

December 15, 2016

**VENTURA COUNTY AGRICULTURAL
IRRIGATED LANDS GROUP (VCAILG)**

2015-2016 Annual Monitoring Report

DRAFT

submitted to:

**LOS ANGELES REGIONAL WATER QUALITY
CONTROL BOARD**

prepared by:

LARRY WALKER ASSOCIATES

On behalf of the:

**VENTURA COUNTY AGRICULTURAL
IRRIGATED LANDS GROUP (VCAILG)**



~Page intentionally left blank~

Table of Contents

List of Tables	iii
List of Figures	vi
List of Appendices	vii
Acronyms	viii
Executive Summary	ES-1
Introduction	1
Group Membership and Setting	1
Irrigated Agriculture in Ventura County.....	4
Calleguas Creek Watershed	6
Santa Clara River Watershed	8
Ventura River Watershed.....	10
VCAILG Participation in TMDLs	12
Water Quality Monitoring	12
Monitoring Objectives	12
Monitoring Site Selection	12
Parameters Monitored and Monitoring Frequency	22
<i>Conditional Waiver</i> Monitoring Constituents and Frequency	22
TMDL Monitoring Constituents and Frequency	25
Sampling Methods	26
Analytical Methods.....	27
Water Quality Benchmarks and Other Objectives.....	29
Water Quality Monitoring Results.....	35
Calleguas Creek Watershed	36
Oxnard Coastal Watershed	54
Santa Clara River Watershed.....	57
Ventura River Watershed.....	77
Chronic Toxicity Test Results	83
Determination of Most Sensitive Species at Toxicity Monitoring Sites.....	83
Single-Species Test Results	84
TMDL Load Allocations and Monitoring Results.....	86
Calleguas Creek Watershed	86

Santa Clara River Watershed	86
Ventura River Watershed.....	90
Harbor Beaches of Ventura County Bacteria TMDL	91
McGrath Lake PCBs, Pesticides, and Sediment Toxicity TMDL	91
Oxnard Drain #3 Subwatershed	93
Malibu Creek Watershed	94
Conclusions.....	94
WQMP Progress Report	95
Outreach Materials	95
Survey Completion	95
Education Requirements	95

List of Tables

Table 1. VCAILG Steering Committee Membership	3
Table 2. VCAILG Membership Statistics as of December 2016.....	3
Table 3. Ventura County’s Leading Agricultural Commodities–2014.....	6
Table 4. VCAILGMP Monitoring Locations for <i>Conditional Waiver</i> Constituents	14
Table 5. Monitoring Locations for Effective TMDLs Monitored According to the 2010 Conditional Waiver VCAILG MRP	15
Table 6. Estimated Irrigated Acreage Represented at 2010 Conditional Waiver VCAILG MRP Monitoring Sites.....	21
Table 7. Constituents and Monitoring Frequency for the 2010 Conditional Waiver VCAILGMP	23
Table 8. VCAILG Sites Monitored and Constituents Sampled in 2015-2016	24
Table 9. Constituents and Frequency for TMDL Monitoring Performed Under the 2010 Conditional Waiver VCAILGMP	25
Table 10. TMDL Sites Monitored and Constituents Sampled in 2015-2016	26
Table 11. Analytical Methods for <i>Conditional Waiver</i> Constituents	28
Table 12. TMDL Analytical Methods for Laboratory Analyses Performed Under the 2010 Conditional Waiver VCAILGMP	29
Table 13. 2010 Conditional Waiver Appendix 2 Standard Water Quality Benchmarks Derived From Narrative Objectives.....	31
Table 14. 2010 Conditional Waiver Appendix 2 Standard Water Quality Benchmarks for Salts and Nutrients (Basin Plan Table 3-8 Numeric Water Quality Objectives).....	32
Table 15. 2010 Conditional Waiver Appendix 2 Standard Water Quality Benchmarks for Copper	33
Table 16. 2010 Conditional Waiver Appendix 2 Standard Water Quality Benchmarks for Organophosphorus Pesticides	33
Table 17. 2010 Conditional Waiver Appendix 2 Water Quality Benchmarks for Organochlorine Pesticides.....	33
Table 18. 2016 Conditional Waiver Appendix 4 Water Quality Benchmark for Bifenthrin.....	33
Table 19. Organochlorine Pesticides Monitored by the VCAILGMP with CTR Water Quality Criteria	34
Table 20. 2015 - 2016 VCAILG Monitoring Data v. Waiver Benchmarks: 01T_ODD3_ARN.	37
Table 21. 2015 - 2016 Trash Observations for 01T_ODD3_ARN.....	38
Table 22. 2015 - 2016 VCAILG Monitoring Data v. Waiver Benchmarks: 04D_ETTG	40
Table 23. 2015 – 2016 Trash Observations for 04D_ETTG	41

Table 24. 2015 - 2016 VCAILG Monitoring Data v. Waiver Benchmarks: 04D_LAS	43
Table 25. 2015 - 2016 Trash Observations for 04D_LAS.....	44
Table 26. 2015 - 2016 VCAILG Monitoring Data v. Waiver Benchmarks: 05D_LAVD	46
Table 27. 2015 - 2016 Trash Observations for 05D_LAVD	47
Table 28. 2015 - 2016 VCAILG Monitoring Data v. Waiver Benchmarks: 05T_HONDO	49
Table 29. 2015 - 2016 Trash Observations for 05T_HONDO.....	50
Table 30. 2015 - 2016 VCAILG Monitoring Data v. Waiver Benchmarks: 06T_LONG2.....	52
Table 31. 2015 - 2016 Trash Observations for 06T_LONG2.....	53
Table 32. 2015 - 2016 VCAILG Monitoring Data v. Waiver Benchmarks: OXD_CENTR.....	55
Table 33. 2015 - 2016 Trash Observations for OXD_CENTR	56
Table 34. 2015 - 2016 VCAILG Monitoring Data v. Waiver Benchmarks: S02T_ELLS	58
Table 35. 2015 - 2016 Trash Observations for S02T_ELLS	59
Table 36. 2015 - 2016 VCAILG Monitoring Data v. Waiver Benchmarks: S02T_TODD.....	61
Table 37. 2015 - 2016 Trash Observations for S02T_TODD	62
Table 38. 2015 - 2016 VCAILG Monitoring Data v. Waiver Benchmarks: S03T_TIMB.....	64
Table 39. 2015 - 2016 Trash Observations for S03T_TIMB	65
Table 40. 2015 - 2016 VCAILG Monitoring Data v. Waiver Benchmarks: S03T_BOULD.....	67
Table 41. 2015 - 2016 Trash Observations for S03T_BOULD.....	68
Table 42. 2015 - 2016 VCAILG Monitoring Data v. Waiver Benchmarks: S03D_BARDS.....	70
Table 43. 2015 - 2016 Trash Observations for S03D_BARDS.....	71
Table 44. 2015 - 2016 VCAILG Monitoring Data v. Waiver Benchmarks: S04T_TAPO	73
Table 45. 2015 - 2016 Trash Observations for S04T_TAPO	74
Table 46. 2015 - 2016 VCAILG Monitoring Data v. Waiver Benchmarks: S04T_TAPO_BKGD	76
Table 47. 2015 - 2016 Trash Observations for S04T_TAPO_BKGD.....	76
Table 48. 2015 - 2016 VCAILG Monitoring Data v. Waiver Benchmarks: VRT_THACH.....	78
Table 49. 2015 - 2016 Trash Observations for VRT_THACH	79
Table 50. 2015 - 2016 VCAILG Monitoring Data v. Waiver Benchmarks: VRT_SANTO	81
Table 51. 2015 - 2016 Trash Observations for VRT_SANTO.....	82
Table 52. Chronic Toxicity Results 2015-2016.....	85
Table 53. Load Allocations for Nitrogen Compounds.....	87
Table 54. Nitrogen Load Allocations Compared to SCR VCAILGMP Site Data.....	87
Table 55. Load Allocation for Chloride.....	87

Table 56. Chloride Load Allocation Compared to S04T_TAPO Site Data.....	88
Table 57. Load Allocations for Toxaphene	89
Table 58. Santa Clara River Estuary Toxaphene TMDL Monitoring Data: Water and Suspended Sediment	90
Table 59. Harbor Beaches of Ventura County Bacteria TMDL Monitoring Data	91
Table 60. McGrath Lake Central Ditch Load Allocations.....	93
Table 61. McGrath Lake TMDL Central Ditch Monitoring Data in Water: OXD_CENTR	93
Table 62. Courses Approved for Education Credit.....	95

List of Figures

Figure 1. Ventura County Watersheds.....	5
Figure 2. Calleguas Creek and Oxnard Coastal Watersheds Agricultural Land Use	7
Figure 3. Santa Clara River Watershed Agricultural Land Use.....	9
Figure 4. Ventura River Watershed Agricultural Land Use	11
Figure 5. VCAILG Monitoring Sites in the Calleguas Creek/Oxnard Coastal Watersheds	16
Figure 6. VCAILG Monitoring Sites Located in the Santa Clara River Watershed.....	17
Figure 7. VCAILG Monitoring Sites Located in the Ventura River Watershed	18
Figure 8. Channel Islands Harbor Bacteria TMDL Monitoring Site.....	19
Figure 9. Santa Clara River Estuary Toxaphene TMDL Monitoring Sites	20

List of Appendices

- Appendix A. VCAILG Membership List
- Appendix B. 2015-16 Field Logbooks
- Appendix C. 2015-16 Field Measured Data
- Appendix D. 2015-16 Photo Documentation
- Appendix E. 2015-16 Chain-of-Custody Forms
- Appendix F. 2015-16 Monitoring Data
- Appendix G. 2015-16 Chronic Toxicity Data
- Appendix H. Laboratory Quality Assurance/Quality Control Results and Discussion
- Appendix I. List of Enrolled and Non-Enrolled Parcels for Each Monitoring Site Drainage
- Appendix J. WQMP Progress Report: Copies of Outreach Materials
- Appendix K. WQMP Progress Report: VCAILG Members' Status in Completing Education Requirements

Acronyms

AMR	Annual Monitoring Report
BMP	Best Management Practice
CC	Calleguas Creek
CCW	Calleguas Creek Watershed
CCWTMP	Calleguas Creek Watershed TMDL Monitoring Program
DNQ	Detected Not Quantified
EST	Estimated
LA	Load Allocation
LARWQCB	Los Angeles Regional Water Quality Control Board (Regional Board)
MDL	Method Detection Limit
MRP	Monitoring and Reporting Plan
NA	Not Applicable
ND	Not Detected
NM	Not Measured
NOA	Notice of Applicability
NOI	Notice of Intent
NS	Not Sampled
OC	Organochlorine
OP	Organophosphorus
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QC	Quality Control
RL	Reporting Limit
SCR	Santa Clara River
SCRW	Santa Clara River Watershed
TDS	Total Dissolved Solids
TIE	Toxicity Identification Evaluation
TMDL	Total Maximum Daily Load
TSS	Total Suspended Solids
VCAILG	Ventura County Agricultural Irrigated Lands Group
VR	Ventura River
VRW	Ventura River Watershed
WQMP	Water Quality Management Plan

Executive Summary

Bordering the Pacific Ocean, Ventura County covers approximately 1.2 million acres with the Los Padres National Forest in the northern half of the county and residential, agricultural and business uses in the southern portion. Agriculture has long played an economic and cultural role in Ventura County with over 90,000 acres of irrigated cropland in current production. Home to three major watersheds, the Calleguas Creek Watershed contains the highest number of irrigated acres (approximately 51,000), followed by the Santa Clara River Watershed (approximately 33,000), Ventura River Watershed (approximately 3,400), and finally the Oxnard Plain and Coastal Watersheds (approximately 6,200).

On October 7, 2010 the Los Angeles Regional Water Quality Control Board (Regional Board) adopted a *Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands within the Los Angeles Region* (“Conditional Waiver”, Order No. R4-2010-0186). The purpose of the Conditional Waiver is to assess the effects of and control discharges from irrigated agricultural lands in Los Angeles and Ventura Counties, including irrigation return flows, flows from tile drains, and storm water runoff. These discharges can affect water quality by transporting nutrients, pesticides, sediment, salts, and other pollutants from cultivated fields into surface waters, potentially impairing designated beneficial uses. Owners and operators of agricultural lands in Ventura and Los Angeles Counties must comply with provisions contained in the Conditional Waiver or be regulated under other Regional Board programs. Each Waiver is adopted for a five-year period. After a six month extension of the 2010 Conditional Waiver, a new Conditional Waiver (Order No. R4-2016-0143) was adopted by the Regional Board on April 14, 2016.

Both the 2010 and 2016 Conditional Waivers allow individual landowners and growers to comply with the provisions by working collectively as a Discharger Group, or as an individual. To assist agricultural landowners and growers that farm within the boundaries of Ventura County, various agricultural organizations, water districts and individuals joined together to form the Ventura County Agricultural Irrigated Lands Group (VCAILG), which acts as a Discharger Group for those agricultural landowners and growers that wish to participate.

During the past eight months, 59% of Ventura County’s agricultural landowners, representing approximately 79% of its total irrigated acres, went through the process of re-enrolling in VCAILG and signing Participation Agreements, which outline the individual farmer and grower responsibilities for complying with the new 2016 Conditional Waiver. VCAILG members, as land and water stewards, understand the links between drought and water use and water quality. For decades, farming operations have invested in technology and adopted irrigation practices to use water more efficiently. In September 2016, a State grant-funded program was launched to provide technical assistance and equipment rebates to help more Ventura County farmers improve their irrigation and energy efficiency. The program has \$1.2 million available to reimburse farmers up to 60% of equipment upgrades that show quantifiable water and energy savings. This and other grant programs will support progress towards attaining water quality goals.

Demonstrating VCAILG’s commitment, this document serves as the 2015-2016 VCAILG Annual Monitoring Report (AMR) and summarizes water quality monitoring results as well as other VCAILG activities during the July 2014 through June 2015 reporting period. All monitoring during this reporting year was conducted according to the VCAILG Monitoring and

Reporting Plan approved to meet the 2010 *Conditional Waiver* requirements. However, modifications to the report have been made to accommodate new requirements contained in the 2016 *Conditional Waiver*. This includes a Water Quality Management Plan (WQMP) Progress Report. Additionally, the “Calleguas Creek Watershed TMDL Compliance Monitoring Program Eighth Year Annual Monitoring Report” is being submitted as an accompaniment to this VCAILG AMR. Other relevant TMDL monitoring reports are included by reference. VCAILG coordinates with established TMDL monitoring programs and plays an active role in facilitating the participation of agriculture in TMDL development and implementation processes. Acting on behalf of its members, VCAILG representatives participate in stakeholder meetings, provide comments, and contribute to cooperative agreements.

Monitoring Results

The VCAILG AMR compiles the past year of monitoring data and compares it to the water quality benchmarks included in the Conditional Waiver and with the final or interim Load Allocations (LAs) assigned to irrigated agriculture in TMDLs throughout Ventura County and incorporated into the *Conditional Waiver*. Sixteen sites representing runoff from agriculture-dominated drainages are monitored by VCAILG during two dry events and two wet events annually to assess attainment of the water quality benchmarks. In addition, the Calleguas Creek Watershed TMDL Monitoring Program (CCWTMP) monitors an additional seven agricultural land use sites representing runoff from agriculture-dominated drainages, and several receiving water sites, each during four dry events and two wet events annually. Unlike in the 2010 *Conditional Waiver* when water quality benchmark exceedances detected during the previous year’s monitoring triggered the requirement for a WQMP, the development of a WQMP is now according to a set schedule. The next WQMP is due April 14, 2017 and will consider past data and the results of member management practice surveys.

In summary, during the 2015-2016 monitoring year, Conditional Waiver benchmarks or TMDL LAs were exceeded for the following constituents at least at one monitoring location:

- Organochlorine (OC) Pesticides (DDT and breakdown products, total chlordane, toxaphene, dieldrin)
- Copper and Selenium
- Chlorpyrifos and Diazinon
- Toxicity
- Nitrate and Ammonia
- Salts
- Bifenthrin

~Page intentionally left blank~

Introduction

On April 14, 2016, the Los Angeles Regional Water Quality Control Board adopted the *Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands within the Los Angeles Region* (“*Conditional Waiver*”, Order No. R4-2016-0143). The purpose of the *Conditional Waiver* is to assess the effects of, and control discharges from irrigated agricultural lands in Los Angeles and Ventura Counties, including irrigation return flows, flows from tile drains, and storm water runoff. These discharges can affect water quality by transporting nutrients, pesticides, sediment, salts, and other pollutants from cultivated fields into surface waters, potentially impairing designated beneficial uses. Owners and operators of agricultural lands in Ventura and Los Angeles Counties must comply with provisions contained in the *Conditional Waiver* or be regulated under other Regional Board programs. This was the third iteration of the *Conditional Waiver* adopted for the Los Angeles Region.

The *Conditional Waiver* allows individual landowners and growers to comply with its provisions by working collectively as a Discharger Group, or as an individual. A Discharger Group is defined by the *Conditional Waiver* as “any group of dischargers and/or organizations that forms to comply with this Order. Discharger Groups can be, but are not limited to, organizations formed on a geographic basis or formed with other factors in common such as commodities.” The primary purpose of allowing Discharger Groups is to encourage collaboration on monitoring and reporting and to increase the effectiveness of management practices throughout a watershed to attain water quality standards. Those landowners and growers choosing to comply with the *Conditional Waiver* as a Discharger Group must signify by submitting a Group Notice of Intent and by developing a Discharger Group monitoring program.

To assist agricultural landowners and growers that farm within the boundaries of Ventura County, various agricultural organizations, water districts and individual farmers joined together in 2006 to form the Ventura County Agricultural Irrigated Lands Group (VCAILG), which is intended to act as one unified “Discharger Group” for those agricultural landowners and growers that wish to participate. A Notice of Intent (NOI) to comply was submitted to the Regional Board by the VCAILG under the two previous *Conditional Waivers* and on October 14, 2016 an NOI for compliance with the 2016 *Conditional Waiver* was submitted. The NOI included the VCAILG membership roster, as well as the required Quality Assurance Project Plan (QAPP) and Monitoring and Reporting Program Plan (MRP), which detail the water quality monitoring and reporting procedures being conducted in compliance with the terms of the *Conditional Waiver*.

This report covers the period from July 2016 to June 2016 during which monitoring was conducted according to the requirements and MRP approved under the 2010 *Conditional Waiver*. In addition to including the 2010 *Conditional Waiver* monitoring report components, this report is formatted to meet the new requirements of the 2016 *Conditional Waiver* for annual monitoring reporting by providing data in CEDEN format, maps which include HUC-12 watershed boundaries and monitoring site drainages, and the inclusion of a Water Quality Management Plan (WQMP) Progress Report.

Group Membership and Setting

The VCAILG was formed in 2006 to act as one unified “Discharger Group” in Ventura County for the purpose of compliance with the *Conditional Waiver*. VCAILG oversight is provided by a

17-member Steering Committee and a 6-member Executive Committee (also members of the Steering Committee). Steering Committee membership consists of agricultural organization representatives, agricultural water district representatives, landowners and growers from the three primary watersheds in Ventura County (Calleguas Creek, Santa Clara River, and Ventura River). Steering Committee membership also represents the major commodities grown in Ventura County (strawberries, nursery stock, citrus, vegetables, and avocados). The Steering Committee roster is presented in Table 1.

Because the VCAILG is an unincorporated organization, the Farm Bureau of Ventura County acts as the responsible entity for the collection of funds, contracting with consultants, and other fiscal and/or business matters that require an organization with some form of tax status; the Farm Bureau is a non-profit 501(c)(5) organization.

A list of VCAILG members and associated parcels is included as Appendix A. The membership list includes the following information:

- Assessor Parcel Number
- Parcel Owner and Grower Name(s) (if applicable)
- Parcel Irrigated Acres
- Parcel Watershed
- Parcel Owner and Grower Mailing Address

In addition to Appendix A, VCAILG is required to provide a list of enrolled and non-enrolled parcels for each monitoring site. This list is included as Appendix I.

Table 2 contains a summary of VCAILG membership statistics, including the number of landowners and parcels enrolled, as well as irrigated acreage enrolled in each watershed. All membership statistics represent group status in December of 2016. At this time, VCAILG represents 1,107 Ventura County agricultural landowners and 72,571 irrigated acres. According to the Ventura County Assessor's records, there are an estimated 775 landowners not enrolled in VCAILG. Therefore, VCAILG represents 59 percent of agricultural landowners in Ventura County covering approximately 79 percent of the estimated irrigated acreage.

Table 1. VCAILG Steering Committee Membership

Member, Organization ¹	Crop(s) Represented	Watershed(s) Represented
Edgar Terry, Terry Farms, Inc. (Committee Chair)	Strawberries, Vegetables	Calleguas Creek, Santa Clara River
Jonathan Chase, Hailwood, Inc.	Strawberries, Vegetables	Calleguas Creek
Jerry Conrow, Ojai Basin GMA*	Citrus	Ventura River
Robert Crudup, BrightView Tree Company	Nursery Stock	Santa Clara River
Paul DeBusschere, DeBusschere Ranch	Strawberries, Avocados	Calleguas Creek
Mike Friel, Laguna Grove Service	Citrus	Calleguas Creek
Jesse Gomez, Newhall Land & Farming	Citrus, Hay, Nursery Stock, Vegetables, Sod, Pasture	Santa Clara River
Jurgen Gramckow, Southland Sod Farms	Sod, Hay, Oats, Vegetables	Calleguas Creek, Santa Clara River, Ventura River
Gus Gunderson, Limoneira Company	Avocado, Citrus	Santa Clara River
John Krist, Farm Bureau of Ventura County*	N/A	N/A
John Mathews, Arnold, Bleuel, LaRochelle, et al.*	N/A	N/A
Doug O'Hara, Somis Pacific Ag Management Company	Avocado, Citrus	Calleguas Creek, Santa Clara River
Kelle Pistone, Assoc. of Water Agencies of Ventura County*	N/A	N/A
Rob Roy, Ventura County Agricultural Association*	N/A	N/A
Dave Souza, Pleasant Valley County Water District*	N/A	N/A
Craig Underwood, Underwood Ranches	Avocado, Citrus, Vegetables	Calleguas Creek, Santa Clara River
Jason Vis, Lloyd Butler Ranch	Avocado, Citrus	Calleguas Creek, Santa Clara River

N/A = Not Applicable

1. An asterisk denotes Executive Committee membership

Table 2. VCAILG Membership Statistics as of December 2016

Watershed	Landowner Count	Parcel Count	Irrigated Acres
Calleguas Creek	513	1,191	37,437
Oxnard Coastal	48	104	3,917
Santa Clara River	431	1,047	27,340
Ventura River	161	343	3,878
<i>Total</i>	<i>1,153</i>	<i>2,685</i>	<i>72,571</i>

1. There are 1,107 unique landowners enrolled, a number of whom own property in more than one watershed.

IRRIGATED AGRICULTURE IN VENTURA COUNTY

Ventura County covers 1,843 square miles (approximately 1.2 million acres) with 43 miles of coastline (Figure 1). The Pacific Ocean forms its southwestern boundary, with Los Angeles County to the southeast, Kern County to the north and Santa Barbara County to the west. The Los Padres National Forest accounts for the northern half of the county, with residential, agricultural and business uses in the southern portion. Of the estimated 190,434 acres of agricultural land in the county, there are approximately 93,376 acres of irrigated cropland.¹ The Calleguas Creek Watershed contains the highest number of irrigated acres (approximately 51,000), followed by the Santa Clara River Watershed (approximately 33,000), Ventura River Watershed (approximately 3,400), and finally the Oxnard Plain and Coastal Watersheds (approximately 6,200).²

Agriculture is a major industry in Ventura County, generating over \$2 billion in gross sales for 2014, placing the county 10th in a statewide ranking of California's 58 counties.³ This gross value is up 2 percent from 2013.¹ Strawberries are the number one grossing crop type in Ventura County, and experienced a 3.1 percent increase in gross sales between 2013 and 2014.¹ Lemons were the second highest grossing crop in 2014 with a record value of \$269,428,000 overtaking avocados from the previous year. Avocados had a significant drop in value, with over a 29 percent decrease from 2013.¹ Table 3 lists the County's ten leading crops in gross value for 2014. Characteristics of each of the three main watersheds in Ventura County are discussed in more detail in the following sections.

¹ Ventura County Agricultural Commissioner. *Ventura County's Crop and Livestock Report 2014*. November 3, 2015.

² Estimates of irrigated agricultural acreage by watershed are based on the VCAILG membership database and also includes estimated irrigated acreage for parcels not enrolled in VCAILG.

³ California Department of Food and Agriculture. *California Agricultural Statistics Review 2014-2015*. Agricultural Statistics Overview.

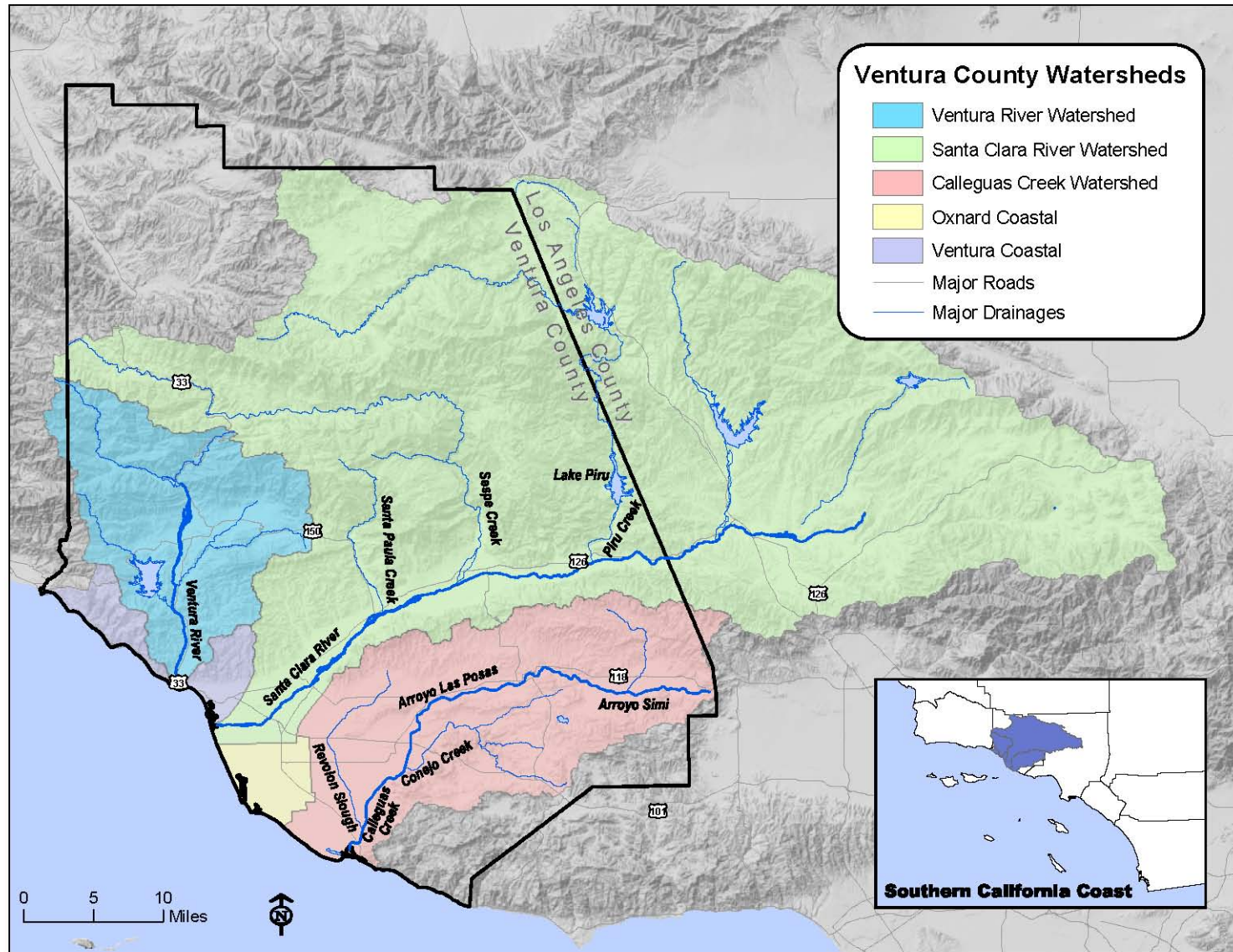


Figure 1. Ventura County Watersheds

Table 3. Ventura County's Leading Agricultural Commodities--2014

Commodity	Gross Value (\$)
1. Strawberries	627,964,000
2. Lemons	269,428,000
3. Raspberries	240,662,000
4. Nursery Stock	180,499,000
5. Celery	152,153,000
6. Avocados	127,978,000
7. Tomatoes	72,207,000
8. Peppers	67,268,000
9. Cut Flowers	47,615,000
10. Kale	35,932,000

Source: Ventura County Agricultural Commissioner. *Ventura County's Crop and Livestock Report 2014*. November 3, 2015.

