DECEMBER 2024
REVISION 1

VENTURA COUNTY AGRICULTURAL
IRRIGATED LANDS GROUP

Monitoring and Reporting Plan

Monitoring and Reporting Plan (MRP) for the Ventura County Agricultural Irrigated Lands Group (VCAILG)

PREPARED BY:

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ON BEHALF OF THE
VENTURA COUNTY AGRICULTURAL IRRIGATED LANDS GROUP

VENTURA COUNTY
Agricultural Irrigated Lands Group

PREPARED FOR:
LOS ANGELES REGIONAL WATER QUALITY CONTROL BOARD

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INTRODUCTION

The Ventura County Agricultural Irrigated Lands Group (VCAILG) was formed in 2006 to act as one unified "Discharger Group" in Ventura County for the purpose of compliance with the Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands (Order No. R4-2005-0080; 2005 Waiver), which was adopted by the Los Angeles Regional Water Quality Control Board (LARWQCB or Los Angeles Water Board) on November 3, 2005. The Los Angeles Water Board renewed the Conditional Waiver in 2010 (Order No. R4-2010-0186; 2010 Waiver), adopted a temporary six-month Conditional Waiver on October 8, 2015 (Order No. R4-2015-0202), and adopted a Conditional Waiver on April 14, 2016 (Order No. R4-2016-0143; 2016 Waiver). These Orders were followed by the adoption of a one-year Conditional Waiver on April 8, 2021 (Order No. R4-2021-0045; 2021 Waiver) that was amended twice – once on April 14, 2022, and again on December 8, 2022 – to extend the 2021 Waiver's expiration date. The Los Angeles Water Board refers to the 2016 Waiver, 2021 Waiver, and 2021 Waiver addendums collectively as the 2016/2021 Waiver. This Monitoring and Reporting Plan fulfills the requirements of the 2023 General Waste Discharge Requirements (Ag Order; Order No. R4-2023-0353) adopted on September 28, 2023.

The VCAILG Monitoring and Reporting Plan (MRP), as specified in the Ag Order, must be sufficient to:

- 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.

Water samples will be collected from surface waterbodies influenced primarily by irrigated agriculture throughout Ventura County and analyzed for constituents typically associated with agricultural activities, such as nutrients and pesticides. Data collected at each monitoring site will be compared with Water Quality Benchmarks to determine whether these benchmarks are being met. A benchmark exceedance will trigger development of a Water Quality Management Plan, which will outline specific steps with milestones that work toward attainment of a specific water quality benchmark through the implementation of management practices. VCAILG Monitoring Program (VCAILGMP) data will be used to determine whether benchmarks are being achieved and areas that require additional management practice implementation.

BACKGROUND

On September 28, 2023, the Los Angeles Water Board adopted General Waste Discharge Requirements for Discharges from Irrigated Agricultural Lands within the Los Angeles Region (Ag Order; Order No. R4-2023-0353). The Ag Order states that its purpose is "to ensure that discharges from irrigated agricultural lands do not cause or contribute to an exceedance of applicable water quality objectives or impair beneficial uses of waters of the state within the Los Angeles Region." The Ag Order also establishes requirements to prevent and address water quality impacts to waters of the state as a result of irrigated agriculture.

In order to comply with the Ag Order, water quality monitoring must be conducted, and the monitoring results must be compared to Water Quality Benchmarks[1] and applicable TMDL load allocations. Exceedances of these benchmarks indicate that management practices require implementation or improvement to better protect water quality, triggering the requirement to develop a Water Quality Management Plan (WQMP). The WQMP iterative process collects information on the level of management practice implementation and then uses the monitoring data to evaluate the need for additional or new management practices to achieve the Water Quality Benchmarks with a time-certain schedule of no more than 10 years. TMDL-associated benchmarks that are not met at the designated TMDL monitoring site by the deadline specified in the Ag Order, Appendix 3, Table 3, then apply

[1] Under the Ag Order, water quality benchmark means discharge prohibitions, narrative or numeric water quality objectives, criteria established by USEPA (including those in the California Toxics Rule and the applicable portions of the National Toxics Rule), and load allocations established pursuant to a TMDL (whether established in the Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties (Basin Plan) or other lawful means).

individual discharge limitation(s) until the TMDL monitoring site is meeting the water quality benchmark (TMDL load allocation(s)).

VCAILG is a countywide Discharger Group with members that represent irrigated acreage located throughout Ventura County watersheds, including Calleguas Creek, Santa Clara River, Ventura River, Malibu, and coastal watersheds. A map of the main watersheds in Ventura County is presented in **Figure 1**.

Ventura County Agriculture

Ventura County covers 1,843 square miles (approximately 1.2 million acres) with 43 miles of coastline. 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. There are approximately 95,785 acres of irrigated cropland in Ventura County.[2] The Calleguas Creek Watershed contains the highest number of irrigated acres (roughly 47,500), followed by the Santa Clara River Watershed (approximately 33,500), Ventura River Watershed (approximately 3,200), and finally the Oxnard Plain/Coastal Watershed (approximately 8,000). Acreage that doesn't fall within these three major watersheds accounts for approximately 3,000 acres (miscellaneous coastal watersheds).[3]

Agriculture is a major industry in Ventura County, generating over $2.1 in gross sales for 2021, placing the county 10th in a statewide ranking of California's 58 counties.[4] In addition to providing economic benefits and opportunities, agricultural lands in Ventura County also provide habitat for various species, serve as buffers between urban areas and natural habitats, and are part of the cultural landscape. Preservation of agricultural land uses in the County is therefore recognized as an important tool to contribute to water quality management and open space protection. The voters have affirmed this in the passage of Save Open-space and Agricultural Resources (SOAR) in Ventura County. SOAR serves as a comprehensive growth management initiative safeguarding agricultural land and open spaces in the county.

[2] Ventura County Agricultural Commissioner. Ventura County's Crop and Livestock Report 2022. July 25, 2023.
[3] 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.
[4] Ventura County Agricultural Commissioner. Ventura County's Crop and Livestock Report 2022. July 25, 2023.

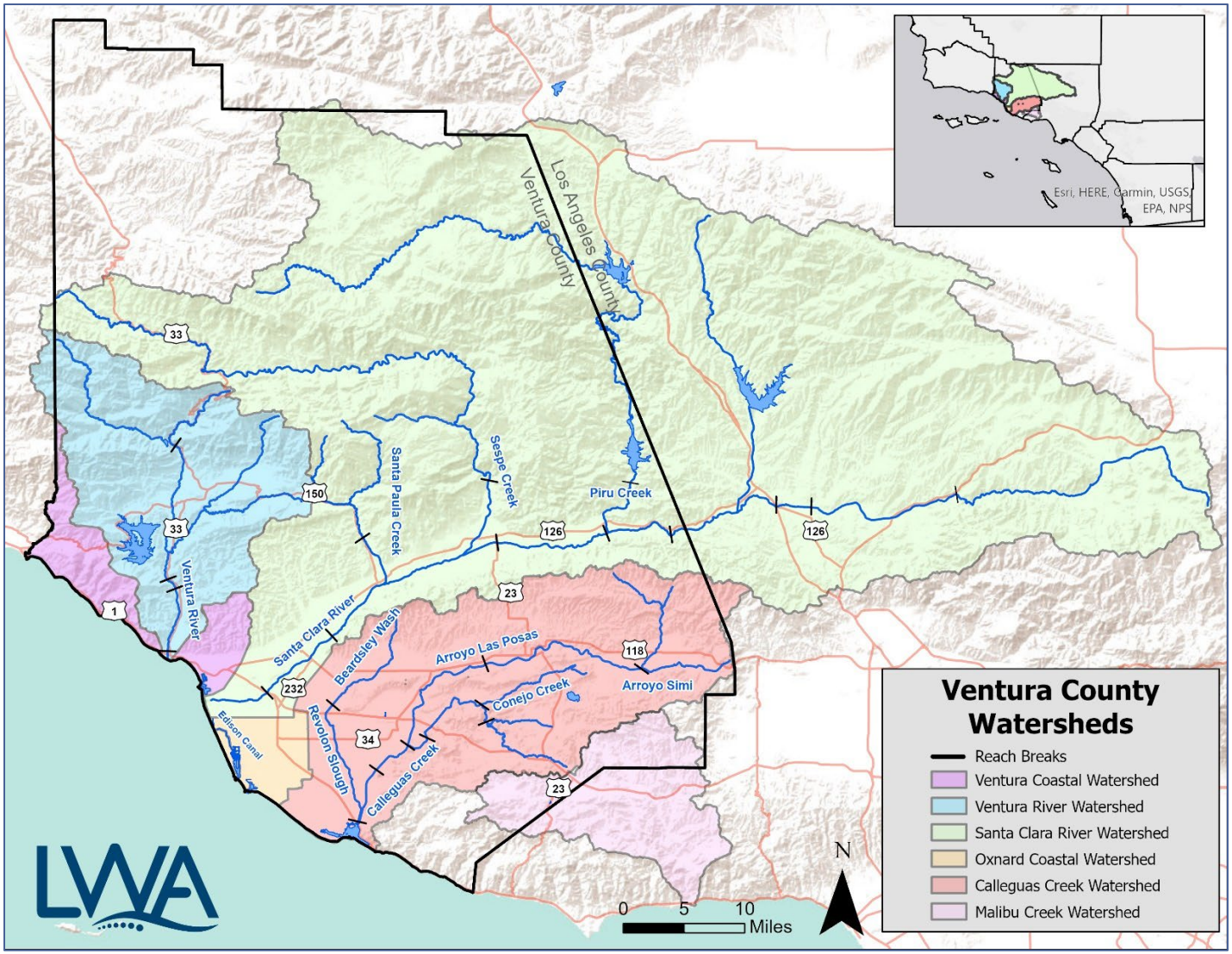


Figure 1. Ventura County Watersheds

SUMMARY OF DISCHARGER GROUP

The VCAILG Notice of Intent (NOI), submitted on March 28, 2024, included information pertaining to the makeup of VCAILG members at that time and summarized the utilization of different farming practices. Since then, additional efforts to provide outreach to unenrolled landowners have been underway. The following membership statistics are current as of December 2, 2024, as shown in **Table 1**.

Table 1. VCAILG Membership Statistics as of December 2, 2024

Watershed	Landowner Count	Parcel Count	Irrigated Acres
Calleguas Creek	607	1,311	42,231
Santa Clara River	463	1,134	28,121
Ventura River	55	107	3,840
Oxnard Plain/Coastal	150	258	4,217
Total	***1,275***	***2,810***	***78,409***

1. Landowner and parcel counts only include parcels designated as 'enrolled' and do not include any exempt parcels.
2. There are 1,229 unique landowners enrolled in VCAILG, a number of whome own property in more than one watershed.

Farming practices are dynamic and respond to changes in the market, climate, consumer demand, regulations, and numerous other factors. For more details regarding the crop types, irrigation methods, water sources, types of discharge, organic farms, and commonly used pesticides, refer to the VCAILG NOI. Farm-specific management practice information will be compiled and provided with each VCAILG WQMP.

PAST AND ON-GOING MONITORING EFFORTS

The first Conditional Waiver was adopted in the Los Angeles region in 2005. Conditional Waiver adoption led to the formation of VCAILG and submittal of the first Notice of Intent (NOI), MRP, and QAPP. VCAILG monitoring began in 2007. Monitoring took place at thirteen sites in the Calleguas Creek Watershed (including two background sites), one site in the Oxnard Coastal Watershed, seven in the Santa Clara River Watershed, and two in the Ventura River Watershed. Results from the first Conditional Waiver monitoring program were compared to water quality benchmarks based on the objectives in the Basin Plan.

With the adoption of the 2010 Conditional Waiver, monitoring for adopted TMDLs was added along with water quality benchmarks based on TMDL load allocations. The Calleguas Creek Watershed TMDLs Monitoring Program (CCWTMP) began in 2008. The VCAILG MRP revision required by the 2010 Conditional Waiver was an opportunity to divide sites in the watershed between the two monitoring programs (VCAILGMP and CCWTMP). Previously, some sites were sampled by both VCAILGMP and CCWTMP and the revised VCAILG MRP provided a way to streamline the monitoring. Also, some sites were relocated to better capture agricultural discharges or improve access; or dropped from the program when they proved not to be representative.

The 2016 Conditional Waiver, and its extensions included additional TMDLs that had been adopted since the 2010 Conditional Waiver. The 2016 Conditional Waiver incorporated TMDL load allocations as individual discharge limitations after the compliance date. Continuity of data was a priority stated in the Conditional Waiver for maintaining a long-term record. Monitoring sites largely remained the same when the site remained accessible and representative. This MRP explains monitoring site changes to refine the program and achieve stated monitoring requirements in the Ag Order.

Each Conditional Waiver included requirements for both Annual Monitoring Reports and Water Quality Management Plans (WQMPs). WQMPs typically consider monitoring results from multiple years. The WQMPs contain management practices and timelines for implementation to address water quality benchmark exceedances. The document includes a plan to provide outreach to assist VCAILG members in providing information on the water quality issues in their area and resources for assistance. WQMPs submitted under the 2016 Conditional Waiver had time series graphs, dated from VCAILG WQMP inception, for sites and constituents with benchmark exceedances meeting the defined

threshold. The most recent WQMP was submitted by VCAILG in 2020.[5] Another VCAILG WQMP will be submitted in 2025, which will include all information required by the Ag Order.

Source Investigations were a requirement of the 2016 Conditional Waiver, for which a Work Plan was approved in 2019 and the Source Investigations and Report were completed the same year. The VCAILG Source Investigation Work Plan includes Appendix A, which provides trend analysis details pertaining to each site-constituent combination, the resulting trend, and whether the applicable benchmark is consistently exceeded.[6] In the Source Investigation Work Plan, 38% of the constituent-site benchmark exceedance combinations were for legacy pesticide constituents. All but one constituent-site benchmark exceedance showed either a decreasing trend or no trend, which is to be expected for compounds no longer being used. Twenty percent of the constituent-site benchmark exceedance combinations were current-use pesticides, most of which showed no trend (though we would expect a decrease now in chlorpyrifos and diazinon as they've been phased out recently for pyrethroid and neonicotinoid pesticides). Nitrogen-related benchmark exceedances were the next most prevalent and mixed results, with no trend, decreasing, or increasing.

The following list summarizes the monitoring programs that make up the body of data and information used by VCAILG for past compliance with Conditional Waivers, as well as present and on-going compliance with the Ag Order. Ventura County has a history of collaboratively addressing water quality issues and leveraging resources and expertise amongst stakeholders and dischargers. All listed reports have been submitted to the Los Angeles Regional Board. VCAILG Annual Monitoring Reports (AMRs) include all data collected under the VCAILG monitoring program that were used to assess compliance with Conditional Waiver benchmarks and TMDL load allocations (select Calleguas Creek Watershed TMDLs monitoring program data are duplicated in the VCAILG AMR text and the entirety of the data have been submitted as part of the VCAILG AMR package). The Calleguas Creek Watershed TMDL Monitoring Program (CCWTMP) has provided results for the entire TMDLs monitoring program for the watershed and included receiving water (main stem), agricultural land use sites, urban lands use sites, and Publicly Owned Treatment Works (POTWs), of which a subset pertains to VCAILG. The CCWTMP is transitioning to focus on receiving water (main stem) monitoring and assessment as permits have evolved and more explicitly incorporate TMDL requirements. The Ventura River Algae TMDL annual reports include main stem monitoring in the watershed for that particular TMDL. There are currently two trash TMDLs in Ventura County, the Ventura River Estuary Trash TMDL and the Revolon Slough/Beardsley Wash Trash TMDL. Compliance with both of these is completed through stakeholder group implementation of trash monitoring and reporting plans (TMRP) and minimum frequency of assessment and collection (MFAC). The following reports include a complete evaluation and review of the data collected across Ventura County by five monitoring programs during the period January 2015 through June 2023, collectively:

- VCAILG 2015–2016 Annual Monitoring Report (AMR) (LWA, 2016)
- VCAILG 2016–2017 AMR (LWA, 2017)
- VCAILG 2017–2018 AMR (LWA, 2018)
- VCAILG 2018–2019 AMR (LWA, 2019)
- VCAILG 2019–2020 AMR (LWA, 2020)
- VCAILG 2020–2021 AMR (LWA, 2021)
- VCAILG 2021–2022 AMR (LWA, 2022)
- VCAILG 2022–2023 AMR (LWA, 2023)
- CCWTCMP Eighth Year AMR: July 2015–June 2016 (LWA, 2016)
- CCWTCMP Ninth Year AMR: July 2016– June 2017 (LWA, 2017)
- CCWTCMP 10th Year AMR: July 2017–June 2018 (LWA, 2018)
- CCWTCMP 11th Year AMR: July 2018–June 2019 (LWA, 2019)
- CCWTCMP 12th Year AMR: July 2019–June 2020 (LWA, 2020)
- CCWTCMP 13th Year AMR: July 2020–June 2021 (LWA, 2021)

[5] LWA (2020). VCAILG Water Quality Management Plan. Submitted to the Los Angeles Regional Water Quality Control Board, October 31, 2020.

[6] LWA (2019). VCAILG Source Investigation Work Plan. Submitted to the Los Angeles Regional Water Quality Control Board, October 2018, revised January 2019.

- CCWTCMP 14th Year AMR: July 2021–June 2022 (LWA, 2022)
- CCWTCMP 15th Year AMR: July 2022– June 2023 (LWA, 2023)
- Ventura River Algae TMDL 2016 Annual Report: May 2015–April 2016 (VCWPD, 2016)
- Ventura River Algae TMDL 2017 Annual Report: May 2016–April 2017 (VCWPD, 2017)
- Ventura River Algae TMDL 2018 Annual Report: May 2017–April 2018 (VCWPD, 2018)
- Ventura River Algae TMDL 2019 Annual Report: May 2018–April 2019 (VCWPD, 2019)
- Ventura River Algae TMDL 2020 Annual Report: May 2019–April 2020 (Rincon Consultants, 2020)
- Ventura River Algae TMDL 2021 Annual Report: May 2020–April 2021 (Rincon Consultants, 2021)
- Ventura River Algae TMDL 2022 Annual Report: May 2021–April 2022 (Rincon Consultants, 2022)
- Ventura River Algae TMDL 2023 Annual Report: May 2022–April 2023 (Rincon Consultants, 2023)
- 2016-2017 Annual Monitoring Report for Ventura River Estuary Trash (VCWPD, 2018)
- 2017-2018 Annual Monitoring Report for Ventura River Estuary Trash (VCWPD, 2019)
- 2018-2019 Annual Monitoring Report for Ventura River Estuary Trash (VCWPD, 2020)
- 2019-2020 Annual Monitoring Report for Ventura River Estuary Trash (VCWPD, 2020)
- 2020-2021 Annual Monitoring Report for Ventura River Estuary Trash (VCWPD, 2021)
- 2022 Annual Monitoring Report for Ventura River Estuary Trash (VCWPD, 2022)
- 2023 Annual Monitoring Report for Ventura River Estuary Trash (VCWPD, 2023)
- Revolon Slough/Beardsley Wash Trash TMDL TMRP/MFAC 2015-2016 Annual Report (LWA, 2017)
- Revolon Slough/Beardsley Wash Trash TMDL TMRP/MFAC 2016-2017 Annual Report (LWA, 2018)
- Revolon Slough/Beardsley Wash Trash TMDL TMRP/MFAC 2017-2018 Annual Report (LWA, 2019)
- Revolon Slough/Beardsley Wash Trash TMDL TMRP/MFAC 2018-2019 Annual Report (VLT, 2020)
- Revolon Sough/Beardsley Wash Trash TMDL TMRP/MFAC 2019-2020 Annual Report (VLT, 2020)
- Revolon Slough/Beardsley Wash Trash TMDL 2021 Annual Monitoring Report (VLT, 2021)
- 2022 Annual Monitoring Report for Revolon Slough and Beardsley Wash Trash TMDL and Trash Conditional Waiver (VLT, 2022)
- Revolon Slough/Beardsley Wash Trash TMDL TMRP/MFAC 2022-2023 Annual Report (VLT, 2023)

Lists of the individual constituents monitored at each monitoring site can be found in the above-listed reports or the approved Quality Assurance Project Plan (QAPP) documents for each of the monitoring programs.

Ag Order Appendix 3, section 1.1.1 specifies that monitoring site changes are subject to Executive Officer approval and "Discharger Groups covered by Order No. R4-2021-0045-A02 shall maintain any monitoring sites and analyses approved under that Order (15 sites for constituents specified in Table 1 and 8 sites for constituents specified in both Table 1 and Table 2) and add an additional monitoring site for Table 1 constituents that captures agricultural discharges to Channel Islands Harbor". The monitoring approach included in this MRP exceeds the number of sites to be monitored for Ag Order, Appendix 3, Table 1 constituents, as well as the number of sites to be monitored for Table 1 and Table 2 constituents. In addition to the Ag Order specified basis for monitoring site location specified in Appendix 3, section 1.1.1, additional considerations included maintaining continuity of sites and continuity in the data collected and evaluation of that data compared to standard water quality benchmarks or TMDL load allocations, remove duplication of sites in the same reach or subwatershed, add sites considering existing site coverage of reaches or subwatersheds, and the inclusion of background sites, where appropriate. Site totals for each of the Ag Order specified categories are shown below.

Table 2. Ag Order MRP Monitoring Site Count

Total Number of Monitoring Sites in this MRP	Number of Sites to be Monitored for Ag Order, Appendix 3, Table 1 Constituents	Number of Sites to be Monitored for Ag Order, Appendix 3, Table 1 and 2 Constituents	Number of Sites to be Monitored for Applicable TMDL Constituents Only	Number of Background Sites
20	16 [1]	16 [1]	2 [2]	2 [3]

1. Proxy site for Malibu Watershed not counted twice in these totals (counted once as the monitoring site in Calleguas Creek Watershed Reach 5).
2. Sites to be monitored for applicable TMDL constituents only include OXD_CENTR and V02D_SPM.
3. Background sites include S04T_TAPO_BKGD, which is a background site for S04T_TAPO, and CIHD_DORIS_BKGD, which is a background site for the new CIHD_DORIS. The CIHD_DORIS site fulfills the requirement of a monitoring site that discharges to Channel Islands Harbor. The background site is to consider urban discharges that enter the channel upstream of the agricultural lands.

Table 3 lists the existing, continuing, and new monitoring sites to be used for VCAILG monitoring. This table is organized by watershed/subwatershed and reach so that the overlap amongst previous monitoring efforts is clear. The rationale for final site selection is also included in the table's "Notes" column. **Figure 2** shows the monitoring site locations that are being eliminated from the monitoring program (red site labels), as well as the distribution of sites that will be monitored under the Ag Order (green site labels).

The Calleguas Creek Watershed (CCW) had the greatest density of agricultural monitoring sites due to two separate monitoring programs that characterize discharges (VCAILGMP and CCWTMP). Historically, this meant that multiple sites within most subwatersheds represented the agriculture for that area. In the 2016/2021 Waiver, VCAILGMP sites in CCW were used to evaluate the attainment of standard water quality benchmarks, and data from the CCWTMP monitoring sites were compared to TMDL load allocations. As a result of conversations and direction from Los Angeles Water Board staff, the VCAILGMP for the Ag Order streamlines this monitoring strategy, narrowing the representative agricultural sites to one per subwatershed/reach where reasonable and adding a site for better coverage. Overall, the CCWTMP agricultural land use sites were selected as the continuing monitoring locations for VCAILGMP to maintain continuity in the evaluation of TMDL load allocations.

Clarification of TMDL boundaries in the Santa Clara River Watershed (SCRW) led to the elimination of three sites where there was duplication of monitoring in the same reach, or TMDL sampling was not needed. This also allowed for simplification of the Responsibility Areas (RAs). A background site has been added to continue confirmation of the natural source determination for chloride in the Upper Santa Clara River.

In the Oxnard Coastal/Channel Islands Harbor area, one site was replaced by a location that fulfills the Ag Order directive to sample agricultural discharge to Edison Canal and a background site was added due to the commingling of urban and agricultural discharges in the area.

No changes were made to the Ventura River Watershed monitoring sites. The proxy site for Malibu TMDLs had been a monitoring site in Reach 5 of the CCW. The continuing CCW Reach 5 monitoring site (05D_LAVD) will be used to represent the Malibu Creek Watershed.

Table 3. List of VCAILG Monitoring Sites in the 2016/2021 Waiver and Ag Order with Site Use Status and Rationale for Removal, Relocation, or Replacement for Ag Order Monitoring

Watershed/ Subwatershed	Site ID	Reach	Monitoring Program During 2016/2021 Waiver [1]	Site Status	Notes [2]
Oxnard Drain #3/ Mugu Lagoon	01T_ODD3_EDI	1	VCAILG, VCAILG TMDL	Continuing	No change to this monitoring site.
Calleguas Creek/ Mugu Lagoon	01T_ODD2_DCH	1	CCW TMDLs ag land use	Continuing	Site representative of agriculture in the subwatershed and allows for continuity in TMDL load allocation evaluations.
Calleguas Creek/ Calleguas Creek	02D_BROOM	2	CCW TMDLs ag land use	Replaced	Replaced by 02D_DEER due to the culvert where samples were taken being covered in sediment from large storms that resulted in channel pathway changes and an inoperable pump for discharging water.
	02D_DEER	2	N/A	New site replacing 02D_BROOM	Due to issues with sampling at 02D_BROOM, this site is its replacement; site is still within the same Calleguas Creek subwatershed and reach. The site represents drainage from avocados, citrus, and row crops.
	9AD_HOWARD	9A	N/A	New	This site was added to have additional agricultural discharge representation between sites 9BD_GERRY and 02D_DEER. This is a difficult area for site location due to a multitude of urban discharges upstream of the agricultural areas. Site is within the Calleguas Creek subwatershed but discharges at Conejo Creek.

Watershed/ Subwatershed	Site ID	Reach	Monitoring Program During 2016/2021 Waiver [1]	Site Status	Notes [2]
Calleguas Creek/ Revolon Slough	04D_ETTG	4	VCAILG	Replaced	Replaced by 04D_WOOD since the other site has been used for TMDL load allocation calculations and is better located in relation to the main stem site.
	04D_LAS	4	VCAILG	Removed	04D_WOOD was selected to represent Revolon Slough. Site 04D_LAS also has numerous access issues. The slope is steep and extremely muddy. Field crews are unable to measure flow during many storm events, and flow is pumped into Revolon Slough, where water is sometimes stagnant and inappropriate for sampling.
	04D_WOOD	4	CCW TMDLs ag land use	Continuing	This site has good crop representation within the drainage area: row crops, some orchards, and hoop house berries. It is also located directly upstream of the Revolon Slough main stem site 04_WOOD. Sampling here allows continuity in TMDL load allocation evaluations.
Calleguas Creek/ Beardsley Channel	05D_SANT_VCWPD	5	CCW TMDLs ag land use	Replaced	This site is located in a Ventura County Watershed Protection District storm drain and has upstream discharges, including a golf course, making it less representative of agriculture than the other monitoring sites in this subwatershed.
	05T_HONDO	5	VCAILG, VCAILG TMDL	Removed	Site is similar to 05D_LAVD, but with a lower proportion of agricultural acreage in the site drainage area and it is less easily accessible.
Calleguas Creek/ Beardsley Channel	05D_LAVD	5	VCAILG	Continuing	This site has the best access of the three available monitoring sites in this subwatershed. It also has great crop distribution and representation for the area and a higher proportion of agricultural acreage compared to the overall site drainage. This site will also replace 05T_HONDO as the proxy site for the Malibu TMDLs
Calleguas Creek/ Arroyo Las Posas	06T_FC_BR	6	CCW TMDLs ag land use	Continuing	Site representative of agriculture in the subwatershed and allows for continuity in TMDL load allocation evaluations.

Watershed/ Subwatershed	Site ID	Reach	Monitoring Program During 2016/2021 Waiver [1]	Site Status	Notes [2]
	06T_LONG2	6	VCAILG	Replaced	Channel where site is located has a very sandy bottom and high infiltration, making the timing of storm sampling difficult even for large rainfall events.
Calleguas Creek/ Arroyo Simi	07D_HITCH_LEVEE_2	7	CCW TMDLs ag land use	Continuing	This is the only site in CCW Reach 7 and the Arroyo Simi subwatershed; it will continue to be monitored.
Calleguas Creek/ Conejo Creek	9BD_GERRY	9B	CCW TMDLs ag land use	Continuing	This is the only site in CCW Reach 9B and will continue to be monitored.
Santa Clara River	Santa Clara River Estuary	---	VCAILG TMDL	Continuing	This is the general area referenced for fish tissue collection to comply with the Santa Clara River Toxaphene TMDL.
	S01D_MONAR	1	VCAILG TMDL	Removed	This monitoring site drains a single field and therefore, is not ideal from a representation perspective. Availability of TMDL boundary shapefiles allowed for better site selection and this site is no longer well suited for TMDL load allocation evaluation.
Santa Clara River	S02T_ELLS	2	VCAILG, VCAILG TMDL	Continuing	This site has good crop representation and has been used to evaluate compliance with the SCR Toxaphene TMDL. Continued sampling here will maintain continuity in evaluation of those load allocations.
	S02T_TODD	2	VCAILG, VCAILG TMDL	Removed	This site is in the same reach and very close to S02T_ELLS. S02T_ELLS had previously been selected for evaluating the SCR Toxaphene TMDL and that site will continue. S02T_TODD is also being removed because there are perennial natural flows in the channel upstream of all agricultural operations, making it less representative in dry weather.
	S03D_BARDS	3	VCAILG, VCAILG TMDL	Continuing	This site will continue and represents the south side of SCR Reach 3.
	S03T_BOULD	3	VCAILG, VCAILG TMDL	Continuing	This site will continue and represents the N side of SCR Reach 3.

Watershed/ Subwatershed	Site ID	Reach	Monitoring Program During 2016/2021 Waiver [1]	Site Status	Notes [2]
	S03T_TIMB	3	VCAILG, VCAILG TMDL	Removed	This site is also on the north side of the SCR in Reach 3. Site S03T_BOULD has better accessibility and crop representation.
	S04T_TAPO	4	VCAILG, VCAILG TMDL	Continuing	This site will represent agricultural discharges in SCR Reach 4 and 5.
	S04T_TAPO_BKGD	4	Special Study Background Site	Continuing	This site will be used periodically to confirm natural source contributions of chloride in SCR Reach 4.
Oxnard Coastal/ McGrath Lake	OXD_CENTR	---	VCAILG, VCAILG TMDL	Continuing	This site will continue to be used to evaluate attainment of McGrath Lake TMDL load allocations. However, site CIHD_DORIS will be used to represent the Oxnard Coastal area for **Table 10** constituents.
Oxnard Coastal/ Channel Islands Harbor	CIHD_VICT	---	VCAILG TMDL	Relocated/ Replaced	This monitoring site is being replaced by monitoring site CIHD_DORIS. The new site will represent agriculture in the Oxnard Coastal area and also will be sampled for the Channel Islands Bacteria TMDL.
	CIHD_DORIS	--	N/A	New	This new monitoring site discharges to Edison Canal and fulfills that Ag Order directive.
	CIHD_DORIS_BKGD	--	N/A	New	This site is located at the edge of the residential area before it enters the agricultural area of Doris Drain. It will serve as a background site when evaluating results from CIHD_DORIS.
Ventura River	V02D_SPM	2	VCAILG TMDL	Continuing	No site changes in this watershed.
	VRT_SANTO	---	VCAILG, VCAILG TMDL	Continuing	No site changes in this watershed.
	VRT_THACH	---	VCAILG, VCAILG TMDL	Continuing	No site changes in this watershed

1. VCAILG = site monitored for 2016/2021 Waiver, Appendix 3, Table 1 constituents; VCAILG TMDL = site monitored for TMDL constituents as designated in VCAILG 2016, Revision 1 MRP; CCW TMDLs ag land use = agricultural land use site monitored under CCWTMP
2. Monitoring sites to be sampled for Ag Order, Appendix 3, Table 1 constituents are listed in **Table 9**. Sites monitored for TMDL constituents are specified in **Table 11** and **Table 12**.

