L	ND	ND	ND	ND	ND	ND	ND	ND

Table 71. Revolon Slough – Santa Clara Drain prior to confluence with Beardsley Channel (05D_SANT_VCWPD) continued

Constituent	Units	Event 22 Dry 8/17/2010	Event 23 Dry 11/9/2010		Event 24 Wet 12/19/2010		Event 25 Dry 2/1/2010	Event 26 Wet 3/20/2011	Event 27 Dry 5/4/2011
Triazine Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Atrazine	µg/L	ND	NM		ND		NM	NM	NM
Prometryn	µg/L	ND	NM		0.112		NM	NM	NM
Simazine	µg/L	ND	NM		2.3521		NM	NM	NM
Pyrethroid Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Bifenthrin	µg/L	ND	0.004	ND	0.0161	DNQ	ND	0.0293	ND
Cyfluthrin	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Cypermethrin	µg/L	ND	ND	ND	0.0338	0.002	ND	0.0526	ND
Deltamethrin	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Permethrin	µg/L	ND	ND	ND	ND	ND	ND	0.1422	ND
Permethrin, cis-	µg/L	NM	NM	ND	ND	ND	ND	0.1422	ND
Permethrin, trans-	µg/L	NM	NM	ND	ND	ND	ND	ND	ND
Metals & Selenium in Water									
Dissolved Copper	µg/L	DNQ	1.923		4.975		1.77	4.96	2.04
Total Copper	µg/L	0.948	4.702		32.815		3.27	613.91	2.24
Dissolved Mercury	µg/L	DNQ	0.001		0.0023		0.0016	ND	0.0019
Total Mercury	µg/L	0.0045	0.0037		0.0712		0.0012	0.4463	0.0016
Dissolved Nickel	µg/L	1.38	1.538		2.081		2.23	2.07	2.14
Total Nickel	µg/L	1.62	2.971		19.062		4.04	283.98	2.39
Dissolved Zinc	µg/L	ND	2.505		3.148		0.97	2.31	0.89
Total Zinc	µg/L	1.93	8.35		98.578		3.38	1270.27	1.1
Dissolved Selenium	µg/L	25.0	49.957		4.254		44.96	1.54	59.73
Total Selenium	µg/L	28.1	49.843		3.719		70.73	3.39	52.86

Table 72. Arroyo Las Posas – Somis Road (06_SOMIS)

Constituent	Units	Event 22 Dry 8/17/2010	Event 23 Dry 11/9/2010		Event 24 Wet 12/19/2010		Event 25 Dry 2/1/2011	Event 26 Wet 3/20/2011	Event 27 Dry 5/4/2011
General Water Quality Constituents									
Flow	cfs	0.716	3.924		NM		7.326	NM	3.932
pH		8.1	8.32		7.86		8.32	7.83	8.31
Temperature	°C	25.9	15.19		14.31		12.08	11.41	26.23
Dissolved Oxygen	mg/L	8.65	8.86		8.29		10.88	13.27	7.32
Electrical Conductivity	µS/cm	1849	1690		362		601	351	1890
TSS	mg/L	13.0	20.6		1387.5		25.6	2228.0	7.2
Nutrients									
Ammonia-N	mg/L	ND	ND		0.116		0.11	0.27	0.06
Nitrate-N	mg/L	9.84	8.49		2.38		10.38	2.26	9.18
Nitrite-N	mg/L	DNQ	ND		DNQ		DNQ	DNQ	0.16
Organic N	mg/L	DNQ	2.48		4.924		0.33	6.77	1.72
TKN	mg/L	DNQ	2.48		5.04		0.44	7.04	1.78
Total Phosphorus-P	mg/L	0.49	0.865		2.88		0.824	4.021	0.907
Orthophosphate-P	mg/L	0.39	ND		0.572		0.697	0.579	0.719
Organic Constituents in Water									
OC Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Aldrin	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Alpha-BHC (HCH)	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Beta-BHC (HCH)	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Gamma-BHC (HCH)	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Delta-BHC (HCH)	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Chlordane-alpha	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Chlordane-gamma	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Total Chlordane	µg/L	ND	ND	ND	ND	ND	ND	ND	ND

Table 72. Arroyo Las Posas – Somis Road (06_SOMIS) continued

Constituent	Units	Event 22 Dry 8/17/2010	Event 23 Dry 11/9/2010		Event 24 Wet 12/19/2010		Event 25 Dry 2/1/2011	Event 26 Wet 3/20/2011	Event 27 Dry 5/4/2011
OC Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
2,4'-DDD	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
2,4'-DDE	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
2,4'-DDT	µg/L	ND	ND	ND	ND	ND	ND	0.0546	ND
4,4'-DDD	µg/L	ND	ND	ND	ND	ND	ND	0.0454	ND
4,4'-DDE	µg/L	DNQ	0.0108	0.0266	0.1952	0.0155	0.0154	0.1853	ND
4,4'-DDT	µg/L	ND	ND	0.0106	0.1059	ND	ND	ND	ND
Dieldrin	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan I	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan II	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan Sulfate	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endrin	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endrin Aldehyde	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endrin Ketone	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Toxaphene	µg/L	DNQ	ND	ND	DNQ	ND	ND	ND	ND
PCBs				**<63µm**	**63µm to 2mm**	**Filtrate**			
Aroclor 1016	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1221	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1232	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1242	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1248	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1254	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1260	µg/L	ND	ND	ND	ND	ND	ND	ND	ND

Table 72. Arroyo Las Posas – Somis Road (06_SOMIS) continued

Constituent	Units	Event 22 Dry 8/17/2010	Event 23 Dry 11/9/2010		Event 24 Wet 12/19/2010		Event 25 Dry 2/1/2011	Event 26 Wet 3/20/2011	Event 27 Dry 5/4/2011
OP Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Chlorpyrifos	µg/L	ND	ND	0.1127	ND	ND	0.0549	0.3907	ND
Diazinon	µg/L	ND	ND	0.1113	ND	ND	ND	ND	ND
Malathion	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Triazine Pesticides									
Atrazine	µg/L	0.0238	NM		ND		NM	NM	NM
Prometryn	µg/L	ND	NM		ND		NM	NM	NM
Simazine	µg/L	0.0331	NM		0.3857		NM	NM	NM
Pyrethroid Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Bifenthrin	µg/L	ND	ND	ND	0.0276	0.0042	ND	0.0242	ND
Cyfluthrin	µg/L	ND	ND	ND	0.0148	ND	ND	ND	ND
Cypermethrin	µg/L	ND	ND	ND	DNQ	DNQ	ND	ND	ND
Deltamethrin	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Permethrin	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Permethrin, cis-	µg/L	NM	NM	ND	ND	ND	ND	ND	ND
Permethrin, trans-	µg/L	NM	NM	ND	ND	ND	ND	ND	ND

Table 73. Las Posas – Fox Canyon at Bradley Rd N of Hwy 118 (06T_FC_BR)

Constituent	Units	Event 22 Dry 8/17/2010	Event 23 Dry 11/9/2010		Event 24 Wet 12/19/2010		Event 25 Dry 2/1/2010	Event 26 Wet 3/20/2011	Event 27 Dry 5/4/2011
General Water Quality Constituents									
Flow	cfs	0.023			9.010			32.275	
pH		8.72			8.03			8.05	
Temperature	°C	27.11			14.36			10.49	
Dissolved Oxygen	mg/L	7.03	NS Site Dry		10.04		NS Site Dry	10.11	NS Site Dry
Electrical Conductivity	µS/cm	704.2			499			339	
TSS	mg/L	1560			6607.1			5273.3	
Total Hardness	mg/L	0.023			9.010			32.275	
Organic Constituents in Water									
OC Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Aldrin	µg/L	ND		ND	ND	ND		ND	
Alpha-BHC (HCH)	µg/L	ND		ND	ND	ND		ND	
Beta-BHC (HCH)	µg/L	ND		ND	ND	ND		ND	
Gamma-BHC (HCH)	µg/L	ND		ND	ND	ND		ND	
Delta-BHC (HCH)	µg/L	ND		ND	ND	ND		ND	
Chlordane-alpha	µg/L	0.0084		ND	DNQ	ND		ND	
Chlordane-gamma	µg/L	DNQ	NS Site Dry	ND	0.0056	ND	NS Site Dry	ND	NS Site Dry
Total Chlordane	µg/L	0.0084		ND	0.0056	ND		ND	
2,4'-DDD	µg/L	0.0135		ND	ND	ND		ND	
2,4'-DDE	µg/L	0.0102		ND	ND	ND		ND	
2,4'-DDT	µg/L	0.0558		ND	0.0222	ND		ND	
4,4'-DDD	µg/L	0.0346		ND	ND	ND		0.0139	
4,4'-DDE	µg/L	0.418		ND	0.0542	0.0238			

Table 73. Las Posas – Fox Canyon at Bradley Rd N of Hwy 118 (06T_FC_BR) continued

Constituent	Units	Event 22 Dry 8/17/2010	Event 23 Dry 11/9/2010	Event 24 Wet 12/19/2010			Event 25 Dry 2/1/2010	Event 26 Wet 3/20/2011	Event 27 Dry 5/4/2011
OC Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
4,4'-DDT	µg/L	0.159	NS Site Dry	ND	ND	ND	NS Site Dry	ND	NS Site Dry
Dieldrin	µg/L	ND		ND	ND	ND		ND	
Endosulfan I	µg/L	ND		ND	ND	ND		ND	
Endosulfan II	µg/L	ND		ND	ND	ND		ND	
Endosulfan Sulfate	µg/L	ND		ND	ND	ND		ND	
Endrin	µg/L	ND		ND	ND	ND		ND	
Endrin Aldehyde	µg/L	ND		ND	ND	ND		ND	
Endrin Ketone	µg/L	ND		ND	ND	ND		ND	
Toxaphene	µg/L	1.71		ND	ND	ND		ND	
PCBs				**<63µm**	**63µm to 2mm**	**Filtrate**			
Aroclor 1016	µg/L	ND	NS Site Dry	ND	ND	ND	NS Site Dry	ND	NS Site Dry
Aroclor 1221	µg/L	ND		ND	ND	ND		ND	
Aroclor 1232	µg/L	ND		ND	ND	ND		ND	
Aroclor 1242	µg/L	ND		ND	ND	ND		ND	
Aroclor 1248	µg/L	ND		ND	ND	ND		ND	
Aroclor 1254	µg/L	ND		ND	ND	ND		ND	
Aroclor 1260	µg/L	ND		ND	ND	ND		ND	
OP Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Chlorpyrifos	µg/L	ND	NS Site Dry	DNQ	0.0143	ND	NS Site Dry	0.0249	NS Site Dry
Diazinon	µg/L	ND		ND	ND	ND		ND	
Malathion	µg/L	ND		ND	ND	ND		ND	

Table 73. Las Posas – Fox Canyon at Bradley Rd N of Hwy 118 (06T_FC_BR) continued

Constituent	Units	Event 22 Dry 8/17/2010	Event 23 Dry 11/9/2010		Event 24 Wet 12/19/2010		Event 25 Dry 2/1/2010	Event 26 Wet 3/20/2011	Event 27 Dry 5/4/2011
Triazine Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Atrazine	µg/L	ND	NS Site Dry		ND		NS Site Dry	NM	NS Site Dry
Prometryn	µg/L	ND			ND			NM	
Simazine	µg/L	ND			1.1917			NM	
Pyrethroid Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Bifenthrin	µg/L	ND	NS Site Dry	0.0209	ND	0.0038	NS Site Dry	ND	NS Site Dry
Cyfluthrin	µg/L	ND		ND	ND	ND		ND	
Cypermethrin	µg/L	ND		ND	ND	ND		ND	
Deltamethrin	µg/L	ND		ND	ND	ND		ND	
Permethrin	µg/L	ND		ND	ND	ND		ND	
Permethrin, cis-	µg/L	NM		ND	ND	ND		ND	
Permethrin, trans-	µg/L	NM		ND	ND	ND		ND	

Table 74. Arroyo Simi – Hitch Boulevard (07_HITCH)

Constituent	Units	Event 22 Dry 8/17/2010	Event 23 Dry 11/9/2010		Event 24 Wet 12/19/2010		Event 25 Dry 2/1/2011	Event 26 Wet 3/20/2011	Event 27 Dry 5/5/2011
General Water Quality Constituents									
Flow	cfs	1.090	4.025		NM		4.741	NM	2.664
pH		7.69	6.99		7.86		7.94	7.75	8.06
Temperature	°C	25.2	15.12		14.91		15.78	10.96	25.07
Dissolved Oxygen	mg/L	8.64	8.41		8.52		9.22	11.65	8.35
Electrical Conductivity	µS/cm	1841	1670		458		1870	248	1910
TSS	mg/L	1.0	5.1		401.0		8.2	756.7	8.7
Nutrients									
Ammonia-N	mg/L	ND	ND		0.0749		DNQ	0.27	ND
Nitrate-N	mg/L	10.0	9.23		2.29		14.0	3.17	14.29
Nitrite-N	mg/L	0.072	ND		DNQ		DNQ	DNQ	0.16
Organic N	mg/L	DNQ	1.92		2.64		2.11	3.0	2.03
TKN	mg/L	DNQ	1.92		2.71		2.15	3.27	2.03
Total Phosphorus-P	mg/L	0.657	1.16		1.66		1.06	2.677	1.029
Orthophosphate-P	mg/L	0.875	0.124		0.521		0.901	0.462	0.781
Organic Constituents in Water									
OC Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Aldrin	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Alpha-BHC (HCH)	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Beta-BHC (HCH)	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Gamma-BHC (HCH)	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Delta-BHC (HCH)	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Chlordane-alpha	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Chlordane-gamma	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Total Chlordane	µg/L	ND	ND	ND	ND	ND	ND	ND	ND

Table 74. Arroyo Simi – Hitch Boulevard (07_HITCH) continued

Constituent	Units	Event 22 Dry 8/17/2010	Event 23 Dry 11/9/2010	Event 24 Wet 12/19/2010			Event 25 Dry 2/1/2011	Event 26 Wet 3/20/2011	Event 27 Dry 5/5/2011
OC Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
2,4'-DDD	µg/L	ND	ND	ND	ND	ND	ND	0.028	ND
2,4'-DDE	µg/L	ND	ND	ND	ND	ND	ND	0.014	ND
2,4'-DDT	µg/L	ND	ND	ND	0.0981	DNQ	ND	0.0894	ND
4,4'-DDD	µg/L	ND	ND	ND	ND	ND	ND	0.0797	ND
4,4'-DDE	µg/L	ND	ND	0.0173	0.2589	0.0141	0.0145	0.3769	ND
4,4'-DDT	µg/L	ND	ND	ND	0.1056	ND	ND	ND	ND
Dieldrin	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan I	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan II	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan Sulfate	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endrin	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endrin Aldehyde	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endrin Ketone	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Toxaphene	µg/L	ND	ND	ND	0.0582	ND	ND	ND	DNQ
PCBs				**<63µm**	**63µm to 2mm**	**Filtrate**			
Aroclor 1016	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1221	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1232	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1242	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1248	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1254	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1260	µg/L	ND	ND	ND	ND	ND	ND	ND	ND

Table 74. Arroyo Simi – Hitch Boulevard (07_HITCH) continued

Constituent	Units	Event 22 Dry 8/17/2010	Event 23 Dry 11/9/2010		Event 24 Wet 12/19/2010		Event 25 Dry 2/1/2011	Event 26 Wet 3/20/2011	Event 27 Dry 5/5/2011
OP Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Chlorpyrifos	µg/L	ND	ND	0.1015	ND	0.0127	0.0393	1.227	ND
Diazinon	µg/L	ND	ND	0.0627	ND	ND	ND	ND	ND
Malathion	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Triazine Pesticides									
Atrazine	µg/L	0.0207	NM		ND		NM	NM	NM
Prometryn	µg/L	ND	NM		DNQ		NM	NM	NM
Simazine	µg/L	0.0293	NM		0.021		NM	NM	NM
Pyrethroid Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Bifenthrin	µg/L	ND	ND	0.0031	0.0201	0.0021	ND	0.0259	ND
Cyfluthrin	µg/L	ND	ND	ND	0.0032	DNQ	ND	ND	ND
Cypermethrin	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Deltamethrin	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Permethrin	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Permethrin, cis-	µg/L	NM	NM	ND	ND	ND	ND	ND	ND
Permethrin, trans-	µg/L	NM	NM	ND	ND	ND	ND	ND	ND

Table 75. Arroyo Simi – Madera Avenue (07_MADER)

Constituent	Units	Event 22 Dry 8/18/2010	Event 23 Dry 11/10/2010	Event 24 Wet 12/19/2010	Event 25 Dry 2/2/2011	Event 26 Wet 3/20/2011	Event 27 Dry 5/5/2011
General Water Quality Constituents							
Flow	cfs	2.525	4.860	NM	2.825	NM	1.002
pH		8.12	8.24	7.85	8.18	8.2	8.12
Temperature	°C	22.03	15.02	14.61	9.86	10.61	21.14
Dissolved Oxygen	mg/L	8.48	9.78	9.38	11.04	10.83	10.3
Electrical Conductivity	µS/cm	2490	NM	601	2460	161	2650
TSS	mg/L	2.75	DNQ	557.8	DNQ	610.0	DNQ
Nutrients							
Ammonia-N	mg/L	0.037	0.79	0.115	0.06	0.25	ND
Nitrate-N	mg/L	4.07	4.78	0.861	4.51	0.44	4.54
Nitrite-N	mg/L	0.097	DNQ	DNQ	DNQ	DNQ	0.19
Organic N	mg/L	ND	0.43	2.055	1.2	2.46	1.52
TKN	mg/L	ND	1.22	2.17	1.26	2.71	1.52
Total Phosphorus-P	mg/L	ND	0.045	1.48	0.042	1.652	0.169
Orthophosphate-P	mg/L	0.036	ND	0.289	ND	0.291	ND

Table 76. Arroyo Simi –Flood Control Channel at County Trail Park (07D_CTP)

Constituent	Units	Event 22 Dry 8/18/2010	Event 23 Dry 11/10/2010	Event 24 Wet 12/19/2010			Event 25 Dry 2/2/2011	Event 26 Wet 3/20/2011	Event 27 Dry 5/5/2011
General Water Quality Constituents									
Flow	cfs	0.234	0.096	NM			0.112	NM	0.111
pH		9.5	10.66	7.77			9.48	7.65	10.17
Temperature	°C	26.15	20.25	15.31			8.81	11.79	24.55
Dissolved Oxygen	mg/L	13.01	11.7	9.26			17.02	10.17	12.93
Electrical Conductivity	µS/cm	840	835	449			845	154	727
TSS	mg/L	6.75	DNQ	19.9			DNQ	94.5	11.3
Total Hardness	mg/L	0.234	0.096	NM			0.112	NM	0.111
Organic Constituents in Water									
OC Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Aldrin	µg/L	ND	ND	ND	ND	DNQ	ND	ND	ND
Alpha-BHC (HCH)	µg/L	ND	ND	ND	ND	0.005	ND	ND	ND
Beta-BHC (HCH)	µg/L	ND	ND	ND	ND	0.015	ND	ND	ND
Gamma-BHC (HCH)	µg/L	ND	ND	ND	ND	DNQ	ND	ND	ND
Delta-BHC (HCH)	µg/L	ND	ND	ND	ND	0.0062	ND	ND	ND
Chlordane-alpha	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Chlordane-gamma	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Total Chlordane	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
2,4'-DDD	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
2,4'-DDE	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
2,4'-DDT	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
4,4'-DDD	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
4,4'-DDE	µg/L	ND	ND	ND	ND	ND	ND	ND	ND

Table 76. Arroyo Simi –Flood Control Channel at County Trail Park (07D_CTP) continued

Constituent	Units	Event 22 Dry 8/18/2010	Event 23 Dry 11/10/2010	Event 24 Wet 12/19/2010			Event 25 Dry 2/2/2011	Event 26 Wet 3/20/2011	Event 27 Dry 5/5/2011
OC Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
4,4'-DDT	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Dieldrin	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan I	µg/L	ND	ND	ND	ND	0.0055	ND	ND	ND
Endosulfan II	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan Sulfate	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endrin	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endrin Aldehyde	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endrin Ketone	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Toxaphene	µg/L	ND	ND	ND	ND	ND	ND	ND	0.0619
PCBs				**<63µm**	**63µm to 2mm**	**Filtrate**			
Aroclor 1016	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1221	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1232	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1242	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1248	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1254	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1260	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
OP Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Chlorpyrifos	µg/L	ND	ND	0.0617	ND	ND	ND	ND	ND
Diazinon	µg/L	ND	ND	0.0151	ND	ND	ND	ND	ND
Malathion	µg/L	ND	ND	ND	ND	ND	ND	ND	ND

Table 76. Arroyo Simi –Flood Control Channel at County Trail Park (07D_CTP) continued

Constituent	Units	Event 22 Dry 8/18/2010	Event 23 Dry 11/10/2010	Event 24 Wet 12/19/2010			Event 25 Dry 2/2/2011	Event 26 Wet 3/20/2011	Event 27 Dry 5/5/2011
Triazine Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Atrazine	µg/L	ND	NM		ND		NM	NM	NM
Prometryn	µg/L	ND	NM		ND		NM	NM	NM
Simazine	µg/L	ND	NM		0.0417		NM	NM	NM
Pyrethroid Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Bifenthrin	µg/L	0.134	0.0166	0.0071	0.0403	0.0103	0.1685	0.022	0.0229
Cyfluthrin	µg/L	0.005	ND	ND	0.0123	0.002	ND	ND	ND
Cypermethrin	µg/L	ND	ND	ND	DNQ	ND	ND	ND	ND
Deltamethrin	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Permethrin	µg/L	ND	ND	ND	DNQ	ND	0.1964	ND	ND
Permethrin, cis-	µg/L	NM	NM	ND	DNQ	ND	0.1515	ND	ND
Permethrin, trans-	µg/L	NM	NM	ND	ND	ND	0.0449	ND	ND

Table 77. Arroyo Simi – 2nd corrugated pipe discharging on north side of Arroyo Simi flood control levee off of Hitch Blvd (07D_HITCH_LEVEE_2)

Constituent	Units	Event 22 Dry 8/17/2010	Event 23 Dry 11/9/2010	Event 24 Wet 12/19/2010			Event 25 Dry 2/1/2010	Event 26 Wet 3/20/2011	Event 27 Dry 5/5/2011
General Water Quality Constituents									
Flow	cfs		NM		NM			NM	0.005
pH			8.18		7.8			7.73	8.34
Temperature	°C		12.54		15.45			11.5	22.93
Dissolved Oxygen	mg/L	NS Site Dry	9.83		8.38		NS Site Dry	10.2	7.45
Electrical Conductivity	µS/cm		2790		420			440	3.36
TSS	mg/L		1031.1		952.0			406.0	27.6
Total Hardness	mg/L		NM		NM			NM	0.005
Organic Constituents in Water									
OC Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Aldrin	µg/L		ND	ND	ND	ND		ND	ND
Alpha-BHC (HCH)	µg/L		ND	ND	ND	ND		ND	ND
Beta-BHC (HCH)	µg/L		ND	ND	ND	ND		ND	ND
Gamma-BHC (HCH)	µg/L		ND	ND	ND	ND		ND	ND
Delta-BHC (HCH)	µg/L		ND	ND	ND	ND		ND	ND
Chlordane-alpha	µg/L	NS Site Dry	0.0484	ND	0.0195	ND	NS Site Dry	0.0105	ND
Chlordane-gamma	µg/L		0.0385	ND	0.0087	ND		0.0126	ND
Total Chlordane	µg/L		0.0869	ND	0.0282	ND		0.0231	ND
2,4'-DDD	µg/L		0.0727	ND	ND	ND		0.0514	ND
2,4'-DDE	µg/L		0.0662	ND	ND	ND		0.0237	ND
2,4'-DDT	µg/L		0.3798	0.0095	0.4344	ND		0.2023	0.0188
4,4'-DDD	µg/L		0.2351	ND	0.1539	ND		0.2024	0.0091

Table 77. Arroyo Simi – 2nd corrugated pipe discharging on north side of Arroyo Simi flood control levee off of Hitch Blvd (07D_HITCH_LEVEE_2) continued

Constituent	Units	Event 22 Dry 8/17/2010	Event 23 Dry 11/9/2010	Event 24 Wet 12/19/2010			Event 25 Dry 2/1/2010	Event 26 Wet 3/20/2011	Event 27 Dry 5/4/2011
OC Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
4,4'-DDE	µg/L	NS Site Dry	3.4783	0.0753	1.3499	0.5125	NS Site Dry	0.866	0.1039
4,4'-DDT	µg/L		1.4568	0.0367	0.6492	ND		0.113	0.0604
Dieldrin	µg/L		ND	ND	ND	ND		ND	ND
Endosulfan I	µg/L		ND	ND	ND	ND		ND	ND
Endosulfan II	µg/L		ND	ND	ND	ND		ND	ND
Endosulfan Sulfate	µg/L		ND	ND	ND	ND		ND	ND
Endrin	µg/L		ND	ND	ND	ND		ND	ND
Endrin Aldehyde	µg/L		ND	ND	ND	ND		ND	ND
Endrin Ketone	µg/L		ND	ND	ND	ND		ND	ND
Toxaphene	µg/L		ND	ND	DNQ	ND		ND	DNQ
PCBs				**<63µm**	**63µm to 2mm**	**Filtrate**			
Aroclor 1016	µg/L	NS Site Dry	ND	ND	ND	ND	NS Site Dry	ND	ND
Aroclor 1221	µg/L		ND	ND	ND	ND		ND	ND
Aroclor 1232	µg/L		ND	ND	ND	ND		ND	ND
Aroclor 1242	µg/L		ND	ND	ND	ND		ND	ND
Aroclor 1248	µg/L		ND	ND	ND	ND		ND	ND
Aroclor 1254	µg/L		ND	ND	ND	ND		ND	ND
Aroclor 1260	µg/L		ND	ND	ND	ND		ND	ND

Table 77. Arroyo Simi – 2nd corrugated pipe discharging on north side of Arroyo Simi flood control levee off of Hitch Blvd (07D_HITCH_LEVEE_2) continued

Constituent	Units	Event 22 Dry 8/17/2010	Event 23 Dry 11/9/2010	Event 24 Wet 12/19/2010			Event 25 Dry 2/1/2010	Event 26 Wet 3/20/2011	Event 27 Dry 5/4/2011
OP Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Chlorpyrifos	µg/L	NS Site Dry	1.5901	0.318	ND	ND	NS Site Dry	0.1487	2.234
Diazinon	µg/L		ND	0.4041	ND	ND		ND	ND
Malathion	µg/L		ND	ND	ND	ND		ND	ND
Triazine Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Atrazine	µg/L	NS Site Dry	NM		ND		NS Site Dry	NM	NM
Prometryn	µg/L		NM		ND			NM	NM
Simazine	µg/L		NM		ND			NM	NM
Pyrethroid Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Bifenthrin	µg/L	NS Site Dry	ND	ND	ND	DNQ	NS Site Dry	ND	ND
Cyfluthrin	µg/L		ND	ND	0.0039	0.0087		ND	ND
Cypermethrin	µg/L		ND	ND	0.0074	0.0066		ND	ND
Deltamethrin	µg/L		ND	ND	ND	0.0543		ND	ND
Permethrin	µg/L		0.1893	ND	0.4935	1.3258		0.4655	0.2323
Permethrin, cis-	µg/L		NM	ND	0.4935	1.1096		0.4655	0.175
Permethrin, trans-	µg/L		NM	ND	ND	0.2162		ND	0.0573

Table 78. Arroyo Simi – Dry Canyon at Heywood Street Crossing (07T_DC_H)

