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[Revision 1]

VENTURA COUNTY AGRICULTURAL
IRRIGATED LANDS GROUP (VCAILG)

Monitoring and Reporting Plan (MRP)

submitted to:
LOS ANGELES REGIONAL WATER QUALITY CONTROL BOARD

prepared by:
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On behalf of the
VENTURA COUNTY AGRICULTURAL IRRIGATED LANDS GROUP (VCAILG)

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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), which was adopted by the Los Angeles Regional Water Quality Control Board on November 3, 2005. On October 7, 2010, a new *Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands within the Los Angeles Region* (Order No. R4-2010-0186) was adopted. The VCAILG Monitoring and Reporting Plan (MRP) has three basic purposes, as specified in the *Conditional Ag Waiver*:

1. To monitor the discharge of wastes in irrigation return flows, tile drains, stormwater, and waters of the state and identify waste sources;
2. Where discharges of waste cause or contribute to exceedances of Water Quality Benchmarks or cause pollution or nuisance, to submit a Water Quality Management Plan (WQMP) to implement targeted practices to reduce or eliminate the discharges of waste; and
3. Report results and other required information on an annual basis.

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, including suspended sediment, nutrients, and pesticides. Data collected at each 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 (WQMP), which will outline specific steps that will be taken to reduce pollutant loading to receiving waters and ultimately attain water quality objectives through the use of best management practices. VCAILGMP data will be used to determine monitoring program effectiveness at meeting program objectives.

Background

On October 7, 2010, the Los Angeles Regional Water Quality Control Board adopted the *Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands within the Los Angeles Region* (Order No. R4-2010-0186). The Order states that the intent of the *Conditional Ag Waiver* is "to establish a regulatory program for irrigated agricultural lands that requires Dischargers to attain Water Quality Benchmarks through a process that quantitatively assesses the in-stream water quality impacts of discharges and, when necessary to attain Water Quality Benchmarks, requires Dischargers to implement effective management practices." In order to comply with the *Conditional Ag Waiver*, water quality monitoring must be conducted and the monitoring results compared to water quality benchmarks and applicable TMDL load allocations. Exceedances of these benchmarks indicate that management practices are in need of implementation or improvement to better protect water quality, triggering the requirement to develop a Water Quality Management Plan (WQMP). The WQMP outlines specific steps that will be taken to reduce pollutant loading to receiving waters and ultimately attain water quality objectives through the use of best management practices.

The VCAILG was initially formed to comply with the 2005 *Conditional Ag Waiver* and is continuing for 2010 *Conditional Ag Waiver* compliance. The VCAILG is a county-wide Discharger Group. Group members represent irrigated acreage located throughout Ventura County watersheds, including the Calleguas Creek, Santa Clara River, Ventura River and coastal watersheds. A map of the main Ventura County watersheds 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. Of the estimated 259,055 acres of agricultural land in the county, there are approximately 93,000 acres of irrigated land.[1] The Calleguas Creek Watershed contains the highest number of irrigated acres (roughly 46,000), followed by the Santa Clara River Watershed (approximately 32,000), Ventura River Watershed (approximately 6,400), and finally the Oxnard Plain/Coastal Watershed (approximately 5,400).[2]

Agriculture is a major industry in Ventura County, generating over $1.62 billion in gross sales for 2009, placing the county 8th in a statewide ranking of California's 58 counties. Ventura County was ranked as one of the top five counties in California for eleven agricultural commodities in 2009. [3]

Various monitoring programs and the Annual Monitoring Reports, submitted by VCAILG during the 2005 *Conditional Ag Waiver* period have documented exceedances of water quality benchmarks that could cause or contribute to water quality impairments. The 2008 Federal Clean Water Act Section 303(d) list of impaired water bodies in the Los Angeles Region identifies agriculture as a potential source of pollutants; most commonly, pesticides and nutrients. The implementation of the 2005 *Conditional Ag Waiver* by the members of VCAILG has resulted in extensive water quality monitoring, grower education and outreach, and implementation of numerous new and/or improved management practices to improve and protect water quality in Ventura County. The 2010 *Conditional Ag Waiver* was adopted as a continuation of the original program to leverage past successes and continue improving water quality through education, monitoring, and the use of a targeted, iterative BMP implementation process.

[1] The estimates of acreage of agricultural and irrigated agricultural land in the county: U.S. Department of Agriculture-National Agricultural Statistics Service, *2007 Census of Agriculture*. Washington D.C.: Updated September 2009.

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

[3] Ventura County Agricultural Commissioner. *Ventura County Crop Report 2009*. July 27, 2010.

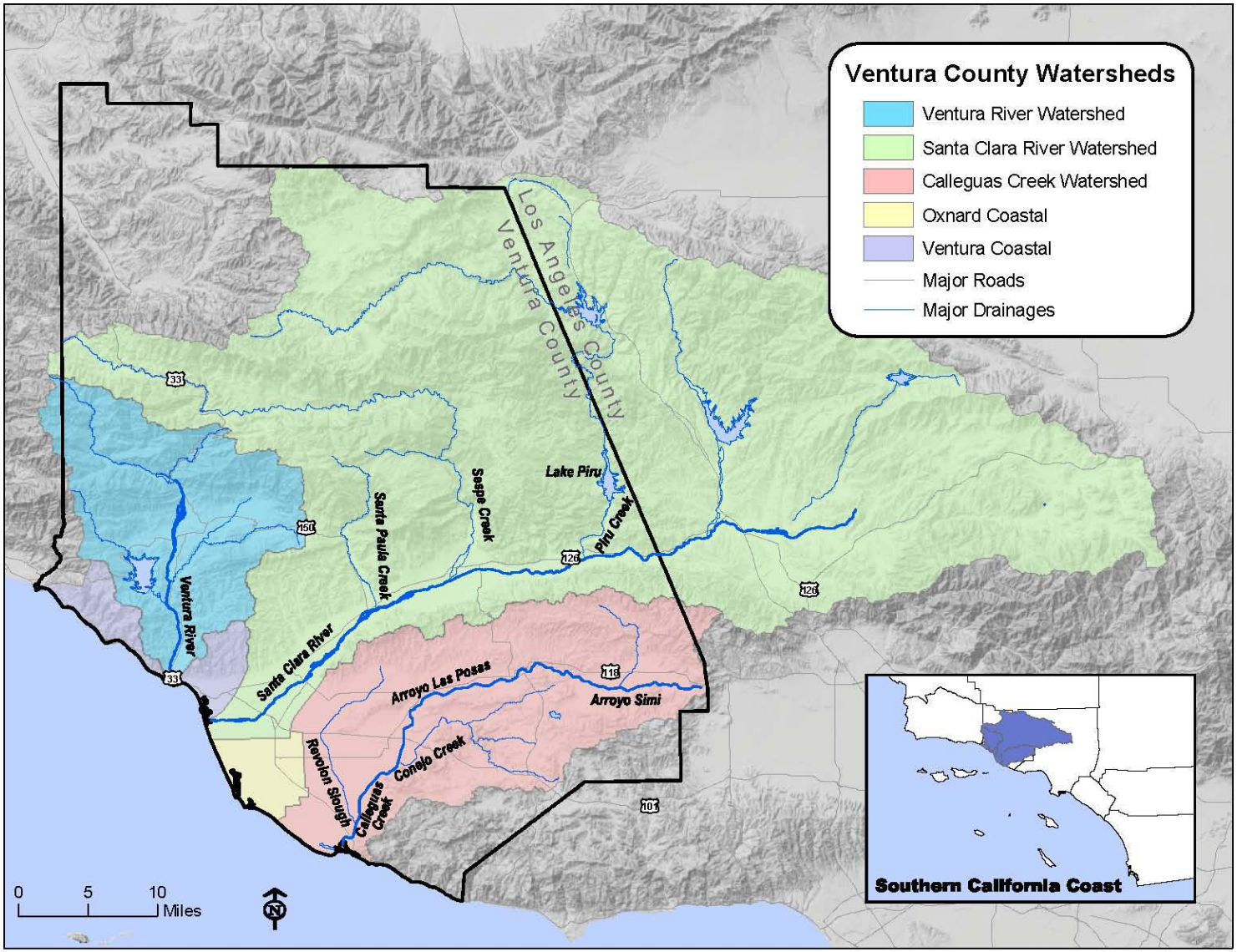

Figure 1. Ventura County Watersheds

Past and On-Going Monitoring Efforts

The following three tables summarize monitoring completed by the CCWTMP at agricultural land use sites and the VCAILGMP during the 2005 *Conditional Ag Waiver* period. A complete evaluation and review of the data collected by these monitoring programs can be found in the following reports:

- VCAILG 2007 Annual Monitoring Report (LWA, 2008)
- VCAILG 2008 Annual Monitoring Report (LWA, 2009)
- VCAILG 2009 Annual Monitoring Report (LWA, 2010
- VCAILG 2010 Annual Monitoring Report (LWA, 2011)
- Calleguas Creek Watershed TMDL Compliance Monitoring Program First Year Annual Monitoring Report (LWA, 2010)
- Calleguas Creek Watershed TMDL Compliance Monitoring Program Second Year Annual Monitoring Report (LWA, 2011)

Lists of the individual constituents monitored at each monitoring site can also be found in the previously mentioned reports or the approved QAPP documents for each of the monitoring programs.

Table 1. Summary of Monitoring Conducted by the VCAILGMP for the 2005 *Conditional Ag Waiver*

Site ID	Event 1 Dry	Event 2 Dry	Event 3 Wet	Event 4 Wet	Event 5 Wet	Event 6 Dry	Event 7 Dry	Event 8 Wet	Event 9 Dry	Event 10 Wet	Event 11 Dry
01T_ODD2_DCH	WQ, Tox	WQ, Tox	WQ	WQ, Tox	WQ	WQ	WQ, Tox	WQ	WQ, Tox	WQ	WQ, Tox
01T_ODD3_ARN	WQ, Tox	WQ, Tox	WQ	WQ, Tox	WQ	WQ	FTO	WQ	WQ, Tox	WQ	WQ, Tox
02D_BROOM	NS	WQ	WQ	WQ	WQ	WQ	WQ	WQ	NS	WQ	NS
02D_CSUCI	NS	NS	NS	NS	NS	NS	NS	WQ	NS	NS	NS
04D_ETTG	WQ	WQ	WQ	WQ	WQ	WQ	WQ	WQ	WQ	WQ	WQ
04D_LAS	WQ	WQ	WQ	WQ	WQ	WQ	WQ	WQ	WQ	WQ	WQ
05D_LAVD	WQ, Tox	WQ	NS	NS	WQ	NS	NS	WQ	NS	WQ	NS
05D_SANT_VCWPD	WQ	WQ	WQ	WQ	WQ	WQ	WQ	WQ	WQ	WQ	WQ
05D_SANT_BKGD	NS	NS	NS	NS	WQ	NS	NS	NS	NS	WQ	NS
05T_HONDO	NS	NS	WQ	WQ, Tox	WQ	NS	NS	WQ	NS	NS	NS
06T_FC_BR	NS	NS	WQ	WQ, Tox	WQ	NS	NS	WQ	NS	WQ	WQ, Tox
06T_LONG, LONG2, & LONG3	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
9BD_GERRY	NS	NS	NS	NS	NS	NS	NS	WQ	NS	WQ	NS
OXD_CENTR	WQ	WQ	WQ	WQ	WQ	WQ	WQ	WQ	WQ	WQ	WQ
S02T_ELLS	NS	NS	WQ	WQ, Tox	WQ	NS	WQ	WQ	NS	WQ	WQ, Tox
S02T_TODD	WQ, Tox	WQ	WQ	WQ, Tox	WQ	WQ	FTO	WQ	WQ, Tox	WQ	WQ, Tox
S03D_BARDS	NS	NS	WQ	NS	WQ	NS	NS	WQ	NS	WQ	NS
S03T_BOULD	Tox	WQ	WQ	WQ, Tox	WQ	WQ	FTO	WQ	WQ, Tox	WQ	NS
S03T_TIMB	NS	NS	WQ	WQ, Tox	WQ	NS	NS	WQ	NS	WQ	NS
S04T_HOPP	NS	NS	WQ	WQ, Tox	WQ	WQ	NS	WQ	NS	WQ	NS
S04T_TAPO	WQ, Tox	WQ, Tox	WQ	WQ, Tox	WQ	WQ	WQ, Tox	WQ	WQ, Tox	WQ	WQ, Tox
S04T_TAPO_BKGD	NS	WQ	NS	NS	NS	WQ	NS	NS	NS	NS	NS
VRT_SANTO	NS	NS	NS	WQ, Tox	WQ	NS	NS	NS	NS	WQ	NS
VRT_THACH	NS	NS	NS	WQ, Tox	WQ	NS	NS	NS	NS	WQ	NS

WQ = General Water Quality Constituents, Nutrients, and Pesticides Tox = Toxicity
NS = Not Sampled; insufficient flow present FTO = Fish Tissue Sampling Offset (site not visited)

Table 2. Summary of Monitoring Conducted by the CCWTMP at Agricultural Land Use Sites – Year 1

Site ID	Event 1 Dry	Event 2 Dry	Event 3 Wet	Event 4 Dry	Event 5 Wet	Event 6 Dry
01T_ODD2_DCH	WQ, N, P, M	WQ, N, P, M	WQ, N, P, M	WQ, N, P, M	WQ, N, P, M	WQ, N, P, M
02D_BROOM	NS	NS	NS	WQ, N, P, M	WQ, N, P, M	WQ, N, P, M
04D_WOOD	NS	WQ, N, P, M	WQ, N, P, M	WQ, N, P, M	WQ, N, P, M	WQ, N, P, M
05D_SANT_VCWPD	WQ, N, P, M	WQ, N, P, M	WQ, N, P, M	WQ, N, P, M	WQ, N, P, M	WQ, N, P, M
06T_FC_BR	NS	WQ, N, P	WQ, N, P	NS	WQ, N, P	NS
07D_HITCH_LEVEE_2	WQ, N, P	NS	WQ, N, P	NS	WQ, N, P	NS
9BD_GERRY	NS	NS	WQ, N, P, M	NS	WQ, N, P, M	NS

WQ = General Water Quality Constituents P = Pesticides & PCBs N = Nutrients M = Metals
NS = Not Sampled; insufficient flow

Table 3. Summary of Monitoring Conducted by the CCWTMP at Agricultural Land Use Sites – Year 2

Site ID	Event 9 Dry	Event 12 Dry	Event 14 Wet	Event 16 Wet	Event 17 Dry	Event 20 Dry
01T_ODD2_DCH	WQ, N, P, M	WQ, N, P, M	WQ, N, P, M	WQ, N, P, M	WQ, N, P, M	WQ, N, P, M
02D_BROOM	NS	WQ, N, P, M	WQ, N, P, M	WQ, N, P, M	WQ, N, P, M	NS
04D_WOOD	NS	WQ, N, P, M	WQ, N, P, M	WQ, N, P, M	WQ, N, P, M	WQ, N, P, M
05D_SANT_VCWPD	WQ, N, P, M	WQ, N, P, M	WQ, N, P, M	WQ, N, P, M	WQ, N, P, M	WQ, N, P, M
06T_FC_BR	NS	WQ, N, P	WQ, N, P	WQ, N, P	NS	NS
07D_HITCH_LEVEE_2	NS	NS	WQ, N, P	WQ, N, P	WQ, N, P	NS
9BD_GERRY	NS	NS	WQ, N, P, M	WQ, N, P, M	NS	NS

WQ = General Water Quality Constituents P = Pesticides & PCBs N = Nutrients M = Metals
NS = Not Sampled; insufficient flow

Table 4. Summary of Monitoring Conducted by the CCWTMP at Agricultural Land Use Sites – Year 3 to date

Site ID	Event 22 Dry	Event 23 Dry	Event 24 Wet	Event 25 Dry	Event 25 Wet	Event 26 Dry
01T_ODD2_DCH	WQ, P, M	WQ, P, M	WQ, P, M	WQ, P, M	WQ, P, M	Event has not yet occurred.
02D_BROOM	NS	WQ, P, M	WQ, P, M	WQ, P, M	WQ, P, M	
04D_WOOD	NS	WQ, P, M	WQ, P, M	WQ, P, M	WQ, P, M	
05D_SANT_VCWPD	WQ, P, M	WQ, P, M	WQ, P, M	WQ, P, M	WQ, P, M	
06T_FC_BR	WQ, P	NS	WQ, P	NS	WQ, P	
07D_HITCH_LEVEE_2	NS	WQ, P	WQ, P	NS	WQ, P	
9BD_GERRY	NS	NS	WQ, P, M	NS	WQ, P, M	

WQ = General Water Quality Constituents P = Pesticides & PCBs N = Nutrients M = Metals
NS = Not Sampled; insufficient flow

Ventura County Pesticide Use

Compilations of pesticide usage for 2010 have not yet been posted by the Department of Pesticide Regulation (DPR); therefore, the following summary is for pesticide usage in Ventura County during 2009. Table 5 lists the top five pesticides by pounds of active ingredient, used within Ventura County. Included in Table 6 are the commodities grown within the county that have the highest pesticide usage by pounds of active ingredient. Table 7 lists the five most frequently applied registered active ingredients in Ventura County during 2009.