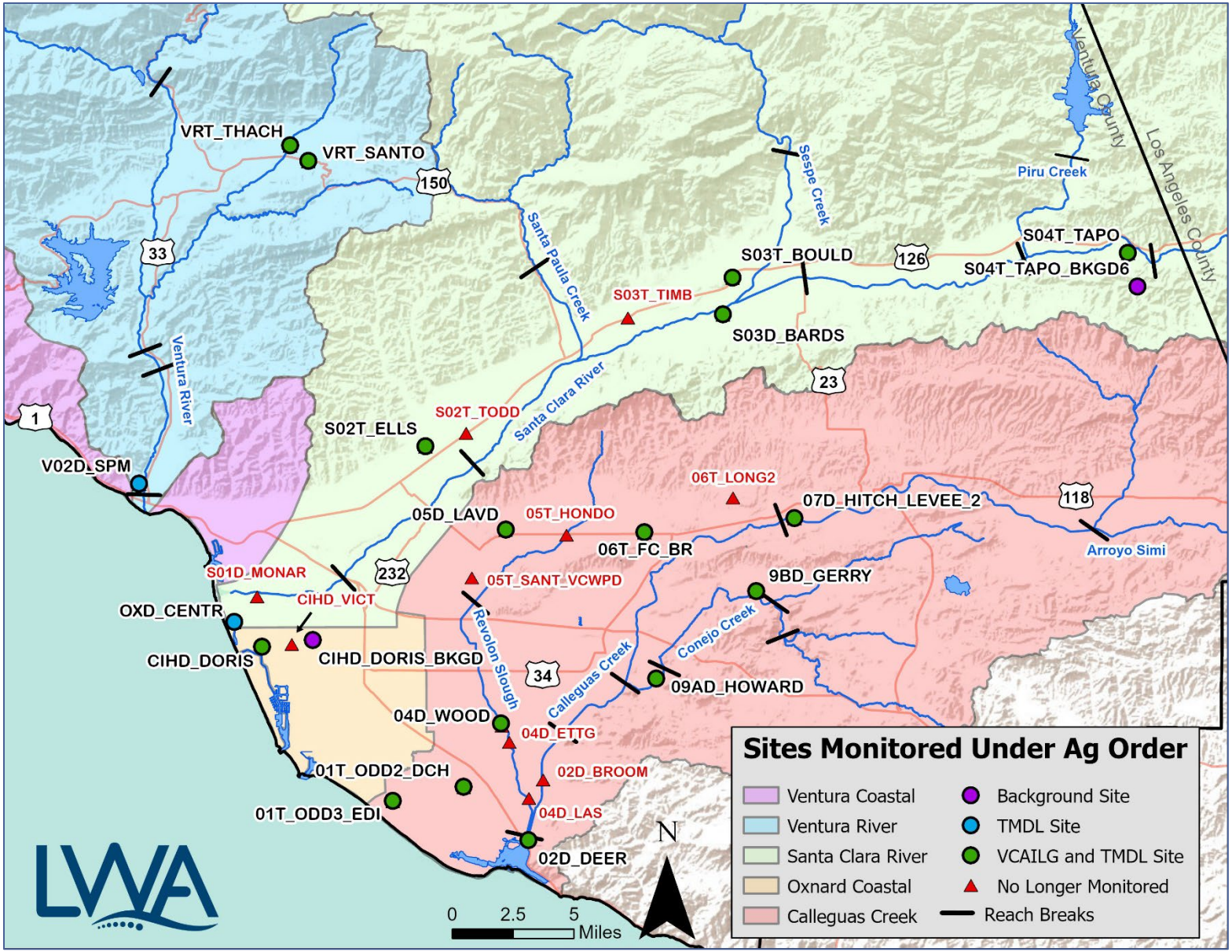


Figure 2. Map of Sites from 2016/2021 Conditional Waiver and Sites for Ag Order Monitoring

RESPONSIBILITY AREAS

In order to evaluate monitoring results for attainment of Ag Order water quality benchmarks and TMDL load allocation benchmarks, monitoring sites are assigned as representative of defined areas. The areas defined to be represented by a particular monitoring site or site(s) for compliance with the benchmarks applicable to them are referred to as responsibility areas (RAs). **Table 3** provides details of monitoring site changes from those sites monitored under the 2016/2021 Waiver monitoring program to the sites that will be monitored moving forward in compliance with the Ag Order. A few new monitoring sites have been added, some sites have been relocated, and most VCAILG sites in the Calleguas Creek Watershed have been replaced by the agricultural land use sites that were sampled under the CCWTMP. These changes eliminate duplication of sampling within the same reach/subwatershed, provide better site distribution, and comply with the Ag Order direction to add a monitoring site to represent discharge to Edison Canal.

In addition to specifying monitoring site locations and their purpose, this MRP "shall list the Discharger Group member sites that are being represented by each monitoring site" (Ag Order, Appendix 3, Section 1.1.1). To associate member sites (parcels) for representation by a particular monitoring site or combination of monitoring sites, it is necessary to first understand where and which water quality benchmarks apply within Ventura County. VCAILG has worked with Los Angeles Water Board staff to receive or obtain approval for maps of TMDL boundaries (**Table 4**). TMDL boundaries were overlain to define areas that are responsible for compliance with the same TMDL load allocation benchmarks. These defined areas, where all the properties within them are represented by the same monitoring site(s) and must attain the same TMDL load allocation(s), are referred to as Responsibility Areas (RAs). Appendix G includes a parcel list with RA designations. Any parcel residing fully within a single RA is assigned to that RA. Parcels that bridge more than one RA are designated "straddlers," and Regional Board staff will determine their RA assignment.

Where exceedances of TMDL load allocation benchmarks have occurred after the TMDL deadline, discharge limitations are triggered for members in the RA(s) represented by the site where the exceedance(s) occurred. One option to comply with these discharge limitations is to complete and implement a compliance pathway labeled Track 2: Farm-level Management Practice Plan (MPP). Ag Order, Appendix 3, Section 3.4, Table 4 prioritized and scheduled MPP due dates for the RAs that were developed during the 2016/2021 Waiver. However, the use of TMDL boundaries to define RAs and the monitoring site selection process means that Ag Order, Appendix 3, Section 3.4 Table 4 no longer aligns with the VCAILG monitoring program and RA assignments. In accordance with the Ag Order, Section 3.4, Table 4, footnote A, "Responsibility Areas and monitoring sites may be realigned to more closely reflect TMDL boundaries, with approval of Executive Officer," the RAs were realigned specifically to group areas that fall within the same TMDL obligations. **Table 5** provides an MPP submission schedule to replace Ag Order, Appendix 3, Section 3.4, Table 4 that utilizes the RA names contained in this MRP for compliance with the Ag Order. To provide context for the descriptive RA names, **Figure 3** includes the RA boundaries and names.

Table 4. TMDL Boundary Shapefiles Origin

TMDL Name	Shapefile Name	Origin
Calleguas Creek Nitrogen Compounds TMDL	Calleguas_entirewatershed	Shapefile was created during development of Stakeholder-driven TMDLs for the Calleguas Creek Watershed and utilized in the Los Angeles Water Board approved CCWTMP QAPP. Los Angeles Water Board staff have directed that this shapefile be used to identify members subject to discharge limitations for exceedances of this TMDL's load allocation benchmarks in Ag Order, Appendix 5.
Calleguas Creek Watershed and Mugu Lagoon Toxicity,	Calleguas_entirewatershed [1]	Shapefile was created during development of Stakeholder-driven TMDLs for the Calleguas Creek Watershed and utilized in the Los Angeles Water Board approved CCWTMP QAPP. Los Angeles Water Board staff have directed that this shapefile be used to identify members subject to discharge

TMDL Name	Shapefile Name	Origin
Chlorpyrifos, and Diazinon TMDL		limitations for exceedances of this TMDL's load allocation benchmarks in Ag Order, Appendix 5.
Calleguas Creek Watershed and Mugu Lagoon Metals and Selenium TMDL	Calleguas_entirewatershed [1]	Shapefile was created during development of Stakeholder-driven TMDLs for the Calleguas Creek Watershed and utilized in the Los Angeles Water Board approved CCWTMP QAPP. Los Angeles Water Board staff have directed that this shapefile be used to identify members subject to discharge limitations for exceedances of this TMDL's load allocation benchmarks in Ag Order, Appendix 5.
Calleguas Creek Salts TMDL	Salts_TMDL_Updated_Final	The CCW Salts TMDL was Stakeholder-developed with oversight and adoption by the Los Angeles Water Board. The Salts TMDL boundaries are what is used by the Stakeholder group in implementing the TMDL. Los Angeles Water Board staff have directed the use of this shapefile to identify members subject to discharge limitations for exceedances of this TMDL's load allocation benchmarks in Ag Order, Appendix 5.
Calleguas Creek Watershed and Mugu Lagoon OC Pesticides and PCBs TMDL	Calleguas_entirewatershed [1] minus EPA_OxnardDrain3	Calleguas_entirewatershed shapefile was created during development of Stakeholder-driven TMDLs for the Calleguas Creek Watershed (CCW) and utilized in the Los Angeles Water Board approved CCWTMP QAPP. EPA developed a TMDL for Oxnard Drain #3 with multiple overlapping constituents. Part of the Oxnard Drain #3 TMDL area is within the Calleguas Creek Watershed. Los Angeles Water Board staff have directed the application of the CCW OC Pesticides and PCBs TMDL to the entire CCW, minus the area that falls within the Oxnard Drain #3 TMDL, in which case those properties must comply with the Oxnard Drain #3 TMDL.
Oxnard Drain #3 Pesticides, PCBs, and Sediment Toxicity TMDL	EPA_OxnardDrain3	This shapefile was provided by the EPA when they developed this TMDL. Los Angeles Water Board staff have directed that this shapefile be used to identify members subject to discharge limitations for exceedances of this TMDL's load allocation benchmarks in Ag Order, Appendix 5.
McGrath Lake OC Pesticides and PCBs TMDL	ILRP_McGrath_Lake_OC_ Pesticides_and_PCBs_TMDL	Shapefile provided by Los Angeles Water Board staff. Staff have directed that this shapefile be used to identify members subject to discharge limitations for exceedances of this TMDL's load allocation benchmarks in Ag Order, Appendix 5.
Santa Clara River Estuary Toxaphene TMDL	ILRP_Santa_Clara_River_ Estuary_Toxaphene_TMDL	Shapefile provided by Los Angeles Water Board staff. Staff have directed that this shapefile be used to identify members subject to discharge limitations for exceedances of this TMDL's load allocation benchmarks in Ag Order, Appendix 5.
Santa Clara River Nitrogen TMDL	ILRP_Santa_Clara_River_ Nitrogen_TMDL	Shapefile provided by Los Angeles Water Board staff. Staff have directed that this shapefile be used to identify members subject to discharge limitations for exceedances

TMDL Name	Shapefile Name	Origin
		of this TMDL's load allocation benchmarks in Ag Order, Appendix 5.
Santa Clara River Bacteria TMDL	SCR_Subwatershed_Reach3, SCR_SubWatershed_Reach5	Shapefiles provided by Los Angeles Water Board staff. Staff have directed that this shapefile be used to identify members subject to discharge limitations for exceedances of this TMDL's load allocation benchmarks in Ag Order, Appendix 5.
Upper Santa Clara River Chloride TMDL	N/A	Natural source demonstration data was presented to Los Angeles Water Board staff at a meeting on November 3, 2020. Background monitoring results were also included in the VCAILG 2020 AMR document as well as a supplemental data file (Appendix F, VCAILG 2020 AMR). This background source information was accepted by Los Angeles Water Board staff and per their direction, monitoring will continue as specified in this MRP to periodically confirm the natural chloride source.
Ventura River Algae TMDL	VenturaRW, VenturaRW HEC-1 (provided with MRP attachments)	The VenturaRW shapefile provides an outline of the Ventura River Watershed and Los Angeles Water Board staff directed that it be used to identify members subject to discharge limitations for exceedances of this TMDL's load allocation benchmarks in Ag Order, Appendix 5. Due to the difference in wet weather load allocations between (1) the upper watershed and (2) the lower watershed plus Canada Larga, it was necessary to create RAs that separated the area draining to the upper watershed reaches from the area draining to Canada Larga and the lower watershed reaches. For this step, a shapefile obtained from the Ventura County Watershed Protection District (VCWPD) was used that contains hydrologic units used by the County to develop a HEC-1 Hydrology Model. The subwatersheds in the VCWPD shapefile are consistent with the hydrologic delineations used by the Regional Board and their consultants during the development of the Ventura River Algae TMDL. The outer boundary of the Ventura River watershed of the VenturaRW and VenturaRW HEC-1 shapefiles match.
Malibu Creek Watershed Nutrients TMDL	ILRP_Malibu_Creek_Nutrients_TMDL	Shapefile provided by Los Angeles Water Board staff. Staff have directed that this shapefile be used to identify members subject to discharge limitations for exceedances of this TMDL's load allocation benchmarks in Ag Order, Appendix 5.
Malibu Creek Watershed Sedimentation and Nutrients TMDL	ILRP_Malibu_Creek_Nutrients_and_Sediment_TMDL	Shapefile provided by Los Angeles Water Board staff. Staff have directed that this shapefile be used to identify members subject to discharge limitations for exceedances of this TMDL's load allocation benchmarks in Ag Order, Appendix 5.

1. Shapefile includes subwatersheds, which are used to apply subwatershed specific load allocations: Calleguas_subws_ArroyoSimi, Calleguas_subws_Calleguas, Calleguas_subws_Conejo, Calleguas_subws_LasPosas, Calleguas_subws_Mugu, and Calleguas_subws_RevolonBeardsley.

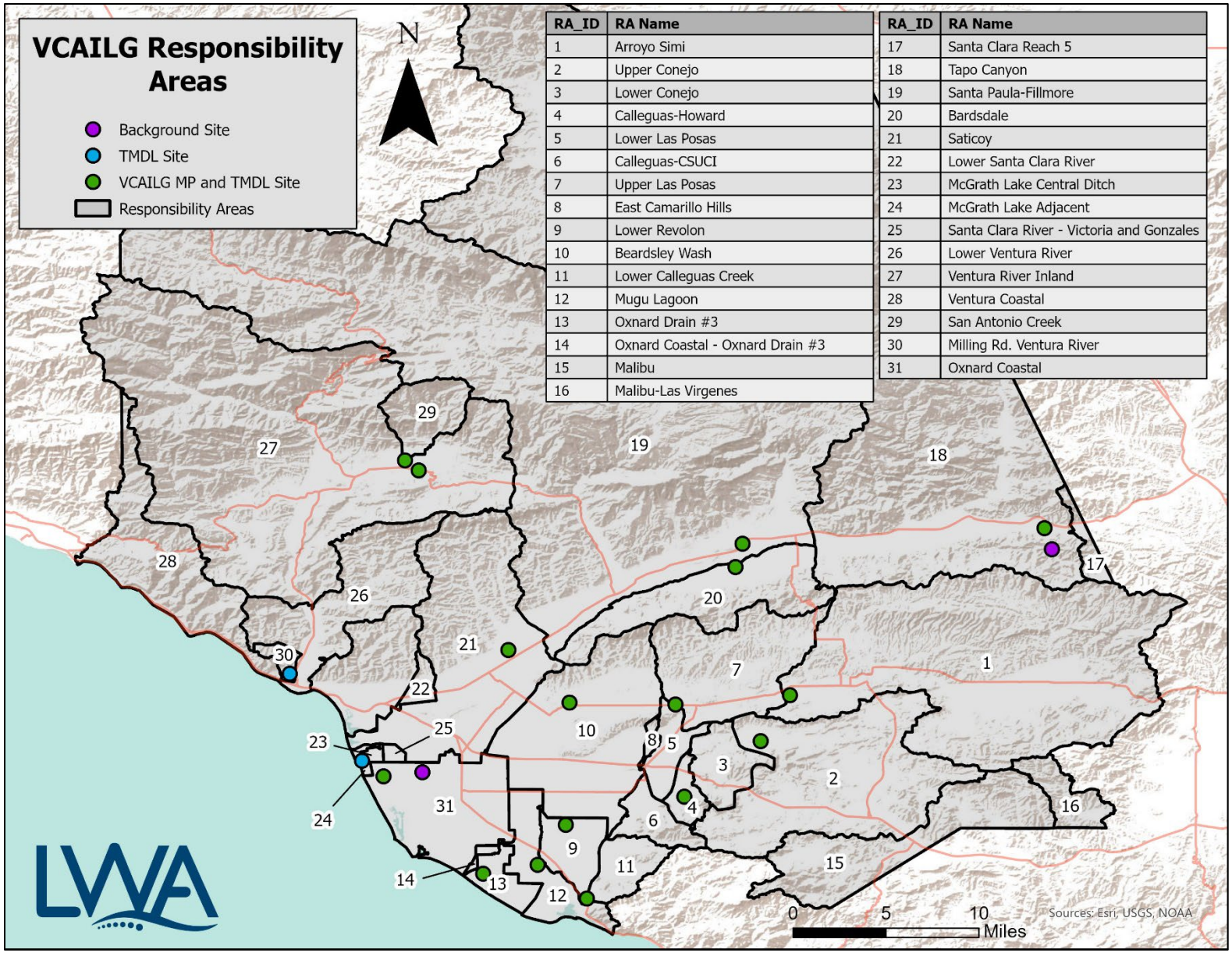
Table 5. Track 2 – MPP Submission Due Dates based on Geographical Prioritization If Water Quality Benchmarks Are Exceeded after the TMDL Compliance Deadline

Priority	RA Name in Ag Order [1]	VCAILG 2024 MRP RA Equivalent and RA ID	Approximate Number of Agricultural Parcels within 2024 MRP RA [7]		Associated VCAILG Monitoring Site in Ag Order	Associated VCAILG Monitoring Site(s) in 2024 MRP [2]	Date MPP Due (all except Diversified Socially Disadvantaged Growers)	Date MPP Due (Diversified Socially Disadvantaged Growers)
			Enrolled	Not Enrolled				
1	McGrath Lake Drainage Area	McGrath Central Ditch (23)	3	0	OXD_CENTR	OXD_CENTR, S02T_ELLS [3]	5/15/2024	5/15/2025
		SCR-Victoria and Gonzales (25)	12	0		OXD_CENTR, S02T_ELLS [4]		
		McGrath Lake Adjacent (24)	1	0		OXD_CENTR		
2	Lower Ventura River	Ventura River Milling Rd. (30)	3	0	V02D_SPM	V02D_SPM	9/15/2024	9/15/2025
	Tapo Canyon	Tapo Canyon (18)	158	49	S04T_TAPO	S04T_TAPO		
3	Boulder Creek	Santa Paula-Fillmore (18)	483	85	S03T_BOULD	S03T_BOULD	1/15/2025	1/15/2026
4	Bardsdale	Bardsdale (20)	199	69	S03D_BARDS	S03D_BARDS	5/15/2025	5/15/2026
	Tapo Canyon	Santa Clara Reach 5 (17) [5]	44	0	S04T_TAPO	S04T_TAPO		
5	Arroyo Simi	Arroyo Simi (1)	112	47	06T_LONG2	07D_HITCH_LEVEE_2	9/15/2025	9/15/2026
6	Arroyo Conejo	Upper Conejo (2), Lower Conejo (3)	110 17	45, 9	06T_LONG2	9BD_GERRY	1/15/2026	1/15/2027
7	Beardsley	Beardsley Wash (10), East Camarillo Hills (8)	309, 0	38, 0	05T_HONDO	05D_LAVD	5/15/2026	5/15/2027
	Malibu	Malibu (15), Malibu-Las Virgenes (16)	3	2	05T_HONDO	05D_LAVD		

Priority	RA Name in Ag Order [1]	VCAILG 2024 MRP RA Equivalent and RA ID	Approximate Number of Agricultural Parcels within 2024 MRP RA [7]		Associated VCAILG Monitoring Site in Ag Order	Associated VCAILG Monitoring Site(s) in 2024 MRP [2]	Date MPP Due (all except Diversified Socially Disadvantaged Growers)	Date MPP Due (Diversified Socially Disadvantaged Growers)
			Enrolled	Not Enrolled				
8	Las Posas	Upper Las Posas (7)	416	127	06T_LONG2	06T_FC_BR	9/15/2026	9/15/2027
9	Ventura River Inland	Ventura River Inland (27), Lower Ventura River (26)	158, 9	97, 23	VRT_THACH	VRT_THACH	1/15/2027	1/15/2028
10	San Antonio Creek	San Antonio Creek (29)	34	7	VRT_SANTO	VRT_SANTO	5/15/2027	5/15/2028
	LaVista Drain	Lower Las Posas (5)	49	14	05D_LAVD	06T_FC_BR		
	Santa Paula Creek	NA [6]	NA [6]	NA [6]	S03T_TIMB	NA [6]		
11	Todd Barranca	Lower Santa Clara River (22)	6	1	S02T_TODD	S02T_ELLS	9/15/2027	9/15/2028
12	Lower Calleguas Creek	Lower Calleguas Creek (11)	27	7	04D_ETTG	02D_DEER	1/15/2028	1/15/2029
		Calleguas-Howard (4)	17	1		9AD_HOWARD		
	Etting-Wood	Mugu Lagoon (12)	100	6	04D_ETTG	01T_ODD2_DCH		
	Ellsworth Barranca	Saticoy (21)	241	21	S02T_ELLS	S02T_ELLS		
	South Revolon	Lower Revolon (9)	99	4	04D_LAS	04D_WOOD		
		Calleguas-CSUCI (6)	24	6		9AD_HOWARD		

Priority	RA Name in Ag Order [1]	VCAILG 2024 MRP RA Equivalent and RA ID	Approximate Number of Agricultural Parcels within 2024 MRP RA [7]		Associated VCAILG Monitoring Site in Ag Order	Associated VCAILG Monitoring Site(s) in 2024 MRP [2]	Date MPP Due (all except Diversified Socially Disadvantaged Growers)	Date MPP Due (Diversified Socially Disadvantaged Growers)
			Enrolled	Not Enrolled				
13	Mugu Lagoon	Oxnard Drain #3 (13), Oxnard Coastal-Oxnard Drain #3 (14)	31, 11	0, 2	01T_ODD3_EDI	01T_ODD3_EDI	5/15/2028	5/15/2029

1. The following RAs are not included in the table because there are no TMDL-based load allocation benchmarks that apply to those areas: Oxnard Coastal and Ventura Coastal.
2. This column may not list all applicable TMDL monitoring sites associated with the corresponding RA. In some cases, main stem site data are used for load allocation calculations.
3. OXD_CENTR is the site for the McGrath Lake TMDL; S02T_ELLS is the site for the Santa Clara River Nitrogen TMDL for this RA.
4. OXD_CENTR is the site for the McGrath Lake TMDL; S02T_ELLS is the site for the Santa Clara River Nitrogen and Toxaphene TMDLs for this RA.
5. Santa Clara River Reach 5 is subject to the Santa Clara River Bacteria TMDL, whereas the Reach 4 portion of the Tapo Canyon RA is not. Therefore, the Santa Clara River Reach 5 RA is grouped with the Bardsdale RA since this part of the Santa Clara River is also subject to the Santa Clara River Bacteria TMDL.
6. The former Santa Paula Creek RA is now encompassed within the Santa Paula-Fillmore RA and is represented by monitoring site S03T_BOULD. See priority #3 and the Santa Paula-Fillmore RA for revised schedule information.
7. Listed counts are for all parcels in the VCAILG database regardless of status (e.g., enrolled, unenrolled, etc.).



RA_ID	RA Name
1	Arroyo Simi
2	Upper Conejo
3	Lower Conejo
4	Calleguas-Howard
5	Lower Las Posas
6	Calleguas-CSUCI
7	Upper Las Posas
8	East Camarillo Hills
9	Lower Revolon
10	Beardsley Wash
11	Lower Calleguas Creek
12	Mugu Lagoon
13	Oxnard Drain #3
14	Oxnard Coastal - Oxnard Drain #3
15	Malibu
16	Malibu-Las Virgenes

RA_ID	RA Name
17	Santa Clara Reach 5
18	Tapo Canyon
19	Santa Paula-Fillmore
20	Bardsdale
21	Saticoy
22	Lower Santa Clara River
23	McGrath Lake Central Ditch
24	McGrath Lake Adjacent
25	Santa Clara River - Victoria and Gonzales
26	Lower Ventura River
27	Ventura River Inland
28	Ventura Coastal
29	San Antonio Creek
30	Milling Rd. Ventura River
31	Oxnard Coastal

Figure 3. VCAILG Responsibility Areas (RAs) and Names with Monitoring Site Locations

VENTURA COUNTY PESTICIDE USE

Compilations of pesticide use reporting (PUR) data for 2022 and 2023 have yet to be made available on the California Department of Pesticide Regulation (CDPR) California Pesticide Information Portal; therefore, the following summary is for 2021 PUR data associated with irrigated agriculture in Ventura County. **Table 6** lists the top five pesticides by pound of active ingredient applied within Ventura County in 2021. The table also includes the top five commodities to which the top five active ingredients were applied. **Table 7** presents the top five commodities grown in the county in 2021 that have the highest pesticide usage, as measured by pounds of active ingredient applied. **Table** 7 also provides the top five active ingredients applied to each of the top five commodities, as well as the sum (lbs/yr) of all other pesticides applied to each of the top five crops. **Table 8** lists the five most frequently applied active ingredients and their total number of applications in Ventura County in 2021.

Table 6. Top Five Pesticides Used in Ventura County in 2021

Chemical/Active Ingredient	Commodity	Pounds Applied (lbs/yr)[1]
Chloropicrin	Strawberry	1,678,866
	Nursery-outdoor flowers	9,501
	Peppers	9,002
	Tomato	4,575
	Blackberry	1,133
Mineral Oil	Lemon	1,307,018
	Avocado	181,724
	Blackberry	44,276
	Orange	38,032
	Raspberry	34,473
Potassium N-Methyldithiocarbamate	Strawberry	671,372
Dichloropropene	Strawberry	289,731
	Peppers	16,436
	Lemon	4,055
	Tomato	2,994
	Nursery-outdoor flowers	2,091
Metam-Sodium	Peppers	126,664
	Strawberry	50,140
	Tomato	10,904
	Nursery-outdoor flowers	1,469

1. Data sourced from the California Department of Pesticide Regulation (CDPR) Pesticide Use Reporting (PUR) for Ventura County during the 2021 calendar year (most recent year available from CDPR).

Table 7. Top Five Commodities with Highest Pesticide Usage in Ventura County in 2021

Commodity	Chemical/Active Ingredient	Pounds Applied (lbs/yr)[1]
Strawberry	Chloropicrin	1,678,866
	Potassium N-Methyldithiocarbamate	671,372
	1,3-Dichloropropene	289,731
	Captan	117,780
	Sulfur	78,027
	All other active ingredients	235,392
Lemon	Mineral Oil	1,307,018
	Glyphosate	63,773
	Potassium Phosphite	6,067
	Copper Hydroxide	4,666
	1,3-Dichloropropene	4,055
	All other active ingredients	251,723
Avocado	Mineral Oil	181,724
	Glyphosate	37,418
	Potassium Phosphite	3,833
	Simazine	1,098
	Kaolin	1,050
	All other active ingredients	2,764
Peppers	Metam-Sodium	126,664
	Cryolite	28,839
	1,3-Dichloropropene	16,434
	Chloropicrin	9,002
	Hydrogen Peroxide	1,894
	All other active ingredients	14,432
Celery	Chlorothalonil	16,233
	Potash Soap	9,352
	Prometryn	9,033
	Dichloran	6,710
	Acephate	5,842
	All other active ingredients	53,877

1. Data sourced from the California Department of Pesticide Regulation (CDPR) Pesticide Use Reporting (PUR) for Ventura County during the 2021 calendar year (most recent year available from CDPR).

Table 8. Top Five Most Frequently Applied Pesticides in Ventura County in 2021

Chemical/Active Ingredient	Pounds Applied (lbs/yr)[1]	Number of Applications
Chloropicrin	1,703,560	287
Mineral Oil	1,648,392	4,171
Potassium N-Methyldithiocarbamate	671,372	60
1,3-Dichloropropene	316,050	76
Metam-Sodium	189,178	42

1. Data sourced from the California Department of Pesticide Regulation (CDPR) Pesticide Use Reporting (PUR) for Ventura County during the 2021 calendar year (most recent year available from CDPR).

APPROACH

Water samples will be collected from surface waterbodies influenced primarily by irrigated agriculture throughout Ventura County and analyzed for constituents typically associated with agricultural activities. **Table 9** lists the sites for which samples will be collected and tested for Ag Order, Appendix 3, Table 1 constituents that include field measured parameters, suspended and dissolved solids, salts, nutrients, copper, pesticides, toxicity, and bacteria. **Table 11** lists the monitoring sites that will be sampled and tested for the applicable TMDL constituents. The resulting data will be compared with the applicable water quality benchmarks listed in Appendices 4 and/or 5 of the Ag Order to determine whether these benchmarks are being met. Water quality benchmarks include numeric and narrative water quality objectives contained in the Basin Plan for the Los Angeles Region, criteria contained in the California Toxics Rule (CTR) and the applicable portions of the National Toxics Rule (NTR), and load allocations established through adopted Total Maximum Daily Loads (TMDLs) in local watersheds.

When water quality data are collected and observed to exceed applicable water quality benchmarks included in Appendices 4 and 5 of the Ag Order, the Order includes the types of management practices for categories of pollutants that a WQMP must specify, as well as TMDL-specific management practices. The WQMP must include targeted management practices that are designed and implemented to reduce or eliminate waste discharges from irrigated agricultural operations so that water quality benchmarks are attained. The WQMP must outline specific steps and milestones intended to attain water quality benchmarks with implementation of the identified management practices. The WQMP must also describe the level of implementation of VCAILG members' existing management practices and propose additional management practices where water quality benchmarks are not met. VCAILG members must follow an iterative approach to implementing successive management practices that result in attainment of water quality benchmarks within no more than 10 years from the date the WQMP is submitted unless the WQMP addresses a TMDL monitoring site with (1) a compliance date (see WDRs Appendix 3, Table 3) that has passed or (2) a compliance date that is less than 10 years from the date of WQMP submittal.