		Event 22	Event 23		Event 24		Event 25	Event 26	Event 27
		Dry	Dry		Wet		Dry	Wet	Dry
Constituent	Units	8/18/2010	11/10/2010		12/19/2010		2/2/2011	3/20/2011	5/5/2011
General Water Quality Constituents									
Flow	cfs	0.127	0.019		9.405		0.088	NM	0.080
pH		8.42	9.13		7.75		8.41	7.75	9.21
Temperature	°C	20.49	13.95		15.1		3.74	10.84	23.03
Dissolved Oxygen	mg/L	8.23	10.78		9.08		12.55	10.46	10.05
Electrical Conductivity	µS/cm	1236	895		178		1570	77	12530
TSS	mg/L	11.2	DNQ		37.9		29.0	217.0	8.2
Total Hardness	mg/L	0.127	0.019		9.405		0.088	NM	0.080
Organic Constituents in Water									
OC Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Aldrin	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Alpha-BHC (HCH)	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Beta-BHC (HCH)	µg/L	ND	ND	ND	ND	ND	ND	0.0214	ND
Gamma-BHC (HCH)	µg/L	ND	ND	ND	ND	ND	ND	0.0078	ND
Delta-BHC (HCH)	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Chlordane-alpha	µg/L	ND	ND	ND	ND	ND	DNQ	ND	ND
Chlordane-gamma	µg/L	ND	ND	ND	ND	ND	DNQ	ND	ND
Total Chlordane	µg/L	ND	ND	ND	ND	ND	DNQ	ND	ND
2,4'-DDD	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
2,4'-DDE	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
2,4'-DDT	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
4,4'-DDD	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
4,4'-DDE	µg/L	ND	ND	ND	ND	ND	0.011	ND	ND

Table 78. Arroyo Simi – Dry Canyon at Heywood Street Crossing (07T_DC_H) continued

Constituent	Units	Event 22 Dry 8/18/2010	Event 23 Dry 11/10/2010	Event 24 Wet 12/19/2010			Event 25 Dry 2/2/2011	Event 26 Wet 3/20/2011	Event 27 Dry 5/5/2011
OC Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
4,4'-DDT	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Dieldrin	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan I	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan II	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan Sulfate	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endrin	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endrin Aldehyde	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endrin Ketone	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Toxaphene	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
PCBs				**<63µm**	**63µm to 2mm**	**Filtrate**			
Aroclor 1016	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1221	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1232	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1242	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1248	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1254	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1260	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
OP Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Chlorpyrifos	µg/L	ND	0.3711	ND	ND	ND	ND	ND	ND
Diazinon	µg/L	0.0408	ND	ND	ND	1.2116	ND	ND	0.0408
Malathion	µg/L	ND	ND	ND	ND	ND	ND	ND	ND

Table 78. Arroyo Simi – Dry Canyon at Heywood Street Crossing (07T_DC_H) continued

Constituent	Units	Event 22 Dry 8/18/2010	Event 23 Dry 11/10/2010	Event 24 Wet 12/19/2010			Event 25 Dry 2/2/2011	Event 26 Wet 3/20/2011	Event 27 Dry 5/5/2011
Triazine Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Atrazine	µg/L	ND	NM		ND		NM	NM	NM
Prometryn	µg/L	ND	NM		ND		NM	NM	NM
Simazine	µg/L	0.0435	NM		ND		NM	NM	NM
Pyrethroid Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Bifenthrin	µg/L	0.0415	0.0094	ND	0.0198	0.01	ND	0.0474	0.0188
Cyfluthrin	µg/L	0.0133	ND	ND	0.0078	0.0031	ND	0.0225	0.0084
Cypermethrin	µg/L	DNQ	ND	ND	ND	ND	ND	ND	ND
Deltamethrin	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Permethrin	µg/L	ND	0.0694	ND	ND	ND	ND	DNQ	NM
Permethrin, cis-	µg/L	NM	NM	ND	ND	ND	ND	ND	NM
Permethrin, trans-	µg/L	NM	NM	ND	ND	ND	ND	DNQ	NM

Table 79. Conejo Creek – Hill Canyon below N Fork (10_GATE)

Constituent	Units	Event 22 Dry 8/17/2010	Event 23 Dry 11/9/2010		Event 24 Wet 12/19/2010		Event 25 Dry 2/1/2011	Event 26 Wet 3/20/2011	Event 27 Dry 5/5/2011
General Water Quality Constituents									
Flow	cfs	NM	3.929		NM		4.200	NM	18.982
pH		7.33	7.61		7.75		7.86	7.83	7.96
Temperature	°C	22.99	20.6		15.11		17.68	11.57	22.32
Dissolved Oxygen	mg/L	6.46	6.1		9.42		8.39	10.61	9.02
Electrical Conductivity	µS/cm	1225	1025		373		1253	189	1341
TSS	mg/L	2.0	DNQ		40.4		DNQ	369.3	DNQ
Nutrients									
Ammonia-N	mg/L	2.8	1.0		0.106		0.57	0.35	0.4
Nitrate-N	mg/L	4.87	4.58		1.01		3.86	0.64	3.58
Nitrite-N	mg/L	0.318	0.11		DNQ		0.12	ND	0.27
Organic N	mg/L	ND	0.98		1.274		1.5	2.64	1.82
TKN	mg/L	2.68	1.98		1.38		2.07	2.99	2.22
Total Phosphorus-P	mg/L	2.23	0.075		0.384		2.07	0.689	2.131
Orthophosphate-P	mg/L	2.08	0.54		0.388		1.689	0.381	1.781
Organic Constituents in Water									
OC Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Aldrin	µg/L	ND	ND	ND	ND	ND	ND	ND	NM
Alpha-BHC (HCH)	µg/L	ND	ND	ND	ND	ND	ND	ND	NM
Beta-BHC (HCH)	µg/L	ND	ND	ND	ND	ND	ND	ND	NM
Gamma-BHC (HCH)	µg/L	ND	ND	ND	ND	ND	ND	ND	NM
Delta-BHC (HCH)	µg/L	ND	ND	ND	ND	ND	ND	ND	NM
Chlordane-alpha	µg/L	ND	ND	ND	ND	ND	ND	ND	NM
Chlordane-gamma	µg/L	ND	ND	ND	ND	ND	ND	ND	NM
Total Chlordane	µg/L	ND	ND	ND	ND	ND	ND	ND	NM

Table 79. Conejo Creek – Hill Canyon below N Fork (10_GATE) continued

Constituent	Units	Event 22 Dry 8/17/2010	Event 23 Dry 11/9/2010	Event 24 Wet 12/19/2010			Event 25 Dry 2/1/2011	Event 26 Wet 3/20/2011	Event 27 Dry 5/5/2011
OC Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
2,4'-DDD	µg/L	ND	ND	ND	ND	ND	ND	ND	NM
2,4'-DDE	µg/L	ND	ND	ND	ND	ND	ND	ND	NM
2,4'-DDT	µg/L	ND	ND	ND	ND	ND	ND	ND	NM
4,4'-DDD	µg/L	ND	ND	ND	ND	ND	ND	ND	NM
4,4'-DDE	µg/L	ND	ND	ND	ND	ND	ND	ND	NM
4,4'-DDT	µg/L	ND	ND	ND	ND	ND	ND	ND	NM
Dieldrin	µg/L	ND	ND	ND	ND	ND	ND	ND	NM
Endosulfan I	µg/L	ND	ND	ND	ND	ND	ND	ND	NM
Endosulfan II	µg/L	ND	ND	ND	ND	ND	ND	ND	NM
Endosulfan Sulfate	µg/L	ND	ND	ND	ND	ND	ND	ND	NM
Endrin	µg/L	ND	ND	ND	ND	ND	ND	ND	NM
Endrin Aldehyde	µg/L	ND	ND	ND	ND	ND	ND	ND	NM
Endrin Ketone	µg/L	ND	ND	ND	ND	ND	ND	ND	NM
Toxaphene	µg/L	ND	ND	ND	ND	ND	ND	ND	NM
PCBs				**<63µm**	**63µm to 2mm**	**Filtrate**			
Aroclor 1016	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1221	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1232	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1242	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1248	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1254	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1260	µg/L	ND	ND	ND	ND	ND	ND	ND	ND

Table 79. Conejo Creek – Hill Canyon below N Fork (10_GATE) continued

Constituent	Units	Event 22 Dry 8/17/2010	Event 23 Dry 11/9/2010	Event 24 Wet 12/19/2010			Event 25 Dry 2/1/2011	Event 26 Wet 3/20/2011	Event 27 Dry 5/5/2011
OP Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Chlorpyrifos	µg/L	ND	ND	ND	ND	ND	ND	ND	NM
Diazinon	µg/L	ND	ND	ND	ND	ND	ND	ND	NM
Malathion	µg/L	ND	ND	ND	ND	ND	ND	ND	NM
Triazine Pesticides									
Atrazine	µg/L	ND	NM		ND		NM	NM	NM
Prometryn	µg/L	ND	NM		ND		NM	NM	NM
Simazine	µg/L	0.0401	NM		ND		NM	NM	NM
Pyrethroid Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Bifenthrin	µg/L	ND	ND	ND	0.015	DNQ	ND	0.0475	NM
Cyfluthrin	µg/L	ND	ND	ND	0.0042	ND	ND	0.0187	NM
Cypermethrin	µg/L	ND	ND	ND	ND	ND	ND	ND	NM
Deltamethrin	µg/L	ND	ND	ND	ND	ND	ND	ND	NM
Permethrin	µg/L	ND	ND	ND	ND	ND	ND	ND	NM
Permethrin, cis-	µg/L	NM	NM	ND	ND	ND	ND	ND	NM
Permethrin, trans-	µg/L	NM	NM	ND	ND	ND	ND	DNQ	NM

Table 80. Conejo Creek – North Fork above Hill Canyon (12_PARK)

Constituent	Units	Event 22 Dry 8/17/2010	Event 23 Dry 11/10/2010	Event 25 Dry 2/2/2011	Event 27 Dry 5/4/2011
General Water Quality Constituents					
Flow	cfs	0.132	1.479	1.962	0.470
pH		7.98	8.18	8.59	8.65
Temperature	°C	17.4	9.8	8.61	18.95
Dissolved Oxygen	mg/L	8.31	9.42	11.47	12.08
Electrical Conductivity	µS/cm	1680	1433	1930	1990
TSS	mg/L	DNQ	ND	DNQ	ND
Nutrients					
Ammonia-N	mg/L	ND	ND	ND	ND
Nitrate-N	mg/L	0.276	0.57	1.39	0.92
Nitrite-N	mg/L	DNQ	ND	ND	DNQ
Organic N	mg/L	ND	0.61	0.7	0.54
TKN	mg/L	ND	0.61	0.7	0.54
Total Phosphorus-P	mg/L	ND	0.085	0.08	0.333
Orthophosphate-P	mg/L	0.019	ND	0.191	ND

Table 81. Conejo Creek – S Fork behind Belt Press Build (13_BELT)

Constituent	Units	Event 22 Dry 8/17/2010	Event 23 Dry 11/10/2010		Event 24 Wet 12/19/2010		Event 25 Dry 2/2/2011	Event 26 Wet 3/20/2011	Event 27 Dry 5/4/2011
General Water Quality Constituents									
Flow	cfs	0.730	1.345		NM		2.223	NM	0.911
pH		7.98	8.34		7.89		8.56	7.89	8.36
Temperature	°C	19.46	11.52		14.76		10.34	11.59	20.01
Dissolved Oxygen	mg/L	7.7	8.73		9.98		10.67	10.92	10.82
Electrical Conductivity	µS/cm	1443	1530		308		1600	164	1700
TSS	mg/L	2.25	DNQ		36.9		ND	388.0	DNQ
Nutrients									
Ammonia-N	mg/L	ND	DNQ		NM		ND	NM	DNQ
Nitrate-N	mg/L	0.495	0.5		NM		1.04	NM	0.66
Nitrite-N	mg/L	DNQ	ND		NM		ND	NM	0.05
Organic N	mg/L	ND	0.679		NM		0.27	NM	0.54
TKN	mg/L	ND	0.71		NM		DNQ	NM	0.58
Total Phosphorus-P	mg/L	DNQ	0.079		NM		0.077	NM	0.25
Orthophosphate-P	mg/L	ND	ND		NM		0.199	NM	ND
Organic Constituents in Water									
OC Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Aldrin	µg/L	ND	NM	ND	ND	ND	NM	ND	ND
Alpha-BHC (HCH)	µg/L	ND	NM	ND	ND	ND	NM	ND	ND
Beta-BHC (HCH)	µg/L	ND	NM	ND	ND	ND	NM	ND	ND
Gamma-BHC (HCH)	µg/L	ND	NM	ND	ND	ND	NM	ND	ND
Delta-BHC (HCH)	µg/L	ND	NM	ND	ND	ND	NM	ND	ND
Chlordane-alpha	µg/L	ND	NM	ND	ND	ND	NM	ND	ND
Chlordane-gamma	µg/L	ND	NM	ND	ND	ND	NM	ND	ND
Total Chlordane	µg/L	ND	NM	ND	ND	ND	NM	ND	ND

Table 81. Conejo Creek – S Fork behind Belt Press Build (13_BELT) continued

Constituent	Units	Event 22 Dry 8/17/2010	Event 23 Dry 11/10/2010	Event 24 Wet 12/19/2010			Event 25 Dry 2/2/2011	Event 26 Wet 3/20/2011	Event 27 Dry 5/4/2011
OC Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
2,4'-DDD	µg/L	ND	NM	ND	ND	ND	NM	ND	ND
2,4'-DDE	µg/L	ND	NM	ND	ND	ND	NM	ND	ND
2,4'-DDT	µg/L	ND	NM	ND	ND	ND	NM	ND	ND
4,4'-DDD	µg/L	ND	NM	ND	ND	ND	NM	ND	ND
4,4'-DDE	µg/L	ND	NM	ND	ND	ND	NM	ND	ND
4,4'-DDT	µg/L	ND	NM	ND	ND	ND	NM	ND	ND
Dieldrin	µg/L	ND	NM	ND	ND	ND	NM	ND	ND
Endosulfan I	µg/L	ND	NM	ND	ND	ND	NM	ND	ND
Endosulfan II	µg/L	ND	NM	ND	ND	ND	NM	ND	ND
Endosulfan Sulfate	µg/L	ND	NM	ND	ND	ND	NM	ND	ND
Endrin	µg/L	ND	NM	ND	ND	ND	NM	ND	ND
Endrin Aldehyde	µg/L	ND	NM	ND	ND	ND	NM	ND	ND
Endrin Ketone	µg/L	ND	NM	ND	ND	ND	NM	ND	ND
Toxaphene	µg/L	ND	NM	ND	ND	ND	NM	ND	ND
PCBs				**<63µm**	**63µm to 2mm**	**Filtrate**			
Aroclor 1016	µg/L	ND	NM	ND	ND	ND	NM	ND	ND
Aroclor 1221	µg/L	ND	NM	ND	ND	ND	NM	ND	ND
Aroclor 1232	µg/L	ND	NM	ND	ND	ND	NM	ND	ND
Aroclor 1242	µg/L	ND	NM	ND	ND	ND	NM	ND	ND
Aroclor 1248	µg/L	ND	NM	ND	ND	ND	NM	ND	ND
Aroclor 1254	µg/L	ND	NM	ND	ND	ND	NM	ND	ND
Aroclor 1260	µg/L	ND	NM	ND	ND	ND	NM	ND	ND

Table 81. Conejo Creek – S Fork behind Belt Press Build (13_BELT) continued

Constituent	Units	Event 22 Dry 8/17/2010	Event 23 Dry 11/10/2010		Event 24 Wet 12/19/2010		Event 25 Dry 2/2/2011	Event 26 Wet 3/20/2011	Event 27 Dry 5/4/2011
OP Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Chlorpyrifos	µg/L	ND	NM	0.0217	ND	ND	NM	ND	ND
Diazinon	µg/L	ND	NM	ND	ND	ND	NM	ND	ND
Malathion	µg/L	ND	NM	ND	ND	ND	NM	ND	ND
Triazine Pesticides									
Atrazine	µg/L	ND	NM		ND		NM	NM	NM
Prometryn	µg/L	ND	NM		ND		NM	NM	NM
Simazine	µg/L	ND	NM		ND		NM	NM	NM
Pyrethroid Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Bifenthrin	µg/L	0.0055	NM	ND	0.0106	DNQ	NM	0.0483	ND
Cyfluthrin	µg/L	ND	NM	ND	ND	ND	NM	ND	ND
Cypermethrin	µg/L	ND	NM	ND	ND	ND	NM	ND	ND
Deltamethrin	µg/L	ND	NM	ND	ND	ND	NM	ND	ND
Permethrin	µg/L	ND	NM	ND	ND	ND	NM	ND	ND
Permethrin, cis-	µg/L	NM	NM	ND	ND	ND	NM	ND	ND
Permethrin, trans-	µg/L	NM	NM	ND	ND	ND	NM	ND	ND

Table 82. Conejo Creek – South Branch Arroyo Conejo S Side of W Hillcrest (13_SB_HILL)

Constituent	Units	Event 22	Event 23	Event 24			Event 25	Event 26	Event 27
		Dry	Dry	Wet			Dry	Wet	Dry
		8/18/2010	11/10/2010	12/19/2010			2/2/2011	3/20/2011	5/5/2011
General Water Quality Constituents									
Flow	cfs	0.768	2.097		NM		3.412	NM	3.275
pH		8.32	8.33		7.74		8.34	7.63	7.99
Temperature	°C	29.84	12.15		14.57		8.29	11.53	17.28
Dissolved Oxygen	mg/L	8.96	11.78		9.48		10.62	10.53	8.27
Electrical Conductivity	µS/cm	1239	1150		258		1229	200	1289
TSS	mg/L	5.0	DNQ		25.7		DNQ	308.0	DNQ
Total Hardness	mg/L	0.768	2.097		NM		3.412	NM	3.275
Organic Constituents in Water									
OC Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Aldrin	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Alpha-BHC (HCH)	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Beta-BHC (HCH)	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Gamma-BHC (HCH)	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Delta-BHC (HCH)	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Chlordane-alpha	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Chlordane-gamma	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Total Chlordane	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
2,4'-DDD	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
2,4'-DDE	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
2,4'-DDT	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
4,4'-DDD	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
4,4'-DDE	µg/L	ND	ND	ND	ND	ND	ND	ND	ND

Table 82. Conejo Creek – South Branch Arroyo Conejo S Side of W Hillcrest (13_SB_HILL) continued

Constituent	Units	Event 22 Dry 8/18/2010	Event 23 Dry 11/10/2010		Event 24 Wet 12/19/2010		Event 25 Dry 2/2/2011	Event 26 Wet 3/20/2011	Event 27 Dry 5/5/2011
OC Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
4,4'-DDT	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Dieldrin	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan I	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan II	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan Sulfate	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endrin	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endrin Aldehyde	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endrin Ketone	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Toxaphene	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
PCBs				**<63µm**	**63µm to 2mm**	**Filtrate**			
Aroclor 1016	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1221	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1232	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1242	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1248	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1254	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1260	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
OP Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Chlorpyrifos	µg/L	ND	ND	ND	DNQ	ND	ND	ND	ND
Diazinon	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Malathion	µg/L	ND	ND	ND	ND	ND	ND	ND	ND

Table 82. Conejo Creek – South Branch Arroyo Conejo S Side of W Hillcrest (13_SB_HILL) continued

Constituent	Units	Event 22 Dry 8/18/2010	Event 23 Dry 11/10/2010		Event 24 Wet 12/19/2010		Event 25 Dry 2/2/2011	Event 26 Wet 3/20/2011	Event 27 Dry 5/5/2011
Triazine Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Atrazine	µg/L	ND	NM		ND		NM	NM	NM
Prometryn	µg/L	ND	NM		ND		NM	NM	NM
Simazine	µg/L	ND	NM		ND		NM	NM	NM
Pyrethroid Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Bifenthrin	µg/L	ND	ND	ND	0.0079	0.0036	ND	0.0132	ND
Cyfluthrin	µg/L	ND	ND	ND	0.0037	ND	ND	ND	ND
Cypermethrin	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Deltamethrin	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Permethrin	µg/L	ND	ND	ND	ND	ND	ND	ND	NM
Permethrin, cis-	µg/L	NM	NM	ND	ND	ND	ND	ND	NM
Permethrin, trans-	µg/L	NM	NM	ND	ND	ND	ND	ND	NM

Table 83. Conejo Creek – Howard Road Bridge (9A_HOWAR)

Constituent	Units	Event 22 Dry 8/18/2010	Event 23 Dry 11/10/2010	Event 25 Dry 2/2/2011	Event 27 Dry 5/5/2011
General Water Quality Constituents					
Flow	cfs	3.62	2.489	5.629	11.486
pH		8.15	7.69	8.56	8.04
Temperature	°C	23.75	17.33	11.03	18.52
Dissolved Oxygen	mg/L	8.37	7.91	9.85	6.37
Electrical Conductivity	µS/cm	1409	1540	1510	1520
TSS	mg/L	9.75	DNQ	DNQ	DNQ
Nutrients					
Ammonia-N	mg/L	0.315	0.9	0.23	0.15
Nitrate-N	mg/L	6.11	8.45	7.57	5.81
Nitrite-N	mg/L	0.082	0.19	0.06	0.19
Organic N	mg/L	DNQ	2.84	2.45	1.79
TKN	mg/L	DNQ	3.74	2.68	1.94
Total Phosphorus-P	mg/L	2.25	3.5	2.59	1.645
Orthophosphate-P	mg/L	2.12	0.578	2.027	1.581

Table 84. Conejo Creek – Adolfo Road (9B_ADOLF)

Constituent	Units	Event 22 Dry 8/17/2010	Event 23 Dry 11/9/2010		Event 24 Wet 12/19/2010		Event 25 Dry 2/1/2011	Event 26 Wet 3/20/2011	Event 27 Dry 5/4/2011
General Water Quality Constituents									
Flow	cfs	7.18	12.80		12.80		9.11	NM	10.64
pH		8.56	8.13		8.13		8	8.14	8.56
Temperature	°C	22.67	24.4		17.92		12.74	11.8	21.6
Dissolved Oxygen	mg/L	11.42	8.93		9.96		9.68	10	13.65
Electrical Conductivity	µS/cm	1233	1200		367		1265	1610	1373
TSS	mg/L	9.0	DNQ		211.6		DNQ	740.0	DNQ
Nutrients									
Ammonia-N	mg/L	ND	0.22		0.073		0.2	0.07	ND
Nitrate-N	mg/L	4.96	5.91		1.04		5.72	0.89	5.45
Nitrite-N	mg/L	0.053	0.07		DNQ		0.09	ND	0.22
Organic N	mg/L	1.26	1.68		1.507		1.56	3.86	1.7
TKN	mg/L	1.26	1.9		1.58		1.76	3.93	1.7
Total Phosphorus-P	mg/L	1.13	2.73		0.648		1.48	1.064	1.346
Orthophosphate-P	mg/L	1.17	1.199		0.479		1.303	0.384	1.289
Organic Constituents in Water									
OC Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Aldrin	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Alpha-BHC (HCH)	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Beta-BHC (HCH)	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Gamma-BHC (HCH)	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Delta-BHC (HCH)	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Chlordane-alpha	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Chlordane-gamma	µg/L	ND	ND	ND	DNQ	ND	ND	ND	ND
Total Chlordane	µg/L	ND	ND	ND	DNQ	ND	ND	ND	ND

Table 84. Conejo Creek – Adolfo Road (9B_ADOLF) continued

		Event 22	Event 23		Event 24		Event 25	Event 26	Event 27
		Dry	Dry		Wet		Dry	Wet	Dry
Constituent	Units	8/17/2010	11/9/2010		12/19/2010		2/1/2011	3/20/2011	5/4/2011
OC Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
2,4'-DDD	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
2,4'-DDE	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
2,4'-DDT	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
4,4'-DDD	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
4,4'-DDE	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
4,4'-DDT	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Dieldrin	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan I	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan II	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan Sulfate	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endrin	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endrin Aldehyde	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endrin Ketone	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Toxaphene	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
PCBs				**<63µm**	**63µm to 2mm**	**Filtrate**			
Aroclor 1016	µg/L	ND	NM	ND	ND	ND	NM	ND	ND
Aroclor 1221	µg/L	ND	NM	ND	ND	ND	NM	ND	ND
Aroclor 1232	µg/L	ND	NM	ND	ND	ND	NM	ND	ND
Aroclor 1242	µg/L	ND	NM	ND	ND	ND	NM	ND	ND
Aroclor 1248	µg/L	ND	NM	ND	ND	ND	NM	ND	ND
Aroclor 1254	µg/L	ND	NM	ND	ND	ND	NM	ND	ND
Aroclor 1260	µg/L	ND	NM	ND	ND	ND	NM	ND	ND

Table 84. Conejo Creek – Adolfo Road (9B_ADOLF) continued

Constituent	Units	Event 22 Dry 8/17/2010	Event 23 Dry 11/9/2010		Event 24 Wet 12/19/2010		Event 25 Dry 2/1/2011	Event 26 Wet 3/20/2011	Event 27 Dry 5/4/2011
OP Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Chlorpyrifos	µg/L	ND	ND	ND	0.0106	ND	ND	ND	ND
Diazinon	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Malathion	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Triazine Pesticides									
Atrazine	µg/L	ND	NM		ND		NM	NM	NM
Prometryn	µg/L	ND	NM		ND		NM	NM	NM
Simazine	µg/L	0.0184	NM		DNQ		NM	NM	NM
Pyrethroid Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Bifenthrin	µg/L	ND	ND	0.015	ND	DNQ	ND	0.0373	ND
Cyfluthrin	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Cypermethrin	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Deltamethrin	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Permethrin	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Permethrin, cis-	µg/L	NM	NM	ND	ND	ND	ND	ND	ND
Permethrin, trans-	µg/L	NM	NM	ND	ND	ND	ND	ND	ND

Table 85. Conejo Creek – Storm drain under N side of Adolfo Road (9BD_ADOLF)

Constituent	Units	Event 22 Dry 8/17/2010	Event 23 Dry 11/9/2010		Event 24 Wet 12/19/2010		Event 25 Dry 2/1/2010	Event 26 Wet 3/20/2011	Event 27 Dry 5/4/2011
General Water Quality Constituents									
Flow	cfs	0.03254	0.052047		32.0768		0.1164	NM	0.102631
pH		8.79	9.42		7.76		8.26	8.02	8.53
Temperature	°C	27.48	25.42		16.06		10.07	12.35	31.17
Dissolved Oxygen	mg/L	17.2	14.7		10.82		14.81	9.67	20.77
Electrical Conductivity	µS/cm	3620	3340		100		5280	76	4760
TSS	mg/L	7.0	38.8		30.0		DNQ	22.9	98.3
Total Hardness	mg/L	694.0	912.2		94.0		1550.3	16.2	1383.2
Organic Constituents in Water									
OC Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Aldrin	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Alpha-BHC (HCH)	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Beta-BHC (HCH)	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Gamma-BHC (HCH)	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Delta-BHC (HCH)	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Chlordane-alpha	µg/L	ND	ND	ND	DNQ	ND	ND	ND	ND
Chlordane-gamma	µg/L	ND	ND	ND	DNQ	ND	ND	ND	ND
Total Chlordane	µg/L	ND	ND	ND	DNQ	ND	ND	ND	ND
2,4'-DDD	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
2,4'-DDE	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
2,4'-DDT	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
4,4'-DDD	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
4,4'-DDE	µg/L	ND	ND	ND	0.0068	ND	ND	ND	ND

Table 85. Conejo Creek – Storm drain under N side of Adolfo Road (9BD_ADOLF) continued

Constituent	Units	Event 22 Dry 8/17/2010	Event 23 Dry 11/9/2010		Event 24 Wet 12/19/2010		Event 25 Dry 2/1/2010	Event 26 Wet 3/20/2011	Event 27 Dry 5/4/2011
OC Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
4,4'-DDT	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Dieldrin	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan I	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan II	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan Sulfate	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endrin	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endrin Aldehyde	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Endrin Ketone	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Toxaphene	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
PCBs				**<63µm**	**63µm to 2mm**	**Filtrate**			
Aroclor 1016	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1221	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1232	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1242	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1248	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1254	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1260	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
OP Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Chlorpyrifos	µg/L	ND	ND	0.063	0.0443	ND	ND	ND	ND
Diazinon	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Malathion	µg/L	ND	ND	ND	ND	ND	ND	ND	ND

Table 85. Conejo Creek – Storm drain under N side of Adolfo Road (9BD_ADOLF) continued