Table 5. Top Pesticides Used in Ventura County – 2009

Chemical	Commodity	Pounds	# of Applications	Acres Treated
Chloropicrin	Strawberry	958,608	163	6,548
	Soil Fumigation	315,611	108	2,931
	Tomato	60,420	33	766
	Raspberry	40,153	22	298
	Peppers	11,382	2	217
Mineral Oil	Lemon	738,191	573	12,597
	Avocado	108,776	300	7,122
	Orange	14,546	25	1,514
	Apple	10,498	1	247
	Tangerine	3,335	15	498
Petroleum Oil	Lemon	566,675	369	11,668
	Avocado	5,299	24	292
	Tangerine	2,128	6	221
	Orange	856	4	20
Methyl Bromide	Soil Fumigation	254,347	79	1,318
	Strawberry	131,692	48	718
	Raspberry	71,087	21	257
	Tomato	48,933	28	647
	Nursery-outdoor flowers	10,103	23	47
Polyolyethyene Polyoxypropylene [1]	Strawberry	412,479	235	13,279
	Tomato	186	142	3,660
	Nursery-outdoor containers	120	188	1,893
	Avocado	87	20	1,013
	Lemon	22	6	65

1. Chemical is an adjuvant.

Table 6. Commodities with Highest Pesticide Usage – 2009

Commodity	Chemical	Pounds	# of Applications	Acres Treated
Strawberry	Chloropicrin	958,608	163	6,548
	Polyoxyethyene Polooxypropylene [1]	412,479	235	13,279
	1,3-Dichloropropene	313,271	61	3,124
	Metam-sodium	195,029	37	1,238
	Methyl Bromide	131,692	48	718
	All other active ingredients	474,782	7,896	369,509
Lemon	Mineral Oil	728,191	573	12,597
	Petroleum Oil, unclassified	566,675	369	11,668
	Petroleum Oil, paraffin based	54,461	68	2,059
	Glyphosate, isopropylamine salt	46,756	1,164	23,997
	Glyphosate, potassium salt	23,833	680	12,347
	All other active ingredients	88,908	3,015	77,752
Soil Fumigation/ Preplant	Chloropicrin	315,611	108	2,931
	Methyl Bromide	254,347	79	1,318
	Metam-sodium	86,752	11	487
	1,3-Dichloropropene	27,146	8	390
	Napropamide	1,516	27	1,516
	All other active ingredients	3,131	248	7,042
Tomato	Chloropicrin	60,420	33	766
	Methyl Bromide	48,933	28	647
	Neem Oil	34,477	163	10,900
	Sulfur	17,190	52	2,270
	Chlorothalonil	12,695	113	6,199
	All other active ingredients	55,544	2,321	118,661
Raspberry	Methyl Bromide	71,087	21	257
	Chloropicrin	40,153	22	298
	Lime-sulfur	17,496	90	625
	Petroleum distillates	12,024	212	1,373
	Malathion	4,681	113	1,393
	All other active ingredients	18,304	1,773	17,926

1. Chemical is an adjuvant.

Table 7. Five Most Frequently Applied Pesticides in Ventura County - 2009

Chemical	Pounds	# of Applications
Alpha (para-nonylphenyl) omega-hydroxypoly (oxyethylene)	26,082.01	5,235
Glyphosate, isopropylamine salt	88,650.10	2,119
Dimethylpolysiloxane	113,604.01	2,831
Imidacloprid	5,002.37	2,119
Abamectin	595.44	1,834

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, including suspended sediment, nutrients, and pesticides. Data collected will be compared with Water Quality Benchmarks to determine whether these benchmarks are being met. Water Quality Benchmarks include water quality objectives contained in the Basin Plan for the Los Angeles Region, criteria contained in the California Toxics Rule, and load allocations established through adopted Total Maximum Daily Loads (TMDLs) in local watersheds identified in Appendices 2 and 3 of the *Conditional Ag Waiver*. A benchmark exceedance will trigger development of a Water Quality Management Plan (WQMP), which will outline specific steps that will be taken to reduce pollutant loading to receiving waters and ultimately attain water quality objectives through the use of best management practices.

VCAILGMP data also may be used to assist CCWTMP with loading determinations from agriculture. Conversely, agricultural land use and receiving water data collected concurrently in the Calleguas Creek Watershed (CCW) through the CCW TMDL Monitoring Program (CCWTMP) or other regulatory programs (NPDES, Stormwater), may be evaluated to determine whether agricultural drainages in that watershed may be contributing to receiving water impairments, and will likely inform BMP implementation and effectiveness.

Monitoring Sites

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 are as follows:

1. Land use (primarily agricultural drainages);
2. Subwatershed representation;
3. Acres of agricultural irrigated lands represented;
4. Proximity to agricultural operations;
5. Previous or existing monitoring locations under the 2005 *Conditional Ag Waiver* or TMDL monitoring programs;
6. Drainage into waterbodies included on or proposed for the 303(d) list of impaired waterbodies;
7. Size and complexity of watershed;

8. Size and flow of waterbodies; and,
9. Safe access during dry and wet weather.

Monitoring sites were selected to best characterize agricultural inputs to receiving waters and are generally located at the lower ends of mainstem tributaries or agricultural drainages in areas associated with agricultural activity. In some cases, "background" sites are also located to aide in distinguishing agricultural inputs from other sources (i.e., landscape irrigation runoff). Background sites will be sampled only for chemical parameters when flow is present at the site they are tributary to.

Monitoring sites in the Calleguas Creek Watershed supplement monitoring performed under the CCWTMP and retain consistency with previous VCAILG sampling. Monitoring sites in the Santa Clara River and Ventura River Watersheds were selected to continue building on existing data previously collected by VCAILG.

Table 8 lists monitoring sites selected in each watershed and associated global positioning system (GPS) coordinates for sampling *Conditional Ag Waiver* Appendix 1, Table 1 constituents. Following that is Table 9, which lists the constituents and monitoring frequency for the sites in Table 8. Table 10 lists monitoring sites and associated global positioning system (GPS) coordinates for TMDL monitoring locations. Table 11 provides constituent and monitoring frequency information for TMDL sites that will be monitored under the VCAILGMP. TMDL sites not included in the table are part of the CCWTMP and are monitored quarterly for dry weather and during two storm events. Driving directions to each site are included in Appendix A.

Following the tables are figures showing sites in each watershed for *Conditional Ag Waiver* and TMDL monitoring programs. After the site location and topographical maps, are figures that show crops grown in the vicinity of each monitoring site. More detailed information regarding cultural and other management practices (*e.g.*, irrigation water sources, types of discharges) in each watershed is contained in the Notice of Intent (NOI). Used in conjunction with information contained in the following figures, information contained in the NOI can be used to identify practices that may contribute to water quality characteristics at a given monitoring site.

Table 8. VCAILGMP Monitoring Locations for *Conditional Ag Waiver* Constituents

Watershed/ Subwatershed	Site ID	Reach	Waterbody Type [1]	Site Location	GPS Coordinates [2] Latitude	GPS Coordinates [2] Longitude
Calleguas Creek/ Mugu Lagoon	01T_ODD3_ARN	1	T	Rio de Santa Clara/Oxnard Drain #3 at Arnold Rd.	34.123564	-119.156514
Calleguas Creek/ Calleguas Creek	02D_CSUCI [2]	2	B	02D_BROOM background site near CSUCI	34.159860	-119.049375
Calleguas Creek/ Revolon Slough	04D_ETTG	4	D	Discharge to Revolon Slough at Etting Rd.	34.161797	-119.091419
	04D_LAS	4	D	Discharge to Revolon Slough at S. Las Posas Rd.	34.134208	-119.079767
Calleguas Creek/ Beardsley Channel	05D_SANT_BKGD [2]	5	D	05D_SANT_VCWPD background site near the golf course.	34.263213	-119.111314
	05D_LAVD	5	T	La Vista Drain at La Vista Ave.	34.265950	-119.093589
	05T_HONDO	5	T	Hondo Barranca at Hwy. 118	34.263608	-119.057431
Calleguas Creek/ Arroyo Las Posas	06T_LONG2	6	T	Long Canyon at Balcom Canyon Rd. crossing	34.281721	-118.958565
Oxnard Coastal	OXD_CENTR	--	D	Central Ditch at Harbor Blvd.	34.220555	-119.254983
Santa Clara River	S02T_ELLS	2	T	Ellsworth Barranca at Telegraph Rd.	34.306805	-119.141275
	S02T_TODD	2	T	Todd Barranca at Hwy. 126	34.313584	-119.117095
	S03T_TIMB	3	T	Timber Canyon at Hwy. 126	34.370172	-119.020939
	S03T_BOULD	3	T	Boulder Creek at Hwy. 126	34.389578	-119.958738
	S03D_BARDS	3	D	Discharge along Bardsdale Ave. upstream of confluence with Santa Clara River	34.371535	-118.964470
	S04T_TAPO	4	T	Tapo Canyon Creek	34.401717	-118.723706
	S04T_TAPO_BKGD [2]	4	B	S04T_TAPO background site upstream of agricultural operations.	34.387316	-118.720451
Ventura River	VRT_THACH	--	T	Thacher Creek at Ojai Avenue	34.446719	-119.210893
	VRT_SANTO	--	T	San Antonio Creek at Grand Avenue	34.454455	-119.221723

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

Table 9. Constituents and Monitoring Frequency for the VCAILGMP

CONSTITUENT	FREQUENCY [1]
FIELD MEASUREMENTS	2 dry events; 2 wet events
Flow, pH, Temperature, Dissolved Oxygen, Turbidity, Conductivity	
GENERAL WATER QUALITY CONSTITUENTS (GWQC)	
Total Dissolved Solids (TDS), Total Suspended Solids (TSS), Hardness, Chloride, Sulfate	
NUTRIENTS	
Total Ammonia-N, Nitrate-N, Phosphate	
PESTICIDES	
Organochlorine Pesticides [2], Organophosphorus Pesticides [3], Pyrethroid Pesticides [4]	
METALS	
Dissolved Copper, Total Copper	
TRASH	
Trash observations	
AQUATIC CHRONIC TOXICITY	1 wet event; second dry event

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

Table 10. Monitoring Locations for Effective TMDLs

Watershed/ Subwatershed	Site ID	Reach	Waterbody Type [1]	Site Location	GPS Coordinates	
					Latitude	Longitude
Calleguas Creek/ Mugu Lagoon	01T_ODD2_DCH	1	T	Duck Pond/Oxnard Drain #2/Mugu Drain S. of Hueneme Rd.	34.1395	-119.1183
Calleguas Creek/ Calleguas Creek	02D_BROOM	2	D	Discharge to Calleguas Creek at Broome Ranch Rd.	34.1434	-119.0711
Calleguas Creek/ Revolon Slough	04D_WOOD	4	D	Agricultural drain on E. side of Wood Rd. N of Revolon	34.1707	-119.0960
	05D_SANT_VCWPD	5	D	Santa Clara Drain at VCWPD Gage #781	34.2425	-119.1114
Calleguas Creek/ Arroyo Las Posas	06T_FC_BR	6	T	Fox Canyon at Bradley Rd.	34.2646	-119.0115
Calleguas Creek/ Arroyo Simi	07D_HITCH_LEVEE_2	7	D	2nd corrugated pipe discharging on N. site of Arroyo Simi flood control levee off of Hitch Blvd.	34.2714	-118.9205
Calleguas Creek/ Conejo Creek	9BD_GERRY	9B	D	Drain crossing Santa Rosa Rd. at Gerry Rd.	34.2369	-118.9473
Santa Clara River Estuary	S01D_MONAR	1	D	Drain entering SCR Estuary at Monarch Lane between Harbor Blvd. and Victoria Ave.	34.2333	-119.2413
Santa Clara River	S02T_ELLS	2	T	Ellsworth Barranca at Telegraph Rd.	34.3068	-119.1413
Oxnard Coastal/ Channel Islands Harbor	CIHD_VICT	--	D	Discharge to Doris Drain at S. Victoria Ave.	34.2099	-119.2207

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

Table 11. Site Specific Monitoring Frequency and Constituents for TMDL Monitoring Performed Under the VCAILGMP

SITE ID	CONSTITUENT [1]	FREQUENCY
S01D_MONAR	Field Measurements TSS, toxaphene, chlordane, dieldrin (water)	2 dry events; 2 wet events
	Field Measurements Toxaphene, chlordane, dieldrin (filtered sediment)	2 wet events
S02T_ELLS	Toxaphene, chlordane, dieldrin (filtered sediment) [2]	2 wet events
Santa Clara River Estuary	Toxaphene, chlordane, dieldrin (fish tissue)	Every three years
CIHD_VICT	Field Measurements *E. coli*, enterococcus, total coliform, fecal coliform	2 dry events; 2 wet events

1. This table only lists constituents necessary for data comparison with TMDL load allocations that are not already collected at the specified site as part of the Table 9 VCAILGMP sampling.
2. Required TMDL constituents not listed in this table will already be collected as part of the *Conditional Ag Waiver* constituents listed in Table 1.