When a TMDL-associated water quality benchmark in Ag Order, Appendix 5, is not met at a Discharger Group monitoring site by the deadline in the Ag Order, Appendix 3, Table 3, then all members in the responsibility area for the group monitoring site shall be subject to a discharge limitation equal to the water quality benchmark from the deadline forward. The Discharger Group shall continue to monitor, evaluate, and address water quality benchmark exceedances after Table 3 deadlines. Unless an exceedance of a TMDL-associated water quality benchmark in Ag Order, Appendix 5, can be demonstrated not to have been caused or contributed by irrigated agriculture, then all members in the responsibility area shall be subject to a discharge limitation equal to the water quality benchmark from the deadline forward. Members will continue to be subject to an individual discharge limitation until the water quality benchmark is achieved.

For constituents other than trash, the individual discharge limitation can take one of two forms:

- **Track 1**: Member shall implement an individual Monitoring and Reporting Plan (MRP) to directly measure or demonstrate whether the discharge from their operation meets or exceeds a water quality benchmark as measured at an edge-of-field compliance point(s); or

- **Track 2**: Member shall implement a farm-level Management Practice Plan (MPP) certified by a qualified professional that assures implementation of selected management practices will result in attainment of the water quality benchmark. A member following Track 2 must also be engaged in farm-level MPP adaptive management.

Members are considered in compliance with the discharge limitations upon submitting the written notice to the Los Angeles Water Board identifying their intent to comply through either Track 1 or Track 2.

For Discharger Group monitoring sites where trash is a TMDL constituent, evidence that members are implementing a Minimum Frequency of Assessment and Collection (MFAC) Program will be considered when determining if agricultural discharges are causing or contributing to an exceedance. At a minimum, this evidence must include a demonstration that trash is not accumulating in deleterious amounts between trash assessment and collection events.

MONITORING SITES

VCAILGMP covers monitoring surface water quality at 16 discrete monitoring sites located throughout Ventura County (see **Table 9**; not including background or proxy locations) for the constituents listed in Appendix 3, Table 1 of the Ag Order see **Table 10**). Additional monitoring at a select number of these sites and/or additional TMDL-specific sites will take place to comply with TMDL monitoring requirements not covered by other monitoring programs (see **Table 11**).

The process for selection of appropriate sites for monitoring is based on land uses, subwatershed characteristics, VCAILG landowner representation, and access considerations. The specific criteria for selection of monitoring sites include:

1. Land use (primarily agricultural drainages).
2. Waterbodies for which TMDLs have been developed.
3. Size and complexity of subwatershed.
4. Watershed hydrology.
5. Size and flow of waterbodies.
6. Proximity to agricultural operations.
7. Acres and crop types of irrigated agricultural land represented.
8. Previous or existing monitoring sites under the 2005, 2010, and 2016/2021 Conditional Waivers or TMDL monitoring programs.
9. Safe access during dry and wet weather.

The process for monitoring site selection was based on land uses, subwatershed characteristics, VCAILG landowner representation, access considerations, minimization of contributions from other sources, existing site location coverage, and TMDL boundaries/reaches/subwatersheds, as applicable. Monitoring sites were selected to best characterize agricultural inputs to receiving waters and are generally located at the lower ends of main stem tributaries or agricultural drainages in areas associated with agricultural activity. **Table 12** provides information that links the constituents analyzed for each TMDL to the specific sites where the various classes of constituents are monitored. Refer to **Appendix A** for physical descriptions and driving directions for all monitoring site locations.

Maps of the three watersheds in Ventura County where samples will be collected are shown in **Figure 4** (Calleguas Creek/Oxnard Coastal Watersheds), **Figure 5** (Santa Clara River Watershed), and **Figure 6** (Ventura River Watershed). Similar maps are provided in **Figure 7** through **Figure 9** that also display the predominant crop types grown in each watershed.

Table 9. VCAILGMP Monitoring Sites for Constituents Specified in Ag Order (Ag Order, Appendix 3, Table 1 Constituents)

Watershed/ Subwatershed	Site Id	Reach	Waterbody Type [1]	Site Location	GPS Coordinates [2]	
					Latitude	Longitude
Oxnard Drain #3/ Mugu Lagoon	01T_ODD3_EDI	1	T	Rio de Santa Clara/Oxnard Drain #3 downstream of Edison Dr.	34.1326	-119.1607
Calleguas Creek/ Mugu Lagoon	01T_ODD2_DCH	1	T	Duck Pond/ Oxnard Drain #2/ Mugu Drain S. of Hueneme Rd.	34.1395	-119.1185
Calleguas Creek/ Calleguas Creek	02D_DEER	2	D	Agricultural drain at Deer Path Rd. just upstream of Pacific Coast Hwy	34.1132	-119.0799
	9AD_HOWARD	9A	D	Agricultural drain on N. side of Howard Rd. at Conejo Creek	34.1926	-119.0040
Calleguas Creek/ Revolon Slough	04D_WOOD	4	D	Agricultural drain on E. side of Wood Rd. N. of Revolon Slough	34.1708	-119.0963
Calleguas Creek/ Beardsley Channel	05D_LAVD	5	D	La Vista Drain at La Vista Ave.	34.2659	-119.0935
Calleguas Creek/ Arroyo Las Posas	06T_FC_BR	6	T	Fox Canyon at Bradley Rd.	34.2646	-119.0111
Calleguas Creek/ Arroyo Simi	07D_HITCH_LEVEE_2	7	D	2nd corrugated pipe discharging on N. side of Arroyo Simi flood control levee off of Hitch Blvd.	34.2716	-118.9219
Calleguas Creek/ Conejo Creek	9BD_GERRY	9B	D	Agricultural, drain crossing Santa Rosa Rd. at Gerry Rd.	34.2358	-118.9446
Santa Clara River	S02T_ELLS	2	T	Ellsworth Barranca at Telegraph Rd.	34.3068	-119.1412
	S03T_BOULD	3	T	Boulder Creek at Hwy 126	34.3895	-119.9587
	S03D_BARDS	3	D	Discharge along Bardsdale Ave. upstream of confluence with Santa Clara River	34.3715	-118.9644
	S04T_TAPO	4	T	Tapo Canyon Creek S. of Camino del Rio	34.4017	-118.7237
Oxnard Coastal/ Channel Islands Harbor	CIHD_DORIS	--	D	Doris Drain at corner before discharging to Edison Canal	34.2084	-119.238
	CIHD_DORIS_BKGD	--	B	Urban discharge to Doris Drain on Patterson Rd.	34.2116	-119.2079
Ventura River	VRT_THACH	--	T	Thacher Creek at Ojai Ave.	34.4467	-119.2108
	VRT_SANTO	--	T	San Antonio Creek at Grand Ave.	34.2659	-119.221723
Proxy for Malibu Creek	05D_LAVD	5	D	La Vista Drain at La Vista Ave.	34.2659	-119.0935

1. T = Tributary to main stem; D = Agricultural Drain; B = Background site
2. All GPS coordinates are presented in decimal degrees latitude and longitude in North American Datum 1983 (NAD83).

Table 10. Constituents and Monitoring Frequency of VCAILGMP (Ag Order, Appendix 3, Table 1 Constituents)

Constituent	Frequency [1]
Field Measurements	2 dry events and 2 wet events
Flow, pH, Temperature, Dissolved Oxygen, Turbidity, and Specific Conductivity	
General Water Quality Constituents	
Total Dissolved Solids (TDS), Total Suspended Solids (TSS), Hardness (as $CaCO_3$), Chloride, and Sulfate	
Nutrients	
Ammonia-N, Nitrate-N, Total Nitrogen-N, Dissolved Orthophosphate-P, Total Phosphorus-P	
Trace Metals	
Dissolved Copper, Total Copper	
Pesticides	
Organochlorine Pesticides[2], Organophosphate Pesticides[3], Pyrethroid Pesticides[4], Neonicotinoids[5]	
Trash	
Trash observations	
Bacteria	
E. coli or Enterococci[6]	
Chronic Aquatic Toxicity	1 wet event and second dry-season event

1. The "wet" season is defined as October 15th through May 15th; the "dry" season is defined as May 16th through October 14th.
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-I, endosulfan- II, endosulfan sulfate, endrin, endrin aldehyde, endrin ketone, and toxaphene.
3. Organophosphate pesticides include: bolstar, chlorpyrifos, demeton, diazinon, dichlorvos, dimethoate, disulfoton, ethoprop, fenchlorphos, fensulfothion, fenthion, malathion, ~~merphos~~ (Although merphos is listed in the Ag Order, this pesticide is no longer included in the OP pesticides suite. Merphos has not been detected in previous water quality samples and it does not have a water quality benchmark, so it will not be analyzed), methyl parathion, mevinphos, phorate, tetrachlorovinphos, tokuthion, and trichloronate.
4. Pyrethroid pesticides include: allethrin, bifenthrin, cyfluthrin, cypermethrin, danitol (fenpropathrin), deltamethrin/tralomethrin, esfenvalerate, fenvalerate, fluvalinate, lambda-cyhalothrin, permethrin-cis, permethrin-trans, prallethrin, and resmethrin.
5. Neonicotinoid pesticides: acetamiprid, clothianidin, dinotefuran, imidacloprid, nitenpyram, nithiazine, thiacloprid, and thiamethoxam.
6. *E. coli* or *Enterococci* will be tested according to site conditions.

Table 11. Monitoring Sites for TMDL Constituents

Watershed/ Subwatershed	Site Id	Reach	Waterbody Type [1]	Site Location	Gps Coordinates [2]	
					Latitude	Longitude
Oxnard Drain #3/ Mugu Lagoon	01T_ODD3_EDI [3]	1	T	Rio de Santa Clara/Oxnard Drain #3 downstream of Edison Dr.	34.1326	-119.1607
Calleguas Creek/ Mugu Lagoon	01T_ODD2_DCH	1	T	Duck Pond/Oxnard Drain #2/Mugu Drain S. of Hueneme Rd.	34.1395	-119.1185
Calleguas Creek/ Calleguas Creek	02D_DEER	2	D	Agricultural drain at Deer Path Rd. just upstream of Pacific Coast Hwy	34.1132	-119.0799
	9AD_HOWARD	9A	D	Agricultural drain on N. side of Howard Rd. at Conejo Creek	34.1926	-119.0040
Calleguas Creek/ Revolon Slough	04D_WOOD	4	D	Agricultural drain on E. side of Wood Rd. N of Revolon Slough	34.1708	-119.0963
Calleguas Creek/ Beardsley Channel	05D_LAVD	5	D	La Vista Drain at La Vista Ave.	34.2659	-119.0935
Calleguas Creek/ Arroyo Las Posas	06T_FC_BR	6	T	Fox Canyon at Bradley Rd.	34.2646	-119.0111
Calleguas Creek/ Arroyo Simi	07D_HITCH_LEVEE_2	7	D	2nd corrugated pipe discharging on N. side of Arroyo Simi flood control levee off of Hitch Rd.	34.2716	-118.9219
Calleguas Creek/ Conejo Creek	9BD_GERRY	9B	D	Agricultural drain crossing Santa Rosa Rd. at Gerry Rd.	34.2358	-118.9446
Santa Clara River	S02T_ELLS	2	T	Ellsworth Barranca at Telegraph Rd.	34.3068	-119.1412
	S03T_BOULD	3	T	Boulder Creek at Hwy 126	34.3895	-119.9587
	S03D_BARDS	3	D	Discharge along Bardsdale Ave. upstream of confluence with Santa Clara River	34.3715	-118.9644
	S04T_TAPO	4	T	Tapo Canyon Creek S. of Camino del Rio	34.4017	-118.7237
	S04T_TAPO_BKGD	4	B	Tapo Canyon Creek upstream of all irrigated agriculture. Upper Santa Clara River Chloride TMDL background site for S04T_TAPO.	34.3854	-118.7182
Oxnard Coastal/ McGrath Lake/	OXD_CENTR	--	D	Central Ditch at Harbor Blvd.	34.2209	-119.2549
	CIHD_DORIS	--	D	Doris Drain at corner before discharging to Edison Canal	34.2084	-119.238

Watershed/ Subwatershed	Site Id	Reach	Waterbody Type [1]	Site Location	Gps Coordinates [2]	
					Latitude	Longitude
Channel Islands Harbor	CIHD_DORIS_BKGD	--	B	Urban discharge to Doris Drain at Patterson Rd. Background site to CIHD_DORIS.	34.2116	-119.2079
Ventura River	V02D_SPM	2	D	Drainage channel to Ventura River downstream of Milling Rd. crossing.	34.2891	-119.3088
	VRT_THACH	--	T	Thacher Creek at Ojai Ave.	34.446719	-119.210893
	VRT_SANTO	--	T	San Antonio Creek at Grand Ave.	34.2659	-119.221723
Malibu Proxy Site	05D_LAVD	5	D	La Vista Drain at La Vista Ave.	34.2659	-119.0935

1. T = Tributary; D = Agricultural Drain; B = Background Site.
2. All GPS coordinates presented in decimal degrees latitude and longitude in North American Datum 1983 (NAD83).
3. This site is also included in the CCWTMP QAPP to monitor for Oxnard Drain #3 TMDL constituents for multiple Stakeholders, including VCAILG.

Table 12. Site-Specific Monitoring Frequency and Constituents for TMDL Monitoring Performed Under VCAILGMP

TMDL [1, 8]	Site Id	Constituent [2]	Frequency
Calleguas Creek Nitrogen TMDL	01T_ODD3_EDI 01T_ODD2_DCH 02D_DEER 04D_WOOD 05D_LAVD 06T_FC_BR 07D_HITCH_LEVEE_2 9AD_HOWARD 9BD_GERRY	Nitrate-N, nitrite-N, ammonia-N	2 dry events, 2 wet events
Calleguas Creek Toxicity, Chlorpyrifos, and Diazinon TMDL	01T_ODD3_EDI 01T_ODD2_DCH 02D_DEER 04D_WOOD 05D_LAVD 06T_FC_BR 07D_HITCH_LEVEE_2 9AD_HOWARD 9BD_GERRY	Toxicity, chlorpyrifos, diazinon	2 dry events, 2 wet events
Calleguas Creek Metals and Selenium TMDL	01T_ODD3_EDI 01T_ODD2_DCH 02D_DEER 04D_WOOD 05D_LAVD 06T_FC_BR 07D_HITCH_LEVEE_2 9AD_HOWARD 9BD_GERRY	Copper, nickel, selenium, mercury (total and dissolved forms for each)	2 dry events, 2 wet events
Calleguas Creek Salts TMDL	05D_LAVD 06T_FC_BR 07D_HITCH_LEVEE_2 9AD_HOWARD 9BD_GERRY	Chloride, TDS, sulfate, boron	2 dry events, 2 wet events
Calleguas Creek OC Pesticides and PCBs TMDL	01T_ODD2_DCH 02D_DEER 04D_WOOD 05D_LAVD 06T_FC_BR 07D_HITCH_LEVEE_2 9AD_HOWARD 9BD_GERRY	Organochlorine Pesticides, PCBs	2 dry events, 2 wet events

TMDL [1, 8]	Site Id	Constituent [2]	Frequency
Oxnard Drain #3 Pesticides, PCBs, and Sediment Toxicity TMDL	01T_ODD3_EDI	Bifenthrin, total chlordane, chlorpyrifos, 4,4'-DDT, 4,4'-DDE, 4,4'-DDD, dieldrin, total PCBs, toxaphene (water)	2 dry events; 2 wet events
		TOC, total chlordane, 4,4'-DDT, 4,4'-DDE, 4,4'-DDD, dieldrin, total PCBs, toxaphene, sediment toxicity (sediment) [3]	Once a year
McGrath Lake OC Pesticides and PCBs TMDL	OXD_CENTR	Total organic carbon (TOC), TSS, total PCBs, 4,4'-DDT, 4,4'-DDE, 4,4'-DDD, dieldrin, total chlordane (water)	2 dry events; 2 wet events
		TOC, Total PCBs, 4,4'-DDT, 4,4'-DDE, 4,4'-DDD, dieldrin, total chlordane (suspended sediment)	2 wet events
Channel Islands Harbor Bacteria TMDL	CIHD_DORIS CIHD_DORIS_BKGD	*E. coli*, *Enterococcus*, total coliform, fecal coliform	2 dry events; 2 wet events
Santa Clara River Estuary Toxaphene TMDL	S02T_ELLS	TSS, toxaphene, chlordane, dieldrin (water)	2 dry events; 2 wet events
		Toxaphene, chlordane, dieldrin (filtered sediment)	2 wet events
	Santa Clara River Estuary	Toxaphene, chlordane, dieldrin (fish tissue)	Every 3 years [4]
Santa Clara River Nitrogen TMDL	S02T_ELLS S03T_BOULD S03D_BARDS S04T_TAPO	Ammonia-N, nitrate-N, nitrite-N	2 dry events; 2 wet events
Santa Clara River Bacteria TMDL [5]	S03T_BOULD S03D_BARDS	*E. coli*	2 dry events; 2 wet events
Upper Santa Clara River Chloride TMDL [6]	S04T_TAPO	Chloride	2 dry events; 2 wet events
	S04T_TAPO_BKGD	Chloride	2 dry events during years when natural source determination confirmation is needed
Ventura River Algae TMDL	VRT_THACH VRT_SANTO V02D_SPM	Total nitrogen, total phosphorus	2 dry events
		Nitrate-N, nitrite-N	2 wet events

TMDL [1, 8]	Site Id	Constituent [2]	Frequency
Malibu Creek Watershed Nutrients TMDL	05D_LAVD [7]	Total nitrogen, total phosphorus	2 dry events
		Nitrate-N, nitrite-N	2 wet events
Malibu Creek Watershed Sedimentation and Nutrients TMDL	05D_LAVD [7]	Total nitrogen, total phosphorus	2 wet events; 2 dry events

1. The Ventura River Estuary Trash TMDL and Revolon Slough and Beardsley Wash Trash TMDLs are not listed in this table as their monitoring, reporting, and compliance are completed through implementation of a Minimum Frequency Assessment and Collection (MFAC) Program and the Stakeholders submit a separate Annual Monitoring Report for these TMDLs.
2. Constituents listed in this table are necessary for data comparison with TMDL load allocations, many of which area also Ag Order constituents (Ag Order, Appendix 3, Table 1, or Table 10 of this MRP).
3. Bulk sediment toxicity testing will be performed on either *Hyalella azteca* or urchin (fertilization or development test), depending on sample conditions. Toxicity tests using *Hyalella azteca* are appropriate when pore water salinity is < 15 ppt. Urchin fertilization or development tests would be appropriate for pore water salinities ≥ 15 ppt.
4. Continuing the current fish tissue sampling schedule, the next collection will be in summer 2024.
5. If more frequent sampling occurs, those results will be reported and used to evaluate TMDL compliance.
6. The Regional Board has accepted the natural source determination provided by VCAILG for chlorides in the Upper Santa Clara River. However, to demonstrate that the conclusion of the natural source demonstration is still reflective of current environmental conditions, additional sampling will be performed in the first year of approval of this MRP and then three years later. If demonstration shows that it is still a natural source after the 3-year sampling, then the demonstration will only need to be made every 5 years. This sampling will be performed at site S04T_TAPO_BKGD, which is an upstream background site to S04T_TAPO in Tapo Canyon Creek just upstream of where agricultural operations begin.
7. Proxy site selected to assess compliance with the two Malibu Watershed TMDLs.
8. Monitoring data from other programs may be used to evaluate progress towards attaining or compliance with TMDL load allocations.