Constituent	Units	Event 22 Dry 8/17/2010	Event 23 Dry 11/9/2010		Event 24 Wet 12/19/2010		Event 25 Dry 2/1/2010	Event 26 Wet 3/20/2011	Event 27 Dry 5/4/2011
Triazine Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Atrazine	µg/L	ND	NM		ND		NM	NM	NM
Prometryn	µg/L	ND	NM		ND		NM	NM	NM
Simazine	µg/L	0.0156	NM		ND		NM	NM	NM
Pyrethroid Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Bifenthrin	µg/L	ND	0.0113	ND	0.0343	0.0127	ND	0.0147	ND
Cyfluthrin	µg/L	ND	ND	ND	0.0131	0.0037	ND	0.0114	ND
Cypermethrin	µg/L	ND	ND	ND	ND	0.0033	ND	ND	ND
Deltamethrin	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Permethrin	µg/L	ND	ND	ND	ND	0.0702	ND	DNQ	ND
Permethrin, cis-	µg/L	NM	NM	ND	ND	ND	ND	ND	ND
Permethrin, trans-	µg/L	NM	NM	ND	ND	0.0702	ND	DNQ	ND
Metals & Selenium in Water									
Dissolved Copper	µg/L	5.26	5.725		4.521		3.07	3.07	4.07
Total Copper	µg/L	6.14	6.721		6.714		3.36	5.05	5.14
Dissolved Mercury	µg/L	0.0038	DNQ		0.0066		0.0012	0.0019	0.004
Total Mercury	µg/L	0.0055	DNQ		0.015		DNQ	0.0128	0.0051
Dissolved Nickel	µg/L	7.08	5.306		2.19		6.96	0.71	8.73
Total Nickel	µg/L	7.7	6.834		3.007		7.64	2.28	9.71
Dissolved Zinc	µg/L	6.48	6.728		19.397		7.4	12.43	4.73
Total Zinc	µg/L	8.95	16.965		37.728		6.49	33.68	12.29
Dissolved Selenium	µg/L	2.65	2.247		0.284		4.24	DNQ	5.13
Total Selenium	µg/L	2.97	2.375		0.31		4.41	DNQ	6.33

Table 86. Conejo Creek – Drainage ditch crossing Santa Rosa Rd at Gerry Rd (9BD_GERRY)

Constituent	Units	Event 22 Dry 8/17/2010	Event 23 Dry 11/9/2010	Event 24 Wet 12/19/2010			Event 25 Dry 2/1/2010	Event 26 Wet 3/20/2011	Event 27 Dry 5/4/2011
General Water Quality Constituents									
Flow	cfs			NM				14.72	
pH				8.19				7.93	
Temperature	°C			16.04				11.7	
Dissolved Oxygen	mg/L	NS Site Dry	NS Site Dry	9.5			NS Site Dry	10.68	NS Site Dry
Electrical Conductivity	µS/cm			811				396	
TSS	mg/L			57.2				1596	
Total Hardness	mg/L			164.6				58.5	
Organic Constituents in Water									
OC Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Aldrin	µg/L			ND	ND	ND		ND	
Alpha-BHC (HCH)	µg/L			DNQ	ND	ND		ND	
Beta-BHC (HCH)	µg/L			ND	ND	ND		ND	
Gamma-BHC (HCH)	µg/L			ND	ND	ND		ND	
Delta-BHC (HCH)	µg/L			ND	ND	ND		ND	
Chlordane-alpha	µg/L			ND	DNQ	ND		0.04	
Chlordane-gamma	µg/L	NS Site Dry	NS Site Dry	ND	DNQ	ND	NS Site Dry	0.0535	NS Site Dry
Total Chlordane	µg/L			ND	DNQ	ND		0.0935	
2,4'-DDD	µg/L			ND	ND	ND		ND	
2,4'-DDE	µg/L			ND	ND	ND		ND	
2,4'-DDT	µg/L			ND	ND	ND		ND	
4,4'-DDD	µg/L			ND	0.0186	ND		ND	
4,4'-DDE	µg/L			ND	ND	ND		0.1214	

Table 86. Conejo Creek – Drainage ditch crossing Santa Rosa Rd at Gerry Rd (9BD_GERRY) continued

Constituent	Units	Event 22 Dry 8/17/2010	Event 23 Dry 11/9/2010	Event 24 Wet 12/19/2010			Event 25 Dry 2/1/2010	Event 26 Wet 3/20/2011	Event 27 Dry 5/4/2011
OC Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
4,4'-DDT	µg/L			ND	ND	ND		ND	
Dieldrin	µg/L			ND	ND	ND		ND	
Endosulfan I	µg/L			ND	ND	ND		ND	
Endosulfan II	µg/L			ND	ND	ND		ND	
Endosulfan Sulfate	µg/L	NS Site Dry	NS Site Dry	ND	ND	ND	NS Site Dry	ND	NS Site Dry
Endrin	µg/L			ND	ND	ND		ND	
Endrin Aldehyde	µg/L			ND	ND	ND		ND	
Endrin Ketone	µg/L			ND	ND	ND		ND	
Toxaphene	µg/L			ND	ND	ND		ND	
PCBs				**<63µm**	**63µm to 2mm**	**Filtrate**			
Aroclor 1016	µg/L			ND	ND	ND		ND	
Aroclor 1221	µg/L			ND	ND	ND		ND	
Aroclor 1232	µg/L			ND	ND	ND		ND	
Aroclor 1242	µg/L	NS Site Dry	NS Site Dry	ND	ND	ND	NS Site Dry	ND	NS Site Dry
Aroclor 1248	µg/L			ND	ND	ND		ND	
Aroclor 1254	µg/L			ND	ND	ND		ND	
Aroclor 1260	µg/L			ND	ND	ND		ND	
OP Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Chlorpyrifos	µg/L	NS Site Dry	NS Site Dry	0.1928	ND	ND	NS Site Dry	0.4317	NS Site Dry
Diazinon	µg/L			ND	ND	ND		ND	
Malathion	µg/L			ND	ND	ND		ND	

Table 86. Conejo Creek – Drainage ditch crossing Santa Rosa Rd at Gerry Rd (9BD_GERRY) continued

Constituent	Units	Event 22 Dry 8/17/2010	Event 23 Dry 11/9/2010	Event 24 Wet 12/19/2010			Event 25 Dry 2/1/2010	Event 26 Wet 3/20/2011	Event 27 Dry 5/4/2011
Triazine Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Atrazine	µg/L	NS Site Dry	NS Site Dry		ND		NS Site Dry	NM	NS Site Dry
Prometryn	µg/L				ND			NM	
Simazine	µg/L				0.0673			NM	
Pyrethroid Pesticides				**<63µm**	**63µm to 2mm**	**Filtrate**			
Bifenthrin	µg/L	NS Site Dry	NS Site Dry	ND	0.0174	ND	NS Site Dry	0.0243	NS Site Dry
Cyfluthrin	µg/L			ND	ND	ND		ND	
Cypermethrin	µg/L			ND	ND	ND		ND	
Deltamethrin	µg/L			ND	ND	ND		ND	
Permethrin	µg/L			ND	ND	ND		ND	
Permethrin, cis-	µg/L			ND	ND	ND		ND	
Permethrin, trans-	µg/L			ND	ND	ND		ND	
Metals & Selenium in Water									
Dissolved Copper	µg/L	NS Site Dry	NS Site Dry		22.532		NS Site Dry	18.53	NS Site Dry
Total Copper	µg/L				24.623			135.68	
Dissolved Mercury	µg/L				0.008			0.0024	
Total Mercury	µg/L				0.028			0.0661	
Dissolved Nickel	µg/L				5.648			2.35	
Total Nickel	µg/L				9.22			66.76	
Dissolved Zinc	µg/L				22.468			6.08	
Total Zinc	µg/L				54.781			506.39	
Dissolved Selenium	µg/L				0.207			DNQ	
Total Selenium	µg/L				0.264			0.48	

Freshwater Salt Concentrations

Table 87. Compliance Sites - Receiving Water, Grab Samples Only

Site and Constituent (mg/L)	Salt Event Number and Date															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	1/31/11	2/1-2/11	2/15/11	2/28/11	3/14/11	3/20/11	3/30/11	4/14/11	4/28/11	5/4-5/11	5/18/11	5/31/11	6/14/11	6/30/11	7/18/11	7/28/11
Revolon Slough – Wood Road (04_WOOD)																
Boron	1.59	1.40	1.41	2.06	1.30	0.09	1.66	1.56	1.84	1.97	0.97	1.97	1.65	1.64	1.95	1.97
Chloride	169	151	161	171	196	10	183	182	177	185	116	190	162	144	186	196
Sulfate	1716	1508	1529	1815	1885	77	1905	1829	1718	1845	960	1822	1451	1397	1813	1858
TDS	3670	3313	3195	3840	4060	162	3880	3610	3375	3740	1930	3550	2890	2770	3680	3710
Calleguas Creek – University Drive CSUCI (03_UNIV)																
Boron	NM	0.40	NM	NM	NM	0.07	NM	NM	NM	0.40	NM	NM	NM	NM	NM	NM
Chloride	131	181	203	144	190	15	163	198	189	183	138	206	207	202	204	199
Sulfate	176	233	262	178	242	30	222	270	250	236	195	262	234	244	249	238
TDS	733	1009	1074	790	1020	148	930	1090	988	920	730	1040	1050	1060	1080	1010
Arroyo Simi – Above Hitch Boulevard (07_HITCH-S)																
Boron	0.59	0.63	---	0.71	---	0.06	0.67	---	0.77	0.76	---	0.76	---	0.82	---	0.68
Chloride	141	157	---	145	---	13	166	---	168	174	---	167	---	168	---	164
Sulfate	379	416	---	393	---	35	539	---	477	476	---	442	---	434	---	413
TDS	1120	1179	---	1070	---	70	1350	---	1220	1195	---	1140	---	1160	---	1125
Conejo Creek at Baron Brothers (9B_BARON)																
Boron	NM	0.26	---	NM	---	0.04	NM	---	NM	0.33	---	NM	---	NM	---	NM
Chloride	113	155	---	132	---	12	152	---	162	166	---	155	---	150	---	149
Sulfate	135	182	---	168	---	14	214	---	210	209	---	180	---	170	---	162
TDS	605	788	---	740	---	98	885	---	841	843	---	730	---	735	---	727

Table 87. Compliance Sites - Receiving Water, Grab Samples Only (continued)

Site and Constituent (mg/L)	Salt Event Number and Date															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	1/31/11	2/1-2/11	2/15/11	2/28/11	3/14/11	3/20/11	3/30/11	4/14/11	4/28/11	5/4-5/11	5/18/11	5/31/11	6/14/11	6/30/11	7/18/11	7/28/11
Conejo Creek at Howard Road Bridge (9A_HOWAR)																
Boron	NM	0.35	NM	---	NM	0.04	---	NM	---	0.38	NM	---	NM	---	NM	---
Chloride	128	177	178	---	173	14	---	185	---	182	136	---	182	---	183	---
Sulfate	160	225	245	---	229	16	---	265	---	245	160	---	233	---	223	---
TDS	696	916	920	---	925	100	---	995	---	930	680	---	956	---	940	---

Table 88. Land Use Monitoring Sites

Site and Constituent (mg/L)	Salt Event Number															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	1/31/11	2/1-2/11	2/15/11	2/28/11	3/14/11	3/20/11	3/30/11	4/14/11	4/28/11	5/4-5/11	5/18/11	5/31/11	6/14/11	6/30/11	7/18/11	7/28/11
04D_VENTURA																
Boron	NM	0.28	NM	---	NM	0.05	---	NM	---	0.39	NM	---	NM	---	NM	---
Chloride	131	173	39	---	91	9	---	146	---	115	49	---	178	---	88	---
Sulfate	245	196	82	---	183	13	---	241	---	181	87	---	240	---	141	---
TDS	727	803	280	---	624	112	---	840	---	608	320	---	919	---	490	---
04D_WOOD																
Boron	NM	1.81	NM	---	NM	0.10	---	NM	---	NM	NM	---	NM	---	NM	---
Chloride	133	190	NS Site Dry	---	NS Site Dry	15	---	NS Site Dry	---	NS Site Dry	85	---	NS Site Dry	---	NS Site Dry	---
Sulfate	1130	2035		---		100	---		---		938	---		---		---
TDS	2497	4360		---		254	---		---		1770	---		---		---
07D_CTP																
Boron	NM	0.22	---	NM	---	0.06	NM	---	NM	0.28	---	NM	---	NM	---	NM
Chloride	110	117	---	156	---	13	176	---	121	100	---	124	---	111	---	102
Sulfate	93	87	---	177	---	12	226	---	130	83	---	114	---	111	---	84
TDS	363	479	---	762	---	116	780	---	537	409	---	520	---	510	---	457
07D_HITCH_LEVEE_2																
Boron	NM		---	NM	---	0.15	NM	---	NM	1.31	---	NM	---	NM	---	NM
Chloride	NS Site Dry	NS Site Dry	---	NS Site Dry	---	31	NS Site Dry	---	NS Site Dry	253	---	NS Site Dry	---	NS Site Dry	---	NS Site Dry
Sulfate			---		---	60		---		828	---		---		---	
TDS			---		---	336		---		2620	---		---		---	

Table 88. Land Use Monitoring Sites (continued)

Site and Constituent (mg/L)	Salt Event Number and Date															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	1/31/11	2/1-2/11	2/15/11	2/28/11	3/14/11	3/20/11	3/30/11	4/14/11	4/28/11	5/4-5/11	5/18/11	5/31/11	6/14/11	6/30/11	7/18/11	7/28/11
13_SB_HILL																
Boron	NM	0.11	---	NM	---	0.04	NM	---	NM	0.15	---	NM	---	NM	---	NM
Chloride	127	136	---	111	---	14	106	---	131	141	---	147	---	142	---	133
Sulfate	126	119	---	113	---	11	109	---	126	142	---	128	---	126	---	118
TDS	679	728	---	762	---	124	670	---	689	759	---	760	---	710	---	734
9BD_ADOLF																
Boron	NM	1.65	NM	---	NM	0.03	---	NM	---	1.81	NM	---	NM	---	NM	---
Chloride	421	384	222	---	388	5	---	512	---	420	268	---	350	---	360	---
Sulfate	1686	321	976	---	1531	7	---	1784	---	1694	1478	---	1544	---	1371	---
TDS	4059	4153	2543	---	3710	14	---	4090	---	3640	2920	---	3290	---	3020	---
9BD_GERRY																
Boron	NM	NS Site Dry	---	NM	---	0.07	NM	---	NM	NS Site Dry	---	NM	---	NM	---	NM
Chloride	NS Site Dry	NS Site Dry	---	NS Site Dry	---	11	NS Site Dry	---	NS Site Dry	NS Site Dry	---	NS Site Dry	---	NS Site Dry	---	NS Site Dry
Sulfate	NS Site Dry	NS Site Dry	---	NS Site Dry	---	25	NS Site Dry	---	NS Site Dry	NS Site Dry	---	NS Site Dry	---	NS Site Dry	---	NS Site Dry
TDS	NS Site Dry	NS Site Dry	---	NS Site Dry	---	182	NS Site Dry	---	NS Site Dry	NS Site Dry	---	NS Site Dry	---	NS Site Dry	---	NS Site Dry

Table 89. Salts: Monthly Averages for Salt Concentrations Derived from Continuous EC Data [a]

Site and Constituent	Units	Jan-2011	Feb-2011	Mar-2011	Apr-2011	May-2011	Jun-2011
Revolon Slough – Wood Road (04_WOOD)							
Chloride	mg/L	168	151	137	174	169	163
Sulfate	mg/L	1651	1471	1326	1708	1659	1597
TDS	mg/L	3387	3015	2713	3506	3405	3276
Boron	mg/L	1.5	1.3	1.2	1.8	1.8	1.7
Calleguas Creek – University Drive CSUCI (03_UNIV)							
Chloride	mg/L	195	164	173	190	185	190
Sulfate	mg/L	250	212	210	240	237	243
TDS	mg/L	1033	878	925	1008	982	1005
Arroyo Simi – Hitch Boulevard (07_HITCH-S)							
Chloride	mg/L	158	139	156	162	156	162
Sulfate	mg/L	441	387	434	452	434	453
TDS	mg/L	1155	1015	1138	1183	1137	1187
Boron	mg/L	0.7	0.6	0.7	0.7	0.7	0.7
Conejo Creek – Baron Bros. Nursery (9B_BARON)							
Chloride	mg/L	129	134	144	156	146	143
Sulfate	mg/L	159	166	179	194	181	178
TDS	mg/L	675	703	750	811	761	748
Conejo Creek – Howard Road Bridge (9A_HOWAR)							
Chloride	mg/L	169	154	154	174	170	169
Sulfate	mg/L	223	202	202	229	225	224
TDS	mg/L	883	806	806	908	890	887

[a] Monthly averages were derived from continuous sensor data for EC (5-min data) and the surrogate relationships predicting salt concentrations from EC.

POTW Water Quality

Table 90. Camarillo Water Reclamation Plant (9AD_CAMA)

Constituent	Units	Event 22 Dry 8/4/2010	Sep 2010[1]	Oct 2010[1]	Event 23 Dry 11/3/2010	Dec 2010[1]	Jan 2011[1]	Event 25 Dry 2/2/2011	Mar 2011[1]	Apr 2011[1]	Event 27 Dry 5/4/2011	Jun 2011[1]	Jul 2011[1]	Aug 2011[1]
General Water Quality Constituents														
Flow	cfs	5.692	---	---	5.689	---	---	6.355	---	---	5.752	---	---	---
pH		7.6	---	---	7.5	---	---	7.5	---	---	7.4	---	---	---
Temperature	°C	25	---	---	23.3	---	---	14.4	---	---	23.3	---	---	---
Dissolved Oxygen	mg/L	7.2	---	---	6	---	---	8.2	---	---	7.2	---	---	---
Electrical Conductivity	µS/cm	NM	---	---	NM	---	---	NM	---	---	NM	---	---	---
TSS	mg/L	2.75	---	---	1	---	---	DNQ	---	---	5	---	---	---
Total Hardness	mg/L	275	---	---	449.5	---	---	400.1	---	---	446.9	---	---	---
Nutrients														
Ammonia-N	mg/L	1.67	---	---	4.0	---	---	0.88	---	---	0.82	---	---	---
Nitrate-N	mg/L	8.3	---	---	7.7	---	---	10.2	---	---	8.42	---	---	---
Nitrite-N	mg/L	0.032	---	---	0.3	---	---	0.03	---	---	0.03	---	---	---
Organic N	mg/L	1.7	---	---	5.8	---	---	1.7	---	---	1.0	---	---	---
TKN	mg/L	3.4	---	---	9.8	---	---	2.6	---	---	1.8	---	---	---
Total Phosphorus-P	mg/L	4.39	---	---	3.96	---	---	4.68	---	---	4.60	---	---	---
Orthophosphate-P	mg/L	4.13	---	---	3.90	---	---	4.14	---	---	4.06	---	---	---
Organic Constituents in Water														
OC Pesticides														
Aldrin	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Alpha-BHC (HCH)	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Beta-BHC (HCH)	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Gamma-BHC (HCH)	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---

Table 90. Camarillo Water Reclamation Plant (9AD_CAMA) continued

Constituent	Units	Event 22 Dry 8/4/2010	Sep 2010[1]	Oct 2010[1]	Event 23 Dry 11/3/2010	Dec 2010[1]	Jan 2011[1]	Event 25 Dry 2/2/2011	Mar 2011[1]	Apr 2011[1]	Event 27 Dry 5/4/2011	Jun 2011[1]	Jul 2011[1]	Aug 2011[1]
OC Pesticides														
Delta-BHC (HCH)	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Chlordane-alpha	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Chlordane-gamma	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Total Chlordane	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
2,4'-DDD	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
2,4'-DDE	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
2,4'-DDT	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
4,4'-DDD	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
4,4'-DDE	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
4,4'-DDT	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Dieldrin	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Endosulfan I	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Endosulfan II	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Endosulfan Sulfate	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Endrin	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Endrin Aldehyde	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Endrin Ketone	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Toxaphene	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
PCBs														
Aroclor 1016	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Aroclor 1221	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Aroclor 1232	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Aroclor 1242	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Aroclor 1248	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---

Table 90. Camarillo Water Reclamation Plant (9AD_CAMA) continued

Constituent	Units	Event 22 Dry 8/4/2010	Sep 2010[1]	Oct 2010[1]	Event 23 Dry 11/3/2010	Dec 2010[1]	Jan 2011[1]	Event 25 Dry 2/2/2011	Mar 2011[1]	Apr 2011[1]	Event 27 Dry 5/4/2011	Jun 2011[1]	Jul 2011[1]	Aug 2011[1]
PCBs														
Aroclor 1254	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Aroclor 1260	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
OP Pesticides														
Chlorpyrifos	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Diazinon	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Malathion	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Triazine Pesticides														
Atrazine	µg/L	ND	---	---	NM	---	---	NM	---	---	NM	---	---	---
Prometryn	µg/L	ND	---	---	NM	---	---	NM	---	---	NM	---	---	---
Simazine	µg/L	ND	---	---	NM	---	---	NM	---	---	NM	---	---	---
Pyrethroid Pesticides														
Bifenthrin	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Cyfluthrin	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Cypermethrin	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Deltamethrin	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Permethrin	µg/L	ND	---	---	0.0556	---	---	ND	---	---	ND	---	---	---
Permethrin, cis-	µg/L	NM	---	---	NM	---	---	ND	---	---	ND	---	---	---
Permethrin, trans-	µg/L	NM	---	---	NM	---	---	ND	---	---	ND	---	---	---
Metals & Selenium in Water														
Dissolved Copper	µg/L	4.81	---	---	9.683	---	---	8.39	---	---	7.98	---	---	---
Total Copper	µg/L	5.25	---	---	10.026	---	---	9.73	---	---	8.52	---	---	---
Dissolved Mercury	µg/L	0.0026	---	---	DNQ	---	---	0.0016	---	---	0.0025	---	---	---
Total Mercury	µg/L	0.0037	---	---	0.0022	---	---	0.0017	---	---	0.0025	---	---	---

Table 90. Camarillo Water Reclamation Plant (9AD_CAMA) continued

Constituent	Units	Event 22 Dry 8/4/2010	Sep 2010[1]	Oct 2010[1]	Event 23 Dry 11/3/2010	Dec 2010[1]	Jan 2011[1]	Event 25 Dry 2/2/2011	Mar 2011[1]	Apr 2011[1]	Event 27 Dry 5/4/2011	Jun 2011[1]	Jul 2011[1]	Aug 2011[1]
Metals & Selenium in Water														
Dissolved Nickel	µg/L	3.23	---	---	2.691	---	---	2.79	---	---	3.09	---	---	---
Total Nickel	µg/L	3.4	---	---	2.715	---	---	3.12	---	---	3.04	---	---	---
Dissolved Zinc	µg/L	38.9	---	---	25.886	---	---	35.5	---	---	39.91	---	---	---
Total Zinc	µg/L	40	---	---	24.343	---	---	37.44	---	---	40.95	---	---	---
Dissolved Selenium	µg/L	ND	---	---	DNQ	---	---	DNQ	---	---	DNQ	---	---	---
Total Selenium	µg/L	ND	---	---	DNQ	---	---	0.26	---	---	1.12	---	---	---
Salts in Water														
Chloride	mg/L	220	286	272	247	247	220	235	227	217	218	234	216	210
Sulfate	mg/L	297	265	293	297	271	313	286	287	327	290	275	279	231
TDS	mg/L	1123.5	1103	1083	1145.5	1086	1194	1102	1104	1159	1123.5	1026	1025	938
Boron	mg/L	0.78	0.72	0.75	0.73	0.79	0.67	0.76	0.81	0.82	0.75	0.72	0.78	0.73

1. Salts were monitored monthly; all others quarterly.

Table 91. Hill Canyon Wastewater Treatment Plant (10D_HILL)

Constituent	Units	Event 22 Dry 8/4/2010	Sep 2010[1]	Oct 2010[1]	Event 23 Dry 11/4/2010	Dec 2010[1]	Jan 2011[1]	Event 25 Dry 2/10/2011	Mar 2011[1]	Apr 2011[1]	Event 27 Dry 5/5/2011	Jun 2011[1]	Jul 2011[1]	Aug 2011
General Water Quality Constituents														
Flow	cfs	14.09	---	---	14.787	---	---	14.508	---	---	15.588	---	---	---
pH		7.1	---	---	6.9	---	---	7	---	---	7	---	---	---
Temperature	°C	25.55	---	---	24.44	---	---	21.11	---	---	23.33	---	---	---
Dissolved Oxygen	mg/L	6.9	---	---	6.2	---	---	6.7	---	---	6.3	---	---	---
Electrical Conductivity	µS/cm	920	---	---	967	---	---	960	---	---	937	---	---	---
TSS	mg/L	0.9	---	---	0.7	---	---	1.3	---	---	1.3	---	---	---
Total Hardness	mg/L	171	---	---	169	---	---	194	---	---	198	---	---	---
Nutrients														
Ammonia-N	mg/L	1.7	---	---	1.9	---	---	1.8	---	---	1.6	---	---	---
Nitrate-N	mg/L	6.8	---	---	6.6	---	---	7.3	---	---	7.1	---	---	---
Nitrite-N	mg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Organic N	mg/L	1.7	---	---	0.8	---	---	0.4	---	---	0.3	---	---	---
TKN	mg/L	ND	---	---	2.7	---	---	2.2	---	---	1.9	---	---	---
Total Phosphorus-P	mg/L	3.8	---	---	3.6	---	---	4	---	---	3.4	---	---	---
Orthophosphate-P	mg/L	3.7	---	---	3.9	---	---	3.8	---	---	3.4	---	---	---
Organic Constituents in Water														
OC Pesticides														
Aldrin	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Alpha-BHC (HCH)	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Beta-BHC (HCH)	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Gamma-BHC (HCH)	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Delta-BHC (HCH)	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---

Table 91. Hill Canyon Wastewater Treatment Plant (10D_HILL) continued

Constituent	Units	Event 22 Dry 8/4/2010	Sep 2010[1]	Oct 2010[1]	Event 23 Dry 11/4/2010	Dec 2010[1]	Jan 2011[1]	Event 25 Dry 2/10/2011	Mar 2011[1]	Apr 2011[1]	Event 27 Dry 5/5/2011	Jun 2011[1]	Jul 2011[1]	Aug 2011
OC Pesticides														
Chlordane-gamma	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Chlordane-alpha	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Total Chlordane	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
2,4'-DDD	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
2,4'-DDE	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
2,4'-DDT	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
4,4'-DDD	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
4,4'-DDE	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
4,4'-DDT	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Dieldrin	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Endosulfan I	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Endosulfan II	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
OC Pesticides														
Endosulfan Sulfate	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Endrin	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Endrin Aldehyde	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Endrin Ketone	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Toxaphene	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
PCBs														
Aroclor 1016	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Aroclor 1221	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Aroclor 1232	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Aroclor 1242	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Aroclor 1248	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---

Table 91. Hill Canyon Wastewater Treatment Plant (10D_HILL) continued

Constituent	Units	Event 22 Dry 8/4/2010	Sep 2010[1]	Oct 2010[1]	Event 23 Dry 11/4/2010	Dec 2010[1]	Jan 2011[1]	Event 25 Dry 2/10/2011	Mar 2011[1]	Apr 2011[1]	Event 27 Dry 5/5/2011	Jun 2011[1]	Jul 2011[1]	Aug 2011
PCBs														
Aroclor 1254	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Aroclor 1260	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
OP Pesticides														
Chlorpyrifos	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Diazinon	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Malathion	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Triazine Pesticides														
Atrazine	µg/L	ND	---	---	ND	---	---	NM	---	---	ND	---	---	---
Prometryn	µg/L	ND	---	---	ND	---	---	NM	---	---	ND	---	---	---
Simazine	µg/L	ND	---	---	ND	---	---	NM	---	---	ND	---	---	---
Pyrethroid Pesticides														
Bifenthrin	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Cyfluthrin	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Cypermethrin	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Deltamethrin	µg/L	NM	---	---	ND	---	---	ND	---	---	ND	---	---	---
Permethrin	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Metals & Selenium in Water														
Dissolved Copper	µg/L	4.1	---	---	2.2	---	---	2.9	---	---	6.4	---	---	---
Total Copper	µg/L	3.9	---	---	2.6	---	---	3.8	---	---	3.2	---	---	---
Dissolved Mercury	µg/L	ND	---	---	ND	---	---	DNQ	---	---	ND	---	---	---
Total Mercury	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Dissolved Nickel	µg/L	1.9	---	---	1.7	---	---	1.6	---	---	1.9	---	---	---
Total Nickel	µg/L	2.5	---	---	2.5	---	---	2.5	---	---	2.3	---	---	---
Dissolved Zinc	µg/L	39.0	---	---	36.0	---	---	43.0	---	---	40.0	---	---	---