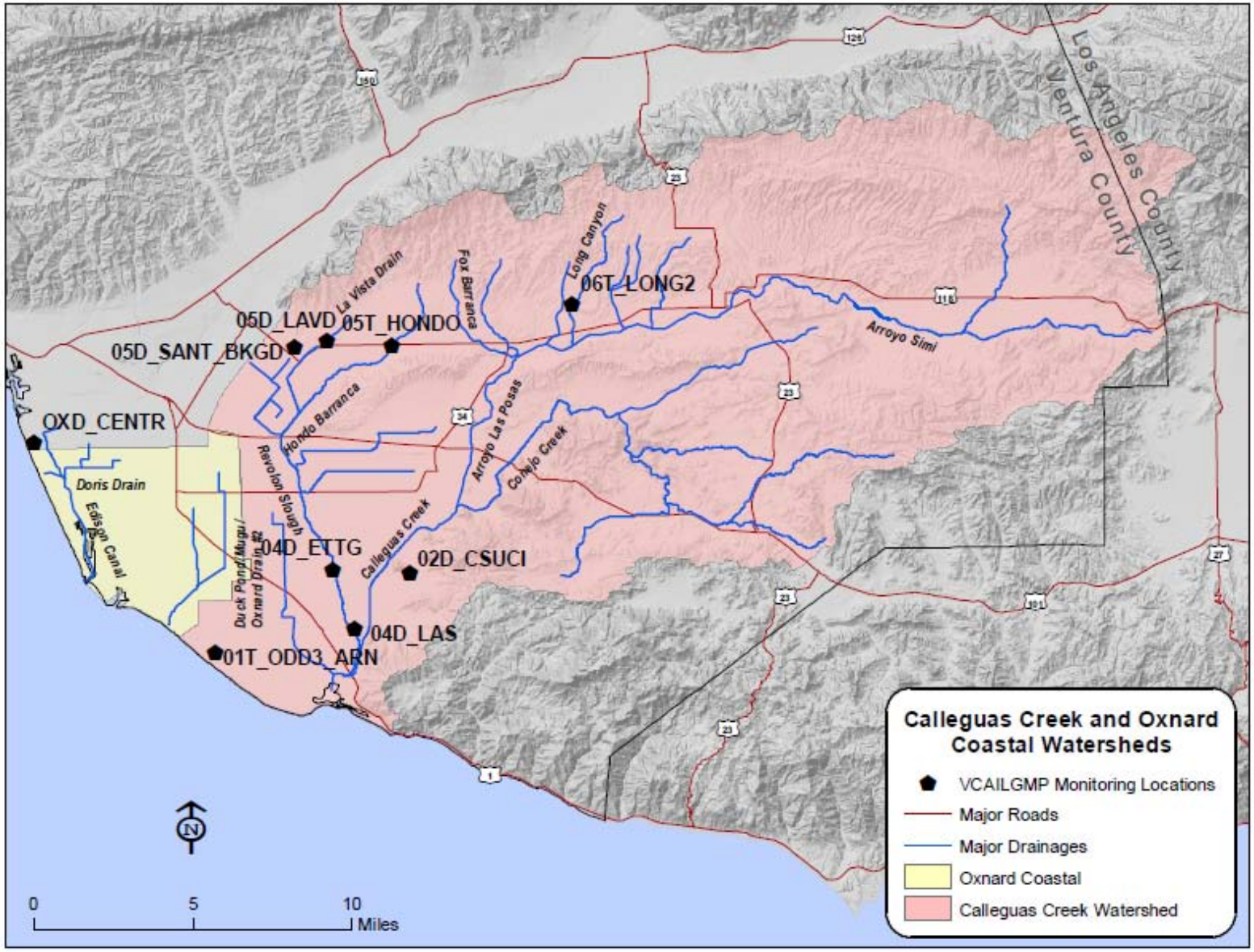

Figure 2. VCAILGMP Monitoring Sites in the Calleguas Creek/Oxnard Coastal Watersheds