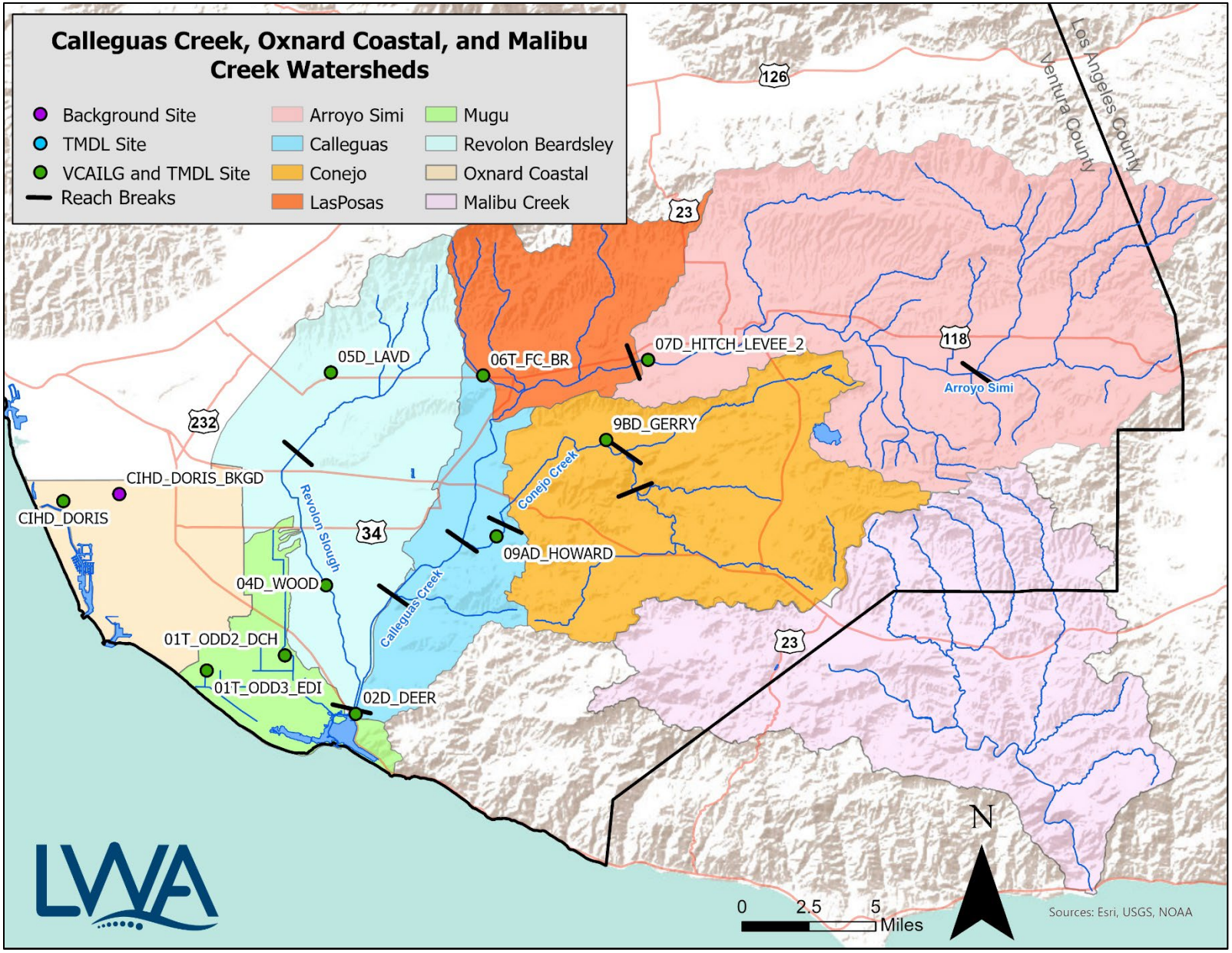


Figure 4. Monitoring Sites in the Calleguas Creek/Oxnard Coastal Watersheds

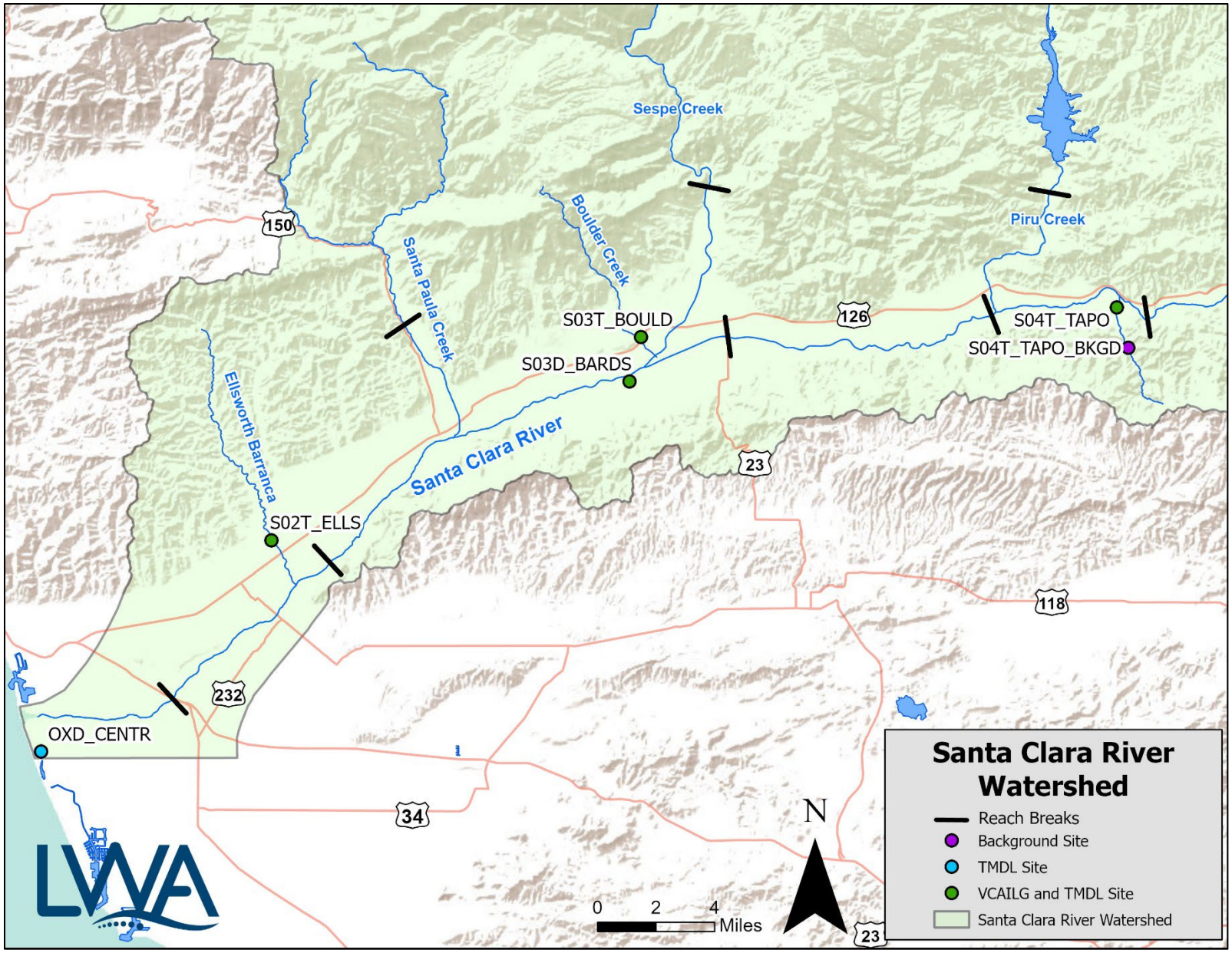


Figure 5. Monitoring Sites Located in the Santa Clara River Watershed

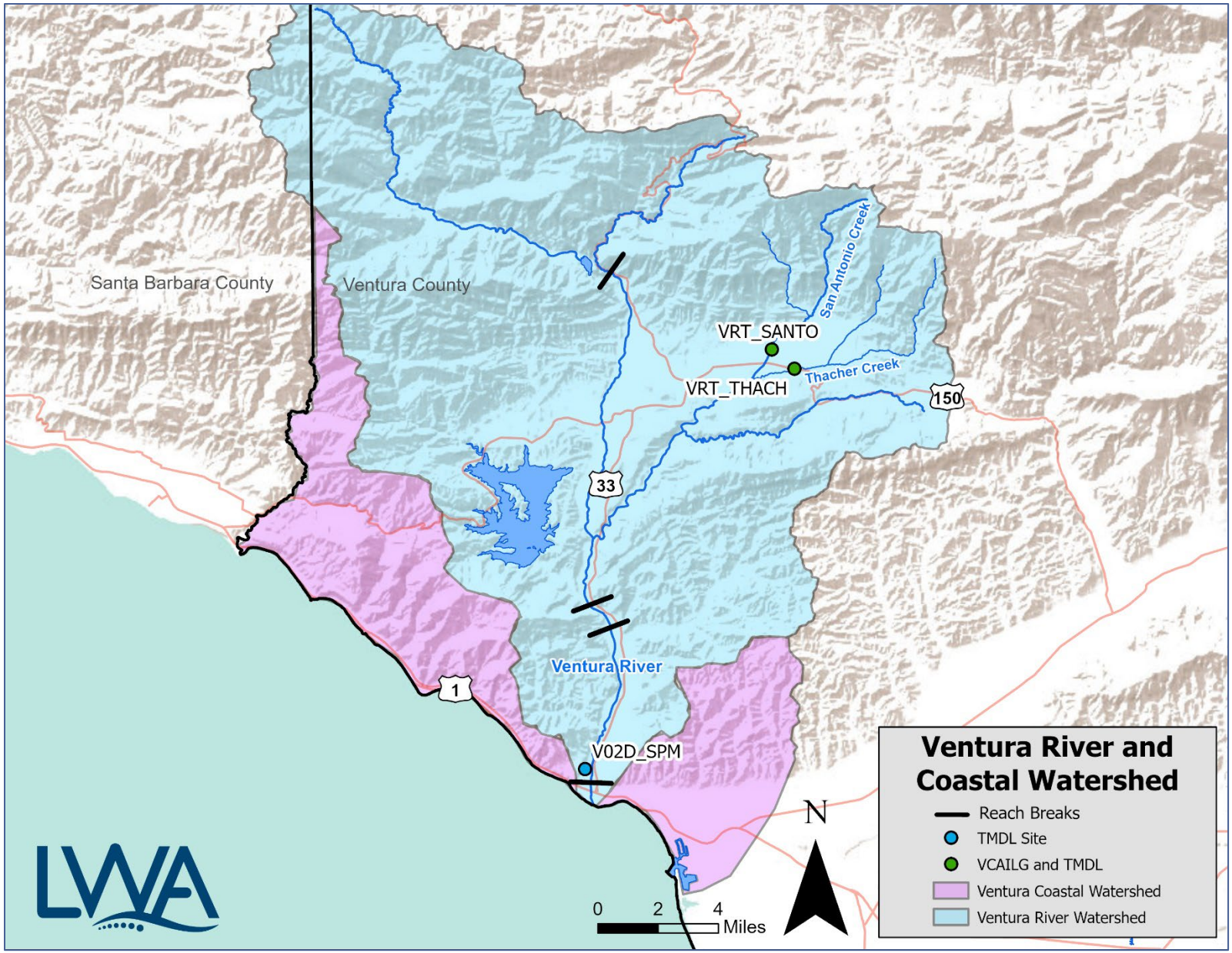


Figure 6. Monitoring Sites Located in the Ventura River Watershed

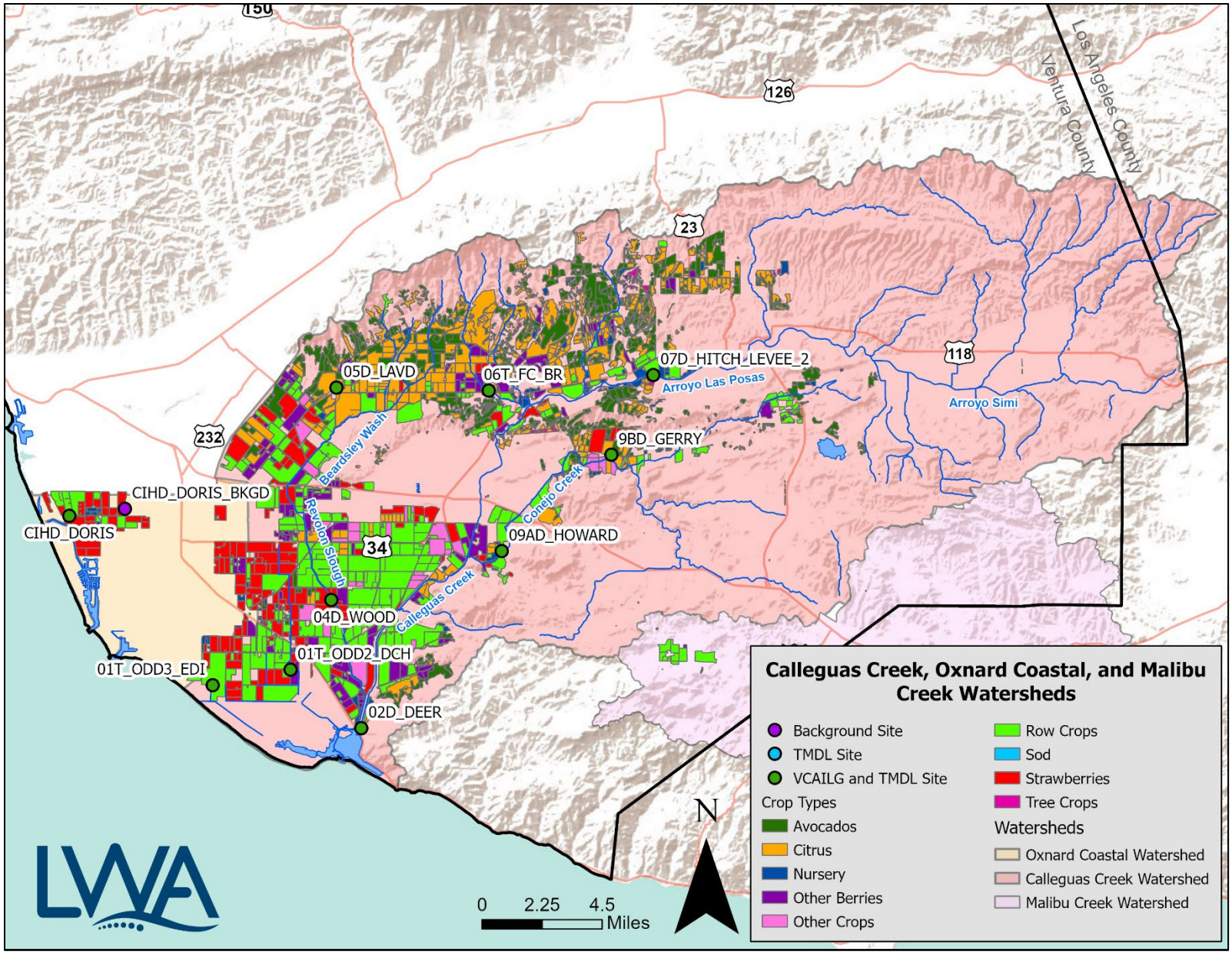


Figure 7. Calleguas Creek/Oxnard Coastal Monitoring Sites and Crop Types

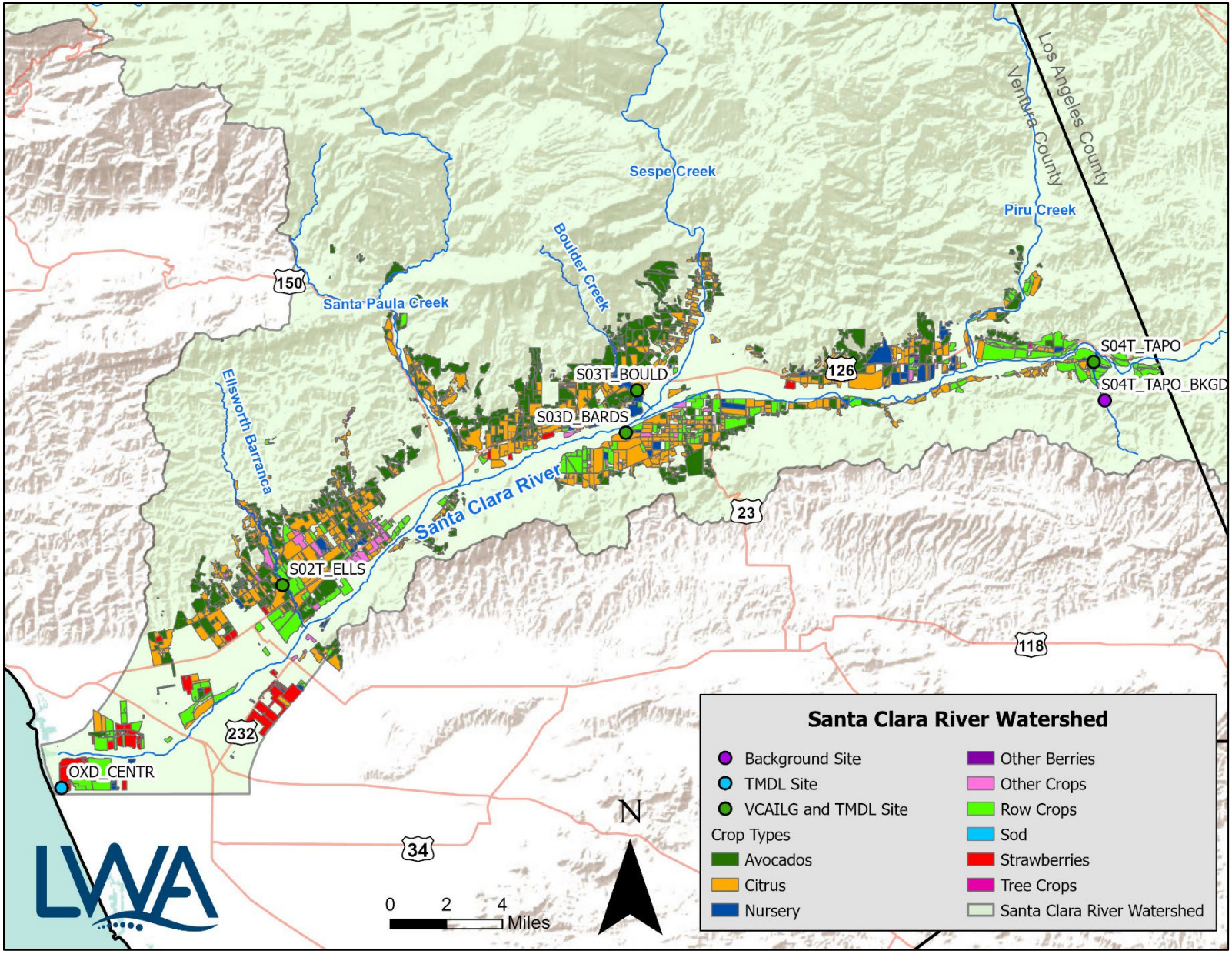


Figure 8. Santa Clara River Watershed Monitoring Sites and Crop Types

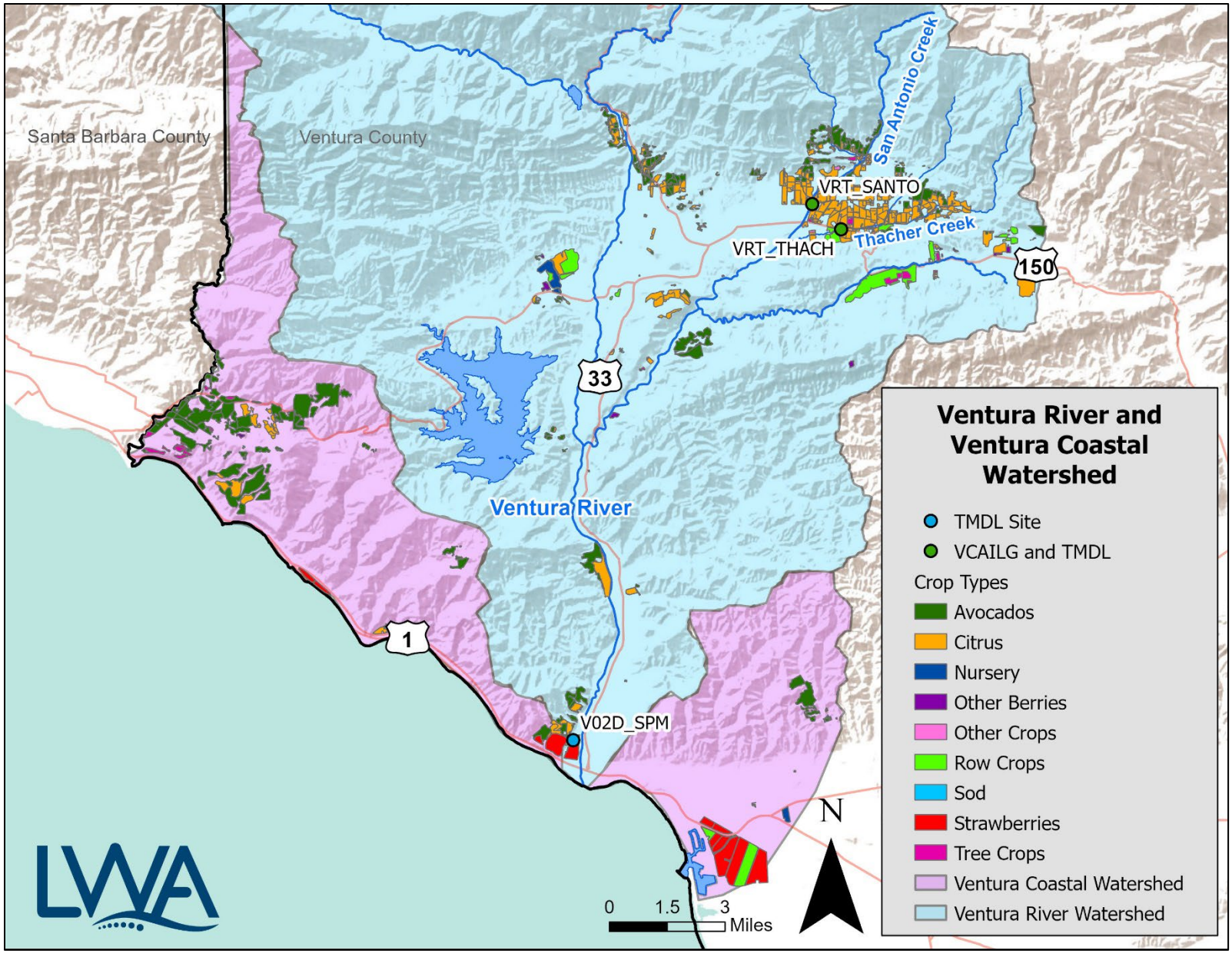


Figure 9. Ventura River Watershed Monitoring Sites and Crop Types

SAMPLING SCHEDULE

Monitoring will be conducted during two wet and two dry events each year for all water quality constituents and during one storm event and the second dry weather event for toxicity testing. **Table 13** presents the yearly monitoring to be conducted at each VCAILGMP site. The start of implementation of this MRP is dependent upon VCAILG's receipt of Executive Officer approval from the Los Angeles Water Board. Until that time, monitoring will continue according to the MRP (VCAILG, 2017) approved for compliance with the 2016/2021 Waiver. **Table 14** presents the yearly monitoring at each TMDL monitoring site that has been incorporated into VCAILGMP. For information regarding TMDL monitoring that is the responsibility of other programs, refer to the appropriate QAPP. To the extent practicable, toxicity testing will be conducted concurrently by the Calleguas Creek Watershed TMDL Monitoring Program (CCWTMP) to provide an indication of whether agricultural drainages are causing or contributing to toxicity in the receiving water (main stem). Any changes with regard to the sample schedule will be determined through discussions between the Project Manager, Project QA Manager, and field staff and will be documented in the Annual Report.

Should measurable precipitation occur during the seven days prior to a scheduled dry weather event, data from stream gages within each watershed will be evaluated to determine if flow rates have returned to pre-storm levels for at least 3 days. If flow rates have returned to and remained at pre-storm levels for a minimum of 3 days, then the sampling event may be conducted as scheduled. If flow rates have not returned to pre-storm levels, then the sampling event will be rescheduled to allow flow rates to return to pre-storm levels. Dry weather monitoring (May 16th through October 14th) will be scheduled to occur after the majority of growers have applied pesticides and/or fertilizers and during the period when irrigation is required, where practicable. Additional considerations will be made to coordinate with CCWTMP quarterly dry weather monitoring events, when feasible.

All efforts will be made to conduct two wet weather events during the wet season (October 15 through May 15). The Program's first wet-season samples will be aimed at collecting the first storm of the year that occurs during the wet season that meets the rainfall threshold. Sufficient precipitation is needed to produce runoff and increase drainage/stream flow. Ag Order, Appendix 3, requires that wet season samples "shall be collected within the first 24 hours of a storm with greater than 0.5-inch (in.) rain as measured by the nearest National Weather Service rain gauge, to the extent practicable. Practical constraints on wet season sampling events include but are not limited to (1) lab closures on weekends and holidays, (2) sample holding times, and (3) safety of the monitoring team." If two wet weather events are not sampled during a monitoring year, then the reasons for this will be documented in the corresponding Annual Monitoring Report.

The Santa Clara River Estuary Toxaphene TMDL was originally incorporated into the Conditional Waiver as a single regulatory action. This TMDL requires fish collection in the estuary to be completed every three years. The fish collection and tissue analysis schedule will continue from the 2016/2021 Waiver and be performed in the summer of 2024 and every three years thereafter. The Santa Clara River Estuary Toxaphene TMDL, as well as the McGrath Lake OC Pesticides and PCBs TMDL, and the Oxnard Drain #3 Pesticides, PCBs, and Sediment Toxicity TMDL also specify sediment sampling, either suspended or bed sediment. The frequency of this monitoring is also continued from the 2016/2021 Waiver and provided in the following two tables on a site-by-site basis.

Table 13. VCAILGMP Monitoring Schedule

Watershed/ Subwatershed	Site Id	Reach	Yearly Events			
			Dry Event 1	Wet Event 1	Wet Event 2	Dry Event 2
Oxnard Drain #3/ Mugu Lagoon	01T_ODD3_EDI	1	WQ	TOX, WQ	WQ	TOX, WQ
Calleguas Creek/ Mugu Lagoon	01T_ODD2_DCH	1	WQ	TOX, WQ	WQ	TOX, WQ
Calleguas Creek/ Calleguas Creek	02D_DEER	2	WQ	TOX, WQ	WQ	TOX, WQ
	9AD_HOWARD	9A	WQ	TOX, WQ	WQ	TOX, WQ
Calleguas Creek/ Revolon Slough	04D_WOOD	4	WQ	TOX, WQ	WQ	TOX, WQ
Calleguas Creek/ Beardsley Channel	05D_LAVD	5	WQ	TOX, WQ	WQ	TOX, WQ
Calleguas Creek/ Arroyo Las Posas	06T_FC_BR	6	WQ	TOX, WQ	WQ	TOX, WQ
Calleguas Creek/ Arroyo Simi	07D_HITCH_LEVEE_2	7	WQ	TOX, WQ	WQ	TOX, WQ
Calleguas Creek/ Conejo Creek	9BD_GERRY	9B	WQ	TOX, WQ	WQ	TOX, WQ
Santa Clara River	S02T_ELLS	2	WQ	TOX, WQ	WQ	TOX, WQ
	S03T_BOULD	3	WQ	TOX, WQ	WQ	TOX, WQ
	S03D_BARDS	3	WQ	TOX, WQ	WQ	TOX, WQ
	S04T_TAPO	4	WQ	TOX, WQ	WQ	TOX, WQ
Oxnard Coastal/ Channel Islands Harbor	CIHD_DORIS	--	WQ	TOX, WQ	WQ	TOX, WQ
	CIHD_DORIS_BKGD	--	WQ	TOX, WQ	WQ	TOX, WQ
Ventura River	VRT_THACH	--	WQ	TOX, WQ	WQ	TOX, WQ
	VRT_SANTO	--	WQ	TOX, WQ	WQ	TOX, WQ
Proxy for Malibu Creek	05D_LAVD	5	WQ	TOX, WQ	WQ	TOX, WQ

WQ = Water Quality: All water quality constituents listed in **Table 10**, excluding toxicity, which it noted separately.
TOX = Toxicity.

Table 14. Monitoring Schedule for Sites Incorporated into VCAILGMP

Watershed/ Subwatershed	Site Id	Reach	Yearly Events [1]			
			Dry Event 1	Wet Event 1	Wet Event 2	Dry Event 2
Oxnard Drain #3/ Mugu Lagoon	01T_ODD3_EDI	1	Nitrate-N, Nitrite-N; Toxicity, chlorpyrifos, diazinon; Total and Dissolved: copper, nickel, selenium, mercury; Bifenthrin, total chlordane, chlorpyrifos, 4,4'-DDT, 4,4'-DDE, 4,4'-DDD, dieldrin, total PCBs, toxaphene (water); TOC, total chlordane, 4,4'-DDT, 4,4'-DDE, 4,4'-DDD, dieldrin, total PCBs, toxaphene, sediment toxicity (sediment)	Nitrate-N, nitrite-N; Toxicity, chlorpyrifos, diazinon; Total and Dissolved: copper, nickel, selenium, mercury; Bifenthrin, total chlordane, chlorpyrifos, 4,4'-DDT, 4,4'-DDE, 4,4'-DDD, dieldrin, total PCBs, toxaphene (water)	Nitrate-N, nitrite-N; Toxicity, chlorpyrifos, diazinon; Total and Dissolved: copper, nickel, selenium, mercury; Bifenthrin, total chlordane, chlorpyrifos, 4,4'-DDT, 4,4'-DDE, 4,4'-DDD, dieldrin, total PCBs, toxaphene (water)	Nitrate-N, nitrite-N; Toxicity, chlorpyrifos, diazinon; Total and Dissolved: copper, nickel, selenium, mercury; Bifenthrin, total chlordane, chlorpyrifos, 4,4'-DDT, 4,4'-DDE, 4,4'-DDD, dieldrin, total PCBs, toxaphene (water)
Calleguas Creek/ Mugu Lagoon	01T_ODD2_DCH	1	Nitrate-N, nitrite-N; Toxicity, chlorpyrifos, diazinon; Total and Dissolved: copper, nickel, selenium, mercury; OC pesticides, PCBs	Nitrate-N, nitrite-N; Toxicity, chlorpyrifos, diazinon; Total and Dissolved: copper, nickel, selenium, mercury; OC pesticides, PCBs	Nitrate-N, nitrite-N; Toxicity, chlorpyrifos, diazinon; Total and Dissolved: copper, nickel, selenium, mercury; OC pesticides, PCBs	Nitrate-N, nitrite-N; Toxicity, chlorpyrifos, diazinon; Total and Dissolved: copper, nickel, selenium, mercury; OC pesticides, PCBs

Watershed/ Subwatershed	Site Id	Reach	Yearly Events [1]			
			Dry Event 1	Wet Event 1	Wet Event 2	Dry Event 2
Calleguas Creek/ Calleguas Creek	02D_DEER	2	Nitrate-N, nitrite-N; Toxicity, chlorpyrifos, diazinon; Total and Dissolved: copper, nickel, selenium, mercury; OC pesticides, PCBs	Nitrate-N, nitrite-N; Toxicity, chlorpyrifos, diazinon; Total and Dissolved: copper, nickel, selenium, mercury; OC pesticides, PCBs	Nitrate-N, nitrite-N; Toxicity, chlorpyrifos, diazinon; Total and Dissolved: copper, nickel, selenium, mercury; OC pesticides, PCBs	Nitrate-N, nitrite-N; Toxicity, chlorpyrifos, diazinon; Total and Dissolved: copper, nickel, selenium, mercury; OC pesticides, PCBs
Calleguas Creek/ Revolon Slough	04D_WOOD	4	Nitrate-N, nitrite-N; Toxicity, chlorpyrifos, diazinon; Total and Dissolved: copper, nickel, selenium, mercury; OC pesticides, PCBs	Nitrate-N, nitrite-N; Toxicity, chlorpyrifos, diazinon; Total and Dissolved: copper, nickel, selenium, mercury; OC pesticides, PCBs	Nitrate-N, nitrite-N; Toxicity, chlorpyrifos, diazinon; Total and Dissolved: copper, nickel, selenium, mercury; OC pesticides, PCBs	Nitrate-N, nitrite-N; Toxicity, chlorpyrifos, diazinon; Total and Dissolved: copper, nickel, selenium, mercury; OC pesticides, PCBs
Calleguas Creek/ Beardsley Channel	05D_LAVD	5	Nitrate-N, nitrite-N; Toxicity, chlorpyrifos, diazinon; Total and Dissolved: copper, nickel, selenium, mercury; Chloride, TDS, sulfate, boron OC pesticides, PCBs	Nitrate-N, nitrite-N; Toxicity, chlorpyrifos, diazinon; Total and Dissolved: copper, nickel, selenium, mercury; Chloride, TDS, sulfate, boron OC pesticides, PCBs	Nitrate-N, nitrite-N; Toxicity, chlorpyrifos, diazinon; Total and Dissolved: copper, nickel, selenium, mercury; Chloride, TDS, sulfate, boron OC pesticides, PCBs	Nitrate-N, nitrite-N; Toxicity, chlorpyrifos, diazinon; Total and Dissolved: copper, nickel, selenium, mercury; Chloride, TDS, sulfate, boron OC pesticides, PCBs
Calleguas Creek/ Arroyo Las Posas	06T_FC_BR	6	Nitrate-N, nitrite-N; Toxicity, chlorpyrifos, diazinon; Total and Dissolved: copper, nickel, selenium, mercury; Chloride, TDS, sulfate, boron OC pesticides, PCBs	Nitrate-N, nitrite-N; Toxicity, chlorpyrifos, diazinon; Total and Dissolved: copper, nickel, selenium, mercury; Chloride, TDS, sulfate, boron OC pesticides, PCBs	Nitrate-N, nitrite-N; Toxicity, chlorpyrifos, diazinon; Total and Dissolved: copper, nickel, selenium, mercury; Chloride, TDS, sulfate, boron OC pesticides, PCBs	Nitrate-N, nitrite-N; Toxicity, chlorpyrifos, diazinon; Total and Dissolved: copper, nickel, selenium, mercury; Chloride, TDS, sulfate, boron OC pesticides, PCBs
Calleguas Creek/ Arroyo Simi	07D_HITCH_LEVE E_2	7	Nitrate-N, nitrite-N; Toxicity, chlorpyrifos, diazinon;	Nitrate-N, nitrite-N; Toxicity, chlorpyrifos, diazinon;	Nitrate-N, nitrite-N; Toxicity, chlorpyrifos, diazinon;	Nitrate-N, nitrite-N; Toxicity, chlorpyrifos, diazinon;

Watershed/ Subwatershed	Site Id	Reach	Yearly Events [1]			
			Dry Event 1	Wet Event 1	Wet Event 2	Dry Event 2
			Total and Dissolved: copper, nickel, selenium, mercury; Chloride, TDS, sulfate, boron OC pesticides, PCBs	Total and Dissolved: copper, nickel, selenium, mercury; Chloride, TDS, sulfate, boron OC pesticides, PCBs	Total and Dissolved: copper, nickel, selenium, mercury; Chloride, TDS, sulfate, boron OC pesticides, PCBs	Total and Dissolved: copper, nickel, selenium, mercury; Chloride, TDS, sulfate, boron OC pesticides, PCBs
Calleguas Creek/ Conejo Creek	9AD_HOWARD	9A	Nitrate-N, nitrite-N; Toxicity, chlorpyrifos, diazinon; Total and Dissolved: copper, nickel, selenium, mercury; Chloride, TDS, sulfate, boron OC pesticides, PCBs	Nitrate-N, nitrite-N; Toxicity, chlorpyrifos, diazinon; Total and Dissolved: copper, nickel, selenium, mercury; Chloride, TDS, sulfate, boron OC pesticides, PCBs	Nitrate-N, nitrite-N; Toxicity, chlorpyrifos, diazinon; Total and Dissolved: copper, nickel, selenium, mercury; Chloride, TDS, sulfate, boron OC pesticides, PCBs	Nitrate-N, nitrite-N; Toxicity, chlorpyrifos, diazinon; Total and Dissolved: copper, nickel, selenium, mercury; Chloride, TDS, sulfate, boron OC pesticides, PCBs
	9BD_GERRY	9B	Nitrate-N, nitrite-N; Toxicity, chlorpyrifos, diazinon; Total and Dissolved: copper, nickel, selenium, mercury; Chloride, TDS, sulfate, boron OC pesticides, PCBs	Nitrate-N, nitrite-N; Toxicity, chlorpyrifos, diazinon; Total and Dissolved: copper, nickel, selenium, mercury; Chloride, TDS, sulfate, boron OC pesticides, PCBs	Nitrate-N, nitrite-N; Toxicity, chlorpyrifos, diazinon; Total and Dissolved: copper, nickel, selenium, mercury; Chloride, TDS, sulfate, boron OC pesticides, PCBs	Nitrate-N, nitrite-N; Toxicity, chlorpyrifos, diazinon; Total and Dissolved: copper, nickel, selenium, mercury; Chloride, TDS, sulfate, boron OC pesticides, PCBs

Watershed/ Subwatershed	Site Id	Reach	Yearly Events [1]			
			Dry Event 1	Wet Event 1	Wet Event 2	Dry Event 2
Santa Clara River	Santa Clara River Estuary	Estuary	Toxaphene, chlordane, dieldrin (fish tissue) Every 3 years continuing with summer 2024			
	S02T_ELLS	2	TSS, toxaphene, chlordane, dieldrin (water); Ammonia-N, nitrate-N, nitrite-N	TSS, toxaphene, chlordane, dieldrin (water) Toxaphene, chlordane, dieldrin (filtered sediment); Ammonia-N, nitrate-N, nitrite-N	TSS, toxaphene, chlordane, dieldrin (water) Toxaphene, chlordane, dieldrin (filtered sediment); Ammonia-N, nitrate-N, nitrite-N	TSS, toxaphene, chlordane, dieldrin (water); Ammonia-N, nitrate-N, nitrite-N
	S03T_BOULD	3	Ammonia-N, nitrate-N, nitrite-N *E. coli*	Ammonia-N, nitrate-N, nitrite-N; *E. coli*	Ammonia-N, nitrate-N, nitrite-N; *E. coli*	Ammonia-N, nitrate-N, nitrite-N; *E. coli*
	S03D_BARDS	3	Ammonia-N, nitrate-N, nitrite-N *E. coli*	Ammonia-N, nitrate-N, nitrite-N; *E. coli*	Ammonia-N, nitrate-N, nitrite-N; *E. coli*	Ammonia-N, nitrate-N, nitrite-N; *E. coli*
	S04T_TAPO	4	Ammonia-N, nitrate-N, nitrite-N; Chloride	Ammonia-N, nitrate-N, nitrite-N; Chloride	Ammonia-N, nitrate-N, nitrite-N; Chloride	Ammonia-N, nitrate-N, nitrite-N; Chloride
	S04T_TAPO_BKGD	4	Chloride [2]	--	--	Chloride [2]
Oxnard Coastal/ McGrath Lake/ Channel Islands Harbor	OXD_CENTR	--	Total organic carbon (TOC), TSS, total PCBs, 4,4'-DDT, 4,4'-DDE, 4,4'-DDD, dieldrin, total chlordane (water)	Total organic carbon (TOC), TSS, total PCBs, 4,4'-DDT, 4,4'-DDE, 4,4'-DDD, dieldrin, total chlordane (water); TOC, Total PCBs, 4,4'-DDT, 4,4'-DDE, 4,4'-DDD, dieldrin, total chlordane (suspended sediment)	Total organic carbon (TOC), TSS, total PCBs, 4,4'-DDT, 4,4'-DDE, 4,4'-DDD, dieldrin, total chlordane (water); TOC, Total PCBs, 4,4'-DDT, 4,4'-DDE, 4,4'-DDD, dieldrin, total chlordane (suspended sediment)	Total organic carbon (TOC), TSS, total PCBs, 4,4'-DDT, 4,4'-DDE, 4,4'-DDD, dieldrin, total chlordane (water)
	CIHD_DORIS	--	*E. coli*, *Enterococcus*, total coliform, fecal coliform	*E. coli*, *Enterococcus*, total coliform, fecal coliform	*E. coli*, *Enterococcus*, total coliform, fecal coliform	*E. coli*, *Enterococcus*, total coliform, fecal coliform

Watershed/ Subwatershed	Site Id	Reach	Yearly Events [1]			
			Dry Event 1	Wet Event 1	Wet Event 2	Dry Event 2
	CIHD_DORIS_BKGD	--	*E. coli*, *Enterococcus*, total coliform, fecal coliform	*E. coli*, *Enterococcus*, total coliform, fecal coliform	*E. coli*, *Enterococcus*, total coliform, fecal coliform	*E. coli*, *Enterococcus*, total coliform, fecal coliform
Ventura River	V02D_SPM	2	Total nitrogen, total phosphorus	Nitrate-N, nitrite-N	Nitrate-N, nitrite-N	Total nitrogen, total phosphorus
	VRT_THACH	--	Total nitrogen, total phosphorus	Nitrate-N, nitrite-N	Nitrate-N, nitrite-N	Total nitrogen, total phosphorus
	VRT_SANTO	--	Total nitrogen, total phosphorus	Nitrate-N, nitrite-N	Nitrate-N, nitrite-N	Total nitrogen, total phosphorus
Malibu Proxy Site	05D_LAVD	5	Total nitrogen, total phosphorus	Total nitrogen, total phosphorus; Nitrate-N, nitrite-N	Total nitrogen, total phosphorus; Nitrate-N, nitrite-N	Total nitrogen, total phosphorus

1. Refer to **Table 12** for more information of how these constituents relate to the TMDLs for which these sites are being monitored.
2. The Regional Board has accepted the natural source determination provided by VCAILG for chlorides in the Upper Santa Clara River. However, to demonstrate that the conclusion of the natural source demonstration is still reflective of current environmental conditions, additional sampling will be performed during dry weather events in the first year of approval of this MRP and then three years later. If demonstration shows that it is still a natural source after the 3-year sampling, then the demonstration will only need to be made every 5 years.