Table 91. Hill Canyon Wastewater Treatment Plant (10D_HILL) continued

Constituent	Units	Event 22 Dry 8/4/2010	Sep 2010[1]	Oct 2010[1]	Event 23 Dry 11/4/2010	Dec 2010[1]	Jan 2011[1]	Event 25 Dry 2/10/2011	Mar 2011[1]	Apr 2011[1]	Event 27 Dry 5/5/2011	Jun 2011[1]	Jul 2011[1]	Aug 2011
Metals & Selenium in Water														
Total Zinc	µg/L	35.0	---	---	38.0	---	---	41.0	---	---	36.0	---	---	---
Dissolved Selenium	µg/L	0.52	---	---	ND	---	---	0.61	---	---	0.68	---	---	---
Total Selenium	µg/L	0.6	---	---	0.4	---	---	0.7	---	---	0.6	---	---	---
Salts in Water														
Chloride	mg/L	138	135	132	137	130	136	146	140	142	139	133	136	133
Sulfate	mg/L	109	114	118	107	104	122	118	117	129	120	112	108	99
TDS	mg/L	587	578	596	571	574	591	613	587	635	594	584	527	574
Boron	mg/L	0.56	0.55	0.57	0.5	0.49	0.46	0.53	0.51	0.49	0.51	0.48	0.52	0.47

1. Salts were monitored monthly; all others quarterly.

Table 92. Simi Valley Water Quality Control Plant (07D_SIMI)

Constituent	Units	Event 22 Dry 8/10/2010	Sep 2010[1]	Oct 2010[1]	Event 23 Dry 11/2/2010	Dec 2010[1]	Jan 2011[1]	Event 25 Dry 2/8/2011	Mar 2011[1]	Apr 2011[1]	Event 27 Dry 5/3/2011	Jun 2011[1]	Jul 2011[1]	Aug 2011[1]
General Water Quality Constituents														
Flow	cfs	8.5	---	---	NR	---	---	9.2	---	---	8.9	---	---	---
pH		7.1	---	---	7.0	---	---	7.1	---	---	7.2	---	---	---
Temperature	°F	78	---	---	76	---	---	68	---	---	72	---	---	---
Dissolved Oxygen	mg/L	8.6	---	---	8.6	---	---	8.8	---	---	8.7	---	---	---
Electrical Conductivity	µS/cm	NR	---	---	NR	---	---	NR	---	---	NR	---	---	---
TSS	mg/L	1.7	---	---	ND	---	---	2.1	---	---	2.1	---	---	---
Nutrients														
Ammonia-N	mg/L	1.13	---	---	1.24	---	---	1.7	---	---	1.2	---	---	---
Nitrate-N	mg/L	6.0	---	---	6.7	---	---	7.9	---	---	7.1	---	---	---
Nitrite-N	mg/L	0.010	---	---	0.011	---	---	0.01	---	---	0.010	---	---	---
Organic N	mg/L	1.5	---	---	1.7	---	---	2.1	---	---	1.3	---	---	---
TKN	mg/L	2.8	---	---	3.5	---	---	3.9	---	---	2.1	---	---	---
Total Phosphorus-P	mg/L	3.5	---	---	3.4	---	---	3.2	---	---	3.4	---	---	---
Orthophosphate-P	mg/L	3.3	---	---	3.2	---	---	3.0	---	---	3.3	---	---	---
Organic Constituents in Water														
OC Pesticides														
Aldrin	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Alpha-BHC (HCH)	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Beta-BHC (HCH)	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Gamma-BHC (HCH)	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Delta-BHC (HCH)	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Chlordane-alpha	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Chlordane-gamma	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---

Constituent	Units	Event 22 Dry 8/10/2010	Sep 2010[1]	Oct 2010[1]	Event 23 Dry 11/2/2010	Dec 2010[1]	Jan 2011[1]	Event 25 Dry 2/8/2011	Mar 2011[1]	Apr 2011[1]	Event 27 Dry 5/3/2011	Jun 2011[1]	Jul 2011[1]	Aug 2011[1]
Total Chlordane	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---

Table 92. Simi Valley Water Quality Control Plant (07D_SIMI) continued

Constituent	Units	Event 22 Dry 8/10/2010	Sep 2010[1]	Oct 2010[1]	Event 23 Dry 11/2/2010	Dec 2010[1]	Jan 2011[1]	Event 25 Dry 2/8/2011	Mar 2011[1]	Apr 2011[1]	Event 27 Dry 5/3/2011	Jun 2011[1]	Jul 2011[1]	Aug 2011[1]
OC Pesticides														
2,4'-DDD	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
2,4'-DDE	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
2,4'-DDT	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
4,4'-DDD	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
4,4'-DDE	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
4,4'-DDT	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Dieldrin	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Endosulfan I	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Endosulfan II	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Endosulfan Sulfate	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Endrin	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Endrin Aldehyde	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Endrin Ketone	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Toxaphene	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
PCBs														
Aroclor 1016	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Aroclor 1221	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Aroclor 1232	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Aroclor 1242	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Aroclor 1248	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---

Aroclor 1254	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Aroclor 1260	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---

Table 92. Simi Valley Water Quality Control Plant (07D_SIMI) continued

Constituent	Units	Event 22 Dry 8/10/2010	Sep 2010[1]	Oct 2010[1]	Event 23 Dry 11/2/2010	Dec 2010[1]	Jan 2011[1]	Event 25 Dry 2/8/2011	Mar 2011[1]	Apr 2011[1]	Event 27 Dry 5/3/2011	Jun 2011[1]	Jul 2011[1]	Aug 2011[1]
OP Pesticides														
Chlorpyrifos	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Diazinon	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Malathion	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Triazine Pesticides														
Atrazine	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Prometryn	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Simazine	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Pyrethroid Pesticides														
Bifenthrin	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Cyfluthrin	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Cypermethrin	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Deltamethrin	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Permethrin	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Metal and Selenium in Water														
Dissolved Copper	µg/L	NR	---	---	NR	---	---	NR	---	---	NR	---	---	---
Total Copper	µg/L	4.2	---	---	ND	---	---	ND	---	---	5.4	---	---	---
Dissolved Mercury	µg/L	NR	---	---	NR	---	---	NR	---	---	NR	---	---	---
Total Mercury	µg/L	ND	---	---	ND	---	---	ND	---	---	ND	---	---	---
Dissolved Nickel	µg/L	NR	---	---	NR	---	---	NR	---	---	NR	---	---	---
Total Nickel	µg/L	2.1	---	---	ND	---	---	ND	---	---	ND	---	---	---
Dissolved Zinc	µg/L	NR	---	---	NR	---	---	NR	---	---	NR	---	---	---
Total Zinc	µg/L	47	---	---	46	---	---	42.7	---	---	45.5	---	---	---

Table 92. Simi Valley Water Quality Control Plant (07D_SIMI) continued

Constituent	Units	Event 22 Dry 8/10/2010	Sep 2010[1]	Oct 2010[1]	Event 23 Dry 11/2/2010	Dec 2010[1]	Jan 2011[1]	Event 25 Dry 2/8/2011	Mar 2011[1]	Apr 2011[1]	Event 27 Dry 5/3/2011	Jun 2011[1]	Jul 2011[1]	Aug 2011[1]
Metal and Selenium in Water														
Dissolved Selenium	µg/L	NR	---	---	NR	---	---	NR	---	---	NR	---	---	---
Total Selenium	µg/L	3.1	---	---	1.9	---	---	2.2	---	---	2.4	---	---	---
Salts in Water														
Chloride	mg/L	130	130	120	120	130	130	130	158	154	146	147	146	150
Sulfate	mg/L	180	190	170	180	190	248	210	250	255	213	205	195	187
TDS	mg/L	700	657	704	695	658	712	753	720	828	750	760	698	742
Boron	mg/L	0.58	0.5	0.6	0.59	0.5	0.6	0.57	0.7	0.6	0.53	0.6	0.3	0.6

[1]Salts were monitored monthly, all othersquarterly.

Compliance Analysis and Discussion

COMPLIANCE COMPARISON

As outlined in the QAPP, data applicable to compliance targets or allocations is reviewed in this report. The following tables list the applicable compliance measures that are covered by this third year of monitoring. For the compliance assessment, two types of assessment procedures were used depending on whether or not the final compliance dates for the TMDL were applicable during the monitoring year.

For TMDLs for which no final allocations or targets are currently effective (OC Pesticides, Metals, and Salts TMDLs), the following compliance comparisons were conducted:

1. Applicable receiving water data at the compliance locations (base of each subwatershed) were compared to the interim load and waste load allocations.
2. If an exceedance of an interim load and/or waste load allocation was observed, the contributing land use data were assessed to evaluate the potential cause of the exceedance.
3. POTW effluent data were compared to the relevant interim waste load allocations.

For the Nitrogen TMDL the following compliance comparisons were conducted:

1. For POTWs, the final waste load allocations are currently effective. As a result, effluent monitoring results were compared to the final allocations for the analysis.
2. For agricultural dischargers and other non-point sources, load allocations are currently effective. Since agricultural dischargers are the only entities with allocations other than POTWs, compliance is assessed by comparing receiving water results against TMDL numeric targets.

For the Toxicity TMDL, the following compliance comparisons were conducted:

1. For POTWs, the final waste load allocations are currently effective. As a result, effluent monitoring results were compared to the final allocations for the analysis.
2. For MS4 dischargers, the final waste load allocations are currently effective. As a result, applicable receiving water data at the compliance locations (base of each subwatershed) were compared to the final waste load allocations. If an exceedance of the final waste load allocation was found, the contributing urban land use data were assessed to evaluate whether the MS4 was potentially causing or contributing to the exceedance.
3. For agricultural dischargers, the final load allocations are not yet effective. As a result, applicable receiving water data at the compliance locations (base of each subwatershed) were compared to the interim load allocations. If an exceedance of an interim load allocation was observed, the contributing agricultural land use data were assessed to evaluate whether agricultural discharges were potentially causing or contributing to the exceedance.
4. In cases where the applicable interim load allocations or final waste load allocations have different values for acute (1-hour) toxicity and chronic (4-day) toxicity, the acute toxicity

allocations were used for assessing wet-weather data and the chronic toxicity allocations were used for assessing dry-weather data.

The following tables compare the applicable allocations based on the compliance procedure outlined above for each of the TMDLs. Some constituents sampled under the CCWTMP do not have applicable allocations and/or targets and are not included in the compliance analysis.

Compliance at Receiving Water Sites

Table 93. OC Pesticides, PCBs, & Siltation

Site & Constituent	Units	Interim WLA & LA[1]	Event 22 Aug-2010
Calleguas Creek – Hwy 1 Bridge (02_PCH)			
Total Chlordane[2]	ng/g dw	17	ND
4,4'-DDD	ng/g dw	66	DNQ
4,4'-DDE	ng/g dw	470	6.63
4,4'-DDT	ng/g dw	110	ND
Dieldrin	ng/g dw	3	ND
PCBs[3]	ng/g dw	3800	ND
Toxaphene	ng/g dw	260	ND
Revolon Slough – Wood Road (04_WOOD)			
Total Chlordane[2]	ng/g dw	48	DNQ
4,4'-DDD	ng/g dw	400	13.9
4,4'-DDE	ng/g dw	1600	70.4
4,4'-DDT	ng/g dw	690	ND
Dieldrin	ng/g dw	5.7	ND
PCBs[3]	ng/g dw	7600	ND
Toxaphene	ng/g dw	790	75.2
Calleguas Creek – University Drive CSUCI (03_UNIV)			
Total Chlordane[2]	ng/g dw	17	ND
4,4'-DDD	ng/g dw	66	ND
4,4'-DDE	ng/g dw	470	ND
4,4'-DDT	ng/g dw	110	ND
Dieldrin	ng/g dw	3	ND
PCBs[3]	ng/g dw	3800	ND
Toxaphene	ng/g dw	260	ND

Table 93. OC Pesticides, PCBs, & Siltation (continued)

Site & Constituent	Units	Interim WLA & LA[1]	Event 22 Aug-2010
Conejo Creek – Adolfo Road (9B_ADOLF)			
Total Chlordane[2]	ng/g dw	3.4	ND
4,4'-DDD	ng/g dw	5.3	ND
4,4'-DDE	ng/g dw	20	DNQ
4,4'-DDT	ng/g dw	2	ND
Dieldrin	ng/g dw	3	ND
PCBs[3]	ng/g dw	3800	ND
Toxaphene	ng/g dw	260	ND
Arroyo Simi – Hitch Boulevard (07_HITCH)			
Total Chlordane[2]	ng/g dw	3.3	ND
4,4'-DDD	ng/g dw	290	ND
4,4'-DDE	ng/g dw	950	DNQ
4,4'-DDT	ng/g dw	670	ND
Dieldrin	ng/g dw	1.1	ND
PCBs[3]	ng/g dw	25700	ND
Toxaphene	ng/g dw	230	ND

ND=not detected; DNQ=detected not quantified

1. Interim waste load allocation for stormwater permittees and interim load allocations for agricultural dischargers; effective until March 24, 2026 (R4-2005-010).
2. Total chlordane is the sum of alpha and gamma-chlordane.
3. PCBs concentrations are the sum of the seven aroclors identified in CTR (1016, 1221, 1232, 1242, 1248, 1254, and 1260).

Table 94. Nitrogen Compounds

Site & Constituent	Units	Target[1]	Event 22 Dry Aug-2010	Event 23 Dry Nov-2010	Event 25 Dry Feb-2011	Event 27 Dry May-2011	Event 24 Wet Dec-2010	Event 26 Wet Mar-2011
Mugu Lagoon – Ronald Reagan Bridge (01_RR_BR)								
Ammonia-N	mg/L	8.1[2]	ND	0.31	DNQ	0.22	0.0977	0.26
Nitrate-N	mg/L	10	0.248	**13.77**	0.16	**17.94**	**26.22**	2.82
Nitrite-N	mg/L	1	ND	0.04	ND	0.13	0.07	0.08
Nitrate-N + Nitrite-N	mg/L	10	0.248	**13.81**	0.16	**18.07**	**26.29**	2.90
Revolon Slough – Wood Road (04_WOOD)								
Ammonia-N	mg/L	5.7[2]	0.256	0.093	0.26	0.44	0.209	0.47
Nitrate-N	mg/L	10	**36.2**	**39.54**	**43.93**	**51.86**	8.9	6.43
Nitrite-N	mg/L	1	0.667	0.03	0.09	0.51	0.051	DNQ
Nitrate-N + Nitrite-N	mg/L	10	**36.867**	**39.57**	**44.02**	**52.37**	8.951	6.43
Beardsley Wash – Central Avenue (05_CENTR)								
Ammonia-N	mg/L	5.7[2]	ND	DNQ	ND	DNQ	0.125	0.77
Nitrate-N	mg/L	10	**40.5**	**45.08**	**71.3**	**50.1**	**10.71**	5.8
Nitrite-N	mg/L	1	0.36	0.03	0.08	0.23	0.066	0.04
Nitrate-N + Nitrite-N	mg/L	10	**40.86**	**45.11**	**71.38**	**50.33**	**10.776**	5.84
Calleguas Creek – Hwy 1 Bridge (02_PCH)								
Ammonia-N	mg/L	5.5[2]	0.0766	0.12	0.17	0.06	NR	NR
Nitrate-N	mg/L	10	9.98	9.06	**18.4**	**11.03**	NR	NR
Nitrite-N	mg/L	1	0.105	0.06	0.35	0.18	NR	NR
Nitrate-N + Nitrite-N	mg/L	10	**10.085**	9.12	**18.75**	**11.21**	NR	NR
Calleguas Creek – University Drive CSUCI (03_UNIV)								
Ammonia-N	mg/L	8.4[2]	0.0582	0.19	0.11	DNQ	0.0835	0.34
Nitrate-N	mg/L	10	7.11	7.91	9.71	6.31	1.75	1.83
Nitrite-N	mg/L	1	0.071	0.37	0.07	0.21	0.02	0.02
Nitrate-N + Nitrite-N	mg/L	10	7.181	7.28	9.78	6.52	1.77	1.85
Conejo Creek – Howard Road Bridge (9A_HOWAR)								
Ammonia-N	mg/L	9.5[2]	0.315	0.9	0.23	0.15	NR	NR
Nitrate-N	mg/L	10	6.11	8.45	7.57	5.81	NR	NR
Nitrite-N	mg/L	1	0.082	0.19	0.06	0.19	NR	NR
Nitrate-N + Nitrite-N	mg/L	10	6.192	8.64	7.63	6.00	NR	NR

Table 94. Nitrogen Compounds (continued)

Site & Constituent	Units	Target[1]	Event 22 Dry Aug-2010	Event 23 Dry Nov-2010	Event 25 Dry Feb-2011	Event 27 Dry May-2011	Event 24 Wet Dec-2010	Event 26 Wet Mar-2011
Conejo Creek – Adolfo Road (9B_ADOLF)								
Ammonia-N	mg/L	9.5[2]	ND	0.22	0.2	ND	0.073	0.07
Nitrate-N	mg/L	10	4.96	5.91	5.72	5.45	1.04	0.89
Nitrite-N	mg/L	1	0.053	0.07	0.09	0.22	0.01	ND
Nitrate-N + Nitrite-N	mg/L	10	5.031	5.98	5.81	5.67	1.05	0.89
Conejo Creek – Hill Canyon Below N Fork (10_GATE)								
Ammonia-N	mg/L	8.4[2]	2.8	1.0	0.57	0.4	0.106	0.35
Nitrate-N	mg/L	10	4.87	4.58	3.86	3.58	1.01	0.64
Nitrite-N	mg/L	1	0.318	0.11	0.12	0.27	0.01	ND
Nitrate-N + Nitrite-N	mg/L	10	5.188	4.69	3.98	3.85	1.02	0.64
Conejo Creek – North Fork Above Hill Canyon (12_PARK)								
Ammonia-N	mg/L	3.2[2]	ND	ND	ND	ND	NR	NR
Nitrate-N	mg/L	10	0.28	0.57	1.39	0.92	NR	NR
Nitrite-N	mg/L	1	0.04	ND	ND	0.01	NR	NR
Nitrate-N + Nitrite-N	mg/L	10	0.32	0.57	1.39	0.93	NR	NR
Conejo Creek – S Fork Behind Belt Press Build (13_BELT)								
Ammonia-N	mg/L	5.1[2]	ND	DNQ	ND	DNQ	NR	NR
Nitrate-N	mg/L	10	0.50	0.5	1.04	0.66	NR	NR
Nitrite-N	mg/L	1	0.04	ND	ND	0.05	NR	NR
Nitrate-N + Nitrite-N	mg/L	10	0.54	0.5	1.04	0.71	NR	NR
Arroyo Las Posas – Somis Road (06_SOMIS)								
Ammonia-N	mg/L	8.1[2]	ND	ND	0.11	0.06	0.116	0.27
Nitrate-N	mg/L	10	9.84	8.49	**10.38**	9.18	2.38	2.26
Nitrite-N	mg/L	1	0.05	ND	0.02	0.16	0.02	0.04
Nitrate-N + Nitrite-N	mg/L	10	9.89	8.49	**10.40**	9.34	2.40	2.30
Arroyo Simi – Hitch Boulevard (07_HITCH)								
Ammonia-N	mg/L	4.7[2]	ND	ND	DNQ	ND	0.0749	0.27
Nitrate-N	mg/L	10	10.0	9.23	**14.0**	**14.29**	2.29	3.17
Nitrite-N	mg/L	1	0.072	ND	0.03	0.16	0.03	0.02
Nitrate-N + Nitrite-N	mg/L	10	**10.072**	9.23	**14.03**	14.45	2.32	3.19

Table 94. Nitrogen Compounds (continued)

Site & Constituent	Units	Target[1]	Event 22 Dry Aug-2010	Event 23 Dry Nov-2010	Event 25 Dry Feb-2011	Event 27 Dry May-2011	Event 24 Wet Dec-2010	Event 26 Wet Mar-2011
Arroyo Simi – Madera Avenue (07_MADER)								
Ammonia-N	mg/L	4.7[2]	0.037	0.79	0.06	ND	0.115	0.25
Nitrate-N	mg/L	10	4.07	4.78	4.51	4.54	0.86	0.44
Nitrite-N	mg/L	1	0.097	0.02	0.04	0.19	0.02	0.01
Nitrate-N + Nitrite-N	mg/L	10	4.167	4.80	4.55	4.73	0.88	0.45

NR=not required; ND=not detected; DNQ=detected not quantified

1. Load allocations for Nitrate-N + Nitrite-N are in effect for agricultural and other non-point sources. To evaluate compliance, monitoring results at receiving water compliance sites were compared against TMDL numeric targets (R4-2008-009).
2. One-hour average.

Results in **bold type** exceed numeric TMDL target.

Table 95. Toxicity, Diazinon, & Chlorpyrifos

Site & Constituent	Units	Dry WLA[1]	Dry Interim LA[2]	Event 22 Dry Aug-2010	Event 23 Dry Nov-2010	Event 25 Dry Feb-2011	Event 27 Dry May-2011	Wet WLA[1]	Wet Interim LA[2]	Event 24 Wet Dec-2010	Event 26 Wet Mar-2011
Mugu Lagoon – Ronald Reagan Bridge (01_RR_BR)											
Chlorpyrifos	µg/L	0.014	0.81	ND	ND	ND	ND	0.025	2.57	**1.1798**	**0.2291**
Diazinon	µg/L	0.1	0.138	ND	**0.2325**	ND	ND	0.1	0.278	ND	**0.1168**
Revolon Slough – Wood Road (04_WOOD)											
Chlorpyrifos	µg/L	0.0133	0.81	ND	ND	**0.0811**	0.0069	0.024	2.57	**1.3126**	**2.9397**
Diazinon	µg/L	0.1	0.138	ND	0.0881	ND	ND	0.1	0.278	0.0554	**0.1863**
Calleguas Creek – University Drive CSUCI (03_UNIV)											
Chlorpyrifos	µg/L	0.0133	0.81	ND	ND	ND	ND	0.024	2.57	**0.0947**	**0.4773**
Diazinon	µg/L	0.1	0.138	ND	ND	ND	ND	0.1	0.278	ND	**0.1369**
Conejo Creek – Adolfo Road (9B_ADOLF)											
Chlorpyrifos	µg/L	0.014	0.81	ND	ND	ND	ND	0.025	2.57	0.0106	ND
Diazinon	µg/L	0.1	0.138	ND	ND	ND	ND	0.1	0.278	ND	ND
Arroyo Simi – Hitch Boulevard (07_HITCH)											
Chlorpyrifos	µg/L	0.014	0.81	ND	ND	**0.0393**	ND	0.025	2.57	**0.1142**	**1.227**
Diazinon	µg/L	0.1	0.138	ND	ND	ND	ND	0.1	0.278	0.0627	ND

ND=not detected; DNQ=detected not quantified

1. Dry and Wet Weather WLAs for Stormwater Dischargers (R4-2005-009)
2. Interim Dry and Wet Weather Load Allocations for Irrigated Agriculture; effective until March 2014 (R4-2005-009)

Results in **bold type** exceed applicable WLA or LA.

Table 96. Metals & Selenium

Site & Constituent	Units	Dry Interim WLA[1]	Dry Interim LA[2]	Event 22 Dry 08/17/10	Event 23 Dry 11/09/10	Event 25 Dry 02/01/11	Event 27 Dry 05/04/11	Wet Interim WLA[1]	Wet Interim LA[2]	Event 24 Wet 12/19/10	Event 26 Wet 03/20/11	Annual Average[3]
Revolon Slough – Wood Road (04_WOOD)												
Total Copper	µg/L	19	19	2.47	3.70	5.20	3.55	204	1390	23.76	**263.57**	
Total Nickel	µg/L	13	42	5.73	6.06	5.86	6.27	[4]	[4]	17.94	166.96	
Total Selenium	µg/L	13	6	**25**	**15.80**	**16.18**	**23.61**	290[4]	290[4]	1.78	2.41	
Total Mercury[5]	lbs/yr	4	4.8					4	4.8			2.0[6]
Calleguas Creek – University Drive CSUCI (03_UNIV)												
Total Copper	µg/L	19	19	2.5	3.68	4.03	3.35	204	1390	19.85	70.12	
Total Nickel	µg/L	13	42	4.95	4.46	4.72	4.42	74[3]	74[3]	20.83	62.63	
Total Selenium	µg/L	none	none	1.05	1.34	1.53	2.82	none	none	0.52	1.27	
Total Mercury[5]	lbs/yr	10.5	12.6					10.5	12.6			3.39[7]

1. Interim Dry Weather WLAs for Stormwater Dischargers; effective until March 2022 (R4-2006-0012)
2. Interim Dry Weather Load Allocations for Irrigated Agriculture; effective until March 2022 (R4-2006-0012)
3. Mercury allocation is assessed as an annual average in suspended sediment. For conservative comparison, the average annual total water column mercury concentration was used for the comparison (i.e. assumed that all mercury is on suspended sediment rather than being dissolved).
4. No wet weather exceedances of these constituents were observed in the TMDL analysis so no interim limits were assigned for the TMDL.
5. Interim WLA and LAs are expressed as annual loads.
6. Annual average mercury load is based on estimated annual concentration (average of all monitored events) and total annual flow calculated from preliminary flow data received from the Ventura County Watershed Protection District (VCWPD) via email on 12/20/2011. Data for August 2010 and September 2010 were not available from VCWPD and were estimated as average from the previous four years (2006 to 2009) of August and September data, respectively. Total annual flow for 08/01/10 to 07/31/11 into Mugu Lagoon from Calleguas Creek and Revolon Slough is calculated as 20,017. Mgal/yr. As such, the interim WLA and LA shown correspond to the flow range of 15,000 to 25,000 MGY, per R4-2006-0012.
7. Annual average mercury load is based on estimated annual concentration (average of all monitored events) and total annual flow calculated from USGS daily mean flows (data retrieved from online USGS database on 12/14/11). Total annual flow for 08/01/10 to 07/31/11 into Mugu Lagoon from Calleguas Creek and Revolon Slough is calculated as 20,017 Mgal/yr. As such, the interim WLA and LA shown correspond to the flow range of 15,000 to 25,000 MGY, per R4-2006-0012.

Results in **bold type** exceed applicable WLA or LA.

Table 97. Salts

Site and Constituent	Units	Interim WLA [1]	Interim LA [2]	Monthly Average Concentration from Continuous Data[3] Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11
Revolon Slough – Wood Road (04_WOOD)									
Chloride	mg/L	230	230	168	151	137	174	169	163
Sulfate	mg/L	1289	1962	**1651**	**1471**	**1326**	**1708**	**1659**	**1597**
TDS	mg/L	1720	3995	**3387**	**3015**	**2713**	**3506**	**3405**	**3276**
Boron	mg/L	1.3	1.8	**1.5**	**1.3**	1.2	**1.8**	**1.8**	**1.7**
Calleguas Creek – University Drive CSUCI (03_UNIV)									
Chloride	mg/L	230	230	195	164	173	190	185	190
Sulfate	mg/L	1289	1962	250	212	210	240	237	243
TDS	mg/L	1720	3995	1033	878	925	1008	982	1005
Arroyo Simi – Hitch Boulevard (07_HITCH)									
Chloride	mg/L	230	230	158	139	156	162	156	162
Sulfate	mg/L	1289	1962	441	387	434	452	434	453
TDS	mg/L	1720	3995	1155	1015	1138	1183	1137	1187
Boron	mg/L	1.3	1.8	0.7	0.6	0.7	0.7	0.7	0.7
Conejo Creek – Baron Bros. Nursery (9B_BARON)									
Chloride	mg/L	230	230	129	134	144	156	146	143
Sulfate	mg/L	1289	1962	159	166	179	194	181	178
TDS	mg/L	1720	3995	675	703	750	811	761	748
Conejo Creek – Howard Road Bridge (9A_HOWAR)									
Chloride	mg/L	230	230	169	154	154	174	170	169
Sulfate	mg/L	1289	1962	223	202	202	229	225	224
TDS	mg/L	1720	3995	883	806	806	908	890	887

1. Interim Dry Weather WLAs for Stormwater Dischargers
2. Interim Dry Weather Load Allocations for Irrigated Agriculture
3. Monthly averages were derived from continuous sensor data for EC (5-min data) and the surrogate relationships predicting salt concentrations from EC

Results in **bold type** exceed applicable WLA or LA.