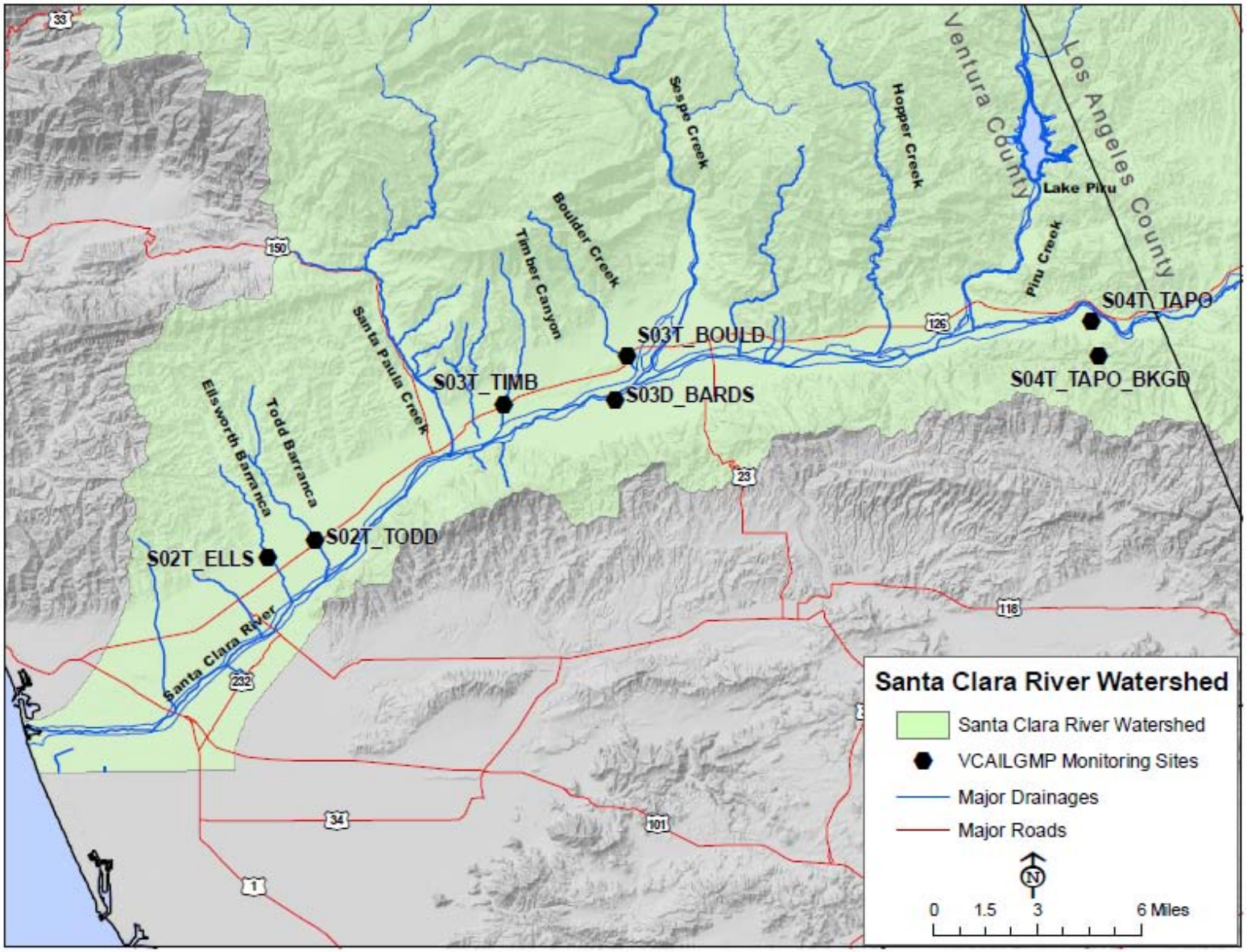

Figure 3. VCAILGMP Monitoring Sites Located in the Santa Clara River Watershed

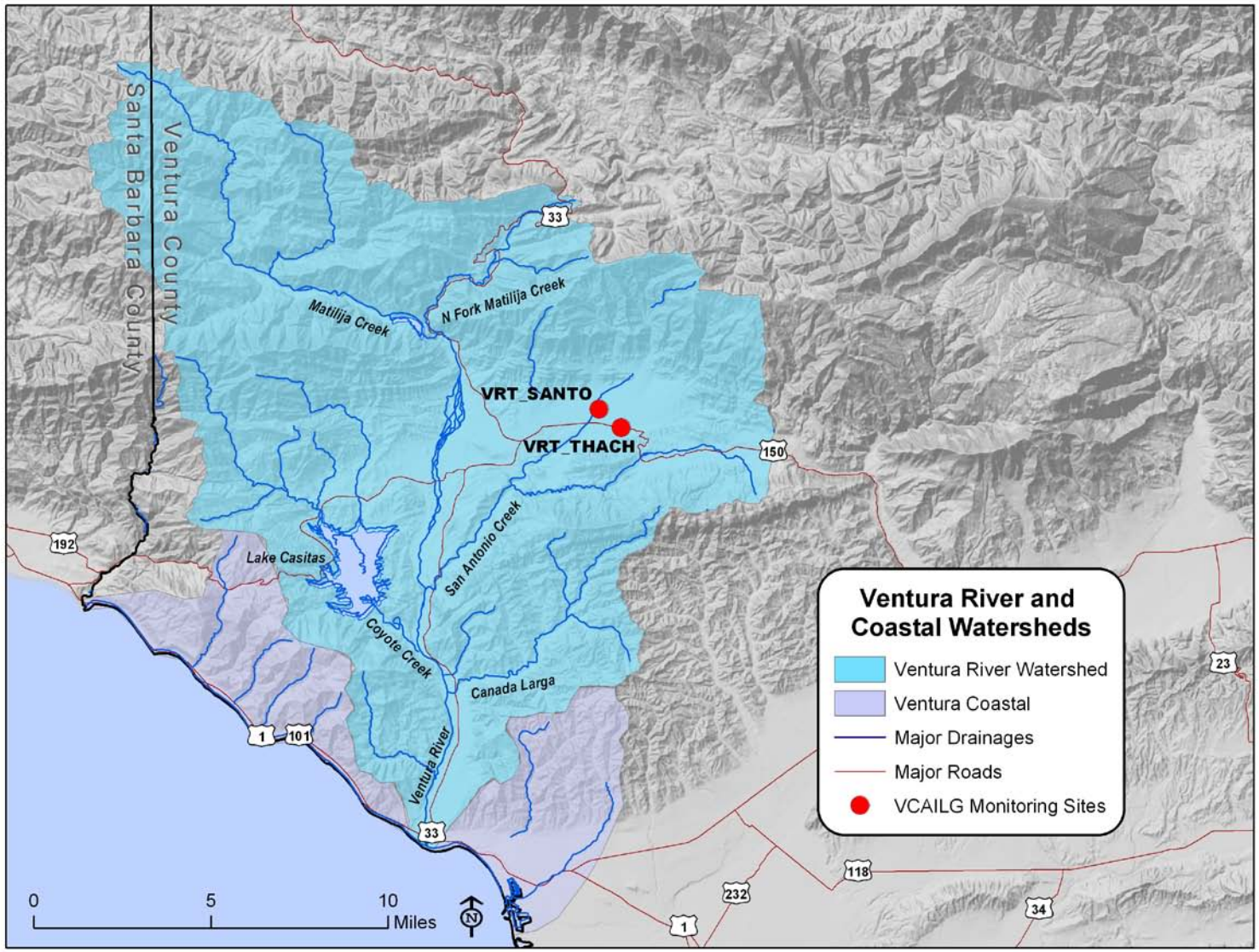

Figure 4. VCAILGMP Monitoring Sites Located in the Ventura River Watershed

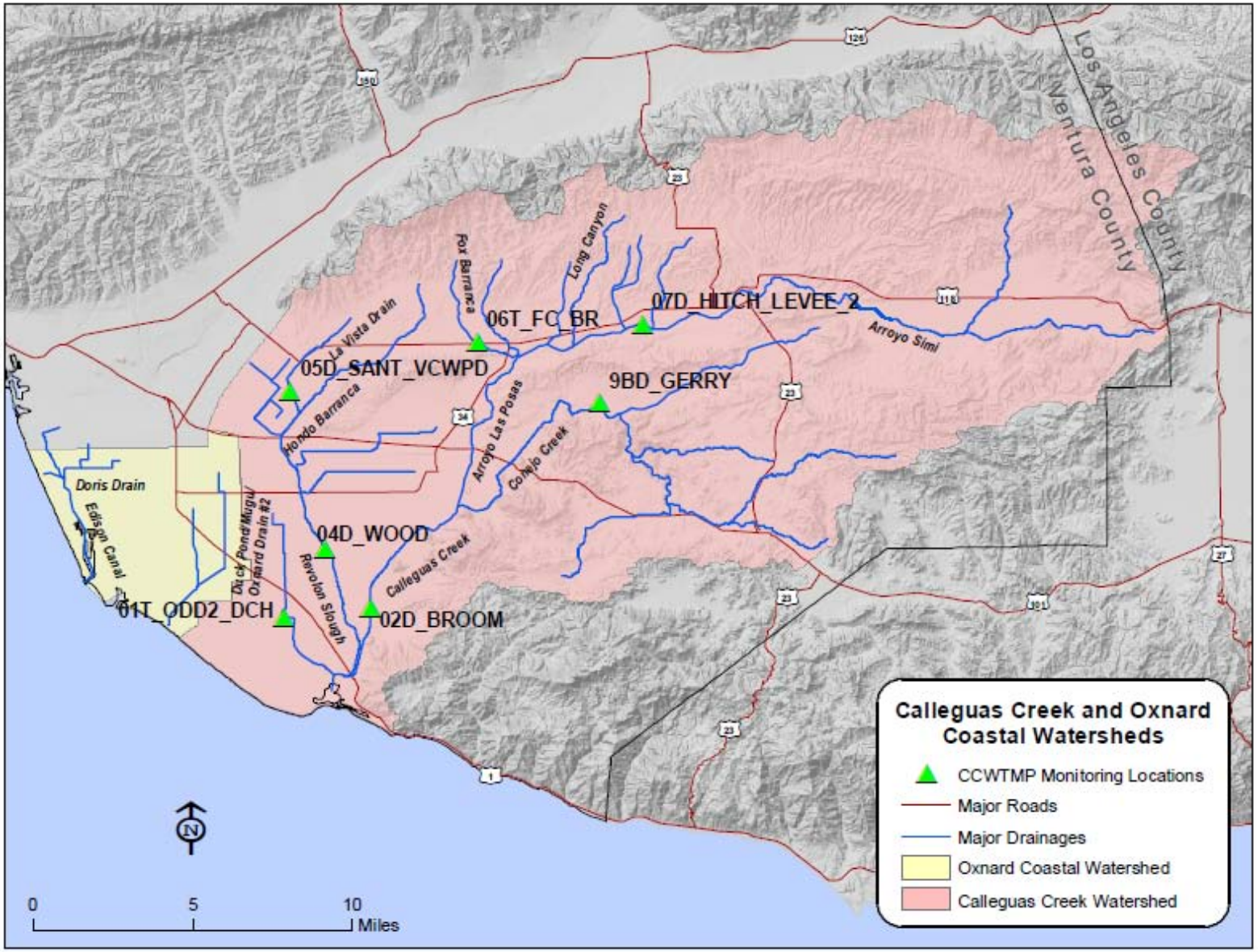

Figure 5. CCWTMP Monitoring Sites

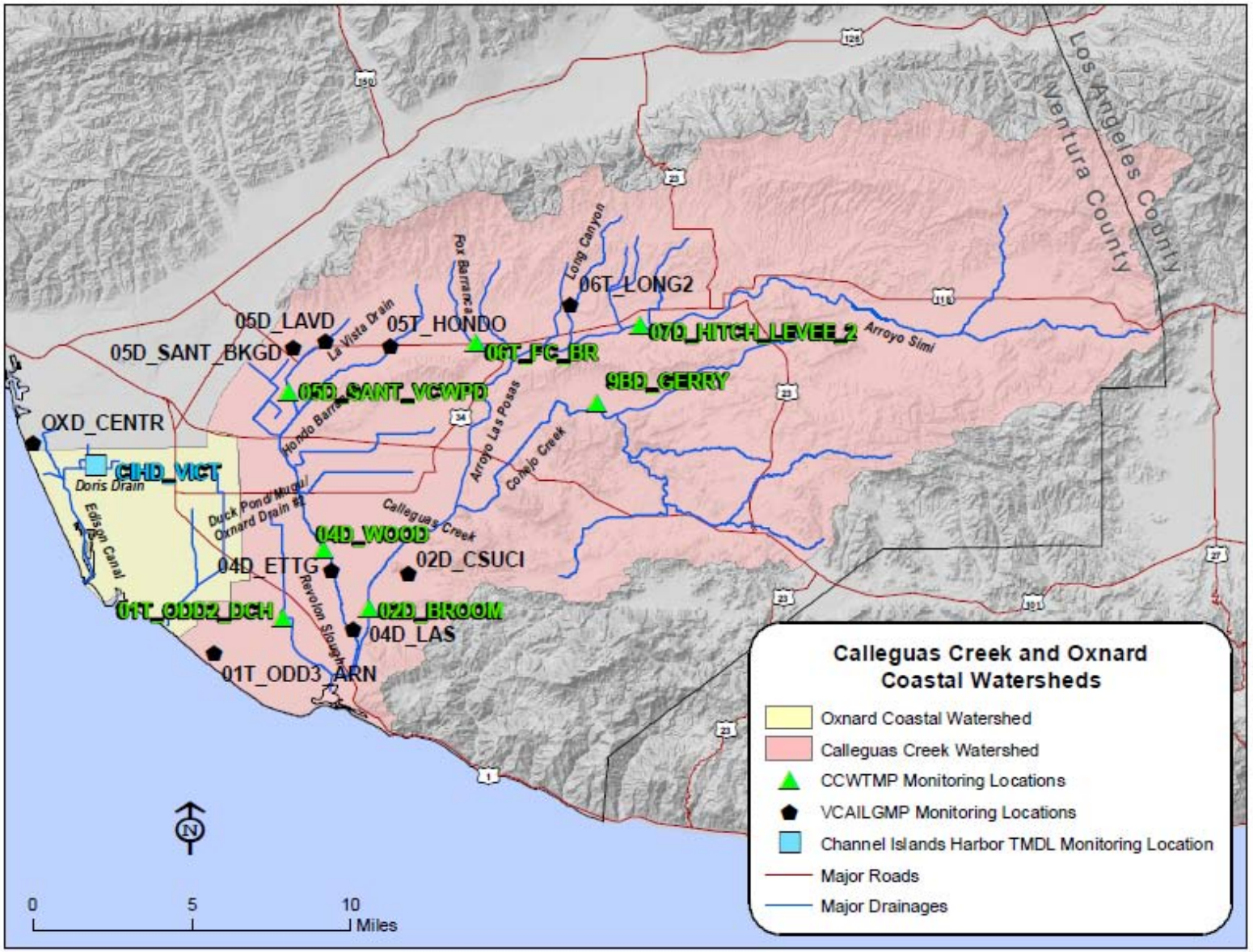

Figure 6. Calleguas Creek Watershed Monitoring Sites for All Programs

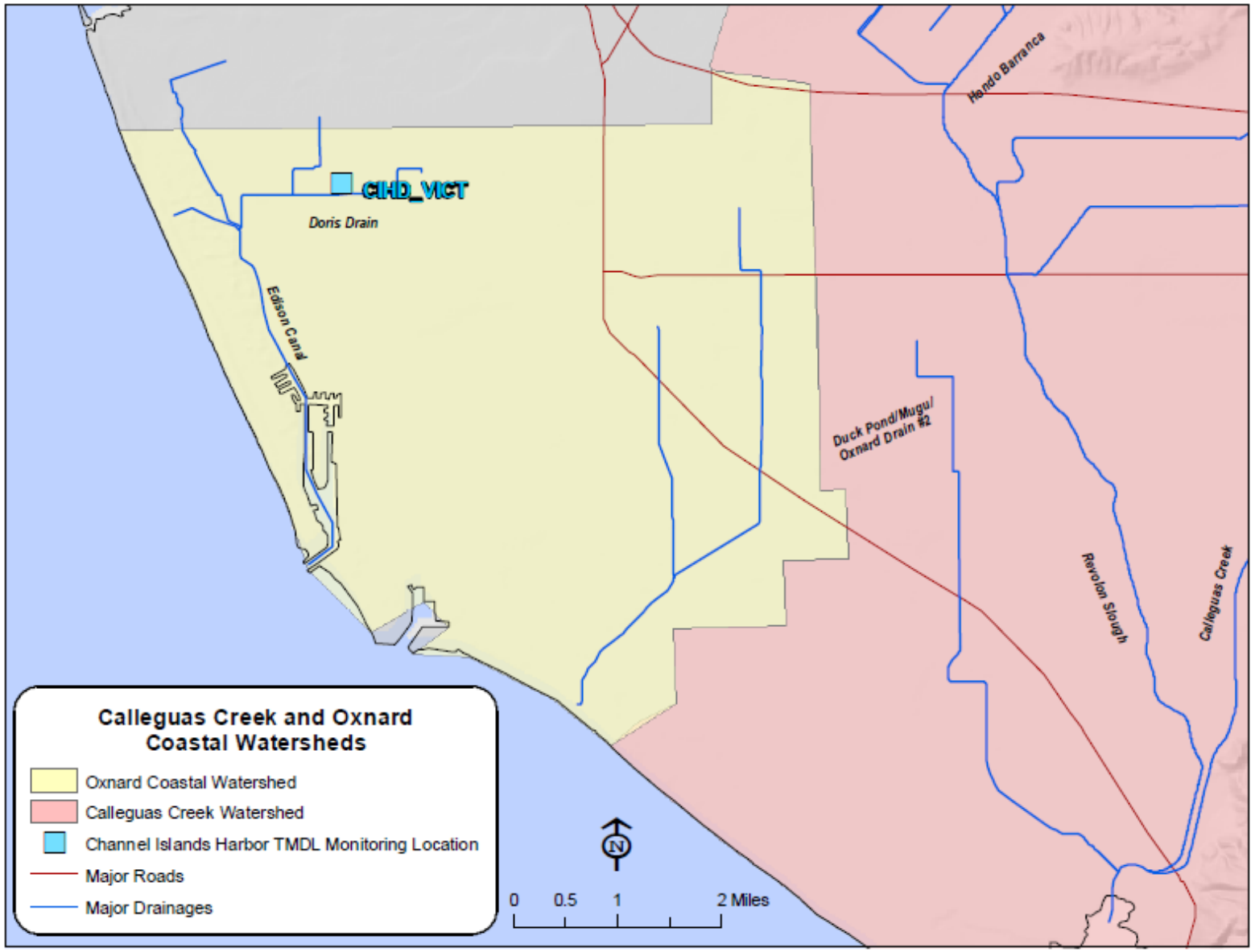

Figure 7. Channel Islands Harbor Bacteria TMDL Monitoring Site

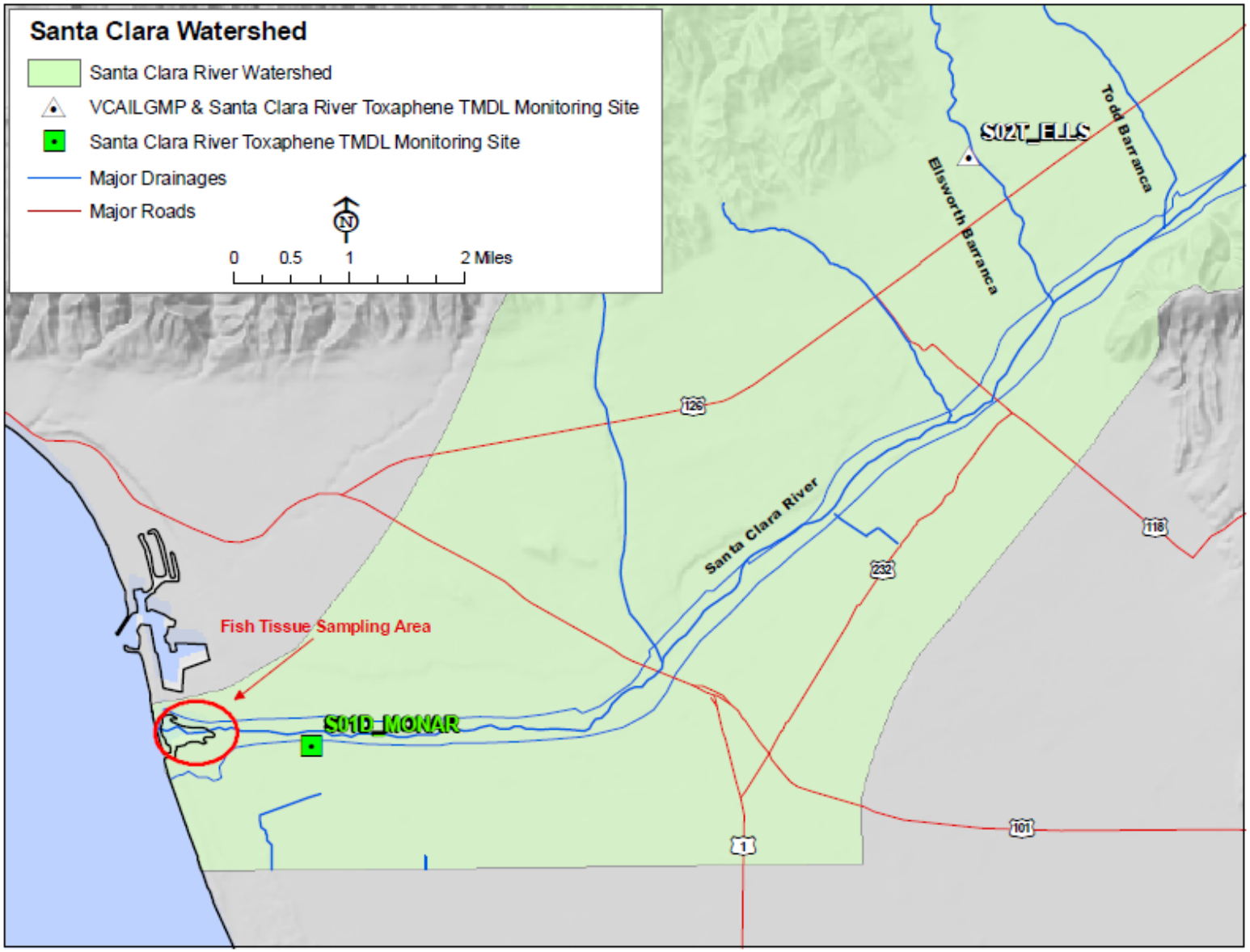

Figure 8. Santa Clara River Estuary Toxaphene TMDL Monitoring Sites

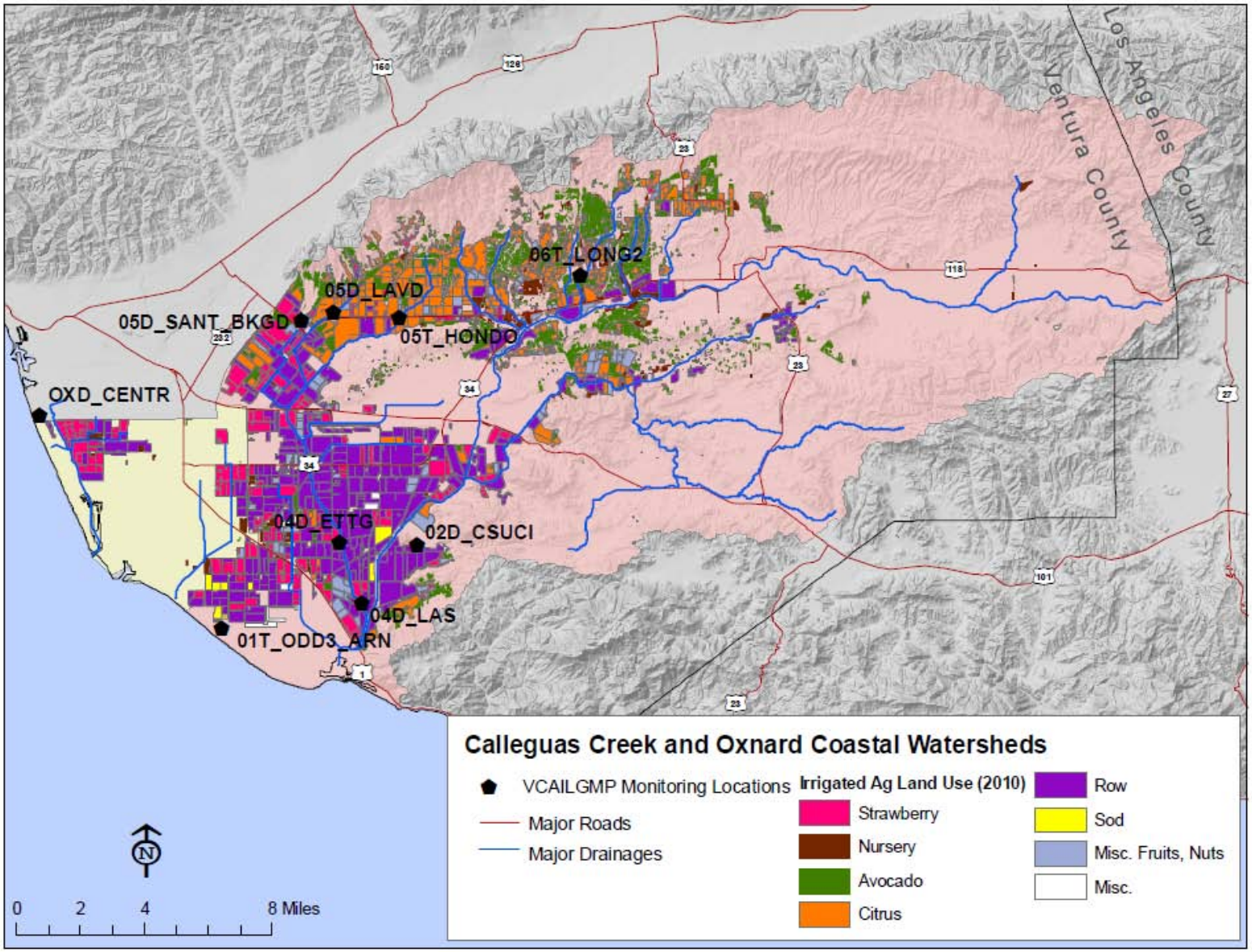

Figure 9. VCAILGMP Calleguas Creek/Oxnard Coastal Monitoring Sites and Agricultural Land Use

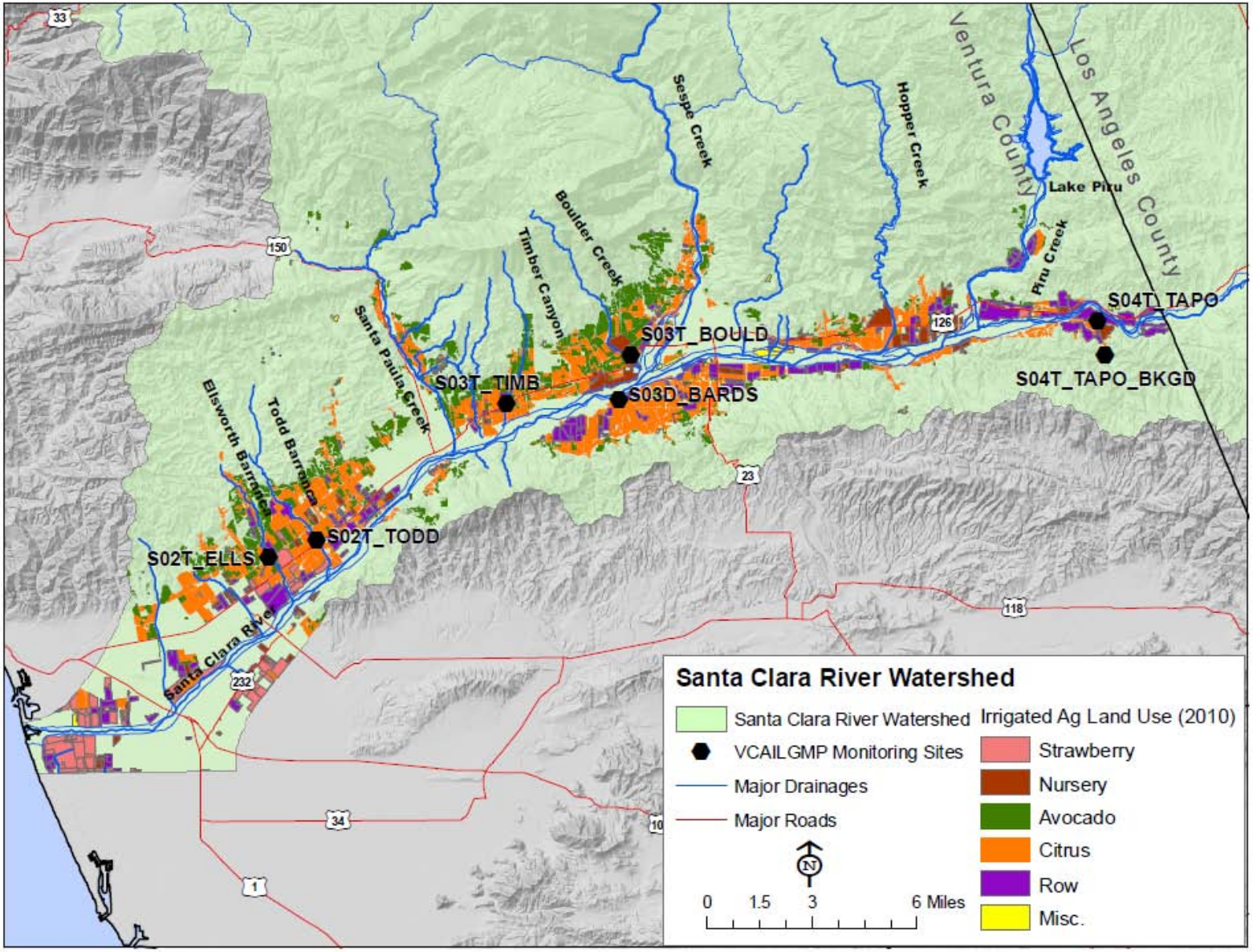

Figure 10. VCAILGMP Santa Clara River Watershed Monitoring Sites and Agricultural Land Use