PARAMETERS TO BE MONITORED

Table 15 and **Table 16** list the constituents for which samples will be analyzed, analytical methods, project detection limits, and project reporting limits for each constituent monitored to meet Ag Order, Appendix 3, Table 1 requirements. **Table 17** includes similar information, but for TMDL water, sediment, and fish tissue constituents monitored as part of VCAILGMP. Constituents monitoring under existing TMDL programs are described in the CCWTMP QAPP (LWA, 2023). Trash assessment and collection is being completed for the Revolon Slough and Beardsley Wash and the Ventura River Estuary Trash TMDL through MFAC/BMP programs, which VCAILG is an implementing party.

Table 15. Field Measurement Instrument Requirements for Accuracy, Precision, and Resolution

Constituent	Method	Range (Unit)	Accuracy	Precision (RPD)	Resolution
Water Velocity[1]	Electromagnetic[2]	-0.5 to +20 ft/s	N/A	± 10%	± 0.05
pH	Electrometric	0–14 pH units	± 0.2	± 10%	± 0.01
Temperature	High stability thermistor	-5 to 50°C	± 10% [3]	± 10%	± 0.01
Dissolved Oxygen	Optical	0–50 mg/L	± 10% [3]	± 10%	± 0.01
Turbidity[4]	Nephelometric	0–1,000 NTU	± 10% [3]	± 10%	± 0.01
Specific Conductivity	Graphite electrodes	0–10,000 µmhos/cm	± 5% [3]	± 10%	± 0.01
Trash	Observation	N/A	N/A	N/A	N/A

N/A = Not applicable

1. Velocity measurement is used to estimated flow in the channel.
2. When water depth is ≤ 1 in. at a monitoring site, the field crew employs either a volumetric measurement method or an object float method to estimate flow. Both methods are described in Appendix E.
3. Maximum percentage (±) of the true value of the calibration standard outside of which the instrument is recalibrated.
4. Turbidity measurements that exceed the range of the meter (1,000 NTU) will result in the collection of a water sample that is sent to the laboratory for turbidity to be analzyed via EPA 180.1.

Table 16. VCAILGMP Analytical Methods and Project Method Detection Limits / Project Reporting Limits for Laboratory Analyses

Constituent	Analytical Method[1]	Units	Project MDL	Project RL
Chronic Aquatic Toxicity[2]				
Ceriodaphnia dubia (water flea)	EPA 821-R-02-013	mean % survival & mean reproduction (neonates/female)	N/A	N/A
Bacteria				
E. coli[3]	SM 9223 B	MPN/100 mL	< 2	< 2
General Water Quality Constituents				
Total Dissolved Solids (TDS)	SM 2540C	mg/L	19	20
Total Suspended Solids (TSS)	SM 2540D	mg/L	0.55	1
Chloride	EPA 300.0	mg/L	0.085	1
Sulfate	EPA 300.0	mg/L	0.3	0.5
Hardness as $CaCO_3$	SM 2340B	mg/L	0.1	0.5
Nutrients				
Total Ammonia-N	EPA 300.0	mg/L	0.007	0.03
Nitrate-N	EPA 300.0	mg/L	0.01	0.05
Total Nitrogen-N	SM 5310 B-N Module	mg/L	0.28	0.6
Dissolved Orthophosphate-P	SM 4500-P E	mg/L	0.01	0.02
Total Phosphorus-P	SM 4500-P E	mg/L	0.016	0.02

Constituent	Analytical Method[1]	Units	Project MDL	Project RL
Trace Metals				
Dissolved Copper	EPA 200.8	µg/L	0.007	0.022
Total Copper	EPA 200.8	µg/L	0.007	0.022
Organochlorine Pesticides[4]				
2,4'-DDD	EPA 625.1	ng/L	1	2
2,4'-DDE	EPA 625.1	ng/L	0.8	2
2,4'-DDT	EPA 625.1	ng/L	0.8	2
4,4'-DDD	EPA 625.1	ng/L	0.8	2
4,4'-DDE	EPA 625.1	ng/L	0.8	2
4,4'-DDT	EPA 625.1	ng/L	0.5	2
Aldrin	EPA 625.1	ng/L	1	5
BHC-alpha	EPA 625.1	ng/L	1	5
BHC-beta	EPA 625.1	ng/L	1	5
BHC-delta	EPA 625.1	ng/L	1	5
BHC-gamma (Lindane)	EPA 625.1	ng/L	1	5
Chlordane-alpha	EPA 625.1	ng/L	0.75	2
Chlordane-gamma	EPA 625.1	ng/L	0.72	2
Dieldrin	EPA 625.1	ng/L	1	2
Endosulfan-I	EPA 625.1	ng/L	1	5
Endosulfan-II	EPA 625.1	ng/L	1	5
Endosulfan sulfate	EPA 625.1	ng/L	1	5
Endrin	EPA 625.1	ng/L	1	5
Endrin aldehyde	EPA 625.1	ng/L	1	5
Endrin ketone	EPA 625.1	ng/L	1	5
Toxaphene	EPA 625.1-NCI	ng/L	10	25
Organophosphorus Pesticides				
Bolstar	EPA 625.1	ng/L	2	4
Chlorpyrifos	EPA 625.1	ng/L	0.5	1
Demeton, Total	EPA 625.1	ng/L	1	2
Diazinon	EPA 625.1	ng/L	0.5	1
Dichlorvos	EPA 625.1	ng/L	3	6
Dimethoate	EPA 625.1	ng/L	5	10
Disulfoton	EPA 625.1	ng/L	1	2
Ethoprop	EPA 625.1	ng/L	1	2
Fenchlorphos	EPA 625.1	ng/L	2	4
Fensulfothion	EPA 625.1	ng/L	1	2
Fenthion	EPA 625.1	ng/L	2	4
Malathion	EPA 625.1	ng/L	2.5	5
Merphos[5]	---	---	---	---
Methyl Parathion	EPA 625.1	ng/L	1	2
Mevinphos	EPA 625.1	ng/L	5	10
Phorate	EPA 625.1	ng/L	5	10
Tetrachlorvinphos	EPA 625.1	ng/L	2	4
Tokuthion	EPA 625.1	ng/L	3	6
Trichloronate	EPA 625.1	ng/L	1	2
Pyrethroid Pesticides				
Allethrin	EPA 625.1-MRM	ng/L	0.5	1
Bifenthrin	EPA 625.1-MRM	ng/L	0.5	1
Cyfluthrin, Total	EPA 625.1-MRM	ng/L	0.5	1

Constituent	Analytical Method[1]	Units	Project MDL	Project RL
Cypermethrin, Total	EPA 625.1-MRM	ng/L	0.5	1
Danitol (Fenpropathrin)	EPA 625.1-MRM	ng/L	0.3	1
Deltamethrin/Tralomethrin	EPA 625.1-MRM	ng/L	0.5	1
Esfenvalerate	EPA 625.1-MRM	ng/L	0.5	1
Fenvalerate	EPA 625.1-MRM	ng/L	0.5	1
Fluvalinate	EPA 625.1-MRM	ng/L	0.5	1
Lambda-Cyhalothrin, Total	EPA 625.1-MRM	ng/L	0.5	1
Permethrin-cis	EPA 625.1-MRM	ng/L	2	4
Permethrin-trans	EPA 625.1-MRM	ng/L	1	2
Prallethrin	EPA 625.1-MRM	ng/L	0.5	1
Resmethrin	EPA 625.1-MRM	ng/L	5	10
Neonicotinoid Pesticides				
Acetamiprid	EPA 625.1	ng/L	10	20
Clothianidin	EPA 625.1	ng/L	10	20
Dinotefuran	EPA 625.1	ng/L	6	12
Imidacloprid	EPA 625.1	ng/L	2	4
Nitenpyram[6]	EPA 625.1	ng/L	10	20
Nithiazine[6]	EPA 625.1	ng/L	10	20
Thiacloprid	EPA 625.1	ng/L	2	4
Thiamethoxam	EPA 625.1	ng/L	2	4

N/A = Not applicable

1. Standard Method (SM) or EPA Method number.
2. Alternative test species (e.g., Hyalella azteca (Mexican scud)) will be used when specific conductivity of water sample > 2,500 µmhos/cm. The EPA method EPA 821-R-02-012 is used to evaluate mean % survival of Hyalella azteca in a water column sample.
3. Enterococcus measured in place of E. coli where appropriate (i.e., brackish conditions).
4. The MDLs and/or RLs listed for several organochlorine pesticides (4,4'-DDD, 4,4'-DDE, 4,4'-DDT, chlordane, dieldrin, and toxaphene) are higher than water quality benchmarks specified for the monitoring program. However, the MDLs and/or RLs listed here are significantly lower than levels currently attainable by commercial laboratories using standard analytical test methods and are consistent with the lowest detection limits reported for NPDES monitoring programs.
5. Merphos is no longer included in the laboratory's organophosphorus pesticides suite and since there is no water quality benchmark for the pesticide and it has not been detected in past VCAILG monitoring, it will not be reported in the future.
6. MDL and RL values provided for constituent are conservative estimates pending ongoing MDL studies not yet completed.

Table 17. TMDL Analytical Methods and Project Method Detection Limits / Project Reporting Limits Performed under VCAILGMP

Constituent[1]	Analytical Method[2]	Units	Project MDL	Project RL
Sediment Toxicity[3]				
Hyalella azteca (Mexican scud)	EPA/600/R-99/064	mean % survival	N/A	N/A
General Water Quality Constituents				
Total Organic Carbon (TOC)	SM 5310C (w)	mg/L	0.16	0.3
Total Organic Carbon (TOC)	EPA 9060 (s)	% Dry Weight	0.01	0.01
Total Suspended Solids (TSS)	SM 2540D	mg/L	0.55	1
Nutrients				
Total Nitrogen-N	SM 5310 B-N Module	mg/L	0.28	0.6
Total Phosphorus-P	SM 4500-P E	mg/L	0.016	0.02
Nitrate-N	EPA 300.0	mg/L	0.01	0.05
Nitrite-N	EPA 300.0	mg/L	0.01	0.03
Salts				
Chloride	EPA 300.0	mg/L	0.085	1
Total Dissolved Solids (TDS)	SM 2540C	mg/L	19	20

Constituent[1]	Analytical Method[2]	Units	Project MDL	Project RL
Sulfate	EPA 300.0	mg/L	0.3	0.5
Boron, Total	EPA 200.8	µg/L	1	5
Trace Metals				
Total Mercury	EPA 1631E	ng/L	0.5	1
Total Nickel	EPA 200.8	µg/L	0.2	0.5
Total Selenium	EPA 200.8	µg/L	0.2	0.5
Bacteria				
E. coli	SM 9223B	MPN/100 mL	< 1	< 1
Enterococcus	SM 9230D	MPN/100 mL	< 1	< 1
Total Coliform	SM 9221B,C,E	MPN/100 mL	< 1.8	< 1.8
Fecal Coliform	SM 9221B,C,E	MPN/100 mL	< 1.8	< 1.8
Organochlorine Pesticides (water matrix)[4]				
4,4'-DDD	EPA 625.1	ng/L	0.8	2
4,4'-DDE	EPA 625.1	ng/L	0.8	2
4,4'-DDT	EPA 625.1	ng/L	0.5	2
Chlordane-alpha	EPA 625.1	ng/L	0.75	2
Chlordane-gamma	EPA 625.1	ng/L	0.72	2
Dieldrin	EPA 625.1	ng/L	1	2
Toxaphene	EPA 625.1-NCI	ng/L	10	25
Organochlorine Pesticides (sediment matrix)[3]				
4,4'-DDD	EPA 8270E	ng/dry g	0.2	0.5
4,4'-DDE	EPA 8270E	ng/dry g	0.19	0.5
4,4'-DDT	EPA 8270E	ng/dry g	0.13	0.5
Chlordane-alpha	EPA 8270E	ng/dry g	0.19	0.5
Chlordane-gamma	EPA 8270E	ng/dry g	0.18	0.5
Dieldrin	EPA 8270E	ng/dry g	0.1	0.2
Toxaphene	EPA 8270E-NCI	ng/dry g	10	20
Organochlorine Pesticides (fish tissue)[3]				
Chlordane-alpha	EPA 8270E	ng/wet g	0.2	0.5
Chlordane-gamma	EPA 8270E	ng/wet g	0.2	0.5
Dieldrin	EPA 8270E	ng/wet g	0.1	0.2
Toxaphene	EPA 8270E-NCI	ng/wet g	10	20
Organophosphorus Pesticides				
Chlorpyrifos	EPA 625.1 (w)	ng/L	0.5	1
Chlorpyrifos	EPA 8270D (s)	ng/dry g	1	2
Polychlorinated Biphenyls (water matrix)				
PCBs – Aroclor 1016	EPA 625.1	ng/L	10	20
PCBs – Aroclor 1221	EPA 625.1	ng/L	10	20
PCBs – Aroclor 1232	EPA 625.1	ng/L	10	20
PCBs – Aroclor 1242	EPA 625.1	ng/L	10	20
PCBs – Aroclor 1248	EPA 625.1	ng/L	10	20
PCBs – Aroclor 1254	EPA 625.1	ng/L	10	20
PCBs – Aroclor 1260	EPA 625.1	ng/L	10	20
Polychlorinated Biphenyls (sediment matrix)				
PCBs – Aroclor 1016	EPA 8270E	ng/dry g	10	20
PCBs – Aroclor 1221	EPA 8270E	ng/dry g	10	20
PCBs – Aroclor 1232	EPA 8270E	ng/dry g	10	20
PCBs – Aroclor 1242	EPA 8270E	ng/dry g	10	20

Constituent[1]	Analytical Method[2]	Units	Project MDL	Project RL
PCBs – Aroclor 1248	EPA 8270E	ng/dry g	10	20
PCBs – Aroclor 1254	EPA 8270E	ng/dry g	10	20
PCBs – Aroclor 1260	EPA 8270E	ng/dry g	10	20
Pyrethroid Pesticides (water matrix)				
Bifenthrin	EPA 625.1-MRM	ng/L	0.5	1

N/A = Not applicable; (w) = water matrix; (s) = sediment matrix; analyses are performed on water matrix unless otherwise noted.

1. Field measurements listed in Table 15 will be taken during TMDL monitoring.
2. Standard Method (SM) or EPA Method number.
3. Alternative toxicity tests (e.g., urchin fertilization or urchin development) will be used when laboratory-measured pore water salinity ≥ 15 ppt.
4. The MDLs and/or RLs listed for several organochlorine pesticides (4,4'-DDD, 4,4'-DDE, 4,4'-DDT, chlordane, dieldrin, and toxaphene) are higher than water quality benchmarks specified for the monitoring program. However, the MDLs and/or RLs listed here are significantly lower than levels currently attainable by commercial laboratories using standard analytical test methods and are consistent with the lowest detection limits reported for NPDES monitoring programs.

All results will meet data quality objectives as stated in the VCAILGMP QAPP (VCAILG, 2024) and be otherwise qualified in conformity with USEPA QA/QC guidance. An analytical method used for this monitoring program may change if a different method is determined to provide better results (e.g., better QC data and/or a more relevant detection limit). Laboratories selected to analyze samples for VCAILGMP must be certified by either the National Environmental Laboratory Accreditation Program (NELAP), the California Department of Health Services – Environmental Laboratory Accreditation Program (ELAP), or both accreditation programs.

Toxicity Testing and Toxicity Identification Evaluations (TIEs)

Twice during each monitoring year, water quality samples will be analyzed for chronic toxicity to *Ceriodaphnia dubia* (or *Hyalella azteca* for high-specific conductivity samples). Toxicity testing is scheduled to take place during one wet event and the second dry event. Appendix 3 of the Ag Order allows for the Program to propose the most sensitive[7] species for toxicity testing for consideration by the Executive Officer. Based on past three-species screenings performed at the same VCAILG monitoring sites for compliance with the 2005 and 2010 Conditional Waivers and the 2016/2021 Waiver, a fourth three-species screening is unnecessary. The most sensitive species screenings conducted during the previous three Conditional Waiver iterations have sufficiently assessed species sensitivity for the purposes of conducting chronic toxicity testing.

Toxicity testing will be performed at the VCAILGMP sites as listed in the Table 13 schedule. During the 2005 and 2010 Conditional Waivers, three-species screening tests were conducted at eight of the eleven toxicity sites (three sites did not have sufficient flow during toxicity monitoring events), and the Executive Officer approved single-species testing to be used for the remainder of the 2010 Conditional Waiver in a letter dated June 28, 2012, to VCAILG. During the 2015-2016 monitoring year, the final remaining sites, S03T_TIMB; VRT_THACH; and VRT_SANTO, had sufficient flow during Event 27 to test for toxicity and a three-species screening was conducted. The same single-species testing was performed for the duration of the 2016/2021 Waiver. For consistency across watersheds and to streamline data comparisons, VCAILG is proposing to continue the previously approved approach of testing all VCAILGMP sites using the appropriate invertebrate species according to ambient specific conductivity. Sites with specific conductivity measuring less than 3,000 µS/cm at the time of sampling were approved for testing based on the survival and reproduction of the invertebrate *Ceriodaphnia dubia*. High specific conductivity sites (>3,000 µS/cm) were approved to be tested using *Hyalella azteca*.

Determination of chronic toxicity to *C. dubia* (or *H. azteca*) will be performed generally as described in the 2021 Revised State Policy for Water Quality Control: Toxicity Provisions (SWRCB, 2021). Toxicity tests will be conducted on 100% sample water.

Chronic toxicity tests will be used to assess both survival and reproduction endpoints for test species. Test results will be reported using the Test of Significant toxicity t-test (TST) approach (USEPA, 2010). For monitoring locations

[7] In addition to most sensitive, the species selected for toxicity testing by the monitoring program must be appropriate for the measured ambient specific conductivity of the water body from where samples were collected.

located in the Calleguas Creek Watershed, chronic toxicity test results will be reported using both the TST approach and in chronic toxicity units (TUc). Toxicity test biological endpoint data will be analyzed using the TST approach with 100% sample water and a control. Results will be reported as pass/fail per the TST approach.

The results of toxicity testing will be used to trigger further investigation to determine the cause of observed laboratory toxicity. If testing indicates the presence of significant toxicity in the sample, Toxicity Identification Evaluation (TIE) procedures may be initiated to investigate the cause of toxicity. For the purpose of triggering a TIE, significant toxicity is defined as mortality >= 50%. The 50% threshold is consistent with the approach recommended in guidance published by USEPA for conducting TIEs (USEPA, 1996), which recommends a minimum threshold of 50% mortality because the probability of completing a successful TIE decreases rapidly for samples with less than this level of toxicity. A targeted Phase I TIE will be conducted to determine the general class of constituents (e.g., non-polar organics) causing toxicity. The targeted TIE will focus on classes of constituents anticipated to be observed in drainages dominated by urban and agricultural discharges and those previously observed to cause toxicity. These classes of constituents have been determined to be primarily non-polar organics.

Adequate sample volume will be collected so that TIE procedures can be initiated as soon as possible, if toxicity >= 50% mortality is observed. This will reduce the potential for loss of toxicity due to extended sample storage and, therefore, will increase the likelihood that the toxicant can be identified.

PLANNED USE OF DATA

Data generated through VCAILGMP will be used to determine whether discharges from irrigated agricultural lands are causing or contributing to exceedances of water quality benchmarks. In conjunction with management practice implementation information, data will be used to produce Water Quality Management Plans where exceedances are observed.

REPORTING REQUIREMENTS

TMDL Reporting

Monitoring data will be used in comparison to the TMDL load allocation benchmarks specified in the Ag Order, Appendix 5. Comparison of monitoring data to water quality benchmarks based upon TMDL load allocations for the Calleguas Creek Metals TMDL, Calleguas Creek Salts TMDL, Calleguas Creek OC Pesticides and PCBs TMDL, and Santa Clara River Bacteria TMDL will be calculated on a yearly basis and reported in the Annual Monitoring Report. For TMDLs where the compliance date, as found in Ag Order, Appendix 3, Table 3, has passed, comparison of monitoring data to water quality benchmarks based upon TMDL load allocations (Ag Order, Appendix 5) will be assessed on an event-by-event basis. New findings of monitoring results greater than applicable water quality benchmarks based upon TMDL load allocations, and after the TMDL deadline, will be notified to the Los Angeles Water Board within 45 days of the date the laboratory data are received for that event.

Table 18 and Table 19 list the monitoring locations for TMDL constituents. As shown in Table 18, the assessment of compliance for the Calleguas Creek Salts TMDL, Calleguas Creek Metals TMDL, and Calleguas Creek OC Pesticides TMDL is determined through a comparison of water quality benchmarks based upon TMDL load allocations to water quality data collected at the receiving water (main stem) under the CCWTCMP and, if necessary, to water quality data collected at agricultural monitoring sites under VCAILGMP.

Table 18. TMDL Monitoring Locations in the Calleguas Creek Watershed

TMDL	Watershed/ Subwatershed	Responsibility Area	Ag TMDL Monitoring Site	Corresponding Receiving Water Site
Calleguas Creek Nitrogen Compounds	Oxnard Drain #3/ Mugu Lagoon	Oxnard Drain #3	01T_ODD3_EDI	N/A
	Calleguas Creek/ Mugu Lagoon	Mugu Lagoon	01T_ODD2_DCH	

TMDL	Watershed/ Subwatershed	Responsibility Area	Ag TMDL Monitoring Site	Corresponding Receiving Water Site
and Related Effects TMDL	Calleguas Creek/ Calleguas Creek	Lower Calleguas Creek	02D_DEER	
	Calleguas Creek/ Revolon Slough	Lower Revolon	04D_WOOD	
	Calleguas Creek/ Beardsley Channel	Beardsley Wash	05D_LAVD	
		East Camarillo Hills		
	Calleguas Creek/ Arroyo Las Posas	Lower Las Posas	06T_FC_BR	
		Upper Los Posas		
	Calleguas Creek/ Arroyo Simi	Arroyo Simi	07D_HITCH_LEVEE_2	
	Calleguas Creek/ Calleguas Creek	Calleguas-Howard	9AD_HOWARD	
		Calleguas-CSU		
	Calleguas Creek/ Conejo Creek	Upper Conejo	9BD_GERRY	
		Lower Conejo		
Calleguas Creek Watershed and Mugu Lagoon Toxicity, Chlorpyrifos, and Diazinon TMDL	Oxnard Drain #3/ Mugu Lagoon	Oxnard Drain #3	01T_ODD3_EDI	N/A
	Calleguas Creek/ Mugu Lagoon	Mugu Lagoon	01T_ODD2_DCH	
	Calleguas Creek/ Calleguas Creek	Lower Calleguas Creek	02D_DEER	
	Calleguas Creek/ Revolon Slough	Lower Revolon	04D_WOOD	
	Calleguas Creek/ Beardsley Channel	Beardsley Wash	05D_LAVD	
		East Camarillo Hills		
	Calleguas Creek/ Arroyo Las Posas	Lower Las Posas	06T_FC_BR	
		Upper Las Posas		
	Calleguas Creek/ Arroyo Simi	Arroyo Simi	07D_HITCH_LEVEE_2	
	Calleguas Creek/ Calleguas Creek	Calleguas-Howard	9AD_HOWARD	
		Calleguas-CSU		
	Calleguas Creek/ Conejo Creek	Upper Conejo	9BD_GERRY	
		Lower Conejo		
Calleguas Creek Watershed and Mugu Lagoon OC Pesticides and PCBs TMDL	Calleguas Creek/ Mugu Lagoon	Mugu Lagoon	01T_ODD2_DCH	01T_ODD3_EDI
	Calleguas Creek/ Calleguas Creek	Lower Calleguas Creek	02D_DEER	02_PCH
	Calleguas Creek/ Revolon Slough	Lower Revolon	04D_WOOD	04_WOOD
	Calleguas Creek/ Beardsley Channel	Beardsley Wash	05D_LAVD	04_WOOD
		East Camarillo Hills		
	Calleguas Creek/ Arroyo Las Posas	Lower Las Posas	06T_FC_BR	03_UNIV
		Upper Las Posas		06_UPLAND
	Calleguas Creek/	Arroyo Simi	07D_HITCH_LEVEE_2	07_HITCH

TMDL	Watershed/ Subwatershed	Responsibility Area	Ag TMDL Monitoring Site	Corresponding Receiving Water Site
	Arroyo Simi			
	Calleguas Creek/ Calleguas Creek	Calleguas-Howard	9AD_HOWARD	03_UNIV
		Calleguas-CSU		
	Calleguas Creek/ Conejo Creek	Upper Conejo	9BD_GERRY	9B_ADOLF
		Lower Conejo		
Calleguas Creek Watershed and Mugu Lagoon Metals and Selenium TMDL	Oxnard Drain #3/ Mugu Lagoon	Oxnard Drain #3	01T_ODD3_EDI	01_RR_BR
	Calleguas Creek/ Mugu Lagoon	Mugu Lagoon	01T_ODD2_DCH	01_RR_BR
	Calleguas Creek/ Calleguas Creek	Lower Calleguas Creek	02D_DEER	03_UNIV
	Calleguas Creek/ Revolon Slough	Lower Revolon	04D_WOOD	04_WOOD
	Calleguas Creek/ Beardsley Channel	Beardsley Wash	05D_LAVD	04_WOOD
		East Camarillo Hills		
	Calleguas Creek/ Arroyo Las Posas	Lower Las Posas	06T_FC_BR	03_UNIV
		Upper Las Posas		
	Calleguas Creek/ Arroyo Simi	Arroyo Simi	07D_HITCH_LEVEE_2	03_UNIV
	Calleguas Creek/ Calleguas Creek	Calleguas-Howard	9AD_HOWARD	03_UNIV
		Calleguas-CSU		
	Calleguas Creek/ Conejo Creek	Upper Conejo	9BD_GERRY	03_UNIV
		Lower Conejo		
Calleguas Creek Watershed Boron, Chloride, Sulfate and TDS (Salts) TMDL	Calleguas Creek/ Pleasant Valley (Calleguas)	Calleguas-CSU	9AD_HOWARD	03_UNIV
	Calleguas Creek/ Pleasant Valley (Revolon)	Beardsley Wash	05D_LAVD	04_WOOD
	Calleguas Creek/ Camarillo	Lower Conejo	9BD_GERRY	9A_HOWAR
		Calleguas-Howard	9AD_HOWARD	9A_HOWAR
	Calleguas Creek/ Arroyo Las Posas	East Camarillo Hills	05D_LAVD	06_UPLAND
	Calleguas Creek/ Arroyo Las Posas	Lower Las Posas	06T_FC_BR	06_UPLAND
		Upper Las Posas		
	Calleguas Creek/ Arroyo Simi	Arroyo Simi	07D_HITCH_LEVEE_2	07_TIERRA
	Calleguas Creek/ Conejo Creek	Upper Conejo	9BD_GERRY	9B_BARON

Table 19. TMDL Monitoring Locations in the Oxnard Drain, McGrath Lake, Santa Clara River, Ventura River, and Malibu Creek Watersheds

TMDL	Watershed	Responsibility Area	Ag TMDL Monitoring Site
Oxnard Drain #3 Pesticides, PCBs, and Sediment Toxicity TMDL	Oxnard Drain #3	Oxnard Coastal - Oxnard Drain #3	01T_ODD3_EDI
	Oxnard Drain #3/ Mugu	Oxnard Drain #3	
McGrath Lake PCBs, Pesticides and Sediment Toxicity TMDL	McGrath Lake	McGrath Lake Central Ditch	OXD_CENTR
		McGrath Lake Adjacent	
		Santa Clara River - Victoria and Gonzales	
Santa Clara River Nitrogen Compounds TMDL	Santa Clara River	Santa Clara River - Victoria and Gonzales	S02T_ELLS
		Lower Santa Clara River	
		McGrath Lake Central Ditch	
		Saticoy	
		Santa Paula-Fillmore	S03T_BOULD
		Bardsdale	S03D_BARDS
		Tapo Canyon	S04T_TAPO
		Santa Clara Reach 5	
Santa Clara River Estuary Toxaphene TMDL	Santa Clara River	Santa Clara River - Victoria and Gonzales	S02T_ELLS
		Saticoy	
Santa Clara River Bacteria TMDL	Santa Clara River	Santa Paula-Fillmore	S03T_BOULD
		Bardsdale	S03D_BARDS
		Santa Clara Reach 5	S04T_TAPO
Upper Santa Clara River Chloride TMDL	Santa Clara River	Tapo Canyon	S04T_TAPO
		Santa Clara Reach 5	
Ventura River Algae TMDL	Ventura River	Lower Ventura River	VRT_THACH
		Ventura River Inland	
		San Antonio Creek	VRT_SANTO
		Milling Rd. Ventura River	V02D_SPM
Malibu Creek Watershed Nutrients TMDL	Malibu Creek	Malibu	05D_LAVD
		Malibu-Las Virgenes	
Malibu Creek Watershed Sedimentation and Nutrients TMDL	Malibu Creek	Malibu-Las Virgenes	05D_LAVD

Annual Monitoring Report

The Annual Monitoring Report (AMR) will be prepared after monitoring events for a given monitoring year are completed and the report will be submitted annually on December 15th. As required by the Program's Monitoring and Reporting Requirements, the AMR will contain the following components:

- Title page and Table of Contents.
- Description/Summary of Discharger Group members and setting.
- Updated membership list submitted electronically.
- Monitoring objectives.
- Parameters monitored and frequency, including sampling and analytical methods.

- Monitoring Site Information for each monitoring site, including:
  - Site description and photographs.
  - GPS coordinates of the site and a map showing the responsibility area and the land draining to the site.
- Monitoring Event Records, including copies of all field documentation. Documentation should include the following information for each site and sample event:
  - Date and time of sampling.
  - Sample location (GPS coordinates).
  - Photograph(s) of the site.
  - Individual(s) who performed the sampling or measurements.
  - Observed field parameters (such as pH and other field measured parameters) and including (where available): description of the weather, rainfall, temperature, photographs, stream flow, color of the water, odor, farm conditions which may affect water quality (crop type, cultivation practices and pesticide, fertilizer, or sediment control measures), and other relevant information that can help in data interpretation.
- Monitoring Data Results for each site and sampling event. All monitoring data shall be submitted in an electronic CEDEN-compatible format. Data shall include:
  - Date(s) analyses were performed.
  - Laboratory and/or individual(s) who performed the analyses.
  - Analytical techniques or method used along with MDLs and RLs.
  - Results of analyses.
- Monitoring Data Analysis, including:
  - Comparison of data with applicable water quality benchmarks.
  - Water quality benchmark exceedances and tabulated results of trend analysis.
  - Data analysis including assessment of compliance and/or non-compliance with water quality benchmarks.
- Discharger Group INMR Reporting.
- Quality Control Section, including:
  - Copy of chain-of-custody forms, submitted electronically.
  - Associated laboratory and field quality control sample results.
  - Summary of precision and accuracy evaluations.
  - Quality control data interpretation, including assessment of data quality objectives.
- Water Quality Management Plan Progress Report for each responsibility area, including:
  - Field-level reports.
  - Education requirements.
  - Irrigation and Nutrient Management Plan (INMP) or certified INMP.
  - Irrigation and Nutrient Management Report (INMR).