Calleguas Creek Watershed

The Calleguas Creek Watershed (Figure 2) is approximately 30 miles long, 14 miles wide, and drains an area of approximately 343 square miles or 219,520 acres. Cities within the watershed include Camarillo, Thousand Oaks, Moorpark, and Simi Valley. 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 main waterbodies in the watershed include Calleguas Creek, Revolon Slough, Beardsley Channel, Conejo Creek, Arroyo Santa Rosa, Arroyo Las Posas and Arroyo Simi. All of these waterbodies appear on the federal 303(d) list of impaired waterbodies, triggering the requirement to develop Total Maximum Daily Loads (TMDLs) for specified pollutants identified as causing impairments. Runoff from irrigated agricultural lands has been identified as one of the sources of these water quality impairments for specified pollutants. To date, TMDLs have been adopted for Nitrogen Compounds, Trash, Organochlorine Pesticides, Polychlorinated Biphenyls (PCBs) and Siltation, Toxicity, Metals and Selenium, and Salts.

At the northwest end of the Oxnard Plain lies a small coastal watershed that drains to McGrath Lake. A TMDL has been adopted to address pesticides and PCBs impairments in the lake. This TMDL applies to the area within the Oxnard Coastal watershed that drains to the Central Ditch at Harbor Boulevard. Another portion of the Oxnard Plain drains to the Channel Islands Harbor in the City of Oxnard. For this drainage area, a TMDL addressing bacteria has been adopted.

Avocados and citrus crops such as lemons and oranges are typically grown in flat or gently sloping foothill areas in the watershed. Agricultural land located on the Oxnard Plain is planted predominately in a wide variety of truck crops, including strawberries, raspberries, peppers, green beans, celery, and onions, as well as sod farms and nurseries. Many farms located in the watershed grow multiple crops during a single calendar year. This multi-cropping technique is most common in the lower parts of the watershed, adjacent to Revolon Slough and Lower Calleguas Creek. Figure 2 shows the distribution of crop types throughout the Calleguas Creek and Oxnard Coastal Watersheds.

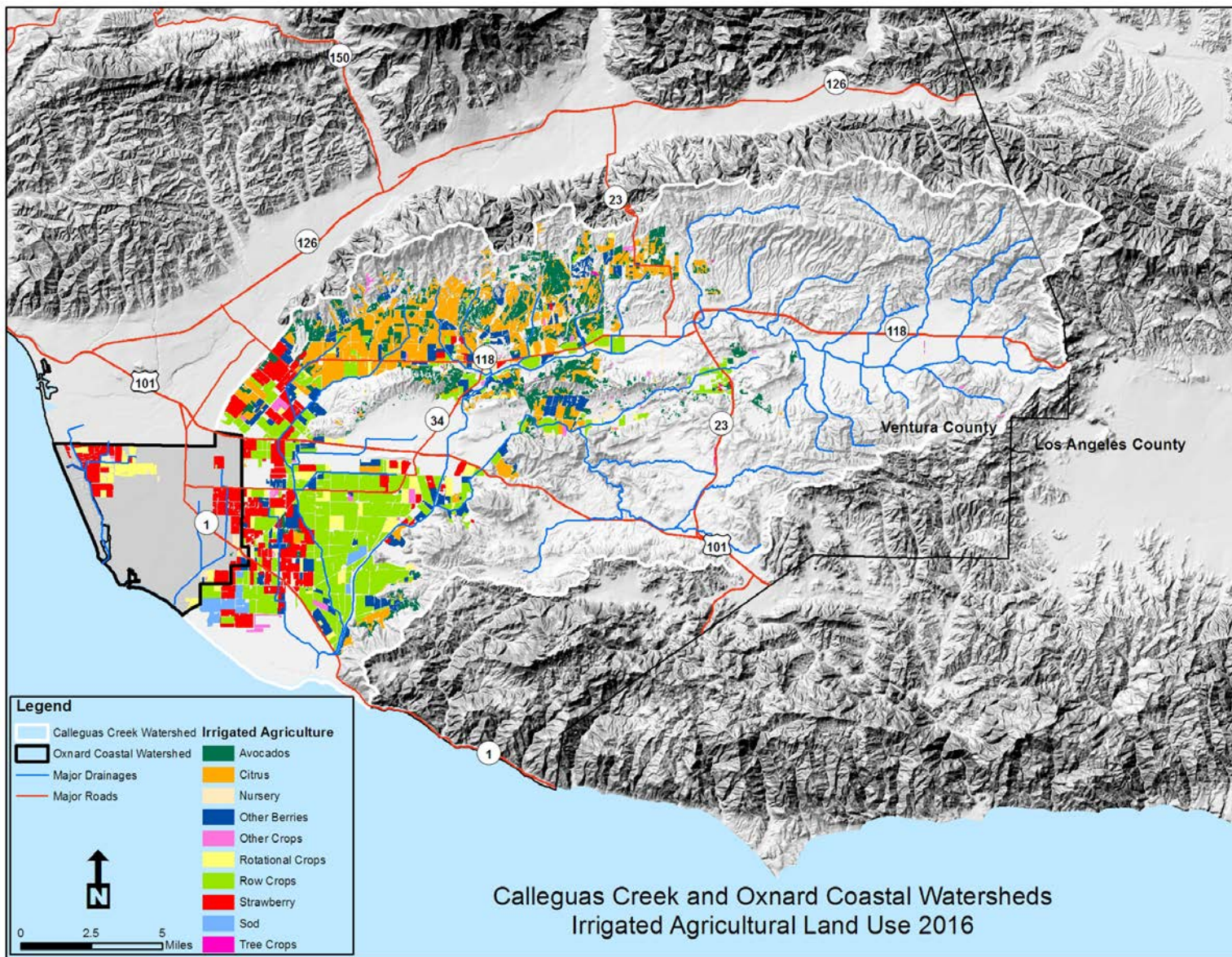


Figure 2. Calleguas Creek and Oxnard Coastal Watersheds Agricultural Land Use

Santa Clara River Watershed

The Santa Clara River is the largest river system in southern California remaining in a relatively natural state. The river originates in the northern slope of the San Gabriel Mountains in Los Angeles County, traverses Ventura County, and flows into the Pacific Ocean halfway between the cities of San Buenaventura and Oxnard. The Santa Clara River and tributary system has a watershed area of about 1,634 square miles (Figure 3). Cities within the watershed include Ventura, Santa Paula, Fillmore, Piru, Santa Clarita, and Newhall. Within Ventura County, major tributaries the Sespe, Piru, and Santa Paula Creeks. Approximately 60 percent of the watershed is located in Ventura County. The most prevalent land use in the 500-year flood plain of the Santa Clara River is agriculture (62 percent), followed by industry (22 percent). Row crops and orchards are planted across the valley floor primarily in Ventura County and extend up adjacent slopes.

Several Santa Clara River reaches and tributaries appear on the federal 303(d) list of impaired waterbodies due to salts, nitrogen compounds, bacteria, and pesticides. TMDLs have been adopted for Nitrogen Compounds (upper and lower Santa Clara River reaches), Chloride (Reach 4B) and Bacteria (Estuary and Reaches 3, 5, 6, and 7). A TMDL for toxaphene in the Santa Clara River Estuary was incorporated in the 2010 *Conditional Waiver* as a single regulatory action and is also included in the 2016 *Conditional Waiver*.

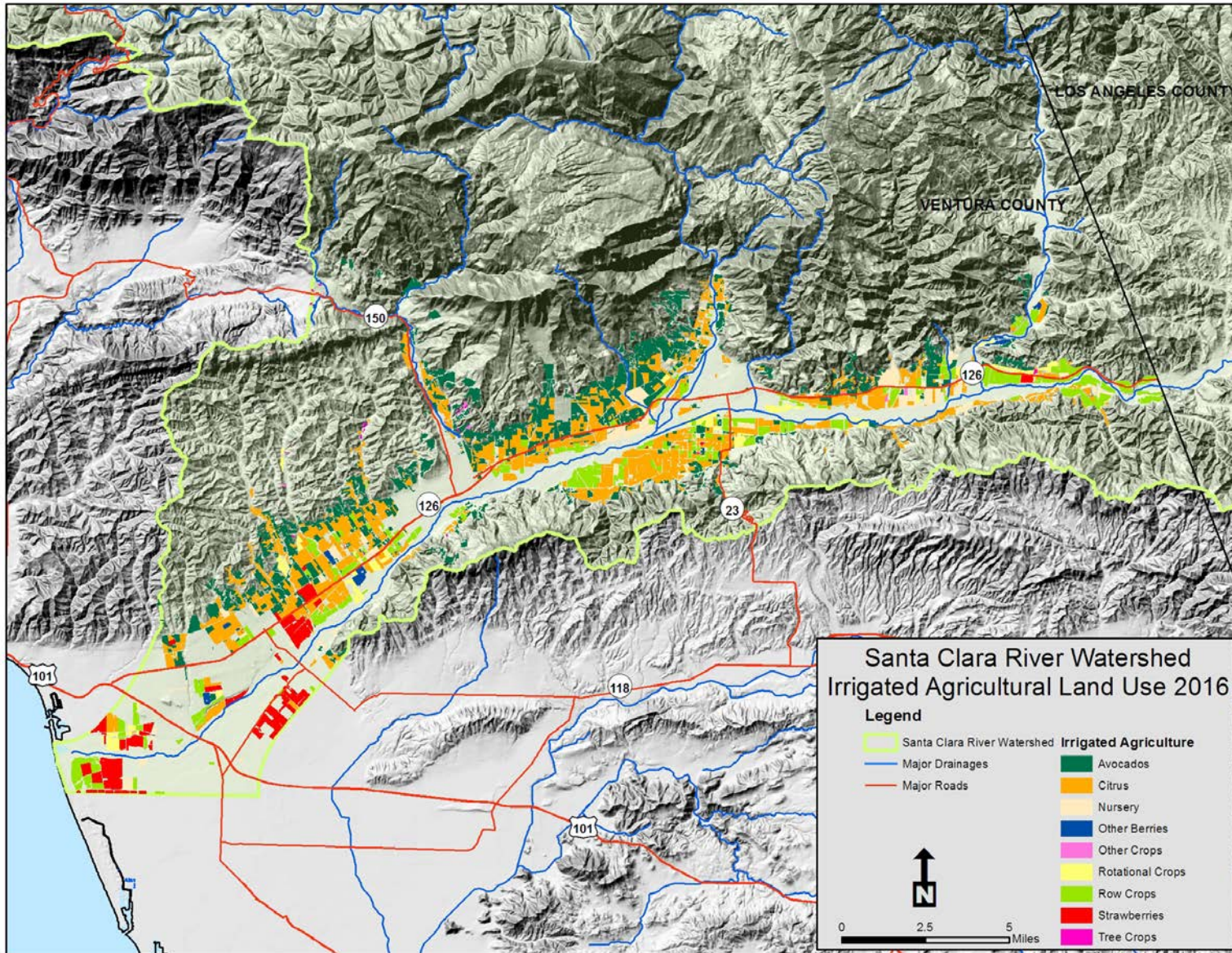


Figure 3. Santa Clara River Watershed Agricultural Land Use

Ventura River Watershed

The Ventura River and its tributaries drain a coastal watershed in western Ventura County. The watershed covers a fan-shaped area of 235 square miles, which is located within the western Transverse Ranges and is 31 miles long from upper Matilija Canyon to the Pacific Ocean (Figure 4). From the upper slopes of the Transverse Ranges, the surface water system in the Ventura River Watershed generally flows in a southerly direction to the estuary, located at the mouth of the Ventura River. Main tributaries in the watershed include Matilija Creek, Coyote Creek and San Antonio Creek. The City of Ojai and communities of Meiners Oaks, Oak View and Casitas Springs are located in the watershed, with surrounding suburban and agricultural areas comprising the Ventura River, Santa Ana, and Upper Ojai Valleys. Portions of the City of San Buenaventura border the lower reaches of the Ventura River. Irrigated agriculture constitutes approximately five percent of land uses in the watershed, with avocado and citrus as the predominant crops grown.

Several Ventura River reaches and tributaries appear on the federal 303(d) list of impaired waterbodies due to Algae/Eutrophic Conditions, Bacteria, Pumping/Water Diversion, and Trash. The Ventura River Estuary Trash TMDL became effective in 2008. A TMDL for algae, eutrophic conditions, and nutrients became effective in July 2013 (Algae TMDL). In its approval notice for the Algae TMDL, the USEPA determined that the Algae TMDL addresses the beneficial use impairments on the 303(d) list identified as being caused by pumping and water diversions. Consequently, a separate TMDL for pumping and water diversions is not expected to be adopted.

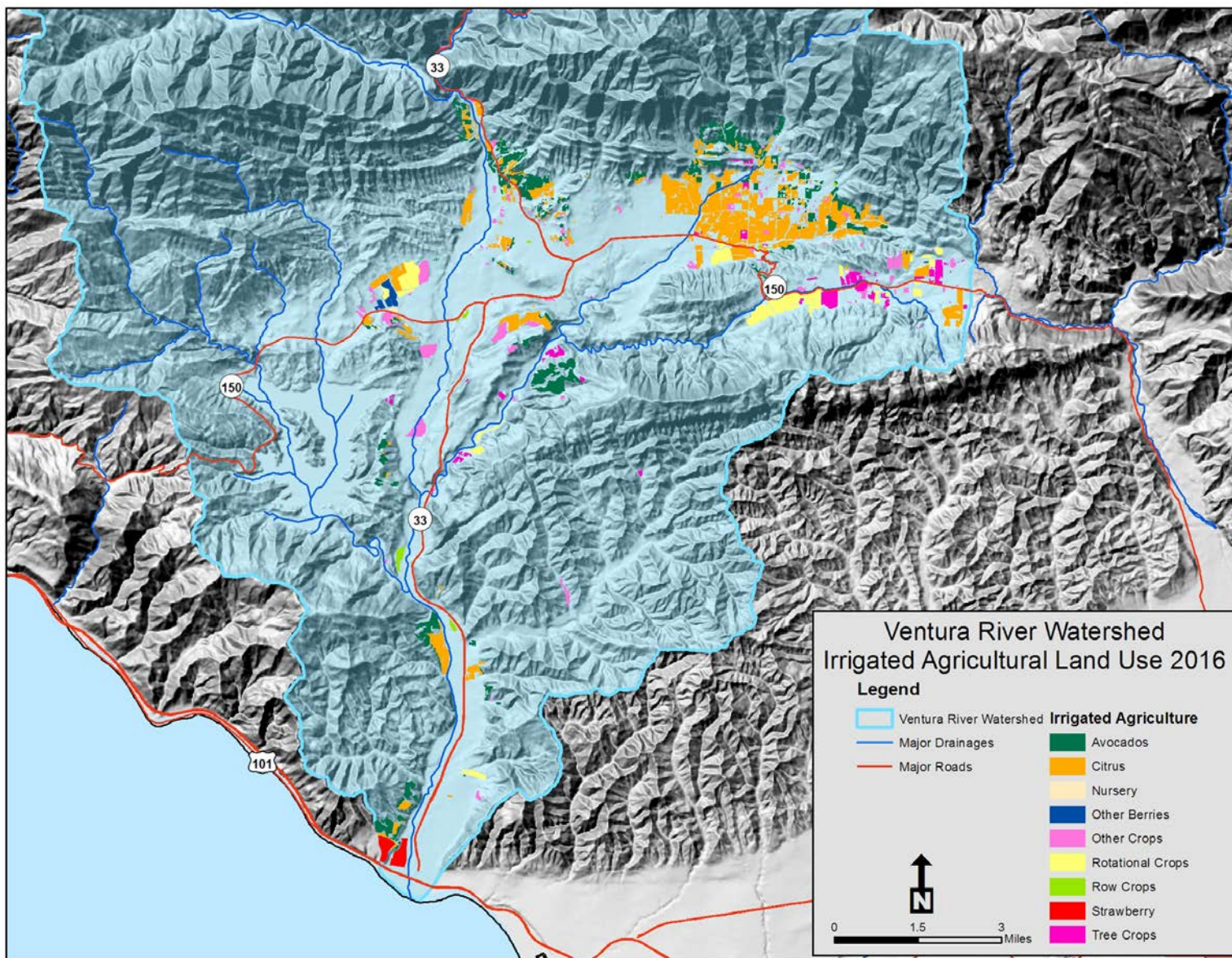


Figure 4. Ventura River Watershed Agricultural Land Use

VCAILG PARTICIPATION IN TMDLS

Within Ventura County, the VCAILG plays an active role in facilitating the participation of agriculture in TMDL development and implementation processes. Acting on behalf of its members, the VCAILG representatives participate in stakeholder meetings, provide comments, and contribute to cooperative agreements. For example, the VCAILG is a participant and funding partner of the Calleguas Creek Watershed TMDL implementation effort and collaborates with the other responsible parties in implementing the two effective trash TMDLs within the County.

Effective TMDL monitoring requirements have been incorporated into both the 2010 and 2016 *Conditional Waivers* (Order No. R4-2010-0186 and R4-2016-0143, respectively). The VCAILG coordinates with established TMDL monitoring programs or conducts additional monitoring where necessary in order to meet TMDL requirements. Where coordinated efforts to meet TMDL requirements are not in place, this annual report includes information regarding agriculture's monitoring and compliance. Separate annual monitoring reports are produced for some TMDL monitoring programs; rather than duplicate these efforts those reports are incorporated herein by reference, where appropriate.

Several TMDLs became effective during the 2010 waiver period and were added to the 2016 *Conditional Waiver*. Monitoring approaches to meet the requirements of these TMDLs are included in the 2016 VCAILG MRP (which has not yet been approved). Therefore, monitoring has not yet begun for a number of the TMDLs listed in the new waiver.

Water Quality Monitoring

MONITORING OBJECTIVES

The objectives of the VCAILGMP required under the *Conditional Waiver* include the following:

- Assess the impacts of waste discharges from irrigated agricultural lands on waters of the state,
- Evaluate the effectiveness of management practices to control waste discharges,
- Track progress in reducing the amount of waste discharged to waters of the state to improve water quality and protect beneficial uses, and
- Assess compliance with discharge limitations, where applicable.

MONITORING SITE SELECTION

The first step toward fulfilling monitoring program objectives was selecting appropriate monitoring sites. The following describes the site selection process for the 2010 *Conditional Waiver*, which the monitoring data contained in this report was collected to comply with. Because the focus of the program is on impacts to surface waterbodies from discharges from irrigated agricultural lands, monitoring sites were selected to best characterize agricultural inputs and are generally located at the lower ends of mainstem tributaries or agricultural drainages in areas associated primarily with agricultural activity. During monitoring conducted under the 2010 *Conditional Waiver*, a background (“BKGD”) site was chosen for one of the Santa Clara River Watershed sites in the natural area upstream. Calleguas Creek Watershed sites supplement monitoring performed under the Calleguas Creek Watershed TMDL Monitoring Program (CCWTMP) and retain consistency with previous VCAILG sampling. Monitoring sites in the

Santa Clara River and Ventura River Watersheds were selected to continue building on existing data previously collected by VCAILG and meet TMDL requirements, where applicable.

The specific criteria for selection of monitoring sites are as follows:

- Land use (primarily agricultural drainages);
- Subwatershed representation;
- Acres of agricultural irrigated lands represented;
- Proximity to agricultural operations;
- Previous or existing monitoring locations under the *2005 Conditional Waiver* or TMDL monitoring programs;
- Drainage into waterbodies included on or proposed for the federal Clean Water Act 303(d) list of impaired waterbodies;
- Size and complexity of watershed;
- Size and flow of waterbodies; and,
- Safe access during dry and wet weather.

Table 4 lists monitoring sites selected in each watershed and associated global positioning system (GPS) coordinates for sampling 2010 *Conditional Waiver* Appendix 1, Table 1 constituents. Table 5 lists monitoring sites and GPS coordinates for effective TMDL monitoring locations.

A new requirement per the 2016 *Conditional Waiver* is the inclusion of maps showing the land area draining each monitoring site as well as the HUC-12 watershed in which each site is located. Figure 5 through Figure 9 show site locations for all monitoring sites within each watershed and include drainage areas and HUC-12 boundaries.

The format for the monitoring site ID/code is XXXA_YYYY_ZZZZ, where:

- “XXX” is a 2- or 3-character code that identifies the mainstem receiving water reach (where applicable) into which the monitored waterbody drains;
- “A” identifies the monitored waterbody as an agricultural drain (D) or a tributary (T) to the receiving water;
- “YYYY” is a 3-, 4-, or 5-character abbreviation for the site location;
- “ZZZZ” is an optional 3-, 4-, or 5-character abbreviation that provides additional site location information (*e.g.*, “BKGD” indicates a background site).

Examples:

S03D_BARDS signifies that the monitoring site is an agricultural drain located in the Santa Clara River Watershed. The site is located along Bardsdale Avenue.

S04T_TAPO_BKGD signifies that this a background monitoring site located on Tapo Creek, which is a tributary to the Santa Clara River, Reach 4.

Table 4. VCAILGMP Monitoring Locations for *Conditional Waiver* Constituents

Watershed / Subwatershed	Station ID	Reach	Waterbody Type ¹	Station Location	GPS Coordinates ²	
					Latitude	Longitude
Calleguas Creek / Mugu Lagoon	01T_ODD3_ARN	1	T	Rio de Santa Clara/Oxnard Drain #3 at Arnold Rd.	34.123564	-119.156514
Calleguas Creek / Revolon Slough	04D_ETTG	4	D	Discharge to Revolon Slough at Etting Rd.	34.161797	-119.091419
	04D_LAS	4	D	Discharge to Revolon Slough at S. Las Posas Rd.	34.134208	-119.079767
Calleguas Creek / Beardsley Channel	05D_LAVD	5	T	La Vista Drain at La Vista Ave.	34.265950	-119.093589
	05T_HONDO	5	T	Hondo Barranca at Hwy. 118	34.263608	-119.057431
Calleguas Creek / Arroyo Las Posas	06T_LONG2	6	T	Long Canyon at Balcom Canyon Rd. crossing	34.281721	-118.958565
Oxnard Coastal	OXD_CENTR	--	D	Central Ditch at Harbor Blvd.	34.220555	-119.254983
	S02T_ELLS	2	T	Ellsworth Barranca at Telegraph Rd.	34.306805	-119.141275
	S02T_TODD	2	T	Todd Barranca at Hwy. 126	34.313584	-119.117095
	S03T_TIMB	3	T	Timber Canyon at Hwy. 126	34.370172	-119.020939
	S03T_BOULD	3	T	Boulder Creek at Hwy. 126	34.389578	-118.958738
	S03D_BARDS	3	D	Discharge along Bardsdale Ave. upstream of confluence with Santa Clara River	34.371535	-118.964470
	S04T_TAPO	4	T	Tapo Canyon Creek	34.401717	-118.723706
	S04T_TAPO_BKGD	4	B	S04T_TAPO background site upstream of agricultural operations	34.387316	-118.7204509
Ventura River	VRT_THACH	--	T	Thacher Creek at Ojai Avenue	34.446719	-119.210893
	VRT_SANTO	--	T	San Antonio Creek at Grand Avenue	34.454455	-119.221723

1. T = Tributary to receiving water; D = agricultural Drain; B = Background site.

2. All GPS coordinates presented in decimal degrees latitude and longitude in North American Datum 1983 (NAD83).

Table 5. Monitoring Locations for Effective TMDLs Monitored According to the 2010 Conditional Waiver VCAILG MRP

Watershed/ Subwatershed	Site ID	Reach	Waterbody Type ¹	Site Location	GPS Coordinates ²	
					Latitude	Longitude
Santa Clara River	S01D_MONAR	1	D	Drain entering SCR Estuary at Monarch Lane between Harbor Blvd. and Victoria Ave.	34.2333	-119.2413
	S02T_ELLS	2	T	Ellsworth Barranca at Telegraph Rd.	34.3068	-119.1413
Oxnard Coastal/ McGrath Lake	OXD_CENTR	--	D	Central Ditch at Harbor Blvd.	34.2206	-119.2550
Oxnard Coastal/ Channel Islands Harbor	CIHD_VICT	--	D	Discharge to Doris Drain at S. Victoria Ave.	34.2099	-119.2207

1. T = Tributary to receiving water; D = agricultural Drain

2. All GPS coordinates presented in decimal degrees latitude and longitude in North American Datum 1983 (NAD83).

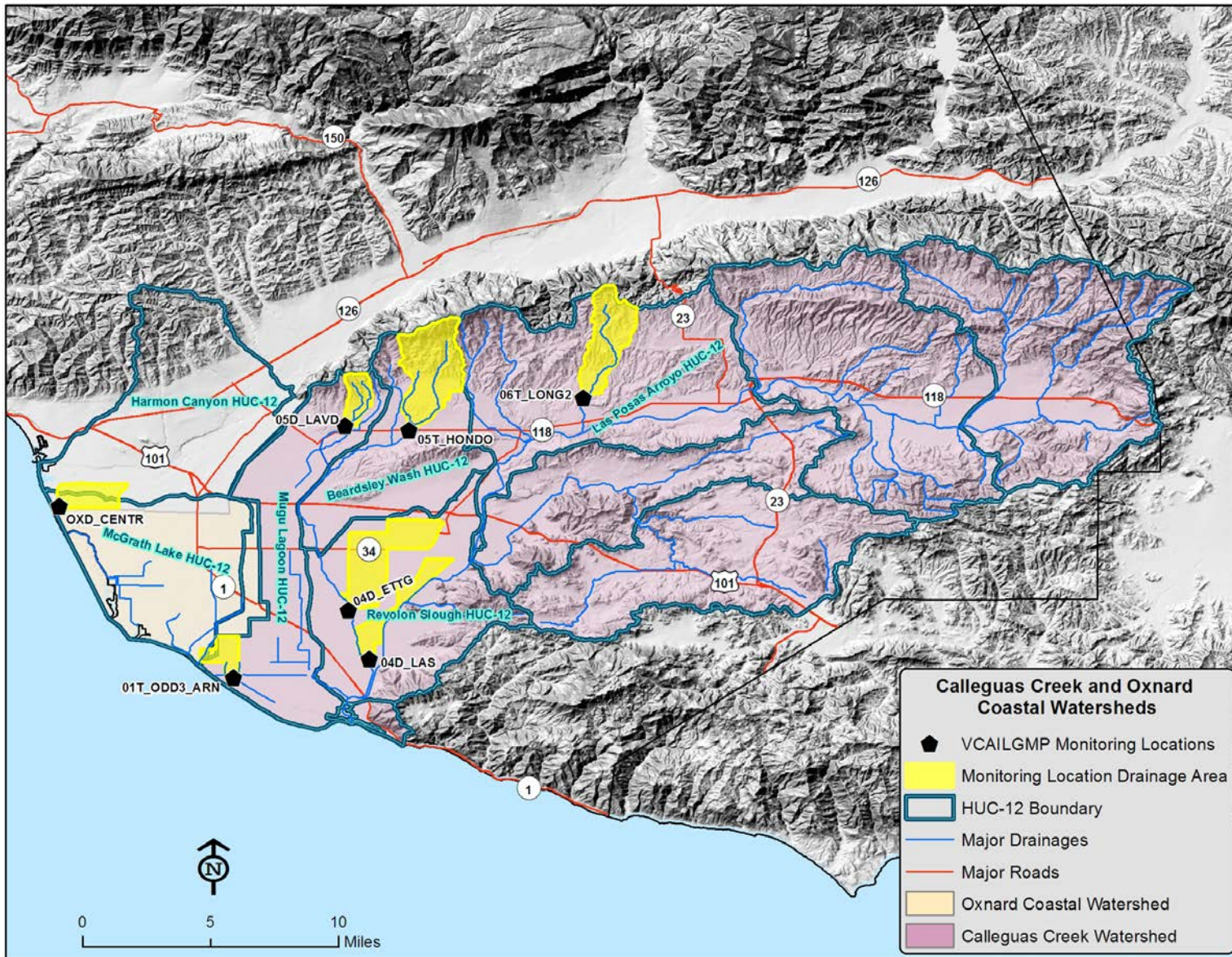


Figure 5. VCAILG Monitoring Sites in the Calleguas Creek/Oxnard Coastal Watersheds