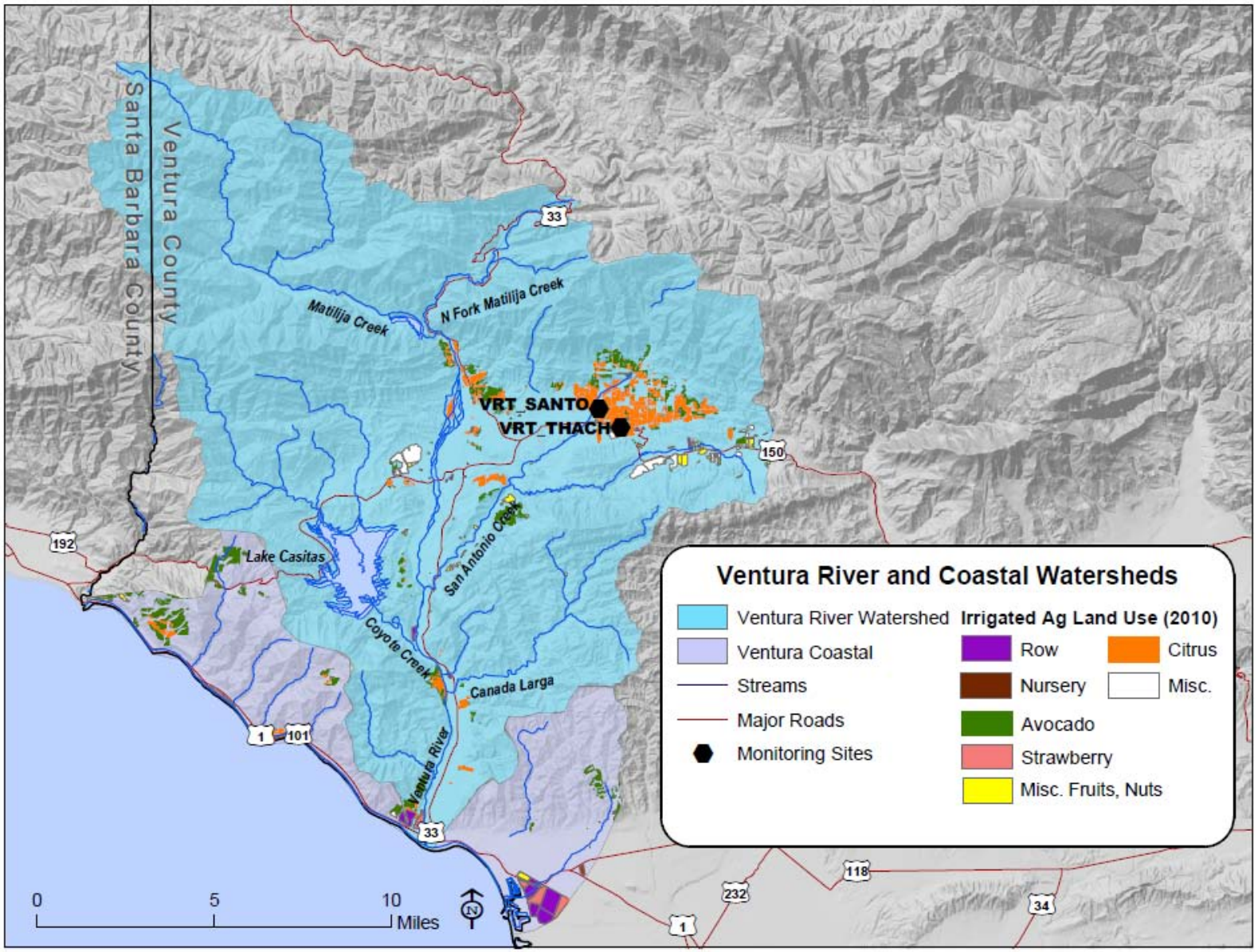

Figure 11. VCAILGMP Ventura River Monitoring Sites and Agricultural Land Use

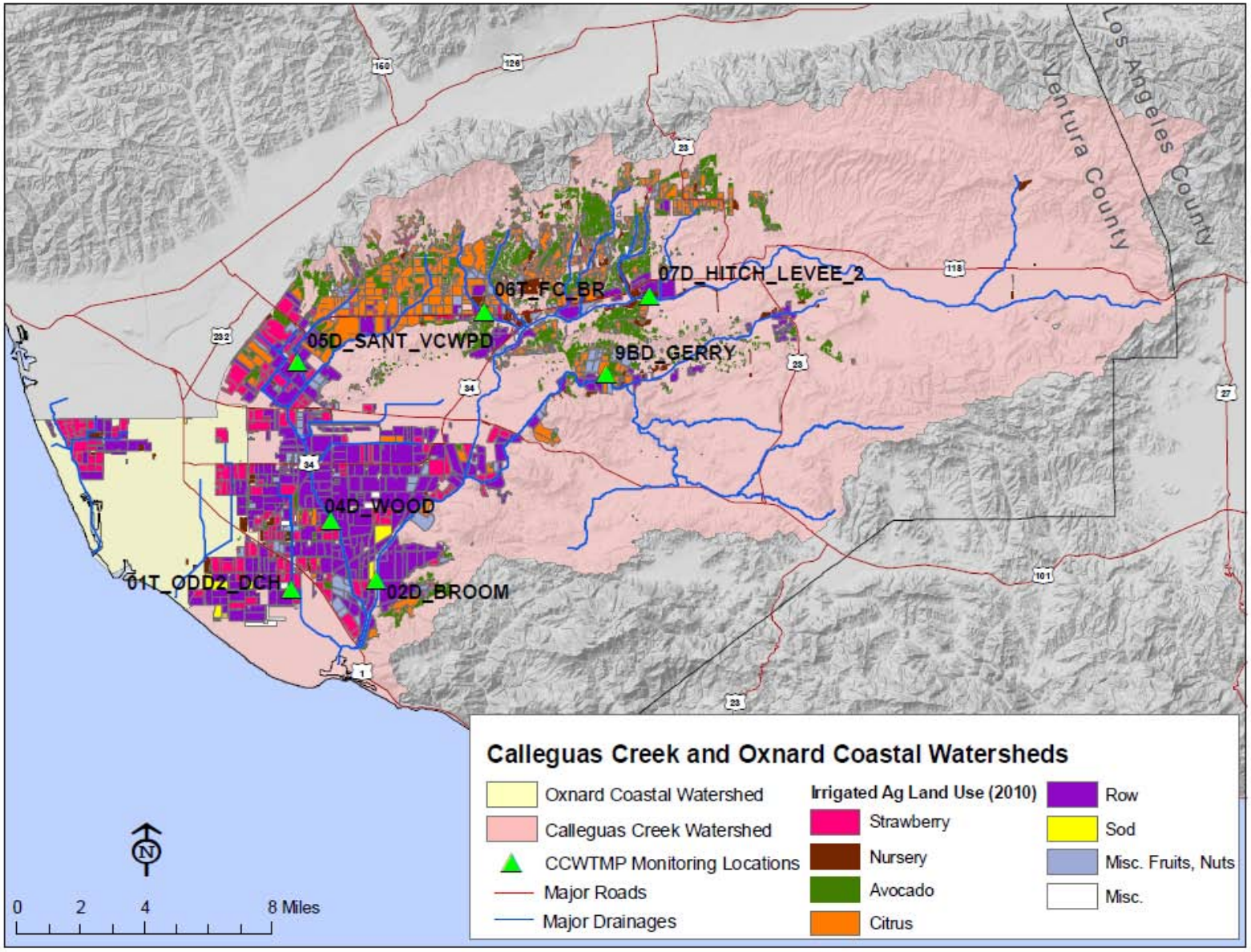

Figure 12. CCWTMP Monitoring Sites and Agricultural Land Use

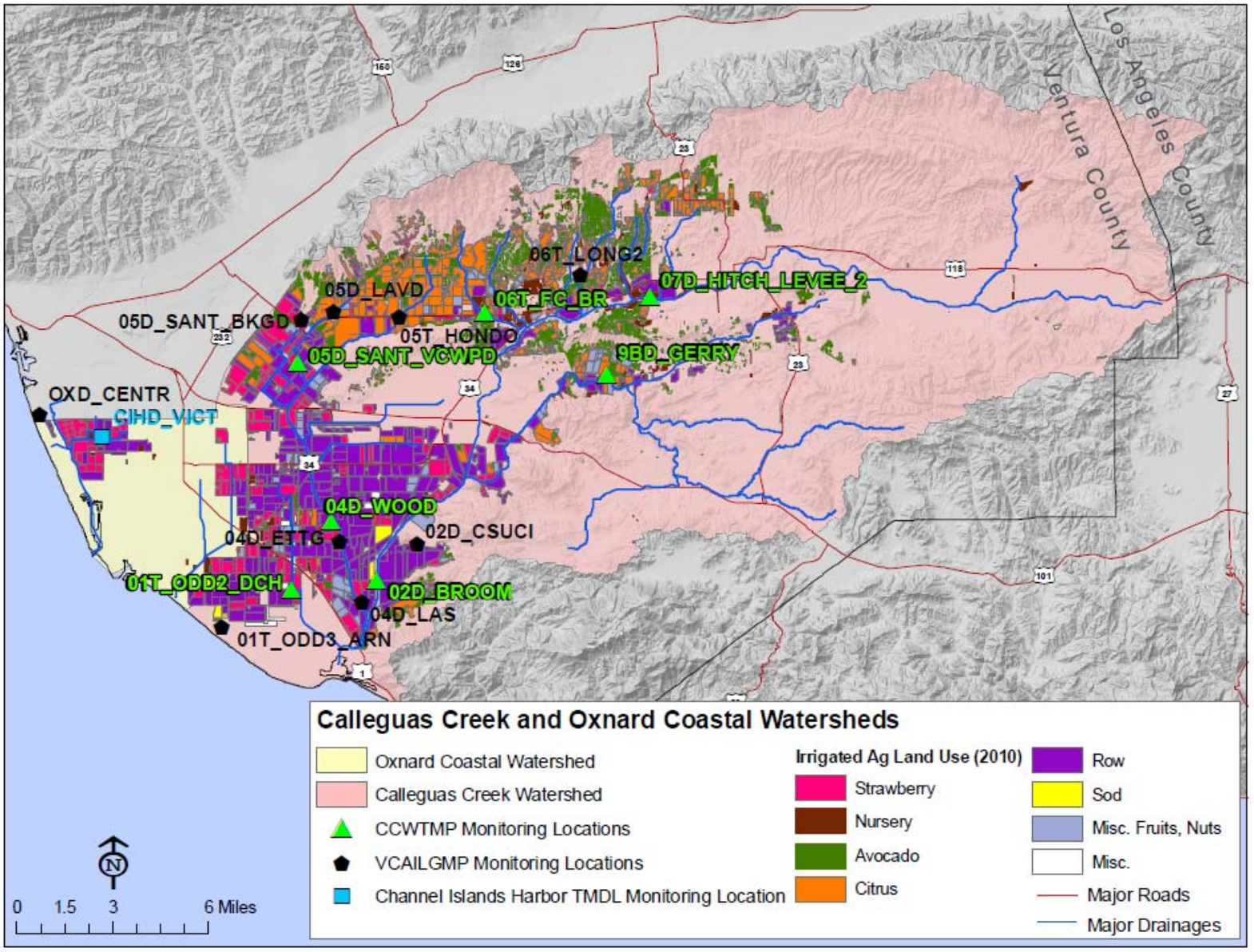

Figure 13. CCW Monitoring Sites for All Programs and Agricultural Land Use

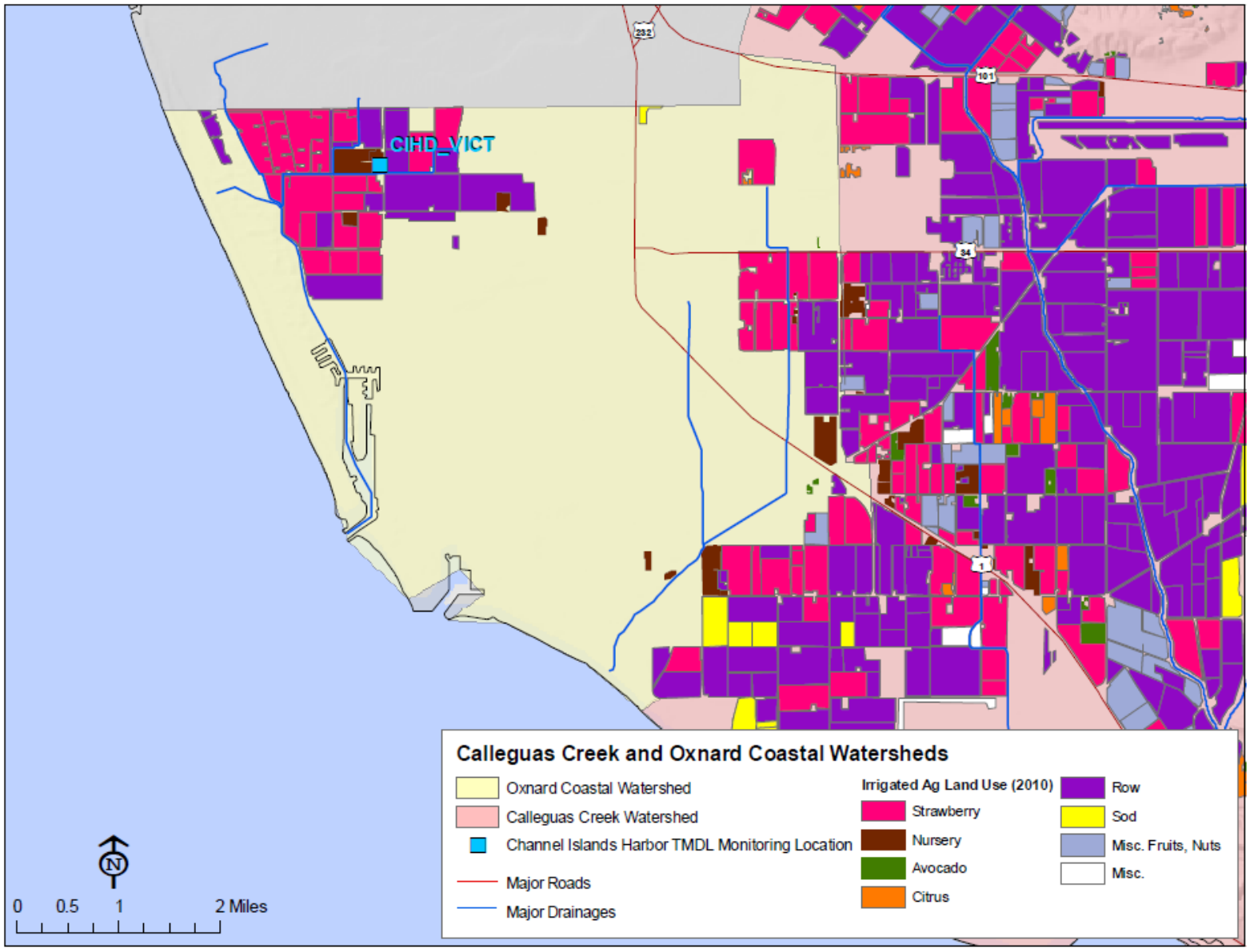

Figure 14. Channel Islands Harbor TMDL Monitoring Site and Agricultural Land Use

Sampling Schedule

Monitoring will be conducted during two wet weather and two dry events for all water quality constituents and during one storm and the second dry weather event for toxicity testing. Table 12 presents the yearly monitoring to be conducted at each VCAILGMP site. Table 13 presents the yearly monitoring at each TMDL monitoring site that has been incorporated into the VCAILG MP. For information regarding TMDL monitoring that is the responsibility of other programs, refer to the appropriate QAPP. Toxicity testing will be conducted on VCAILGMP receiving water monitoring sites only. Toxicity testing will be conducted concurrently by the CCWTMP on TMDL receiving water sites to provide an indication of whether agricultural drainages are causing or contributing to toxicity in the receiving water.