POTW Compliance

Table 98. Nitrogen Compounds

POTW & Constituent	Units	Final WLA[1]	Event 22 Dry Aug-2010	Event 23 Dry Nov-2010	Event 25 Dry Feb-2011	Event 25 Dry May-2011
Camarillo Water Reclamation Plant (9AD_CAMA)						
Ammonia-N	mg/L	3.5[2] 7.8[3]	1.67	**4.0**	0.88	0.82
Nitrate-N	mg/L	9	8.3	7.7	**10.2**	8.42
Nitrite-N	mg/L	0.9	0.032	0.3	0.03	0.03
Nitrate-N + Nitrite-N	mg/L	9	8.332	8.0	**10.23**	8.45
Hill Canyon Wastewater Treatment Plant (10D_HILL)						
Ammonia-N	mg/L	3.1[2] 5.6[3]	1.7	1.9	1.8	1.6
Nitrate-N	mg/L	9	6.8	6.6	7.3	7.1
Nitrite-N	mg/L	0.9	ND	ND	ND	ND
Nitrate-N + Nitrite-N	mg/L	9	6.8	6.6	7.3	7.1
Simi Valley Water Quality Control Plant (07D_SIMI)						
Ammonia-N	mg/L	2.4[2] 3.3[3]	1.13	1.24	1.7	1.2
Nitrate-N	mg/L	9	6.0	6.7	7.9	7.1
Nitrite-N	mg/L	0.9	0.010	0.011	0.01	0.010
Nitrate-N + Nitrite-N	mg/L	9	6.01	6.71	7.91	7.11

1. The effective date for these WLAs was July 16, 2007 (R4-2008-009)
2. WLAs as Average Monthly Effluent Limit
3. WLAs as Maximum Daily Effluent Limit

Results in **bold type** exceed applicable WLA.

Table 99. OC Pesticides, PCBs, and Siltation

POTW & Constituent	Units	Interim WLA[1]	Event 22 Dry Aug-2010	Event 23 Dry Nov-2010	Event 25 Dry Feb-2011	Event 25 Dry May-2011
Camarillo Water Reclamation Plant (9AD_CAMA)						
Total Chlordane [2]	ng/L	100	ND	ND	ND	ND
4,4'-DDD	ng/L	6	ND	ND	ND	ND
4,4'-DDE	ng/L	188	ND	ND	ND	ND
4,4'-DDT	ng/L	10	ND	ND	ND	ND
Dieldrin	ng/L	10	ND	ND	ND	ND
PCBs [3]	ng/L	31	ND	ND	ND	ND
Toxaphene	ng/L	500	ND	ND	ND	ND
Hill Canyon Wastewater Treatment Plant (10D_HILL)						
Total Chlordane [2]	ng/L	1.2	ND	ND	ND	ND
4,4'-DDD	ng/L	20	ND	ND	ND	ND
4,4'-DDE	ng/L	260	ND	ND	ND	ND
4,4'-DDT	ng/L	10	ND	ND	ND	ND
Dieldrin	ng/L	10	ND	ND	ND	ND
PCBs [3]	ng/L	500	ND	ND	ND	ND
Toxaphene	ng/L	500	ND	ND	ND	ND
Simi Valley Water Quality Control Plant (07D_SIMI)						
Total Chlordane [2]	ng/L	100	ND	ND	ND	ND
4,4'-DDD	ng/L	50	ND	ND	ND	ND
4,4'-DDE	ng/L	1.2	ND	ND	ND	ND
4,4'-DDT	ng/L	10	ND	ND	ND	ND
Dieldrin	ng/L	10	ND	ND	ND	ND
PCBs [3]	ng/L	500	ND	ND	ND	ND
Toxaphene	ng/L	500	ND	ND	ND	ND

1. Interim daily WLAs are effective until March 14, 2026 (R4-2005-010).
2. Total chlordane is the sum of alpha and gamma-chlordane.
3. PCBs concentrations are the sum of the seven aroclors identified in CTR (1016, 1221, 1232, 1242, 1248, 1254, and 1260).

Table 100. Toxicity, Chlorpyrifos, and Diazinon

POTW & Constituent	Units	Final WLA[1]	Event 22 Dry Aug-2010	Event 23 Dry Nov-2010	Event 25 Dry Feb-2011	Event 25 Dry May-2011
Camarillo Water Reclamation Plant (9AD_CAMA)						
Chlorpyrifos	µg/L	0.0133	ND	ND	ND	ND
Diazinon	µg/L	0.1	ND	ND	ND	ND
Hill Canyon Wastewater Treatment Plant (10D_HILL)						
Chlorpyrifos	µg/L	0.014	ND	ND	ND	ND
Diazinon	µg/L	0.1	ND	ND	ND	ND
Simi Valley Water Quality Control Plant (07D_SIMI)						
Chlorpyrifos	µg/L	0.014	ND	ND	ND	ND
Diazinon	µg/L	0.1	ND	ND	ND	ND

1. The effective date for these WLAs was March 16, 2008 (R4-2005-009).

Table 101. Metals and Selenium

POTW & Constituent	Units	Daily Max WLA	Monthly Avg WLA	WLA	Event 22 Dry Aug-2010	Event 23 Dry Nov-2010	Event 25 Dry Feb-2011	Event 25 Dry May-2011
Camarillo Water Reclamation Plant (9AD_CAMA)								
Total Copper	µg/L	57.0 [i]	20.0 [i]		5.3	10.0	9.7	8.5
Total Nickel	µg/L	16.0 [i]	6.2 [i]		3.4	2.7	3.1	3.0
Total Mercury	lbs/month			0.03 [i]	0.004	0.002	0.002	0.002
Hill Canyon Wastewater Treatment Plant (10D_HILL)								
Total Copper	µg/L	20.0 [i]	16.0 [i]		3.9	2.6	3.8	3.2
Total Nickel	µg/L	8.3 [i]	6.4 [i]		2.5	2.5	2.5	2.3
Total Mercury[1]	lbs/month			0.23 [i]	0.03	0.03	0.03	0.03
Simi Valley Water Quality Control Plant (07D_SIMI)								
Total Copper	µg/L	31.0 [f]	30.5 [f]		4.2	ND	ND	5.4
Total Nickel	µg/L	960 [f]	169 [f]		2.1	ND	ND	ND
Total Mercury[1]	lbs/month			0.18 [i]	0.14	0.14	0.14	0.15

i. Interim WLA effective until March 26, 2017 (R4-2006-012)
f. Final WLA; effective date was March 26, 2007 (R4-2006-012)
1. Total Mercury concentration reported as not detected (ND) for all monitoring events; one half of the method detection limit was used to calculate the monthly loads

Table 102. Salts

POTW & Constituent	Units	Interim Monthly Avg WLA	Aug 2010	Sep 2010	Oct 2010	Nov 2010	Dec 2010	Jan 2011	Feb 2011	Mar 2011	Apr 2011	May 2011	Jun 2011	Jul 2011
Camarillo Water Reclamation Plant (9AD_CAMA)														
Chloride	mg/L	216	**220**	**286**	**272**	**247**	**247**	**220**	**235**	**227**	**217**	**218**	**234**	216
Sulfate	mg/L	283	**297**	265	**293**	**297**	271	**313**	**286**	**287**	**327**	**290**	275	279
TDS	mg/L	1012	**1124**	**1103**	**1083**	**1146**	**1086**	**1194**	**1102**	**1104**	**1159**	**1124**	**1026**	**1025**
Hill Canyon Wastewater Treatment Plant (10D_HILL)														
Chloride	mg/L	189	138	135	132	137	130	136	146	140	142	139	133	136
Simi Valley Water Quality Control Plant (07D_SIMI)														
Chloride	mg/L	183	130	130	120	120	130	130	130	158	154	146	147	146
Sulfate	mg/L	298	180	190	170	180	190	248	210	250	255	213	205	195
TDS	mg/L	955	700	657	704	695	658	712	753	720	828	750	760	698

Results in **bold type** exceed interim WLA.

COMPLIANCE COMPARISON DISCUSSION

General Water Quality Constituents, OC Pesticides, Metals, Nutrients

The compliance analysis shown in Table 93 through Table 101 above demonstrates that for the most part, the CCW is in compliance with the applicable interim or final WLAs and LAs currently in effect for the Nutrients, OC Pesticides, Toxicity, and Metals TMDLs addressed in the QAPP (compliance with the Salts TMDL is discussed separately). The following observations summarize the compliance status with these load allocations:

- No exceedances of any interim WLA or LAs for OC Pesticides or PCBs were observed at any location in the watershed.
- Exceedances of numeric targets for Nitrate-N and Nitrate-N+Nitrite-N were observed at sites in Mugu Lagoon, Revolon Slough, Arroyo Simi, Arroyo Las Posas, and Calleguas Creek (02_PCH). Most exceedances occurred during dry events, with only two sites, 05_CENTR and in Revolon Slough and 01_RR_BR in Mugu Lagoon, exceeding during a wet weather event (Event 24 in December 2010).
- One site exceeded the interim dry weather WLA and LA for selenium. However, per the Basin Plan Amendment, the attainment of the interim allocation will be evaluated in consideration of background loading if available. As noted in the previous annual report, Revolon Slough, where this site is located, has been shown to have rising groundwater, a large background source of selenium.
- Interim wet weather WLAs for copper in Revolon Slough were exceeded during the March 20, 2011, storm event. This storm event was very large and generated a large amount of sediment transport. Although the total concentrations for copper were very high during this storm event, the dissolved concentrations were much lower and did not exceed TMDL targets (3.6 µg/L as compared to the TMDL target of 4.8 µg/L).
- Although toxicity was observed at some locations in the watershed, TIEs were initiated for all samples meeting the requirements in the QAPP. As a result, the TMDL implementing parties are in compliance with the toxicity WLAs and LAs per the requirements of the TMDL.
- The interim LA for chlorpyrifos was exceeded during one of the wet weather events in the Revolon Slough at Wood Road (04_WOOD). The interim LA for diazinon was exceeded during one of the dry weather events in the Mugu Lagoon at the Ronald Reagan Bridge (01_RR_BR). No other exceedances of the chlorpyrifos and diazinon interim LAs were observed. Some exceedances of the final WLAs for chlorpyrifos and diazinon were also observed at select locations in the watershed; most of them were for chlorpyrifos during wet weather events.

Exceedances of numeric targets for Nitrate-N and Nitrate-N+Nitrite-N were observed at sites in Mugu Lagoon, Revolon Slough, Arroyo Simi, Arroyo Las Posas, and Calleguas Creek (02_PCH). Nitrate-N exceedances are summarized in Table 103 below. The table focuses on Nitrate-N results since Nitrate-N+Nitrite-N exceedances were generally caused by high Nitrate-N values, with Nitrite-N being below the 1 mg/L target at all sites and events.

Table 103. Exceedances of Nitrate-N Numeric TMDL Target of 10 mg/L (all units in mg/L)

Nitrogen TMDL Compliance Sites	Event 22 Aug-2010 Dry	Event 23 Nov-2010 Dry	Event 25 Feb-2010 Dry	Event 27 May-2010 Dry	Event 24 Dec-2011 Wet	Event 26 Mar-2011 Wet
01_RR_BR	no	**yes**	no	**yes**	**yes**	no
04_WOOD	**yes**	**yes**	**yes**	**yes**	no	no
05_CENTR	**yes**	**yes**	**yes**	**yes**	**yes**	no
02_PCH	no	no	**yes**	**yes**	NM	NM
03_UNIV	no	no	no	no	no	no
9A_HOWAR	no	no	no	no	NM	NM
9B_ADOLF	no	no	no	no	no	no
10_GATE	no	no	no	no	no	no
12_PARK	no	no	no	no	NM	NM
13_BELT	no	no	no	no	NM	NM
06_SOMIS	no	no	**yes**	no	no	no
07_HITCH	no	no	**yes**	**yes**	no	no
07_MADER	no	no	no	no	no	no

no signifies that monitoring results were below the Nitrate-N target during the monitoring event.
yes signifies that monitoring results were below the Nitrate-N target during the monitoring event.
NM – not monitored

Nitrogen exceedances occurred primarily in areas of the watershed with agricultural inputs. Reaches downstream of POTW discharges are generally in compliance with the TMDL requirements and urban discharges were determined to be negligible during the TMDL analysis and therefore do not have TMDL allocations. The final nitrogen allocations for agriculture became effective in July 2010. The exceedances of the nitrogen load allocations since that time have triggered the inclusion of nitrogen in the Agricultural Water Quality Management Plan (AWQMP) required under the Conditional Waiver of Irrigated Agricultural Discharges that is currently being implemented in the Calleguas Creek Watershed. Compliance with the load allocations is determined through implementation of the AWQMP.

Additionally, the Camarillo WRP exceeded WLAs during Event 23 (August 2010) for ammonia and during Event 25 (February 2011) for nitrate-N and nitrate-N + nitrite-N. The denitrification facility at the Camarillo WRP has experienced some operational difficulties that led to the exceedances. These issues are in the process of being remedied and once implemented should prevent future exceedances of the WLAs.

Further examination of the chlorpyrifos and diazinon exceedances at receiving water sites was needed to assess whether urban dischargers caused the exceedance of the receiving water allocations. The WLAs for urban dischargers are assessed in the receiving water, while agricultural dischargers are not yet required to be in compliance with the chlorpyrifos and diazinon final load allocations. Monitoring data at land use sites from each subwatershed for which an exceedance was observed was compared to the WLA to determine if MS4 discharges exceeded the allocation during the monitoring event where elevated receiving water concentrations were observed.[4] If the MS4 land use data were below the WLA, the MS4 dischargers were considered to be in compliance with the WLAs. If the MS4 land use data were above the WLA, the MS4 could be contributing to the exceedance in the receiving water. In all but two instances, the exceedances were in reaches to which MS4 discharges were not occurring or the land use data was less than the WLA for diazinon and chlorpyrifos as shown in the following table. At sites 04_WOOD and 07_HITCH during the first storm sampled (Event 24), the receiving water and the upstream MS4 and agricultural land use sites all exceeded the chlorpyrifos target. As a result, it is possible that the either the MS4 or agricultural discharges, or both, contributed to the exceedance. Event 24 was the first significant storm of the season producing over one inch of rainfall and it turned out to be one of the wettest in recorded history. Because chlorpyrifos is often associated with sediment, it is likely these discharges represent legacy applications of chlorpyrifos that were flushed into the stream with sediment during the first flush of the rainy season.

Table 104. Compliance and Land Use Sites Comparison to Determine MS4 Chlorpyrifos and Diazinon WLA Compliance

Sites Exceeding WLAs	Constituent	Event 22 Aug-2010 Dry	Event 23 Nov-2010 Dry	Event 25 Feb-2010 Dry	Event 27 May-2010 Dry	Event 24 Dec-2011 Wet	Event 26 Mar-2011 Wet
01_RR_BR	Chlorpyrifos					no[1]	no[1]
	Diazinon		no[1]				no[1]
04_WOOD	Chlorpyrifos			no		**yes**	no
	Diazinon						no
03_UNIV	Chlorpyrifos					no[1]	no[1]
	Diazinon						no[1]
07_HITCH	Chlorpyrifos			no		**yes**	no

no signifies that the MS4 land use site for the subwatershed did not exceed the WLA during the monitoring event.
yes signifies that the MS4 land use site for the subwatershed exceeded the WLA during the monitoring event.
1. There are no urban discharges to these subwatersheds above the sampling location.
Blank cells indicate that a WLA exceedance did not occur at the compliance monitoring site during a particular event.

During the second storm event sampled (Event 26), copper concentrations in Revolon Slough at 04_WOOD exceeded the wet-weather interim WLA. Further examination of the upstream land use sites in the subwatershed indicates that copper concentrations were also very high during this storm event at two upstream sites, 04D_WOOD and 05D_SANT_VCWPD, both agricultural use sites. The urban use site, 04D_VENTURA, did not exhibit elevated copper levels during this storm event. A summary of the copper monitoring results for storm Event 26 at sites in the Revolon Slough subwatershed is shown in Table 106 below. For discussion purposes, results for both total and dissolved copper fractions as well as total suspended solids (TSS) and turbidity are also included in the table.

[4] Refer to Table 6 for a list of land use sites in each subwatershed.

Table 105. Copper at Revolon Slough Subwatershed Sites for Wet Weather Event 26 and Comparison with Interim Waste Load Allocations and Load Allocations

Site ID	Use	Total Cu Interim WLA[1]	Total Cu Interim LA[1]	Copper Total	Copper Dissolved	Other TSS (mg/L)	Other Turbidity (NTU)
04_WOOD	RW	204	1390	**263.57**	3.61	7,715	3,075
04D_WOOD	Ag		1390	140.78	6.77	2,820	1,780
05D_SANT_VCWPD	Ag		1390	613.91	4.96	8,880	6,440
04D_VENTURA	Urban	204		34.63	4.29	757.5	840

1. Interim WLAs for stormwater permittees and interim LAs for agricultural dischargers are effective until March 2022 (R4-2006-012).

All values are in µg/L, unless otherwise noted

RW – Receiving water compliance site; Ag – Agricultural

Results in **bold type** exceed applicable interim WLA, interim LA, or target.

As noted in the above table, the agricultural sites displayed high levels of total copper, but although these levels are likely contributors to the exceedance of the interim WLA at the downstream receiving water site, they are not in exceedance of the interim LA applicable for agricultural dischargers. It is important to note the low dissolved copper concentrations and high turbidity and TSS levels at 04_WOOD, 04D_WOOD, and 05D_SANT_VCWPD. These results indicate that a high volume of sediment was moving through the system during sample collection at these three sites. The high levels of suspended sediment are the likely cause of the high total metal numbers at these sites. The dissolved copper concentrations at 04_WOOD did not exceed the TMDL target for wet weather.

Selenium concentrations in Revolon Slough at 04_WOOD exceeded the urban dischargers interim WLA and the agricultural dischargers interim LA during all four dry weather monitoring events. A summary of monitoring results for total selenium at sites in the Revolon Slough subwatershed is shown in Table 106 below. For discussion purposes both dry weather and wet weather monitoring results are included in the table.

Table 106. Selenium Monitoring Data in the Revolon Slough Subwatershed

Site ID	Use	Dry Weather Events & Dates: Interim WLA[1]	Interim LA[1]	22 Aug-10	23 Nov-10	25 Feb-11	27 May-11	Wet Weather Events & Dates: Target[2]	24 Dec-10	26 Mar-11
04_WOOD	RW	13	6	**25.0**	**15.80**	**16.18**	**23.61**	290	1.783	2.41
04D_WOOD	Ag		6	NS	3.55	5.04	NS	290	1.815	1.36
05D_SANT_VCWPD	Ag		6	**28.1**	**49.84**	**70.73**	**52.86**	290	3.719	3.39
04D_VENTURA	Urban	13		DNQ	DNQ	DNQ	ND	290	0.174	DNQ

1. Interim WLAs for stormwater permittees and interim LAs for agricultural dischargers are effective until March 2022 (R4-2006-012).
2. No wet weather exceedances were observed in the TMDL analysis so no interim limits were assigned for the TMDL. For comparison purposes, the wet weather targets were included in this table.

RW – Receiving water compliance site; Ag – Agricultural

NS – Not sampled; DNQ – Detected not quantified; ND – Not detected

Results in **bold type** exceed applicable interim WLA or interim LA.

As noted in Table 107, high levels of selenium were also observed at 05D_SANT_VCWPD, an agricultural use site in the upper reach of the subwatershed. The table also indicates that selenium levels at the 04_WOOD receiving water site and at the upstream 05D_SANT_VCWPD site are significantly higher during dry weather events and that the concentrations are being diluted during wet weather events. As discussed in the TMDL, a primary source of selenium in Revolon Slough is considered to be rising groundwater levels and the interim allocations were to be considered in this context. These exceedances were likely caused by rising groundwater. Further investigation of selenium sources will be conducted through special studies as required by the TMDL.

Salts

Table 97 indicates that the Revolon Slough site 04_WOOD is the only freshwater compliance site for salts that showed exceedances of both WLA and LA interim limits. All other freshwater receiving sites meet WLA and LA interim standards for all salt constituents. Although concentrations of boron, sulfate and TDS at 04_WOOD exceeded interim WLA standards, concentrations at the site meet all interim LA limits for sulfate, chloride, TDS, and boron. Although boron concentrations never exceeded the LA interim limit of 1.8 mg/L, concentrations did reach this limit in April and May 2011.

To assess whether urban MS4 dischargers or agricultural dischargers were likely to have contributed to concentrations over the interim WLA standards at 04_WOOD, concentrations from grab sample events at two land-use sites within the Revolon Slough watershed (see Table 88) were compared to the monthly average concentrations at 04_WOOD. At the urban land-use site, 04D_VENTURA, all constituents were within the WLA interim limits for all events, indicating that urban stormwater runoff may not have contributed to exceedances at the 04_WOOD receiving water site. At the agricultural land-use site, 04D_WOOD, the WLA interim standards were exceeded for boron during salt event 2, sulfate during salt event 2, and TDS during salt events 1 and 2. The LA interim standards were exceeded at agricultural site 04D_WOOD for boron, sulfate and TDS during event 2 only. These exceedances of WLA and LA interim limits indicate that agricultural discharge is a likely contributor to WLA exceedances at receiving water site 04_WOOD.

The only other exceedances of a salt WLA were observed in the effluent discharge from the Camarillo WRP (see Table 102). Chloride and TDS concentrations were at or above the interim WLA for POTWs for all sampling periods. Sulfate concentrations exceeded the interim WLA limits in 8 of 12 sampling periods.

These exceedances are due to the unexpected increase in salinity of plant effluent that occurred beginning in 2007, rendering the Camarillo WRP unable to comply with the interim WLA limits, which were established based on plant performance through 2006. Starting in 2007, a series of dry and critical dry years resulted in restrictions of historically low-salinity State Water Project deliveries, supplementation of water supply with high-salinity local groundwater, and concentration of salts through water conservation programs. These factors have all contributed to unavoidable increases in salinity of influent to the plant. Since the Camarillo WRP treatment process was not designed to remove TDS, sulfate or chloride, this increase in salinity of influent has resulted in a corresponding increase in effluent salt concentrations.

In May 2011, Camarillo Sanitary District requested a Time Schedule Order (TSO) as permitted under Water Code section 13385(j)(3)(B) to allow for "completion of significant capital improvement projects that will allow the WRP to comply with the final effluent limits in the Calleguas Creek Watershed Salts TMDL." These improvement projects include 1) construction of the Salinity Management Pipeline (SMP) which will convey wastewater and brine from local groundwater desalting operations to the Pacific Ocean and 2) development of a more extensive recycled water distribution system that will allow reuse of most of the effluent from the water reclamation plant and. These improvements will allow Camarillo WRP to comply with the new interim WLA requirements between June and December of 2014.

GENERAL WATER QUALITY CONSTITUENTS, OC PESTICIDES, METALS, NUTRIENTS

Nitrogen Compounds

Ammonia and Nitrite-N are consistently below TMDL allocations at all Nitrogen TMDL compliance sites. While most sites are in compliance with the Nitrate as N allocations, this constituent is occasionally above the 10 mg/L objective in the Mugu Lagoon (01_RRBR), the lower reaches of Calleguas Creek (02_PCH and 03_UNIV), in Revolon Slough (04_WOOD and 05_CNTR), and in the Las Posas and Simi Arroyos (06_Somis and 07_Hitch). Exceedances in Conejo Creek and in the upper reaches of Calleguas Creek are seldom observed. Levels in the Mugu Lagoon and in freshwater immediately upstream (02_PCH) appear to be decreasing from year to year. Nevertheless, statistically-significant trends have not been observed at any of the sites. Time-series graphs of the Nitrate-N results for dry and wet weather events monitored in the past three years are presented in Appendix F.

OC Pesticides, PCBs, and Siltation

No exceedances of interim WLA or LAs for OC Pesticides or PCBs were observed at any location in the watershed during the previous three monitoring years. Because most constituents are below method detection or quantification levels, meaningful trends in the data cannot be assessed at this time.

Toxicity, Chlorpyrifos, and Diazinon

Chlorpyrifos and diazinon levels are low and often non-detect at compliance sites in Mugu Lagoon and in upstream freshwater sites with occasional spikes in concentrations observed during storm events, especially at sites with agricultural inputs. This is expected as rain washes out sediment particles which may contain these constituents. Trends are unclear at this point; time-series graphs chlorpyrifos and diazinon results for dry and wet weather events monitored in the past three years are presented in Appendix F.

Toxicity is occasionally identified at receiving water sites, especially during storm events. One particular site, 04_WOOD, has been more problematic and the responsible parties have invested resources into source control efforts to address contributing sources. Toxicity results of the past three years are summarized in Table 45.

Metals and Selenium

For the most part, metals and selenium levels at receiving water sites have been low and in compliance with the interim LAs and WLAs and TMDL targets. Concentrations of total metals, such as copper and nickel, tend to be higher during rainstorms, but are generally below the final wet-weather allocations. During large storm events, large amount of sediment can be mobilized that contain higher metals concentrations. However, even during these large storm events with total metals concentrations, the dissolved metals concentrations are below TMDL targets. As a result, the watershed is generally meeting the TMDL targets. Time-series graphs with results from the past three years of monitoring at 04_WOOD and the upstream agricultural sites are presented in Appendix F. The graphs clearly illustrate the generally low metal levels punctuated by the unusual spike during Event 26.

Selenium concentrations at receiving water sites are also low, with few exceedances of selenium interim LAs and WLA, except in the Revolon Slough (04_WOOD and 05D_SANT_VCWPD). As discussed in the TMDL, a primary source of selenium in Revolon Slough is considered to be rising groundwater levels and the interim allocations were to be considered in this context. Time series graphs with selenium concentrations at Revolon Slough sites are included in Appendix F.

SALTS

The continuous monitoring data for salts indicate that there is pronounced variation in all the key parameters monitored (EC, flow, and concentrations of salts). Figure 12 shows close correspondence between the EC time series produced by both types of EC sensors installed at 03_UNIV. In addition, it shows that the twice-monthly grab samples for EC taken at the site agree well with their corresponding 5-minute values from the continuous sensors. All of the days in the time series in Figure 12 except May 18-19 are dry weather days according to the criterion established by the TMDL[5]; the figure indicates that EC may vary in an unpredictable fashion during dry weather. Because time series for other constituents (chloride, sulfate, TDS, and boron) are modeled using relationships with EC, it is important to have an approach that can produce an accurate time series of EC.

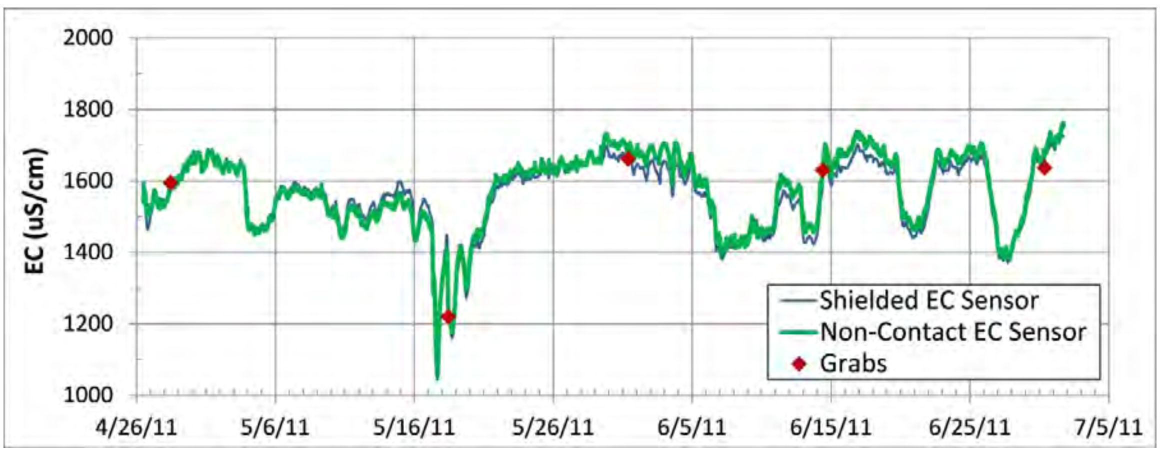


Figure 12. Comparison of continuous (5-min) EC sensor data from April 26-July 5, 2011 and intermittent grab samples for EC (field measurements using meter) at 03_UNIV.