Water Quality Management Plan

A Water Quality Management Plan (WQMP) is a report that addresses site-specific exceedances of water quality benchmarks when considering 2007–2023 water quality monitoring data and provides the results of farm evaluation plans or surveys completed by members who farm in responsibility areas. The first WQMP prepared under the Ag Order will be submitted by December 15, 2024, and then every three years thereafter. In order to meet the 2024 WQMP submittal date, VCAILG will begin surveying members within six months of the adoption of

Ag Order (Order No. R4-2023-0353) and Executive Officer approval of the Farm Evaluation Survey template. The WQMP will outline specific steps with milestones that will be performed to work toward the attainment of water quality benchmarks through the implementation of management practices. As required by the Ag Order, Appendix 3, a WQMP shall contain the following components:

- **Summary of Existing Conditions** for each monitoring site that includes:
    - A map showing the monitoring site, the land area draining to the monitoring site, the responsibility area, and the enrolled and non-enrolled irrigated agricultural parcels with each responsibility area. Maps shall be submitted electronically in GIS format in addition to being included in the written WQMP.
    - For each constituent that has exceeded a water quality benchmark (considering applicable averaging periods[8]), a graph showing the concentrations and trends of the constituent over time since 2007.
    - A grower-specific field-level report, submitted with Anonymous Member IDs, of existing management practices[9] being implemented in the responsibility area. In addition to adoption rates, report on the degree of implementation (e.g., size of treated area) for each type of management practice, as follows:
        - For all types of management practices that require linear installation, report linear feet installed per corresponding total length. For example, list how many feet of windbreak are installed on the property per total wind-facing property line.
        - For all types of management practices that require linear installation to treat an area of irrigated agricultural land, report linear feet installed and acres treated. For example, list how many feet of filter strip are installed at the property to treat how many acres of land.
        - For all types of management practices that are installed to treat a specific area, report acres treated. For example, for a sedimentation retention basin, report how many acres of runoff from agricultural land are treated by this basin.
    - A pesticide use evaluation assessment, including the timing of pesticide applications, the application rates, the amounts of pesticide applied, and the points of application. Compare changes in pesticide concentrations at specific monitoring sites to pesticide use patterns for land area draining to the monitoring site.
    - Comparison of existing management practice implementation (type of management practices, adoption rates, and degree of implementation specified in the Ag Order, Appendix 3, Section 2.1.c.) in the responsibility area draining to the monitoring site to long-term monitoring data for the monitoring site using graphical comparison, as specified in the Ag Order, Appendix 3, Section 2.1.b., in order to assess management practice effectiveness and determine if additional or upgraded management practices are necessary to meet water quality benchmarks.
- **Proposed Additional or Updated Management Practices** based on the analysis completed under the Ag Order, Appendix 3, Section 2.1.e., for each monitoring site provide:
    - Description of additional or upgraded management practices, which shall be implemented by members in the land area draining to the monitoring site and in the responsibility area to address water quality benchmark exceedances, as follows:

[8] The averaging period is typically defined in the Basin Plan, as part of water quality criteria promulgated by the USEPA, or as part of the criteria being used to interpret narrative objectives. If averaging periods are not defined in the Basin Plan, USEPA promulgated criteria, or other water quality criteria, or approved water quality trigger, the Discharger Group shall use the averaging period determined by the Los Angeles Water Board under Order R4-2016-0143.

[9] To determine existing management practice implementation, a Discharger Group must compile information from Farm Evaluation Surveys completed by members. The Farm Evaluation Surveys must be specific enough to produce the required level of detail for management practice reporting.

- For exceedances of water quality benchmarks for nutrients, the WQMP must specify the following types of all types of management practices:
  - ❖ Improved irrigation efficiency to reduce runoff.
  - ❖ Treatment systems or control systems, such as bioreactors to remove nitrogen from discharges.
  - ❖ Practices to reduce erosion and sediment in runoff.
  - ❖ Vegetated practices, such as riparian buffers and vegetated channels.
- For exceedance of water quality benchmarks for historic pesticides and their degradation products, such as DDT, DDE, chlordane, and dieldrin, the WQMP must specify the following types of management practices:
  - ❖ Improved irrigation efficiency to reduce runoff.
  - ❖ Practices to reduce erosion and sediment runoff.
  - ❖ Stormwater runoff filtration and/or infiltration.
  - ❖ Vegetated practices, such as riparian buffers and vegetated channels.
- For exceedances of water quality benchmarks for copper and current use pesticides, such as diazinon and pyrethroids, the WQMP must specify the following types of management practices:
  - ❖ Pesticide management plans.
  - ❖ Improved irrigation efficiency to reduce runoff.
  - ❖ Practices to reduce erosion and sediment runoff.
  - ❖ Stormwater runoff filtration and/or infiltration.
  - ❖ Vegetated practices, such as riparian buffers and vegetated channels.
  - ❖ Because source reduction and non-structural management practices have already been fully or nearly fully implemented[10] by all members in the land area draining to the monitoring site, the WQMP must specify implementation of structural/treatment management practices.

- Description of TMDL-specific management practices, which shall be implemented by members in watersheds addressed by TMDLs to a degree appropriate to achieve TMDL load allocations, as follows:
  - For the McGrath Lake OC Pesticides and PCBs TMDL, practices to reduce sediment runoff and improve irrigation efficiency on individual farms and reduce sediment runoff in the Central Ditch.
  - For the Santa Clara River Estuary Toxaphene TMDL, practices to reduce sediment runoff and improve irrigation efficiency.
- For irrigated agricultural areas that are subject to erosion and may discharge sediment that may degrade surface waters, the WQMP must specify sediment and erosion control management practices.
- A time-certain schedule that is as short as possible, but in no case more than 10 years, for implementation of additional or upgraded management practices to ultimately attain water quality benchmarks unless otherwise specified in the Ag Order, Appendix 3, Table 3.

[10] Or cannot be fully implemented. For example, if irrigation runoff cannot be reduced or eliminated by replacing inefficient irrigation systems with drip irrigation because of plant propagation needs or other considerations, then irrigation runoff must be treated before leaving the property or recycled (tailwater recovery).

- **Outreach Plan** – The WQMP shall include a strategy for communicating to members the need to implement additional or upgraded management practices. The outreach shall be culturally relevant and offered in appropriate languages. For each monitoring site:
    - Provide regular communication (a minimum of twice per year) to members, alerting them of additional and upgraded management practice requirements specific to their monitoring site/responsibility area or TMDL watershed as specified in the Ag Order, Appendix 3, Section 2.2.
    - Provide education classes, referrals to technical assistance providers, and notices of available funding to members, targeting the constituents specific to their monitoring site/responsibility area or TMDL watershed as specified in the Ag Order, Appendix 3, Section 2.2.

MONITORING EVENT PREPARATION

Monitoring event preparation includes preparation of field equipment, placing bottle orders, and contacting the necessary personnel regarding site access and schedule. The following steps will be completed two weeks prior to each sampling event (a condensed timeline may be appropriate for storm events, which may need to be completed on short notice):

1. Contact laboratories to order sample containers and coordinate sample transportation details.
2. Confirm scheduled monitoring date with field crew(s) and set up sampling day itinerary, including sample drop off.
3. Prepare equipment (see **Table 20**).
4. Prepare sample container labels and apply them to bottles.
5. Prepare the monitoring event summary and field log sheets to indicate the type of field measurements, field observations, and samples to be collected at each monitoring site.
6. Verify that field measurement equipment is operating properly (i.e., check batteries, calibrate, etc.)
7. Check the tide chart, determine low tide times, and note them in the field logs for tidally influenced sites. Plan site sampling in order to prioritize sampling tidally influenced sites to align with low tide as much as possible.

Table 20. Field Equipment Checklist

Field Equipment Checklist		
✓ Monitoring plan	✓ Tape measure	✓ Sealable plastic bags
✓ Sample containers with lids, including extras	✓ Paper towels or rags in a box	✓ Grab pole
✓ Pre-Printed and extra labels	✓ Safety equipment	✓ Clean secondary containers
✓ Event summary sheets	✓ First aid kit	✓ Field measurement equipment
✓ Field log sheets	✓ Cellular telephone	✓ New powder-free nitrile gloves
✓ Chain-of-Custody Forms	✓ Gate keys	✓ Pens
✓ Bubble wrap	✓ Hip waders	✓ Stopwatch
✓ Coolers with ice	✓ Plastic trash bags	✓ Camera
✓ Blank water	✓ Distilled/D.I. wash bottles	

Monitoring Event Summary and Post-Event Summary

A monitoring event summary sheet will be produced for the field crew(s) prior to each monitoring event. **Appendix B** contains an example of a sampling event summary sheet. The event summary sheet will outline sampling requirements at each monitoring site, including a list of samples to be collected, as well as quality control (QC) sample collection requirements. This summary will act as a guide to assist field crews in preparing for and track sample collection during each event.

A post-event summary report will be produced by the field crew and submitted to the Project Manager (Amy Storm, LWA) and Project QA Manager (Michael Marson, LWA) within one week of the completion of each sampling event and will consist of the following:

1. Notes regarding any issues or unusual occurrences that arose during the event.
2. Completed checkbox table of sites sampled or not sampled and the crew that visited each site.
3. Summary of sample collection, such as whether or not all required samples were collected and if there were any deviations from the VCAILGMP QAPP (VCAILG, 2024).
4. Any additional notes regarding the sample event.
5. A copy of the field logbook and chain-of-custody forms.

Exceptions to the above include instances when a site could not be accessed or sampled (this does NOT include when a site is simply dry). When the monitoring conducted by the VCAILGMP cannot be completed to comply with the requirements of the Ag Order due to circumstances beyond VCAILG's control, the Regional Board Executive Officer will be notified by VCAILG within three working days with a statement of the situation, explanation of circumstance(s) with documentation, and a statement of corrective action for the future.

An example of a post-event summary sheet is included in **Appendix C**. The field logbook and COCs will be scanned into PDF (portable document format) files and stored electronically by the Project Manager and in hard copy format by the field crew lead. The field logbook and COC forms are discussed in more detail in the Sample Collection / Field Measurements and Observations section of this MRP.

Bottle Order/Preparation

Sample container orders will be placed with the appropriate analytical laboratory at least two weeks prior to each sampling event. Containers will be ordered for all water samples, including QC samples, as well as extra containers in case the need arises for intermediate containers or replacements. The containers must be of the proper type and size and contain a preservative as appropriate for the specified laboratory analytical methods. **Table 21** and **Table 22** present the proper container type, volume, and immediate processing and storage needs for water and

sediment samples. The field crew must inventory sample containers upon receipt from the laboratory to ensure that adequate containers have been provided to meet analytical requirements for each monitoring event. After each event, any bottles used to collect water samples will be cleaned by the laboratory and either picked up by or shipped to the field crew.

Sample Container Labeling

All samples must be identified with a unique identification code to ensure that results are properly reported and interpreted. Samples will be identified such that the site, sampling location, matrix, sampling equipment, and sample type (i.e., normal field sample or QC sample) can be distinguished by a data reviewer or user. Sample identification codes will consist of a site identification code, a matrix code, and a unique sample ID number assigned by the monitoring manager. The format for sample ID codes is *VCAILGMP - ###.# - AAAA - XXX,* where:

- *VCAILGMP* indicates that the sample was collected as part of the VCAILG Monitoring Program.
- *###-* identifies the sequentially numbered sample event, and ".#" is an optional indicator to represent sample recollection for the same event. Sample events are numbered from 001 to 999 and will not be repeated.
- *AAAA* indicates the unique site identification code assigned to each site. Site identification codes (Site ID) are provided in **Table 9** and **Table 11**.
- XXX identifies the sample number unique to a sample bottle collected for a single event. Sample bottles are numbered sequentially from 001 to 999 and will not be repeated within a single event.

All sample containers will be pre-labeled before each sampling event to the extent practicable. Pre-labeling sample containers simplifies field activities, such that only sample collection time, date, and field crew initials need to be recorded in the field. Custom labels will be produced using blank waterproof labels. This approach will allow the site and analytical constituent information to be entered in advance and printed as needed prior to each sampling event. Labels will be applied to the appropriate sample containers in a dry environment as labels usually do not adhere to wet bottles. The labels will not be applied to container caps. Container labels will contain the following information:

- Program Name
- Site ID
- Sample ID
- Date
- Collection Time
- Sampling Personnel
- Analytical Requirements
- Preservation Requirements
- Laboratory Conducting Analysis

Sample Collection

Table 21 and **Table 22** list specific constituents for which samples will be analyzed and specify the sample container, volume required, and immediate processing and storage holding time requirements.

Table 21. VCAILGMP Sample Container, Volume, Initial Preservative, and Holding Time Requirements

Constituent	Sample Container	Sample Volume1	Immediate Processing And Storage	Holding Time
Aquatic Toxicity				
Chronic Aquatic Toxicity	FLPE-lined Jerrican	2.5 gal.	Store at 4°C	36 hours[2]
Bacteria				
E. coli	Sterile Plastic	4 oz.	Sodium thiosulfate; store at 4°C	8 hours
Field Measurements				
Flow, pH, Temperature, Dissolved Oxygen, Specific Conductivity, Turbidity	Field Meter	N/A	N/A	N/A
General Water Quality Constituents				
Total Suspended Solids (TSS)	HDPE Plastic	1 L	Store at 4°C	7 days
Total Dissolved Solids (TDS)	HDPE Plastic	1 Pint (16 oz.)	Store at 4°C	7 days
Chloride				28 days
Sulfate				28 days
Hardness as $CaCO_3$	HDPE Plastic	250 mL	Cool, 0-6°C	6 months
Nutrients				
Total Ammonia-N	Amber Glass	250 mL	H_2SO_4, Cool, 0-6°C	28 days
Nitrate-N	HDPE Plastic	250 mL	Cool, 0-6°C	48 hours
Total Nitrogen-N	HDPE Plastic	250 mL	Cool, 0-6°C	48 hours
Dissolved Orthophosphate-P	HDPE Plastic	250 mL	Cool, 0-6°C	48 hours
Total Phosphorus-P	Amber Glass	250 mL	H_2SO_4, Cool, 0-6°C	48 hours
Trace Metals				
Dissolved Copper	HDPE Plastic (double-bagged)	250 mL	Cool, 0-6°C	180 days
Total Copper				
Pesticides				
Organochlorine Pesticides	Amber Glass	2 x 1 L	Cool, 0-6°C	7/40 days[3]
Organophosphate Pesticides				
Pyrethroid Pesticides				
Neonicotinoid Pesticides				

N/A = Not applicable

1. Additional sample volume may be required for quality control analyses.
2. Tests should be initiated within 36 hours after sample collection. The 36-hour holding time does not apply to subsequent analyses for TIEs. For interpretation of toxicity results, sub-samples may be split from toxicity samples in the laboratory and analyzed for specific constituents. All other sampling requirements (sample containers, preservation, and holding times) for these samples are as specified in this document for the specific analytical method. Results from these analyses are qualified for any other use (e.g., characterization of ambient conditions) because of potential holding time exceedances and variance from sampling requirements.
3. 7/40 days = 7 days to extraction and 40 days from extraction to analysis.

Table 22. TMDL Sample Container, Volume, Initial Preservative, and Holding Time Requirements for Constituents Monitored under VCAILGMP

Constituent	Sample Matrix	Sample Container	Sample Volume1	Immediate Processing And Storage	Holding Time
General Water Quality Constituents					
Total Suspended Solids (TSS)	Water	Plastic	1 L	Store at 4°C	7 days
Total Organic Carbon (TOC)	Water	Amber Glass	250 mL	HCl, Cool, 0-6°C	28 days
Total Organic Carbon (TOC)	Sediment	Jar	4 oz.	Frozen	1 year
Nutrients					
Total Nitrogen-N	Water	Amber Glass	250 mL	H_2SO_4, Cool, 0-6°C	48 hours
Total Phosphorus-P	Water	Amber Glass	250 mL	H_2SO_4, Cool, 0-6°C	48 hours
Nitrate-N	Water	HDPE Plastic	250 mL	Cool, 0-6°C	48 hours
Nitrite-N					
Salts					
Chloride	Water	HDPE Plastic	1 Pint (16 oz.)	Store at 4°C	28 days
Total Dissolved Solids (TDS)					7 days
Sulfate					28 days
Boron, Total	Water	HDPE Plastic (double-bagged)	250 mL	Store at 4°C	180 days
Trace Metals					
Total Mercury	Water	Glass	250 mL	Store at 4°C	48 hours
Total Nickel	Water	HDPE Plastic (double-bagged)	250 mL	Store at 4°C	48 hours
Total Selenium	Water				
Pesticides and PCBs					
PCB Arochlors	Water	Amber Glass	2 x 1 L	Cool, 0-6°C	7/40 days[2]
Organochlorine Pesticides					
Organophosphate Pesticides					
Pyrethroid Pesticides					
PCB Arochlors	Sediment	Jar	4 oz.	Frozen	1 year
Toxaphene					
Organochlorine Pesticides	Suspended Sediment	Amber Glass	2 x 1 L	Cool, 0-6°C	7/40 days[2]
Organochlorine Pesticides	Fish Tissue	Wrapped in foil	200 g	Frozen	1 year
Bacteria					
E. coli	Water	Sterile Plastic	4 oz.	Sodium thiosulfate; store at 4°C	8 hours
Enterococcus	Water	Sterile Plastic	4 oz.	Sodium thiosulfate; store at 4°C	24 hours
Total Coliform	Water	Sterile Plastic	4 oz.	Sodium thiosulfate; store at 4°C	8 hours
Fecal Coliform					
Sediment Toxicity					
Hyalella azteca	Sediment	Plastic	1 L (min.)	Cool, 0-6°C	14 days

1. Additional sample volume may be required for quality control analyses.
2. 7/40 days = 7 days to extraction and 40 days from extraction to analysis.

Sampling Technique

Samples will be collected in a manner that minimizes the possibility of sample contamination. These sampling techniques are summarized below:

- Samples are collected only into rigorously pre-cleaned sample containers.
- At least two persons are required on a sampling crew.
- Clean, powder-free nitrile gloves must be worn while collecting samples and must be changed whenever something not known to be clean has been touched.
- To reduce the potential for contamination and to ensure crew safety, field crews must observe the following precautions while collecting samples:
    - Smoking is prohibited.
    - Collecting samples near a vehicle, running or otherwise, is prohibited.
    - Eating or drinking during sample collection is prohibited.
    - Sampling personnel should avoid breathing, sneezing, or coughing in the direction of an open sample container.
    - Do not allow rainwater to drip from rain gear or any other surface into sample containers.

Field Protocols

Briefly, the key aspects of quality control associated with sample collection for eventual chemical and toxicological analyses are as follows:

- Field personnel will be thoroughly trained in the proper use of sample collection gear and will be able to distinguish acceptable versus unacceptable water samples in accordance with pre-established criteria.
- Field personnel will be thoroughly trained to recognize and avoid potential sources of sample contamination (*e.g.*, engine exhaust, ice used for cooling, smoking, etc.).
- Sampling gear and utensils that come in direct contact with the sample will be made of non-contaminating materials (*e.g.*, borosilicate glass, high-quality stainless steel and/or Teflon™, according to protocol) and will be thoroughly cleaned between sampling stations according to appropriate cleaning protocol (rinsing thoroughly with laboratory reagent water at minimum) or a fresh laboratory cleaned utensil will be used for each site.
- Sample containers will be of the recommended type and will be free of contaminants (i.e., pre-cleaned).
- Conditions for sample collection, preservation, and holding times will be followed.

Field crews (2 persons per crew, minimum) will only be mobilized for sampling when weather conditions and flow conditions are considered to be safe. For safety reasons, sampling will occur during daylight hours, when possible. Sampling events should proceed in the following manner:

- Before the crew leaves the sampling base of operations, confirm the number and type of sample containers, as well as the complete equipment list.
- Proceed to the first sampling site.
- Fill out the general information on the field log (or electronic field log) sheet. An example field log is included in **Appendix D**.
- Collect the samples indicated on the event summary sheet in the manner described in this MRP. Collect additional volume and blank samples for field-initiated QA/QC samples, if necessary. Place filled sample containers in coolers and carefully pack and ice samples as described in this MRP. Using the log sheet, confirm that all appropriate sample containers were filled.
- Collect field measurements and observations, and record these in the field log (or electronic log) sheet.
- Repeat the procedures in steps 3, 4, and 5 for each of the remaining monitoring sites.

- Complete the chain-of-custody forms using the field log sheets.
- After sample collection is completed at all monitoring sites, deliver and/or ship samples to the appropriate laboratory.

Water Sample Collection

Grab samples will be collected at approximately mid-stream, mid-depth at the location of greatest flow (where feasible) by direct submersion of the sample bottle. This is the preferred method for grab sample collection. However, due to monitoring site configurations and safety concerns, direct filling of sample containers may not always be feasible, especially during wet events. Monitoring site configuration will dictate the grab sample collection technique. Grab samples will be collected directly into the appropriate containers (containing the required preservatives, as shown in **Table 21** and **Table 22**). Clean, powder-free nitrile gloves will be worn while collecting samples. The SOP for the collection of surface water samples is provided in **Appendix E** of this MRP.

There are two confirmation steps that must be completed before water sample collection can begin:

1. Determine whether there is continuous flow at the site and
2. Determine whether water is moving in the correct direction.

The potential exists for monitoring sites to lack discernable flow. Sampling stagnant, ponded, or extremely low-flow water may generate non-representative data. Extremely low flow is defined as water that cannot be sampled without disturbing the channel bottom while using a zip-top plastic bag as an intermediate container. There is also the potential at some monitoring sites for water to back up from the main water body or have its natural flow direction reversed by tides. Tidally influenced sites should be visited as close to low tide as is feasible. To ensure that representative samples are collected, sites monitored under the guidance of this MRP should be assessed for the previously listed two conditions and sampled (or not sampled) accordingly:

- Stagnant, ponded, or extremely low flow as defined above, should **NOT** be sampled. The field log should be completed for non-water quality data (including date and time of site visit) and the site conditions should be photo-documented.
- Flowing water (i.e., flow determined by visual observation, floating objects, flow meter data, and photo-documented assessment of conditions immediately upstream and downstream of monitoring site) **SHOULD** be sampled.

It is the combined responsibility of all members of the sampling crew to determine if the performance requirements of the specific sampling method have been met, and to collect additional samples, if required. If the performance requirements outlined above or documented in sampling protocols are not met, then the sample will be re-collected. If contamination of the sample container is suspected, a fresh sample container will be used. The Project Manager will be contacted if at any time the sampling crew has questions about procedures or issues based on site-specific conditions.

The grab sample techniques that may be employed by field crews are described below.

Direct Submersion: Hand Technique

Where practical, all grab samples will be collected by direct submersion at mid-stream, mid-depth using the following procedures.

1. Wear clean, powder-free nitrile gloves when handling containers and lids. Change gloves if soiled or if the potential for cross-contamination occurs from handling sampling materials or samples.
2. Use pre-labeled sample containers as described in the Sample Container Labeling section of this MRP.
3. Remove the lid, submerge the container to mid-stream/mid-depth, let the container fill with water, and secure the lid.
4. Place the sample on ice.
5. Collect the remaining samples, including quality control samples, if required, using the same protocols described above.

6. Fill out the COC form, note sample collection time on the field log sheet, and deliver samples to the appropriate laboratory.

Intermediate Container Technique

Samples may be collected with the use of a specially cleaned intermediate container, if necessary, following the steps listed below. A secondary container may include a container that is similar in composition to the sample container or a pre-cleaned pitcher made of the same material as the sample container.

1. Wear clean, powder-free nitrile gloves when handling bottles and lids. Change gloves if soiled or if the potential for cross-contamination occurs from handling sampling materials or samples.
2. Use pre-labeled sample containers as described in the Sample Container Labeling section of this MRP.
3. Submerge the intermediate container to mid-stream/mid-depth (if possible), let the container fill with water, and quickly transfer the sample into the individual sample container(s) and secure the lid(s).
4. Place the sample(s) on ice.
5. Collect remaining samples, including quality control samples, if required, using the same protocols described above.
6. Fill out the COC form, note sample collection time on the field log sheet, and deliver the samples to the appropriate laboratory.

Sediment Sample Collection

Sediment may not necessarily be sampled at the same time as water samples are collected. However, if sediment samples are collected in conjunction with water samples, sediment bottles will be filled after collection of water samples from areas not disturbed during water sampling. Sediment samples will be collected at five (5) to ten (10) wadeable depositional areas containing fine-grained particulate matter within 100 meters of the monitoring site. The goal is to select depositional zones that are representative of upstream influences, various flow regimes, and areas with differing depths if such zones exist at a particular site. To accurately characterize recent sediment deposition and corresponding sediment quality, only the surficial 2 to 3 centimeters (cm) of sediment will be collected from each depositional area. The sediment can be collected through several means depending on current conditions, including using a Teflon spoon, scoop, or spatula in locations with low water depth (< 2 feet (ft)) and with low flow, which are typical during dry weather sampling.

Spoon, Scoop, or Spatula Sampler

A Teflon spoon, scoop, or spatula can be used to remove the layers of sediment from the bottom of stream beds when the water is shallow (< 2 ft) and there is low flow. The top layer of surficial fine material from the stream bed (approximately 1 to 2 cm) will be carefully removed. Removing more material than necessary will be avoided. The Teflon scoop or spatula will be used for removing large smooth deposits and the Teflon spoon for removing the fine material in tight areas between rocks and debris. Each scoop or spoon should represent approximately 2 square inches ($in.^2$) of bottom area 1 to 2 cm deep.

Extra care is necessary to protect the fine sediments from being washed away by the stream. The sample will be brought to the stream surface in such a way as to avoid losing the fine material. The sample will be inspected for adequate fine material and then deposited in the compositing jar.

Field Compositing and Storage of Sediment Samples

Once the sediment has been collected from the chosen depositional areas, the samples in the compositing jar will be stirred with a polycarbonate stirring rod for at least five minutes and for as long as necessary to homogenize the samples. The homogenized samples will then be aliquoted into the appropriate sample containers for the various parameters to be analyzed. The sample containers will then be individually wrapped in a plastic bag to prevent contamination from other samples or ice or water and then placed in a cooler with enough ice to keep them cool for 48 hours (see the Sample Handling section below for more detail). Alternatively, sediments may be homogenized by the laboratory prior to analysis.

Fish Tissue Sample Collection – Santa Clara River Estuary

Estuary fish species community compositions can be variable from year-to-year. Additionally, the salinity of the Santa Clara River Estuary changes based on river flows, saltwater inflow from breaches of the sand berm, and inputs from the Ventura Water Reclamation Facility. For these reasons, it is proposed that target species in the estuary are selected based on the local abundance and fish size at the time of field collection. Fish targeted should be those that are commonly consumed by humans, but based on past collection events, this may not be feasible. According to the staff report prepared for the Santa Clara River Estuary Toxaphene TMDL (LARWQCB, 2010), fish tissue data for arroyo chub and Santa Ana sucker were used in evaluating the fish tissue impairment. The Santa Ana sucker is federally listed as a threatened species and, therefore, will not be collected for fish tissue analysis. Some fish species noted as abundant or common in a recent City of Ventura Special Study of the Estuary (Stillwater, 2011) that are likely targets for collection by VCAILGMP include arroyo chub, mosquitofish, fathead minnow, and common carp.

Fish will be collected using gear appropriate to field conditions and the species being targeted. Sampling gear may include electrofishing boats, backpack electrofishers, seine nets, gill nets, trap nets, hook and line, or other equipment, as required. Larger specimens are collected as individuals for filleting to allow for an evaluation of human health risks. Small species are collected as bulk samples and the whole-body tissue is analyzed, which will potentially allow for an evaluation of ecological risk. Tissue monitoring will involve the field collection of fish and the procurement and storage of tissue samples to be analyzed for toxaphene, chlordane, and dieldrin using California Department of Fish and Wildlife (CDFW) protocols (CDFW, 2000) that are in accordance with USEPA Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories (USEPA, 2000). **Appendix E** provides a summary of CDFW protocols and protocols for the collection of tissue samples.

Field Measurements and Observations

Field measurements (see **Table 10**) will be collected and observations will be made and noted at each monitoring site after all samples scheduled for collection at the site are collected. Field measurements will include flow, pH, temperature, dissolved oxygen, specific conductivity, and turbidity. Measurements (except flow) will be collected at approximately mid-stream, mid-depth at the location of the greatest flow (if feasible) with a portable field meter that meets data quality objectives listed in the VCAILGMP QAPP (VCAILG, 2024).

All field measurement results and comments regarding site observations will be recorded on a field log sheet for each site. Field crews will keep a field logbook for each sampling event, which will contain a calibration log sheet, a field log sheet for each site, and appropriate contact information. The following items should be recorded on the field log sheet for each sample event:

- Monitoring site (Site ID).
- Data and time(s) of sample collection.
- Names of sampling personnel.
- Sampling depth.
- Sample ID numbers and unique IDs for any replicate or blank samples.
- QC sample type (if appropriate).
- Requested analyses (specific parameters or analytical method references).
- Sample type (i.e., grab (water) or integrated (sediment)).
- The results of any field measurements (i.e., flow, pH, temperature, dissolved oxygen, specific conductivity, and turbidity) and the time field measurements were made.
- Qualitative descriptions of relevant water conditions (e.g., water color, flow level, water clarity, whether a connection observed between flow from the monitoring site and the downstream main stem) and weather conditions (e.g., wind, rain) at the time of sample collection.
- Trash observations.
- A description of any unusual occurrences associated with the sampling event, particularly those that may affect water quality or data quality.

Several monitoring sites may be dry during the dry season. This information is relevant in that it establishes the absence of discharges from irrigated lands in the vicinity of these monitoring sites during the dry season. This information will be photo-documented and recorded on field log sheets to document site conditions.

Flow will be estimated using a velocity meter and channel cross-sectional area measurements or will be estimated by other means at each sampling station after all samples are collected. **Appendix E** contains the flow measurement SOP. When a velocity meter is unavailable or the water depth at the site is not sufficient to use a velocity meter, depth, width, and velocity will be estimated to provide an estimate of flow. Depth will be estimated using the average of several depth measurements taken across the width of the channel. Width will be measured by extending a tape measure from one bank to the other. Velocity will be estimated by measuring the time it takes a floating object (e.g., stick, orange peel) to travel a known distance. Regardless of the flow measurement technique used, if a staff gage is present, gage height will be noted on the field log sheet. Flow at the time of sampling will also be obtained from the nearest Ventura County stream gage if one exists on the channel in question and if channel depth is sufficient to produce an accurate measurement.

If at any time the collection of field measurements by wading into the waterbody appears to be unsafe, field crews will not attempt to collect mid-stream, mid-depth measurements. Rather, field measurements will be made either directly from a stable, unobstructed area at the channel edge or by using a telescoping pole and intermediate container to obtain a sample for field measurements and for filling sample containers. The use of sample collection methods other than the mid-stream, mid-depth method will be documented on the field log sheet. Field crews may not be able to measure flow at several sites during wet weather because of the inaccessibility of the site. If this is the case, site inaccessibility will be documented on the field log sheet.

The field sampling crew has the primary responsibility for responding to failures in the sampling or measurement systems. Deviations from established monitoring protocols and this MRP will be documented in the comment section of the field log sheet. If monitoring equipment fails, monitoring personnel will report the problem in the notes section of the field log sheet and will not record data values for the variables in question. Broken equipment will be replaced or repaired prior to the next field use. Data collected using faulty equipment will not be used by VCAILGMP.

SAMPLE HANDLING AND CHAIN-OF-CUSTODY

Sample Handling

The field crews will have custody of samples during each monitoring event. Chain-of-custody (COC) forms will accompany all samples during shipment to contract laboratories to identify the shipment contents. All water quality samples will be transported to the analytical laboratory by the field crew or by overnight courier. The original COC form will accompany the shipment, and a signed copy of the COC form will be sent by the laboratory (typically with a photo to the field crew's email) to the field crew to be retained in the project file.

While in the field, samples will be stored on ice in an insulated container (i.e., ice chest), so that the sample temperature will be kept at approximately 4°C. Samples that must be shipped to the laboratory must be examined to ensure that container lids are tight and sample containers are placed on ice to maintain the temperature at 4°C. The ice packed with samples must be double-bagged in plastic resealable bags, be approximately 2 in. deep at the top and bottom of the cooler, and must contact each sample to maintain temperature. Ice chests containing jerricans must be packed with as much loose ice as possible. The original COC form(s) will be double-bagged in resealable plastic bags and either taped to the outside of the cooler or to the inside lid. Samples must be shipped to the contract laboratory according to Department of Transportation standards. The method(s) of shipment, courier name, and other pertinent information should be entered in the "Received By" or "Remarks" section of the COC form.

Coolers must be sealed with packing tape before shipping and must not leak. It is assumed that samples in tape-sealed ice chests are secure whether being transported by field staff vehicle, by laboratory courier, by common carrier, or by commercial package delivery. The laboratory's sample-receiving department will examine the shipment of samples for correct documentation, proper preservation, and compliance with holding times.

The following procedures are used to prevent bottle breakage and cross-contamination:

- Bubble wrap or foam pouches are used to keep glass bottles from contacting one another to prevent breakage; resealable bags will be used if available.
- All samples are transported inside hard plastic coolers or other contamination-free shipping containers.
- The coolers are taped shut to prevent accidental opening.
- If arrangements are not made in advance, the laboratory's sample-receiving personnel must be notified prior to sample shipment.

All samples remaining after successful completion of analyses will be disposed of properly. It is the responsibility of the personnel of each analytical laboratory to ensure that all applicable regulations are followed in the disposal of samples or related chemicals.

Chain-of-Custody Form

Sample custody procedures provide a mechanism for documenting information related to sample collection and handling. Sample custody must be traceable from the time of sample collection until results are reported. A sample is considered under custody if:

- It is in actual possession.
- It is in view after physical possession.
- It is placed in a secure area (accessible by or under the scrutiny of authorized personnel only after in possession).

A COC form must be completed after sample collection and prior to sample shipment or release. The COC form, sample labels, and field documentation will be cross-checked to verify sample identification, type of analyses, number of containers, sample volume, preservatives, and type of containers. A complete COC form is to accompany the transfer of samples to the analyzing laboratory. A typical COC form is illustrated in **Appendix F**.

Transport to Analytical Laboratories

Samples will be stored in coolers with ice and bubble wrap and delivered to the appropriate laboratory. **Table 23** lists the three analytical laboratories proposed for VCAILGMP. Appropriate contacts are listed, along with lab certification information.

Table 23. Analytical Laboratories

Laboratory	Analysis	Shipping Method	Contact	Phone No.	Address	Lab Cert. No. & Exp. Date[1]
Pacific EcoRisk	Toxicity, TIEs	Overnight delivery	Stephen Clark	(707) 207-7766	2250 Cordelia Rd., Fairfield, CA 94534	ELAP #2085 Sep. 30, 2025
Fruit Growers Laboratory, Inc.	Inorganic Chemistry	Same day delivery	David Terz	(805) 392-2000	853 Corporation St., Santa Paula, CA 93060	ELAP #1573 Jul. 31, 2025
Physis Environmental Laboratories	Inorganic Chemistry, Pesticides	Overnight delivery or courier	Misty Mercier	(714) 602-5320	1904 E. Wright Cir., Anaheim, CA 92806	ELAP #2769 Sep. 13, 2025

1. Lab certifications are renewed on an annual basis.

QUALITY ASSURANCE/QUALITY CONTROL

Field-Collected Samples

Quality control (QC) samples will be collected in conjunction with environmental samples to verify data quality. QC samples collected in the field include field blanks and field duplicates. Equipment blanks are prepared by an analytical laboratory for each batch of sampling equipment cleaned by the laboratory (e.g., plastic scoop). Specific collection methods for each type of quality control sample are described below.

Equipment Blanks

The purpose of analyzing equipment blanks is to demonstrate that sampling equipment is free from contamination. Equipment blanks will be collected by the analytical laboratory responsible for cleaning equipment before sending cleaned equipment back to the field crew for use. Equipment blanks will be analyzed for chloride, sulfate, nutrients, and the classes of pesticides identified in Error! Reference source not found.. Equipment blanks will consist of laboratory-prepared blank water (certified to be contaminant-free by the laboratory) processed through the sampling equipment that will be used to collect environmental samples.

The blanks will be analyzed using the same analytical methods and detection limits specified for environmental samples. If any analytes of interest are detected at levels greater than the MDL, the source(s) of contamination will be identified and eliminated (if possible), the affected batch of equipment will be re-cleaned, and new equipment blanks will be prepared and analyzed before the equipment is returned to the field crew for use.

In previous years of VCAILG monitoring, equipment was not necessary to collect samples; therefore, the need for equipment blanks was negated.

Field Blanks

The purpose of analyzing field blanks is to demonstrate that sampling procedures do not result in contamination of the environmental samples. Field blanks will be collected at a frequency of 5% of samples collected, which is more rigorous than the Quality Assurance Management Plan for the State's SWAMP (SWRCB, 2022). Field blanks will consist of laboratory-prepared blank water (certified to be contaminant-free by the laboratory) processed through the sampling equipment using the same procedures used for environmental samples.

If any analytes of interest are detected at levels greater than the MDL, the source(s) of contamination should be identified and eliminated, if possible. The sampling crew should be notified so that the source of contamination can be identified (if possible) and corrective measures are taken prior to the next sampling event.

Field Duplicates – Water and Sediment

The purpose of analyzing field duplicates is to demonstrate the precision of sampling and analytical processes. Field duplicates will be prepared at the rate of 5% of all samples and analyzed along with the associated environmental samples. Field duplicates will consist of two grab samples collected simultaneously, to the extent practicable. If the relative percent difference (RPD) of field duplicate results is greater than 30% *and* the absolute difference is greater than the RL, then both samples should be reanalyzed, if possible. The sampling crew should be notified so that the source of sampling variability can be identified (if possible) and corrective measures are taken prior to the next sampling event.

Laboratory-Generated Samples

Quality control samples prepared in the laboratory will consist of method blanks, laboratory duplicates, matrix spikes/duplicates (MS/MSD), laboratory control samples (LCS/LCSD; alternately, standard reference material (SRM) or certified reference material (CRM) may be used as laboratory control samples), and toxicity quality controls.

Method Blanks

The purpose of analyzing method blanks is to demonstrate that sample preparation and analytical procedures do not result in sample contamination. Method blanks will be prepared and analyzed by the contract laboratory at a rate of at least one for each analytical batch. Method blanks will consist of laboratory-prepared blank water processed along with a batch of environmental samples. If the result for a single method blank is greater than the MDL, or if the average blank concentration plus two standard deviations of three or more blanks is greater than the RL, the source(s) of contamination should be identified and eliminated, and the sample batch should be prepared and analyzed again, if possible. If this is not possible, then the data should be qualified accordingly. If method blank contamination is consistently reported, the laboratory will be expected to propose to the Project Manager a systematic approach for identifying and eliminating the source of contamination. The laboratory should also be prepared to sub-contract analysis for that method to another qualified laboratory until the contamination issue is resolved.

Laboratory Duplicates

The purpose of analyzing laboratory duplicates is to demonstrate the precision of the sample preparation and analytical methods. Laboratory duplicates will be analyzed at the rate of one pair per sample batch. Laboratory duplicates will consist of either the replicate analysis of environmental samples or duplicate laboratory-fortified method blanks. If the relative percent difference (RPD) for any analyte is greater than 30% *and* the absolute difference between duplicates is greater than the RL, then the analytical process is not being performed adequately for that analyte. In this case, the sample batch should be prepared and laboratory duplicates analyzed again, if possible.

Matrix Spikes and Matrix Spike Duplicates – Water and Sediment

The purpose of analyzing matrix spikes and matrix spike duplicates is to demonstrate the performance of the sample preparation and analytical methods in a particular sample matrix. Matrix spikes and matrix spike duplicates will be analyzed at the rate of one pair per sample batch. Each matrix spike and matrix spike duplicate will consist of

an aliquot of laboratory-fortified environmental sample. Spike concentrations should be added at five to ten times the reporting limit for the analyte of interest.

If the matrix spike recovery of any analyte is outside the acceptable range, then the results for that analyte have failed to meet the acceptance criteria. If recovery of laboratory control samples is acceptable, then the analytical process is being performed adequately for that analyte, and the problem is attributable to the sample matrix (i.e., that environmental sample exhibits matrix interference). An attempt will be made to correct the problem (e.g., by dilution, concentration, etc.), and the samples and matrix spikes will be reanalyzed.

If the matrix spike duplicate RPD for any analyte is outside the acceptable range, the results for that analyte have failed to meet acceptance criteria. If the RPD for laboratory duplicates is acceptable, then the analytical process is being performed adequately for that analyte, and the problem is attributable to the sample matrix. An attempt will be made to correct the problem (e.g., by dilution, concentration, etc.), and the samples and matrix spikes will be reanalyzed.

Laboratory Control Samples

The purpose of analyzing laboratory control samples (or standard reference material or certified reference material) is to demonstrate the accuracy of the sample preparation and analytical methods. Laboratory control samples will be analyzed at the rate of one per sample batch. Laboratory control samples will consist of laboratory-fortified method blanks or standard reference material or certified reference material. If recovery of any analyte is outside the acceptable range, then the analytical process is not being performed adequately for that analyte. In this case, the sample batch should be prepared again and the laboratory control sample(s) should be reanalyzed.

Surrogate Spikes

Surrogate recovery results are used to evaluate the accuracy of analytical measurements for organics analyses on a sample-specific basis. A surrogate is a compound (or compounds) added by the laboratory to method blanks, laboratory control samples, environmental samples, matrix spikes, and matrix spike duplicates prior to sample preparation, as specified in the analytical methodology. Surrogates are generally brominated, fluorinated, or isotopically-labeled compounds that are not usually present in environmental or laboratory matrices. Results are expressed as percent recovery of the surrogate spike. Surrogate spikes are applicable for analysis of PCBs and pesticides. Surrogate recoveries must fall within acceptance limits as specified by the analytical method.

VCAILG CONTACT INFORMATION

Information Attribute	Description
Discharger Group Name	Ventura County Agricultural Irrigated Lands Group (VCAILG)
Group Contact Person	Jodi Switzer, Water Program Director
Facility Name	Farm Bureau of Ventura County
Facility Address	5156 McGrath St., Suite 102
Mailing / Billing Address	P.O. Box 3160
City	Ventura
County	Ventura
State	California
Zip Code	93006
Phone No.	(805) 289-0155
E-mail	jodi@farmbureauvc.com

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Appendix List

Appendix A

Monitoring Sites

Site ID	01T_ODD2_DCH
Drains to Reach:	CCW-1: Mugu Lagoon
Site Type	Agricultural Drain
Latitude	34.139514
Longitude	-119.118330
Site Description	Duck Pond/Oxnard Drain #2/Mugu Drain
Driving Directions	In Camarillo, exit Hwy 101 at Los Posas Rd. and head south. Turn right onto Hueneme Road. Just past the Hwy 1 interchange, turn left onto the 2nd ranch road (Naumann Road is too far). The site is located at the bridge crossing.

Site ID	01T_ODD3_EDI
Drains to Reach:	CCW-1: Mugu Lagoon
Site Type	Agricultural Drain
Latitude	34.132631
Longitude	-119.160666
Site Description	Rio de Santa Clara/Oxnard Drain #3
Driving Directions	In Camarillo, exit Hwy 101 at Los Posas Rd. and head south. Turn right onto Hueneme Road. Pass the Hwy 1 interchange, turn left onto Edison Drive and park at the end of the road. Walk along the channel to where it turns to the right (south) and sample just past the turn.

Site ID	02D_DEER
Drains to Reach:	CCW-2: Calleguas Creek
Site Type	Agricultural Drain
Latitude	34.113230
Longitude	-119.079989
Site Description	Agricultural drain at Deer Path Rd. just upstream of Pacific Coast Hwy
Driving Directions	In Camarillo, exit Hwy 101 at Los Posas Rd. and head south. Follow Las Posas all the way to Hwy 1 (PCH). Head south on PCH. The first left turn after crossing the bridge is Caryl Drive. Enter there and just past the gate, there is an open lot. Drive through the lot to access the farm field road that leads to the channel levee (Deer Path road). Sample on the southeast side of the levee at the watershed protection gate.

Site ID	04D_WOOD
Drains to Reach:	CCW-4: Revolon Slough
Site Type	Agricultural Drain
Latitude	34.170800
Longitude	-119.096300
Site Description	Agricultural drain on E. side of Wood Rd. N. of Revolon Slough
Driving Directions	In Camarillo, exit Hwy 101 at Las Posas Rd. and head south. Turn right onto E. Pleasant Valley Rd. Turn left on Wood Rd. The site is on the left side of the street just before Revolon Slough passes under the road.

Site ID	05D_LAVD
Drains to Reach:	CCW-5: Beardsley Channel
Site Type	Agricultural Drain / Flood Control Channel
Latitude	34.265955
Longitude	-119.093601
Site Description	La Vista Drain at La Vista Ave.
Driving Directions	From Oxnard, exit Hwy 101 at Santa Clara Ave. and head northeast. Santa Clara Ave. turns into Hwy 118 at the "S" turns. Continue on Hwy 118 and turn left onto La Vista Ave. Park near the bridge over La Vista Drain. Sample in box channel on the east side of the road.

Site ID	06T_FC_BR
Drains to Reach:	CCW-6: Arroyo Las Posas
Site Type	Tributary to Arroyo Las Posas
Latitude	34.264653
Longitude	-119.011128
Site Description	Fox Canyon Barranca at Hwy 118
Driving Directions	In Camarillo, exit Hwy 101 at Lewis-Somis Rd (Hwy 34) and head north. Turn left onto Hwy 118 and turn right onto Bradley Rd. Pull off Bradley Rd. to the right just past the Fox Canyon bridge. Site access is down the north bank of the channel, on the east side of Bradley Rd.

Site ID	07D_HITCH_LEVEE_2
Drains to Reach:	CCW-7: Arroyo Simi
Site Type	Agricultural drain to Arroyo Simi
Latitude	34.271600
Longitude	-118.921902
Site Description	Ag pipe discharge to Arroyo Simi
Driving Directions	From Somis, head east on Hwy 118. Turn right on Hitch Blvd, just past Grimes Canyon Rd. Turn left onto the levee for the flood control channel (VCWPD Key required). Sample from the 2nd corrugated pipe discharging from the north side of Arroyo Simi, just beyond the 1st power pole.

Site ID	9AD_HOWARD
Drains to Reach:	CCW-9A: Conejo Creek
Site Type	Agricultural Drain
Latitude	34.192675
Longitude	-119.004054
Site Description	Agricultural drain on N. side of Howard Rd. at Conejo Creek
Driving Directions	In Camarillo, exit Hwy 101 at Pleasant Valley/Santa Rosa Rd. Head south on Pleasant Valley Road and turn left onto Pancho Rd. Turn left onto Howard Rd. Just before you cross the bridge, park at the open lot between the road conjunctions. Sample in the ag ditch before it goes under the road to discharge to Conejo Creek.

Site ID	9BD_GERRY
Drains to Reach:	CCW-9B: Conejo Creek
Site Type	Agricultural discharge to Conejo Creek
Latitude	34.235928
Longitude	-118.944793
Site Description	Discharge at Santa Rosa Rd and Gerry Rd
Driving Directions	From US 101 in Camarillo exit Santa Rosa Rd. and head northeast. Turn left onto Gerry Rd. and park. Sample in ditch on west side on Gerry Rd.

Site ID	S02T_ELLS
Drains to Reach:	Santa Clara River, Reach 2
Site Type	Tributary to Santa Clara River
Latitude	34.306805
Longitude	-119.141275
Site Description	Ellsworth Barranca at Telegraph Rd
Driving Directions	In Ventura, exit Hwy 101 at Hwy 126 and head east. Exit Hwy 126 at Wells Rd. and turn left onto Wells Rd. Turn right onto Telegraph Rd. Pull off Telegraph to the right just before the Ellsworth Barranca bridge and park. Access is down the farm road.

Site ID	S03T_BOULD
Drains to Reach:	Santa Clara River, Reach 3
Site Type	Tributary to Santa Clara River
Latitude	34.389578
Longitude	-118.958738
Site Description	Boulder Creek on the N side of Hwy 126
Driving Directions	From westbound Hwy 126, pull off to the right into the driveway just past the Old Telegraph Rd. turnoff and park. Access is down the bank on the southwest side of the Creek.

Site ID	S03T_BARDS
Drains to Reach:	Santa Clara River, Reach 3
Site Type	Agricultural discharge to Santa Clara River
Latitude	34.371535
Longitude	-118.964470
Site Description	Drain at Bardsdale Ave at the Santa Clara River
Driving Directions	From Hwy 126, turn south onto Hwy 23 in Fillmore and cross the Santa Clara River bridge. Exit Hwy 23 at Bardsdale Ave. at the intersection where the Hwy turns due south. Drive to the end of Bardsdale Ave. and park. VCWPD Key required to access the levee road on the south side of the creek. Follow levee road until the creek turns north. Sample at the bend in the creek near the big tree.

Site ID	S04T_TAPO
Drains to Reach:	Santa Clara River, Reach 4
Site Type	Tributary to Santa Clara River
Latitude	34.401717
Longitude	-118.723706
Site Description	Tapo Canyon Creek on the south side of Hwy 126
Driving Directions	From eastbound Hwy 126, turn right at the Newhall Land sign (about 4 miles past Piru). Call security at the Newhall gate for access. Cross the Santa Clara River and turn left at Camino Del Rio and drive to the Tapo Canyon crossing. Park before crossing the creek. Sample location is on upstream side of road.

Site ID	S04T_TAPO_BKGD
Drains to Reach:	Santa Clara River, Reach 4
Site Type	Background site for S04T_TAPO
Latitude	34.385273
Longitude	-118.718017
Site Description	Tapo Canyon Creek upstream of all irrigated agriculture. Upper Santa Clara River Chloride TMDL background site for S04T_TAPO.
Driving Directions	** ONLY DURING SPECIFIED DRY WEATHER SAMPLING EVENTS ** From site S04T_TAPO, follow farm road on west side of creek up the hill. Continue on farm road ~1.25 miles to the end of the orchard on east side of road. Sample location is just before the creek goes under the road.

Site ID	OXD_CENTER
Drains to:	McGrath Lake
Site Type	Agricultural discharge to McGrath Lake
Latitude	34.220926
Longitude	-119.254665
Site Description	Central Ditch at Harbor Blvd
Driving Directions	In Ventura, exit Hwy 101 at Victoria Ave. and head south. Turn right onto Gonzales Rd., then right onto Harbor Blvd. Pull off into the open lot just after the drainage ditch. Sample in the ditch just before it goes into the culvert under Harbor Blvd.

Site ID	CIHD_DORIS
Drains to:	Oxnard Coastal / McGrath Lake / Channel Islands Harbor
Site Type	Drain
Latitude	34.208510
Longitude	-119.238368
Site Description	Doris Drain at corner before discharging to Edison Canal
Driving Directions	In Ventura, exit Hwy 101 at Victoria Ave. and head south. Turn right onto Doris Ave. At the channel, use the north side levee (VCWPD Key required) and follow to where the drain turns south. Sample point is at the bend.

Site ID	CIHD_DORIS_BKGD
Drains to:	Oxnard Coastal / McGrath Lake / Channel Islands Harbor
Site Type	CIHD_DORIS background site. Urban Discharge to Doris Drain
Latitude	34.211616
Longitude	-119.208102
Site Description	Urban discharge to Doris Drain at Patterson Rd. Background site to CIHD_DORIS.
Driving Directions	In Ventura, exit Hwy 101 at Victoria Ave. and head south. Turn left onto Doris Ave. then left onto Patterson Rd. At Nebula St., make a 'U' turn. Drive back down Patterson about 500 feet, you will see a small gate on the righthand side, almost even with storm drain. Safely park on the side of road. Sampling point is around the fence where the channel daylights.

Site ID	V02D_SPM
Drains to Reach:	Ventura River Reach 2 above Main Street Ventura
Site Type	Agricultural drainage channel
Latitude	34.289113
Longitude	-119.308869
Site Description	Drain on SP Milling Road on the west side of the Ventura River
Driving Directions	Heading west on Main Street Ventura past Hwy 33, turn right on Taylor Ranch Rd. Turn right before the pump houses and follow the road downhill to SP Milling Rd. that runs adjacent to the Ventura River. Where the drainage ditch goes under SP Milling road, sample on the downstream side of the road.

Site ID	VRT_THACH
Drains to:	San Antonio Creek and eventually the Ventura River
Site Type	Tributary to Ventura River
Latitude	34.446719
Longitude	-119.210893
Site Description	Thacher Creek at Ojai Ave
Driving Directions	From Hwy 101 head north on Hwy 33. Veer to the right onto Hwy 150 (Ojai Ave.) at the Hwy 33/Hwy 150 intersection and drive through downtown Ojai. Pull off Ojai Ave to the right shoulder at Thacher Creek bridge and park. Access is on the north side of Hwy 150.

Site ID	VRT_SANTO
Drains to:	Ventura River
Site Type	Tributary to the Ventura River
Latitude	34.454455
Longitude	-119.221723
Site Description	San Antonio Creek at Grand Ave
Driving Directions	From Hwy 101 head north on Hwy 33. Veer to the right onto Hwy 150 (Ojai Ave.) at the Hwy 33/Hwy 150 intersection and drive through downtown Ojai. Turn left onto Gridley Rd. Turn right onto Grand Ave. Pull off Grand Ave on the right shoulder just before the San Antonio Creek bridge, near the VCWPD cabinet. Access is on the north side of Grand Ave. Walk through the locked gate on the west side of the channel and down the west bank.

Appendix B

Example Event Summary Sheet

VCAILG Monitoring Program

Event Number:

OXD_CENTR — Central Ditch at Harbor Blvd.

Sample ID	Requested Analyses	Bottles	Notes	Lab
VCAg-062.0-CENTR-224	Total Suspended Solids	1		FGL
VCAg-062.0-CENTR-225	TDS, Chloride, Sulfate	1		FGL
VCAg-062.0-CENTR-226	Ammonia-N, Total Phosphorus	1		PHYSIS
VCAg-062.0-CENTR-227	Nitrate-N, Total Orthophosphate-P	1		PHYSIS
VCAg-062.0-CENTR-228	Total Nitrogen	1		PHYSIS
VCAg-062.0-CENTR-229	E. coli	1		FGL
VCAg-062.0-CENTR-230	PCBs, OP Pests, OC Pests, Pyrethroids, Neonics, Toxaphene	2		PHYSIS
VCAg-062.0-CENTR-232	Total & Dissolved Copper, Hardness	1		PHYSIS
VCAg-062.0-CENTR-231	TOC	2		FGL

CIHD_DORIS — Doris Drain at corner before discharging to Edison Canal

Sample ID	Requested Analyses	Bottles	Notes	Lab
VCAg-062.0-DORIS-206	Total Suspended Solids	1		FGL
VCAg-062.0-DORIS-207	TDS, Chloride, Sulfate	1		FGL
VCAg-062.0-DORIS-208	Ammonia-N, Total Phosphorus	1		PHYSIS
VCAg-062.0-DORIS-209	Nitrate-N, Total Orthophosphate-P	1		PHYSIS
VCAg-062.0-DORIS-210	Total Nitrogen	1		PHYSIS
VCAg-062.0-DORIS-211	Total and Fecal Coliform, E.coli	1		FGL
VCAg-062.0-DORIS-212	Enterococcus	1		FGL
VCAg-062.0-DORIS-213	OP Pests, OC Pests, Pyrethroids, Toxaphene, Neonics	2		PHYSIS
VCAg-062.0-DORIS-214	Total & Dissolved Copper, Hardness	1		PHYSIS

CIHD_DORIS_BKGD — Urban discharge to Doris Drain on Patterson Rd.

Sample ID	Requested Analyses	Bottles	Notes	Lab
VCAg-062.0-DORIS_BK-215	Total Suspended Solids	1		FGL
VCAg-062.0-DORIS_BK-216	TDS, Chloride, Sulfate	1		FGL
VCAg-062.0-DORIS_BK-217	Ammonia-N, Total Phosphorus	1		PHYSIS
VCAg-062.0-DORIS_BK-218	Nitrate-N, Total Orthophosphate-P	1		PHYSIS
VCAg-062.0-DORIS_BK-219	Total Nitrogen	1		PHYSIS
VCAg-062.0-DORIS_BK-220	Total and Fecal Coliform, E.coli	1		FGL
VCAg-062.0-DORIS_BK-221	Enterococcus	1		FGL
VCAg-062.0-DORIS_BK-222	OP Pests, OC Pests, Pyrethroids, Toxaphene, Neonics	2		PHYSIS
VCAg-062.0-DORIS_BK-223	Total & Dissolved Copper, Hardness	1		PHYSIS

Appendix C

Example Post-Event Summary Sheet

VCAILG MONITORING PROGRAM
POST-EVENT SUMMARY
Monitoring Event # / Date: _____

I. Crews:

- **SCR Crew**:
- **OXN Plains:**
- **EDI Sediment (annual)**:
- **SPM site**:
- **VR Crew**:
- **CCW Crew1**:
- **CCW Crew2**:

II. Sites Monitored: Check the box next to sites where there was flow and where samples were collected. Write in crew initials for each site.

Site ID	Crew	Site ID	Crew
ODD3_EDI		BARDS	
DCH		BOULD	
D_WOOD		TAPO	
DEER		TAPO_BKGD	
LAVD		D_GERRY	
D_HOWARD		FC_BR	
HITCH2		ELLS	
OXD_CENTR		SANTO	
DORIS		THACH	
DORIS_BKGD		SPM	

An unchecked box signifies that the site was dry, site inaccessible, or that flow was not representative of the Ag runoff and no samples were collected.

III. Samples Collected (Note whether all samples were collected at all sites per QAPP, if additional samples were collected and why, or if all required samples were not collected and include the site(s) and explanation):

IV. Additional Notes:

Appendix D

Example Field Log

VCAILG Monitoring Program

Sampling Data Log Sheet

Site: **Rio de Santa Clara/Oxnard Drain #3 downstream of E**

Site Id: **01T_ODD3_EDI** Sample Region: **CCW**

GPS Reference
Latitude: **34.1326**
Longitude: **-119.1607**

Personnel: _____ Date: _____ Time: _____ Pictures: _____

Samples Collected

☐ Intermediate container used to transfer water to sample bottles?

Sample ID	Time	Sample Depth (ft)	Analytes	Bottle Count	Notes
☐ VCAg-060.0-EDI-001			Total Suspended Solids	1	
☐ VCAg-060.0-EDI-002			TDS, Chloride, Sulfate	1	
☐ VCAg-060.0-EDI-003			Ammonia-N, Total Phosphorus	1	
☐ VCAg-060.0-EDI-004			Nitrate-N, Nitrite-N, Total Orthophosphate-	1	
☐ VCAg-060.0-EDI-005			Total Nitrogen	1	
☐ VCAg-060.0-EDI-006			E. coli	1	
☐ VCAg-060.0-EDI-007			PCBs, OP Pests, OC Pests, Pyrethroids,	2	
☐ VCAg-060.0-EDI-008			Total & Dissolved Copper, Hardness	1	

Field Measured Data

Time	Temp(ºC)	pH	D.O.(mg/L)	D.O.(%Sat)	EC(uS/cm)	Turbidity(NTU)

Field Observations

(See attached "Field Observations" sheet for standard comments and futher guidance)

Air Temp (ºC)

Dominant Substrate

% Bank Vegetation
Left Bank Right Bank

% Shading

☐ Connected flow observed between monitoring site and the downstream receiving water.

Weather	
Water Color	
Instream Activity	
Odor	
Foreign Matter	
Trash Count	
Trash Type	

Flow Data

Flow Start Time _____ **End Time** _____

	Path# __	Path# __
Width at TOP (ft)		
Width at MIDDLE (ft)		
Width at BOTTOM (ft)		
Depth at 25% at TOP (ft in)		
Depth at 50% at TOP (ft in)		
Depth at 75% at TOP (ft in)		
Depth at 25% at MIDDLE (ft in)		
Depth at 50% at MIDDLE (ft in)		
Depth at 75% at MIDDLE (ft in)		
Depth at 25% at BOTTOM (ft in)		
Depth at 50% at BOTTOM (ft in)		
Depth at 75% at BOTTOM (ft in)		
Distance marked-off (ft)		
Flow time #1 (sec)		
Flow time #2 (sec)		
Flow time #3 (sec)		

R. Bank Dist (ft)	Depth (ft)	Velocity (ft/sec)		R. Bank Dist (ft)	Depth (ft)	Velocity (ft/sec)

Reason if flow not measured:

Poacher Hotline: 888-334-CALTIP (2258)

Additional Notes or Comments

Wildlife present? ☐ Non-contact recreation? (If present, describe below)

Field Observation Guidance and Standard Comments

Qualitative Measures:

Dominant Substrate:

Record the dominant substrate in the upstream reach of the sample location using one of the following categories:
(B) = boulder; (C) = cobble; (G) = gravel; (S) = sand; (F) = fines; (K) = cement

% Bank Vegetation:

Record the percent of the surface of both banks, upstream from your sample location, that you estimate to be covered by vegetation. This estimate applies only to plants and roots at the water's edge. *LEFT BANK = the bank on the left as you're looking upstream.*

% Shading:

Record the percent of the stream's surface (water surface), upstream from your sample location, that you estimate would be shaded if the sun were directly over the waterbody.

Other Notes:

Visually assess the stream corridor and comment on anything that you feel may directly affect or contribute to changes in water quality. Some standard comments and categories of observations are as follows:

- Weather (recent or current events): heavy rains, cold front, heat wave, etc.
- Water Color (as viewed in the bottle): yellow, green, brown, other (describe), or none.
- In-Stream Activity: construction, major erosion events, recent scour, or other (describe).
- Odors at the site: sulfides, sewage, petroleum, unidentifiable odor, or none.
- Foreign Matter: suspended matter, oily sheen, foam, or other debris.
- Biological Activity: Note the presence of birds, fish, mammals or invertebrates observed and record either a) true count up to 25, or b) estimate >25, >50, or >100.
- Trash: Bank and in-stream debris such as aerosol cans, batteries, plastics, bottles, furniture, potting containers, or irrigation tubing. Record the true number of items up to 10. Record greater than 10 items of trash as a range: 10-20, 20-30, etc. When quantifying trash consider what you see from the monitoring site looking about 30' upstream and downstream along the banks. If only a few items, specify what they are and consider removing them when small so we don't continue counting them each time we sample.
- Tidal influences: Record evidence of recent tidal surge or of possible salt-water influence.

Appendix E

Supporting Documents for Field Procedures

Appendix E

Attachment 1: Standard Operating Procedure for Flow Measurement

Current Measurement (Flow Measurement) Standard Operating Procedures Version Date 07/20/06

If conditions safely permit, current-meter measurements are best made by wading. Measurements are made by recording velocity and depth at increments across the channel. The channel cross section should be defined such that:

1. It is perpendicular to the direction of flow.
2. Velocity and depth measurements should be spaced apart such that no more than 10% of the flow passes through any one cross section.

For water depths less than 2.5 ft, velocities are measured at a depth equal to 0.6 times the depth of the water at the measurement location, which is the theoretical depth at which the velocity is equal to the depth-averaged velocity. For water depths greater than 2.5 ft, velocities are measured at 0.2 and 0.8 times the depth, and the average is calculated and assumed to be equal to the depth-averaged velocity.

While taking velocity measurements, field personnel should stand in a position that least affects the velocity of the water passing the current meter. That position is usually obtained by facing the bank so that the water flows against the side of the leg. The current meter should be placed ahead of and upstream from the feet. In all cases, the wading rod, to which the current meter is affixed, should be held in a vertical position with the meter parallel to the direction of flow while the velocity is being observed. Personnel should avoid standing in the water if their feet and legs occupy a significantly large percentage of a narrow cross section. In very small streams, measurements should be taken while standing on the bank or an elevated plank or other support, rather than in the water.

When the flow is too low for a reliable measurement of discharge by current meter, typically ≤ 1 in. deep, the discharge is determined by use of (1) a volumetric method of measurement or (2) the float method, both of which are described below.

VOLUMETRIC MEASUREMENTS

Some monitoring locations may be free-flowing, which allows for collection of the entire flowing stream of water into a container of known volume. The time it takes to fill the known volume is measured using a stopwatch and recorded on the field log. The time it takes to fill the container should be measured three times and averaged to ensure that the calculated discharge is representative. For free-flowing outfalls, the estimated flow rate, Q, is calculated by:

$$Q = (\text{Filled-container volume}) / (\text{Average time to fill container})$$

Float Measurements

The following information was adapted from the State of Washington Department of Ecology publication *A Citizen's Guide to Understanding and Monitoring Lakes and Stream*.

Measuring Stream Flow with a Simple Float

If a flow meter is not available or a rough estimate is adequate, one can measure flow by using a float. The float can be any buoyant object, such as an orange peel or a partially filled plastic water bottle. The object needs to be heavy enough so that about an inch of it is below the water line (don't use glass or any material that may cause problems if one can't retrieve the float after the measurement).

Measure off at least 50 feet along the bank of a straight section of stream. If possible, string a rope across each end of the 50-foot length.

1. Estimate the cross sectional area of the stream at one of these ends by using the total stream width and the average depth (calculate the average depth from depths measured at 1- to 2-foot intervals).

   total width (ft) x average depth (ft) = area (ft^2)

2. Release the float at the upstream end of the 50-foot length. Using a stopwatch, record the time it takes the float to reach the downstream end of the 50-foot length (if the float moves too fast for an accurate measurement, measure off 75 or 100 feet instead of 50). Repeat the measurement two more times for a total of three float time measurements.

3. Calculate the velocity as distance traveled divided by the average amount of time it took the float to travel the distance. If the distance measured along the bank is 50 feet and the orange took an average of 100 seconds to travel the 50-foot distance, then the velocity is 0.5 ft/sec.

   50 ft/100 sec = 0.5 ft/sec

4. Correct for the surface versus mid-depth velocity by multiplying the surface velocity by 0.85.

   0.5 ft/sec x 0.85 = 0.43 ft/sec

5. Calculate the discharge in cubic feet per second (cfs) by multiplying velocity (ft/sec) by the cross-sectional area (ft^2) of the stream.

   0.43 ft/sec x 10.73 ft^2 = 4.62 cfs

Appendix E

Attachment 2: Standard Operating Procedure for Water Sample Collection

MONITORING EVENT PREPARATION

Monitoring event preparation includes preparation of field equipment, placing bottle orders, and contacting the necessary personnel regarding site access and schedule. The following steps shall be completed two weeks prior to each sampling event:

1. Contact laboratories to order containers and to coordinate sample transportation details.
2. Confirm scheduled monitoring date with field crew(s) and set-up sampling day itinerary, including sample drop-off.
3. Prepare equipment (see **Table 1**).
4. Prepare container labels and apply to containers.
5. Prepare the monitoring event summary and field log sheets to indicate the type of field measurements, field observations, and samples to be collected at each of the monitoring sites.
6. Verify that field measurement equipment is functioning properly (*i.e.*, check batteries, calibrate, etc.)
7. Check tide chart, determine low tide times, and note them in the field logs for tidally influenced sites. Plan site sampling order to prioritize sampling tidally influenced sites to align with low tide as much as possible.

Table 1 provides a checklist of field equipment to prepare prior to each sampling event.

Table 1. Field Equipment Checklist

X	Project QAPP	X	Tape Measure
X	Sample Containers plus Extras with Extra Lids	X	Paper Towels or Rags in a Box
X	Pre-Printed and Extra Labels	X	Safety Equipment
X	Event Summary Sheets (including calibration logs)	X	First Aid Kit
X	Field Log Forms	X	Cellular Telephone
X	Chain of Custody Forms	X	Gate Keys
X	Bubble Wrap	X	Hip Waders
X	Coolers w/ Ice	X	Plastic Trash Bags
X	New Powder-Free Nitrile Gloves	X	Distilled/DI Wash Bottles
X	Pens	X	Blank Water
X	Stopwatch	X	Sealable Plastic Bags

X	Field Measurement Equipment and Calibration Standards	X	Grab Pole
X	Camera	X	Clean Secondary Container(s)

Monitoring Event Summary and Post Event Summary

A monitoring event summary sheet shall be produced for the sampling crew prior to each sampling event. The event summary sheet shall outline sampling requirements at each monitoring site, including a list of samples to be collected and quality control (QC) sample collection requirements. This summary will provide guidance to help field crews prepare for and track sample collection during each event. Additionally, the event summary sheet will list required containers and processing and storage requirement.

A post monitoring event summary report will be produced by the field crew subsequent to each monitoring event. This summary will serve as a guide for quality assurance personnel to qualify data. The post event summary will contain chain-of-custody (COC) forms submitted with samples and field log sheets.

Bottle Order/Preparation

Sample container orders will be placed with the appropriate analytical laboratory at least two weeks prior to each sampling event. Containers will be ordered for all water samples, including quality control samples, as well as extra containers in case the need arises for intermediate containers or a replacement. The containers must be the proper type and size and contain the appropriate preservative for the specified laboratory analytical methods.

The field crew must inventory sample bottles upon receipt from the laboratory to ensure that an adequate number of bottles has been provided to meet the analytical requirements for each monitoring event. After each event, any bottles and tubing used to collect water samples will be cleaned by the laboratory and either picked up by or shipped to the field crew.

Sample Bottle Labeling

All samples will be pre-labeled before each sampling event to the extent practicable. Pre-labeling sample bottles and jars simplifies field activities, such that only sample collection time and personnel need to be recorded while in the field. Custom labels will be produced using blank water-proof labels. This approach will allow the monitoring site and analytical constituent information to be entered in advance and printed as needed prior to each monitoring event.

Labels will be applied to the appropriate sample containers in a dry environment, as labels usually do not adhere to wet bottles. The labels will not be applied to container caps. Field labels shall contain the following information:

- Program Name
- Station ID
- Sample ID
- Collection Date
- Collection Time
- Sampling Personnel
- Analytical Requirements
- Preservation Requirements
- Laboratory Conducting Analysis

SAMPLE COLLECTION

Sampling Technique

Samples will be collected in a manner that minimizes the possibility of sample contamination. These sampling techniques are summarized below:

- Samples are collected only into rigorously pre-cleaned sample bottles.
- At least two field staff wearing clean powder-free nitrile gloves are required to assist as a sample crew member.
- Clean, powder-free nitrile gloves are changed whenever something not known to be clean has been touched.
- To reduce the potential for contamination, sample collection personnel must adhere to the following rules while collecting samples:
    1. Smoking is prohibited.
    2. Never sample near a vehicle, running or otherwise.
    3. During wet weather events avoid allow rainwater to drip from any rain gear or any other surface into sample bottles.
    4. Do not eat or drink during sample collection.
    5. Do not breathe, sneeze, or cough in the direction of an open sample bottle.

Water Sample Collection

There are three confirmation steps that must be completed before water sample collection can begin:

1. Determine whether there is continuous flow at the site and,

Determine whether water is moving in the correct direction. The potential exists for monitoring sites to lack discernable flow. Sampling stagnant, ponded, or extremely low flow water may generate non-representative data. Extremely low flow is defined as water that cannot be sampled without disturbing the channel bottom while using a zip top plastic bag as an intermediate container. There is also the potential at some monitoring sites for water to back up from the main water body or have its natural flow direction reversed by tides. Tidally influenced sites should be visited as close to low tide as is feasible. To ensure that representative samples are collected, sites monitored under the guidance of this QAPP should be assessed for the previously listed conditions and sampled (or not sampled) accordingly:

- Stagnant, ponded, or extremely low flow as defined above should **NOT** be sampled. The field log should be completed for non-water quality data (including data and time of site visit) and the site conditions should be photo-documented.
- Flowing water (i.e., flow determined by visual observation, floating objects, flow meter data, and photo-documented assessment of conditions immediately upstream and downstream of monitoring site) **SHOULD** be sampled.

Grab samples will be collected at approximately mid-stream, mid-depth at the location of greatest flow (where feasible) by direct submersion of the sample container. This is the preferred method for grab sample collection. However, due to monitoring site

configurations and safety concerns, direct filling of sample containers may not always be feasible, especially during wet events. Monitoring site configuration will dictate grab sample collection technique. Grab samples will be collected directly into the appropriate containers as outlined in the Project QAPP.

The grab sample techniques that may be employed are described below.

Direct Submersion: Hand Technique

Where practical, all grab samples will be collected by direct submersion at mid-stream, mid-depth using the following procedures:

1. Wear clean, power-free nitrile gloves when handling bottles and lids. Change gloves if soiled or if the potential for cross-contamination occurs from handling sampling materials or samples.
2. Use pre-labeled sample containers as described in the Sample Bottle Labeling section.
3. Remove lid, submerge bottle to mid-stream/mid-depth, fill the bottle, and replace lid.
4. Place sample on ice.
5. Collect remaining samples, including quality control samples, if needed, using the same protocols described above.
6. Complete the COC form, record sample collection, and deliver to appropriate laboratory.

Intermediate Container Technique

Samples for which the introduction of a secondary container is acceptable, and which will be collected from an open channel, may be collected with the use of a specially cleaned intermediate container following the steps listed below. A secondary container could include a container of similar composition to the sample container or pre-cleaned pitcher of the same material as the sample container.

1. Wear clean, powder-free nitrile gloves when handling bottles and lids. Changes gloves if soiled or if the potential for cross-contamination occurs from handling sampling materials or samples.
2. Use pre-labeled sample containers as described in the Sample Bottle Labeling section.
3. Submerge intermediate container to mid-stream, mid-depth, fill container, and pour off into individual sample bottles.
4. Place sample on ice.
5. Collect remaining samples, including quality control samples, if needed, using the same protocols described above.
6. Complete the COC form, record sample collection, and deliver to appropriate laboratory.

FIELD MEASUREMENTS AND OBSERVATIONS

Field measurements required by the Project QAPP will be collected and observations made at each monitoring site after a sample is collected. Field measurements typically include flow, pH, temperature, dissolved oxygen, and specific conductivity. Temperature, pH, dissolved oxygen, and specific conductivity measurements will be collected at approximately mid-stream, mid-depth at the location of greatest flow (if feasible). Field probes shall be lowered to mid-depth and readings recorded on the field log for that monitoring site. All field measurement results and comments on field observations will be recorded on a field log.

Flow measurements will be collected using a velocity meter or estimated at each monitoring site after a sample is collected. When a velocity meter is unavailable, or flow is not sufficiently deep to use a velocity meter, depth, width, and velocity will be estimated to provide an estimate of flow. Depth will be estimated by using the average of several depth measurements taken along the channel. Width will be measured by extending a tape measure from one side of the bank to the other. Velocity will be estimated by measuring the time it takes a floating object (e.g., stick, orange) to travel a known distance.

If at any time the collection of field measurements by wading appears to be unsafe, then field crews will not attempt to collect mid-stream, mid-depth measurements. Rather, field measurements will be made either directly from a stable, unobstructed area at the channel edge, or by using a telescoping pole and intermediate container to obtain a sample for field measurements and for filling sample containers.

In addition to field measurements, observations shall be made at each monitoring site. Observations will include color, odor, floating materials, as well as observations of contact and non-contact recreation. All comments on field observations will be recorded on a field log sheet.

FIELD PROTOCOLS

Field crews (2 persons per crew, minimum) will only be mobilized for sampling when weather conditions and flow conditions are considered to be safe. For safety reasons, sampling will be scheduled to occur during daylight hours, when possible. Sampling events will proceed in the following manner:

1. Before leaving the base of operations, confirm the number and type of sample bottles, as well as the complete equipment list.
2. Proceed to the first monitoring site.
3. Record the general information on the field log sheet.
4. Collect the samples indicated on the event summary sheet in the manner described in the Project QAPP. Collect additional volume and blank samples for field-initiated Quality Control (QC) samples, as necessary. Place filled sample containers in coolers and carefully pack and ice samples as described in the Project QAPP. Using the log sheet, confirm that all appropriate bottles were filled.
5. Collect field measurements and observations, and record on the field log sheet.
6. Repeat the procedures in steps 3, 4, and 5 for each of the remaining monitoring sites.

7. Complete the COC forms using the field logs sheets.
8. After sample collection is completed, deliver and/or ship samples to the appropriate laboratory on the same day as sample collection.

Appendix E

Attachment 3: Standard Operating Procedure for Fish Tissue Collection

Fish Tissue Collection SOP

Version Date 04/04/2011

Tissue Sample Collection

Fish species collected for TMDL development included arroyo chub and Santa Ana sucker. The Santa Ana sucker is federally listed as a threatened species and therefore, will not be collected for fish tissue analysis. Some fish species noted as abundant or common in the Santa Clara River Estuary that are likely targets for collection include: arroyo chub, mosquitofish, fathead minnow, and common carp. Other species not listed above may be collected if they are species known to be consumed by people in the area, within the size range typically kept for consumption, and are predatory or bottom-feeding species.

Total length (longest length from tip of tail fin to tip of nose/mouth) and fork length should be measured and recorded in the field. Scale samples should be collected for aging purposes.

Sampling Protocols

Either the California Department of Fish and Wildlife (CDFW) or a local environmental consulting firm with knowledge of resident species will be contracted to perform sample collection.

Tissue monitoring will involve the field-collection of fish and the obtaining and storing of fish tissue samples to be analyzed for trace levels of target organics, using protocols detailed in CDFG's (2000) standard operating procedures for fish tissue sample collection and preparation. These protocols are summarized below.

Fish will be collected using gear appropriate to the collection site and the species being targeted. Sampling gear may include electrofishing boats, backpack electrofishers, seine nets, gill nets, trap nets, hook and line, or other equipment as required. Specimens are collected as individuals for larger species and as bulk samples (100 g minimum sample size) for small species requiring whole body tissue analysis.

The preferred species to be collected will be species of the highest trophic level at a given location. Efforts will be made to collect fish of a variety of sized for each species collected, but all within the typical size range selected by anglers. Efforts also will be made to collect and freeze more samples than the target number to be initially analyzed, thereby providing opportunity to conduct subsequent rounds of tissue analysis, if appropriate.

Fish taken for the sample are held alive within a circulating live well (e-boat) or a stainless steel bucket (backpack e-fishing, seine netting, etc.) until they are to be processed. Specimens are counted (when practical), measured/recorded for fork length (FL/total length (TL) (fin fish only), and packaged (after being humanely dispatched) in extra-heavy duty aluminum foil (dull side against specimen). When possible, individual

specimens are labeled to correspond to their physical data on the data sheets. Packaged specimens are then frozen and stored on dry ice for transport.

Data sheets include date/time of sampling, site location information, equipment used, effort, specimen data (Spp., FL/TL), additional species captured, and any pertinent field notes.

Individual fish will be wrapped in organic-free Teflon™ sheets and frozen for transportation to the laboratory. The tissue samples are prepared in the laboratory using non-contaminating techniques in a clean room environment. For larger species and individual fish, tissue samples for analysis will consist of a 200-g skin-on fillet sample excised from individual fish (except for catfish and other scaleless species, which are usually prepared as skin-off fillets) (USEPA, 2000). If multiple fish are required to achieve a 200-g sample, smaller, equal-sized skin-on tissue samples from similar size individuals may be combined for a composite sample of 200 g. However, the preferred method is to collect an adequate size sample from individual fish. Collection, handling and storage of tissue samples will be performed in a manner to assure the collection of representative, uncontaminated tissue chemistry samples. Briefly, the key aspects of quality control associated with fish tissue sample collection are as follows:

- Field personnel must be trained in the proper use of sample collection gear and will be able to distinguish acceptable versus unacceptable samples in accordance with pre-established criteria.
- Field personnel must be thoroughly trained to recognize and avoid potential sources of sample contamination (e.g., engine exhaust, winch wires, deck surfaces, ice used for cooling).
- Samplers and utensils that come in direct contact with the sample will be made of non-contaminating materials (e.g., glass, high-quality stainless steel, and/or Teflon™) and will be thoroughly cleaned between sampling stations.
- Sample containers will be pre-cleaned and of the recommended type.

In general, sampling protocols are consistent with national guidance developed by USEPA (2000). The minimum number of fish tissue samples to be initially analyzed for each sampling site is three, but five samples is recommended. These samples may be from the same or different fish species. For any single composite sample of smaller fish, the total length of the smallest fish should be no less than 75% of the total length of the largest fish. If, after expending a reasonable amount of effort, the field crew is unable to catch the required number of fish of an appropriate size at a location, CDFG staff or the sampling contractor will contact the sampling plan manager of the VCAILGMP to discuss whether sampling should continue at that location.

Appendix E

Attachment 4: Standard Operating Procedure for Sediment Sampling

Freshwater Sediment Sampling
Standard Operating Procedures

Version Date 07/20/06

Sampling Event Preparation

Sample event preparation includes preparation of field equipment, placing bottle orders, and contacting the necessary personnel regarding site access and schedule. The following steps shall be completed two weeks prior to each sampling event:

1. Contact laboratories to order jars and to coordinate sample transportation details.
2. Confirm scheduled sampling date with field crew, and set-up sampling day itinerary including sample drop-off.
3. Prepare equipment (see Table 1).
4. Prepare sample labels and apply to jars.
5. Prepare the sampling event summary and field log sheet to indicate the type of field measurements, field observations and samples to be taken at each of the stations.
6. Calibrate field measurement equipment.

Table 1 provides a checklist of field equipment to prepare prior to each sampling event.

Table 1. Field Equipment Checklist

X	Project QAPP	X	Camera	X	4-mil Poly Bags
X	Sample Bottles and Jars w/ Pre-Printed and Extra Labels	X	Tape Measure	X	Stainless Steel Sampling and Mixing Spoons
X	Event Summary Sheets (including calibration logs)	X	Paper Towels or Rags in a Box	X	Stainless Steel Mixing Bowl
X	Field Log Forms	X	Safety Equipment		
X	Chain of Custody Forms	X	First Aid Kit		
X	Bubble Wrap	X	Cellular Telephone		
X	Coolers w/ Ice	X	Gate Keys		
X	New Powder-Free Nitrile Gloves	X	Hip Waders		
X	Pens	X	Plastic Trash Bags		
X	Watch	X	Distilled/DI Wash Bottles		
X	Field Measurement Equipment and Calibration Standards	X	Blank Water		

Sampling Event Summary and Post Event Summary

A sampling event summary sheet shall be produced for the sampling crew prior to each sampling event. The event summary sheet shall outline sampling requirements at each sampling station, including a list of samples to be collected and QA/QC requirements. This summary will act as a guide to help field crews prepare for and track sample collection during each event.

A post sampling event summary will be produced by the sampling crew subsequent to each sampling event. This summary will act as a guide for quality assurance personnel to

qualify data. The post event summary will contain: chain-of-custody (COC) forms submitted with samples and field log sheets.

Bottle Order/Preparation

Sample bottle orders will be placed with the appropriate analytical laboratory at least two weeks prior to each sampling event. Bottles and jars will be ordered for all water and sediment samples, including quality control samples as well as extra bottles in case of a need for intermediate containers or replacement. The bottles must be the proper size and material, and contain preservatives as appropriate for the specified laboratory analytical methods.

The field crew must inventory sample bottles upon receipt from the laboratory to assure that adequate bottles have been provided to meet analytical requirements for each sampling event. After each sampling event, any bottles and tubing used to collect water samples and the equipment used for collecting sediment samples shall be cleaned by the laboratory and either picked up by or shipped to the sampling crew.

Sample Bottle Labeling

All samples will be pre-labeled before each sampling event to the extent practicable. Pre-labeling sample bottles and jars simplifies field activities; leaving only sample collection time and date, and the names of sampling personnel to be filled out in the field. Custom labels will be produced using blank water-proof labels. This approach will allow the stations and analytical constituent information to be entered into the computer program in advance, and printed as needed prior to each sampling event.

Labels shall be applied to the appropriate bottles and jars in a dry environment; attempting to apply labels to sample bottles after filling may cause problems, as labels usually do not adhere to wet bottles. The labels shall be applied to bottles and jars rather than to the caps. Field labels shall contain the following information:

• Program Name • Station ID • Sample ID	• Date • Time • Sampling Personnel	• Analytical Requirements • Preservation Requirements • Laboratory Conducting Analysis

Sample Collection

Sampling Technique

Samples will be collected in a manner that minimizes the possibility of sample contamination. These sampling techniques are summarized below:

- Samples are collected only into rigorously pre-cleaned sample bottles.
- At least two persons, wearing clean powder-free nitrile gloves at all times, are required on a sampling crew.
- Clean, powder-free nitrile gloves are changed whenever something not known to be clean has been touched.

- To reduce the potential for contamination, sample collection personnel must adhere to the following rules while collecting samples:
  1. No smoking.
  2. Never sample near a vehicle, running or otherwise.
  3. During wet weather events avoid allowing rain water to drip from rain gear or any other surface into sample bottles.
  4. Do not eat or drink during sample collection.
  5. Do not breathe, sneeze or cough in the direction of an open sample bottle.

Sediment Sample Collection

Collection of in-stream sediment samples for chemical analysis and toxicity testing shall be conducted according to methods developed by the USGS and outlined in *Guidelines for Collecting and Processing Samples of Stream Bed Sediment for Analysis of Trace Elements and Organic Contaminants for the National Water Quality Assessment Program* (1994). Sediment sampling stations will encompass a section of the reach approximately 100 meters in length upstream from water-column sampling stations. However, this definition may vary based on conditions at each sampling station. Sediment sampling stations should contain 5 to 10 wadeable depositional zones. Depositional zones are defined as locations in streams where the energy regime is low and fine-grained particles accumulate in the stream bed. Depositional zones include areas on the inside bend of a stream or areas downstream from obstacles such as boulders, islands, sand bars, or simply shallow waters near the shore.

The purpose of selecting numerous wadeable depositional zones is to collect a representative sample of each reach. Each depositional zone identified at a sampling station shall be subsampled several times and composited in the field for chemical analysis, or at the lab for toxicity analysis. The number of subsamples collected at each depositional zone shall be based on the size of the zone. If all of the depositional zones within a reasonable distance of the water sampling station have dried, samples should be collected from a partially wetted zone. Wetted zones include areas near the active stream channel.

Sediment samples will be collected using pre-cleaned stainless steel trowels from the top two to three centimeters (cm) of sediment. Collection of sediments in the top two to three cm is a common approach to conducting sediment sampling to conduct sediment toxicity testing. This approach was used in sediment toxicity studies conducted by the Southern California Coastal Water Research Project (SCCWRP) Bight Program and the State Water Resources Control Board Bay Protection and Toxic Cleanup Program (BPTCP), which led to the sediment toxicity listing in the lagoon.

All sediment samples to be analyzed for organic constituents shall be collected as composite samples as described below. Sediment samples analyzed for toxicity will be composited at the toxicity laboratory. Composite samples shall be collected directly into a clean polyethylene bag, mixed, and then placed into the appropriate jars as outlined in the Project QAPP. Sediment sampling techniques that may be employed are described below.

Sediment Sample Collection for Chemical Analysis

1. Wear clean powder-free nitrile gloves when handling bottles and lids. Change gloves if soiled or if the potential for cross-contamination occurs from handling sampling materials or samples;
2. Use pre-labeled sample containers as described in the Sample Bottle Labeling section;
3. Approach first depositional zone from downstream, care should be taken to minimize the disturbance of sediments;
4. Collect a sample of the top layer (3 cm) of sediment carefully with stainless steel trowel. Avoid loosing the fines when lifting the sample;
5. Place sample into a clean polyethylene bag;
6. Repeat collection in the deposition zone 5 times, if feasible;
7. Move to the next depositional zone and repeat collection;
8. Upon gathering sediment at each depositional zone in the reach, mix the composite sample in the polyethylene bag and fill sample containers used for chemical analysis;
9. Place sample on ice; and,
10. Fill out COC form, note sample collection on field form, and deliver to appropriate lab.

Sediment Sample Collection for Toxicity Analysis

1. Wear clean powder-free nitrile gloves when handling bottles and lids. Change gloves if soiled or if the potential for cross-contamination occurs from handling sampling materials or samples;
2. Use pre-labeled sample containers as described in the Sample Bottle Labeling Section;
3. Approach first depositional zone from downstream, care should be taken to minimize the disturbance of sediments;
4. Collect a sample of the top layer (3 cm) of sediment carefully with stainless steel trowel. Avoid loosing the fines when lifting the sample;
5. Place sample into a clean polyethylene bag,
6. Collect sample for chemical analysis, as described immediately above;
7. Move to the next depositional zone and repeat collection;
8. Repeat collection with sample spoon in each of the deposition zones until a total volume of 60 L of sample has been collected;
9. Place sample on ice; and,
10. Fill out COC form, note sample collection on field form, and deliver to appropriate lab.

Field Measurements and Observations

Field measurements will be collected and observations made at each sampling station

after a sample is collected. Field measurements typically include flow, pH, temperature, dissolved oxygen, and conductivity. Temperature, pH, dissolved oxygen, and conductivity measurements will be collected at approximately mid-stream, mid-depth at the location of greatest flow (if feasible). Field probes shall be lowered to mid-depth and readings recorded on the field log for that station. All field measurement results and comments on field observations will be recorded on a field log.

Flow measurements will be collected using a velocity meter or estimated at each sampling station after a sample is collected. When a velocity meter is unavailable or flow is not sufficiently deep to use a velocity meter, depth, width, and velocity will be estimated to provide an estimate of flow. Depth will be estimated by using the average of several depth measurements taken along the channel. Width will be measured by extending a tape measure from one side of the bank to the other. Velocity will be estimated by measuring the time it takes a floating object (*e.g.,* stick, orange) to travel a known distance.

If at any time the collection of field measurements by wading appears unsafe, do not attempt to collect mid-stream, mid-depth measurements. Rather, collect field measurements from a stable, unobstructed area at the reach's edge or use an expandable pole and intermediate container to obtain a sample for field measurements.

In addition to field measurements, observations shall be made at each sampling station. Observations will include color, odor, floating materials as well as observations of contact and non-contact recreation. All comments on field observations will be recorded on a field log.

Field Protocols

Field crews (2 persons per crew, minimum) will only be mobilized for sampling when weather conditions and flow conditions are considered to be safe. For safety reasons, sampling will occur only during daylight hours, when possible. Sampling events should proceed in the following manner:

1. Before leaving the sampling crew base of operations, confirm number and type of sample bottles as well as the complete equipment list.
2. Proceed to the first sampling station.
3. Fill-out the general information on the field log sheet.
4. Collect the samples indicated on the event summary sheet in the manner described in this study plan. Collect additional volume and blank samples for field-initiated QA/QC samples, if necessary. Place bottles and/or jars in the coolers, carefully pack and ice samples. Double check against the log sheet that all appropriate bottles were filled.
5. Collect field measurements and observations, and record on the field log sheet.
6. Repeat the procedures in steps 3, 4, and 5 for each of the remaining sampling stations.
7. Complete the chain of custody forms using the field notes.
8. After sample collection is completed, deliver and/or ship samples to appropriate laboratory on the same day as sample collection.

Appendix F

Example Chain-of-Custody Form

Larry Walker Associates
3585 Maple Stree, Suite 232 Ventura, CA 93003 805-585-1835

CHAIN-OF-CUSTODY RECORD

Date: Lab ID:

Destination Lab: FGL Environmental
David Terz
Address: 853 Corporation St.
Santa Paula, CA 93060
Phone: 805-392-2024
Fax: 805-525-4172

Sampled By:

LWA Contact: Michael Marson

Project: VCAILG Monitoring Program

Client Sample Id	Sample Date	Sample Time	Sample Matrix	Container #	Container Type	Container Pres.	Notes

Sender Comments:
1) Prior approval must be obtained if methods or RLs other that those specified in the QAPP are used.
2) Please email a PDF copy of the COC on completion of the sample login to Amy Storm at amys@lwa.com.

Relinquished By (1):
Signature:
Print:
Organization:
Date: Time:

Relinquished By (2):
Date: Time:

Laboratory Comments:

Received By (1):
Signature:
Print:
Organization:
Date: Time:

Received By (2):
Date: Time:

Crew: SCR1