Table 12. VCAILGMP Monitoring Schedule

WATERSHED / SUBWATERSHED	SITE ID	REACH	YEARLY EVENTS			
			WET EVENT 1	WET EVENT 2	DRY EVENT 1	DRY EVENT 2
Calleguas Creek / Mugu Lagoon	01T_ODD3_ARN	1	TOX,WQ	WQ	WQ	TOX,WQ
Calleguas Creek / Calleguas Creek	02D_CSUCI [1]	2	WQ	WQ	WQ	WQ
Calleguas Creek / Revolon Slough	04D_ETTG	4	WQ	WQ	WQ	WQ
	04D_LAS	4	WQ	WQ	WQ	WQ
Calleguas Creek / Beardsley Channel	05D_SANT_BKGD [1]	5	WQ	WQ	WQ	WQ
	05D_LAVD	5	TOX,WQ	WQ	WQ	TOX, WQ
	05T_HONDO	5	TOX,WQ	WQ	WQ	TOX, WQ
Calleguas Creek / Arroyo Las Posas	06T_LONG2	6	TOX,WQ	WQ	WQ	TOX, WQ
Oxnard Coastal	OXD_CENTR	--	WQ	WQ	WQ	WQ
Santa Clara River	S02T_ELLS	2	TOX,WQ	WQ	WQ	TOX,WQ
	S02T_TODD	2	TOX,WQ	WQ	WQ	TOX,WQ
	S03T_TIMB	3	TOX,WQ	WQ	WQ	TOX,WQ
	S03T_ BOULD	3	TOX,WQ	WQ	WQ	TOX,WQ
	S03D_BARDS	3	WQ	WQ	WQ	WQ
	S04T_TAPO	4	TOX,WQ	WQ	WQ	TOX,WQ
	S04T_TAPO_BKGD [1]	4	WQ	WQ	WQ	WQ
Ventura River	VRT_THACH	--	TOX,WQ	WQ	WQ	TOX,WQ
	VRT_SANTO	--	TOX,WQ	WQ	WQ	TOX,WQ

TOX = Toxicity WQ = All water quality constituents listed in Table 9, excluding toxicity, which is noted separately.

1. Background sites are only visited during storm events when the corresponding upstream site is sampled.

Table 13. Monitoring Schedule for Sites Incorporated into VCAILGMP

WATERSHED / SUBWATERSHED	SITE ID	REACH	YEARLY EVENTS			
			WET EVENT 1	WET EVENT 2	DRY EVENT 1	DRY EVENT 2
Santa Clara River Estuary	S01D_MONAR	1	OC-W, OC-S, TSS	OC-W, OC-S, TSS	OC-W, TSS	OC-W, TSS
	Estuary	1	OC-F every three years			
Santa Clara River	S02T_ELLS	2	OC-W, OC-S, TSS	OC-W, OC-S, TSS	OC-W, TSS	OC-W, TSS
Oxnard Coastal/ Channel Islands Harbor	CIHD_VICT	--	Bact	Bact	Bact	Bact

OC-W = OC pesticides toxaphene, chlordane, and dieldrin in water
OC-S = OC pesticides toxaphene, chlordane, and dieldrin in filtered sediment
OC-F = OC pesticides toxaphene, chlordane, and dieldrin in fish tissue
TSS = Total Suspended Solids
Bact = *E. coli*, enterococcus, total coliform, fecal coliform

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. If flow rates have returned to pre-storm levels, the sampling event may be conducted as scheduled. If flow rates have not returned to pre-storm levels, the sampling event will be rescheduled either to allow for flow rates to return to pre-storm levels, or for at least seven days without measurable precipitation prior to sampling, whichever period is shorter. Dry weather monitoring 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.

All efforts will be made to conduct two wet weather events during the wet season (October 15 through May 15). The first wet-season samples will be aimed at collecting the first storm of the year to occur during the wet season. Sufficient precipitation is needed to produce runoff and increase drainage/stream flow. The *Conditional Ag Waiver* Monitoring and Reporting Program requires that the wet season samples "shall be collected within 24 hours of a storm with greater than 0.5 inch rain as measured by the nearest National Weather Service rain gauge, to the extent practicable. Practical constrains on wet season sampling events include but are not limited to 1) lab closures on weekends and holidays, 2) sampling holding times, and 3) safety of monitoring team." The timing of sample collection will be targeted toward the first 24 hours of discharge. Regional Board staff will be notified by email and/or phone when a wet weather monitoring event is initiated.

Dry weather samples will be collected between May 16th and October 14th at a time when the majority of growers have applied pesticides or fertilizers and during the period when irrigation is necessary. Additional considerations will be made to coordinate with CCWTMP quarterly dry weather monitoring events, when feasible.

Parameters to be Monitored

Table 14 and Table 15 lists the constituents for which samples will be analyzed, analytical methods, project method detection limits and project reporting limits for each constituent monitored to meet *Conditional Ag Waiver* Appendix 1 Table 1 requirements. Table 16 includes the same information, but for TMDL constituents monitored as part of the VCAILGMP. Constituents being monitoring under existing TMDL programs can be found in the CCWTMP QAPP.[4] Trash assessment and collection is being completed for the Revolon Slough and Beardsley Wash and also the Ventura River Estuary Trash TMDLs through MFAC/BMP programs, which VCAILG is an implementing party.

Table 14. Analytical Methods and Project Reporting Limits for Field Measurements

Parameter	Method	Range	Project Reporting Limit
Flow	Electromagnetic	-0.5 to +20 ft/s	0.05 ft/s
pH	Electrometric	0 – 14 pH units	NA
Temperature	High stability thermistor	-5 – 50 ^{o}C	NA
Dissolved oxygen	Membrane	0 – 50 mg/L	0.5 mg/L
Turbidity	Nephelometric	0 – 3000 NTU	0.2 NTU
Conductivity	Graphite electrodes	0 – 10 mmhos/cm	2.5 µmhos/cm
Trash	Observation	NA	NA

NA = Not Applicable

Table 15. VCAILGMP Analytical Methods and Project Method Detection Limits / Project Reporting Limits for Laboratory Analyses

Parameter	Analytical Method [1]	Units	Project Method Detection Limits	Project Reporting Limits
Aquatic Chronic Toxicity [2]				
Pimephales promelas (fathead minnow)	EPA-821-R-02-013 and EPA 600-4-91-002	N/A	N/A	N/A
Ceriodaphnia dubia (water flea)	EPA 821-R-02-013 and EPA 600-4-91-002	N/A	N/A	N/A
Selenastrum capricornutum (green algae)	EPA 821-R-02-013 and EPA 600-4-91-002	N/A	N/A	N/A
General Water Quality Constituents				
Total Dissolved Solids (TDS)	SM 2540C	mg/L	13	20
Total Suspended Solids (TSS)	SM 2540D	mg/L	0.4	1
Chloride	EPA 300.0	mg/L	0.04	1

[4] Larry Walker Associates (LWA). (2008). Calleguas Creek Watershed Management Plan Quality Assurance Project Plan (QAPP) and Monitoring and Reporting Program Plan for Nitrogen, OC and PCBs, Toxicity, and Metals and Selenium Total and Maximum Daily Loads – Draft Report, Revision 2. May 30.

Parameter	Analytical Method [1]	Units	Project Method Detection Limits	Project Reporting Limits
Sulfate	EPA 300.0	mg/L	0.13	2
Hardness	SM 2340B	mg/L	1	5
Nutrients				
Total Ammonia-N	SM 4500-NH_3F	mg/L	0.03	0.06
Nitrate-N	EPA 300.0	mg/L	0.01	0.05
Total Orthophosphate-P	SM 4500-PE	mg/L	0.01	0.01
Metals				
Dissolved Copper	EPA 200.8	µg/L	0.4	0.8
Total Copper	EPA 200.8	µg/L	0.4	0.8
Organochlorine Pesticides [3]				
Aldrin	EPA 625	ng/L	1	5
BHC-alpha	EPA 625	ng/L	1	5
BHC -beta	EPA 625	ng/L	1	5
BHC-delta	EPA 625	ng/L	1	5
BHC-gamma (Lindane)	EPA 625	ng/L	1	5
Chlordane-alpha	EPA 625	ng/L	1	5
Chlordane-gamma	EPA 625	ng/L	1	5
2,4'-DDD	EPA 625	ng/L	1	5
2,4'-DDE	EPA 625	ng/L	1	5
2,4'-DDT	EPA 625	ng/L	1	5
4,4'-DDD	EPA 625	ng/L	1	5
4,4'-DDE	EPA 625	ng/L	1	5
4,4'-DDT	EPA 625	ng/L	1	5
Dieldrin	EPA 625	ng/L	1	5
Endosulfan I	EPA 625	ng/L	1	5
Endosulfan II	EPA 625	ng/L	1	5
Endosulfan Sulfate	EPA 625	ng/L	1	5
Endrin	EPA 625	ng/L	1	5
Endrin Aldehyde	EPA 625	ng/L	1	5
Endrin Ketone	EPA 625	ng/L	1	5
Toxaphene	NCI/GCMS	ng/L	1	50
Organophosphorus Pesticides				
Bolstar	EPA 625	ng/L	2	4
Chlorpyrifos	EPA 625	ng/L	1	2
Demeton	EPA 625	ng/L	1	2
Diazinon	EPA 625	ng/L	2	4
Dichlorvos	EPA 625	ng/L	3	6

Parameter	Analytical Method [1]	Units	Project Method Detection Limits	Project Reporting Limits
Dimethoate	EPA 625	ng/L	3	6
Disulfoton	EPA 625	ng/L	1	2
Ethoprop	EPA 625	ng/L	1	2
Fenchlorphos	EPA 625	ng/L	2	4
Fensulfothion	EPA 625	ng/L	1	2
Fenthion	EPA 625	ng/L	2	4
Malathion	EPA 625	ng/L	3	6
Merphos	EPA 625	ng/L	1	2
Methyl Parathion	EPA 625	ng/L	1	2
Mevinphos	EPA 625	ng/L	8	16
Phorate	EPA 625	ng/L	6	12
Tetrachlorvinphos	EPA 625	ng/L	2	4
Tokuthion	EPA 625	ng/L	3	6
Trichloronate	EPA 625	ng/L	1	2
Pyrethroid Pesticides				
Allethrin	NCI-GCMS	ng/L	0.5	2
Bifenthrin	NCI-GCMS	ng/L	0.5	2
Cyfluthrin	NCI-GCMS	ng/L	0.5	2
Cypermethrin	NCI-GCMS	ng/L	0.5	2
Danitol	NCI-GCMS	ng/L	0.5	2
Deltamethrin	NCI-GCMS	ng/L	0.5	2
Esfenvalerate	NCI-GCMS	ng/L	0.5	2
Fenvalerate	NCI-GCMS	ng/L	0.5	2
Lambda-Cyhalothrin	NCI-GCMS	ng/L	0.5	2
Permethrin	NCI-GCMS	ng/L	5	25
Prallethrin	NCI-GCMS	ng/L	0.5	2

1. Standard Methods (SM) or EPA Method number.
2. Alternative species may be used at high conductivity sites.
3. 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.

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

Parameter	Analytical Method [1]	Units	Project Method Detection Limits	Project Reporting Limits
OC Pesticides (filtered sediment)	EPA 8270C	ng/L	1 [2]	5 [2]
OC Pesticides (fish tissue)	EPA 8270C	ng/g	1 [3]	5 [3]
E. coli	9223B	MPN/100mL	<2	<2
Enterococcus	Indexx Enterolert	MPN/100mL	<1	<1
Total Coliform	9221B	MPN/100mL	<2	<2
Fecal Coliform	9221E	MPN/100mL	<2	<2

1. Standard Methods (SM) or EPA Method number.
2. MDL for toxaphene is 10 ng/L; RL for toxaphene is 50 ng/L
3. MDL for toxaphene is 10 ng/g; RL for toxaphene is 50 ng/g

All results will meet data quality objectives as stated in the VCAILGMP Quality Assurance Project Plan (QAPP), 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 found to give better results (better QC data and/or a more relevant detection limit). Laboratories selected to analyze samples for this program must be certified either by the National Environmental Laboratory Accreditation Program, or by the California Department of Health Services – Environmental Laboratory Accreditation Program (ELAP), or by both agencies.

Toxicity Testing and Toxicity Identification Evaluations (TIEs)

Water quality samples will be analyzed for chronic toxicity to *Ceriodaphnia dubia*, *Pimephales promelas*, and *Selenastrum capricornutum* for the first monitoring event. The most sensitive species determined at each toxicity site will be used for subsequent monitoring events, upon Executive Officer approval. Toxicity testing will be performed only on receiving water sites, including agricultural drainages that appear on the 303(d) list of impaired waterbodies. Although chemistry data collected on agricultural drains can be used to estimate pollutant loads to receiving waters and thereby provide a sense of whether such loads will adversely impact the receiving water, toxicity measured in agricultural drains may have little or no impact on receiving water for various reasons (*i.e.*, chemical degradation, transformation or dilution) and does not provide information regarding receiving water impacts.

Determination of chronic toxicity to *C. dubia, P. promelas* and *S. capricornutum* will be performed generally as described in *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms*, Fourth Edition.[5] Toxicity tests will be conducted on 100% sample.

[5] United States Environmental Protection Agency (USEPA). (2002). Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition. (EPA 821-R-02-013). USEPA Office of Water, Washington, D.C. October.

One toxicological protocol has been modified in this QAPP. The chronic fathead minnow test is susceptible to Pathogen Related Mortality (PRM), a phenomenon that is not uncommon in toxicity tests of ambient waters. PRM is characterized by high inter-replicate variability in mortality and pathogenic "coronas" around the fish, resulting in fish mortality related to a pathogen infestation and not due to toxicant exposure. The toxicity testing laboratory (Pacific EcoRisk) includes pathogen control modifications based on Geis (2003)[6], as approved by the EPA. The chronic fathead minnow SOP in Attachment 3 of Appendix D has been updated to include this PRM exposure protocol.

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 at least 50% mortality (*P. promelas* and *C. dubia*) or a 50% reduction in growth (*S. capricornutum*). The 50% threshold is consistent with the approach recommended in guidance published by U.S. EPA for conducting TIEs[7], 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. SOPs for typical TIE testing procedures to address pesticides and metals toxicity are included in Attachment 7 of Appendix D.

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

The decision to initiate TIE procedures on any sample, including samples exceeding the mortality threshold, as well as the focus and scope of TIE procedures, will be determined through consultation between the Project Manager, toxicity laboratory, and Regional Board staff. When deciding whether to initiate TIE procedures for a specific site and monitoring event, a number of factors will be considered, including the level of toxicity, history of toxicity at the site, the species and endpoints exhibiting toxic effects, as well as the primary technical basis for triggering TIEs described above. The rationale for determining the TIE procedures for a specific sample will be clearly documented in subsequent data reports.

The VCAILGMP includes some sites that are tidally influenced (01T_ODD3_ARN) or exhibit high conductivity (e.g. 01T_ODD2_DCH and S04T_TAPO). Attempts will be made to collect samples at low tide; however, even under this condition the measured salinity exceeds levels suitable for the three freshwater test species. If sample salinity at any monitoring site exceeds levels suitable for the three freshwater species identified in this Element, alternative species will be selected based on previous testing in the area and recommendations of the toxicity testing laboratory. Potential alternate species include the following:

- For *Ceriodaphnia dubia*: *Hyalella azteca*.

[6] Geis, S.W. et al. 2003. "Modifications to the fathead minnow (*Pimephales promelas*) chronic test method to remove mortality due to pathogenic organisms." Environ Toxicol Chem, 22 (10), 2400-2404.

[7] United States Environmental Protection Agency (USEPA). (1996). Marine Toxicity Identification Evaluation (TIE): Phase 1 Guidance Document. (EA/600/R-96/054). USEPA Office of Research and Development, Washington D.C.