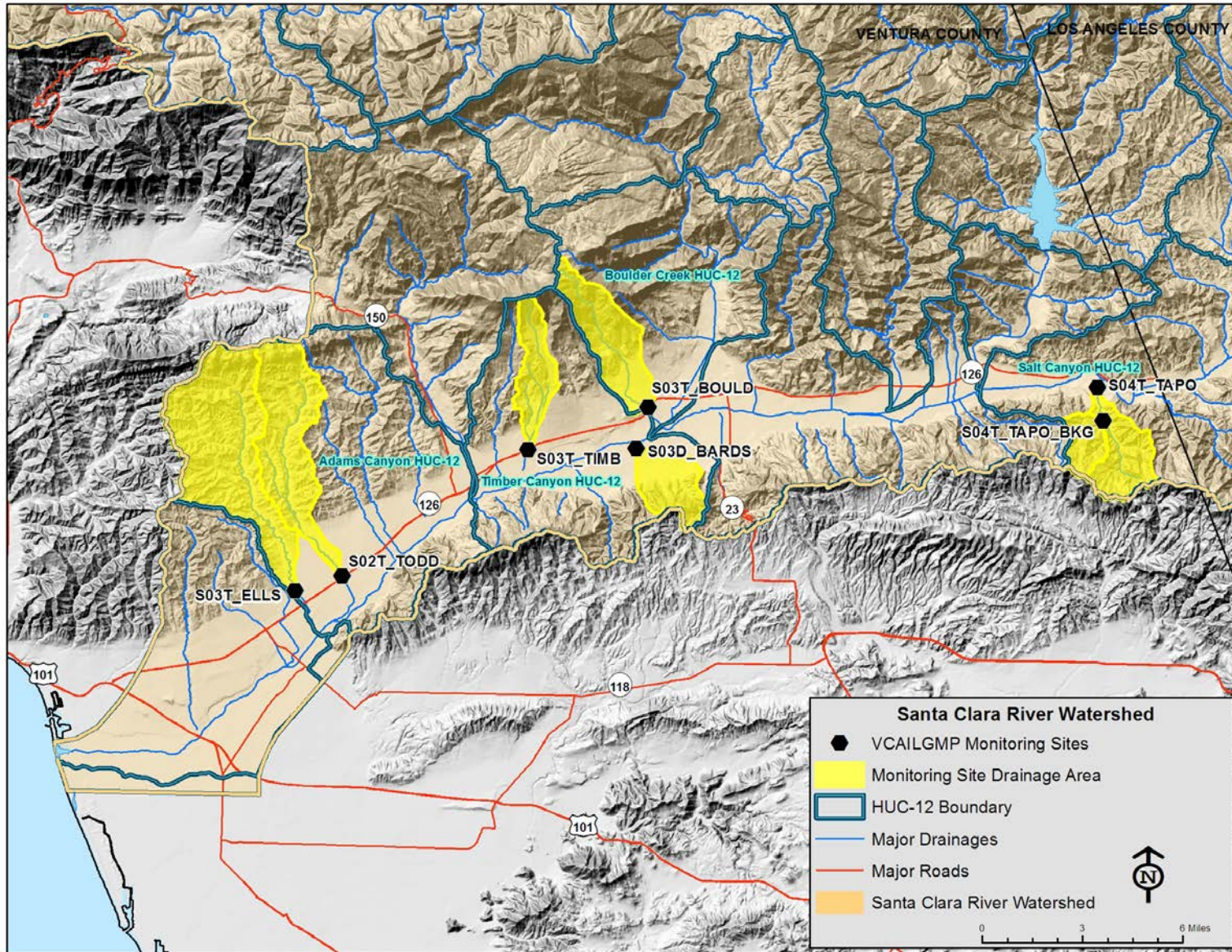


Figure 6. VCAILG Monitoring Sites Located in the Santa Clara River Watershed

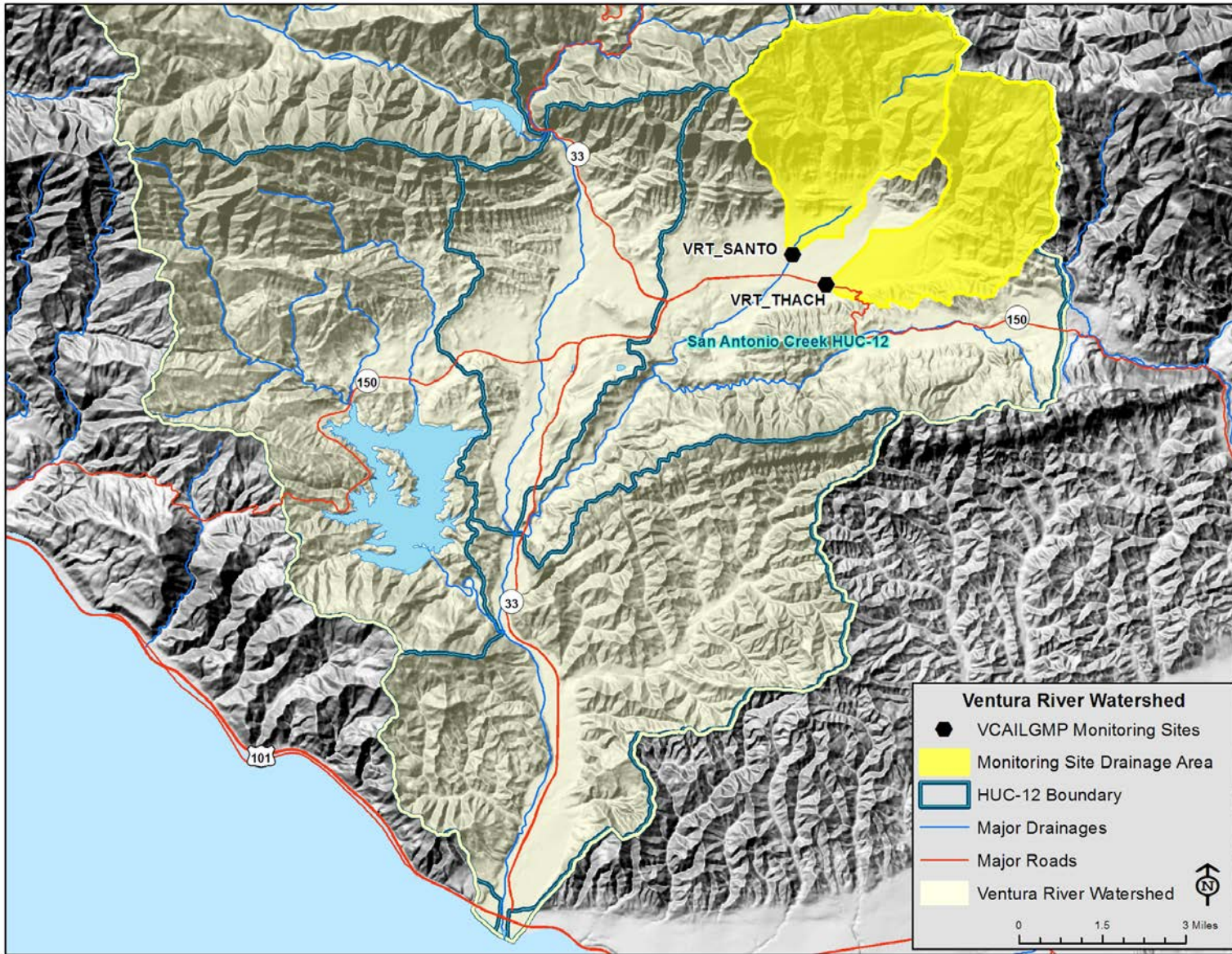


Figure 7. VCAILG Monitoring Sites Located in the Ventura River Watershed

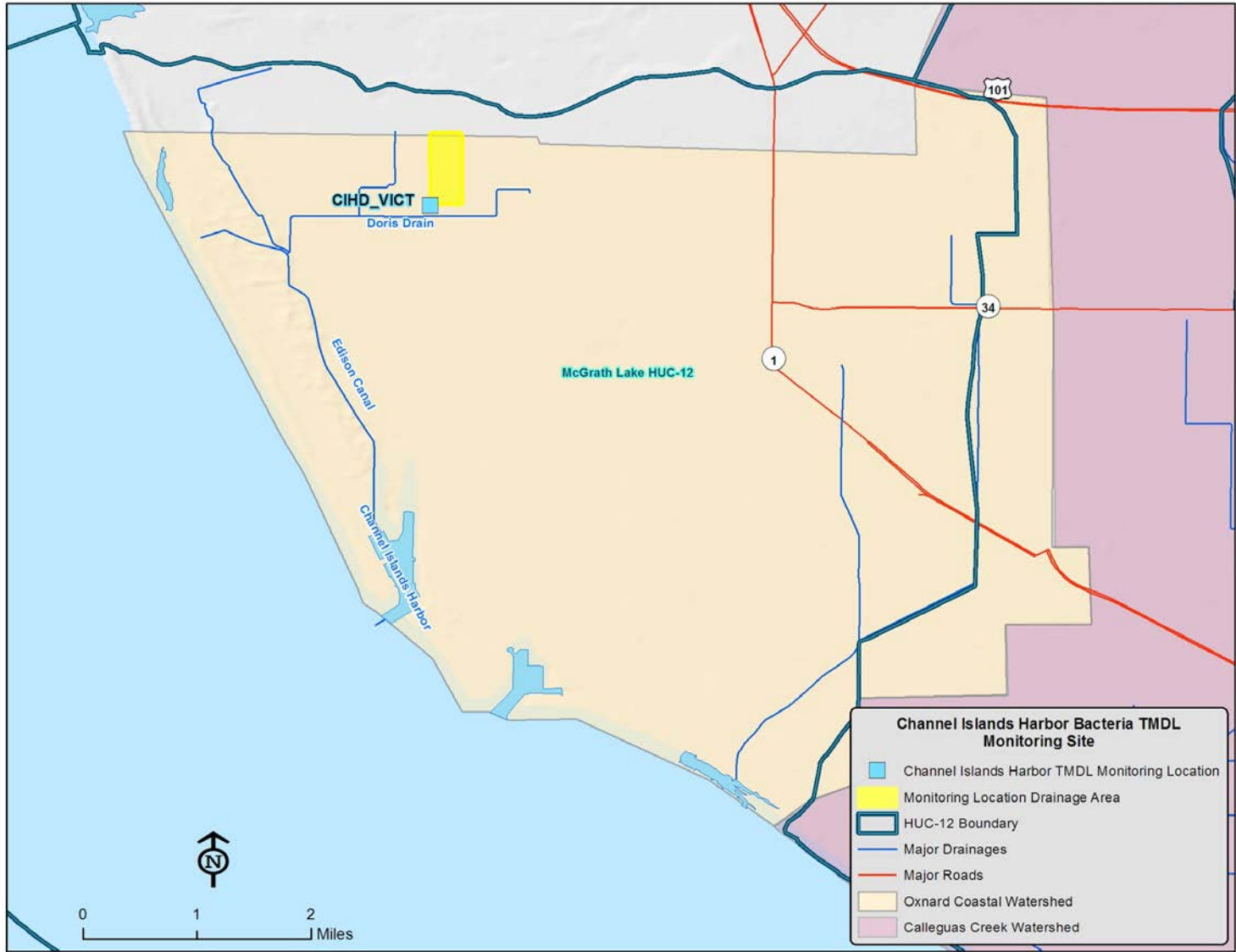


Figure 8. Channel Islands Harbor Bacteria TMDL Monitoring Site

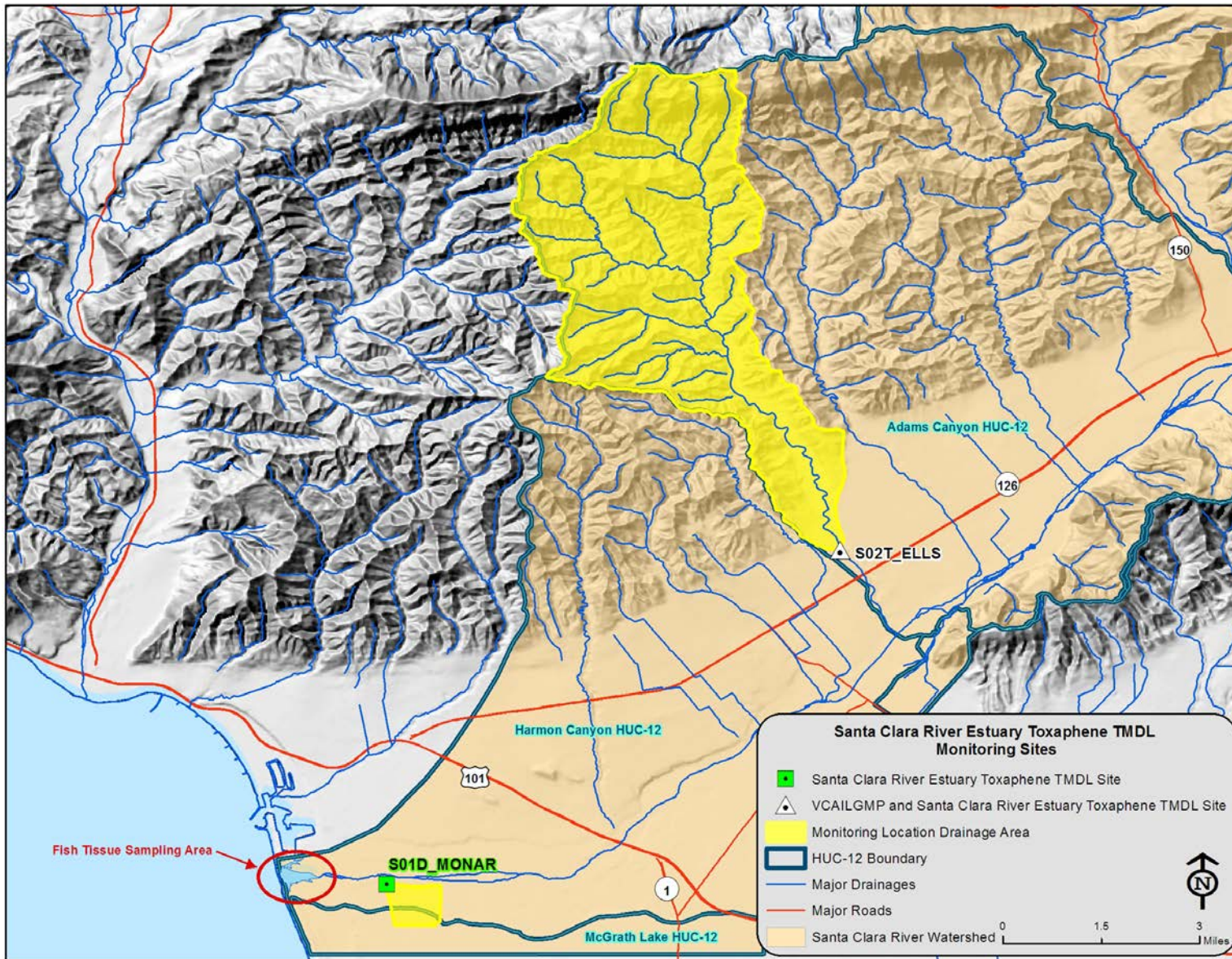


Figure 9. Santa Clara River Estuary Toxaphene TMDL Monitoring Sites

Table 6. Estimated Irrigated Acreage Represented at 2010 Conditional Waiver VCAILG MRP Monitoring Sites

Station ID	Irrigated Agricultural Acreage ^{1,2}									Drainage Area Acres
	Row Crops	Citrus	Avocados	Tree Crops	Strawberries	Other Berries	Sod	Nursery	Other Crops	
01T_ODD3_ARN	308						345		7	800
04D_ETTG	2,186	117			219	176			25	3,309
04D_LAS	1051				14		138	4	4	1,339
05D_LAVD	59	341	224			134			2	877
05T_HONDO	26	1,670	674	2		118		25	3	3,928
06T_LONG2	39	472	743		19	178		88	17	2,813
OXD_CENTR ³	389				466			85		1,243
S02T_ELLS ³	110	580	646	<1					8	9,015
S02T_TODD	143	838	224	3				64	19	5,748
S03D_BARDS	50	905	158					17	2	2,214
S03T_BOULD	10	202	1,084					151		3,764
S03T_TIMB	33	250	496	2		1				2,183
S04T_TAPO	228	98						54		3,686
VRT_SANTO		415	268	17					8	7,220
VRT_THACH	6	797	156	13				3	67	6,003
S01D_MONAR ⁴					346					209
CIHD_VICT ⁴					108					99

1. Data Source: Ventura County Agricultural Commissioner's Office, September 2016.

2. Some acreage is double or triple counted due to multi-cropping practices.

3. This site is monitored for 2010 Conditional Waiver Appendix 1, Table 1 constituents and for an applicable TMDL.

4. This is a TMDL specific monitoring site that is sampled according to the VCAILG MRP approved under the 2010 Conditional Waiver.

PARAMETERS MONITORED AND MONITORING FREQUENCY

***Conditional Waiver* Monitoring Constituents and Frequency**

The *Conditional Waiver* specifies the constituents to be monitored during each monitoring event (Table 7) as well as the monitoring frequency. Per the *Conditional Waiver*, monitoring is required twice during the wet season and twice during the dry season. In addition, toxicity monitoring is required during one wet event and once during the dry season each year. The wet season is October 15th through May 15th and the dry season is from May 16th through October 14th. Wet season samples shall be collected within 24 hours of a storm occurring with precipitation totals greater than 0.5 inch. The initial dry weather monitoring event shall be completed after the application of pesticides or fertilizers during the period when irrigation is required.

In 2015-2016, storm monitoring occurred on January 6, 2016, and March 7, 2016. Dry weather monitoring occurred on August 6, 2015 and May 26, 2016. Wet weather toxicity samples were collected during Event 27 on January 6, 2016. Dry weather toxicity samples were collected during the second dry weather event on May 26, 2016.

Table 8 provides a summary of monitoring sites and constituents that were monitored during the wet and dry weather monitoring events in 2015 and 2016. Field measurements were also collected at the sites where samples were collected.

Table 7. Constituents and Monitoring Frequency for the 2010 Conditional Waiver VCAILGMP

Constituent	Frequency ¹
Field Measurements	
Flow, pH, Temperature, Dissolved Oxygen, Turbidity, Conductivity	
General Water Quality Constituents (GWQC)	
Total Dissolved Solids (TDS), Total Suspended Solids (TSS), Hardness, Chloride, Sulfate	
Nutrients	
Total Ammonia-N, Nitrate-N, Phosphate	2 dry events; 2 wet events
Pesticides	
Organochlorine Pesticides ² , Organophosphorus Pesticides ³ , Pyrethroid Pesticides ⁴	
Metals	
Dissolved Copper, Total Copper	
Trash	
Trash observations	1 wet event; second dry event
Aquatic Chronic Toxicity	

1. The "wet" season is defined as October 15th through May 15th; the "dry" season is defined as May 16th through October 14th each year.
2. Organochlorine Pesticides include: 2,4'-DDD, 2,4'-DDE, 2,4'-DDT, 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, aldrin, BHC-alpha, BHC-beta, BHC-delta, BHC-gamma, chlordane-alpha, chlordane-gamma, dieldrin, endosulfan sulfate, endosulfan I, endosulfan II, endrin, endrin aldehyde, endrin ketone, and toxaphene.
3. Organophosphorus Pesticides include: bolstar, chlorpyrifos, demeton, diazinon, dichlorvos, disulfoton, ethoprop, fenchlorphos, fensulfathion, fenthion, malathion, merphos, methyl parathion, mevinphos, phorate, tetrachlorvinphos, tokuthion, and trichloronate.
4. Pyrethroid Pesticides include: allethrin, bifenthrin, cyfluthrin, cypermethrin, danitol, deltamethrin, esfenvalerate, fenvalerate, lambda-cyhalothrin, permethrin, and prallethrin.

Table 8. VCAILG Sites Monitored and Constituents Sampled in 2015-2016

Watershed / Subwatershed	Site ID	Reach	Yearly Events ¹			
			Dry 8/6/2015	Wet 1/6/2016	Wet 3/7/2016	Dry 5/26/2016
Calleguas Creek / Mugu Lagoon	01T_ODD3_ARN	1	WQ	WQ ²	WQ	WQ, TOX
Calleguas Creek / Revolon Slough	04D_ETTG	4	WQ	WQ	WQ	WQ
	04D_LAS	4	WQ	WQ ²	WQ	WQ
Calleguas Creek / Beardsley Channel	05D_LAVD	5	WQ	WQ, TOX	WQ	WQ ³
	05T_HONDO	5	WQ ³	WQ, TOX	WQ	WQ ³
Calleguas Creek / Arroyo Las Posas	06T_LONG2	6	WQ ³	WQ ³ , TOX	WQ ³	WQ ³
Oxnard Coastal	OXD_CENTR	--	WQ	WQ	WQ	WQ ³
Santa Clara River	S02T_ELLS	2	WQ ³	WQ, TOX	WQ	WQ, TOX
	S02T_TODD	2	WQ	WQ, TOX	WQ	WQ, TOX
	S03T_TIMB	3	WQ ³	WQ, TOX	WQ	WQ ³
	S03T_BOULD	3	WQ ³	WQ, TOX	WQ	WQ ³
	S03D_BARDS	3	WQ ³	WQ	WQ	WQ
	S04T_TAPO	4	WQ	WQ, TOX	WQ	WQ, TOX
	S04T_TAPO_BKGD	4		WQ ²	WQ ²	WQ
Ventura River	VRT_THACH	--	WQ ³	WQ, TOX	WQ	WQ ³
	VRT_SANTO	--	WQ ³	WQ, TOX	WQ ³	WQ ³

TOX = Toxicity

WQ = All water quality constituents listed in Table 7, excluding toxicity, which is noted separately

1. Toxicity testing was performed during the first wet event and the second dry event.

2. No samples collected as site was inaccessible.

3. No samples collected due to insufficient flow/dry conditions.

TMDL Monitoring Constituents and Frequency

Monitoring for TMDL compliance is either prescribed in the adopted Basin Plan Amendment, or performed according to a TMDL Monitoring Plan, approved by the Regional Board Executive Officer. The following tables summarize the TMDL monitoring that was performed under the VCAILGMP. When appropriate, TMDL monitoring events were conducted at the same time as *Conditional Waiver* monitoring.

Calleguas Creek Watershed TMDL monitoring was completed per the CCWTMP QAPP and monitoring approach for the Calleguas Creek Watershed Salts TMDL. The *Calleguas Creek Watershed TMDL Compliance Monitoring Program Eighth Year Annual Monitoring Report* describes the TMDL monitoring program and results in detail.⁴ All efforts have been made to coordinate the VCAILG monitoring program and CCWTMP when timing sampling events. CCWTMP monitoring is conducted quarterly with an additional two storm events each year.

Table 9. Constituents and Frequency for TMDL Monitoring Performed Under the 2010 Conditional Waiver VCAILGMP

Site ID	Constituent ¹	Frequency
S01D_MONAR	Field Measurements TSS, toxaphene, chlordane, dieldrin (water)	2 dry events; 2 wet events
	Field Measurements Toxaphene, chlordane, dieldrin (filtered sediment)	2 wet events
S02T_ELLS	Toxaphene, chlordane, dieldrin (filtered sediment) ²	2 wet events
Santa Clara River Estuary	Toxaphene, chlordane, dieldrin (fish tissue)	Every three years
CIHD_VICT	Field Measurements <i>E. coli</i> , enterococcus, total coliform, fecal coliform	2 dry events; 2 wet events
OXD_CENTR	Total organic carbon, total PCBs (water)	2 dry events; 2 wet events ²
	Total organic carbon, total PCBs, DDT and derivatives, dieldrin, total chlordane (sediment)	Once after 1 st rain event; once after the wet season ²

1. This table only lists constituents necessary for data comparison with TMDL LAs that are not already collected at the specified site as part of the Table 7 VCAILGMP sampling.
2. TMDL monitoring at OXD_CENTR is for compliance with the McGrath Lake TMDL, which became effective after the adoption of the *Conditional Waiver*. Monitoring was conducted according to the September 21, 2012 conditional approval letter of the MRP and QAPP for the McGrath Lake TMDL Phase 1 Monitoring Program.

⁴ Larry Walker Associates. 2016. Calleguas Creek Watershed TMDL Compliance Monitoring Program Eighth Year Annual Monitoring Report. December 15, 2016.

Table 10. TMDL Sites Monitored and Constituents Sampled in 2015-2016

TMDL	Site ID	Yearly Events				
		Dry 8/6/2015	Wet 1/6/2016	Dry ¹ 1/13/2016	Wet 3/7/2016	Dry 5/26/2016
Santa Clara River Estuary Toxaphene TMDL	S01D_MONAR	OC-W TSS	OC-W OC-S TSS		OC-W OC-S TSS	OC-W TSS
	S02T_ELLS	OC-W TSS ²	OC-W OC-S TSS		OC-W OC-S TSS	OC-W TSS
	Santa Clara River Estuary	Frequency is every three years. Fish collection was not required this monitoring year				
Channel Islands Harbor Bacteria TMDL	CIHD_VICT	Bact	Bact		Bact	Bact ²
McGrath Lake PCBs, Pesticides and Sediment Toxicity TMDL	OXD_CENTR	OC-PCB-W TOC TSS	OC-PCB-W TOC TSS	OC-PCB-S TOC	OC-PCB- W TOC TSS	OC-PCB-W OC-PCB-S TOC TSS ³

OC-W = OC pesticides toxaphene, chlordane, and dieldrin in water

OC-S = OC pesticides toxaphene, chlordane, and dieldrin in filtered sediment

Bact = *E. coli*, enterococcus, total coliform, fecal coliform

OC-PCB-W = OC pesticides chlordane, dieldrin, DDT and derivatives, total PCBs in water

OC-PCB-S = OC pesticides chlordane, dieldrin, DDT and derivatives, total PCBs in sediment

TOC = Total Organic Carbon

TSS = Total Suspended Solids

1. Event specific to monitoring sediment for the McGrath Lake TMDL.

2. Site not sampled due to insufficient flow/dry conditions.

3. Site not sampled for water quality parameters due to stagnant conditions. Sediment samples were collected.

SAMPLING METHODS

The VCAILG QAPP contains requirements for sampling procedures that are designed to ensure that high-quality data are generated through the VCAILGMP. Field crews are trained to adhere strictly to standard operating procedures for all aspects of monitoring, including use of sample containers that are appropriate to each constituent or constituent group analyzed, avoiding potential sources of contamination, and accurately completing field log sheets and chain-of-custody forms, to name a few examples.

Samples were collected either by the direct immersion technique or by using a secondary container; filled sample containers were immediately put on ice in an ice chest. Notes regarding sample bottle fill method and sample collection depth can be found in the field log sheets (Appendix B).

Flow measurements were performed according to the standard operating procedure included in Appendix C-1 of the QAPP using either current-meter or float measurements. During wet events, the float method of measuring flow is most practical. At some sites, channel depth was estimated using a reference photo, painted gauge, or other appropriate tool. Estimated flows are qualified as such in the field data (Appendix C) and site summary tables. *Flow estimates made during the wet event, therefore, should be regarded as gross estimates and used with discretion.*

Flow measurements were made according to the standard operating procedure included in Appendix C-1 of the QAPP, as previously noted.

During all monitoring events, a Hydrolab MS5 Data Sonde was used to measure a number of parameters in situ, including temperature, pH, dissolved oxygen, conductivity, and turbidity. Data and information collected at each monitoring site were recorded on a field log sheet. The completed field log sheets for each event are included with this Annual Report as Appendix B, which is included on the Annual Report Data CD. Information recorded on the field log sheet at each monitoring site includes the following:

- Field crew initials;
- Date and time samples were collected;
- Water quality results for constituents measured using field probes (pH, temperature, conductivity, etc.);
- Measurements supporting flow calculations (channel width, depth, water velocity);
- Observations regarding the weather, water color and odor, contact and non-contact recreation, instream activity, the presence of foreign matter, trash counts and types, wildlife, etc.;
- Vegetation and channel substrate (*i.e.*, concrete, cobble, sand, etc.) observations.