Continuous time series for flow (Figure 13) reveal a reasonably repetitive diurnal pattern in flow at 9B_BARON and 07_HITCH-S during dry weather, which is likely linked to diurnal patterns in discharge of effluent at the upstream POTWs (Simi Valley Water Quality Control Plant is upstream from 07_HITCH-S; Hill Canyon Wastewater Treatment Plant is upstream from 9B_BARON). A highly featured and less predictable diurnal variation in flow is observed on most dry weather days at 04_WOOD, which cannot be explained by POTW discharge (there is

---

[5] See the Salt Balance discussion in this report for a description of the methods for designating dry weather.

none in the drainage leading to the site), but may be explained by intermittent discharges from tile drains or other types of short-lived discharges to Revolon Slough. An unexpected pattern of temporary increases in discharge lasting 2-3 days occurred at 9A_HOWAR and 03_UNIV during the dry weather period illustrated in Figure 13. The time series for the two sites track each other closely during the 2-3 day pulses, but diverge from each other during the dry days between pulses.

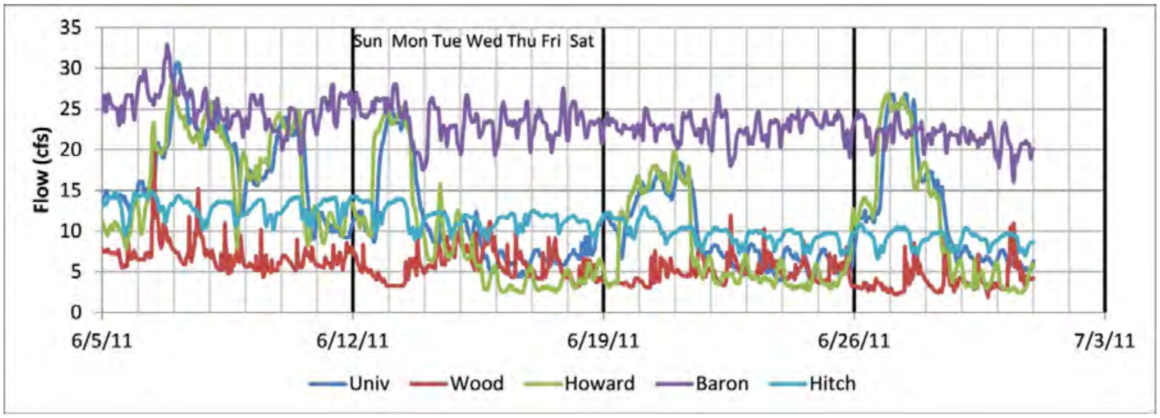
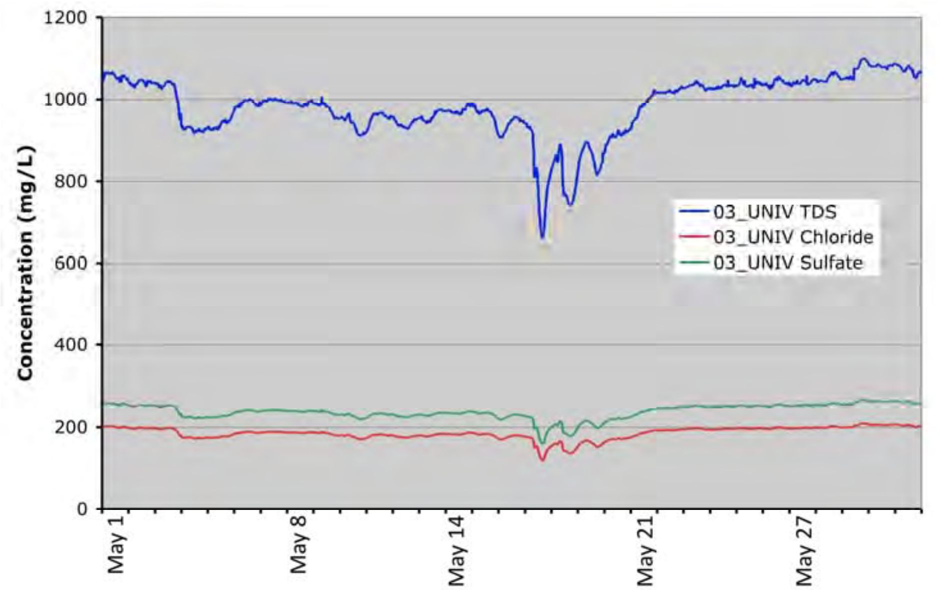


Figure 13. Discharge at 5-min intervals between June 5 to June 30, 2011 at all five salt compliance sites. Weeks are bracketed by bolded vertical grid lines.

Figure 14 (upper panel) illustrates the time series of salt concentrations for May, 2011, obtained for the 03_UNIV site by applying surrogate relationships to the 5-min EC data from the continuous sensors. All of the days in the time series met the TMDL criterion for dry weather except for May 18-19. The time series reveal the dilution of salt concentrations that occurs during brief runoff events, but also reveals that chloride and sulfate concentrations can be reasonably constant during dry weather at 03_UNIV. Continuous load data (plotted for 5-min intervals in Figure 14, lower panel) indicate that when 5-min concentrations are paired with corresponding 5-min discharge values to produce 5-min loads, salt flux is more variable during dry weather at 03_UNIV than concentration data alone would predict. The data set also illustrates that that seemingly minor decreases in concentration during dry weather (such as during May 3-5) can coincide with significant increases in salt flux that make important contributions to the annual dry weather export term.

The analogous plots for 04_WOOD for May 2011 (Figure 15) reveal somewhat different dynamics of concentration and flux of salt at this site, compared to 03_UNIV. Whereas the predominant form of variation at 03_UNIV was between days or weeks during May 2011, there was a pronounced diurnal pattern in concentration and 5-min loads of TDS and sulfate at 04_WOOD during the same period. A pulse of salt export occurred on May 9, on a day that met the TMDL criterion for dry weather, and again during May 18-19 (which met the criterion for wet days).



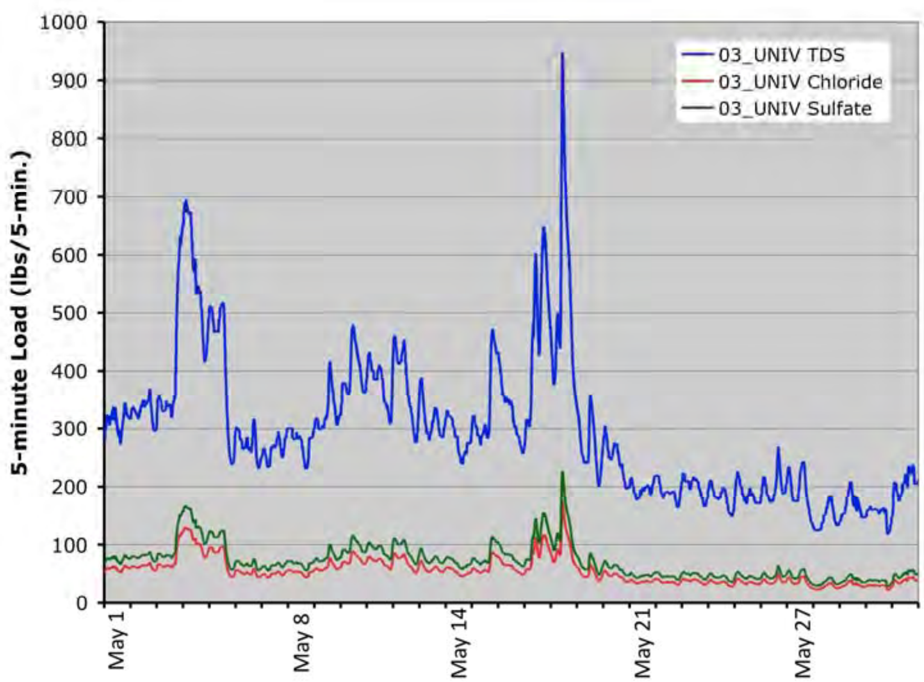


Figure 14. Time series of salt concentrations (mg/L; upper panel) and salt loads (lbs/5-min; lower panel) at 03_UNIV using all 5-minute intervals in May 2011. Concentrations were derived from 5-min EC data and application of the surrogate relationships predicting salt concentrations from EC. Loads were obtained by pairing 5-min concentrations with discharge from the same 5-min interval.

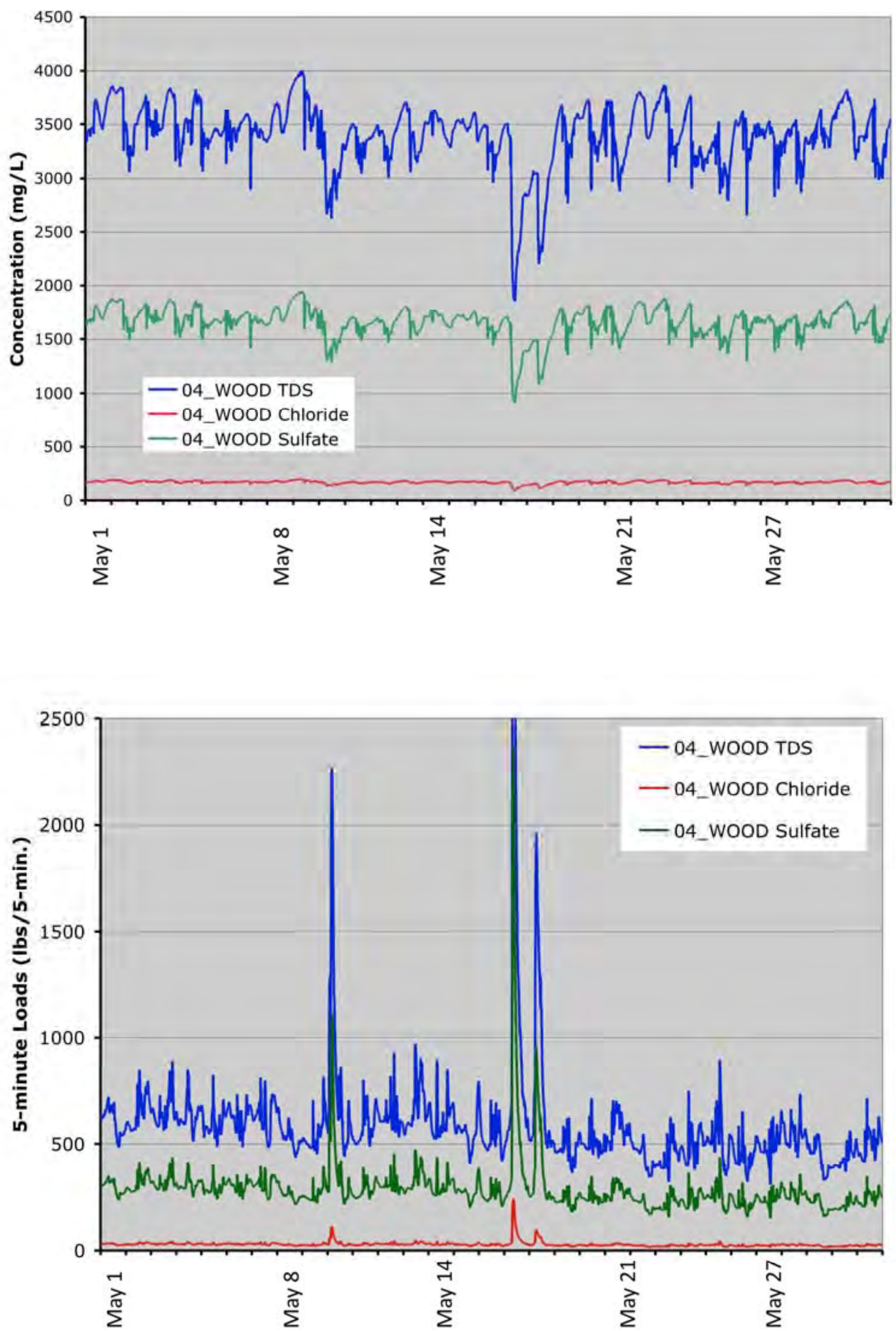


Figure 15. Time series of salt concentrations (mg/L; upper panel) and salt loads (lbs/5-min; lower panel) at 04_WOOD using all 5-minute intervals in May 2011. Concentrations were derived from 5-min EC data and application of the surrogate relationships predicting salt concentrations from EC. Loads were obtained by pairing 5-min concentrations with discharge from the same 5-min interval.

Reduction Milestones

SALT BALANCE

The Salts TMDL implementation plan requires a progressive improvement in the watershed salt balance; the first interim milestone (Implementation Item #7) is required to be achieved within three years of the effective date of the TMDL (required by December 2, 2011):

> *Re-evaluation of the interim WLAs and interim LAs for boron, chloride, sulfate and TDS based on new data. Responsible jurisdictions and agencies shall demonstrate that implementation actions have reduced the boron, sulfate, TDS, and chloride imbalance by 20%.*

The Parties Implementing the TMDLs in the CCW (Parties) submitted a letter to the Regional Water Board on December 2, 2011, which presented the current year salt balance (2010/2011), compared it to a revised baseline salt balance, and provided a discussion of the implementation actions taken to date that are designed to achieve improvement in the watershed salt balance.

In order to calculate the improvement in the salt balance, it is necessary to have both a baseline and a current salt balance value for comparison. The salt balance is calculated by using available data to estimate inputs and exports of salts from the watershed. For both the current year and baseline calculations, the following inputs and exports were calculated:

Inputs

- Imported water supply
- Additions of salt to water supply through use of water and wastewater treatment
- Diversions of Santa Clara River water
- Extraction of confined groundwater
- Pesticides and fertilizers

Exports

- Load of salt discharged through Calleguas Creek below Potrero Road
- Load of salt discharged through Revolon Slough below Laguna Road

The results of the salt balance determination and baseline comparison are presented below, with a detailed discussion of the data sets and analyses used to derive them. The summary of salt-related implementation actions provided to the Regional Water Board on December 2, 2011, is included to provide background and context.

Status of TMDL Implementation Actions

In the Salts TMDL implementation plan, the Parties identified the following actions that could be undertaken in the first three years of TMDL implementation:

- Augment water conservation programs.

- Begin implementation of Best Management Practices for agriculture.

- Complete of Phase 1 of the Regional Salinity Management Pipeline (SMP) construction.
- Provide blending of imported State Project Water with poorer quality groundwater from the unconfined South Las Posas Basin aquifer to obtain water of sufficient quality for agricultural use.
- Expand the recycled water transmission and distribution system in the Southern Reaches of the watershed.
- Pump and treat unconfined aquifers in the Pleasant Valley Basin near Channel Islands University (CSUCI) that currently contain water with high salts concentrations. The brine from the treatment process will be discharged to the SMP and moved out of the watershed to the ocean.
- Develop existing and new water blending facilities by Camrosa.
- Relocate the wastewater discharge point for the Camarillo WRP and Camrosa WRF to downstream of Potrero Road Bridge on Calleguas Creek.
- Install pumping facilities and pipelines to connect Camarillo WRP to the Camrosa recycled water system and discontinue direct discharge to the stream by Camarillo WRP.

The Parties have completed or made progress on all of the actions identified above with a few modifications. The status of the implementation actions is summarized in Table 107.

Table 107. Summary of Implementation Actions taken by Implementing Parties of the CCWTMP to Improve the Watershed Salt Balance

Action	Status	Modifications
Augment water conservation programs	All the Parties have implemented or augmented existing water conservation programs. Water conservation has significantly reduced imported water usage in municipal areas.	None
Begin implementation of Best Management Practices for agriculture	Members of VCAILG are in the third year of implementing best management practices in accordance with approved Water Quality Management Plans to address salts and other pollutants.	None
Complete of Phase 1 of the Regional Salinity Management Pipeline (SMP) construction	Phase 1 construction is almost complete and work has begun on Phase 2. The SMP is expected to begin receiving discharges in 2012.	Although Phase 1 is almost complete, construction has been slightly delayed. As a result, the implementation of actions dependent on the SMP has been delayed by about a year.

Table 107. Summary of Implementation Actions taken by Implementing Parties of the CCWTMP to Improve the Watershed Salt Balance (continued)

Action	Status	Modifications
Provide blending of imported State Project Water with poorer quality groundwater from the unconfined South Las Posas Basin aquifer to obtain water of sufficient quality for agricultural use.	Blended water has been provided to agricultural users in the Las Posas Basin since the effective date of the TMDL.	None
Expand the recycled water transmission and distribution system in the Southern Reaches of the watershed.	Expansion of the recycled water system has begun and has provided a mechanism to systematically reduce imported water use. Additional phases of the expansion will continue throughout the implementation period.	None
Pump and treat unconfined aquifers in the Pleasant Valley Basin near Channel Islands University (CSUCI) that currently contain water with high salts concentrations and discharge brine to the SMP.	The treatment facility is at 90% design and is expected to go to bid in January. Construction will be completed by September or October 2012.	Full implementation of this project has been delayed by about a year, partly due to a delay in the SMP Phase 1 schedule.
Develop existing and new water blending facilities by Camrosa.	Analysis of the existing facilities determined that new water blending facilities were not necessary to implement the TMDL.	This action is no longer part of the implementation plan. The change will not impact the overall salt balance as these facilities were designed to facilitate the use of recycled water and did not independently remove salts.
Relocate the wastewater discharge point for the Camarillo WRP and Camrosa WRF to downstream of Potrero Road Bridge on the Calleguas Creek.	The Camarillo Sanitary District and Camrosa determined that building the outfall was not necessary to implement the TMDL. The SMP will provide a sufficient alternative discharge location if all of the water from either treatment plant cannot be recycled as anticipated in the TMDL.	This action is no longer part of the implementation plan. The change will not impact the overall salt balance as the recycled water that would have been discharged through this point will be reused in the lower portions of the watershed or discharged to the SMP.
Install pumping facilities and pipelines to connect Camarillo WRP to the Camrosa recycled water system and discontinue direct discharge to the stream by Camarillo WRP.	Funding has been obtained through a Proposition 84 grant. Design has begun on the facilities and work will begin when the funding is received.	Project has been delayed because the funding from Prop 84 has not yet been provided, but will be completed by 2015.

As shown in the table, progress has been made on all of the actions proposed in the TMDL implementation plan. However, some of the significant capital improvements have been delayed due to funding constraints and construction delays. Although delays have occurred, most of the projects that are being developed are to provide infrastructure to allow control of the salts in the watershed and therefore do not directly impact the calculation of the salt imbalance in the watershed. Only one project, the pumping and treatment of unconfined aquifers in the Pleasant Valley Basin, would have resulted in additional salt export out of the watershed. It is anticipated that this action will be complete by the end of 2012.

The only other actions that were scheduled to occur by 2011 that can influence the salt imbalance are water conservation and agricultural BMPs. As a result, actions that can be taken by the Parties to manage the salt balance during the first phase of implementation are really limited to the reduction of inputs into the watershed through implementation of water conservation and pesticide/fertilizer management.

Current Year Salt Balance

Compliance with the salt balance is calculated on an annual basis. Given the timing for demonstrating compliance with the TMDL requirements (December 2, 2011), it is not possible to calculate a calendar year salt balance. As a result, the time period of the calculation was based on the availability of stream export data for the watershed. Continuous salt monitoring equipment was installed at the CCWMP TMDL receiving water compliance sites in January 2011. Data from these sites were available through August 31, 2011 for the analysis. Therefore, for every term of the current year salt balance, effort was made to compute annual loads based on a 12-month window that ended as close as possible to August 31, 2011. Sufficiently detailed data were available to estimate loads for September 2010-August 2011 for the following terms of the salt balance: imported water (including extractions from the Las Posas Aquifer Storage and Recovery Wellfield), additions of salt to water supply, and stream export during dry weather. Sufficient data for months in 2011 was not available for other terms of the salt balance. Consequently, calendar year 2010 (January-December 2010) was used as the 12-month window to estimate annual salt loads for the following terms of the salt balance: pesticide applications, Santa Clara River Water Diversions, and extractions of confined ground water.

Salt inputs downstream of Potrero Road on Calleguas Creek and Laguna Road on Revolon Slough do not contribute to the watershed salt balance. Therefore, a GIS shapefile was created which represented the geographical area that pertains to the salt balance for CCW (Salt Balance Area). This shapefile excluded portions of the watershed downstream from Potrero Road (for Calleguas Creek) and Laguna Road (for Revolon Slough). The stream export data were from monitoring sites at the border of the Salt Balance Area (for Calleguas Creek), or just downstream from the border of the Salt Balance Area (for Revolon Slough). The datasets used to derive the input terms of the current year salt balance were adjusted (where necessary) so that they excluded deliveries or applications of water or salt to areas outside the Salt Balance Area.

The current year salt balance is presented in Table 108, followed by a detailed discussion about details about the datasets and analyses used to each term of the salt balance.

Table 108. Salt Balance for Calleguas Creek Watershed[(a)] for 2010/2011.

Term of Salt Balance		12-month period evaluated	Daily Volume (MGD)	Chloride (lbs)	Sulfate (lbs)	TDS (lbs)	Boron (lbs)
Imported Water	Deliveries of water from ASR Well Field	Sept. 2010-Aug. 2011	2	444,735	822,839	2,981,163	1,639
	Combined deliveries from Jensen and Bard Treatment Plants		62	14,025,214	11,374,584	58,718,998	41,623
Additions of Salt to Water Supply	Simi Valley POTW	Sept. 2010-Aug. 2011	9.1	1,754,911	3,743,789	9,657,632	8,959
	Hill Canyon POTW		9.6	2,072,798	1,758,086	8,927,471	8,700
	Camrosa POTW		1.3	359,713	140,513	734,435	799
	Moorpark POTW		2.2	367,597	229,501	1,252,852	1,406
	Camarillo POTW		3.8	1,680,041	697,320	5,517,820	4,979
		POTWs Combined	26.0	6,235,060	6,569,209	26,090,210	24,843
Pesticide Applications		Jan-Dec. 2010	N/A	24,906	567,602	N/A	N/A
Santa Clara River Diversions		Jan-Dec. 2010	11.6	1,912,196	15,326,170	32,911,998	22561
Confined Groundwater Pumping	Las Posas Basin	Jan-Dec. 2010	25	4,813,004	17,824,486	55,071,943	22,347
	Oxnard Plain		10	2,165,610	14,188,430	34,252,628	17,567
	Oxnard Plain Forebay		1	107,881	867,107	2,084,252	1,163
	Pleasant Valley		10	4,294,910	12,484,785	33,806,306	12,591
		Annual Total Inputs		34,023,437	80,024,839	245,917,498	144,334
Stream Export during Dry Weather	via Revolon Slough	Sept. 2010-Aug. 2011	N/A	2,478,259	24,232,507	49,670,862	24,273
	via Calleguas Creek		N/A	3,208,926	4,090,408	16,975,482	8,071
		Annual Total Export		5,687,184	28,322,915	66,646,344	32,345
		Annual Mass Stranded		28,336,253	51,701,924	179,271,154	111,989

(a) Area pertaining to salt balance excluded portions of the watershed downstream from Potrero Road (for Calleguas Creek) and Laguna Road (for Revolon Slough).

Imported Water Supply

Deliveries to local water purveyors by Calleguas Municipal Water District (CMWD) are derived from three sources: (1) direct deliveries from Metropolitan Water District (MWD) Jensen Treatment Plant (Jensen Plant), (2) temporarily stored MWD water via the Lake Bard Water Filtration Plant (Bard Plant), and (3) extractions from the Las Posas Aquifer Storage and Recovery Wellfield (ASRW). All three sources of water were treated as imported water supplies. In reality, the water extracted from the ASRW represents a variable blend of local confined groundwater and previously injected water from the State Water Project, and thus some of the salt load in ASRW deliveries is not derived from imported water *per se*. However, because extractions of confined groundwater within the Salt Balance Area are also considered inputs to the salt balance, the treatment of the total ASRW salt load as a watershed input is appropriate; the wells in the ASRW were excluded from the dataset used separately to estimate confined groundwater extractions.

Estimation of Volumes Delivered to Salt Balance Area from the Three CMWD Water Sources

Spreadsheets containing the monthly water deliveries (acre feet/month) to 21 local water purveyors for calendar year 2010 and Jan.-Aug, 2011 were obtained from CMWD. The volumes in the spreadsheets did not distinguish how much water from each of the three imported water "sources" (Jensen Plant, Bard Plant, and ASRW) were provided to each of the 21 local water purveyors. In order to estimate the salt content of imported water deliveries, it was necessary to divide deliveries into volumes of ASRW and "non-ASRW" water. This was accomplished using the following steps:

1. The subset of local water purveyors whose service areas are wholly or partially contained in the Salt Balance Area was determined using the Salt Balance Area shapefile. Seventeen local water purveyors met this condition. ArcGIS was used to calculate the percent of the delivery area for each of the seventeen purveyors contained in the Salt Balance Area. The total CWMD delivery volumes for each of the seventeen purveyors for two periods (September-December, 2010 and January-August, 2011) were multiplied by the pertinent areal percentage to estimate the amount of imported water for each purveyor that was delivered to the Salt Balance Area (as opposed to outside of the Salt Balance Area). In addition, total Sept.-Dec. 2010 and Jan.-Aug. 2011 CMWD deliveries to the Salt Balance Area were computed.

2. The amount of ASRW water that was blended with Jensen and Bard Plant water differed between 2010 and 2011; overall proportions are provided in Table 109. The volumes of ASRW water delivered to CMWD customers was estimated for two periods (September-December, 2010 and January-August, 2011) by applying the percentages in Table 109 to the total deliveries (acre feet per period) from all CMWD sources to all 21 local water purveyors. In reality, these ASRW volumes (2010 and 2011) constitute part of the imported water supply for only 10 of the 17 local water purveyors whose service areas pertain to the Salt Balance Area[6]. However, the volume of ASRW water for both periods was estimated using the CMWD delivery volumes to all 21 local purveyors, because the proportions in Table 109 applied to combined deliveries to all 21 local purveyors, not just deliveries to the purveyors that receive ASRW water in their imported water blend.

Table 109. Overall proportions of Source Water in Blended Water Delivered by CMWD

Year	Jensen Treatment Plant	Lake Bard Water Filtration Plant	Aquifer Storage & Recovery Wellfield (ASRW)
2010	89%	1%	10%
2011	98%	1%	1%

Some of the ASRW water delivered to the 10 pertinent local purveyors was delivered outside the Salt Balance Area. For that reason, the ASRW volumes for both periods (September-December,

[6] The 10 local water purveyors that that received ASRW water in their blend from CMWD during 2010/2011 were the City of Oxnard, Berylwood Heights Mutual Water Company, City of Camarillo, Camrosa Water District, Crestview Mutual Water Company, Pleasant Valley Mutual Water Company, Ventura County Water Works Districts # 1 and 19, Zone Mutual Water Company, and Solano Verde Mutual Water Company.

2010 and January-August, 2011) were each reduced by the overall percent of "ASRW-recipient" service area that lay outside of the Salt Balance Area (33%) (see step 2 above).

3. "Non-ASRW" volumes ("Jensen+Bard" delivery volumes) were computed for the two periods (September-December, 2010 and January-August, 2011) by subtracting the result in step 2 (total ASRW water to Salt Balance Area) from the result in step 1 (total CMWD deliveries to Salt Balance Area).

Determining Salt Concentrations to Apply to Imported Water Sources

The mean concentrations of chloride, sulfate, TDS and boron for 2010 in the three "sources" of imported water (Jensen, Bard, ASRW) were obtained from the CMWD Annual Water Quality Report, dated July 2011. Because the salt profile of Jensen and Bard Plant water is similar, it was decided to combine the delivery volumes for Jensen and Bard treatment plants for the 17 local water purveyors that provide water to the Salt Balance Area, and to apply a proportion-weighted salt concentration to these combined Jensen+Bard delivery volumes. The proportional split from Table 109, which applied to 2010 CMWD deliveries (89 Jensen:1 Bard), was applied to the annual mean salt concentrations for Jensen and Bard water (from the CMWD Annual Water Quality Report) to derive proportion-weighted salt concentrations for "Jensen+Bard" water. Although these proportion-weighted salt concentrations were derived using 2010 data, they were applied to the Jensen+Bard delivery volumes computed for both periods (September-December, 2010 and January-August, 2011) for the Salt Balance Area in step 3 above.

The 2010 salt concentrations for ASRW water in the July 2011 CMWD Annual Water Quality Report were applied without modification to the ASRW volume delivered to the Salt Balance Area during September-December, 2010 (computed in step 2). The salt concentrations applied to ASRW water delivered to the Salt Balance Area during January-August 2011 were modified using information from Tony Goff (CMWD) which indicated that about 41% of ASRW water pumped Jan-Aug 2011 (404 out of 990 acre feet) was extracted very soon after an injection of Jensen water, and that this 41% of ASRW water for 2011 could be reasonably characterized as having the salt profile equal to a blend 85% Jensen + 15% ASRW.

Additions of Salt to Water Supply

General Approach for Estimating Additions of Salt to Water Supply

Additions of salt to water supply through commercial or residential use and wastewater treatment were estimated by subtracting the salt load in the water supplied for non-irrigation purposes to customers of particular sewer districts from the salt load in the total discharges (effluent) of the associated POTWs. The analysis was done for the five POTWs in CCW[7]. Monthly influent volumes for POTWs were used as a surrogate measure of non-irrigation water supply volume. The salt concentrations of water supply (which were applied to POTW influent volume) were calculated by considering the proportions of imported and local water used by the pertinent municipal water purveyors and the salt concentrations in the various water sources, as obtained from CMWD (for blends of ASRW, Jensen, and Bard plant water) or from United Water District

[7] Camrosa Water District Water Reclamation Facility, Camarillo Sanitary District Water Reclamation Plant, Ventura County Waterworks District No. 1 Moorpark WWTP, City of Simi Valley Hill Canyon WWTP, City of Thousand Oaks Simi Valley Water Quality Control Plant

or local water purveyors (for potable groundwater supplies). POTW effluent included discharges to surface waters or percolation ponds, and/or reclaimed water supplies, depending on the POTW. The additions of salt to water supply were calculated as the difference between the salt loads in POTW effluent and the salt load in the initial water supply[8]. More detail about specific components of the water supply additions calculations are provided below.

Influent Volumes

Daily influent flow data in MGD were available for each of the five POTWs every day within the Salt Balance time-frame, therefore total monthly influent flows (million gallons per month) were calculated as the monthly sums of daily flows.

Imported Water Component of Initial Water Supply Salt Concentrations

As explained above (Imported Water Supply), water deliveries from CMWD consisted of a blend of water from the Jensen Plant, the Bard Plant, and the ASRW. The specific blend of water sources supplied by CMWD varied among the five municipal supply areas considered for the salt balance. Only Jensen Plant water was delivered to the Simi Valley and Thousand Oaks areas by the local water purveyors, therefore ASRW water quality was not used to estimate initial water supply salt load for the Simi Valley Water Quality Control Plant and the Hill Canyon Wastewater Treatment Plant.

As indicated in Table 109 in 2010, the initial water supply pertinent to the Camrosa, Moorpark, and Camarillo POTWs consisted of 89% water from the Jensen Plant, 10% from the ASRW, and 1% from the Bard Plant. Water from the Jensen and Bard plants had very similar salt profiles in 2010, and thus the salt concentrations for the Jensen Plant were applied to combined deliveries of water from the Jensen and Bard plants. Consequently, for Sep.-Dec., 2010, imported water ratios in drinking water supplies were assumed to be 90% Jensen quality and 10% ASRW quality.

Use of the source water proportions in Table 109 for 2011, and the additional information that 41% of ASRW water in 2011 was very recently injected Jensen water (see above), resulted in adjusted imported water ratios of 99.347% Jensen Plant quality and 0.653% ASRW quality for the water supply pertaining to the Camrosa, Moorpark, and Camarillo POTWs for the period Jan.-Aug., 2011.

Jensen Plant concentration data for chloride, sulfate, and TDS were compiled from PDFs of monthly Table D of The Metropolitan Water District of Southern California General Mineral and Physical Analysis of Metropolitan's Water Supplies, for months September 2010 through August 2011. Boron at the Jensen Plant was only measured in October 2010, therefore that value was extrapolated to the other months. ASRW salt concentrations were obtained from average values presented in the Calleguas MWD Summary of Water Quality Results for 2010 (in the annual water quality report dated July 2011).

---

[8] Load in pounds per month were calculated from monthly flows (MGD), concentrations (mg/L), and a conversion factor of 8.3454 (lbs*L)/(mg*gal*10^6).

Local Water Contributions to Initial Water Supply Salt Content

Simi Valley Water Quality Control Plant.

Contacts indicated that Simi Valley drinking water supplies were not supplemented with local groundwater during the time-frame of the Salt Balance calculations.

Hill Canyon Wastewater Treatment Plant

Contacts indicated that Thousand Oaks drinking water supplies were not supplemented with local groundwater during the time-frame of the Salt Balance calculations.

Camrosa Water Reclamation Facility

Well-to-Import Ratios for months Jan 2010 to Aug 2011 for Camrosa Water District's water supply were obtained from spreadsheets received directly from Camrosa Water District; Conejo Wells #2, #3, #4, SR #8, Tierra Rejada Well, and Woodcreek Well were included as sources of potable water. The large general dataset provided by Camrosa Water District contained concentration data for these wells, including chloride, sulfate, and TDS, and extended from 1990 to Sept. 2010. The monthly percent volume contributions were available for each well. The average of these percent contributions was calculated and used to adjust the concentration data. The actual average concentration was assigned to September 2010, after adjustment using the actual monthly production ratios for that month. For October 2010 through August 2011 (months for which measured concentration data were not available for wells), average concentrations were calculated for generic months (without years) and applied. These generic concentrations were adjusted using the overall average production ratios from each well.

Boron data were not available for the Camrosa Water District groundwater wells. Boron data were therefore compiled for other wells very close to the pertinent local groundwater wells[9]. Surrogate concentrations were available only for March 2010 and August 2010. All other months within the timeframe of interest were assigned an overall average boron concentration.

The total supply concentrations were calculated by first calculating the overall quality of imported water supply (see imported water details provided above) and prorating those weighted imported water concentrations with the concentrations for local groundwater using the Well-to-Import Ratios for each month.

Moorpark Wastewater Treatment Plant

Ventura County Waterworks District No. 1 (A. Sexton, pers. comm.) provided the information that the data under the heading "Waterworks District No. 1" in the water quality table in the VCWD1 Annual Water Quality Report for 2010 were local groundwater concentrations, including data for chloride, sulfate, and TDS.[10] The report narrative indicated that 83% of

---

[9] The alternate well data was contained in the groundwater quality database assembled for computation of the confined groundwater extraction salt load.

[10] The other three data columns in the report represent imported water from the Jensen ("MWD") and Bard ("CMWD Lake Bard") Plants and the ASRW ("CMWD Las Posas Wellfield").

Moorpark's water was imported water; therefore it was assumed that the rest was extracted from local wells.[11]

The total supply concentrations were calculated by first calculating the overall quality of imported water supply (see imported water details provided above):

(% Jensen volume)(Jensen concentration) + (% ASRW volume)(ASRW concentration),

then prorating those weighted imported water concentrations with the concentrations for local groundwater using the overall percent of local groundwater and percent of imported water.

Camarillo Water Reclamation Plant

The percent of local groundwater (40%) versus imported water (60%) contributing to the municipal water supply was estimated by Camarillo Water Department (Tom Smith, personal communication). Potable groundwater is obtained from wells A, B, D and 3 (State well numbers are also available). Local groundwater concentration data was obtained from the City of Camarillo Water Department's Water Systems List Report from Jan. 2009 to Oct 2011, which included data from Oct. 2008 through Jul. 2011. Where data were unavailable for a constituent on a given month, the overall average concentration was substituted.

The total supply concentrations were calculated by first calculating the overall quality of imported water supply (see imported water details provided above) as:

(% Jensen volume)(Jensen concentration) + (% ASRW volume)(ASRW concentration),

then prorating those weighted imported water concentrations with the concentrations for local groundwater using the overall percent of local groundwater and percent of imported water.

Effluent Volumes and Concentrations

Daily effluent flow data in MGD were available for every day within the Salt Balance time-frame for each POTW, therefore total monthly effluent flows (million gallons per month) were calculated as the monthly sums of daily flows. Effluent-related details for specific POTWs are as follows:

Camrosa Water Reclamation Facility

July 2011 and August 2011 effluent concentration data were not provided. The average concentrations from other months combined were substituted for the missing values. There was a negative load difference between effluent and supply boron in September 2010, probably due to a lack of water supply concentration data for boron (very few concentration measurements were available for water supply).

Camarillo Water Reclamation Plant

Effluent concentration data were collected three times per week, and the monthly averages were calculated using all available data per month. A negative water supply addition load for sulfate

[11] According to Drinking Water Branch Water System Details (http://drinc.ca.gov:8080/DWW/JSP/WaterSystemDetail.jsp?tinwsys_is_number=6164&tinwsys_st_code=CA&wsnumber=CA5610018) the six local groundwater wells contributing to the VCWWD #1 supply are wells # 15, 20, 95, 96, 97, and 98.

(effluent sulfate minus water supply sulfate) was obtained in August 2011, which was due to a low effluent sulfate load during that month, rather than any feature in the water supply data for sulfate.

Moorpark Wastewater Treatment Plant

For the Moorpark POTW, which discharges to percolation ponds and supplies some reclaimed water for local irrigation, total outflow was calculated as the sum of pond discharge and reclamation flows. Monthly effluent loads were calculated using effluent concentration data (which applied to both percolation ponds and reclamation flows) and the monthly total outflow.

Salt Inputs from Diversions of Santa Clara River water

Monthly surface water diversion flows were obtained from United Water Conservation District (UWCD) for the time-period from January 2010 through June 2011. It was assumed that 2/7 of the total deliveries to the UWCD PTP system fall within the Salt Balance Area[12].

Water quality data from the Santa Clara River at the Freeman Diversion was also available from January 2010 through June 2011. Chloride, sulfate, and TDS were sampled on a weekly to monthly basis. Boron was sampled on a quarterly basis. Monthly boron concentrations were interpolated from the quarterly measurements.

Monthly salt loads from the Santa Clara River diversions were calculated by multiplying monthly flow by the average monthly concentration of each salt constituent. Monthly loads were then summed together to calculate annual loads from January 2010 to December 2010.

Salt Inputs from Extractions of Confined Groundwater

Overview

Salt loads from confined groundwater pumping were calculated based on groundwater pumping data[13] and water quality data[14] for chloride, TDS, sulfate and boron for the January 2010 – December 2010 time-period. The analysis assumed that 1) all groundwater pumped within the study area is used within the study area and 2) no significant imports of groundwater are sourced from outside the study area.

Efforts were made to include only groundwater pumped from confined aquifers in this analysis. ArcGIS was used match wells with the corresponding groundwater subbasin as delineated by the USGS.[15] Since the Santa Rosa, Thousand Oaks, Simi Valley, Conejo Valley, and Tierra Rejada groundwater subbasins are predominantly unconfined aquifer systems[16], these subbasins were not included in the analysis. Unconfined wells in the Oxnard Plain Forebay were filtered out, but

---

[12] Bryan Bondy (UWCD), personal communication, Nov. 2011

[13] Provided by Fox Canyon Groundwater Management Area (FCGMA)

[14] Provided by United Water Conservation District (UWCD)

[15] USGS, 2004. USGS FGDC Content Standards for Digital Geospatial Metadata- Version: FGDC-STD-001-1998. 445 National Center, Reston, VA 20192. Available online at: http://water.usgs.gov/GIS/metadata/usgswrd/XML/ca_provinces.xml#Metadata_Reference_Information

[16] California Department of Water Resources (DWR), 2003. Bulletin 118: California Groundwater, Hydrologic Region South Coast.

it was infeasible to screen individual unconfined wells out of the Las Posas, Oxnard Plain and Pleasant Valley subbasin areas. Consequently, some loading from unconfined wells in these basins may be included in the analysis, though the majority of wells located in the Las Posas, Oxnard Plain, and Pleasant Valley subbasins are assumed to be pumping from confined aquifer layers. Groundwater imports to the study area from confined pumping are thus assumed to come from the following four subbasins: Oxnard Plain Forebay, Oxnard Plain, Pleasant Valley, and Las Posas. Extraction and water quality data from the Moorpark Aquifer Storage and Recovery (ASR) wells were not included in this analysis since the salt imports from these wells are accounted for in the "Imported Water" component of the salt balance.

Extraction Volumes

Extraction volumes were reported twice per year as six-month pumping volumes for each well within the study area. The first measurement includes total pumping from January – June 2010; the second measurement includes total pumping from July – December 2010.

Concentrations

Wells in each groundwater subbasin were sampled for chloride, sulfate, TDS and boron. Water quality data at each well was averaged by six-month intervals (January – June 2010 and July – December 2010) and matched to the corresponding extraction wells, wherever possible. However, in most cases, extraction wells did not correspond to water quality wells, and the extraction well was instead matched with the six-month average concentration for the corresponding groundwater subbasin.

Loads

Six-month chloride, sulfate, TDS and boron loads were calculated for each groundwater subbasin by multiplying the extraction volume at each well by the corresponding concentration. Annual loads were calculated by summing the two six-month loading periods over all groundwater subbasins.

Salt Inputs from Pesticide Applications

Quantities of Commercial Product Applied to Salt Balance Area

Pesticide application data were obtained from the Ventura County Agricultural Commissioner's Office (Ag Commission) Pesticide Use Report (PUR) database[17]. Data was available for 2010, the most recent full year of record. The PUR database provided the location of the application through a site ID, the commercial name of the pesticide used, and the amount applied (lbs or gallons). The Ag Commission also provided a GIS layer containing the geographic location of each site ID, which were then identified as either being inside or outside the Salt Balance Area. Only records for pesticide applications within the Salt Balance Area were further considered.

---

[17] Data provided by Chief Deputy Agricultural Commissioner Susan Johnson, 669 County Square Drive, Ventura, CA 93003. Provided September 2011.

Identification of Sulfur- and Chloride-Containing Commercial Products

The active ingredients were determined for commercial products[18] through the use of the California Department of Pesticide Regulation's (CDPR) pesticide databases. Records of pesticide active ingredients and commercial names were procured from the State's 2009 PUR for Ventura County.[19] The 2009 PUR successfully identified all the unique commercial names of the pesticides applied in Calleguas Creek Watershed in 2010. The number of unique active ingredients was found to be too large for review. The list of active ingredients to review for the pesticide salt load was narrowed down by ranking them based on total mass of application in the Salt Balance Area, and including only the largest active ingredients by weight accounting for 90% of the cumulative mass. This procedure reduced the list of active ingredients from 208 to 33. The chemical composition of active ingredients was determined through online research, predominantly via the website of the U.S. Department of Agriculture (USDA) Agricultural Research Service[20].

The EPA registration documents for the 33 active ingredients were then reviewed to identify information on the breakdown pathway for the pesticide. If the pesticide would mineralize and release chlorine or sulfur within a six month time frame (half lives of less than 6 months), the active ingredient was included in the final analysis. If the pesticide was stable in the environment, generated breakdown products that did not release chlorine or sulfur or did not remain in soils (i.e. volatilized), then the active ingredient was not included in the analysis.

Assumptions Used to Derive Sulfate and Chloride Loads from Applications of Sulfur- and Chloride Containing Products

The sulfur, sulfate, or chlorine content (percent weight) of pesticides was determined from the chemical composition of the active ingredients. A conservative approach was taken to account for the fate of sulfur and chlorine in the active ingredients. It was assumed that 100 percent of the chlorine and sulfur in the active ingredients would be converted post-application to chloride or sulfate, respectively with two exceptions. Metam-Sodium and Potassium N-Methyldithiocarbamate only release one of their two sulfur atoms during breakdown so only 50% of the sulfur in the active ingredients for these two pesticides was assumed for the calculation. A conversion factor was applied to active ingredients containing sulfur (as opposed to sulfate) to account for the higher molar weight of sulfate (96 g) compared to elemental sulfur (32 g).

It was assumed that 100% of the mass of sulfur and sulfate-containing commercial product applied (the majority of which were copper sulfates, sulfur, or lime-sulfur), was active ingredient. The percentage of active ingredient for commercial products containing chlorine was determined through the CDPR Product Database[21]. For efficacy, the percent of active ingredients for chlorine-containing commercial products were determined for the commercial

---

[18] For example, the active ingredient of the commercial product "Roundup" is "glyphosate".

[19] California Pesticide Information Portal (CALPIP). Available: http://calpip.cdpr.ca.gov/county.cfm. Accessed September 2011.

[20] Agricultural Research Service. Available: http://www.ars.usda.gov/Services/docs.htm?docid=14147. Accessed September 2011.

[21] California Department of Pesticide Research Product Database. Available: http://www.cdpr.ca.gov/docs/label/prodnam.htm. Accessed September 2011.

product names that, when ranked by weight of application, cumulatively accounted for 99.6 percent of the total mass of chlorine-containing product applied in the Salt Balance Area.

Some of the commercial products may contain sulfate, chloride, or other salts within their inactive ingredients. For example, the pesticide glyphosate is often applied as a crystalized isopropylamine or potassium salt. Salt applied to the Salt Balance Area through inactive ingredients were not estimated.

Dry Weather Stream Export of Salts

Identification of Dry Weather Days

Salt is currently exported from the Salt Balance Area only via surface water flows from Calleguas Creek and Revolon Slough. For the purposes of the salt balance, only salt export during dry weather was considered. Dry weather was defined as days which satisfied two criteria: (1) mean daily flows (cfs) in Calleguas Creek were below the 86th percentile for the 12-month period Sept. 2010-Aug. 2011, and (2) there was no appreciable precipitation in the Salt Balance Area (as judged by daily rainfall records for 25 rain gages throughout the area; appreciable rainfall was defined as occurrence of ≥ 0.10 inches of rain at more than one gage in the Salt Balance Area).

Determination of Dry Weather Flow Threshold for Calleguas Creek at Potrero Road and List of Potential Dry Days

1. A complete time series of mean daily flow (cfs) at the Calleguas Creek compliance point (UNIV site) was prepared for the period Sept. 1, 2010-Aug. 31, 2011 by combining the following two data sets:

   1. Mean daily flow at USGS gage #11106550 ("Calleguas Creek nr. Camarillo", colocated with CCWTMP site 03_UNIV) for 9/1/2010-1/21/11 (pertinent dates prior to installation of LWA continuous depth monitor) and 3/21/11-4/25/11 (dates when LWA sensor was missing at 03_UNIV)[22].
   2. Mean daily flow at 03_UNIV derived from the LWA depth sensor for 1/22/11-3/20/11 and 4/26/11-8/31/11.[23]

2. The 86th percentile of ranked mean daily flows for the 12-month data set was determined to be 38 cfs.

3. The list of dates with dry weather flows was determined by applying the 38 cfs dry flow threshold to the 12-month time series. Potential dry days were those with mean daily discharge < 38 cfs at 03_UNIV. This resulted in identification of 314 potential dry days (prior to consideration of rainfall occurrence).

Refinement of Potential Dry Day List Based on Prior-day Rainfall

---

[22] USGS data at time of acquisition was approved through 10/5/2010; provisional thereafter.

[23] Mean daily flows (cfs) for the period 1/22/11-6/30/11 were prepared using "approved" rating curves with a LWA publication date of 7/22/11. Mean daily flows (cfs) for the period 7/1/11-8/31/11 were processed using updated rating curves, are "provisional" and were provided by Jeff Walker (LWA) on October 4, 2011.

1. The VCWPD map of active rainfall stations[24] was used to identify gages in the Salt Balance area. The gages selected to represent subregions of the Salt Balance Area were as follows:

Simi Valley

196C (Tapo Canyon County Park)
193A (Santa Susana)
242 (Tripas Canyon)
234B (Las Llajas Canyon)
272 (Sage Ranch)
227 (Lake Bard)
506 (Wood Ranch, Sycamore Canyon Drain)
246A (Simi Sanitation Plant)

Moorpark Area
126A (Moorpark – Ventura County Yard)
502 (Santa Rosa Valley – Basin 2)

Somis Area
206B (Somis-Fuller)
190 (Somis-Bard)
189 (Somis-Deboni)

Camarillo Area
219A (Camarillo Hauser)
500A (Camrosa Water District)
194A (Camarillo-Adohr)
505 (Camarillo-CSUCI)
259 (Camarillo-PVWD nr. airport)
509 (Spanish Hills – Las Posas Reservoir)

Revolon Slough Upper Watershed
261 (Saticoy Recharge Facility)

Thousand Oaks Area
510 (Long Ranch)
169A (Thousand Oaks Civic Center)
121C (Lake Sherwood – County Fire Station)
128C (Thousand Oaks APCS-Raws)
188A (Newbury Park- County Fire Station)

The daily rainfall records for the above rain gages for 9/1/2010-8/31/2011 were downloaded and combined. Each day receiving ≥ 0.10 in rainfall for each gage was flagged.

[24] http://www.vcwatershed.net/hydrodata/gmap.php

2. Days were identified during which ≥ 0.10 inches of rainfall occurred at more than one gage in the Salt Balance Area on the same day (referred to as "precipitation days"). There were only 9 days in the 12-month period when ≥ 0.10 inches was recorded at only one gage. The number of gages that received rain on "precipitation days" ranged from 3 to 24. There were 31 days identified as "precipitation days."

3. Days identified as potential dry weather days based on flow at UNIV were disqualified if the preceding day was identified as a "precipitation day". This step resulted in disqualification of 14 potential dry weather days, producing a final time series of 300 dry weather days for the Salt Balance determination.

Assignment of Salt Fluxes (lbs/day) to Dry Weather Days

Preparation of Time Series of Daily Salt Fluxes for Period of Operation of LWA Continuous Monitors

1. Time series of daily loads (lbs/day) for chloride, sulfate, TDS, and boron (the latter only at Revolon Slough[25]) were generated for Calleguas Creek (at 03_UNIV) and Revolon Slough (at 04_WOOD) for all available days between 1/22/11-8/31/11 using 5-min flow and EC data from the LWA continuous monitors and application of the surrogate relationships predicting salt concentrations from EC.[26]

Estimation of Daily Salt Fluxes for Unmonitored Dry Weather Days

1. A mean "dry weather daily load" based on dry weather days with LWA sensor data was calculated for chloride, sulfate, and TDS for Calleguas Creek, and chloride, sulfate, TDS, and boron for Revolon Slough.

2. For estimation of salt loads for dry weather days without available sensor data ("unmonitored dry days") for Calleguas Creek, a mean ratio "load per cfs" (lbs/cfs) was calculated for chloride, sulfate, and TDS for Calleguas Creek. First, daily ratios were calculated using mean daily flow (cfs) and the daily flux of salt (lbs) for each day with approved or provisional LWA sensor records available. An overall mean ratio was calculated from all available daily ratios. The mean ratios (lbs/cfs) were applied to mean daily discharge (either USGS-gage-based or LWA-sensor-based discharge) to estimate lbs/day of chloride, sulfate, and TDS for Calleguas Creek, and chloride, sulfate, TDS, and boron for Calleguas on all unmonitored dry weather days during the 12-month Salt Balance period (9/1/10-8/31/11).

3. For estimation of salt loads for dry weather days without available sensor data for Revolon Slough, a mean daily flux (lbs/day) was computed for dry weather periods with continuous monitoring data and applied to all calendar days characterized as dry weather days for which continuous monitoring data was not available.

---

[25] At the time of the salt balance determination, the surrogate relationship between EC and boron at UNIV was judged too immature (based on too few field measurements of boron) for prediction of boron concentrations in Calleguas Creek.

[26] Daily loads (lbs/day) for the period 1/22/11-6/30/11 were prepared using "approved" surrogate relationships, 5-min flows, and 5-min salt concentrations with a LWA publication date of 7/22/11. Daily loads for the period 7/1/11-8/31/11 were prepared using updated rating curves and surrogate relationships, are "provisional" and were provided by Jeff Walker on October 4, 2011.

4. Because 5-min boron records were not available for Calleguas Creek based on EC-sensor data, an overall mean boron concentration was calculated for all available grab samples of boron that were taken during dry weather between 1/22/11-8/31/11 (sample size of 4 grab samples). This overall mean concentration of boron was applied to daily discharge (cubic feet) on dry weather days at UNIV to produce a time series of estimated boron fluxes on all dry weather days during the 12-month Salt Balance period (9/1/10-8/31/11).

Estimation of Cumulative Annual Dry Weather Salt Fluxes

Cumulative (annual) dry weather salt fluxes for Calleguas Creek and Revolon Slough were determined as the sum of daily loads (lbs/day) estimated for all dry weather days during the 12-month Salt Balance period (9/1/10-8/31/11).

Baseline Evaluation

The TMDL Technical Report provides an initial calculation of the salt imbalance that can be used as a baseline. However, the Technical Report calculation relied on existing information and was calculated based on a long historical dataset to generally characterize the historic salt imbalance. The calculation was not done specifically to derive a baseline value and was not done in the same manner as the calculation of the current year salt balance discussed above. As a result, the salt balance baseline values in the TMDL Technical Report are not directly comparable to the current year analysis. To try to remedy the discrepancies, the TMDL Technical Report values were reviewed to determine if any modifications were necessary to derive a baseline that was more applicable for comparison to the current year analysis.

The baseline calculation includes import and export components. In general, more information was available to evaluate and calculate the import values as compared to the export values. For each term, the TMDL Technical Report analysis was compared to the current approach to calculating the salt balance and discrepancies were identified. Additionally, the values were compared to the conditions in 2007 and 2008 to represent the baseline years after TMDL development, but before TMDL implementation.

Inputs

Imported Water Supply. Calculation process was determined to be consistent with the current year analysis, though calculated in a less detailed way. Average water deliveries and concentrations over historical record were used so they do not specifically represent conditions in 2007 and 2008, but the analysis does not need to be modified for the baseline calculation.

Additions of Salt to Water Supply. Calculation process was determined to be consistent with the current year analysis. Values were calculated based on 2003 and 2004 data that appear to be sufficiently similar to represent conditions in 2007 and 2008 given the assumptions of the analysis.

Diversion of Santa Clara River Water. Calculation process used averages based on a long historical record. Current calculation process matches water deliveries for the month with the average monthly concentration. The TMDL technical report values were compared to values calculated for 2007 and 2008. In 2007, the water deliveries and loads were lower than the TMDL Technical Report analysis while in 2008 the water deliveries and loads were higher than the TMDL Technical Report analysis. As a result, the TMDL technical report values are approximately equal to the average of the two years and can be used for the analysis.

Extraction of Confined Groundwater. The groundwater analysis for the TMDL Technical Report grouped large basin areas together and used average concentrations and pumping volumes from the historical record to determine estimated loads. The current analysis approach utilized a well-by-well analysis to closely match pumping volumes to available concentration data for the year. The calculation processes were therefore very different. To see if the TMDL Technical Report analysis was comparable, the 2007 pumping volumes for each subbasin were estimated for the Salt Balance Area and multiplied by the average 2007 concentrations for each subbasin. The results were significantly different from the values presented in the TMDL Technical Report. As a result, the groundwater input term will be updated using this analysis for calculation of the baseline.

Pesticides and Fertilizers. The values from the TMDL Technical Report were used for the analysis. The calculation process was similar to the current year analysis except that not all pesticides that contained chlorine or sulfur atoms were evaluated in the TMDL Technical Report analysis. As a result, the baseline values contain less conservative assumptions than the current year analysis and are therefore lower than the current year estimates. Because of the uncertainty about the fate of the pesticides in the environment and the likelihood of chloride and sulfate being generated from these applications, these estimates are the most uncertain of all of the input estimates.

Exports

Historic surface water dry weather salts data in the Calleguas Creek Watershed is limited to areas of the watershed monitored by wastewater treatment plants with a few samples for chloride and sulfate that are collected by the Ventura Countywide Stormwater Program. As a result, very few dry weather surface water samples are available at the locations were export from the watershed is calculated (Calleguas Creek at University Dr. and Revlon Slough at Wood Rd.). Consequently, the export terms in the TMDL Technical Report could not be calculated based on available water quality data. It was envisioned that the monitoring program would begin within the first year of the implementation program and would be able to provide a basis for calculating the baseline salt export that could be used for determining compliance with the salt balance requirements. However, due to the complexities of setting up the monitoring program and the fact that approval of the monitoring program was not obtained until 2011, baseline export data is not available for the watershed.

The TMDL Technical Report used estimated loadings from the Salt Balance Model to evaluate export. This method is not consistent with the analysis being done for the current year salt balance. However, data are not available to generate any other type of analysis that could be considered more consistent with the current year analysis. As a result, the TMDL Technical Report values are used as the baseline export for the salt balance calculations. Although there are significant limitations to this approach, the TMDL values are the best available information to use as a baseline at this point. The impacts of the uncertainties in the export baseline on the salt balance calculation are discussed in the Discussion section of this letter.

The TMDL Technical Report did not calculate an export term for boron. Boron exceedances only occur in Revolon Slough and Arroyo Simi and the TMDL analysis determined that boron does not exceed water quality objectives in other portions of the watershed. As a result, a watershed salt balance for boron is not necessary to achieve compliance with the TMDL. Given this analysis and the lack of data on boron at the export locations, a baseline boron export term was not calculated.

Based on the analysis above, the revised baseline calculation for the Calleguas Creek Watershed is shown in Table 110.

Table 110. Salt Balance Baseline for Calleguas Creek Watershed[(a)]

Term of Salt Balance		Daily Volume (MGD)	Chloride (lbs)	Sulfate (lbs)	TDS (lbs)	Boron (lbs)
Imported Water (Combined deliveries from Jensen and Bard Treatment Plants)		74	13,976,379	19,386,590	74,390,402	60,865
Additions of Salt to Water Supply (POTWs Combined)		30.6	6,643,000	5,256,000	31,207,500	N/A
Pesticide Applications		N/A	181	102,869	N/A	N/A
Santa Clara River Diversions		10	2,528,421	16,693,669	36,860,109	22,847
Confined Groundwater Pumping	Las Posas Basin	25.6	5,149,238	17,086,107	62,368,192	13,267
	Oxnard Plain	10.0	2,250,093	14,211,968	36,119,663	18,081
	Oxnard Plain Forebay	0.7	121,787	1,029,748	2,188,071	1,046
	Pleasant Valley	10.4	3,607,451	12,146,208	33,601,493	14,658
	Annual Total Inputs	161.2	34,276,550	85,913,159	276,735,429	130,765
	Annual Total Export		9,380,500	19,199,000	48,289,500	N/A
	Annual Mass Stranded		24,896,050	66,714,159	228,445,929	N/A

Comparison of Baseline to Current Year

The baseline salt imbalance was compared to the current year salt imbalance by comparing the percent change in the annual mass of stranded salts within the watershed. The results of the comparison are shown in Table 111.

Table 111. Salt Imbalance Reduction Calculations

Timeframe	Term of Salt Balance	Chloride (lbs)	Sulfate (lbs)	TDS (lbs)	Boron (lbs)
Baseline	**Annual Total Inputs**	34,276,550	85,913,159	276,735,429	130,765
	Annual Total Exports	9,380,500	19,199,000	48,289,500	
	Annual Mass Stranded	24,896,050	66,714,159	228,445,929	
Current Year (2010/2011)	**Annual Total Inputs**	34,023,437	80,024,839	245,917,498	144,334
	Annual Total Export	5,687,184	28,322,915	66,646,344	32,345
	Annual Mass Stranded	28,336,253	51,701,924	179,271,154	111,989
Percent Change in Stranded Mass		13.82%	-22.50%	-21.53%	N/A

Discussion

The required 20% reduction in the salt imbalance was achieved for sulfate and TDS. Baseline export data for boron was not available so a comparison could not be made to determine if a 20% reduction was achieved. However, actions taken to address the other salts are expected to reduce boron concentrations in the impaired reaches.

The required 20% reduction in the salt imbalance was not achieved for chloride even though the Parties implemented the majority of the planned implementation actions. Several possible reasons exist for the discrepancy. As discussed above, the calculation of the baseline exports was problematic and based on limited data. The estimated baseline export for chloride from the TMDL Technical Report is almost double the measured export found during the monitoring program for 2011. Secondly, although water conservation activities resulted in an 8% reduction in overall input water volume to the watershed and an almost 15% reduction in imported water use, the chloride concentrations in the imported water went up by about the same percentage. Average chloride concentrations also increased in the groundwater inputs. As a result, the actions taken by the Parties to reduce chloride inputs into the watershed were offset by an increase in chloride concentrations in the water supply over which they have no control. The combination of the likely overestimate of chloride export in the TMDL Technical Report and the increased chloride concentrations in the water supply contributed to the calculated change in the salt balance not achieving a 20% reduction.

Although the calculation does not show a 20% reduction for chloride, the TMDL requires that "Responsible jurisdictions and agencies shall demonstrate that implementation actions have reduced the boron, sulfate, TDS, and chloride imbalance by 20%." The Parties have taken the actions laid out in the TMDL implementation plan to the extent possible during the first three years of the TMDL and reduced the inputs of chloride over which they had control. The primary implementation action, water conservation, has reduced the use of imported water by almost 15% and the use of all water, including groundwater, by over 8%. For several municipalities, water conservation resulted in reductions of imported water use by over 20%. Although the reduction in water volume was offset in the salt balance calculation by the increase in chloride concentrations, the Parties have no control over the increased salt concentrations in the water supply. As a result, over the implementation period, the reduction in water use will decrease the mass of salts entering the watershed.

On the export side, until the SMP is operational, the Parties have no mechanism to export salts out of the watershed except through the stream system. The TMDL includes a provision that the implementation schedule for actions that are dependent on the SMP will be linked to the construction schedule of the SMP. Since the SMP has not yet begun accepting discharges, the Phase 1 actions that rely on the SMP could not be completed in the first three years of the TMDL implementation. As a result, the increased export that was anticipated to occur by December 2011 will occur in 2012. Given the significant progress made in constructing the SMP and the groundwater desalters in the Pleasant Valley subwatershed and the insufficient available data to generate a baseline value that is truly comparable to the exports calculated with the monitoring data for 2010, the Parties feel that the first milestone has been achieved through their actions to implement the TMDL even though the calculation does not demonstrate a 20% reduction in the salt imbalance for chloride.

In summary, the salt balance calculations demonstrate a 20% reduction in the salt imbalance has been achieved for TDS and sulfate. Although the salt balance calculation did not demonstrate a 20% reduction for chloride, the Parties achieved the first milestone through the implementation of actions that were feasible to achieve given the construction schedule of the SMP and the quality of the imported water supply. Starting next year, additional salt export will begin through the SMP, thereby reducing the chloride imbalance.

Recommendations

Based on the information and analysis gathered for the initial salt balance calculation, it has been determined that the salt baseline developed for the TMDL is not adequate for comparison to the data being collected for evaluating interim reduction milestones. As a result, it is recommended that a baseline using the watershed salt balance information collected for 2010-11 be used as the salt baseline for evaluation of future interim load reductions. In addition, as part of the evaluation of the new salt baseline, a consideration of new salt sources, such as saltwater pools, that were not included in the original TMDL analysis will be included to determine if modifications to the baseline are necessary to address this source.

INTERIM METALS REDUCTIONS

The Calleguas Creek Watershed Metals and Selenium TMDL (Metals TMDL) Implementation Plan requires progressive reductions in the wasteload and load allocations for several parameters assigned to agricultural and urban dischargers. The first interim milestone for these reductions, as described in Item 25 of the TMDL Implementation Schedule (Table 7-19.2 of Attachment A to R4-2006-012), is for a 25% reduction of the difference between baseline loadings and final load allocations within 5 years after the effective date (March 26, 2007). Per the Implementation Schedule:

> *Re-evaluation of Agricultural and Urban load and waste load allocations for copper, mercury, nickel, and selenium based on the evaluation of BMP effectiveness. Agricultural and urban dischargers will have a required 25%, 50%, and 100% reduction in the difference between the current loadings and the load allocations at 5, 10, and 15 years after the effective date, respectively.*

This section provides a review of baseline data and final allocations assigned to agricultural and urban dischargers, an analysis of loading rate data compiled from monitoring efforts, and a demonstration of compliance with the TMDL Implementation Schedule milestone due on March 26, 2012. The data provided in this annual report and previous annual reports can be utilized for consideration of re-evaluation of agricultural and urban load and wasteload allocations if appropriate.

Determination of Baseline and Required Load Reductions

In order to calculate the reduction between "current loadings and the load allocations," it is necessary to have both baseline and a final allocation values for comparison. The Metals TMDL assigns final allocations as loads for all constituents that can be used for determining a 25% reduction. However, a method is needed to determine the "current loadings" for comparison. The TMDL includes interim allocations for agricultural and urban dischargers for all constituents, but only assigns interim allocations as loads for mercury. Interim allocations for copper, nickel, and selenium are assigned as concentrations. As a result, for mercury "current loadings" could be defined as the interim allocations. However, it was necessary to define "current conditions" in a different way for copper, nickel and selenium. Because compliance with the interim and final allocations is determined in the receiving water for agricultural and urban dischargers, the selected approach was to first evaluate whether the required reductions have been observed in the receiving water. The following provides a discussion of the calculated baseline and required load reduction analysis approaches.

For mercury, the interim and final waste load allocations were considered as the baseline and final loading values, respectively. The required 25% load reductions were calculated using the sum of the agricultural and urban allocations as compared to the sum of the interim allocations. The load allocations and calculated load reductions of 25% are presented below in Table 112.

Table 112. Mercury Loads in pounds per year (lbs/yr)

Flow Range			0 - 15,000 MGY	15,000 - 25,000 MGY	Above 25,000 MGY
Agricultural Discharge Waste Load Allocations	Calleguas Creek	Interim	3.9	12.6	77.5
		Final	0.5	1.9	11.2
	Revolon Slough	Interim	2	4.8	12.2
		Final	0.2 [a]	0.8	2.2
Urban Discharge Waste Load Allocations	Calleguas Creek	Interim	3.3	10.5	64.6
		Final	0.4	1.6	9.3
	Revolon Slough	Interim	1.7	4.0	10.2
		Final	0.1	0.7	1.8
25% Reduction [b]	Calleguas Creek		5.6	18.2	112
	Revolon Slough		1.6	4.8	21.0

a. Final allocation was not included in the Basin Plan Amendment. This is the value from the TMDL technical report.

b. Represents a 25% reduction in the difference between the sum of the interim agricultural and urban allocations and the sum of the final agricultural and urban allocations.

For copper, nickel, and selenium, as discussed in the compliance analysis above, the water quality data has indicated that the receiving waters are already meeting the final TMDL targets for all constituents except selenium. However, the targets are expressed as dissolved metals and the allocations are expressed as total recoverable metals. As a result, the total recoverable loading capacities and associated current loads for the receiving waters, as calculated for the TMDL Technical Report, were used as the baseline values for the purposes of the receiving water analysis. The Water Effects Ratio (WER) for copper in Calleguas Creek of 3.69, effective August 23, 2007, was applied to the loading capacities for that watershed. The total recoverable loading capacities, current loads and the required reductions for the receiving waters are presented in Table 113.

Table 113. Copper, Nickel and Selenium Total Recoverable Loads (lbs/day)

	Flow Condition[1]	Revolon Slough Low	Revolon Slough Average	Revolon Slough Elevated	Calleguas Creek Low	Calleguas Creek Average	Calleguas Creek Elevated
Current Loads	Copper	0.75	1.45	3.41	1.07	1.20	1.99
	Nickel	0.78	1.49	3.27	2.30	2.49	3.70
	Selenium	1.74	2.98	4.71	n/a[2]	n/a[2]	n/a[2]
Loading Capacity	Copper	0.12	0.24	0.56	1.48	1.66	2.73
	Nickel	0.32	0.61	1.34	1.1	1.2	1.77
	Selenium	0.19	0.32	0.51	n/a[2]	n/a[2]	n/a[2]
25% Reduction[3]	Copper	0.59	1.15	2.70	[4]	[4]	[4]
	Nickel	0.66	1.27	2.79	2.00	2.17	3.22
	Selenium	1.35	2.31	3.66			

1. Flow conditions for each receiving water are determined in the TMDL Technical Report. For Revolon Slough, flow conditions are considered low below 10 cubic feet per second (cfs), average between 10 and 17 cfs, and elevated between 17 and 22 cfs. For Calleguas Creek, flow conditions are low below 5 cfs, average between 5 and 21, and elevated between 21 and 30 cfs.
2. No allocations for selenium are assigned to Calleguas Creek because an impairment does not exist in that reach.
3. Represents a 25% reduction in the difference between the sum of the interim agricultural and urban allocations and the sum of the final agricultural and urban allocations.
4. Current loads are below the WER adjusted final receiving water loading capacity.

Data Compilation

Metals concentrations measured within the receiving waters at 03_UNIV and 04_WOOD through the CCWTMP were used for the evaluation. Records from May 2009 to the most recent compiled data (i.e. May 2011) were used for the analysis.

Flow data was taken from Federal, County, and site-specific flow meters as applicable. For Calleguas Creek, data was compiled from USGS flow gauge #11106550 (Calleguas Creek near Camarillo, at University Drive). For Revolon Slough, data was compiled from Ventura County Watershed Protection District flow gauge #776A. Continuous flow meters were also recently installed at monitoring sites 03_UNIV and 04_WOOD for the salts TMDL monitoring (as discussed in previous sections), which measured flows through Calleguas Creek and Revolon Slough, respectively. Data from the continuous sensors were used when available which was generally from January 22 to August 31, 2011[27]. Daily mean discharge flows in cubic feet per second (cfs) were compiled for each flow gauge.

The sampling dates of monitoring data from 03_UNIV and 04_WOOD was compared to their respective flow gauges' daily mean flow record for that date to determine the flow conditions through the reach at the time of sampling. Daily mean flows also were summed from August 1 to July 31, and the two reaches were added together to establish the flow year condition for mercury loading evaluations.

[27] Data from July to August has not been reviewed by staff and remains a provisional estimated flow rate.

Comparison to Interim Reduction Milestones

Mercury

For mercury, the watershed loading calculations in the receiving waters calculated for the compliance analysis in each annual report were used for the comparison. The watershed loading calculations represent discharges from all sources and are therefore a conservative estimate of the loading reductions being achieved by urban and agricultural dischargers.

A compilation of flows through the watershed and a determination of the flow conditions for the past three years are presented below in Table 114.

Table 114. Flow Conditions in the Calleguas Creek Watershed

Dates	Annual Calleguas Creek Flows (MGY)	Yearly Revolon Slough Flows (MGY)	Yearly Watershed Flows (MGY)	Flow Year Condition
August 2008 - July 2009	6580	3127	9707	Low Flow
August 2009 - July 2010	12279	3044	15323	Medium Flow
August 2010 - July 2011	15249	3769	19018	Medium Flow

These flow conditions were then used to determine the applicable reductions for comparison, as described above in Table 112. When comparing the measured loadings for mercury, as shown in Table 115, both reaches have achieved the required 25% reductions for the past three years. Additionally, the measured watershed loads are lower than the sum of the final allocations for urban and agricultural dischargers in the receiving waters.

Table 115. Mercury Loadings and Allocations

		Revolon Slough		Calleguas Creek	
Flow Year	Flow Condition for Year	Measured Load (lb/yr) [1]	25% Reduction Milestone (lb/yr)	Measured Load (lb/yr)	25% Reduction Milestone (lb/yr)
2008-2009	Low	0.24	1.3	0.304	2.575
2009-2010	Medium	0.2	3.175	0.77	8.275
2010-2011	Medium	2	3.175	3.39	8.275

1. The measured load was in compliance with the final allocations

Copper and Nickel

Final allocations for copper, nickel, and selenium are expressed as daily loads. As a result, daily loads were calculated for each measurement obtained under the CCWTMP since August 2008. Loading rates were calculated by determining the product of the measured pollutant concentration and the measured flow rate for the reach on the same day. For compliance purposes, flows were grouped by their flow category of low, average, or elevated flow as determined in the TMDL Technical Report. An average load was also calculated for each flow category from each reach. Several Calleguas Creek flow measurements, while measured during dry events, recorded flows that exceeded the 86th percentile of flow rates, and were thus effectively considered to be wet flow rates. These records were not considered when calculating the average loads.

The copper, nickel and selenium averages for each flow condition are compared to the 25% loading reduction milestone in Table 116. A compilation of the individual calculated loadings compared to the 25% loading reduction milestones for Revolon Slough and Calleguas Creek are presented below in Table 117 and Table 118, respectively. All calculated loads met the 25% reduction requirement with the exception of one copper value and one selenium value in Revolon Slough in 2010. Since 2010, the 25% reduction requirements have been met in the receiving water and the overall average concentrations for each flow condition meet the reduction requirement. As a result, the watershed is in compliance with the 25% reduction requirement due by March 26, 2012.

Table 116. Calculated Average Loads by Flow Condition as Compared to Reduction Milestones

	Flow	Revolon Slough			Calleguas Creek		
	Condition[1]	**Low**	**Average**	**Elevated**	**Low**	**Average**	**Elevated**
Average Loads	Copper	0.17	0.27	0.55	n/a[2]	0.15	0.42
	Nickel	0.23	0.35	0.82	n/a[2]	0.30	0.71
	Selenium	0.64	1.34	1.80	n/a[3]	n/a[3]	n/a[3]
25% Reduction[3]	Copper	0.59	1.15	2.70	[4]	[4]	[4]
	Nickel	0.66	1.27	2.79	2.00	2.17	3.22
	Selenium	1.35	2.31	3.66	n/a[3]	n/a[3]	n/a[3]

1. Flow conditions for each receiving water are determined in the TMDL Technical Report. For Revolon Slough, flow conditions are considered low below 10 cubic feet per second (cfs), average between 10 and 17 cfs, and elevated between 17 and 22 cfs. For Calleguas Creek, flow conditions are low below 5 cfs, average between 5 and 21, and elevated between 21 and 30 cfs.
2. No allocations for selenium are assigned to Calleguas Creek because an impairment does not exist in that reach.
3. Represents a 25% reduction in the difference between the sum of the interim agricultural and urban allocations and the sum of the final agricultural and urban allocations.
4. Current loads were below the WER adjusted final receiving water loading capacity so no reductions are necessary to meet the TMDL targets.

Table 117. Calculated Copper, Nickel and Selenium Loads and Compliance Status for Revolon Slough

Event	Date	Flow Condition	Cu Load (lb/day)	Ni Load (lb/day)	Se Load (lb/day)
Event 1	8/7/08	Low	0.08	0.08	0.57
Event 2	11/11/08	Low	0.24	0.32	0.81
Event 3	12/15/08	Wet	87.8	45.4	2.15
Event 4	2/4/09	Low	0.13	0.28	0.99
Event 5	2/7/09	Wet	13.4	6.74	0.57
Event 6	5/5/09	Average	0.24	0.36	2.22
Event 7	6/10/09	Low	0.03	0.05	0.41
Event 8	7/8/09	Low	0.05	0.05	0.36
Event 9	8/4/09	Low	0.05	0.10	0.61
Event 10	9/2/09	Low	0.05	0.10	0.54
Event 11	10/7/09	Average	0.21	0.28	0.69
Event 12	11/10/09	Low	0.13	0.26	0.36
Event 13	12/2/09	Low	0.16	0.30	0.57
Event 14	12/7/09	Wet	17.2	9.02	1.20
Event 15	1/13/10	Low	**0.70**	0.44	0.46
Event 16	1/20/10	Wet	167	76.8	1.08
Event 17	2/20/10	Elevated	0.55	0.82	1.80
Event 18	3/10/10	Low	0.25	0.50	**1.71**
Event 19	4/7/10	Low	0.31	0.40	0.83
Event 20	5/11/10	Low	0.13	0.18	0.51
Event 21	6/2/10	Low	0.09	0.11	0.18
Event 22	8/17/10	Low	0.05	0.12	0.51
Event 23	11/9/10	Low	0.17	0.28	0.74
Event 24	12/19/10	Wet	75.4	56.9	5.65
Event 25	2/1/11	Average	0.36	0.40	1.11
Event 26	3/20/11	Wet	294	186	2.69
Event 27	5/4/11	Low	0.18	0.32	1.22

Bolded values exceed the 25% reduction requirement.

Table 118. Calculated Copper and Nickel Loads and Compliance Status for Calleguas Creek

Event	Date	Flow Condition	Cu Load (lb/day)	Ni Load (lb/day)
Event 1	8/7/08	Average	0.13	0.39
Event 2	11/11/08	Average	0.06	0.23
Event 3	12/15/08	Wet	275	188
Event 4	2/4/09	Average	0.23	0.43
Event 5	2/7/09	Wet	18.5	13.9
Event 6	5/5/09	Average	0.14	0.27
Event 7	6/10/09	Average	0.26	0.50
Event 8	7/8/09	Average	0.10	0.25
Event 9	8/4/09	Average	0.04	0.19
Event 10	9/2/09	Average	0.06	0.22
Event 11	10/7/09	Average	0.10	0.31
Event 12	11/10/09	Average	0.09	0.34
Event 13	12/2/09	Average	0.07	0.18
Event 14	12/7/09	Wet	118	63.6
Event 15	1/13/10	Elevated	0.42	0.74
Event 16	1/20/10	Wet	32.3	345
Event 17	2/20/10	Beyond Elevated	0.85	2.03
Event 18	3/10/10	Average	0.12	0.29
Event 19	4/7/10	Elevated	0.42	0.67
Event 20	5/11/10	Average	0.14	0.27
Event 21	6/2/10	Average	0.14	0.29
Event 22	8/17/10	Average	0.24	0.48
Event 23	11/9/10	Average	0.28	0.34
Event 24	12/19/10	Wet	312	327
Event 25	2/1/11	Average	0.27	0.32
Event 26	3/20/11	Wet	1730	1545
Event 27	5/4/11	Beyond Elevated	0.58	0.76

Conclusions

Overall, the receiving waters, and correspondingly agricultural and urban dischargers, are in compliance with the TMDL requirement to reduce discharges by 25% of the difference between current loadings and the final allocations by March 26, 2012. Only one selenium and one copper sample out of the 27 events collected since August 2008 were not in compliance with the 25% reduction and all samples collected since April 2010 have met the 25% reduction requirement. Additionally, the average copper, nickel and selenium loads and the annual average mercury loads for the monitoring period all met the 25% reduction requirement. As a result, the monitoring has demonstrated that the agricultural and urban dischargers are in compliance with the first interim reduction milestone in the Metals TMDL. Additional analysis specific to urban and agricultural discharges may be necessary to evaluate future reduction milestones if the receiving waters do not meet the future required reduction milestones.

Revisions and Recommendations

The QAPP specifies that during the completion of each CCWTMP annual report, revisions to the standard procedures will be made, including: site relocation, ceasing monitoring efforts and/or deleting certain constituents from sample collection. Some revisions were recommended in the previous annual reports; however no response from the Regional Water Board has been received to date. In order to continue implementing the CCWTMP in an adaptive and cost effective manner, some of the previously requested revisions have been carried out. The following revisions to the QAPP include those previously requested in the first and second year annual reports, actions taken, and additional recommendations:

First Year Annual Report Recommendations and Actions

- The relocation of certain CCWTMP land use site to match new locations of the Ventura County Watershed Protection District (VCWPD) MS4 Stormwater Site:
    - The relocations are still being evaluated by the Implementing Parties and will be provided to the Regional Water Board when they occur.
- Cease sampling the Nitrogen TMDL investigation sites. These sites were selected to characterize land use discharges to meet a special study requirement in the TMDL. The monitoring was only scheduled to occur for one year (see Non-Point Source Workplan (LWA, 2004)) so this monitoring has now been completed.
    - Nutrient samples were collected from land use sites through the second year of monitoring, but ceased starting with year three.
- Cease monthly monitoring of metals after June 2010 monitoring event is completed and return to quarterly for the remainder of the year. This will complete one year of monitoring and prevent additional monitoring costs from being incurred while the data evaluation is occurring. Monthly monitoring can be reinitiated in 2012 if deemed necessary by the Regional Water Board based on the data review.
    - Monthly metals monitoring ended after the completion of event 21 in June 2010.
- The triazine herbicides atrazine, prometryn, and simazine were included in the monitoring program as they have been detected in toxic samples and have the potential to increase toxicity of OP pesticides (Anderson and Lydy, 2002). However, triazine herbicides are not on the 303(d) list and have not been identified as contributing to or increasing toxicity in the CCW in either the historical data or in the recently collected data. As such, conducting analysis for triazine herbicides will be discontinued.
    - Triazine analysis continued through year two and the first two dry weather and first storm event of year three. However, further triazine sample collection will not be performed beginning in 2011.
- Cease conducting Toxicity Evaluation Investigations (TIEs) at the 04_WOOD site (Revolon Slough at Wood Road crossing) as detailed in the letter sent to the Regional Water Board on July 20, 2009 (Appendix D of CCWTMP First Year Annual Monitoring Report). Continual toxicity has been observed at this site and as outlined in the letter, the stakeholders would rather invest resources into implementation activities targeting load reductions.

    - TIEs at the 04_WOOD site were not initiated when water quality toxicity was observed during the second and third years of monitoring.

Second Year Annual Report Recommendations and Actions

- Cease PCBs monitoring at all land use sites.
    - PCB analysis has continued since there is no cost savings in not obtaining these results.

Third Year Annual Report Recommendations and Actions

- Ending toxicity investigation monitoring. As outlined in the Toxicity Review section of this report, significant mortality has not occurred at either the two water column or two sediment toxicity investigation sites in the three years of the CCWTMP.
- Revise the nitrogen TMDL monitoring to reflect a subwatershed approach consistent with the other TMDLs. The nitrogen TMDL was adopted many years before the remaining CCW TMDLs and required a different monitoring approach. Since the compliance deadlines for this TMDL have been reached and many of the TMDL reaches are in compliance, a revised monitoring approach that provides more consistency with the other TMDLs is warranted. Modifications to remove sites for reaches upstream of a subwatershed monitoring location are recommended.

Recommended revisions from the first year annual report have been implemented as outlined above. The second year recommendation was not implemented since continuing to report PCB results requires no additional effort. Third year recommendations will be implemented during year five of the monitoring program if no Regional Water Board comments are received on this modification.

In addition to the recommendations presented above, the QAPP will need to be updated in 2012 to incorporate the Salts TMDL monitoring approach. At that time, it is also recommended that the QAPP be updated for all constituents to reflect the recommendations identified above and reflect monitoring adjustments that have been implemented due to field conditions.

References

Anderson, T. D. and Lydy, M. J. 2002. Increased toxicity to invertebrates associated with a mixture of atrazine and organophosphate insecticides. Environ. Tox. and Chem. V21, No. 7, 1507–1514.

Bailey, H.C., DiGiorgio, C., Kroll, K., Miller, J.L., Hinton, D.E., Starrett, G. 1996. Development of Procedures for Identifying Pesticide Toxicity in Ambient Waters: Carbofuran, Diazinon, Chlorpyrifos. Environ. Tox. and Chem. V15, No. 6, 837–845.

Larry Walker Associates (LWA). 2006. Ventura County Agricultural Irrigated Lands Group Quality Assurance Project Plan. August 3, 2006, Revision 1.

United States Environmental Protection Agency (USEPA). 1991. Methods for Aquatic Toxicity Identification Evaluations: Phase 1 Toxicity Characterization Procedures (Second Edition). EPA-600/6-91/003. USEPA, Environmental Research Laboratory, Duluth, MN.

United States Environmental Protection Agency (USEPA). 1992. Toxicity Identification Evaluation: Characterization of Chronically Toxic Effluents Phase I. EPA-600/6-91/005. USEPA, Office of Research and Development, Washington, D.C.

United States Environmental Protection Agency (USEPA). 1993a. Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, Fourth Edition. EPA/600/4-90/027F. USEPA, Office of Research and Development, Washington, D.C.

United States Environmental Protection Agency (USEPA). 1993b. Methods for Aquatic Toxicity Identification Evaluations: Phase II Toxicity Identification Procedures for Samples Exhibiting Acute and Chronic Toxicity. EPA/600/R- 92/080. USEPA, Office of Research and Development, Washington, D.C.

United States Environmental Protection Agency (USEPA). 1996. Marine Toxicity Identification Evaluation. Phase I Guidance Document EPA/600/R-96/054. USEPA, Office of Research and Development, Washington, D.C.