- For *Pimephales promelas*: *Menidia beryllina* (inland silverside).
- For *Selenastrum capricornutum*: *Thalassiosira pseudonana*.

Planned Use of Data

Data generated through the VCAILGMP will be used to determine whether discharges from irrigated agricultural lands are causing or contributing to exceedances of water quality benchmarks. Exceedances of benchmarks will trigger development of Water Quality Management Plans (WQMPs) that contain necessary information to assess the impacts of waste discharges, quantify and identify sources, identify and implement new and/or revised management practices to reduce or eliminate discharges that cause or contribute to benchmark exceedances, document the implementation and maintenance of management practices, and document attainment of benchmarks. VCAILGMP data will also be used to determine monitoring program effectiveness at meeting program objectives.

VCAILGMP data also may be used to assist the Calleguas Creek Watershed TMDL Monitoring Program (CCWTMP) in determining pollutant loads from irrigated agriculture. Conversely, data collected concurrently in the Calleguas Creek Watershed (CCW) through the CCWTMP or other regulatory programs (e.g., NPDES, Stormwater), may be evaluated to determine whether agricultural drainages may be contributing to receiving water impairments. Data collected through the CCWTMP may also inform BMP implementation and effectiveness.

Reporting Requirements

Toxicity Trigger Exceedance Notification

Prepared by the Project Manager and submitted to the Regional Board's QA Officer, this report will consist of an email notification that the toxicity trigger has been exceeded and at which site(s). This report will be submitted within five business days of a toxicity trigger exceedance.

QA Summary Report

Prepared by the Project QA Manager or designee after each monitoring event and submitted to the Project Manager, this will present a tabular summary of any lab performance issues and the actions taken to correct those problems (e.g. reanalysis of samples not meeting quality control criteria).

Preliminary Data Report

Prepared by the QA and Project Managers, within 90 days of each monitoring event and shall include preliminary monitoring data after a QA/QC evaluation has been performed. Preliminary data will not be considered final until it is submitted as part of the AMR, nor will it be used to formally assess attainment of Water Quality Benchmarks.

Annual Monitoring Report

The Annual Monitoring Report will be prepared annually by the Project Manager and will be submitted annually beginning one year after issuance of the NOA. As required by Monitoring and Reporting Requirements, the Annual Monitoring Report will contain the following components:

- Description/Summary of Discharger Group membership and setting;
- Updated membership list, submitted electronically;

- Monitoring objectives;
- Sampling site descriptions, including photographs;
- Location map of sampling sites including GPS coordinates;
- Parameters monitored and frequency;
- Sampling and analytical methods used, submitted in a tabular format;
- Tabulated results of analyses;
- Data interpretation including assessment of compliance and/or non-compliance with Water Quality Benchmarks;
- Results of toxicity exceedances and results of TIE(s), clearly identified in the report as a separate section;
- Copy of Chain-of-Custody forms, submitted electronically;
- Associated laboratory and field quality control sample results;
- Summary of precision and accuracy;
- Quality control data interpretation, including assessment of data quality objectives;
- If Water Quality Benchmarks are not attained as demonstrated by monitoring, the AMR shall include a statement of intent to prepare a WQMP within six months to address all benchmark exceedances;
- Documentation that education requirements have been fulfilled by each member of the Discharger Group;
- Conclusions and recommendations.

Copies of all field documentation and laboratory original data will be included in the AMR as attachments. The monitoring data will be submitted in a format consistent with SWAMP reporting requirements, both electronically and in hard copy tabular form.

Water Quality Management Plan (WQMP)

A Water Quality Management Plan (WQMP) will be submitted annually six months after the first Annual Monitoring Report is submitted that contains data demonstrating that water quality benchmarks have been exceeded. As required by Monitoring and Reporting Requirements, a WQMP will contain the following components:

- A summary review of monitoring objectives and sample locations including GPS coordinates and maps;
- A summary of Water Quality Benchmark exceedances;
- Determination of pollutant loading from irrigated agricultural land, where practicable;
- Identification of likely waste sources, review of possible correlations between sampling conditions, seasonal growing activities, and water quality results;
- Follow-up monitoring, if deemed appropriate, to better understand the nature and source of wastes and/or to document attainment of Water Quality Benchmarks;
- A description and documentation of existing management practices, including the degree and location of implementation;
- A review of existing management practice maintenance;
- Identification of priority areas for management practice implementation, follow-up monitoring (if deemed appropriate), and focused outreach and education;
- Description and general location of management practices which will be implemented to address water quality impairments;
- Explanation of the management practice selection process and how they will address Water

Quality Benchmark exceedances;
- Schedule and strategy for implementation of new and/or revised management practices;
- Pesticide use evaluation assessment compared to pesticide concentrations at monitoring sites;
- Tracking of management practice implementation and maintenance;
- An approach to determine the effectiveness of management practices at reducing waste discharge and protecting water quality;
- An evaluation of compliance with Water Quality Benchmarks to determine if improvement or additional management practice implementation is necessary; or alternatively, provide technical documentation of natural, historical, or existing conditions that are causing non-compliance.

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 in storm events, which may need to be completed on short notice):

1. Contact laboratories to order sample 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 17).
4. Prepare sample container labels and apply 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 of the monitoring sites.
6. Verify that field measurement equipment is operating properly (*i.e.*, check batteries, calibrate, etc.)

Table 17 provides a checklist of field equipment to prepare prior to each monitoring event.

Table 17. Field Equipment Checklist

X	Monitoring Plan	X	Tape Measure	X	Sealable Plastic Bags
X	Sample Containers plus Extras with Extra Lids	X	Paper Towels or Rags in a Box	X	Grab Pole
X	Pre-Printed and Extra Labels	X	Safety Equipment	X	Clean Secondary Container(s)
X	Event Summary Sheets	X	First Aid Kit	X	Field Measurement Equipment
X	Field Log Sheets	X	Cellular Telephone	X	New Powder-Free Nitrile Gloves
X	Chain of Custody Forms	X	Gate Keys	X	Pens
X	Bubble Wrap	X	Hip Waders	X	Stop Watch
X	Coolers with Ice	X	Plastic Trash Bags	X	Camera
X	Blank Water	X	Distilled/DI 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 sampling station, including a list of samples to be collected and

quality control (QC) sample collection requirements. This summary will act as a guide to assist field crews prepare 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 and Project QA Manager 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 any deviations from the QAPP;
4. Any additional notes regarding the sample event;
5. A copy of the field logbook and chain-of-custody (COC) forms.

An example Post Event Summary Sheet is included in Appendix C. The field logbook and COCs will be scanned into PDF 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 Plan.

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 preservative as appropriate for the specified laboratory analytical methods. Table 18 and Table 19 present the proper container type, volume, and immediate processing and storage needs. 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 will 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., environmental 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. The format for sample ID codes is *VCAILGMP - ###.# - AAAA - XXX,* where:

- *VCAILGMP* indicates that the sample was collected as part of the VCAILGMP.
- ###- identifies the sequentially numbered monitoring event, and .# is an optional indicator for re-samples collected 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 are provided in Table 8.

- 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, leaving only sample collection time and date and field crew initials to be filled out in the field. Custom labels will be produced using blank water-proof labels. This approach will allow the 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 containers. The labels will not be applied to container caps. Container labels will contain the following information:

- Program Name
- Station ID
- Sample ID
- Date
- Time
- Sampling Personnel
- Analytical Requirements
- Preservative Requirements
- Analytical Laboratory

Sample Collection

Tables 18 and 19 list specific constituents for which samples will be analyzed and specifies the sample container, volume required, and immediate processing and storage and holding time requirements.

Table 18. VCAILGMP Sample Container, Volume, Initial Preservation, and Holding Time Requirements

Parameter	Sample Container	Sample Volume [1]	Immediate Processing and Storage	Holding Time
Aquatic Toxicity				
Chronic Aquatic Toxicity	FLPE-lined jerrican	5 gallons	Store at 4°C	36 hours [2]
Field Measurements				
Flow, pH, Temperature, Dissolved Oxygen, Turbidity, Conductivity	Field Meter	N/A	N/A	N/A
General Water Quality Constituents				
Total Suspended Solids (TSS)	Plastic	1 L	Store at 4°C	7 days
Total Dissolved Solids (TDS)	Plastic	500 mL	Store at 4°C	7 days
Chloride				28 days
Sulfate				28 days
Hardness	HDPE Plastic	250 mL	Store at 4°C	6 months
Total Ammonia-N	Glass	250 mL	H_2SO_4; Store at 4°C	28 days
Nitrate-N	HDPE Plastic	250 mL	Store at 4°C	48 hours
Total Orthophosphate-P	HDPE Plastic	250 mL	Store at 4°C	48 hours
Pesticides				
Organochlorine Pesticides	Amber Glass	2 L	Store at 4°C	7/40 days [3]
Organophosphorus Pesticides				
Pyrethroid Pesticides				
Metals				
Dissolved Copper	HDPE Plastic	250 mL	Store at 4°C	48 hours
Total Copper	HDPE Plastic	250 mL	Store at 4°C	180 days

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 hold time does not apply to subsequent analyses for TIEs. For interpretation of toxicity results, samples may be split from toxicity samples in the laboratory and analyzed for specific chemical parameters. 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 of 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 19. TMDL Sample Container, Volume, Initial Preservation, and Holding Time Requirements for Constituents Monitored Under the VCAILGMP

Parameter	Sample Container	Sample Volume [1]	Immediate Processing and Storage	Holding Time
OC Pesticides (filtered sediment)	Amber Glass	2 L	Store at 4°C	40 days
OC Pesticides (fish tissue)	Teflon Sheet	200 g	Store on dry ice	1 year if frozen
E. coli	Sterile Plastic	120 mL	Sodium thiosulfate; Store at 4°C	6 hours
Enterococcus	Sterile Plastic	120 mL	Sodium thiosulfate; Store at 4°C	6 hours
Total Coliform	Sterile Plastic	120 mL	Sodium thiosulfate; Store at 4°C	6 hours
Fecal Coliform	Sterile Plastic	120 mL	Sodium thiosulfate; Store at 4°C	6 hours

1. Additional sample volume may be required for quality control analyses.

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:

    1. Smoking is prohibited.
    2. Collecting samples near a vehicle, running or otherwise, is prohibited.
    3. Eating or drinking during sample collection is prohibited.
    4. Sampling personnel should avoid breathing, sneezing or coughing in the direction of an open sample container.
    5. Do not allow rain water to drip from rain gear or any other surface into sample containers.

Field Protocols

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

1. Before leaving the base of operations, confirm 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 this MRP Plan. 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 this MRP Plan. Using the log sheet, confirm that all appropriate bottles were filled.
5. Collect field measurements and observations, and record these 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 chain of custody forms using the field log sheets.
8. 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 bottles as described above 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 bottles whenever feasible with special care taken when filling bottles with preservative. Clean, powder-free nitrile gloves will be worn while collecting samples. In the event that a peristaltic pump and priority-cleaned silicone and Teflon™ tubing are used as a last resort to collect samples (*i.e.*, due to unsafe conditions during wet events), the sample collection tubing and the sample bottle and lid shall come into contact only with surfaces known to be clean, or with the water sample. Standard operating procedures (SOPs) for collection of surface water samples are specified below.

The potential exists for monitoring sites to lack discernable flow. The lack of discernable flow may generate unrepresentative data as standing puddles will not appropriately characterize agricultural discharges. To address the potential confounding interference that can occur under such conditions, sites monitored under the guidance of this QAPP should be assessed for the following conditions and sampled (or not sampled) accordingly:

- Pools of water with no flow or visible connection to another surface water body 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 condition should be photo-documented.
- Flowing water (*i.e.*, determined by visual observations, flow meter data, and a photo-documented assessment of conditions immediately upstream and downstream of the sampling 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, 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 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.
3. Remove the lid, submerge the container to mid-stream/mid-depth, let the container fill 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.
3. Submerge the intermediate container to mid-stream/mid-depth (if possible), let the container fill, 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.

Pumping

The use of a peristaltic pump is not anticipated to be necessary at the VCAILGMP sites; however, information is included here in case pump use becomes necessary due to safety concerns. Samples may be collected with the use of a peristaltic pump and specially cleaned tubing following the steps listed below.

1. Wear clean powder-free nitrile gloves when handling bottles, lids, and pump tubing. 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;
3. Attach pre-cleaned tubing into the pump, exercising caution to avoid allowing tubing ends to touch any surface known not to be clean. A separate length of clean tubing must be used at each sample location for which the pump is used;

4. Place one end of the tubing below the surface of the water. To the extent possible, avoid placing the tubing near the bottom of the channel so that settled solids are not pumped into the sample container.
5. Hold the other end of the tubing over the opening of the sample container, exercising care not to touch the tubing to the sample container.
6. Pump the necessary sample volume into the sample container and secure the lid;
7. Place the sample on ice;
8. Collect remaining samples including quality control samples, if required, using the same protocols described above; and
9. Fill out the COC form, note sample collection time on the field log sheet, and deliver the samples to appropriate laboratory.

Field Measurements and Observations

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

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 log book for each sampling event that contains 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 sampling event:

- Monitoring station location (Site ID);
- Date and time(s) of sample collection;
- Name(s) 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 method references);
- Sample type, (*i.e.*, grab);
- The results of any field measurements (*i.e.*, flow, pH, temperature, dissolved oxygen, turbidity, conductivity) and the time field measurements were made;
- Qualitative descriptions of relevant water conditions (*e.g.*, water color, flow level, clarity) or weather (*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.

The field log will be scanned into a PDF and transmitted along with the Post-Event Summary Sheet to the Project Manager within one week of the conclusion of each sampling event. Appendix D contains an example field log sheet.

Flow will be estimated using a velocity meter and channel cross-sectional area measurements, or will be estimated by other means at each monitoring site after all samples are collected. Appendix C of the QAPP contains the flow measurement standard operating procedure (SOP). 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 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 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 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. 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 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 outlined in the VCAILGMP QAPP 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 for the 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 PDF copy of the COC form will be sent, by the laboratory 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 sample temperature will be maintained at approximately 4˚C. Samples that must be shipped to the laboratory must be examined to ensure that container lids are tight and that containers don't leak. The ice packed with samples must be double-bagged in re-sealable bags, be approximately 2 inches 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 re-sealable 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 a field staff vehicle, 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.
- All samples are transported inside hard plastic coolers or other contamination-free shipping containers.
- The coolers are taped shut to prevent accidental opening.
- Arrangements must be made in advance to notify the laboratory's sample receiving department prior to sample shipment.

All samples remaining after successful completion of analyses will be disposed of properly. It is the responsibility 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.
- in view after in physical possession.
- placed in a secure area (accessible by or under the scrutiny of authorized personnel only after in possession).

A chain-of-custody (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 by the field crew prior to shipment or delivery to the laboratory to verify sample identification, types of analyses, number of containers, sample volume, preservatives, and types of containers. A completed COC form is to accompany the samples to the analyzing laboratory. A typical COC form is illustrated in Appendix E.

Transport to Analytical Laboratories

Samples will be stored in coolers with ice and bubble wrap and delivered to the appropriate laboratory as indicated in Table 19. Table 20 lists the three analytical laboratories proposed for the VCAILG Monitoring Program. Appropriate contacts are listed along with lab certification information.

Table 20. Analytical Laboratories

Laboratory	Analysis	Shipping Method	Contact	Phone	Address	Lab Certification No. & Expiration Date [1]
Pacific EcoRisk	Toxicity, TIEs	Overnight delivery	Stephen Clark	[707] 207-7766	2250 Cordelia Rd. Fairfield, CA 94534	NELAP # 04225CA May 31, 2012
Fruit Growers Laboratory, Inc.	Inorganic Chemistry	Same day delivery	David Terz	[805] 392-2000	853 Corporation St. Santa Paula, CA 93060	NELAP # 01110CA January 31, 2012
Physis Environmental Laboratories	Pesticides	Overnight delivery or Courier	Rich Gossett	[714] 602-5320	1904 E. Wright Circle Anaheim, CA 92806	ELAP #2769 April 30, 2013

1. Lab certifications are renewed on an annual basis.

Quality Assurance/Quality Control

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 the analytical laboratory for each batch of sampling equipment cleaned (*i.e.*, pump tubing). 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 equipment to the field crew for use, and analyzed for all appropriate constituents. 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 for salts, nutrients, copper, and pesticides using the same analytical methods 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.