Information entered on field log sheets is ultimately entered into the VCAILGMP database for reporting. Field data are included with this Annual Report in Appendix C, which can be found on the Annual Report Data CD. Photo documentation of each monitoring site for all four events is also included on the Annual Report Data CD as Appendix D.

Samples were transported back to FGL Environmental Laboratory in Santa Paula, where chain-of-custody (COC) documentation was completed and toxicity samples were prepared for overnight delivery to the toxicity testing laboratory, Pacific EcoRisk (PER). A courier picked up the samples to be analyzed at Physis Environmental Laboratories and delivered them according to the requirements of the QAPP.

The completed COC forms are included this Annual Report as Appendix E; also included on the Annual Report Data CD.

ANALYTICAL METHODS

Table 11 provides a summary of analytical methods used by contract laboratories for analyzing samples collected for 2010 *Conditional Waiver* constituents during the 2015-2016 monitoring year. Table 12 lists analytical methods for TMDL constituents monitored as part of the VCAILGMP. Refer to the CCWTMP QAPP for methods used on samples collected for that monitoring program.

Table 11. Analytical Methods for Conditional Waiver Constituents

Constituent	Analytical Method
Aquatic Chronic Toxicity ¹	
<i>Ceriodaphnia dubia</i> (water flea) ²	EPA-821-R-02-013 and EPA 600-4-91-002
<i>Pimephales promelas</i> (fathead minnow) ³	
<i>Selenastrum capricornutum</i> (green algae) ⁴	
General Water Quality Constituents (WQ)	
Flow, pH, Temperature, Dissolved Oxygen, Conductivity, Turbidity	Field Measurement
Total Dissolved Solids (TDS)	SM 2540C
Total Suspended Solids (TSS)	SM 2540D
Chloride	EPA 300.0
Sulfate	EPA 300.0
Hardness	SM 2340B
Nutrients	
Total Ammonia-N	SM 4500-NH ₃ F
Nitrate-N	EPA 300.0
Phosphate (Total Orthophosphate as P)	SM4500-PE
Metals	
Total and Dissolved Copper	EPA 200.8
Organic Constituents ⁵	
Organochlorine Pesticides ⁶	EPA 625
Organophosphorus Pesticides	EPA 625
Pyrethroid Pesticides	EPA 625-NCI

1. Chronic toxicity tests were performed on three species for the first toxicity monitoring event where water was present at each particular site, after which the most sensitive species was selected for use in subsequent monitoring events.
2. If sample conductivity exceeded 3000 uS/cm, *Hyalella azteca* was used for toxicity testing.
3. If sample conductivity exceeded 3000 uS/cm, *Menidia beryllina* was used for toxicity testing.
4. If sample conductivity exceeded 3000 uS/cm, *Thalassiosira pseudonana* was used for toxicity testing.
5. See Table 7 for the list of constituents in each pesticide group.
6. Toxaphene is analyzed using EPA 625-NCI.

Table 12. TMDL Analytical Methods for Laboratory Analyses Performed Under the 2010 Conditional Waiver VCAILGMP

Constituent ¹	Analytical Method
OC Pesticides (filtered sediment)	EPA 8270C
OC Pesticides (fish tissue)	EPA 8280C
<i>E. coli</i>	9223B
Enterococcus	Indexx Enterolert
Total coliform	9221B
Fecal coliform	9221E
Total organic carbon (TOC) (water)	5310C
PCBs (water)	EPA 625
Total organic carbon (TOC) (sediment)	EPA 9060A
OC Pesticides (sediment)	EPA 8270C
PCBs (sediment)	EPA 8270C

1. Listed constituents are those that are required by a TMDL and not already listed in the previous table.

Data Quality

The VCAILG QAPP specifies monitoring program requirements and procedures designed to ensure that the quality of data generated through the VCAILGMP are such that data can be used to 1) accurately assess environmental conditions and 2) make environmentally-sound decisions. Appendix H provides a summary of the data quality evaluation performed on the data collected during the 2015-2016 monitoring year. An evaluation of the data quality for the Calleguas Creek Watershed TMDL monitoring program is included as Appendix E as part of the eighth year annual monitoring report for that program.⁵

WATER QUALITY BENCHMARKS AND OTHER OBJECTIVES

This section presents the standard water quality benchmarks as specified in the 2010 and 2016 Conditional Waivers (R4-2010-0186 and R4-2016-0143) used to evaluate monitoring data collected at VCAILG monitoring sites during the 2015-2016 monitoring year. These benchmarks are the same for both waivers aside from the addition of bifenthrin and *E. coli* in the 2016 *Conditional Waiver*. Bifenthrin data is available as it is included in the pyrethroid pesticides analysis suite and is compared to the new benchmark. *E. coli* testing was not required and did not occur during this monitoring year, so it is not included in the benchmark or monitoring data tables.

“Standard water quality benchmarks” in the 2010 *Conditional Waiver* include numeric and narrative water quality objectives contained in Appendix 2, and include several narrative and numeric Basin Plan objectives and water quality standards from the California Toxics Rule (CTR). In cases where the Conditional Waiver references the Basin Plan or CTR, in Appendix 2 without specifying a benchmark number, the lowest applicable number was selected for each watershed. CTR water quality criteria are available for several OC pesticides that are analyzed

⁵ Larry Walker Associates. “Calleguas Creek Watershed TMDL Compliance Monitoring Program Eighth Year Annual Monitoring Report.” December 15, 2016.

as part of the VCAILGMP; though not listed as benchmarks in Appendix 2 of the Conditional Waiver they are provided in a separate table in this section for reference. In addition to the Appendix 2 benchmarks, the Conditional Waiver also includes effective TMDL LAs as additional water quality benchmarks in Appendix 3. Due to the complexity of appropriately comparing TMDL LAs to the proper location, site type, sample media, and sampling condition, these benchmarks and the associated monitoring results are presented and discussed separately in the report section titled “TMDL Load Allocations and Monitoring Results”.

Several of the narrative water quality objectives contained in the Basin Plan specify that discharges of wastes to receiving waters cannot alter “natural” or “ambient” conditions above or below a stated level. Many of the VCAILG monitoring sites are located on agricultural drains that discharge to receiving waters. Because “natural” and “ambient” conditions have not been established in receiving waters or are non-existent on agricultural drains and ephemeral streams, monitoring data from sites located on agricultural drains are evaluated based on the assumption that if benchmarks are not exceeded in the agricultural drain, it is unlikely that the discharge from that drain will cause benchmark exceedances in the receiving water.

Table 13. 2010 Conditional Waiver Appendix 2 Standard Water Quality Benchmarks Derived From Narrative Objectives

Constituent	Watershed ¹	Narrative Objective ²	Applicable Benchmark
pH	CC, OXD, SCR, VR	The pH of inland surface waters shall not be depressed below 6.5 or raised above 8.5 as a result of waste discharges. Ambient pH levels shall not be changed by more than 0.5 pH units from natural conditions as a result of waste discharges.	6.5 ≤ pH ≤ 8.5 Changes to ambient receiving water conditions are not assessed; "ambient" or "natural" conditions have not been established
Temperature	CC, OXD, SCR, VR	For waters designated WARM, water temperature shall not be altered by more than 5°F above the natural temperature. At no time shall WARM-designated waters be raised above 80°F as a result of waste discharges.	WARM: ≤ 80°F Changes to ambient receiving water conditions are not assessed; "ambient" or "natural" conditions have not been established
	SCR, VR	For waters designated COLD, water temperature shall not be altered by more than 5°F above the natural temperature.	COLD: No numeric benchmark. Changes to ambient receiving water conditions are not assessed; "ambient" or "natural" conditions have not been established
Dissolved Oxygen	OXD	No single dissolved oxygen determination shall be less than 5 mg/L, except when natural conditions cause lesser concentrations.	≥ 5 mg/L
	CC, SCR, VR	The dissolved oxygen content of all surface waters designated as WARM shall not be depressed below 5 mg/L as a result of waste discharges.	WARM: ≥ 5 mg/L
	SCR, VR	The dissolved oxygen content of all surface waters designated as COLD and SPWN shall not be depressed below 7 mg/L as a result of waste discharges.	COLD, SPWN: ≥ 7 mg/L
Turbidity	CC, OXD, SCR, VR	Waters shall be free of changes in turbidity that cause nuisance or adversely affect beneficial uses. Increases in natural turbidity attributable to controllable water quality factors shall not exceed the following limits: <ul style="list-style-type: none"> ▪ Where natural turbidity is between 0 and 50 NTU, increases shall not exceed 20%; ▪ Where natural turbidity is greater than 50 NTU, increases shall not exceed 10%. 	No numeric benchmarks. Changes to ambient receiving water conditions are not assessed; "ambient" or "natural" conditions have not been established
Total Suspended Solids (TSS)	CC, OXD, SCR, VR	Wastes shall not contain suspended material in concentrations that cause nuisance or adversely affect beneficial uses.	No numeric benchmarks.
Toxicity	CC, OXD, SCR, VR	All waters shall be free of toxic substances in concentrations that are toxic to, or that produce detrimental physiological responses in human, plant, animal or aquatic life. There shall be no chronic toxicity in ambient waters outside mixing zones.	≤ 1.0 TUc ³ Benchmarks for specific potentially toxic constituents are listed in Tables 16 through 20.

1. CC = Calleguas Creek Watershed OXD = Oxnard Coastal Watershed SCR = Santa Clara River Watershed VR = Ventura River Watershed

2. Source: Water Quality Control Plan, Los Angeles Region (Basin Plan), 1994.

3. Source: "Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands," Order No. R4-2010-0186, Los Angeles Regional Water Quality Control Board, adopted October 7, 2010.

Table 14. 2010 Conditional Waiver Appendix 2 Standard Water Quality Benchmarks for Salts and Nutrients (Basin Plan Table 3-8 Numeric Water Quality Objectives)

Watershed / Reach	Reach Description	Chloride (mg/L)	Sulfate (mg/L)	TDS (mg/L)	Nitrogen (mg/L)	Ammonia ¹ (mg/L)	Phosphate (mg/L)
CC below Potrero Rd.	-----	-----	-----	-----	10 ²	pH, temperature dependent	-----
CC above Potrero Rd.	-----	150	250	850	10 ³	pH, temperature dependent	-----
OXD	-----	-----	-----	-----	10 ²	pH, temperature dependent	-----
SCR Reach 1	Tidally-influenced mouth of Santa Clara River upstream to 101 Bridge	-----	-----	-----	10 ²	pH, temperature dependent	-----
SCR Reach 2	Upstream of Hwy 101 Bridge to Freeman Diversion	150	600	1200	10 ²	pH, temperature dependent	-----
SCR Reach 3	Upstream of Freeman Diversion to A Street Bridge in Fillmore	100 ⁴	650	1300	5 ³	pH, temperature dependent	-----
SCR Reach 4	Upstream of A Street Bridge in Fillmore to Blue Cut Gaging Station	100	600	1300	5 ³	pH, temperature dependent	-----
VR Reach 4	Between Camino Cielo Rd. and Casitas Vista Rd.	60	300	800	5 ³	pH, temperature dependent	-----

Watersheds: CC = Calleguas Creek OXD = Oxnard Coastal SCR = Santa Clara River VR = Ventura River

1. Ammonia benchmarks are based on 1) freshwater ammonia objectives as calculated according to LARWQCB Resolutions 2002-011 and 2005-014, and 2) saltwater ammonia objectives as calculated according to LARWQCB Resolution 2004-022. Ammonia objectives are calculated based on the pH and temperature of the receiving water measured at the time of sample collection for ammonia analysis. Ammonia objectives used as benchmarks are chronic, 30-day averages.
2. There is no site-specific nitrogen objective in the Basin Plan (Table 3-8) applicable to this reach. The Basin Plan objective of 10 mg/L Nitrate-N was used for comparison with VCAILG data collected at monitoring sites in this reach.
3. The Nitrogen benchmark listed is as Nitrate-N plus Nitrite-N.
4. The 100 mg/L benchmark for chloride is the revised water quality objective adopted by the Regional Board in Resolution 2003-015.

Table 15. 2010 Conditional Waiver Appendix 2 Standard Water Quality Benchmarks for Copper

Constituent	Freshwater ^{1,2}		Brackish or Saltwater ¹	
	Benchmark (µg/L)	Benchmark Source	Benchmark (µg/L)	Benchmark Source
Copper	= $0.96e^{[0.8545(\ln hardness)+(-1.702)]}$	CTR CCC ³	3.1	CTR CCC ³

1. Freshwater benchmark applies to discharges to waters with salinities <1 ppt at least 95% of the time. Saltwater benchmark applies when salinities are ≥10 ppt at least 95% of the time. For discharges between these categories, or tidally influenced freshwater that supports EST beneficial uses, the lower criteria of the two shall be used; which is the saltwater benchmark.
2. As per footnote “m” to the Table in Paragraph (b)(1) of the CTR; “The freshwater criteria for metals are expressed in terms of the dissolved fraction of the metal in the water column.” In instances where the measured hardness is >400 mg/L as CaCO₃, a hardness of 400 is used to calculate the benchmark. This was done in accordance with CTR §31692, f. Hardness.
3. CTR = California Toxics Rule (USEPA, May 18, 2000).
CCC = Criteria Continuous Concentration

Table 16. 2010 Conditional Waiver Appendix 2 Standard Water Quality Benchmarks for Organophosphorus Pesticides

Constituent	CC, OXD, SCR, VR Watersheds
	Benchmark (µg/L)
Chlorpyrifos	0.025
Diazinon	0.10

Watersheds: CC = Calleguas Creek OXD = Oxnard Coastal SCR = Santa Clara River VR = Ventura River

Table 17. 2010 Conditional Waiver Appendix 2 Water Quality Benchmarks for Organochlorine Pesticides

Constituent	CC Watershed		OXD, SCR Watersheds		VR Watershed	
	Benchmark (µg/L)	Benchmark Source ¹	Benchmark (µg/L)	Benchmark Source ¹	Benchmark (µg/L)	Benchmark Source ¹
Chlordane, sum	0.00059	CTR HHO	0.00059	CTR HHO	0.00059	CTR HHO
4,4'-DDD	0.00084	CTR HHO	0.00084	CTR HHO	0.00084	CTR HHO
4,4'-DDE	0.00059	CTR HHO	0.00059	CTR HHO	0.00059	CTR HHWO
4,4'-DDT	0.00059	CTR HHO	0.00059	CTR HHO	0.00059	CTR HHWO
Dieldrin	0.00014	CTR HHO	0.00014	CTR HHO	0.00014	CTR HHWO
Toxaphene	0.00075	CTR HHO	0.00075	CTR HHO	0.00075	CTR HHO

Watersheds: CC = Calleguas Creek OXD = Oxnard Coastal SCR = Santa Clara River VR = Ventura River

1. CTR = California Toxics Rule (USEPA, May 18, 2000).
HHO = Human Health for Consumption of Organisms Only (30-day average)
HHWO = Human Health for Consumption of Water and Organisms (MUN-designation) (30-day average)

Table 18. 2016 Conditional Waiver Appendix 4 Water Quality Benchmark for Bifenthrin

Constituent	CC, OXD, SCR, VR Watersheds
	Benchmark (µg/L)
Bifenthrin	0.0006

Watersheds: CC = Calleguas Creek OXD = Oxnard Coastal SCR = Santa Clara River VR = Ventura River

Table 19. Organochlorine Pesticides Monitored by the VCAILGMP with CTR Water Quality Criteria

Constituent	CC Watershed		OXD, SCR Watersheds		VR Watershed	
	Benchmark (ug/L)	Benchmark Source ¹	Benchmark (ug/L)	Benchmark Source ¹	Benchmark (ug/L)	Benchmark Source ¹
Aldrin	0.00014	CTR HHO	0.00014	CTR HHO	0.00013	CTR HHWO
Alpha-BHC	0.013	CTR HHO	0.013	CTR HHO	0.0039	CTR HHWO
Beta-BHC	0.046	CTR HHO	0.046	CTR HHO	0.014	CTR HHWO
Gamma-BHC (Lindane)	0.063	CTR HHO	0.063	CTR HHO	0.019	CTR HHWO
Endosulfan I	0.056	CTR AFWC	0.056	CTR AFWC	0.056	CTR AFWC
Endosulfan II	0.056	CTR AFWC	0.056	CTR AFWC	0.056	CTR AFWC
Endosulfan Sulfate	240	CTR HHO	240	CTR HHO	110	CTR HHWO
Endrin	0.036	CTR AFWC	0.036	CTR AFWC	0.036	CTR AFWC
Endrin Aldehyde	0.81	CTR HHO	0.81	CTR HHO	0.76	CTR HHWO

Watersheds: CC = Calleguas Creek OXD = Oxnard Coastal SCR = Santa Clara River VR = Ventura River

2. CTR = California Toxics Rule (USEPA, May 18, 2000).

HHO = Human Health for Consumption of Organisms Only (30-day average)

HHWO = Human Health for Consumption of Water and Organisms (MUN-designation) (30-day average)

AFWC = Aquatic Life, Freshwater Chronic (4-day average)

WATER QUALITY MONITORING RESULTS

This section contains a summary of water quality monitoring data collected at VCAILG sites where flow was present during the four monitoring events conducted in 2015-2016. Information presented for each VCAILG monitoring site includes the receiving water of the drainage monitored, a site location map, a site photo, and a narrative summary of which events were monitored, exceedances (if any) of standard water quality benchmarks, and unusual occurrences (if any) from each event. The predominant crop type(s) potentially contributing to the flow at each monitoring site is also noted in this section; this information is also listed in Table 6. All constituents listed in Appendix 2 of the 2010 *Conditional Waiver* and Appendix 4 of the 2016 *Conditional Waiver* (with the exception of *E. coli*, for which monitoring has not yet begun) are included in the data tables for each site. Additional constituents are listed only if they have been detected at a particular site. Non-detect data is included with all of the water quality monitoring data for 2015-2016 as Appendix F on the Annual Report Data CD. All hard copy laboratory reports are also included on the Data CD. Results summarized in this section are compared with 2010 *Conditional Waiver* standard water quality benchmarks from Appendix 2 and Appendix 4 of the 2016 *Conditional Waiver* (except for *E. coli* as previously noted) and specified in Table 13 through Table 19 where applicable, all exceedances are indicated in **bold type** in the following data tables for each monitoring site.

Any data reported by the laboratory in units of ng/L were converted to µg/L for comparison with benchmarks expressed in units of µg/L. Results reported by the laboratory as “Total Orthophosphate as P” were converted to “Total Orthophosphate” by multiplying the result by the molecular weight of phosphate (95 g/mol) and dividing the product by the molecular weight of phosphorus (31 g/mole). The converted result is reported as “Total Orthophosphate” on data tables presented in this section. The electronic data file remains unconverted and is labeled “Total Orthophosphate-P.”

Results of toxicity tests conducted during the 2015-2016 monitoring year are discussed separately in a subsequent section.

All analyses included in this report were conducted at a laboratory certified for such analyses by the California Department of Health Services – Environmental Laboratory Accreditation Program (ELAP) or the National Environmental Laboratory Accreditation Program (NELAP), and in accordance with current USEPA guidance procedures, or as specified in this Monitoring Program.

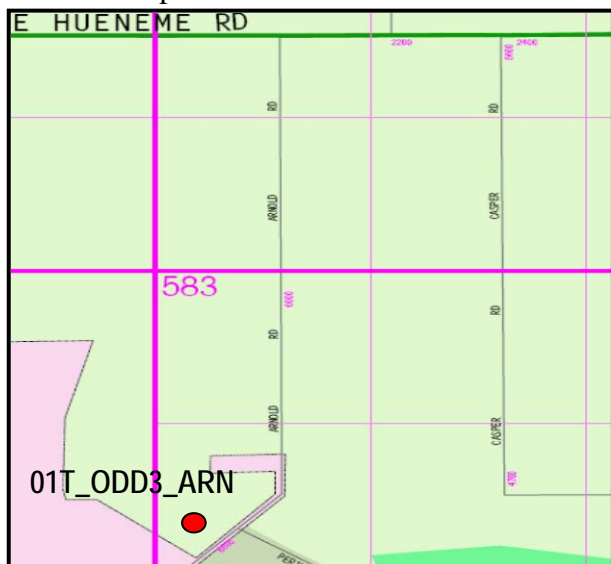
Calleguas Creek Watershed

The Calleguas Creek Watershed contains six VCAILG monitoring sites. Monitoring sites are discussed below in order of the Calleguas Creek reach into which they drain.

01T_ODD3_ARN

Rio de Santa Clara / Oxnard Drain No. 3. The monitoring site is located on an agricultural drain just upstream from the Arnold Road Bridge. Flow from this drain eventually discharges into the western arm of Mugu Lagoon (Calleguas Creek Reach 1). Because the site is tidally influenced, an attempt is made to conduct monitoring at this site approximately one-half hour after low tide.

Site Map



View downstream at sampling point



Samples were collected at this site during three of the four 2015-2016 monitoring events; during Event 27, the road was closed rendering the site inaccessible. Table 20 contains a summary of the concentrations for select constituents and provides a comparison of measured concentrations with applicable water quality benchmarks. Flow is not measured at this site because it is unsafe to do so. Table 21 summarizes the trash observations for each event. This area is frequently used by bird watchers and others participating in non-contact recreation. The trash found near the monitoring site is not specific to agriculture.

Exceedances of nitrate-N, dissolved copper, 4,4'-DDD and 4,4'-DDE occurred during the three sampling events at this site during the 2015-2016 monitoring year. The 4,4'-DDT benchmark was exceeded during Events 28 and 29, and the toxaphene benchmark was exceeded during Events 26 and 28. The bifenthrin benchmark was exceeded during Event 28. Row crops and sod are the primary crop types in the vicinity of this site.

Table 20. 2015 - 2016 VCAILG Monitoring Data v. Waiver Benchmarks: 01T_ODD3_ARN

Constituent	Units	Benchmark	Event 26	Event 27	Event 28	Event 29
			Dry 8/6/2015	Wet 1/6/2016	Wet 3/7/2016	Dry 5/26/2016
Field Measurements						
Flow	CFS		N/A		N/A	N/A
pH		6.5 ≤ pH ≤ 8.5	7.93		8.02	7.4
Temperature	°C		22.29		15.16	21.74
Dissolved Oxygen	mg/L	≥ 5	10.63		10.25	7.56
Turbidity	NTU		N/A		27.6	44.0
Conductivity	µS/cm		6486		3850	6691
General Water Quality						
Total Dissolved Solids (TDS)	mg/L		4690		2610	5060
Total Suspended Solids (TSS)	mg/L				93	83
Total Hardness as CaCO ₃	mg/L		2225		1009	1926
Chloride	mg/L		1230		605	1420
Sulfate	mg/L		1520		810	1820
Nutrients						
Ammonia-N	mg/L	0.77/ NS/ 1.05/ 2.64 ¹	DNQ		2.7	0.23
Nitrate-N	mg/L	10 ²	41.42		43.33	39.25
Total Orthophosphate	mg/L		0.09		0.98	1.84
Metals						
Dissolved Copper	µg/L	3.10 ³	4.02	NS	3.94	3.95
Total Copper	µg/L		4.95		6.71	4.83
Organochlorine Pesticides						
Aldrin	µg/L	0.00014	ND		ND	ND
BHC-alpha	µg/L	0.013	ND		ND	ND
BHC-beta	µg/L	0.046	ND		ND	ND
BHC-gamma	µg/L	0.063	ND		ND	ND
Chlordane-alpha	µg/L		DNQ		DNQ	ND
Chlordane-gamma	µg/L		DNQ		DNQ	ND
Total Chlordane	µg/L	0.00059	DNQ		DNQ	ND
4,4'-DDD	µg/L	0.00084	0.0143		0.0241	0.0264
4,4'-DDE	µg/L	0.00059	0.0252		0.0546	0.0333
4,4'-DDT	µg/L	0.00059	ND		0.016	0.016
Dieldrin	µg/L	0.00014	ND		ND	ND
Endosulfan-I	µg/L	0.056	ND		ND	ND
Endosulfan-II	µg/L	0.056	ND		ND	ND
Endosulfan Sulfate	µg/L	240	ND		ND	ND
Endrin	µg/L	0.036	ND		ND	ND

Constituent	Units	Benchmark	Event 26	Event 27	Event 28	Event 29
			Dry	Wet	Wet	Dry
			8/6/2015	1/6/2016	3/7/2016	5/26/2016
Endrin Aldehyde	µg/L	0.81	ND		ND	ND
Toxaphene	µg/L	0.00075	0.07166		0.4671	ND
Organophosphorus Pesticides						
Chlorpyrifos	µg/L	0.025	ND		ND	ND
Diazinon	µg/L	0.1	ND		ND	ND
Pyrethroid Pesticides						
Bifenthrin	µg/L	0.0006	ND		0.0515	ND

Concentrations in **bold** indicate an exceedance of a water quality benchmark applicable to this site for the specified constituent. See Tables 14 through 19 for a list of benchmarks applicable to this site.

N/A – Flow was not sampled due to tidal influence or inaccessibility. Turbidity meter malfunctioned.

NS – No samples were collected due to the site being inaccessible. Road leading to site closed.

1. The benchmarks for Ammonia-N are listed in order of monitoring event and were calculated based on the Basin Plan Amendment to Update Saltwater Ammonia Objectives (LARWQCB Resolution No. 2004-022). The benchmarks are based on the chronic saltwater equation and are dependent upon the pH, temperature, and salinity of the water at the time of sample collection.
2. There is no site-specific nitrogen objective in the Basin Plan (Table 3-8) applicable to this reach. The Basin Plan objective of 10 mg/L nitrate-N was used for comparison with VCAILG data for this site.
3. Copper benchmark for saltwater applies at this site as prescribed in Table 16.

Table 21. 2015 - 2016 Trash Observations for 01T_ODD3_ARN

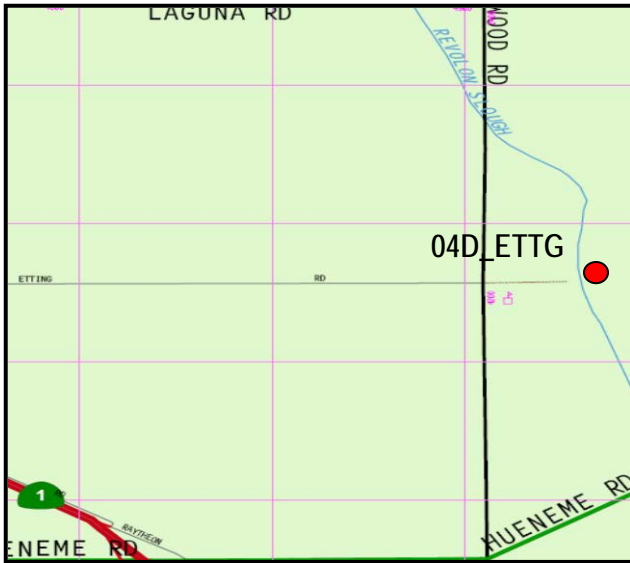
Event	Count	Types
Event 26	7	Cups, glass, sand bag, plastic bottle
Event 27	NS ¹	N/A
Event 28	30-50	Cups, sandbags, plastic, cardboard
Event 29	0	N/A

1. Inaccessible, road closed.

04D_ETTG

This monitoring site is located on an agricultural drain just upstream from its confluence with Revolon Slough, just east of the intersection of Wood Road and Etting Road. Flow from this drain eventually discharges into Calleguas Creek Reach 4 (Revolon Slough).

Site Map



View toward SW looking downstream an ag drain before the confluence with Revolon



Flow was present at this site during all monitoring events. Table 22 contains a summary of concentrations for select constituents and provides a comparison of measured concentrations with applicable water quality benchmarks. The approximate amount and types of trash observed at this site is listed in Table 23.

Exceedances of nitrate-N, 4,4'-DDD, 4,4'-DDE, 4,4'-DDT and toxaphene occurred during all four monitoring events. Exceedances of the dissolved copper benchmark occurred during Events 28 and 29, while exceedances of chlorpyrifos occurred during both wet Events 27 and 28. The bifenthrin benchmark was exceeded during dry Event 26 and wet Event 28. The total chlordane benchmark and diazinon benchmark were each exceeded during wet weather Event 28. Row crops are the most common crops grown within this site drainage area. Additional crop types include strawberries, other berries (such as raspberries or blueberries), and citrus.

Table 22. 2015 - 2016 VCAILG Monitoring Data v. Waiver Benchmarks: 04D_ETTG

Constituent	Units	Benchmark	Event	Event	Event	Event
			26 Dry 8/6/2015	27 Wet 1/6/2016	28 Wet 3/7/2016	29 Dry 5/26/2016
Field Measurements						
Flow	CFS		2.33	16.32	10.26	3.96
pH		6.5 < pH < 8.5	8.19	8.04	7.86	7.95
Temperature	°C	≤ 26.67°C ¹	24.91	12.96	17.2	17.91
Dissolved Oxygen	mg/L	≥ 5	10.83	9.57	8.88	10.5
Turbidity	NTU		38.1	480.0	628.0	6.2
Conductivity	µS/cm		3543	1215	3263	4521
General Water Quality						
Total Dissolved Solids (TDS)	mg/L		2910	860	2720	3970
Total Suspended Solids (TSS)	mg/L		54	338	1810	13
Total Hardness as CaCO ₃	mg/L		1857	438	1362	2138
Chloride	mg/L		270	76	209	280
Sulfate	mg/L		1240	410	1200	1880
Nutrients						
Ammonia-N	mg/L	0.93/ 2.54/ 2.48/ 2.1 ²	0.41	0.57	0.55	0.06
Nitrate-N	mg/L	10 ³	33.9	19.1	58.3	71.4
Total Orthophosphate	mg/L		2.60	3.55	2.48	0.92
Metals						
Dissolved Copper	µg/L	3.10 ⁴	2.34	2.88	5.52	3.76
Total Copper	µg/L		4.26	13.81	73.35	4.27
Organochlorine Pesticides						
Aldrin	µg/L	0.00014	ND	ND	ND	ND
BHC-alpha	µg/L	0.013	ND	ND	ND	ND
BHC-beta	µg/L	0.046	ND	ND	ND	ND
BHC-gamma	µg/L	0.063	ND	ND	ND	ND
trans-Nonachlor	µg/L		ND	DNQ	0.0084	ND
Chlordane-alpha	µg/L		ND	ND	0.0103	ND
Chlordane-gamma	µg/L		ND	DNQ	0.01	ND
Total Chlordane	µg/L	0.00059	ND	DNQ	0.0203	ND
2,4'-DDD	µg/L		DNQ	0.0328	0.0474	DNQ
2,4'-DDE	µg/L		DNQ	ND	0.0162	ND
2,4'-DDT	µg/L		DNQ	ND	0.0848	ND
4,4'-DDD	µg/L	0.00084	0.0089	0.1221	0.1438	0.0152
4,4'-DDE	µg/L	0.00059	0.0243	0.1536	0.8292	0.0151
4,4'-DDT	µg/L	0.00059	0.0211	0.0783	0.3986	0.0747
Dieldrin	µg/L	0.00014	ND	ND	ND	ND

Constituent	Units	Benchmark	Event 26	Event 27	Event 28	Event 29
			Dry 8/6/2015	Wet 1/6/2016	Wet 3/7/2016	Dry 5/26/2016
Endosulfan-I	µg/L	0.056	ND	ND	ND	ND
Endosulfan-II	µg/L	0.056	ND	ND	ND	ND
Endosulfan Sulfate	µg/L	240	ND	ND	ND	ND
Endrin	µg/L	0.036	ND	ND	ND	ND
Endrin Aldehyde	µg/L	0.81	ND	ND	ND	ND
Toxaphene	µg/L	0.00075	0.06286	0.40078	3.7811	0.1221
Organophosphorus Pesticides						
Chlorpyrifos	µg/L	0.025	ND	0.0317	0.0421	ND
Diazinon	µg/L	0.1	ND	ND	0.1045	ND
Dimethoate	µg/L		0.0608	ND	ND	ND
Malathion	µg/L		ND	ND	0.5718	ND
Pyrethroid Pesticides						
Bifenthrin	µg/L	0.0006	0.0021	ND	0.1052	ND
Cypermethrin	µg/L		ND	ND	0.0582	ND

Concentrations in **bold** indicate an exceedance of a water quality benchmark applicable to this site for the specified constituent. See Tables 14 through 19 for a list of benchmarks applicable to this site.

1. The temperature limit for waterbodies designated as WARM is 80°F (26.7°C).
2. The benchmarks for Ammonia-N are listed in order of monitoring event and were calculated based on the April 2002 Basin Plan Amendment chronic equation (ELS absent) and are dependent upon the pH and temperature of the water at the time of sample collection.
3. There is no site-specific nitrogen objective in the Basin Plan (Table 3-8) applicable to this reach. The Basin Plan objective of 10 mg/L nitrate-N was used for comparison with VCAILG data for this site.
4. The copper benchmark for saltwater applies at this site as prescribed in Table 16.

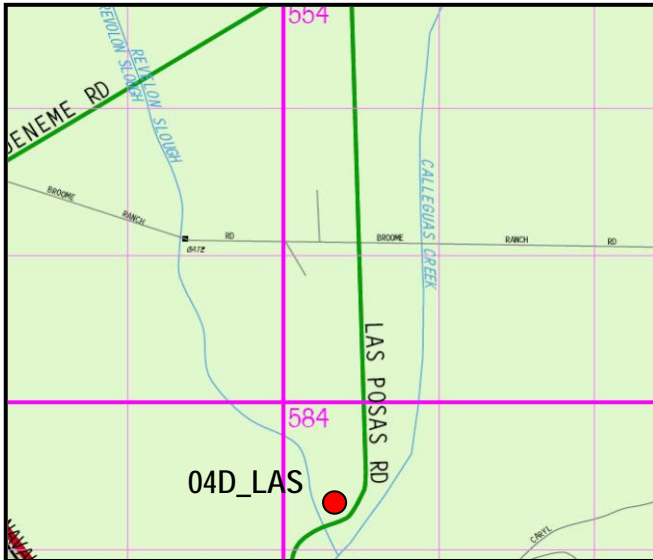
Table 23. 2015 – 2016 Trash Observations for 04D_ETTG

Event	Count	Types
Event 26	20-40	Ag trash, car mats, plastic bottles, cups, Styrofoam, plastic bags
Event 27	10	Styrofoam cups, bottles, plastic
Event 28	30-50	Building supplies, ag trash, cups
Event 29	1	Plastic netting

04D_LAS

This monitoring site is located on an agricultural drain just upstream of its confluence with Revolon Slough just upstream of South Las Posas Road. A tile drain discharge is intermittently pumped into this agricultural drain upstream of the monitoring site. Flow from this drain eventually flows into Calleguas Creek Reach 4 (Revolon Slough).

Site Map



View toward S looking downstream on ag drain before the culvert draining into Revolon Slough



Samples were collected at this site for three of the four 2015-2016 monitoring events; the site was not sampled during Event 27 because water was flowing from the Calleguas Creek River into the agricultural drain and was therefore not representative of agricultural runoff. Table 24 contains a summary of the concentrations for select constituents and provides a comparison of measured concentrations with applicable water quality benchmarks. Table 25 quantifies and describes trash found at this site.

Exceedances of nitrate-N and 4,4'-DDE occurred during all three sampled events. The 4,4'-DDD benchmark was exceeded during wet weather Event 28 and dry weather Event 29. Exceedances of dissolved copper, 4,4'-DDT, toxaphene, chlorpyrifos and diazinon occurred during wet weather Event 28. Row crops are the primary crop type along with acreage of sod being grown in the vicinity of this site.

Table 24. 2015 - 2016 VCAILG Monitoring Data v. Waiver Benchmarks: 04D_LAS

Constituent	Units	Benchmark	Event	Event	Event	Event
			26 Dry 8/6/2015	27 Wet 1/6/2016	28 Wet 3/7/2016	29 Dry 5/26/2016
Field Measurements						
Flow	CFS		1.67		4.208	1.21
pH		6.5 ≤ pH ≤ 8.5	7.79		7.9	7.76
Temperature	°C	≤ 26.67°C ¹	20.36		16.47	18.34
Dissolved Oxygen	mg/L	≥ 5	10.11		8.73	11.77
Turbidity	NTU		N/A		127.8	9.3
Conductivity	µS/cm		3628		3802	4180
General Water Quality						
Total Dissolved Solids (TDS)	mg/L		2850		2850	3040
Total Suspended Solids (TSS)	mg/L		7		369	7
Total Hardness as CaCO ₃	mg/L		1697		1287	1349
Chloride	mg/L		38		360	410
Sulfate	mg/L		106		1040	1260
Nutrients						
Ammonia-N	mg/L	2.21/ NS/ 2.47/ 2.61 ²	0.11		0.25	0.1
Nitrate-N	mg/L	10 ³	38.9		48.0	39.6
Total Orthophosphate	mg/L		2.02		3.00	1.47
Metals						
Dissolved Copper	µg/L	3.10 ⁴	2.80	NS	4.17	2.80
Total Copper	µg/L		3.12		18.95	2.84
Organochlorine Pesticides						
Aldrin	µg/L	0.00014	ND		ND	ND
BHC-alpha	µg/L	0.013	ND		ND	ND
BHC-beta	µg/L	0.046	ND		ND	ND
BHC-gamma	µg/L	0.063	ND		ND	ND
Chlordane-alpha	µg/L		ND		DNQ	ND
Chlordane-gamma	µg/L		ND		DNQ	ND
Total Chlordane	µg/L	0.00059	ND		DNQ	ND
2,4'-DDD	µg/L		ND		0.009	ND
2,4'-DDT	µg/L		ND		0.0082	ND
4,4'-DDD	µg/L	0.00084	DNQ		0.0262	0.0123
4,4'-DDE	µg/L	0.00059	0.0058		0.1189	0.0119
4,4'-DDT	µg/L	0.00059	ND		0.0323	ND
Dieldrin	µg/L	0.00014	ND		ND	ND
Endosulfan-I	µg/L	0.056	ND		ND	ND
Endosulfan-II	µg/L	0.056	ND		ND	ND

Constituent	Units	Benchmark	Event 26 Dry	Event 27 Wet	Event 28 Wet	Event 29 Dry
			8/6/2015	1/6/2016	3/7/2016	5/26/2016
Endosulfan Sulfate	µg/L	240	ND		ND	ND
Endrin	µg/L	0.036	ND		ND	ND
Endrin Aldehyde	µg/L	0.81	ND		ND	ND
Toxaphene	µg/L	0.00075	DNQ		0.3428	DNQ
Organophosphorus Pesticides						
Chlorpyrifos	µg/L	0.025	0.0102		0.0609	ND
Diazinon	µg/L	0.1	ND		0.0292	ND
Pyrethroid Pesticides						
Bifenthrin	µg/L	0.0006	ND		ND	ND

Concentrations in **bold** indicate an exceedance of a water quality benchmark applicable to this site for the specified constituent. See Tables 14 through 19 for a list of benchmarks applicable to this site.

N/A – Turbidity meter malfunctioned.

NS – No samples were collected due to the site being ponded and inaccessible.

1. The temperature limit for waterbodies designated as WARM is 80°F (26.7°C).
2. The benchmarks for Ammonia-N are listed in order of monitoring event and were calculated based on the April 2002 Basin Plan Amendment chronic equation (ELS absent) and are dependent upon the pH and temperature of the water at the time of sample collection.
3. There is no site-specific nitrogen objective in the Basin Plan (Table 3-8) applicable to this reach. The Basin Plan objective of 10 mg/L nitrate-N was used for comparison with VCAILG data for this site.
4. The copper benchmark for saltwater applies at this site as prescribed in Table 16.

Table 25. 2015 - 2016 Trash Observations for 04D_LAS

Event	Count	Types
Event 26	10	Plastic bottles, Styrofoam cup
Event 27	5	Styrofoam cup, plastic
Event 28	5+	Plastic cups, Styrofoam
Event 29	0	N/A

05D_LAVD

This monitoring site is located on the La Vista Drain just east of La Vista Avenue, north of Hwy 118. Flow from this drain eventually discharges into Calleguas Creek Reach 5 (Beardsley Channel). The Ventura County Watershed Protection District maintains a stormwater monitoring station just downstream of the VCAILG monitoring site.

Site Map



View upstream (NE) from sampling location



Samples were collected at this site for three of the four 2015-2016 monitoring events. Flow was not present during Event 29 (dry weather). Table 26 contains a summary of the concentrations for select constituents and provides a comparison of measured concentrations with applicable water quality benchmarks. Table 27 quantifies and describes trash found at this site.

There were exceedances of 4,4'-DDD, 4,4'-DDE, 4,4'-DDT and bifenthrin during all three sampled events. Exceedances of TDS, sulfate and nitrate-N were observed during Events 26 and 28 (dry and wet, respectively). Total chlordane exceeded the benchmark during dry Event 26 and wet Event 27. Event 26 also saw exceedances of dieldrin and toxaphene, while chlorpyrifos exceeded the benchmark during Event 27. Citrus, avocados, and berries (other than strawberries) are the major crop types that drain to this monitoring location.

Table 26. 2015 - 2016 VCAILG Monitoring Data v. Waiver Benchmarks: 05D_LAVD

Constituent	Units	Benchmark	Event 26	Event 27	Event 28	Event 29	
			Dry 8/6/2015	Wet 1/6/2016	Wet 3/7/2016	Dry 5/26/2016	
Field Measurements							
Flow	CFS		0.126	53.246	0.071	NS	
pH		6.5 ≤ pH ≤ 8.5	8.22	7.87	7.76		
Temperature	°C	≤ 26.67°C ¹	27.5	9.32	15.03		
Dissolved Oxygen	mg/L	≥ 5	7.88	11.31	9.58		
Turbidity	NTU		1836	>3000	341.5		
Conductivity	µS/cm		2654	386	2197		
General Water Quality							
Total Dissolved Solids (TDS)	mg/L	850	2250	300	1630		
Total Suspended Solids (TSS)	mg/L		7300	1330	500		
Total Hardness as CaCO ₃	mg/L		1795	184	815		
Chloride	mg/L	150	140	23	70		
Sulfate	mg/L	250	1060	144	690		
Nutrients							
Ammonia-N	mg/L	0.75/ 4.07/ 3.23/ NS ²	0.25	0.81	0.66		
Nitrate-N	mg/L	10	29.0	8.7	64.3		
Total Orthophosphate	mg/L		13.79	2.48	4.78		
Metals							
Dissolved Copper	µg/L	29.3/ 15.1/ 29.3/ NS ³	6.71	11.50	22.52		
Total Copper	µg/L		82.57	271.08	43.28		
Organochlorine Pesticides							
Aldrin	µg/L	0.00014	ND	ND	ND		
BHC-alpha	µg/L	0.013	ND	ND	ND		
BHC-beta	µg/L	0.046	ND	ND	ND		
BHC-gamma	µg/L	0.063	ND	ND	ND		
cis-Nonachlor	µg/L		0.0052	0.0059	ND		
trans-Nonachlor	µg/L		0.0102	0.0134	ND		
Chlordane-alpha	µg/L		0.0116	0.0171	ND		
Chlordane-gamma	µg/L		0.0098	0.0119	ND		
Total Chlordane	µg/L	0.00059	0.0214	0.029	ND		
2,4'-DDD	µg/L		0.3267	0.0272	DNQ		
2,4'-DDE	µg/L		0.0923	0.0082	ND		
2,4'-DDT	µg/L		0.4487	0.0226	0.0106		
4,4'-DDD	µg/L	0.00084	1.8287	0.1568	0.0111		
4,4'-DDE	µg/L	0.00059	5.2742	0.5416	0.0959		

Constituent	Units	Benchmark	Event	Event	Event	Event
			26	27	28	29
			Dry	Wet	Wet	Dry
			8/6/2015	1/6/2016	3/7/2016	5/26/2016
4,4'-DDT	µg/L	0.00059	1.3715	0.1455	0.0431	
Dieldrin	µg/L	0.00014	0.0297	ND	ND	
Endosulfan-I	µg/L	0.056	ND	ND	ND	
Endosulfan-II	µg/L	0.056	ND	ND	ND	
Endosulfan Sulfate	µg/L	240	ND	ND	ND	
Endrin	µg/L	0.036	ND	ND	ND	
Endrin Aldehyde	µg/L	0.81	ND	ND	ND	
Toxaphene	µg/L	0.00075	10.5357	ND	ND	
Organophosphorus Pesticides						
Chlorpyrifos	µg/L	0.025	0.0137	0.6749	ND	
Diazinon	µg/L	0.1	ND	ND	ND	
Dimethoate	µg/L		0.056	ND	ND	
Malathion	µg/L		ND	0.2116	ND	
Pyrethroid Pesticides						
Bifenthrin	µg/L	0.0006	0.1709	0.0621	0.0228	
Cyfluthrin	µg/L		ND	ND	0.0156	
Danitol	µg/L		ND	ND	0.0332	

Concentrations in **bold** indicate an exceedance of a water quality benchmark applicable to this site for the specified constituent. See Tables 14 through 19 for a list of benchmarks applicable to this site.

NS – No samples were collected due to the site being dry.

1. The temperature limit for waterbodies designated as WARM is 80°F (26.7°C).
2. The benchmarks for Ammonia-N are listed in order of monitoring event and were calculated based on the April 2002 Basin Plan Amendment chronic equation (ELS absent) and are dependent upon the pH and temperature of the water at the time of sample collection.
3. The benchmarks for copper are listed in order of monitoring event and were calculated for freshwater at this site as prescribed in Table 16.

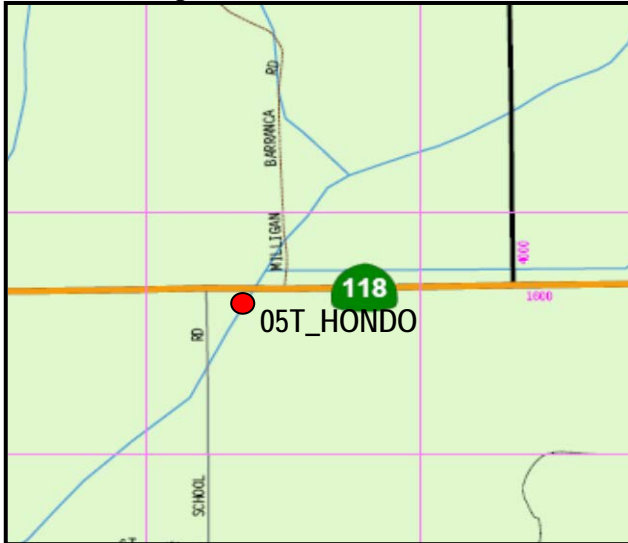
Table 27. 2015 - 2016 Trash Observations for 05D_LAVD

Event	Count	Types
Event 26	2	Plastic toy ball, tennis ball
Event 27	0	N/A
Event 28	0	N/A
Event 29	2	Plastic bottle, straw

05T_HONDO

This monitoring site is located on Hondo Barranca just downstream of the Hwy 118 Bridge. Hondo Barranca is a tributary to Calleguas Creek Reach 5 (Beardsley Channel).

Site Map



View downstream (S) at sampling location



Flow was present at this site during two of the four monitoring events. The site was sampled during Events 27 and 28 (wet weather), and dry during dry Events 26 and 29. Table 28 contains a summary of the concentrations for select constituents and provides a comparison of measured concentrations with applicable water quality benchmarks. There were exceedances of 4,4'-DDE, 4,4'-DDT and chlorpyrifos during both wet Events 27 and 28. Total chlordane, 4,4'-DDD, bifenthrin, and nitrate-N benchmarks were exceeded during wet weather Event 27.

Table 29 quantifies and describes trash found at this site. The site is located directly adjacent to Hwy 118 and drains land planted primarily with citrus and avocado orchards.

Table 28. 2015 - 2016 VCAILG Monitoring Data v. Waiver Benchmarks: 05T_HONDO

Constituent	Units	Benchmark	Event 26 Dry	Event 27 Wet	Event 28 Wet	Event 29 Dry
			8/6/2015	1/6/2016	3/7/2016	5/26/2016
Field Measurements						
Flow	CFS			689.26	1.92	
pH		6.5 ≤ pH ≤ 8.5		7.81	7.99	
Temperature	°C	≤ 26.67°C ¹		9.33	13.76	
Dissolved Oxygen	mg/L	≥ 5		11.18	10.26	
Turbidity	NTU			>3000	2897	
Conductivity	µS/cm			1414	560.9	
General Water Quality						
Total Dissolved Solids (TDS)	mg/L	850		300	410	
Total Suspended Solids (TSS)	mg/L			14000	5000	
Total Hardness as CaCO ₃	mg/L			131	217	
Chloride	mg/L	150		15	12	
Sulfate	mg/L	250		100	188	
Nutrients						
Ammonia-N	mg/L	NS/ 4.39/ 2.59/ NS ²		1.87	0.42	
Nitrate-N	mg/L	10		15.63	6.33	
Total Orthophosphate	mg/L			1.07	5.76	
Metals						
Dissolved Copper	µg/L	NS/ 11.2/ 17.34/ NS ³	NS	5.30	9.76	NS
Total Copper	µg/L			352.4	132.4	
Organochlorine Pesticides						
Aldrin	µg/L	0.00014		ND	ND	
BHC-alpha	µg/L	0.013		ND	ND	
BHC-beta	µg/L	0.046		ND	ND	
BHC-gamma	µg/L	0.063		ND	ND	
cis-Nonchlor	µg/L			0.1364	ND	
trans-Nonachlor	µg/L			0.423	DNQ	
Chlordane-alpha	µg/L			0.3951	DNQ	
Chlordane-gamma	µg/L			0.3347	DNQ	
Total Chlordane	µg/L	0.00059		0.7298	DNQ	
2,4'-DDD	µg/L			0.1439	DNQ	
2,4'-DDE	µg/L			0.0469	ND	
2,4'-DDT	µg/L			0.0692	ND	
4,4'-DDD	µg/L	0.00084		0.9128	DNQ	
4,4'-DDE	µg/L	0.00059		3.7516	0.0279	
4,4'-DDT	µg/L	0.00059		0.5704	0.0336	

Constituent	Units	Benchmark	Event 26 Dry	Event 27 Wet	Event 28 Wet	Event 29 Dry
			8/6/2015	1/6/2016	3/7/2016	5/26/2016
Dieldrin	µg/L	0.00014		ND	ND	
Endosulfan-I	µg/L	0.056		ND	ND	
Endosulfan-II	µg/L	0.056		ND	ND	
Endosulfan Sulfate	µg/L	240		ND	ND	
Endrin	µg/L	0.036		ND	ND	
Endrin Aldehyde	µg/L	0.81		ND	ND	
Hexachlorobenzene	µg/L			0.0225	ND	
Toxaphene	µg/L	0.00075		ND	ND	
Organophosphorus Pesticide						
Chlorpyrifos	µg/L	0.025		0.3043	0.0527	
Diazinon	µg/L	0.1		ND	ND	
Malathion	µg/L			0.8693	ND	
Pyrethroid Pesticides						
Bifenthrin	µg/L	0.0006		0.1753	ND	

Concentrations in **bold** indicate an exceedance of a water quality benchmark applicable to this site for the specified constituent. See Tables 14 through 19 for a list of benchmarks applicable to this site.

NS – No samples were collected due to the site being dry.

1. The temperature limit for waterbodies designated as WARM is 80°F (26.7°C).
2. The benchmarks for Ammonia-N are listed in order of monitoring event and were calculated based on the April 2002 Basin Plan Amendment chronic equation (ELS absent) and are dependent upon the pH and temperature of the water at the time of sample collection.
3. The benchmarks for copper are listed in order of monitoring event and were calculated for freshwater at this site as prescribed in Table 16.

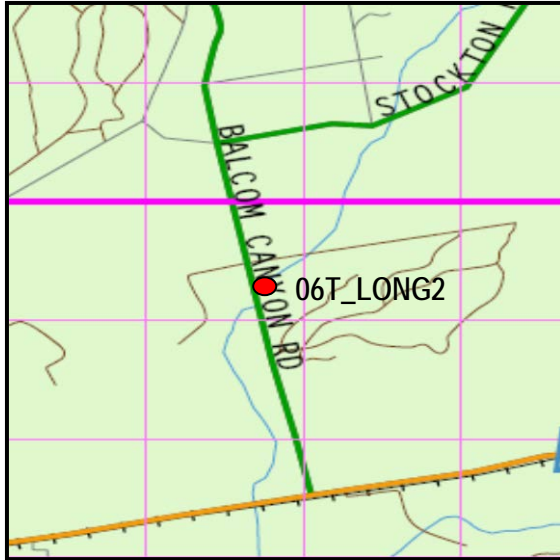
Table 29. 2015 – 2016 Trash Observations for 05T_HONDO

Event	Count	Types
Event 26	20-30	Tire, cups, plastic bottles, ag trash, box
Event 27	< 50	Plastic, bottles, styrofoam, milk jugs
Event 28	10	Ag trash, urban trash, plastic
Event 29	10	Fast food, plastic bottles, plastic wrap

06T_LONG2

This monitoring site is located on Long Canyon where it crosses Balcom Canyon Road north of Highway 118. Long Canyon is a tributary to Calleguas Creek Reach 6 (Arroyo Las Posas).

Map of Sites



View upstream from sampling location



Samples were only collected at this site during Event 27 (wet weather). The site was dry during events 26, 28 and 29. Table 30 contains a summary of the concentrations for select constituents and provides a comparison of measured concentrations with applicable water quality benchmarks. There were exceedances of total chlordane, 4,4-DDD, 4,4'-DDE, 4,4'-DDT, bifenthrin, and chlorpyrifos benchmarks during Event 27.

Table 31 quantifies and describes trash found at this site. The drainage area for this monitoring site consists mostly of citrus and avocado orchards, with small portions used for growing, berries, and nursery stock.

Table 30. 2015 - 2016 VCAILG Monitoring Data v. Waiver Benchmarks: 06T_LONG2

Constituent	Units	Benchmark	Event 26	Event 27	Event 28	Event 29
			Dry	Wet	Wet	Dry
			8/6/2015	1/6/2016	3/7/2016	5/26/2016
Field Measurements						
Flow	CFS			212.84		
pH		6.5 ≤ pH ≤ 8.5		7.73		
Temperature	°C	≤ 26.67°C ¹		7.65		
Dissolved Oxygen	mg/L	≥ 5		11.77		
Turbidity	NTU			>3000		
Conductivity	µS/cm			534.7		
General Water Quality						
Total Dissolved Solids (TDS)	mg/L	850		510		
Total Suspended Solids (TSS)	mg/L			114000		
Total Hardness as CaCO ₃	mg/L			286		
Chloride	mg/L	150		16		
Sulfate	mg/L	250		220		
Nutrients						
Ammonia-N	mg/L	NS/ 5.39/ NS/ NS ²		2.46		
Nitrate-N	mg/L	10		6.22		
Total Orthophosphate	mg/L			2.76		
Metals			NS		NS	NS
Dissolved Copper	µg/L	NS/ 22.0/ NS/ NS ³		8.531		
Total Copper	µg/L			699.406		
Organochlorine Pesticides						
Aldrin	µg/L	0.00014		ND		
BHC-alpha	µg/L	0.013		ND		
BHC-beta	µg/L	0.046		ND		
BHC-gamma	µg/L	0.063		ND		
cis-Nonachlor	µg/L			0.0313		
trans-Nonachlor	µg/L			0.116		
Chlordane-alpha	µg/L			0.0984		
Chlordane-gamma	µg/L			0.0817		
Total Chlordane	µg/L	0.00059		0.1801		
4,4'-DDD	µg/L	0.00084		0.107		
4,4'-DDE	µg/L	0.00059		0.4526		
4,4'-DDT	µg/L	0.00059		0.2		
Dieldrin	µg/L	0.00014		ND		
Endosulfan-I	µg/L	0.056		ND		
Endosulfan-II	µg/L	0.056		ND		

Constituent	Units	Benchmark	Event 26	Event 27	Event 28	Event 29
			Dry	Wet	Wet	Dry
			8/6/2015	1/6/2016	3/7/2016	5/26/2016
Endosulfan Sulfate	µg/L	240		ND		
Endrin	µg/L	0.036		ND		
Endrin Aldehyde	µg/L	0.81		ND		
Hexachlorobenzene	µg/L			0.0154		
Toxaphene	µg/L	0.00075		ND		
Organophosphorus Pesticides						
Chlorpyrifos	µg/L	0.025		0.2989		
Diazinon	µg/L	0.1		ND		
Pyrethroid Pesticides						
Bifenthrin	µg/L	0.0006		0.6048		
cis-Permethrin	µg/L			1.3327		
trans-Permethrin	µg/L			1.0984		

Concentrations in **bold** indicate an exceedance of a water quality benchmark applicable to this site for the specified constituent. See Tables 14 through 19 for a list of benchmarks applicable to this site.

NS – No samples were collected due to the site being dry.

1. The temperature limit for waterbodies designated as WARM is 80°F (26.7°C).
2. The benchmarks for Ammonia-N are listed in order of monitoring event and were calculated based on the April 2002 Basin Plan Amendment chronic equation (ELS absent) and are dependent upon the pH and temperature of the water at the time of sample collection.
3. The benchmarks for copper are listed in order of monitoring event and were calculated for freshwater at this site as prescribed in Table 16.

Table 31. 2015 - 2016 Trash Observations for 06T_LONG2

Event	Count	Types
Event 26	12	Boxes, plastic bags, can, cups, wrappers
Event 27	10	Bottles, cans, plastic
Event 28	0	N/A
Event 29	0	N/A

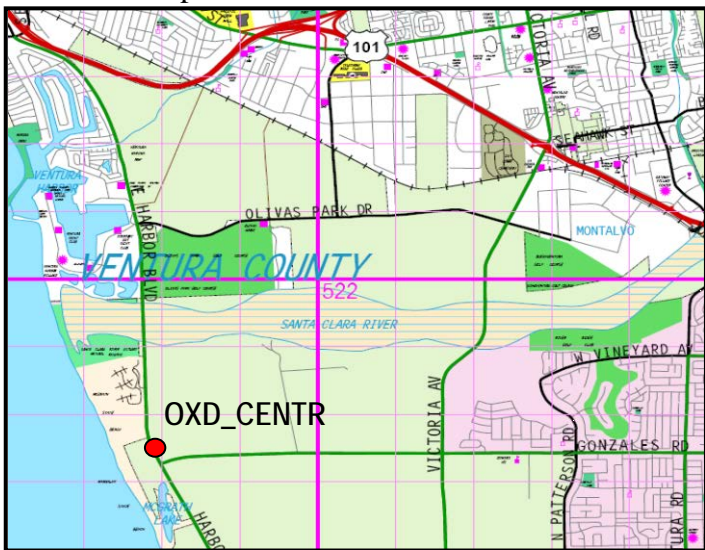
Oxnard Coastal Watershed

The Oxnard Coastal Watershed contains only one VCAILG monitoring site. The site is located on a drain used primarily for irrigated agriculture.

OXD_CENTR

This is the only VCAILG monitoring site in the Oxnard Coastal Watershed. The site is located on the Central Ditch, which flows under Harbor Boulevard and into McGrath Lake. Water from McGrath Lake is pumped periodically into the ocean to prevent the Central Ditch from backing up and flooding Harbor Boulevard.

Site Map



View looking downstream



Samples were collected at this site during three of the four 2015-2016 monitoring events. During dry Event 29, the site was completely stagnant with no flow and was therefore not sampled. Table 32 contains a summary of the concentrations for select constituents and provides a comparison of measured concentrations with applicable water quality benchmarks. Exceedances of nitrate-N occurred during all three sampled events. The 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, toxaphene, and bifenthrin benchmarks were exceeded during Events 27 and 28 (both wet weather). The total chlordane and ammonia-N benchmarks were exceeded during Event 28.

Table 33 quantifies and describes trash found at this site. Strawberries and row crops are the predominant crop types that drain to this site.

Table 32. 2015 - 2016 VCAILG Monitoring Data v. Waiver Benchmarks: OXD_CENTR

Constituent	Units	Benchmark	Event	Event	Event	Event	
			26 Dry 8/6/2015	27 Wet 1/6/2016	28 Wet 3/7/2016	29 Dry 5/26/2016	
Flow	CFS		0.6567	0.769	3.202	NS	
pH		6.5 ≤ pH ≤ 8.5	7.4	7.3	7.2		
Temperature	°C		20.41	13.02	12.41		
Dissolved Oxygen	mg/L	≥ 5	8.46	8.52	8.15		
Turbidity	NTU		1.03	350.5	555.0		
Conductivity	µS/cm		3431	2846	2531		
General Water Quality							
Total Dissolved Solids (TDS)	mg/L		2910	2560	2160		
Total Suspended Solids (TSS)	mg/L		5	181	676		
Total Hardness as CaCO ₃	mg/L		1904	1450	1181		
Chloride	mg/L		240	180	109		
Sulfate	mg/L		1380	1290	1140		
Nutrients							
Ammonia-N	mg/L	3.21/ 5.59/ 6.24/ NS ¹	0.42	0.26	6.85		
Nitrate-N	mg/L	10 ²	12.99	27.56	38.82		
Total Orthophosphate	mg/L		1.53	0.83	5.52		
Metals							
Dissolved Copper	µg/L	25.31 ³	1.33	3.79	10.06		
Total Copper	µg/L		1.52	10.44	57.95		
Organochlorine Pesticides							
Aldrin	µg/L	0.00014	ND	ND	ND		
BHC-alpha	µg/L	0.013	ND	ND	ND		
BHC-beta	µg/L	0.046	ND	ND	ND		
BHC-gamma	µg/L	0.063	ND	ND	ND		
cis-Nonachlor	µg/L		ND	DNQ	0.0052		
trans-Nonachlor	µg/L		ND	DNQ	0.0119		
Chlordane-alpha	µg/L		ND	DNQ	0.0215		
Chlordane-gamma	µg/L		ND	DNQ	0.0177		
Total Chlordane	µg/L	0.0059	ND	DNQ	0.0392		
2,4'-DDD	µg/L		ND	0.0316	0.0525		
2,4'-DDE	µg/L		ND	0.0074	0.0118		
2,4'-DDT	µg/L		ND	0.0312	0.1172		
4,4'-DDD	µg/L	0.00084	DNQ	0.1461	0.1396		
4,4'-DDE	µg/L	0.00059	DNQ	0.2935	0.5144		
4,4'-DDT	µg/L	0.00059	ND	0.1688	0.5364		

Constituent	Units	Benchmark	Event 26 Dry	Event 27 Wet	Event 28 Wet	Event 29 Dry
			8/6/2015	1/6/2016	3/7/2016	5/26/2016
Dieldrin	µg/L	0.00014	ND	ND	ND	
Endosulfan-I	µg/L	0.056	ND	ND	ND	
Endosulfan-II	µg/L	0.056	ND	ND	ND	
Endosulfan Sulfate	µg/L	240	ND	ND	ND	
Endrin	µg/L	0.036	ND	ND	ND	
Endrin Aldehyde	µg/L	0.81	ND	ND	ND	
Toxaphene	µg/L	0.00075	ND	0.99234	4.2608	
Organophosphorus Pesticides						
Chlorpyrifos	µg/L	0.025	ND	0.0042	0.014	
Diazinon	µg/L	0.1	ND	ND	ND	
Malathion	µg/L		ND	0.0077	ND	
Pyrethroid Pesticides						
Bifenthrin	µg/L	0.0006	ND	0.5232	0.0688	
Danitol	µg/L		ND	ND	0.0074	

Concentrations in **bold** indicate an exceedance of a water quality benchmark applicable to this site for the specified constituent. See Tables 14 through 19 for a list of benchmarks applicable to this site.

NS – No sample were collected due to the site being ponded.

1. The benchmarks for Ammonia-N are listed in order of monitoring event and were calculated based on the April 2002 Basin Plan Amendment chronic equation (ELS absent) and are dependent upon the pH and temperature of the water at the time of sample collection.
2. There is no site-specific nitrogen objective in the Basin Plan (Table 3-8) applicable to this reach. The Basin Plan objective of 10 mg/L nitrate-N was used for comparison with VCAILG data for this site.
3. The copper benchmark was applied for saltwater at this site as prescribed in Table 16.

Table 33. 2015 - 2016 Trash Observations for OXD_CENTR

Event	Count	Types
Event 26	6	Plastic, styrofoam, paper
Event 27	2	Plastic
Event 28	5	Plastic, cups
Event 29	1	Cup

Santa Clara River Watershed

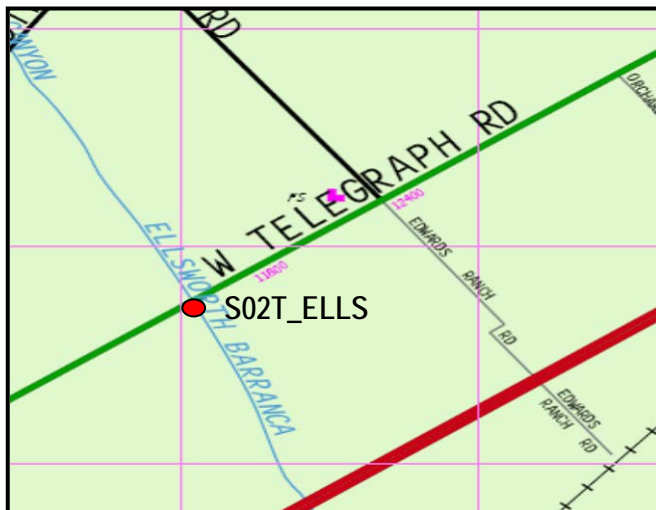
The Santa Clara River Watershed contains seven VCAILG monitoring sites, including one background site. Five of the sites are located on tributaries to the Santa Clara River.

S03D_BARDS is the only monitoring site located on a drain used primarily for irrigated agriculture. Monitoring sites are discussed below in order of the Santa Clara River reach into which they drain.

S02T_ELLS

This monitoring site is located on Ellsworth Barranca just downstream of the Telegraph Road Bridge. Ellsworth Barranca drains the Aliso Canyon area and is a tributary to Santa Clara River Reach 2.

Site Map



View upstream at the bridge



Flow was present at this site during three of the four 2015-2016 monitoring events. The site was dry during Event 26, and sampled during Events 27, 28 and 29. Table 34 contains a summary of the concentrations for select constituents and provides a comparison of measured concentrations with applicable water quality benchmarks. During Events 27 and 28 (wet and dry weather, respectively) there were exceedances of the 4,4'-DDE, and 4,4'-DDT benchmarks. The bifenthrin benchmark was exceeded during wet weather Event 27 and dry weather Event 29. The benchmarks for total chlordane, 4,4'-DDD, toxaphene and chlorpyrifos were exceeded during wet weather Event 27.

Table 35 describes trash found at this site. Citrus and avocados are the primary crop types associated with this site.

Table 34. 2015 - 2016 VCAILG Monitoring Data v. Waiver Benchmarks: S02T_ELLS

Constituent	Units	Benchmark	Event	Event	Event	Event
			26 Dry 8/6/2015	27 Wet 1/6/2016	28 Wet 3/7/2016	29 Dry 5/26/2016
Field Measurements						
Flow	CFS			33.678	9.774	0.995
pH		6.5 ≤ pH ≤ 8.5		7.73	8.02	8.19
Temperature	°C	≤ 26.67°C ¹		8.2	11.39	17.36
Dissolved Oxygen	mg/L	≥ 6		11.59	10.6	9.45
Turbidity	NTU			2499	>1000	56.2
Conductivity	µS/cm			518.1	1186	1513
General Water Quality						
Total Dissolved Solids (TDS)	mg/L	1200		290	760	1140
Total Suspended Solids (TSS)	mg/L			2840	11400	500
Total Hardness as CaCO ₃	mg/L			117	230	627
Chloride	mg/L	150		58	112	69
Sulfate	mg/L	600		91	300	590
Nutrients						
Ammonia-N	mg/L	NS/ 5.2/ 2.89/ 1.52 ²		0.6	0.63	0.28
Nitrate-N	mg/L	10		3.14	2.04	0.29
Total Orthophosphate	mg/L			1.72	1.69	0.46
Metals						
Dissolved Copper	µg/L	NS/ 10.2/ 18.3/ 29.3 ³	NS	8.86	6.036	2.08
Total Copper	µg/L			266.22	223.687	3.136
Organochlorine Pesticides						
Aldrin	µg/L	0.00014		ND	ND	ND
BHC-alpha	µg/L	0.013		ND	ND	ND
BHC-beta	µg/L	0.046		ND	ND	ND
BHC-gamma	µg/L	0.063		ND	ND	ND
cis-Nonachlor	µg/L			0.0113	ND	ND
trans-Nonachlor	µg/L			0.0296	ND	ND
Chlordane-alpha	µg/L			0.0389	ND	ND
Chlordane-gamma	µg/L			0.0352	ND	ND
Total Chlordane	µg/L	0.00059		0.0741	ND	ND
2,4'-DDD	µg/L			0.1053	ND	ND
2,4'-DDE	µg/L			0.0263	ND	ND
2,4'-DDT	µg/L			0.1136	ND	DNQ
4,4'-DDD	µg/L	0.00084		0.5944	ND	ND
4,4'-DDE	µg/L	0.00059		1.5616	ND	0.0166
4,4'-DDT	µg/L	0.00059		0.4505	ND	0.0415

Constituent	Units	Benchmark	Event	Event	Event	Event
			26 Dry 8/6/2015	27 Wet 1/6/2016	28 Wet 3/7/2016	29 Dry 5/26/2016
Dieldrin	µg/L	0.00014		ND	ND	ND
Endosulfan-I	µg/L	0.056		ND	ND	ND
Endosulfan-II	µg/L	0.056		ND	ND	ND
Endosulfan Sulfate	µg/L	240		ND	ND	ND
Endrin	µg/L	0.036		ND	ND	ND
Endrin Aldehyde	µg/L	0.81		ND	ND	ND
Toxaphene	µg/L	0.00075		0.50491	ND	ND
Organophosphorus Pesticides						
Chlorpyrifos	µg/L	0.025		1.5929	ND	ND
Diazinon	µg/L	0.1		0.0169	ND	ND
Pyrethroid Pesticides						
Bifenthrin	µg/L	0.0006		0.0897	ND	0.019
cis-Permethrin	µg/L			DNQ	ND	0.6078
trans-Permethrin	µg/L			0.0104	ND	1.7562

Concentrations in **bold** indicate an exceedance of a water quality benchmark applicable to this site for the specified constituent.

See Tables 14 through 19 for a list of benchmarks applicable to this site.

NS – No samples were collected due to the site being dry.

1. The temperature limit for waterbodies designated as WARM is 80°F (26.7°C).
2. The benchmarks for Ammonia-N are listed in order of monitoring event and were calculated based on the April 2002 Basin Plan Amendment chronic equation (ELS present) and are dependent upon the pH and temperature of the water at the time of sample collection.
3. The copper benchmarks are listed in order of monitoring event and were calculated for freshwater at this site as prescribed in Table 16.

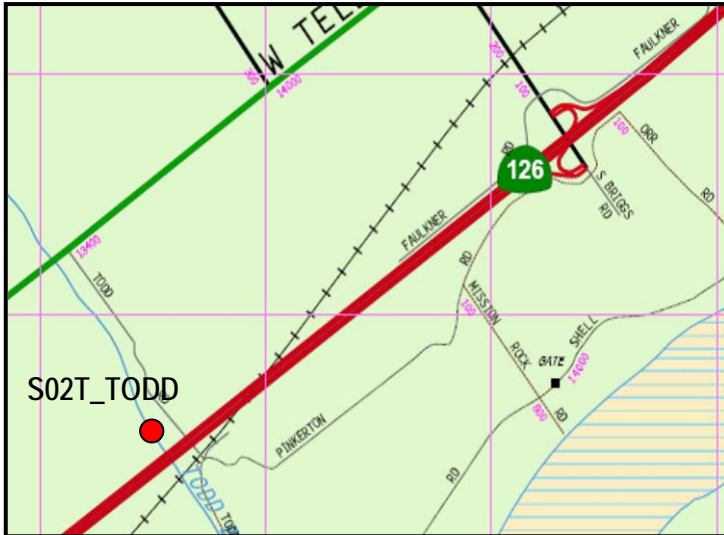
Table 35. 2015 - 2016 Trash Observations for S02T_ELLS

Event	Count	Types
Event 26	3	Liquor bottles, plastic bags
Event 27	3	Plastic cups, aluminum can
Event 28	15	Ag plastic, coffee cup, irrigation tube
Event 29	10-15	Yogurt, bag, cardboard, ag trash

S02T_TODD

This monitoring site is located on Todd Barranca upstream of Hwy 126. Todd Barranca drains the Wheeler Canyon area and is a tributary to Santa Clara River Reach 2.

Site Map



View upstream of the sampling site



Sufficient flow was present during all four 2015-2016 monitoring events. Table 36 contains a summary of the concentrations for select constituents and provides a comparison of measured concentrations with applicable water quality benchmarks. The sulfate and TDS benchmarks were exceeded during Events 26, 27 and 29 (dry, wet and dry events, respectively). The benchmarks for 4,4'-DDD and 4,4'-DDT were exceeded during wet weather Events 27 and 28. The nitrate-N, 4,4'-DDE, bifenthrin, and toxaphene benchmarks were also exceeded during wet weather Event 27.

Table 37 lists trash observation made at the site. Citrus and avocados are the primary crop types associated with this site, along with portions used for row crops.

Table 36. 2015 - 2016 VCAILG Monitoring Data v. Waiver Benchmarks: S02T_TODD

Constituent	Units	Benchmark	Event 26 Dry	Event 27 Wet	Event 28 Wet	Event 29 Dry
			8/6/2015	1/6/2016	3/7/2016	5/26/2016
Field Measurements						
Flow	CFS		0.287	0.661	10.607	0.948
pH		6.5 ≤ pH ≤ 8.5	7.13	7.4	7.69	7.81
Temperature	°C	≤ 26.67°C ¹	19.15	11.2	11.14	18.94
Dissolved Oxygen	mg/L	≥ 6	8.44	9.29	10.09	9.08
Turbidity	NTU		N/A	530.0	>1000	0.0
Conductivity	µS/cm		2049	2372	841.6	1887
General Water Quality						
Total Dissolved Solids (TDS)	mg/L	1200	1630	1880	570	1370
Total Suspended Solids (TSS)	mg/L		ND	1710	5030	2
Total Hardness as CaCO ₃	mg/L		1152.6	1058.2	200.1	795.4
Chloride	mg/L	150	70	115	39	81
Sulfate	mg/L	600	730	930	221	720
Nutrients						
Ammonia-N	mg/L	4.15/ 5.86/ 4.5/ 2.36 ²	ND	0.31	0.95	0.5
Nitrate-N	mg/L	10	4.25	12.04	3.76	3.7
Total Orthophosphate	mg/L		0.12	0.77	6.77	0.15
Metals						
Dissolved Copper	µg/L	29.3/ 29.3/ 16.2/ 29.3 ³	1.001	4.712	6.498	0.866
Total Copper	µg/L		1.458	26.139	105.678	1.036
Organochlorine Pesticides						
Aldrin	µg/L	0.00014	ND	ND	ND	ND
BHC-alpha	µg/L	0.013	ND	ND	ND	ND
BHC-beta	µg/L	0.046	ND	ND	ND	ND
BHC-gamma	µg/L	0.063	ND	ND	ND	ND
Chlordane-alpha	µg/L		ND	DNQ	ND	ND
Chlordane-gamma	µg/L		ND	DNQ	ND	ND
Total Chlordane	µg/L	0.00059	ND	DNQ	ND	ND
2,4'-DDT	µg/L		ND	ND	0.0753	ND
4,4'-DDD	µg/L	0.00084	ND	0.036	0.2531	ND
4,4'-DDE	µg/L	0.00059	ND	0.0245	ND	ND
4,4'-DDT	µg/L	0.00059	ND	0.0344	0.6653	ND
Dieldrin	µg/L	0.00014	ND	ND	ND	ND
Endosulfan-I	µg/L	0.056	ND	ND	ND	ND
Endosulfan-II	µg/L	0.056	ND	ND	ND	ND
Endosulfan Sulfate	µg/L	240	ND	ND	ND	ND

Constituent	Units	Benchmark	Event	Event	Event	Event
			26	27	28	29
			Dry	Wet	Wet	Dry
			8/6/2015	1/6/2016	3/7/2016	5/26/2016
Endrin	µg/L	0.036	ND	ND	ND	ND
Endrin Aldehyde	µg/L	0.81	ND	ND	ND	ND
Toxaphene	µg/L	0.00075	ND	0.54652	ND	ND
Organophosphorus Pesticides						
Chlorpyrifos	µg/L	0.025	ND	0.0186	ND	ND
Diazinon	µg/L	0.1	ND	ND	ND	ND
Pyrethroid Pesticides						
Bifenthrin	µg/L	0.0006	ND	0.0075	ND	ND

Concentrations in **bold** indicate an exceedance of a water quality benchmark applicable to this site for the specified constituent. See Tables 14 through 19 for a list of benchmarks applicable to this site.

N/A – Meter did not post calibrate.

1. The temperature limit for waterbodies designated as WARM is 80°F (26.7°C).
2. The benchmarks for Ammonia-N are listed in order of monitoring event and were calculated based on the April 2002 Basin Plan Amendment chronic equation (ELS present) and are dependent upon the pH and temperature of the water at the time of sample collection.
3. The copper benchmark was calculated for freshwater at this site as prescribed in Table 16. It was the same for all three events.

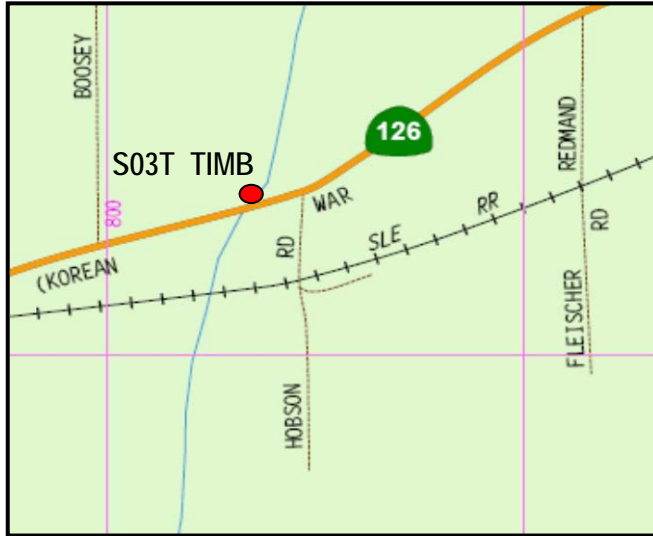
Table 37. 2015 - 2016 Trash Observations for S02T_TODD

Event	Count	Types
Event 26	3	Drink bottle, plastic bag
Event 27	0	N/A
Event 28	2	Plastic Bags
Event 29	0	N/A

S03T_TIMB

This monitoring site is located on Timber Canyon Creek just upstream of Hwy 126, east of Santa Paula. Timber Creek is a tributary to Santa Clara River Reach 3.

Site Map



View of site (S) toward Hwy 126



Sufficient flow to monitor was present during wet Events 27 and 28, and the site was dry during both dry Events 26 and 29. Table 38 contains a summary of the concentrations for select constituents and provides a comparison of measured concentrations with applicable water quality benchmarks. Sufficient flow to monitor was present during wet Events 27 and 28, and the site was dry during both dry Events 26 and 29. The 4,4'-DDT benchmark was exceeded during both wet weather Events 27 and 28. During wet weather Event 27, there were exceedances of the 4,4'-DDD, 4,4'-DDE, Bifenthrin, and toxaphene benchmarks.

Trash observations are provided in Table 39. This site drains mostly avocado and citrus orchards.

Table 38. 2015 - 2016 VCAILG Monitoring Data v. Waiver Benchmarks: S03T_TIMB

Constituent	Units	Benchmark	Event 26	Event 27	Event 28	Event 29
			Dry	Wet	Wet	Dry
			8/6/2015	1/6/2016	3/7/2016	5/26/2016
Field Measurements						
Flow	CFS			15.67	0.41	
pH		6.5 ≤ pH ≤ 8.5		7.65	7.69	
Temperature	°C	≤ 26.67°C ¹		8.98	14.16	
Dissolved Oxygen	mg/L	≥ 5		11.29	10.07	
Turbidity	NTU			2897.0	>1000	
Conductivity	µS/cm			728.6	965.2	
General Water Quality						
Total Dissolved Solids (TDS)	mg/L	1300		500	680	
Total Suspended Solids (TSS)	mg/L			33700	8900	
Total Hardness as CaCO ₃	mg/L			177	183	
Chloride	mg/L	100		32	36	
Sulfate	mg/L	650		246	336	
Nutrients						
Ammonia-N	mg/L	NS/ 4.43/ 3.7/ NS ²		0.61	0.47	
Nitrate-N	mg/L	5		3.57	4.26	
Total Orthophosphate	mg/L			0.74	2.11	
Metals						
Dissolved Copper	µg/L	NS/ 14.6/ 15.0/ NS ³	NS	6.76	7.85	NS
Total Copper	µg/L			364.5	189.3	
Organochlorine Pesticides						
Aldrin	µg/L	0.00014		ND	ND	
BHC-alpha	µg/L	0.013		ND	ND	
BHC-beta	µg/L	0.046		ND	ND	
BHC-gamma	µg/L	0.063		ND	ND	
Chlordane-alpha	µg/L			DNQ	ND	
Chlordane-gamma	µg/L			ND	ND	
Total Chlordane	µg/L	0.00059		DNQ	ND	
2,4'-DDT	µg/L			0.0083	ND	
4,4'-DDD	µg/L	0.00084		0.0089	ND	
4,4'-DDE	µg/L	0.00059		0.0345	ND	
4,4'-DDT	µg/L	0.00059		0.0698	0.0169	
Dieldrin	µg/L	0.00014		ND	ND	
Endosulfan-I	µg/L	0.056		ND	ND	
Endosulfan-II	µg/L	0.056		ND	ND	
Endosulfan Sulfate	µg/L	240		ND	ND	
Endrin	µg/L	0.036		ND	ND	

Constituent	Units	Benchmark	Event 26	Event 27	Event 28	Event 29
			Dry 8/6/2015	Wet 1/6/2016	Wet 3/7/2016	Dry 5/26/2016
Endrin Aldehyde	µg/L	0.81		ND	ND	
Toxaphene	µg/L	0.00075		0.55702	ND	
Organophosphorus Pesticides						
Chlorpyrifos	µg/L	0.025		0.0031	ND	
Diazinon	µg/L	0.1		ND	ND	
Pyrethroid Pesticides						
Bifenthrin	µg/L	0.0006		0.0096	ND	

Concentrations in **bold** indicate an exceedance of a water quality benchmark applicable to this site for the specified constituent. See Tables 14 through 19 for a list of benchmarks applicable to this site.

NS – No samples were collected due to the site being dry.

1. The temperature limit for waterbodies designated as WARM is 80°F (26.7°C).
2. The benchmarks for Ammonia-N are listed in order of monitoring event and were calculated based on the April 2002 Basin Plan Amendment chronic equation (ELS present) and are dependent upon the pH and temperature of the water at the time of sample collection.
3. The copper benchmark was calculated for freshwater at this site as prescribed in Table 16. It was the same for all three events.

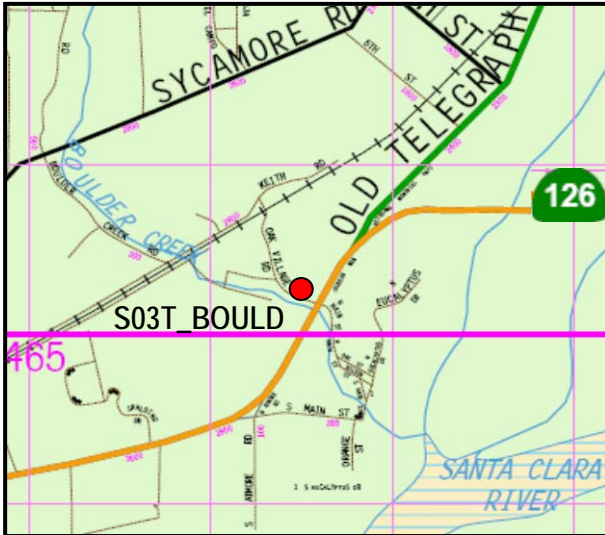
Table 39. 2015 – 2016 Trash Observations for S03T_TIMB

Event	Count	Types
Event 26	20-30	Drink bottles, plastic bags, paper, plastic cups, cans
Event 27	1	Plastic bag
Event 28	3	Trash bag, food wrappers
Event 29	2	Box, crate

S03T_BOULD

This monitoring site is located on Boulder Creek just upstream of Hwy 126, west of Fillmore. Boulder Creek is a tributary to Santa Clara River Reach 3.

Site Map



View of sampling location (upstream)



Sufficient flow to monitor was present for wet weather Events 27 and 28 during the 2015-2016 monitoring year. The site was dry during dry Events 26 and 29. Table 40 contains a summary of the concentrations for select constituents and provides a comparison of measured concentrations with applicable water quality benchmarks. The 4,4'-DDT benchmark was exceeded during both wet Events 27 and 28. Exceedances of the nitrate-N, total chlordane, 4,4'-DDE, bifenthrin, and toxaphene benchmarks occurred during wet Event 27.

Trash observations for this site can be found in Table 41. Citrus, avocados, and nurseries are the primary crop types associated with this site.

Table 40. 2015 - 2016 VCAILG Monitoring Data v. Waiver Benchmarks: S03T_BOULD

Constituent	Units	Benchmark	Event	Event	Event	Event
			26 Dry 8/6/2015	27 Wet 1/6/2016	28 Wet 3/7/2016	29 Dry 5/26/2016
Field Measurements			NS			
Flow	CFS				69.042	0.053
pH		6.5 ≤ pH ≤ 8.5			7.45	7.72
Temperature	°C	≤ 26.67°C ¹			8.75	16.04
Dissolved Oxygen	mg/L	≥ 5			11.31	9.57
Turbidity	NTU				2897.0	>1000
Conductivity	µS/cm				715.8	546.1
General Water Quality						
Total Dissolved Solids (TDS)	mg/L	1300			510	390
Total Suspended Solids (TSS)	mg/L				15800	2080
Total Hardness as CaCO ₃	mg/L			302	169	
Chloride	mg/L	150		18	13	
Sulfate	mg/L	650		261	150	
Nutrients						
Ammonia-N	mg/L	NS/ 6.6/ 3.17/ NS ²		1.74	0.16	
Nitrate-N	mg/L	5		9.35	4.5	
Total Orthophosphate	mg/L			0.83	5.21	
Metals						
Dissolved Copper	µg/L	NS/ 23.0/ 14.0/ NS ³	NS	4.45	3.66	
Total Copper	µg/L			229.7	43.8	
Organochlorine Pesticides						
Aldrin	µg/L	0.00014		ND	ND	
BHC-alpha	µg/L	0.013		ND	ND	
BHC-beta	µg/L	0.046		ND	ND	
BHC-gamma	µg/L	0.063		ND	ND	
trans-Nonachlor	µg/L			0.0064	ND	
Chlordane-alpha	µg/L			0.0077	ND	
Chlordane-gamma	µg/L			0.0054	ND	
Total Chlordane	µg/L	0.00059		0.0131	ND	
4,4'-DDD	µg/L	0.00084		DNQ	ND	
4,4'-DDE	µg/L	0.00059		0.0201	ND	
4,4'-DDT	µg/L	0.00059		0.0336	0.0056	
Dieldrin	µg/L	0.00014		ND	ND	
Endosulfan-I	µg/L	0.056		ND	ND	
Endosulfan-II	µg/L	0.056		ND	ND	
Endosulfan Sulfate	µg/L	240		ND	ND	

Constituent	Units	Benchmark	Event	Event	Event	Event
			26 Dry 8/6/2015	27 Wet 1/6/2016	28 Wet 3/7/2016	29 Dry 5/26/2016
Endrin	µg/L	0.036		ND	ND	
Endrin Aldehyde	µg/L	0.81		ND	ND	
Toxaphene	µg/L	0.00075		0.34928	ND	
Organophosphorus Pesticides						
Chlorpyrifos	µg/L	0.025		0.013	ND	
Diazinon	µg/L	0.1		ND	ND	
Pyrethroid Pesticides						
Bifenthrin	µg/L	0.0006		0.0094	ND	
trans-Permethrin	µg/L			0.0149	ND	

Concentrations in **bold** indicate an exceedance of a water quality benchmark applicable to this site for the specified constituent. See Tables 14 through 19 for a list of benchmarks applicable to this site.

NS – No samples were collected due to the site being dry.

1. The temperature limit for waterbodies designated as WARM is 80°F (26.7°C).
2. The benchmarks for Ammonia-N are listed in order of monitoring event and were calculated based on the April 2002 Basin Plan Amendment chronic equation (ELS present) and are dependent upon the pH and temperature of the water at the time of sample collection.
3. The copper benchmark was calculated for freshwater at this site as prescribed in Table 16. It was the same for all three events.

Table 41. 2015 - 2016 Trash Observations for S03T_BOULD

Event	Count	Types
Event 26	10-20	Water bottles, mylar balloons, paper
Event 27	3	Food wrappers
Event 28	5	Beer bottles, plant container
Event 29	15-20	Wrappers, food containers, bottles, cardboard

S03D_BARDS

This monitoring site is located near the end of the agricultural drain that runs parallel to Bardsdale Avenue in Bardsdale. The drain is located on the south side of the Santa Clara River and eventually discharges into Santa Clara River Reach 3.

Site Map



View of site looking upstream



Sufficient flow to monitor was present during three of the four 2015-2016 sampling events. Sampling was conducted during wet weather Events 27 and 28, as well as dry weather Event 29. The site was dry during Event 26. Table 42 contains a summary of the concentrations for select constituents and provides a comparison of measured concentrations with applicable water quality benchmarks. During Event 27 and 28 (both wet weather), there were exceedances of both the 4,4'-DDE and bifenthrin benchmark. There were exceedances of the total chlordane, 4,4'-DDD, 4,4'-DDT, chlorpyrifos, and diazinon benchmarks during wet weather Event 27.

Trash observations for S03D_BARDS are provided below in Table 43. This site drains mostly citrus orchards with small proportions of the area used for avocados and row crops.

Table 42. 2015 - 2016 VCAILG Monitoring Data v. Waiver Benchmarks: S03D_BARDS

Constituent	Units	Benchmark	Event	Event	Event	Event
			26 Dry 8/6/2015	27 Wet 1/6/2016	28 Wet 3/7/2016	29 Dry 5/26/2016
Field Measurements						
Flow	CFS			63.20	0.105	0.968
pH		6.5 ≤ pH ≤ 8.5		8.18	7.93	8.37
Temperature	°C	≤ 26.67°C ¹		7.51	21.84	19.63
Dissolved Oxygen	mg/L	≥ 5		11.89	10.18	10
Turbidity	NTU			2896.0	804.0	1.6
Conductivity	µS/cm			301.1	423.5	1283
General Water Quality						
Total Dissolved Solids (TDS)	mg/L	1300		210	310	920
Total Suspended Solids (TSS)	mg/L			19200	570	16
Total Hardness as CaCO ₃	mg/L			72	97	514
Chloride	mg/L	100		9	33	54
Sulfate	mg/L	650		83	69	391
Nutrients						
Ammonia-N	mg/L	NS/ 2.91/ 1.68/ 0.98 ²		0.59	0.19	0.06
Nitrate-N	mg/L	5		3.36	3.07	1.12
Total Orthophosphate	mg/L			1.93	3.03	0.15
Metals						
Dissolved Copper	µg/L	NS/ 6.7/ 8.7/ 29.3 ³	NS	5.42	8.39	0.42
Total Copper	µg/L			307.41	25.16	0.94
Organochlorine Pesticides						
Aldrin	µg/L	0.00014		ND	ND	ND
BHC-alpha	µg/L	0.013		ND	ND	ND
BHC-beta	µg/L	0.046		ND	ND	ND
BHC-gamma	µg/L	0.063		ND	ND	ND
cis-Nonachlor	µg/L			0.0562	ND	ND
trans-Nonachlor	µg/L			0.1821	DNQ	ND
Chlordane-alpha	µg/L			0.1482	ND	ND
Chlordane-gamma	µg/L			0.1256	ND	ND
Total Chlordane	µg/L	0.00059		0.2738	ND	ND
2,4'-DDD	µg/L			0.0149	ND	ND
4,4'-DDD	µg/L	0.00084		0.102	ND	ND
4,4'-DDE	µg/L	0.00059		0.4097	0.0093	DNQ
4,4'-DDT	µg/L	0.00059		0.1396	ND	ND
Dieldrin	µg/L	0.00014		ND	ND	ND
Endosulfan-I	µg/L	0.056		ND	ND	ND
Endosulfan-II	µg/L	0.056		ND	ND	ND

Constituent	Units	Benchmark	Event 26	Event 27	Event 28	Event 29
			Dry 8/6/2015	Wet 1/6/2016	Wet 3/7/2016	Dry 5/26/2016
Endosulfan Sulfate	µg/L	240		ND	ND	ND
Endrin	µg/L	0.036		ND	ND	ND
Endrin Aldehyde	µg/L	0.81		ND	ND	ND
Toxaphene	µg/L	0.00075		ND	ND	ND
Organophosphorus Pesticides						
Chlorpyrifos	µg/L	0.025		0.1941	0.017	0.0139
Diazinon	µg/L	0.1		1.5024	ND	ND
Pyrethroid Pesticides						
Bifenthrin	µg/L	0.0006		0.4125	0.0268	ND
Danitol	µg/L			ND	0.0098	ND

Concentrations in **bold** indicate an exceedance of a water quality benchmark applicable to this site for the specified constituent. See Tables 14 through 19 for a list of benchmarks applicable to this site.

NS – No samples were collected due to the site being dry.

1. The temperature limit for waterbodies designated as WARM is 80°F (26.7°C).
2. The benchmarks for Ammonia-N are listed in order of monitoring event and were calculated based on the April 2002 Basin Plan Amendment chronic equation (ELS present) and are dependent upon the pH and temperature of the water at the time of sample collection.
3. The copper benchmark was calculated for freshwater at this site as prescribed in Table 16. It was the same for all three events.

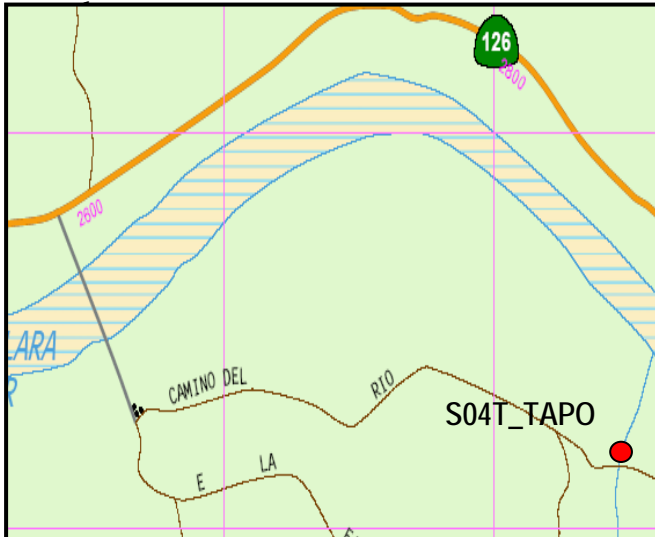
Table 43. 2015 - 2016 Trash Observations for S03D_BARDS

Event	Count	Types
Event 26	10-20	Plastic bags, oil drum, PVC pipes
Event 27	3	Ag plastic, PVC pipe
Event 28	10	Plastic pipe, ag plastic, plant container
Event 29	3	Ag bag, wrapper, tray

S04T_TAPO

This monitoring site is located on Tapo Creek near the Ventura / Los Angeles County line, south of Hwy 126 and the Santa Clara River. Tapo Creek is a tributary to Santa Clara River Reach 4.

Site Map



View upstream toward the sample site at the



Sufficient flow was present to sample during all four 2015-2016 monitoring events. Table 44 contains a summary of the concentrations for select constituents and provides a comparison of measured concentrations with applicable water quality benchmarks. The benchmarks for TDS, chloride, sulfate, 4,4'-DDE and 4,4'-DDT were exceeded for the Events 26, 27 and 29 (dry, wet and dry, respectively). The nitrate-N benchmark was exceeded during dry Events 26 and 29. During wet weather Event 27, the benchmark for total chlordane, 4,4'-DDD, toxaphene, bifenthrin, and chlorpyrifos were exceeded.

Table 45 summarizes trash observations for this site. Row crops, citrus, and nursery stock are grown in the vicinity of this monitoring site.

Table 44. 2015 - 2016 VCAILG Monitoring Data v. Waiver Benchmarks: S04T_TAPO

Constituent	Units	Benchmark	Event 26	Event 27	Event 28	Event 29
			Dry 8/6/2015	Wet 1/6/2016	Wet 3/7/2016	Dry 5/26/2016
Field Measurements						
Flow	CFS		0.1809	36.137	0.352	0.096
pH		$6.5 \leq \text{pH} \leq 8.5$	7.68	7.85	8.26	8.44
Temperature	°C	$\leq 26.67^\circ\text{C}^1$	18.62	8.42	12.19	17
Dissolved Oxygen	mg/L	≥ 5	8.47	11.02	9.77	9.71
Turbidity	NTU		N/A	2896.0	>1000	0.0
Conductivity	µS/cm		3641	327.3	2457	2130
General Water Quality						
Total Dissolved Solids (TDS)	mg/L	1300	2940	370	1790	1500
Total Suspended Solids (TSS)	mg/L		3	5780	3800	34
Total Hardness as CaCO ₃	mg/L		1763	94	626	660
Chloride	mg/L	100	210	27	108	140
Sulfate	mg/L	600	1340	156	701	640
Nutrients						
Ammonia-N	mg/L	2.81/ 18.07/ 1.89/ 1.03 ²	0.3	0.36	0.3	0.38
Nitrate-N	mg/L	5	22.04	2.45	3.36	9.85
Total Orthophosphate	mg/L		0.43	1.13	3.34	0.49
Metals						
Dissolved Copper	µg/L	29.3/ 8.46/ 29.3/ 29.3 ³	2.6	5.3	9.7	1.5
Total Copper	µg/L		3.2	327.2	141.8	2.8
Organochlorine Pesticides						
Aldrin	µg/L	0.00014	ND	ND	ND	ND
BHC-alpha	µg/L	0.013	ND	ND	ND	ND
BHC-beta	µg/L	0.046	ND	ND	ND	ND
BHC-gamma	µg/L	0.063	ND	ND	ND	ND
cis-Nonachlor	µg/L		ND	0.0216	ND	ND
trans-Nonachlor	µg/L		ND	0.056	ND	ND
Chlordane-alpha	µg/L		ND	0.0611	ND	ND
Chlordane-gamma	µg/L		ND	0.054	ND	ND
Total Chlordane	µg/L	0.0059	ND	0.1151	ND	ND
2,4'-DDD	µg/L		ND	0.1081	ND	ND
2,4'-DDE	µg/L		ND	0.0408	ND	ND
2,4'-DDT	µg/L		ND	0.0902	ND	ND
4,4'-DDD	µg/L	0.00084	DNQ	0.3936	ND	0.0054
4,4'-DDE	µg/L	0.00059	0.0063	1.4668	ND	0.0279
4,4'-DDT	µg/L	0.00059	0.0106	0.3138	ND	0.035

Constituent	Units	Benchmark	Event 26 Dry	Event 27 Wet	Event 28 Wet	Event 29 Dry
			8/6/2015	1/6/2016	3/7/2016	5/26/2016
Dieldrin	µg/L	0.00014	ND	ND	ND	ND
Endosulfan-I	µg/L	0.056	ND	ND	ND	ND
Endosulfan-II	µg/L	0.056	ND	ND	ND	ND
Endosulfan Sulfate	µg/L	240	ND	ND	ND	ND
Endrin	µg/L	0.036	ND	ND	ND	ND
Endrin Aldehyde	µg/L	0.81	ND	ND	ND	ND
Toxaphene	µg/L	0.00075	ND	0.28661	ND	ND
Organophosphorus Pesticides						
Chlorpyrifos	µg/L	0.025	ND	0.0369	ND	ND
Diazinon	µg/L	0.1	ND	ND	ND	ND
Pyrethroid Pesticides						
Bifenthrin	µg/L	0.0006	ND	0.0342	ND	ND

Concentrations in **bold** indicate an exceedance of a water quality benchmark applicable to this site for the specified constituent.

See Tables 14 through 19 for a list of benchmarks applicable to this site.

N/A – Meter did not post calibrate.

1. The temperature limit for waterbodies designated as WARM is 80°F (26.7°C).
2. The benchmarks for Ammonia-N are listed in order of monitoring event and were calculated based on the April 2002 Basin Plan Amendment chronic equation (ELS present) and are dependent upon the pH and temperature of the water at the time of sample collection.
3. The copper benchmark was calculated for freshwater at this site as prescribed in Table 16.

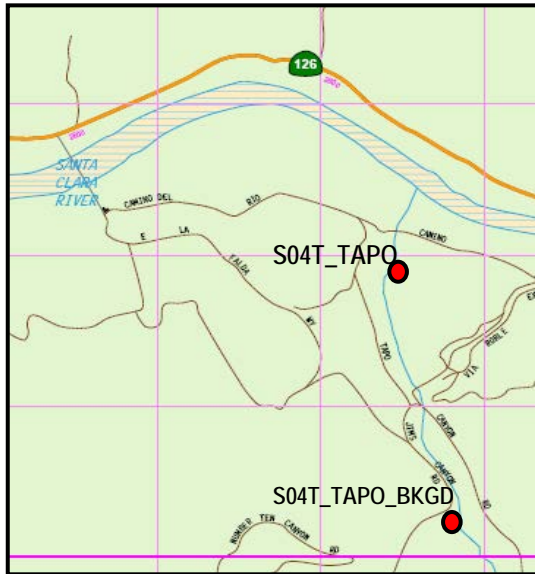
Table 45. 2015 - 2016 Trash Observations for S04T_TAPO

Event	Count	Types
Event 26	5	Paper, plastic bag
Event 27	1	Ag plastic
Event 28	1	Cup
Event 29	5-10	Bags, cups, wrappers

S04T_TAPO_BKGD

This monitoring site is a background site for S04T_TAPO that is located upstream of irrigated agricultural land that drains to S04T_TAPO. This site was selected to determine whether high salts concentrations are a background condition for the area. Since this site can only be reached by dirt roads, it has been too muddy to gain access for sampling during storm events.

Site Map



View of monitoring location



Site S04T_TAPO_BKGD was sampled once during the 2015-2016 monitoring year. The site was either not visited (Event 26), or the road was too muddy to access the site (Events 27 and 28). Table 46 contains a summary of the concentrations for select constituents. Because this site is a background site, water quality benchmarks are not included. In comparison to benchmarks at site S04T_TAPO, during sampling Event 29, the site had high concentrations of TDS, chloride and sulfate. All pesticide analysis resulted in ND. Table 47 summarizes trash observations for this site.

Table 46. 2015 - 2016 VCAILG Monitoring Data v. Waiver Benchmarks: S04T_TAPO_BKGD

Constituent	Units	Event 26	Event 27	Event 28	Event 29
		Dry 8/6/2015	Wet 1/6/2016	Wet 3/7/2016	Dry 5/26/2016
Field Measurements					
Flow	CFS				0.103
pH					8.71
Temperature	°C				13.96
Dissolved Oxygen	mg/L				9.54
Turbidity	NTU				0.2
Conductivity	µS/cm				5225
General Water Quality					
Total Dissolved Solids (TDS)	mg/L				3950
Total Suspended Solids (TSS)	mg/L	NS ¹	NS ²	NS ²	7
Total Hardness as CaCO ₃	mg/L				824.5
Chloride	mg/L				420
Sulfate	mg/L				940
Nutrients					
Ammonia-N	mg/L				ND
Nitrate-N	mg/L				0.07
Total Orthophosphate	mg/L				2.39
Metals					
Dissolved Copper	µg/L				5.681
Total Copper	µg/L				6.897

NS – Site not sampled.

1. Site not visited
2. Site inaccessible due to muddy road

Table 47. 2015 - 2016 Trash Observations for S04T_TAPO_BKGD

Event	Count	Types
Event 26	NS ¹	N/A
Event 27	NS ²	N/A
Event 28	NS ³	N/A
Event 29	0	N/A

1. Site not visited
2. Road inaccessible
3. Site inaccessible due to mud

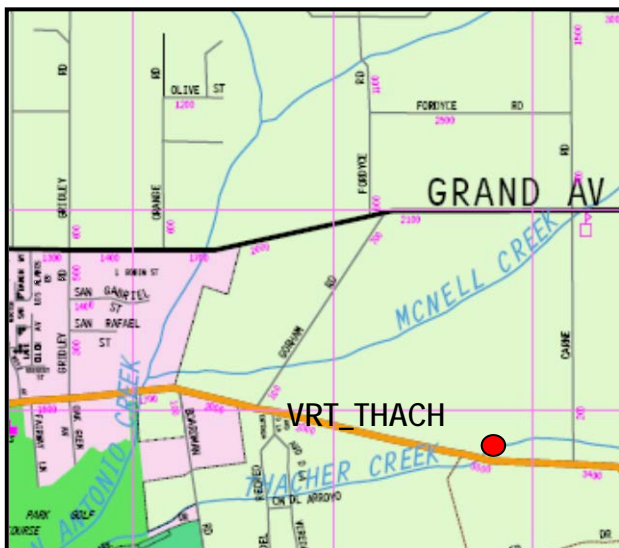
Ventura River Watershed

There are two VCAILG monitoring sites located in this watershed, both tributaries to the Ventura River and located on the east end of the City of Ojai.

VRT_THACH

This monitoring site is located on Thacher Creek just upstream of Ojai Avenue in Ojai. Thacher Creek is a tributary of San Antonio Creek, which is a tributary of the Ventura River.

Site Map



View downstream from site looking towards Ojai Ave. bridge



Sufficient flow was present for sampling at this site during two of the three 2015-2016 monitoring events. The site was sampled during both wet Events 27 and 28, and dry during both dry Events 26 and 29. Table 48 contains a summary of concentrations for select constituents and provides a comparison of measured concentrations with applicable water quality benchmarks. The 4,4'-DDE benchmark was exceeded during both sampled wet weather events. The 4,4'-DDT and toxaphene benchmarks were exceeded during Event 27.

The approximate amount and types of trash observed at this site is recorded in Table 49. Citrus and avocados are the predominant crop types associated with this site.

Table 48. 2015 - 2016 VCAILG Monitoring Data v. Waiver Benchmarks: VRT_THACH

Constituent	Units	Benchmark	Event 26	Event 27	Event 28	Event 29
			Dry	Wet	Wet	Dry
			8/6/2015	1/6/2016	3/7/2016	5/26/2016
Field Measurements						
Flow	CFS			2.514	0.331	
pH		$6.5 \leq \text{pH} \leq 8.5$		7.58	6.97	
Temperature	°C	$\leq 26.67^\circ\text{C}^1$		9.86	10.89	
Dissolved Oxygen	mg/L	≥ 7		10.69	10.49	
Turbidity	NTU			2132	555	
Conductivity	$\mu\text{S}/\text{cm}$			363.3	122	
General Water Quality						
Total Dissolved Solids (TDS)	mg/L	800		260	110	
Total Suspended Solids (TSS)	mg/L			1290	227	
Total Hardness as CaCO_3	mg/L			115.7	48.6	
Chloride	mg/L	60		24	4	
Sulfate	mg/L	30		59	9	
Nutrients						
Ammonia-N	mg/L	NS/ 5.47/ 1.89/ NS ²		2.25	0.19	
Nitrate-N	mg/L	5		4.19	1.26	
Total Orthophosphate	mg/L			4.23	1.87	
Metals						
Dissolved Copper	$\mu\text{g}/\text{L}$	NS/ 10.14/ 4.83/ NS ³	NS	8.132	3.652	NS
Total Copper	$\mu\text{g}/\text{L}$			39.262	12.361	
Organochlorine Pesticides						
Aldrin	$\mu\text{g}/\text{L}$	0.00013		ND	ND	
BHC-alpha	$\mu\text{g}/\text{L}$	0.0039		ND	ND	
BHC-beta	$\mu\text{g}/\text{L}$	0.014		ND	ND	
BHC-gamma	$\mu\text{g}/\text{L}$	0.019		ND	ND	
Chlordane-alpha	$\mu\text{g}/\text{L}$			ND	ND	
Chlordane-gamma	$\mu\text{g}/\text{L}$			ND	ND	
Total Chlordane	$\mu\text{g}/\text{L}$	0.00059		ND	ND	
4,4'-DDD	$\mu\text{g}/\text{L}$	0.00084		ND	ND	
4,4'-DDE	$\mu\text{g}/\text{L}$	0.00059		0.019	0.0107	
4,4'-DDT	$\mu\text{g}/\text{L}$	0.00059		0.0147	ND	
Dieldrin	$\mu\text{g}/\text{L}$	0.00014		ND	ND	
Endosulfan-I	$\mu\text{g}/\text{L}$	0.056		ND	ND	
Endosulfan-II	$\mu\text{g}/\text{L}$	0.056		ND	ND	
Endosulfan Sulfate	$\mu\text{g}/\text{L}$	110		ND	ND	
Endrin	$\mu\text{g}/\text{L}$	0.036		ND	ND	

Constituent	Units	Benchmark	Event 26 Dry	Event 27 Wet	Event 28 Wet	Event 29 Dry
			8/6/2015	1/6/2016	3/7/2016	5/26/2016
Endrin Aldehyde	µg/L	0.76		ND	ND	
Toxaphene	µg/L	0.00075		0.20469	ND	
Organophosphorus Pesticides						
Chlorpyrifos	µg/L	0.025		0.0074	0.0204	
Diazinon	µg/L	0.1		ND	ND	
Pyrethroid Pesticides						
Bifenthrin	µg/L	0.0006		ND	ND	

Concentrations in **bold** indicate an exceedance of a water quality benchmark applicable to this site for the specified constituent.

See Tables 14 through 19 for a list of benchmarks applicable to this site.

N/A – Meter did not post calibrate.

NS – No samples were collected due to the site being dry.

1. The temperature limit for waterbodies designated as WARM is 80°F (26.7°C).
2. The benchmarks for Ammonia-N are listed in order of monitoring event and were calculated based on the April 2002 Basin Plan Amendment chronic equation (ELS present) and are dependent upon the pH and temperature of the water at the time of sample collection.
3. The copper benchmark was calculated for freshwater at this site as prescribed in Table 16.

Table 49. 2015 - 2016 Trash Observations for VRT_THACH

Event	Count	Types
Event 26	4	Cardboard, styrofoam cup, plastic bag
Event 27	1	Ag plastic
Event 28	2	Cardboard, light bulb
Event 29	10-15	Urban trash, plastic, cups

VRT_SANTO

This monitoring site is located on San Antonio Creek just upstream of Grand Avenue in Ojai. San Antonio Creek is a tributary of the Ventura River.

Site Map



View downstream at the Grand Ave. bridge



Samples were collected at this site during one of the four 2015-2016 monitoring events. The site was dry during Events 26 and 29. During Event 28, the site was ponded and not flowing, so the site was not sampled. Event 27 (wet weather event) was the only event sampled. Table 50 contains a summary of the concentrations for select constituents and provides a comparison of measured concentrations with applicable water quality benchmarks. 4,4'-DDD, 4,4'-DDE, 4,4'-DDT benchmarks were exceeded during this sampling event.

Table 51 includes the number and types of trash observed at the monitoring site. Citrus and avocados are the predominant crop types associated with this site.

Table 50. 2015 - 2016 VCAILG Monitoring Data v. Waiver Benchmarks: VRT_SANTO

Constituent	Units	Benchmark	Event	Event	Event	Event
			26	27	28	29
			Dry	Wet	Wet	Dry
			8/6/2015	1/6/2016	3/7/2016	5/26/2016
Field Measurements						
Flow	CFS			0.132		
pH		$6.5 \leq \text{pH} \leq 8.5$		7.45		
Temperature	°C	$\leq 26.67^\circ\text{C}^1$		9.69		
Dissolved Oxygen	mg/L	≥ 7		10.63		
Turbidity	NTU			514.0		
Conductivity	µS/cm			204.8		
General Water Quality						
Total Dissolved Solids (TDS)	mg/L	800		140		
Total Suspended Solids (TSS)	mg/L			227		
Total Hardness as CaCO ₃	mg/L			89.5		
Chloride	mg/L	60		6		
Sulfate	mg/L	300		41		
Nutrients						
Ammonia-N	mg/L	NS/ 6.21/ NS/ NS ²		0.1		
Nitrate-N	mg/L	5		2.21		
Total Orthophosphate	mg/L			0.35		
Metals						
Dissolved Copper	µg/L	NS/ 8.15/ NS/ NS ³	NS ⁴	1.07	NS ⁵	NS ⁴
Total Copper	µg/L			7.856		
Organochlorine Pesticides						
Aldrin	µg/L	0.00013		ND		
BHC-alpha	µg/L	0.0039		ND		
BHC-beta	µg/L	0.014		ND		
BHC-gamma	µg/L	0.019		ND		
Chlordane-alpha	µg/L			ND		
Chlordane-gamma	µg/L			ND		
Total Chlordane	µg/L	0.00059		ND		
4,4'-DDD	µg/L	0.00084		0.0071		
4,4'-DDE	µg/L	0.00059		0.0373		
4,4'-DDT	µg/L	0.00059		0.0088		
Dieldrin	µg/L	0.00014		ND		
Endosulfan-I	µg/L	0.056		ND		
Endosulfan-II	µg/L	0.056		ND		
Endosulfan Sulfate	µg/L	110		ND		
Endrin	µg/L	0.036		ND		

Constituent	Units	Benchmark	Event 26 Dry	Event 27 Wet	Event 28 Wet	Event 29 Dry
			8/6/2015	1/6/2016	3/7/2016	5/26/2016
Endrin Aldehyde	µg/L	0.76		ND		
Toxaphene	µg/L	0.00075		ND		
Organophosphorus Pesticides						
Chlorpyrifos	µg/L	0.025		0.0148		
Diazinon	µg/L	0.1		ND		
Pyrethroid Pesticides						
Bifenthrin	µg/L	0.0006		ND		

Concentrations in **bold** indicate an exceedance of a water quality benchmark applicable to this site for the specified constituent.

See Tables 14 through 19 for a list of benchmarks applicable to this site.

N/A – Meter did not post calibrate.

NS – No samples were collected due to the site being dry.

1. The temperature limit for waterbodies designated as WARM is 80°F (26.7°C).
2. The benchmarks for Ammonia-N are listed in order of monitoring event and were calculated based on the April 2002 Basin Plan Amendment chronic equation (ELS present) and are dependent upon the pH and temperature of the water at the time of sample collection.
3. The copper benchmark was calculated for freshwater at this site as prescribed in Table 16.
4. Site dry.
5. No flow, stagnant pond of water.

Table 51. 2015 - 2016 Trash Observations for VRT_SANTO

Event	Count	Types
Event 26	5	Plastic bottles, plates, plastic bag
Event 27	1	Plastic cup
Event 28	3	Foam, aluminum can
Event 29	5-10	Bottles, cans, cups

CHRONIC TOXICITY TEST RESULTS

During the 2015-2016 monitoring year, Pacific EcoRisk (PER) performed single-species short-term chronic toxicity tests for samples collected during the first wet weather and second dry weather events. Three-species screen tests were also conducted for sites S03T_TIMB, VRT_SANTO and VRT_THACH during the first wet weather event. The toxicity reports submitted by PER contain test results and raw data. PER submitted two types of reports, an electronic data deliverable (EDD), which has been configured to California Environmental Data Exchange Network (CEDEN) format, and a narrative report. The toxicity data is included as Appendix G and the narrative lab reports are provided on the accompanying data CD.

Determination of Most Sensitive Species at Toxicity Monitoring Sites

There are 11 toxicity sites that are part of the VCAILGMP. The *Conditional Waiver* requires that three-species chronic toxicity testing be performed on samples collected at each site to determine the most sensitive species among the invertebrate, vertebrate, and algae; the most sensitive species is then used for subsequent toxicity testing for the duration of the VCAILGMP.

Based on previously conducted three-species screening tests at eight of the eleven VCAILGMP sites, the Regional Board approved a single-species to be used at each of these sites for the remainder of this Conditional Waiver in a June 28, 2012 letter. Sites with conductivity measuring less than 3,000 $\mu\text{S}/\text{cm}$ at the time of sampling will be evaluated based on the survival and reproduction of the invertebrate *Ceriodaphnia dubia* (*C. dubia*). High conductivity sites ($>3,000 \mu\text{S}/\text{cm}$) will be tested using *Hyalella azteca* (*Hyalella*) (Table 52).

Through the 2012-2013 monitoring year, there were three remaining sites where flow had not been present during any of the toxicity sampling events to be able to conduct a three-species screening test (S03T_TIMB, VRT_THACH, and VRT_SANTO). However, during the 2013-2014 monitoring year one of these sites, S03T_TIMB, had enough flow present during Event 20 to collect a toxicity sample. As such, PER conducted a three-species screening test. As the conductivity of the sample water collected at the S03T_TIMB site was greater than 3,000 $\mu\text{S}/\text{cm}$, toxicity testing was conducted using organisms that are tolerant of water with high conductivity. The organisms included the invertebrate *Hyalella*, the algae *Thalassiosira pseudonana* (*Thalassiosira*), and the vertebrate *Cyprinodon variegates* (*Cyprinodon*). No toxicity was observed for *Hyalella* and *Thalassiosira*; however, there was 100 percent mortality of the *Cyprinodon* organisms. PER indicated the sample was extremely turbid and it was PER's best professional judgment that the matrix was not conducive to performing aqueous phase testing and therefore, prohibited their capacity to interpret the presence/absences of toxicity in the sample. As such, a most sensitive species was not identified upon completion of the three-species screening test.

Due to the failure of the 3-species screening at S03T_TIMB and an absence of flow during toxicity monitoring events at VRT_THACH and VRT_SANTO, there was no sensitive species determination at the start of the 2015-16 monitoring year for these three sites. Flow was present at all three of these sites during the event 27 storm and three-species screening tests were performed. Each of the sites had conductivity measurements of less than 3,000 $\mu\text{S}/\text{cm}$, therefore the freshwater species were used for testing: the algae *Selenastrum*, the invertebrate *Ceriodaphnia dubia*, and the vertebrate *Pimephales promelas*. There was no significant survival toxicity at any of these three sites for the invertebrate or vertebrate. A significant reduction in

algal growth did occur in the VRT_SANTO sample at a level greater than the 50% threshold, triggering a TIE. The TIE performed targeted pesticides and metals as potential toxicants. The removal of toxicity with the treatment of C₁₈ indicates that non-polar organic compounds, such as herbicides, were the cause of toxicity. Complete results of the three-species screenings are provided in Table 53.

The 2016 VCAILG MRP and QAPP propose future toxicity testing at all sites to be for the appropriate invertebrate species based on the conductivity of the sample.

Single-Species Test Results

Toxicity samples were collected during the first wet weather monitoring event and the second dry weather monitoring event during the 2015-2016 monitoring year. Single-species toxicity testing was conducted using either *C. dubia* or *Hyalella* using the Regional Board-approved species for the specific sites. The *C. dubia* chronic test consisted of the 3-brood (6- to 8-day) survival and reproduction test and the *Hyalella* test consisted of a 10-day survival test.

As shown in Table 53, toxicity testing during Event 27 indicated reproduction toxicity for *C. dubia* at the S04T_TAPO site. No other significant reductions in *C. dubia* survival occurred in any of the remaining single-species results for Event 27 and Event 29. Due to the observation of $\geq 50\%$ reduction in survival in the initial testing of the S04T_TAPO Event 27 *C. dubia* sample, a TIE targeted for pesticides was performed. There was complete mortality at the Baseline (untreated ambient water) treatment, indicating that the toxicity that had been observed in the initial test of this sample was persistent. No blank interferences were present in any of the treatments. The centrifugation treatment removed the survival toxicity, however reproduction toxicity was still observed. There was removal of survival and reproduction toxicity observed in the C₁₈ Solid Phase Extraction (SPE) treatment. As centrifugation is a pre-treatment step for the C₁₈ SPE treatment, these results suggest that a particulate associated contaminant and a dissolved non-polar organic compound(s) caused the toxicity.

Table 52. Chronic Toxicity Results 2015-2016

Site	Event	<i>Selenastrum</i> ¹		<i>Ceriodaphnia dubia</i> ²			<i>Pimephales promelas</i> ³		<i>Hyalella</i> ⁴	TIE? Triggered
		Growth Toxicity	Growth % Red.	Survival Toxicity	Reprod. Toxicity	Reprod. % Red.	Survival Toxicity	Biomass Toxicity	Survival Toxicity	
S02T_TODD	27: 1/6/16			No	Yes	35.8% ⁵				No
S02T_ELLS	27: 1/6/16			No	Yes	54.7% ⁵				No
S03T_TIMB	27: 1/6/16	No	----	No	Yes	35.1% ⁵	No	----		No
S03T_BOULD	27: 1/6/16			No	Yes	31.3% ⁵				No
S04T_TAPO	27: 1/6/16			Yes	Yes	100% ⁶				Yes
S04T_TAPO dup	27: 1/6/16			Yes	Yes	100% ⁶				Yes
05D_LAVD	27: 1/6/16			No	Yes	60.2% ⁵				No
05D_HONDO	27: 1/6/16			No	Yes	57.2% ⁵				No
06T_LONG2	27: 1/6/16			No	Yes	54.5% ⁵				No
VRT_SANTO	27: 1/6/16	Yes	55.3%	No	Yes	58.3% ⁵	No	----		Yes
VRT_THACH	27: 1/6/16	No	----	No	Yes	50.0% ⁵	No	----		No
S02T_TODD	29: 5/26/16			No	No	----				No
S02T_TODD dup	29: 5/26/16			No	No	----				No
S02T_ELLS	29: 5/26/16			No	No	----				No
S04T_TAPO	29: 5/26/16			No	No	----				No
01_ODD3_ARN	29: 5/26/16								No	No

1. *Selenastrum capricornutum* (algae) is evaluated for the growth endpoint.
2. *Ceriodaphnia dubia* (invertebrate – water flea) is evaluated for the survival and reproduction endpoints.
3. *Pimephales promelas* (vertebrate – fathead minnow) is evaluated for survival and biomass endpoints.
4. *Hyalella azteca* (invertebrate – crustacean) is evaluated for the survival endpoint.
5. The response at this test treatment was significantly less than the Lab Control treatment response ($p < 0.05$).
6. There was 100 percent survival toxicity in the samples, so reproduction toxicity was not able to be assessed.

TMDL LOAD ALLOCATIONS AND MONITORING RESULTS

Calleguas Creek Watershed

The Stakeholders Implementing TMDLs in the Calleguas Creek Watershed submit an annual monitoring report on December 15th of each year. This year's report, "Calleguas Creek Watershed TMDL Compliance Monitoring Program Eighth Year Annual Monitoring Report – July 2015 to June 2016" is included as an additional attachment to the VCAILG AMR. The report includes summaries of the sampling events, data summaries, and a compliance comparison to the allocations for five of the currently effective TMDLs in the watershed:

- 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)

The Revolon Slough and Beardsley Wash Trash TMDL (Trash TMDL) is addressed through a separate monitoring and reporting program, however the annual report is also submitted annually on December 15th. For additional information, refer to the "2016 Revolon Slough/Beardsley Wash Trash TMDL TMRP/MFAC Annual Report".

Santa Clara River Watershed

On January 31, 2012 a Santa Clara River Bacteria TMDL became effective. Monitoring and reporting requirements as well as water quality benchmarks based upon the TMDL load allocations were included in the 2016 *Conditional Waiver*. Monitoring during the 2015-16 monitoring year was conducted per the MRP and QAPP approved under the 2010 *Conditional Waiver* and therefore did not include monitoring and data for comparison to the SCR Bacteria TMDL benchmarks.

Effective TMDLs for the Santa Clara River Watershed that were included in the 2010 *Conditional Waiver* are discussed below.

Santa Clara River Nitrogen Compounds TMDL

Load Allocations

The LA for the Santa Clara River Nitrogen Compounds TMDL applicable to VCAILG monitoring sites is listed in Table 53.

Table 53. Load Allocations for Nitrogen Compounds

Constituent	Load Allocation (mg/L) ¹
Ammonia-N + Nitrate-N + Nitrite-N	10

1. The specified load allocation applies to all Santa Clara River reaches within Ventura County.

Monitoring Results

Table 54 lists the data collected at the VCAILGMP monitoring sites located within the Santa Clara River Watershed for comparison to the nitrogen LA. The LA was exceeded at three monitoring sites, S02T_TODD, S03T_BOULD, and S04T_TAPO. The S02T_TODD site was sampled during all four events with only the concentration from the first wet event exceeding the LA. The S03T_BOULD site was sampled during the two wet weather events; the concentration exceeded the LA during the first wet event. The S04T_TAPO site was sampled during all monitoring events with the concentrations measured during dry weather exceeding the LA.

Table 54. Nitrogen Load Allocations Compared to SCR VCAILGMP Site Data

Site	Constituent	LA ¹ (mg/L)	Event 26 Dry Aug-2015	Event 27 Wet Jan-2016	Event 28 Wet Mar-2016	Event 29 Dry May-2016
S02T_ELLS	Ammonia-N + Nitrate-N	10	NS	3.76	2.67	0.57
S02T_TODD	Ammonia-N + Nitrate-N	10	4.25	12.35	4.71	4.2
S03T_TIMB	Ammonia-N + Nitrate-N	10	NS	4.18	4.73	NS
S03T_BOULD	Ammonia-N + Nitrate-N	10	NS	11.09	4.66	NS
S03D_BARDS	Ammonia-N + Nitrate-N	10	NS	3.95	3.26	1.18
S04T_TAPO	Ammonia-N + Nitrate-N	10	22.29	2.81	3.66	10.23

NS = Not Sampled; site dry.

Bold numbers indicate the value is greater than the Load Allocation.

1. Nitrite-N concentrations are not monitored as part of the VCAILGMP, however, levels of nitrite are typically insignificant compared to the other nitrogen compounds that are measured.

Upper Santa Clara River Chloride TMDL Revisions

Load Allocations

The chloride load allocation applies to reaches 4B, 5, and 6 of the Santa Clara River. There is one VCAILG monitoring site, S04T_TAPO that drains to reach 4B. The remaining reaches are located within Los Angeles County.

Table 55. Load Allocation for Chloride

Constituent	Load Allocation (mg/L) ¹
Chloride	100

1. Allocation applies as a 3-month rolling average.

Monitoring Results

According to the TMDL source analysis, nonpoint sources are not a major chloride source. Three of the four single samples collected at the S04T_TAPO site were greater than the TMDL load allocation; however the load allocation is a 3-month rolling average benchmark.

Table 56. Chloride Load Allocation Compared to S04T_TAPO Site Data

Site	Constituent	LA ¹ (mg/L)	Event 26 Dry Aug-2015	Event 27 Wet Jan-2016	Event 28 Wet Mar-2016	Event 29 Dry May-2016
S04T_TAPO	Chloride	100	210	27	108	140

1. While the load allocation is a 3-month rolling average, the data provided in this table consists of single samples.

Santa Clara River Estuary Toxaphene TMDL

The Santa Clara River Estuary Toxaphene TMDL was adopted as a single regulatory action in the 2010 *Conditional Waiver*. The 2016 *Conditional Waiver* and Appendix 3, Monitoring and Reporting Requirements, specifies the following constituents be monitored as part of this TMDL: chlordane, dieldrin, and toxaphene. The constituents are also required to be analyzed in various media: fish tissue (every three years in the Estuary), water, and suspended sediment (during wet weather events). Two sites were selected to meet the TMDL requirements of having one water quality monitoring site representing agricultural discharges directly to the Estuary and one representative discharge to the Santa Clara River upstream of the Estuary. The VCAILGMP site S02T_ELLS is monitored as the upstream TMDL site by collecting additional sample volume for suspended sediment analysis, which is beyond normal *Conditional Waiver* monitoring. Site S01D_MONAR was selected to represent agricultural discharges to the Estuary. A description of S02T_ELLS was provided previously with the *Conditional Waiver* monitoring results for that site. Analogous information regarding S01D_MONAR is provided below.

S01D_MONAR

This monitoring site is located on an agricultural drain that discharges directly to the Santa Clara River Estuary between Harbor Boulevard and Victoria Avenue.

Site Map



View downstream towards Estuary



Load Allocations

The 2010 and 2016 *Conditional Waivers* incorporated toxaphene LAs for suspended sediment and fish tissue as Water Quality Benchmarks shown in the table below.

Table 57. Load Allocations for Toxaphene

Reach	Toxaphene in Fish Tissue (µg/kg)	Toxaphene in Suspended Sediment (µg/kg)
Santa Clara River Estuary	6.1	0.1

Monitoring Results

LAs for the Santa Clara River Estuary Toxaphene TMDL were established for toxaphene measured in fish tissue and suspended sediment. Additionally, monitoring of chlordane and dieldrin is required; however, these constituents do not have LAs. In the VCAILG QAPP, it was specified that if possible, targeted fish should be those that are commonly consumed by humans, but based on the results of other studies in the Estuary that may not be feasible. Fish were collected in spring 2015 and results were reported in the 2014-15 AMR; therefore, fish collection and analysis was not required for the 2015-2016 monitoring year. The next fish sampling will be in the spring/summer of 2018. Dieldrin and toxaphene were not detected in any of the suspended sediment samples. Chlordane was detected in the suspended sediment at the S01T_ELLS site during the first storm event. No exceedances of the toxaphene LA in suspended sediment occurred this monitoring year. The results of monitoring for the Santa Clara River Estuary Toxaphene TMDL are presented in Table 58.

Table 58. Santa Clara River Estuary Toxaphene TMDL Monitoring Data: Water and Suspended Sediment

Site	Constituent	Units	Load Allocation	Event 26 Dry Aug-2013	Event 27 Wet Jan-2014	Event 28 Wet Mar-2014	Event 29 Dry May-2016
Water							
S01T_ELLS	TSS	mg/L	---	NS	2,840	11,400	500
	Chlordane ¹	µg/L	---	NS	0.07	ND	ND
	Dieldrin	µg/L	---	NS	ND	ND	ND
	Toxaphene	µg/L	---	NS	0.51	ND	ND
Suspended Sediment (>63 µg/kg)							
	Chlordane ¹	µg/kg	---	NR	11.2	ND	NR
	Dieldrin	µg/kg	---	NR	ND	ND	NR
	Toxaphene	µg/kg	0.1	NR	ND	ND	NR
Water							
S01D_MONAR	TSS	mg/L	---	95	2,900	721	14
	Chlordane ¹	µg/L	---	ND	0.06	0.06	ND
	Dieldrin	µg/L	---	ND	ND	ND	ND
	Toxaphene	µg/L	---	ND	1.04	2.44	0.61
Suspended Sediment (>63 µg/kg)							
	Chlordane ¹	µg/kg	---	NR	ND	ND	NR
	Dieldrin	µg/kg	---	NR	ND	ND	NR
	Toxaphene	µg/kg	0.1	NR	ND	ND	NR

NS = Site Dry

ND = Not detected at the applicable reporting limit.

NR = Not Required; filtered sediment sampling is only required during wet weather sampling events.

1. Reported total chlordane is the sum of alpha- and gamma-chlordane.

Ventura River Watershed

The Ventura River Algae TMDL became effective on June 28, 2013. Load allocations for this TMDL have been added to the 2016 *Conditional Waiver* as water quality benchmarks. This AMR covers the 2015-16 monitoring year, prior to the inclusion of this TMDL in the Waiver and the implementation of additional monitoring necessary for comparison to the load allocations. TMDLs for this watershed included in the 2010 *Conditional Waiver* are discussed below.

Ventura River Estuary Trash TMDL

The Ventura River Estuary Trash TMDL (Trash TMDL) is addressed through a separate monitoring and reporting program, with the annual report submitted on January 30th. For additional information, please refer to the “2014-15 Ventura River Estuary Trash TMDL TMRP/MFAC Annual Report”. The next annual report is due January 30, 2017.

Harbor Beaches of Ventura County Bacteria TMDL

The Harbor Beaches of Ventura County Bacteria TMDL does not specify LAs for agricultural dischargers, but does include a provision for monitoring. The VCAILG QAPP specified a site, monitoring frequency, and constituents to comply with the implementation actions specified for agricultural dischargers in the TMDL. A site description, map, and photo are provided below for the site used to evaluate agricultural discharges upstream of the Channel Islands Harbor.

CIHD_VICT

The monitoring site is located along Victoria Avenue, just north of Doris Avenue and the Doris Drain.

Site Map



View at sampling point looking upstream



Monitoring Data

As specified in the VCAILG QAPP, the CIHD_VICT site is visited at the same frequency as *Conditional Waiver* monitoring. At each event flow and field meter parameters are measured in addition to water samples collected for bacteria testing. Flow was present at this site during The August dry event and both storm events during the 2015-2016 monitoring year. *E. coli*, fecal coliform, total coliform, and enterococcus data are presented in Table 58.

Table 59. Harbor Beaches of Ventura County Bacteria TMDL Monitoring Data

Site	Event	Bacteria Concentrations (MPN/100mL)			
		<i>E. coli</i>	Fecal Coliform	Total Coliform	Enterococcus
CIHD_VICT	26: 8/6/2015	1,820	4,900	160,000	16,300
CIHD_VICT	27: 1/6/2016	540	24,000	>160,000	>121,000
CIHD_VICT	28: 3/7/2016	485	490	>160,000	>2,420

McGrath Lake PCBs, Pesticides, and Sediment Toxicity TMDL

The TMDL for PCBs, Pesticides, and Sediment Toxicity in McGrath Lake became effective June 30, 2011; after the adoption of the 2010 *Conditional Waiver*. The VCAILG QAPP and MRP

were revised to include the Phase 1 Central Ditch monitoring specified in the McGrath Lake TMDL. Inclusion of monitoring data within this AMR also fulfills the TMDL requirement for annual reporting. A discrepancy was observed within the TMDL where the Central Ditch load allocations are for concentrations in both suspended sediment and water, whereas the Phase 1 monitoring specifies water and sediment sampling. VCAILG had been performing water and sediment sampling; however it is not appropriate to compare bed sediment results to the allocations for suspended sediment. The 2016 VCAILG MRP and QAPP were updated to specify water and suspended sediment monitoring.

The existing VCAILGMP site OXD_CENTR is located at the Central Ditch, which drains into McGrath Lake. Information and *Conditional Waiver* monitoring results related to this site can be found in the previous data compilation section. Water quality data collected at the OXD_CENTR site that pertains to this TMDL is summarized below and compared to the load allocation benchmarks. Sediment samples were collected during two events, but as previously explained this data is not appropriate for comparison to the suspended sediment load allocations. The data is included in Appendix F. Future monitoring conducted per the 2016 VCAILG MRP and QAPP will include the analysis of suspended sediment during the two annual storm events for the TMDL constituents.

TMDL Monitoring and Load Allocations

Water samples are to be analyzed for:

- Total Organic Carbon (TOC)
- Total Suspended Solids (TSS)
- Total PCBs
- DDT and derivatives
- Dieldrin
- Total Chlordane

All of the above listed constituents except for PCBs and TOC are already required as standard *Conditional Waiver* monitoring constituents.

Future suspended samples will be analyzed for the following:

- Total Organic Carbon (TOC)
- Total PCBs
- DDT and derivatives
- Dieldrin
- Total Chlordane

Table 60. McGrath Lake Central Ditch Load Allocations

Constituent	Water Column Load Allocation (µg/L)	Suspended Sediment Load Allocation (µg/dry kg)
Chlordane	0.00059	0.5
Dieldrin	0.00014	0.02
4,4'-DDD	0.00084	2
4,4'-DDE	0.00059	2.2
4,4'-DDT	0.00059	1
Total DDT	---	1.58
Total PCBs	0.00017	22.7

Monitoring Data

Water sampling occurred concurrently with VCAILG monitoring and included the additional total organic carbon (TOC) and PCBs constituents. Exceedances of the water column LAs occurred during both wet weather events for the DDT compounds. The total chlordane LA was exceeded during the second storm event. Sediments were collected a week after the first storm and during the May dry weather event. This data is not appropriate for comparison to suspended sediment load allocations, but is still included in Appendix F.

Table 61. McGrath Lake TMDL Central Ditch Monitoring Data in Water: OXD_CENTR

Constituents in Water	Units	Water LA	Event 26	Event 27	Event 28	Event 29
			Dry 8/6/2015	Wet 1/6/2016	Wet 3/7/2016	Dry 5/26/2016
TOC	mg/L	---	2.5	7.2	NT	Not Sampled; water stagnant
TSS	mg/L	---	5	181	676	
Total PCBs ¹	µg/L	0.00017	ND	ND	ND	
4,4'-DDD	µg/L	0.00084	DNQ	0.15	0.14	
4,4'-DDE	µg/L	0.00059	DNQ	0.29	0.51	
4,4'-DDT	µg/L	0.00059	ND	0.17	0.54	
Dieldrin	µg/L	0.00014	ND	ND	ND	
Total Chlordane ²	µg/L	0.00059	ND	DNQ	0.04	

NT = Not Tested

1. Total PCBs include the 7 aroclors identified in CTR (1016, 1221, 1232, 1242, 1248, 1254, 1260).

2. Total chlordane is considered the sum of alpha- and gamma-chlordane.

Oxnard Drain #3 Subwatershed

The United States Environmental Protection Agency (USEPA) established the Oxnard Drain #3 Pesticides, PCBs, and Sediment Toxicity TMDL, which became effective October 6, 2011. TMDL load allocations were incorporated into the 2016 *Conditional Waiver* as water quality benchmarks. To evaluate agricultural discharges progress in attaining this TMDL, the 2016 VCAILG MRP and QAPP include a monitoring site as well as specifics regarding monitoring frequency and constituents for comparison to the LAs and will be included in future AMRs.

Malibu Creek Watershed

Load allocations for two Malibu Creek Watershed TMDLs were incorporated into the 2016 *Conditional Waiver*. At this time VCAILG does not have any members farming within this watershed.

Conclusions

Submittal of this report fulfills the Annual Monitoring Report requirements specified in Appendix 1 of the 2010 *Conditional Waiver* and where possible, new requirements contained in Appendix 3 of the 2016 *Conditional Waiver*. All required elements are included in this narrative report and with the accompanying appendices.

This report presents monitoring data for evaluating agricultural discharges as compared to standard water quality benchmarks as well as compliance with effective TMDL LAs that were incorporated in the 2010 *Conditional Waiver* as benchmarks. Unlike previous AMRs, benchmark exceedances do not automatically trigger the requirement to develop a WQMP. Instead, WQMPs are to be developed and implemented according to the schedule set forth in the 2016 *Conditional Waiver*. The next WQMP is due April 14, 2017 (one year after *Conditional Waiver* adoption). This WQMP will be based on monitoring data collected from 2007 to 2016 and report on the existing management practices implemented by VCAILG members as provided in the December 2016 management practice survey, which was approved by the Regional Board Executive Officer on October 10, 2016. The WQMP shall include the following main sections:

- Summary of existing conditions (organized by monitoring site)
- Proposed additional or upgraded management practices
- Outreach plan

The VCAILG will implement its WQMP and assist its members to achieve the water quality benchmarks set forth in the *Conditional Waiver*.

WQMP Progress Report

The 2016 *Conditional Waiver* specifies that a WQMP Progress Report include the following components:

- Copies of outreach materials
- Report on members who have and have not completed surveys
- Report on members who have and have not completed education requirements
- *Report on individual discharge monitoring results, if chosen (not applicable since none of the benchmark compliance deadlines have passed)*

OUTREACH MATERIALS

At this time all outreach materials have consisted of mailings to existing and potential VCAILG members to inform them of the adoption of the 2016 *Conditional Waiver* and the process to enroll in VCAILG. Announcements regarding education opportunities were also shared. Copies of these mailings/emails are included as **Appendix J**.

SURVEY COMPLETION

VCAILG was required to begin surveying its members within eight months of adoption of the 2016 *Conditional Waiver* (December 14, 2016), which was the day prior to the submittal of this report. Therefore, the VCAILG is currently in process of surveying its members and cannot provide a list of those that have and have not completed the survey.

EDUCATION REQUIREMENTS

The 2016 *Conditional Waiver* requires that dischargers obtain a minimum of two hours of educational training every year. Only eight months have passed since Waiver adoption so **Appendix K** simply lists the progress of VCAILG members towards meeting the two hours of education training. Regional Board staff provided written confirmation on September 23, 2016 that the timeframe during which the first two hours of education need to be completed is between April 14, 2016 and November 30, 2017 to align with AMR reporting.

Since adoption of the 2016 *Conditional Waiver* four classes have been offered. Table 62 lists the approved education classes and the hours of credit for each class.

Table 62. Courses Approved for Education Credit

Date	Course Title	Education Hours
7/28/2016	Irrigation and Nutrient Management Meeting for Berry and Vegetable Crops	3.15
9/27/2016	Agricultural Water Use Efficiency Education Program and Kickoff Event	2
9/28/2016	ABCs of Fertilizers and Plan Nutrition	4
9/29/2016	ABCs of Fertilizers and Plan Nutrition (Spanish)	4