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 SWAMP.[8] 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 indentified and eliminated, if possible. The sampling crew should be notified so that the source

[8] State Water Resources Control Board (SWRCB). (2008). Quality Assurance Program Plan, Version 1.0 – Final Technical Report. September

of contamination can be identified (if possible) and corrective measures taken prior to the next sampling event.

Matrix Spike/Matrix Spike Duplicate

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.

Field Duplicates

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 25% and the absolute difference is greater than the RL, 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 taken prior to the next sampling event.

VCAILG Contact Information

Discharger Group Name	Ventura County Agricultural Irrigated Lands Group (VCAILG)
Group Contact Person	John Krist
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	CA
Zip Code	93006
Phone No.	[805] 289-0155
Fax No.	[805] 658-0295
E-mail	john@farmbureauvc.com

Appendix A. Monitoring Stations

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_ARN
Drains to Reach:	CCW-1: Mugu Lagoon
Site Type	Agricultural Drain
Latitude	34.123564
Longitude	-119.156514
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. Just past the Hwy 1 interchange, turn left onto Arnold Road and park at the bridge at the end of the road. The site is located on the N bank near the water pump.

Site ID	02D_BROOM
Drains to Reach:	CCW-2: Calleguas Creek
Site Type	Agricultural Drain
Latitude	34.143406
Longitude	-119.071103
Site Description	Discharge to Calleguas Ck at Broome Ranch Rd.
Driving Directions	In Camarillo, exit Hwy 101 at Lewis Rd and head south. At the Potretro Rd. intersection, turn left onto Potrero Road and turn right onto the east flood control levy of Calleguas Creek. Go through the VCWPD locked gate and drive south along the eastern Calleguas Creek levee until the first dirt road intersection (Broome Ranch Rd.) and park. The site is a discharge pipe located on the Creek side of the levy.

Site ID	02D_CSUCI
Drains to Reach:	CCW-2: Calleguas Creek
Site Type	Background site for 02D_BROOM
Latitude	34.158183
Longitude	-119.042683
Site Description	Broome Rd background site at CSUCI
Driving Directions	After samples are collected at 02D_BROOM, proceed back to the VCWPD gate. Turn right onto Potrero Rd. and drive up along the CSUCI grounds. If landscape irrigation runoff is draining into the culvert by the athletic field, collect background samples at that site.

Site ID	04D_ETTG
Drains to Reach:	CCW-4: Revolon Slough
Site Type	Agricultural Drain
Latitude	34.162430
Longitude	-119.090947
Site Description	Discharge to Revolon Slough at Etting Rd.
Driving Directions	In Camarillo, exit Hwy 101 at Lewis Rd and head south. Turn right (west) onto Pleasant Valley Rd. Turn left (south) onto Wood Rd. Turn left (east) onto Etting Rd and drive across the Revolon Slough bridge. Turn right just past the bridge and park. The site is located on the ag drain just upstream of its confluence with Revolon Slough.

Site ID	04D_WOOD
Drains to Reach:	CCW-4: Revolon Slough
Site Type	Agricultural Drain
Latitude	34.1707
Longitude	-119.0960
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 sough. 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	04D_LAS
Drains to Reach:	CCW-4: Revolon Slough
Site Type	Agricultural Drain
Latitude	34.134208
Longitude	-119.079767
Site Description	Discharge to Revolon Slough at S. Las Posas Rd
Driving Directions	In Camarillo, exit Hwy 101 at Las Posas Rd. Turn right onto the flood control levee just before the Revolon Slough bridge and go through the locked VCWPD gate. The site is the ag drain located to the east of the Revolon Slough levee.

Site ID	05D_SANT_VCWPD
Drains to Reach:	CCW-5: Beardsley Channel
Site Type	Agricultural Drain / Flood Control Channel
Latitude	34.242667
Longitude	-119.113736
Site Description	Santa Clara Drain at VCWPD Gage No. 781
Driving Directions	From US 101 in Camarillo, exit Santa Clara Ave and head northeast. Pull off to the right at the VCWPD gate about 0.75 miles beyond the Central Ave. intersection. Go through the locked gate and proceed southeast along the levy to County Gaging Station 781.

Site ID	05D_SANT_BKGD
Drains to Reach:	CCW-5: Beardsley Channel
Site Type	Potential Background site for 05D_SANT_VCWPD near golf course
Latitude	34.263213
Longitude	-119.111314
Site Description	05D_SANT_VCWPD background site near the golf course
Driving Directions	After samples are collected at 05D_SANT_VCWPD, proceed to the background site. Turn right on Santa Clara Ave. Left on Hwy 118 at stoplight. Turn right onto Clubhouse Drive. Site is the asphalt drainage ditch on the right side of the road.

Site ID	05D_LAVD
Drains to Reach:	CCW-5: Beardsley Channel
Site Type	Agricultural Drain / Flood Control Channel
Latitude	34.265849
Longitude	-119.094145
Site Description	La Vista Drain at La Vista Ave.
Driving Directions	From Oxnard, exit Hwy 101 at Central Ave. and head northwest. Turn right onto Santa Clara Ave., which turns into Hwy 118 at the stoplight. Continue on Hwy 118 and turn left onto La Vista Ave. Park near the bridge over La Vista Drain.

Site ID	05T_HONDO
Drains to Reach:	CCW-5: Beardsley Channel
Site Type	Tributary to Beardsley Channel
Latitude	34.263608
Longitude	-119.057431
Site Description	Honda Barranca at Hwy 118
Driving Directions	From Oxnard, exit Hwy 101 at Central Ave. and head northwest.. Turn right onto Santa Clara Ave., which turns into Hwy 118 at the stoplight. Continue on Hwy 118 until just past Center School Rd. Turn right off the Hwy onto the dirt area just before the Honda Barranca Bridge. The site is located down the west bank of the channel just downstream of the bridge.

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 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	06T_LONG2
Drains to Reach:	CCW-6: Arroyo Las Posas
Site Type	Tributary to Arroyo Las Posas
Latitude	34.268411
Longitude	-118.959333
Site Description	Long Canyon at Hwy 118
Driving Directions	In Camarillo, exit Hwy 101 at Lewis-Somis Rd (Hwy 34) and head north. Turn right onto Hwy 118 and left onto Balcom Canyon Rd. Site is on the right side of the road at bridge #208.

Site ID	07D_HITCH_LEVEE_2
Drains to Reach:	CCW-7: Arroyo Simi
Site Type	Agricultural drain to Arroyo Simi
Latitude	34.2714
Longitude	-118.9205
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. Sample from the 2nd corrugated pipe discharging on the north side of Arroyo Simi, just beyond the 1st power pole.

Site ID	9BD_GERRY
Drains to Reach:	CCW-9B: Conejo Creek
Site Type	Agricultural discharge to Conejo Creek
Latitude	34.237135
Longitude	-118.957091
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

Site ID	OXD_CENTER
Drains to:	McGrath Lake
Site Type	Agricultural discharge to McGrath Lake
Latitude	34.220872
Longitude	-119.254875
Site Description	Central Ditch at Harbor Blvd
Driving Directions	In Ventura, exit Hwy 101 at Victoria Ave. and head south. Turn right onto Olivas Park Dr, then left onto Harbor Blvd. Pull off to the right just before the Gonzalez Rd intersection at the small "Gonzales Rd" sign. The sampling point is down the bank on the right.

Site ID	S01D_MONAR
Drains to:	Santa Clara River Estuary
Site Type	Agricultural discharge to the estuary
Latitude	34.2333
Longitude	-119.2413
Site Description	Drain from Gonzales Rd. to the Santa Clara River Estuary
Driving Directions	In Ventura, exit Hwy 101 at Victoria Ave. and head south. Turn right onto Gonzales Rd. then right into the McGrath driveway at the Paintball sign. Follow the road back towards the river, sampling drainage ditch is on the right.

Site ID	CIHD_VICT
Drains to:	Edison Channel / Channel Islands Harbor
Site Type	Adricultural discharge to Edison Channel
Latitude	34.2099
Longitude	-119.2207
Site Description	Agricultural Ditch at Victoria Ave.
Driving Directions	In Ventura, exit Hwy 101 at Victoria Ave. and head south. Site is on the left side of the road just before Doris Ave.

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.

Site ID	S02T_TODD
Drains to Reach:	Santa Clara River, Reach 2
Site Type	Tributary to Santa Clara River
Latitude	34.313584
Longitude	-119.117095
Site Description	Todd Barranca at Hwy 126
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. Turn right onto Todd Rd. and follow Todd down to the Hwy 126 overpass and park. The site is located down the rip-rap slope just north of Hwy 126.

Site ID	S03T_TIMB
Drains to Reach:	Santa Clara River, Reach 3
Site Type	Tributary to Santa Clara River
Latitude	34.370204
Longitude	-119.021140
Site Description	Timber Canyon on the N side of Hwy 126
Driving Directions	From westbound Hwy 126, pull off to the right onto the dirt farm road past Timber Canyon Road and just past the bridge/guardrail over Timber Canyon. Turn to the right (east) and follow the road to the west bank of the creek.

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. Dry weather 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	34.371917
Longitude	-118.965547
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.

Site ID	S04T_TAPO
Drains to Reach:	Santa Clara River, Reach 4
Site Type	Tributary to Santa Clara River
Latitude	34.403905
Longitude	-118.722000
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.

Site ID	VRT_THACH
Drains to:	San Antonio Creek and eventually the Ventura River
Site Type	Tributary to San Antonio Creek / 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 just before the Thacher Creek bridge and park. Dry weather access is on the north side of Ojai avenue.

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 Ojai Ave to the right shoulder just after the San Antonio Creek bridge, just past Orange Rd. Dry weather 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: 011.0

S04T_HOPP — Hopper Creek at Hwy 126				
Sample ID	Requested Analyses	Bottles	Notes	Lab
☐ VCAg-011.0-HOPP-127	Aquatic toxicity	1		PER
☐ VCAg-011.0-HOPP-128	Total Suspended Solids	1		FGL
☐ VCAg-011.0-HOPP-129	TDS, Chloride, Sulfate	1		FGL
☐ VCAg-011.0-HOPP-130	Ammonia-N	1		CSULB
☐ VCAg-011.0-HOPP-131	Nitrate-N, Total Phosphate	1		CSULB
☐ VCAg-011.0-HOPP-132	OP Pests, OC Pests, Pyrethroids	2		CSULB

S03T_BOULD — Boulder Creek & Hwy 126				
Sample ID	Requested Analyses	Bottles	Notes	Lab
☐ VCAg-011.0-BOULD-133	Aquatic toxicity	1		PER
☐ VCAg-011.0-BOULD-134	Total Suspended Solids	1		FGL
☐ VCAg-011.0-BOULD-135	TDS, Chloride, Sulfate	1		FGL
☐ VCAg-011.0-BOULD-136	Ammonia-N	1		CSULB
☐ VCAg-011.0-BOULD-137	Nitrate-N, Total Phosphate	1		CSULB
☐ VCAg-011.0-BOULD-138	OP Pests, OC Pests, Pyrethroids	2		CSULB

S03T_TIMB — Timber Canyon & Hwy 126				
Sample ID	Requested Analyses	Bottles	Notes	Lab
☐ VCAg-011.0-TIMB-139	Aquatic toxicity	1		PER
☐ VCAg-011.0-TIMB-140	Total Suspended Solids	1		FGL
☐ VCAg-011.0-TIMB-141	TDS, Chloride, Sulfate	1		FGL
☐ VCAg-011.0-TIMB-142	Ammonia-N	1		CSULB
☐ VCAg-011.0-TIMB-143	Nitrate-N, Total Phosphate	1		CSULB
☐ VCAg-011.0-TIMB-144	OP Pests, OC Pests, Pyrethroids	2		CSULB

VRT_SANTO — San Antonio Creek at Grand Ave.				
Sample ID	Requested Analyses	Bottles	Notes	Lab
☐ VCAg-011.0-SANTO-145	Aquatic toxicity	1		PER
☐ VCAg-011.0-SANTO-146	Total Suspended Solids	1		FGL
☐ VCAg-011.0-SANTO-147	TDS, Chloride, Sulfate	1		FGL
☐ VCAg-011.0-SANTO-148	Ammonia-N	1		CSULB
☐ VCAg-011.0-SANTO-149	Nitrate-N, Total Phosphate	1		CSULB
☐ VCAg-011.0-SANTO-150	OP Pests, OC Pests, Pyrethroids	2		CSULB

Appendix C. Example Post-Event Summary Sheet

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

I. Issues that Arose:

- ☐ There were no unusual occurrences at any of the sites monitored.
- ☐ There was at least one unusual occurrence. Details are provided below.

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
☐ ARN		☐ ELLS	
☐ CSUCI		☐ TODD	
☐ ETTG		☐ TIMB	
☐ LAS		☐ BOULD	
☐ SANT_BKGD		☐ BARDS	
☐ LAVD		☐ TAPO	
☐ HONDO		☐ TAPO_BKGD	
☐ LONG2		☐ THACH	
☐ OXD_CENTR		☐ SANTO	
		☐ CIHD_VICT	
		☐ S01D_MONAR	

An unchecked box signifies that the site was dry, or that flow was too low to measure and too low to collect samples.

III. Samples Collected:

- ☐ All samples were collected at all sites as dictated by the QAPP.
- ☐ Additional samples were collected at the following site(s), as explained below:

- ☐ All of the required samples were NOT collected at the following site(s) as explained below:

IV. Additional Notes:

Appendix D. Example Field Log

VCAILG Monitoring Program

Sampling Data Log Sheet

			GPS Reference	GPS Readings
Site:			Latitude:	
Site Id:	Sample Region:		Longitude:	

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
☐					
☐					
☐					
☐					
☐					
☐					
☐					
☐					
☐					
☐					

Field Measured Data

Time(PST)	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)	Algae % Filamentous	Algae % Periphyton	Dominant Substrate

% Bank Vegetation Left Bank	% Bank Vegetation Right Bank	% Shading

Weather	
Water Color	
Instream Activity	
Odor	
Foreign Matter	

Flow Data

Wet channel width (ft)	
Distance for velocity measurement (ft)	

Float Times (sec)

Rep #1	Rep #2	Rep #3	Rep #4	Average

Depth/Stage (circle one) (ft)

Describe flow conditions:

Reason if flow not measured:

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

Additional Notes or Comments Wildlife present? ☐ Non-contact recreation? (If present, describe below)

Appendix D. Example Field Log – continued

Field Observation Guidance and Standard Comments

Qualitative Measures:

Algae:

- Filamentous: Record the percent of the flowing water surface, upstream from your sample location, that you estimate is occupied by filamentous algae.
- Other Periphyton: Record the percent of substrate in the wetted channel, looking upstream from your sample location, that you estimate is covered in periphyton. "Other periphyton" is defined here as the living community attached to the substrate, including algae that is not the green filamentous type, aquatic mosses, fungi, diatoms and sessile invertebrates. To estimate this percentage, feel the surface of the rocks and other substrate materials and estimate the percent of the substrate that is covered with a slimy organic community.

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, human wastes, homeless encampments, furniture or appliances. Record the true number of trash items that could be easily removed up to 10 items. Record greater than 10 items of trash as an estimated range (i.e. 11-20, 21-50).
- Tidal influences: Record evidence of recent tidal surge or of possible salt-water influence.

Appendix E. Example Chain-of-Custody Form

Larry Walker Associates
2151 Alessandro Drive, Suite 100 Ventura, CA 93001 805-585-1835 805-585-1840 Fax

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: Amy Storm

Project: VCAILG Monitoring Program

LARRY WALKER ASSOCIATES

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

Sender Comments:	Relinquished By (1):	Relinquished By (2):
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.	Signature: Print: Organization: Date: Time:	Date: Time:
Laboratory Comments:	**Received By (1):** Signature: Print: Organization: Date: Time:	**Received By (2):** Date: Time:

Crew: