

MAY 2016

SACRAMENTO VALLEY
WATER QUALITY COALITION

Water Quality Management Plan Progress Report

Prepared by

LARRY WALKER ASSOCIATES



Table of Contents

Executive Summary	iii
Management Plan Monitoring.....	iii
Goals for Implementation of Management Practices	iii
New Management Plan Elements.....	iv
Evaluation of Progress	iv
Management Plan Progress Report	1
Results of Monitoring	9
Registered Pesticides.....	9
Toxicity	10
Legacy Pesticides	11
Pathogen indicators	11
Trace Metals.....	11
Salinity	12
DO and pH	12
Nutrients.....	12
Source Evaluations.....	19
Outreach Documentation	19
Management Practices Inventories and Member Surveys.....	19
Recommendations for Management Plan Monitoring	20
Goals for Implementation of Management Practices	22
Update to Required Management Plans	22
New Management Plan Elements.....	22
Implementation Tasks and Schedule for New Elements.....	23
Proposed Changes to the Management Plan	23
Deliverables and Schedule for Ongoing Management Plan Elements	23
TMDL Compliance Reporting.....	28
Chlorpyrifos and Diazinon TMDL.....	28
Clear Lake Nutrient TMDL.....	29
Summary: Evaluation of Progress.....	31

List of Tables

Table 1. Management Plan Progress Report Requirements.....	2
Table 2. Summary of Management Plan Task Activity.....	4
Table 3. Summary of Management Plan Compliance Monitoring Outcomes.....	15
Table 4. Requests for Management Plan Completions.....	21
Table 5. Status: Submitted Management Practices Implementation and Performance Goals.....	22
Table 6. Additions to Management Plan for Data through September 2012.....	23
Table 7. Initial Deliverables for New Management Plan Elements.....	25
Table 8. 2014 Deliverables for Ongoing Management Plans.....	26

Executive Summary

The purpose of this document is to provide an update on the status of the Sacramento Valley Water Quality Coalition's (Coalition) Water Quality Management Plan (Management Plan), which was reorganized into the Comprehensive Surface Water Quality Management Plan (CSQMP) in 2015. The Coalition's Waste Discharge Requirements (WDR), Order No. R5-2014-0030-R1, specifies the requirements for separate surface water Management Plans, and also allows the Coalition to satisfy these requirements by updating the Surface Water Quality Management Plan previously approved under the Coalition Group Conditional Waiver to conform to the Order and the Monitoring and Reporting Program (MRP). The updated CSQMP must conform to the requirements specified for separate Management Plans, but the WDR allows existing Management Plans developed under the Coalition's Conditional Waiver (Conditional Waiver Order R5-2006-0053) to continue to apply under this Order.

In general terms, the processes to meet the requirements of the Management Plan can be distilled to these elements – source evaluation, identification of management practices needed to address exceedances, implementation of management practices, evaluation of effectiveness, and regular assessment of progress toward completion of the management plan. The Coalition has successfully developed and implemented processes for source evaluation and identification of management practices needed. Source evaluations have been completed and provided to the Water Board for a large number of management plan requirements for pesticides, toxicity, pathogen indicators, and legacy organochlorine pesticide exceedances.

Management Plan Monitoring

The need for Management Plan monitoring is determined primarily based on the potential to provide useful information for source identification, in establishing causes of toxicity, and to evaluate management practice effectiveness. This monitoring may consist of water column or sediment sampling, field evaluations, or surveys of agricultural practices. With the exception of pathogen indicator Management Plans for 19 sites, all Management Plans had monitoring scheduled for source evaluation and/or compliance in 2015.

Based on the evaluations of Management Plan monitoring results through 2015 and source evaluations presented in this document, the Coalition has submitted or is preparing requests to deem complete the monitoring and other requirements for nine Management Plans.

Goals for Implementation of Management Practices

Changes in practices and implementation of additional management practices to minimize discharges of waste contributing to exceedances have been ongoing since the Irrigated Lands Reporting Program (ILRP) was initiated, due to the outreach and education efforts of the Coalition and its members and partners. Specific trackable goals (Management Practice Implementation and Performance Goals (MPIPGs) for a number of pesticide and toxicity Management Plans have been developed and submitted to the Water Board beginning in 2011. To date there have been nine MPIPGs submitted to the Water Board. The MPIPGs are the foundation for strategically focused implementation of management practices initiated by the subwatersheds to improve water quality. Assessment of progress toward specific implementation goals will continue to be conducted regularly as documented in individual approved MPIPG documents.

New Management Plan Elements

There were nine Management Plans triggered by exceedances observed in Coalition monitoring conducted from October 2014 through September 2015. The Butte-Yuba-Sutter subwatershed had exceedances that triggered four new Management Plans at the following sites: Gilsizer Slough, Lower Honcut Creek, and Lower Snake River. Gilsizer Slough requires a Management Plan for chlorpyrifos, Lower Honcut Creek needs one for copper, and Lower Snake River requires one for conductivity and arsenic. The Colusa Glenn subwatershed had two waterbodies that require new Management Plans. Walker Creek requires an ammonia Management Plan¹ and Rough and Ready Pumping Plant needs one for pH. Middle Creek, located in the Lake subwatershed, and Tule Canal, in the Yolo subwatershed, both require a dissolved oxygen management plan. Pope Creek, in the Napa subwatershed, needs a new management plan for *E. coli*. The chlorpyrifos management plan at Gilsizer Slough is deemed a High Priority parameter, while the rest of the management plans are deemed Low Priority.

Evaluation of Progress

Meeting water quality objectives is the ultimate goal and measure of effectiveness of the implemented management practices and progress for the Management Plan. Water quality monitoring to measure this progress is ongoing and assessed annually, and has resulted in the completion of several management plans to date. As measured by the completion and ongoing work on specific Management Plan tasks and deliverables and documented throughout this Progress Report, the Coalition continues to make measurable progress toward meeting all of these requirements and expects to achieve the goals of the current approved Management Plan and the CSQMP update that is currently in development.

¹ The Coalition and Colusa Glenn Subwatershed are in the process of drafting a letter to the ILRP that requests that exceedances of ammonia water quality objectives observed in Walker Creek near Highway 99 in August 2014 and May 2015 are not valid as a trigger for Management Plan requirements for ammonia in Walker Creek. At the time these water quality samples were collected, the isolated pools from which they were collected had no upstream or downstream hydrologic connection to the rest of the water body. These pools contained stagnant water and supported significant algal growth. The lack of flow and observed stagnant conditions were the direct cause of the elevated temperatures and pH that resulted in a lowering of the ammonia criterion. These conditions were not caused by agricultural discharges. While measured ammonia (as N) concentrations in the isolated pools exceeded chronic criteria, the Coalition contends that the elevated ammonia concentrations and exceedances were not the result of agricultural discharges, should not be used to characterize agricultural discharge quality, and therefore, are not valid as a trigger for Management Plan requirements for ammonia in Walker Creek.

Management Plan Progress Report

The purpose of this document is to provide an update on the status of the Sacramento Valley Water Quality Coalition's (Coalition) Water Quality Management Plan (Management Plan²), which was reorganized into the Comprehensive Surface Water Quality Management Plan (CSQMP³) in 2015. The Coalition's Waste Discharge Requirements (WDR), Order No. R5-2014-0030-R1, specifies the requirements for separate surface water Management Plans, and also allows the Coalition to satisfy these requirements by updating the Surface Water Quality Management Plan previously approved under the Coalition Group Conditional Waiver to conform to the Order and the Monitoring and Reporting Program (MRP). The updated CSQMP must conform to the requirements specified for separate Management Plans, but the WDR allows existing Management Plans developed under the Coalition's Conditional Waiver (Conditional Waiver Order R5-2006-0053⁴) to continue to apply under this Order.

Reporting for the CSQMP is intended to provide an overview of the Coalition's approach to meeting the requirements of the WDR, a list of all currently required Management Plans and their status, the Management Plans currently being implemented, and a schedule and process for development of newly required Management Plans. Data reports for monitoring conducted for the Management Plan are submitted on the same quarterly schedule and in the same formats as required by the Monitoring and Reporting Program (MRP) for regular Coalition monitoring.

This Progress Report provides summaries of progress toward completion of specific Management Plan elements, updates to the list of required Management Plan elements, and recommendations for continuation or modification of the Management Plan. This Progress Report also summarizes the results of initial source identification evaluations and results of selected Management Plan monitoring for the previous year, provides documentation of outreach efforts, and provides a summary of completed baseline management practice inventories in priority drainages. Future Progress Reports will also document goals established for additional management practice implementation and assess progress toward these implementation goals.

² SVWQC 2009. Water Quality Management Plan. Prepared by Larry Walker Associates for the Sacramento Valley Water Quality Coalition (SVWQC). Sacramento, California. January 2009.

³ SVWQC 2015, Comprehensive Surface Water Quality Management Plan. Prepared by Larry Walker Associates for the Sacramento Valley Water Quality Coalition (SVWQC). Sacramento, California. June 2015

⁴ Prior to adoption of the WDR, the Coalition was subject to a Conditional Waiver of Waste Discharge Requirements for the Irrigated Lands Regulatory Program (ILRP) and subsequent amendments to the ILRP requirements (WQO-2004-0003, SWRCB 2004, R5-2005-0833, R5-2008-0005, R5-2009-0875).

The Progress Report includes the following elements, as specified in the MRP:

Table 1. Management Plan Progress Report Requirements⁵

MRP-1 Section	MPPR Requirement	Report Section Headings	Page
	Signed Transmittal Letter	NA	-
I.F.(1)	Title page	Title page	-
I.F.(2)	Table of contents	Table of Contents	<i>i</i>
I.F.(3)	Executive Summary	Executive Summary	<i>iii</i>
I.F.(4)	Location map(s) and a brief summary of management plans covered by the report	Results of Monitoring	4-8,14
I.F.(5)	Updated table that tallies all exceedances for the management plans	Results of Monitoring	15-18
I.F.(6)	A list of new management plans triggered since the previous report	Update to Required Management Plans	23
I.F.(7)	Status update on preparation of new management plans	New Management Plan Elements	23
I.F.(8)	A summary and assessment of management plan monitoring data collected during the reporting period	Results of Monitoring	9
I.F.(9)	A summary of management plan grower outreach conducted	Outreach Documentation	19
I.F.(10)	A summary of the degree of implementation of management practices	Summary: Evaluation of Progress	31-32
I.F.(11)	Results from evaluation of management practice effectiveness	Summary: Evaluation of Progress	31-32
I.F.(12)	An evaluation of progress in meeting performance goals and schedules	Summary: Evaluation of Progress	31-32
I.F.(13)	Any recommendations for changes to the management plan	Proposed Changes to the Management Plan	31-32

The activities conducted in 2015 to implement the Coalition's Management Plan continued to focus primarily on addressing the higher priority Management Plan elements triggered by exceedances of water quality objectives or trigger limits for registered pesticides and toxicity. Deliverables completed for registered pesticides included review and evaluation of pesticide application data, identification of potential sources, and determination of likely agricultural sources. Implementation completed to address toxicity exceedances included review and evaluation of pesticide application data, evaluation of monitoring results to identify potential causes of toxicity, and determination of likely agricultural sources of identified causes of toxicity. Source evaluations have been documented in the Source Evaluation Reports submitted

⁵ Monitoring and Reporting Program (Attachment B to R5-2014-0030), Appendix MRP-1: Third-Party Management Plan Requirements, Section I.F.

for each management plan element.⁶ For registered pesticides and identified causes of toxicity, surveys of Coalition members operating on high priority parcels were also conducted to determine the degree of implementation of relevant management practices. These survey results form the basis for establishing goals for additional management practice implementation needed to address exceedances of Basin Plan water quality objectives and *ILRP* Trigger Limits.

Management Plan elements with tasks completed in 2015 are listed in **Table 2**. This table provides the water body and analyte or monitoring category of concern and a summary of the major Management Plan task activity.

⁶ A Management Plan element is the specific individual combination of the water body and analyte or monitoring category requiring management, e.g., diazinon in Gilsizer Slough, or invertebrate toxicity in Coon Hollow Creek.

Table 2. Summary of Management Plan Task Activity

Management Plan Category	Subwatershed	Waterbody	Analyte(s)	Summary of Major Management Plan Activity and Status
DO and pH	Butte-Yuba-Sutter	Butte Slough	DO	Sampled at all sites in 2015; Other tasks suspended on direction from Executive Officer (EO); Source Evaluations deferred.
		Gilsizer Slough	DO, pH	
		Lower Honcut Creek	DO	
		Lower Snake River	DO	
		Pine Creek	DO	
		Sacramento Slough	DO	
	Colusa Glenn	Colusa Basin Drain	DO	
		Freshwater Creek	DO	
		Stone Corral Creek	DO	
		Stony Creek	pH	
Sycamore Slough		DO		
Lake	Walker Creek	DO, pH		
	McGaugh Slough	DO		
Pit River	Middle Creek	DO		
	Fall River	pH		
PNSSNS	Pit River	DO, pH		
	Coon Creek	DO		
Sacramento Amador	Cosumnes River	DO, pH		
	Dry Creek	pH		
	Grand Island Drain	DO		
	Laguna Creek	DO, pH		
Shasta Tehama	Anderson Creek	DO		
	Coyote Creek	DO		
Solano	Ulatis Creek	DO, pH		
	Z-Drain	DO, pH		
Yolo	Cache Creek	DO		
	Tule Canal	pH		
	Willow Slough	pH		

Management Plan Category	Subwatershed	Waterbody	Analyte(s)	Summary of Major Management Plan Activity and Status	
Legacy Pesticides	Butte-Yuba-Sutter	Gilsizer Slough	DDT and degradation products	Sampled at all Management Plan sites in 2015; Other Tasks suspended on direction from EO; Revised draft completion requests for El Dorado Subwatershed water bodies prepared and submitted for review,	
	Colusa Glenn	Freshwater Creek Lurline Creek Sycamore Slough			
		El Dorado			Coon Hollow Creek North Canyon Creek
	Sacramento Amador	Grand Island Drain			
	Yolo	Willow Slough			
Pathogen Indicators	Butte-Yuba-Sutter	Gilsizer Slough Lower Honcut Creek Lower Snake River Pine Creek Wadsworth Canal	<i>E. coli</i>	Sampled at Assessment sites in 2015; Other Tasks suspended pending direction from EO regarding development of a region-wide approach [December 5, 2011 comm. from EO]. A Bacterial Source Identification Study based on bacteroidales DNA was conducted and completed for the Coalition in 2007. The results of this preliminary study indicated that the overwhelming majority of bacteria in surface waters sampled were from human sources, and that agricultural contributions from agricultural bovine sources were rare or absent. A Source Evaluation Report for pathogen indicators (<i>E. coli</i>) was also prepared and submitted in 2011. This evaluation integrated SVWQC monitoring data, grower survey reports of implemented practices, and information about agricultural and non-agricultural sources, and concluded that agricultural was unlikely to be a significant contributing source in most monitored drainages.	
		Colusa Glenn			Colusa Basin Drain Freshwater Creek Logan Creek Lurline Creek Stone Corral Creek Sycamore Slough Walker Creek
	Lake				McGaugh Slough Middle Creek
	Sacramento Amador				Cosumnes River Dry Creek Grand Island Laguna Creek
		Shasta Tehama			Anderson Creek Burch Creek Coyote Creek

Management Plan Category	Subwatershed	Waterbody	Analyte(s)	Summary of Major Management Plan Activity and Status
Pathogen Indicators (continued)	Solano	Ulatis Creek Shag Slough Z-Drain	<i>E. coli</i> (continued)	Sampled at Assessment sites in 2015; Other Tasks suspended pending direction from EO regarding development of a region-wide approach [December 5, 2011 comm. from EO].
	Upper Feather River	Indian Creek Spanish Creek		
	Yolo	Tule Canal Willow Slough		
Registered Pesticides	Butte-Yuba-Sutter	Gilsizer Slough	Diazinon	MPIPG Addendum submitted in 2013; Outreach and implementation is in progress.
		Lower Snake River	Chlorpyrifos	Monitoring continued in 2015, with no exceedances; Request for completion approved Mar 2015.
		Pine Creek	Chlorpyrifos	Management Plan implementation in progress; Action Plan Report submitted in April 2012.
	Colusa Glenn	Colusa Drain	Malathion	MPIPG submitted 2013; Outreach and implementation in progress.
		Walker Creek	Chlorpyrifos	Monitoring continued in 2015; Request for completion approved Jan 2014.
	Solano	Ulatis Creek	Diuron	MPIPG Addendum submitted 2013; Outreach and implementation in progress.
		Ulatis Creek	Malathion	Completion of Management Plan approved May 2013.
		Ulatis Creek	Chlorpyrifos	MPIPG Addendum submitted in 2013; Outreach and implementation are in progress.
	Yolo	Willow Slough	Chlorpyrifos	MPIPG Addendum is in preparation; Outreach and implementation are in progress; RTC submitted in December 2015
		Willow Slough	Diuron	Outreach and implementation continued in 2015; Request for completion in preparation based on compliance; RTC submitted in December 2015
		Willow Slough	Malathion	MPIPG submitted in 2013; Outreach and implementation are in progress.
Salinity	Butte-Yuba-Sutter	Gilsizer Slough	EC	Sampled at all sites in 2015; Continued active participation in CV-SALTS; SVWQC joined CV Salinity Coalition as funding partner.
	Colusa Glenn	Colusa Basin Drain	EC	
		Freshwater Creek	EC	

Management Plan Category	Subwatershed	Waterbody	Analyte(s)	Summary of Major Management Plan Activity and Status
		Lurline Creek	EC	
		Stone Corral Creek	EC	
		Sycamore Slough	EC	
		Walker Creek	EC	
	Lake	McGaugh Slough	EC	
	Sacramento Amador	Dry Creek	TDS	
		Grand Island Drain	EC	
	Solano	Ulatis Creek	EC	
		Shag Slough	EC	
		Z-Drain	EC	
	Upper Feather River	MF Feather River	EC	
	Yolo	Cache Creek	EC	
		Tule Canal	Boron, EC	
		Willow Slough	Boron, EC	
Toxicity	Butte –Yuba-Sutter	Butte Slough	<i>Selenastrum</i> (unidentified cause)	Management Plan approved as completed by Water Board in 2013.
		Lower Snake River	<i>Ceriodaphnia</i> (unidentified cause)	Monitoring of toxicity and potential causes continued in 2015; No toxicity exceedances in last 20 samples (9 samples in 2014), no cause identified.
	Colusa Glenn	Stony Creek	<i>Ceriodaphnia</i> (unidentified cause)	Monitoring of toxicity and potential causes continued in 2015; No toxicity exceedance in last 5 samples (0 in 2014 due to site being dry), no cause identified; Request for completion submitted in July 2013 and awaiting approval.
		Stony Creek	<i>Hyalella</i> (pyrethroids)	Monitoring of toxicity and potential causes continued in 2015; No toxicity exceedance in last 6 samples (0 in 2014 due site being dry); no cause identified; Request for completion submitted in 2013 and was approved on October 21, 2015.
Toxicity (continued)	Colusa Glenn (continued)	Walker Creek	<i>Ceriodaphnia</i> (chlorpyrifos)	Monitoring of toxicity and chlorpyrifos continued in 2015, one chlorpyrifos exceedance, but no toxicity observed; Request for completion was approved in January 2014.

Management Plan Category	Subwatershed	Waterbody	Analyte(s)	Summary of Major Management Plan Activity and Status
	Sacramento Amador	Cosumnes River	<i>Hyalella</i>	Monitoring of toxicity and potential causes continued in 2015; Request for completion based on lack of toxicity and lack of probable ag sources submitted in 2013 was approved in February 2015.
	Solano	Ulatis Creek	<i>Selenastrum</i> (diuron)	Monitoring of toxicity and diuron continued in 2015; No toxicity or pesticide exceedances observed; Diuron MPIPG submitted in 2013; Outreach and implementation are in progress.
		Z-Drain	<i>Hyalella</i> (pyrethroids)	Monitoring of toxicity and expanded monitoring of potential causes and sources continued in 2015; No toxicity exceedances in 2015; MPIPG Addendum submitted in 2013; Implementation of MPIPG is in progress.
	Yolo	Cache Creek	<i>Ceriodaphnia</i> (unidentified cause)	Monitoring of potential causes continued in 2015; No toxicity exceedances observed and no probable cause identified; Request for completion submitted in 2013 and was approved on August 14, 2015
		Willow Slough	<i>Ceriodaphnia</i> (chlorpyrifos)	Chlorpyrifos MPIPGs submitted in 2013; Implementation is in progress; Monitoring continued in 2015 with no toxicity exceedances observed in last 27 samples.
		Willow Slough	<i>Selenastrum</i> (diuron)	Request for completion planned; No toxicity or diuron exceedances observed in 2015.
	Trace Metals	Butte-Yuba-Sutter	Pine Creek	Copper
Pit River		Pit River	Lead	Monitoring continued in 2015; Source Evaluation submitted in 2013 in review; Supplemental Source Evaluation analysis requested by Regional Water Board in 2015;
Sacramento Amador		Grand Island Drain	Arsenic	Monitoring continued in 2015; Source Evaluation submitted August 2013

Notes:

DO = Dissolved Oxygen

EC = Electrical Conductivity

RESULTS OF MONITORING

Management Plan monitoring was conducted as scheduled in the Coalition's 2015 Monitoring Plan, as approved by the Water Board. The results of monitoring conducted in the 2015 Monitoring Year (October 2014-September 2015) for all Management Plan analytes through September 2015 have been reported in the Coalition's 2015 AMR and submitted to the Water Board. Additionally, exceedances for all management plan sampling conducted from October 2014-September 2015 have been reported in Exceedance Reports as required by the ILRP MRP.

The 2015 monitoring year (October 2014-September 2015) was an "Assessment" monitoring year for all representative Coalition sites, and most Management Plan monitoring was coordinated with scheduled monitoring or conducted independently as needed for the specific locations and parameters. Management Plan monitoring for the 2015 monitoring year was conducted at the sites shown in **Figure 1** and the results are summarized below. The results of Management Plan compliance monitoring are also summarized in **Table 3**.

Registered Pesticides

- Six samples were analyzed for diazinon and malathion in Gilsizer Slough. These pesticides were not detected in any of the samples, and there were no exceedances of the ILRP Trigger Limit and Basin Plan objectives for diazinon or malathion.
- Six sample events were conducted for chlorpyrifos in Lower Snake River. Two results were detected above the method detection limit, but they did not result in an exceedance of the Basin Plan objective.
- Five sample events were conducted for chlorpyrifos in Pine Creek. Chlorpyrifos was detected in the April 2015 sample (0.26 µg/L) and it resulted in an exceedance of the Basin Plan's acute and chronic objective for the pesticide.
 - There were three reported applications of chlorpyrifos in the month prior to the April 22, 2015, exceedance. Chlorpyrifos was applied to approximately 470 acres of almonds and 52 acres of beets in the Pine Creek drainage during that time. The beet application occurred less than a week before the exceedance occurred and was made aurally. Although standing water was present in the creek, there was no observable flow at this site. The area received approximately 0.79 inches of rain⁷ in the month preceding the exceedance, but the area was dry for 14 days preceding the event. Toxicity tests for *Ceriodaphnia*, *Pimephales*, and *Selenastrum* were performed with this sample, and the sample was found to be toxic to *Ceriodaphnia*.
- Six events were conducted for chlorpyrifos in Ulati Creek. Chlorpyrifos was detected in one of seven samples (six environmental samples and one field blank) collected and it exceeded the Basin Plan's acute and chronic objective.
 - There were 11 reported applications of chlorpyrifos in the month prior to the May 19, 2015, exceedance. Chlorpyrifos was applied to approximately 835 acres of alfalfa and other miscellaneous crops in the Ulati Creek drainage during the months of April

⁷ Based on precipitation data from CDEC site "Chico (CHI)" (<http://cdec.water.ca.gov/cdecstation/?staid=chi>)

and May. Early applications in April were done aerially. The most recent application prior to the date of exceedance was applied to 100 acres, two weeks prior to the observed exceedance. Although standing water was present in the creek, there was no observable flow at this site. The area received no rain⁸ in the month preceding the exceedance. No toxicity tests were performed for these samples.

- Three sample events for diuron were conducted in Ulatis Creek, which has a Management Plan requirement for diuron and algae toxicity exceedances. No samples showed detected concentrations of diuron nor did they exhibit significant toxicity to *Selenastrum*.
- Six sample events were conducted for malathion in Ulatis Creek. Malathion was not detected in any of these samples and therefore, did not exceed the ILRP Trigger Limit (0 µg/L) or Basin Plan prohibition of discharge for the pesticide.
- Five sample events were conducted for chlorpyrifos and *Ceriodaphnia* toxicity in Willow Slough, which has a linked Management Plan requirement for chlorpyrifos and *Ceriodaphnia* toxicity. There were no detections of the pesticide in any of these samples and none of the samples were toxic. There were two additional *Ceriodaphnia* toxicity events and none of them resulted in toxicity.
- Three sample events were conducted for diuron and algae toxicity at Willow Slough, which has a Management Plan requirement for diuron and algae toxicity. None of the samples collected were toxic to *Selenastrum*, and there were no detections of diuron. Eleven additional sampling events were conducted for algae toxicity, and none of the samples were observed to be toxic. There have been no observations of toxicity in the last 47 events where samples were tested with *Selenastrum*.
- Five sample events were conducted for malathion in Willow Slough. There were no detections or exceedances in any of these samples.
- Seven sample events were conducted for malathion in Colusa Basin Drain. There were no detections or exceedances in any of these samples.

Toxicity

- Lower Snake River has a Management Plan requirement for *Ceriodaphnia* toxicity, and samples for six events were analyzed for *Ceriodaphnia* toxicity. None of these samples were observed to be toxic to *Ceriodaphnia*.
- Stony Creek has a Management Plan requirement for sediment toxicity. There were two planned sediment sampling events, but the site was dry for each event. Due to the site being dry, no *Hyalella* toxicity analyses were performed during the 2015 monitoring year.
- Stony Creek also has a Management Plan requirement for *Ceriodaphnia* toxicity. Four sampling events were planned for *Ceriodaphnia* analysis. However, for all but one event,

⁸ Based on precipitation data from CDEC site “Bear River Near Wheatland (BRW)” (<http://cdec.water.ca.gov/cdecstation/?staid=brw>)

the site was dry. There was no toxicity observed in the one sample collected during the 2015 monitoring year.

- Cosumnes River has a Management Plan requirement for sediment toxicity. One sample was analyzed in April 2015 for *Hyalella* toxicity and it did not exhibit toxicity. A second sample event planned for August 2015 was not completed because the site was dry, which is typical for this location in late summer.
- Cache Creek has a Management Plan requirement for *Ceriodaphnia* toxicity, and five sample events were conducted for *Ceriodaphnia* toxicity. None of the samples were observed to be toxic to *Ceriodaphnia*.
- Ulatis Creek has a Management Plan requirement for algae toxicity and diuron, and 11 sample events were conducted for *Selenastrum* toxicity. None of the samples were observed to be toxic to the alga.
- Z-Drain has a Management Plan requirement for sediment toxicity, and sediment samples were analyzed for one event for *Hyalella* toxicity and pesticides. Toxicity was not observed in the sample.
- Walker Creek and Willow Slough both have toxicity Management Plans that are linked to registered pesticides. The monitoring performed as a result of these linked Management Plans was discussed in the previous section (Registered Pesticides).

Legacy Pesticides

Management Plan monitoring for legacy organochlorine pesticides was conducted at eight sites for two events each (Gilsizer Slough, Freshwater Creek, Lurline Creek, Rough and Ready Pumping Plant, Coon Hollow Creek, North Canyon Creek, Grand Island Drain, and Willow Slough). There were no detected concentrations at any of the sites and therefore, no exceedances. All uses of DDT have been banned in the United States since 1972, except for control of emergency public health problems.⁹

Pathogen indicators

There are 30 sites with Management Plan requirements for pathogen indicator bacteria. Management Plan tasks for pathogen indicators have been suspended at the direction of the Executive Officer of the Water Board, pending development of a region-wide approach for this category (December 5, 2011 comm.). Management Plan monitoring for *E. coli* consisted of sampling at Representative monitoring sites, which resulted in the collection of 115 samples from 13 sites with active Management Plan requirements for pathogen indicators. There were 44 exceedances (38% of total samples) of the ILRP Trigger Limit for *E. coli* observed at these sites during 2015 monitoring.

Trace Metals

There were three active Management Plans for trace metals in 2015: lead in the Pit River, copper in Pine Creek, and arsenic in Grand Island Drain.

⁹ Agency for Toxic Substances and Disease Registry (ATSDR). 2002. Toxicological Profile for DDT. U.S. Department of Health and Human Services. September 2002.

Six events were conducted for arsenic in Grand Island Drain, and five of the samples analyzed resulted in exceedances of the ILRP Trigger Limit for arsenic (10 µg/L). There are both legacy and a few potential current sources of arsenic. There is very little remaining agricultural use of arsenic-based pesticide products (based on review of DPR's PUR data), and arsenic has only a few potentially significant sources: (1) natural background from arsenic in the soils, (2) arsenic remaining from legacy lead arsenate use in orchards, (3) arsenic used in various landscape maintenance and structural pest control applications (non-agriculture), and (4) arsenic used in wood preservatives. One possible source is the wooden bridge structure just upstream of the GIDLR sampling site, if arsenic-based preservatives were used in the wood. A final, but somewhat unlikely source is an arsenic-based additive that may still be used for chicken feed and which can potentially make its way into agricultural fields and runoff if the poultry litter is used on the field.

Six samples were analyzed for copper (total and dissolved) in Pine Creek and none exceeded Basin Plan objectives or ILRP Trigger Limits.

Two samples were analyzed for lead (total and dissolved) in the Pit River and neither sample exceeded Basin Plan objectives or ILRP Trigger Limits.

Salinity

There are 15 sites with active Management Plan requirements for parameters related to salinity (EC and boron). Management Plan monitoring for these parameters consisted of sampling at seven representative sites and eight additional Management Plan sites in 2015. There were 87 sample events for EC at these 15 sites, with 39 observed exceedances (45%) of the ILRP Trigger Limit for EC. Two sites (Willow Slough and Tule Canal) also have a requirement for boron. Three of the four samples collected from Tule Canal exceeded the ILRP Trigger Limit for boron, and all four samples from Willow Slough exceeded the ILRP Trigger Limit for boron.

DO and pH

There are 24 sites with active Management Plan requirements for DO and 11 sites with active Management Plan requirements for pH.

- There were 168 events sampled for 25 sites with active Management Plan requirements for DO. There were 26 exceedances (15%) of the ILRP Trigger Limit for DO observed at 18 sites.
- There were 48 samples collected from 11 sites with active Management Plan requirements for pH. There were only two exceedances (Willow Slough) observed (4%) of the ILRP Trigger Limit for pH.

Nutrients

There were no active Management Plans for nutrients in 2015.

However, a nutrient-related Management Plan requirement exists for the Clear Lake Nutrient TMDL. Monitoring for this Management Plan requirement consisted of nine sample events at the McGaugh Slough and Middle Creek sites in the Lake County Subwatershed. McGaugh Slough typically has zero or near-zero flow, even when water is present, and was dry for all but three of the events. The three samples that were collected at McGaugh Slough did not result in any

exceedances. Samples were collected at Middle Creek for all nine of the events, but none of the results exceeded any objectives. Compliance with the agriculture TMDL load allocations for phosphorus requires evaluation of a larger set of coordinated monitoring data not yet available; therefore, compliance has not yet been determined.

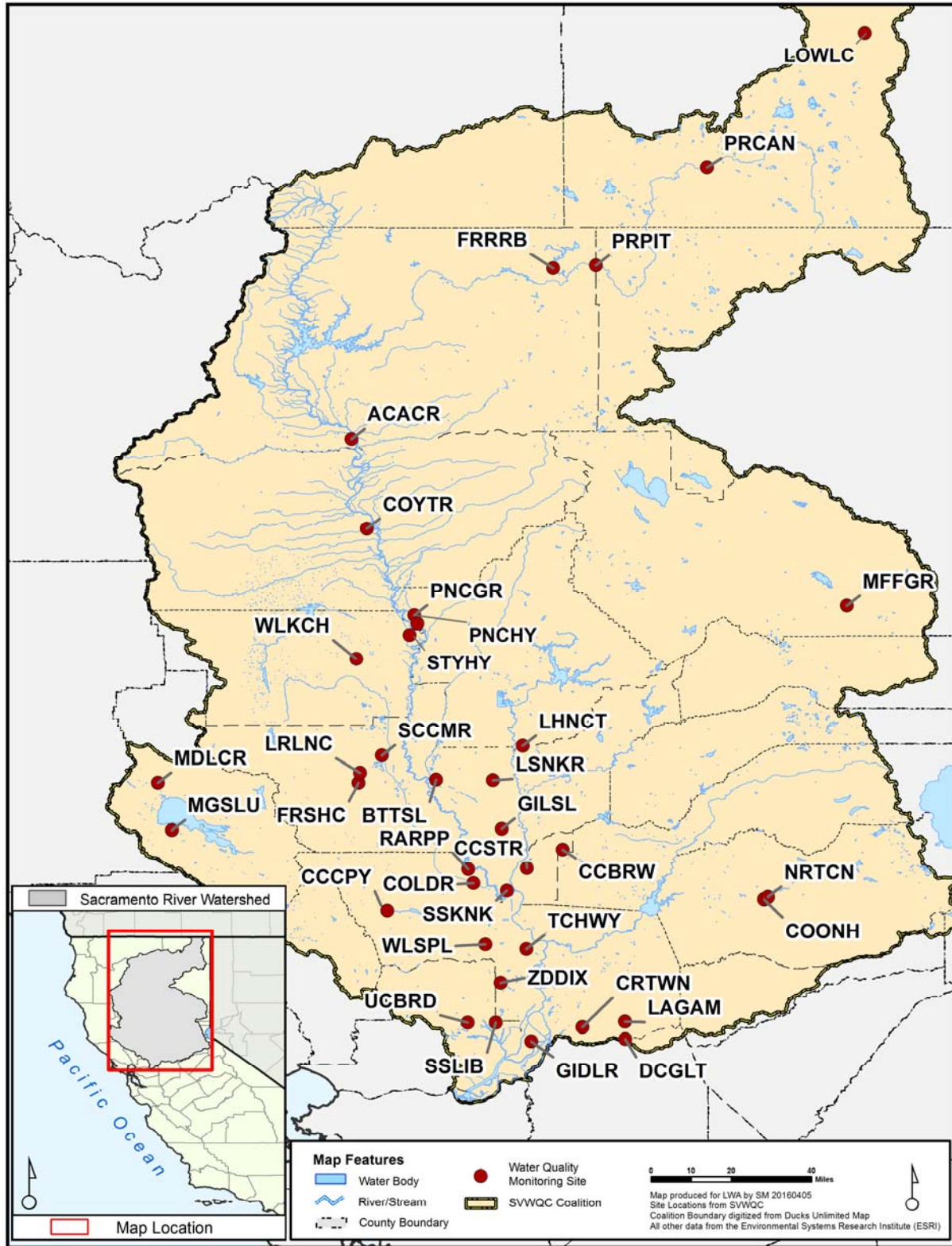


Figure 1. Coalition Monitoring Sites with Management Plans, 2015

Table 3. Summary of Management Plan Compliance Monitoring Outcomes

Management Plan Category	Analyte	Subwatershed	Site Name	Events Sampled	Pesticide Detections	Exceedances
DO and pH	Dissolved Oxygen	Butte-Yuba-Sutter	Butte Slough at Pass Road	5	NA	5
			Gilsizer Slough at George Washington Road	7	NA	2
			Lower Honcut Creek at Hwy 70	11	NA	4
			Lower Snake River	12	NA	0
			Pine Creek at Highway 32	11	NA	6
			Sacramento Slough bridge near Karnak	6	NA	3
		Colusa Glenn	Colusa Basin Drain above KL	6	NA	3
			Freshwater Creek at Gibson Rd	11	NA	0
		Sycamore Slough	Rough and Ready Pumping Plant (RD 108)	5	NA	0
			Stone Corral Creek near Maxwell Road	3	NA	1
			Walker Creek near 99W and CR33	6	NA	0
		Lake	McGaugh Slough at Finley Road East	3	NA	3
			Middle Creek u/s from Highway 20	9	NA	4
		Pit River	Pit River at Pittville	6	NA	0
		PNSSNS	Coon Creek at Brewer Road	7	NA	1
			Coon Creek at Striplin Road	3	NA	0
		Sacramento Amador	Cosumnes River at Twin Cities Rd	5	NA	2
			Grand Island Drain near Leary Road	11	NA	2
			Laguna Creek at Alta Mesa Rd	3	NA	3
		Shasta Tehama	Anderson Creek at Ash Creek Road	10	NA	3
			Coyote Creek at Tyler Road	3	NA	3
		Solano	Ulatis Creek at Brown Road	11	NA	1
			Z Drain	3	NA	1
Yolo	Cache Creek at Capay Diversion Dam	4	NA	1		
	Willow Slough Bypass at Pole Line	11	NA	2		
DO and pH (continued)	pH	Butte-Yuba-Sutter	Gilsizer Slough at George Washington Road	7	NA	1
		Colusa Glenn	Stony Creek on Hwy 45 near Rd 24	2	NA	1

Management Plan Category	Analyte	Subwatershed	Site Name	Events Sampled	Pesticide Detections	Exceedances
		Pit River	Fall River at Fall River Ranch Bridge	4	NA	0
			Pit River at Pittville	6	NA	0
		Sacramento Amador	Cosumnes River at Twin Cities Rd	5	NA	0
			Dry Creek at Alta Mesa Road	1	NA	0
			Laguna Creek at Alta Mesa Rd	3	NA	0
		Solano	Ulatis Creek at Brown Road	11	NA	0
			Z Drain	3	NA	0
		Yolo	Tule Canal at I-80	3	NA	0
Willow Slough Bypass at Pole Line	11		NA	2		
Legacy Pesticides	Legacy Organochlorine and Group A Pesticides	Butte-Yuba-Sutter	Gilsizer Slough at George Washington Road	2	0	0
		Colusa Glenn	Freshwater Creek at Gibson Rd	2	0	0
			Lurline Creek at 99W	2	0	0
			Rough and Ready Pumping Plant (RD 108)	2	0	0
		EIDorado	Coon Hollow Creek	2	0	0
			North Canyon Creek	2	0	0
		Sacramento Amador	Grand Island Drain near Leary Road	2	0	0
Yolo	Willow Slough Bypass at Pole Line	2	0	0		
Pathogen Indicators	<i>E. coli</i>	ButteYubaSutter	Lower Honcut Creek at Hwy 70	11	NA	4
			Lower Snake R. at Nuestro Rd	12	NA	3
			Pine Creek at Highway 32	11	NA	3
		Colusa Glenn	Colusa Basin Drain above KL	4	NA	0
			Freshwater Creek at Gibson Rd	10	NA	7
			Walker Creek near 99W and CR33	6	NA	3
		Lake	Middle Creek u/s from Highway 20	9	NA	2
Pathogen Indicators (continued)	<i>E. coli</i> (continued)	Sacramento Amador	Cosumnes River at Twin Cities Rd	5	NA	3
			Grand Island Drain near Leary Road	11	NA	4
		Shasta Tehama	Anderson Creek at Ash Creek Road	10	NA	7
		Solano	Shag Slough at Liberty Island Bridge	4	NA	0

Management Plan Category	Analyte	Subwatershed	Site Name	Events Sampled	Pesticide Detections	Exceedances
			Ulatis Creek at Brown Road	11	NA	3
		Yolo	Willow Slough Bypass at Pole Line	11	NA	5
Registered Pesticides	Chlorpyrifos	Butte-Yuba-Sutter	Lower Snake R. at Nuestro Rd	6	2	0
			Pine Creek at Nord Gianella Road	5	1	1
		Colusa Glenn	Walker Creek near 99W and CR33	1	0	0
		Solano	Ulatis Creek at Brown Road	6	1	1
		Yolo	Willow Slough Bypass at Pole Line	5	0	0
		Diazinon	Butte-Yuba-Sutter	Gilsizer Slough at George Washington Road	6	0
	Diuron	Solano	Ulatis Creek at Brown Road	3	0	0
		Yolo	Willow Slough Bypass at Pole Line	3	0	0
	Malathion	Butte-Yuba-Sutter	Gilsizer Slough at George Washington Road	6	0	0
		Colusa Glenn	Colusa Basin Drain above KL	7	0	0
		Solano	Ulatis Creek at Brown Road	6	0	0
		Yolo	Willow Slough Bypass at Pole Line	5	0	0
Salinity	Boron	Yolo	Tule Canal at I-80	4	NA	3
			Willow Slough Bypass at Pole Line	4	NA	4
	Conductivity	Butte-Yuba-Sutter	Gilsizer Slough at George Washington Road	7	NA	1
			Colusa Glenn	Colusa Basin Drain above KL	6	NA
		Colusa Glenn	Freshwater Creek at Gibson Rd	11	NA	2
			Lurline Creek at 99W	4	NA	1
			Rough and Ready Pumping Plant (RD 108)	5	NA	4
			Stone Corral Creek near Maxwell Road	3	NA	0
		Lake	McGaugh Slough at Finley Road East	3	NA	0
		Sacramento Amador	Grand Island Drain near Leary Road	11	NA	3
Salinity (continued)	Conductivity (continued)	Solano	Shag Slough at Liberty Island Bridge	4	NA	0
			Ulatis Creek at Brown Road	11	NA	8
			Z Drain	3	NA	0
		Upper Feather River	Middle Fork Feather River above Grizzly Cr	1	NA	0

Management Plan Category	Analyte	Subwatershed	Site Name	Events Sampled	Pesticide Detections	Exceedances
		Yolo	Cache Creek at Capay Diversion Dam	4	NA	1
			Tule Canal at I-80	3	NA	3
			Willow Slough Bypass at Pole Line	11	NA	9
Toxicity	Ceriodaphnia survival	Butte-Yuba-Sutter	Lower Snake R. at Nuestro Rd	9	NA	0
		Colusa Glenn	Stony Creek on Hwy 45 near Rd 24	0	NA	0
			Walker Creek near 99W and CR33	5	NA	0
		Yolo	Cache Creek at Capay Diversion Dam	5	NA	0
			Willow Slough Bypass at Pole Line	7	NA	0
	Selenastrum Growth	Solano	Ulatis Creek at Brown Road	10	NA	0
		Yolo	Willow Slough Bypass at Pole Line	9	NA	0
	Hyalella survival	Colusa Glenn	Stony Creek on Hwy 45 near Rd 24	0	NA	0
		Sacramento Amador	Cosumnes River at Twin Cities Rd	1	NA	0
Solano		Z Drain	2	NA	0	
Trace Metals	Arsenic	Sacramento Amador	Grand Island Drain near Leary Road	6	NA	5
	Copper	Butte-Yuba-Sutter	Pine Creek at Highway 32	6	NA	0
	Lead	Pit River	Pit River at Pittville	6	NA	0

NA = Not applicable

SOURCE EVALUATIONS

There were no new Source Evaluations conducted for the Management Plan in 2015.

OUTREACH DOCUMENTATION

The Coalition and its subwatersheds continue to work with the Water Board and its staff to implement the Coalition's *Landowner Outreach and Management Practices Communications Process* and the Coalition's approved Management Plan to address exceedances of water quality objectives identified in the Sacramento Valley. The primary strategic approach taken by the Coalition has been to notify and educate the subwatershed landowners, farm operators, and/or wetland managers about the cause(s) of toxicity and/or exceedance(s) of water quality objectives or ILRP Trigger Limits. Notifications have initially focused on, but not limited to, growers who operate directly adjacent to or within close proximity to a waterway showing an exceedance of a water quality objective or ILRP Trigger Limit. The broader outreach program, which includes both grower meetings and the notifications distributed through direct mailings, encourages the adoption of BMPs and modification of the uses of specific farm and wetland inputs to prevent movement of constituents of concern into Sacramento Valley surface waters.

To identify landowners operating in high priority lands, the Coalition identifies the assessor parcels and subsequently, the owners of agricultural operations nearest the water bodies of interest. From the list of assessor parcel numbers, the Coalition identifies its members and mails to them an advisory notice along with information on options to address the specific exceedances using BMPs. This same approach has been used to conduct management practice surveys in areas targeted by the Management Plans.

Descriptions of the outreach and education activities conducted by the Coalition's subwatersheds in 2015 are provided in Appendix F (*SVWQC Outreach Materials*) of the Coalition's 2015 Annual Monitoring Report.

MANAGEMENT PRACTICES INVENTORIES AND MEMBER SURVEYS

Historically, inventories of management practices have been conducted by the Coalition in several contexts for the ILRP. Starting in 2014, the WDR required that the Coalition collect and aggregate summarized information from Farm Evaluations. The summary of the management practice data includes a:

- quality assessment of the information by township
- description of corrective actions to be taken regarding any deficiencies in the quality of data submitted

This information is provided as a separate report developed by Michael Johnson, LLC (MLJ) for SVWQC (Farm Evaluation Summary Report). The Farm Evaluation Summary Report will be submitted with the AMR on May 1, 2016.

The Farm Evaluations and the annual Farm Evaluation Summary Report will be the primary source for management practices and member surveys, but additional surveys might be conducted on an as needed basis.

RECOMMENDATIONS FOR MANAGEMENT PLAN MONITORING

Special project monitoring for the Management Plan includes specific targeted monitoring or studies to address implementation of a TMDL or implementation of a Management Plan that results from exceedances. Management plan monitoring is generally conducted to support source identification or effectiveness assessment, and may include surveys of agricultural practices, as well as water column or sediment sampling. The monitoring sites, special study parameters, management plan strategy, implementation steps, and general schedule for management plans have been presented previously in the Sacramento Valley Coalition Group's approved 2009 *Management Plan*, *Management Plan Progress Reports* (2010, 2011, 2012), the *Addendum to Sacramento Valley Water Quality Coalition Management Plan: Chlorpyrifos and Diazinon TMDLs*, and in the Coalition's monitoring plan updated annually for approval by the Executive Officer of the Water Board.

The need for Management Plan monitoring is determined primarily based on the potential to provide useful information for source identification, in establishing causes of toxicity, and to evaluate management practice effectiveness. This monitoring may consist of water column or sediment sampling, field evaluations, or surveys of agricultural practices. With the exception of pathogen indicator Management Plans for 19 sites, all Management Plans had monitoring scheduled for source evaluation and/or compliance in 2015. The monitoring proposed and conducted in 2015 was submitted to and approved by the Water Board's Executive Officer in 2014. The Coalition's approved 2015 monitoring plan includes the recommended monitoring schedule for the Management Plan, as well as monitoring required in 303(d)-listed water bodies and TMDLs for chlorpyrifos and diazinon, legacy OC pesticides, and Group A OC pesticides (Attachment D (Site Specific Monitoring Tables) of the 2015 ILRP Monitoring Plan).

Based on the evaluations of Management Plan monitoring results through 2015 and source evaluations presented earlier in this document, the Coalition has submitted or is preparing requests to deem complete the requirements and monitoring for 13 Management Plans. These Management Plans are summarized in **Table 4**. Monitoring scheduled for these management plans will continue until completion is approved by the Executive Officer of the Water Board, as required by the Coalition's MRP.

Table 4. Requests for Management Plan Completions

Subwatershed	Water Body	Category	Analyte	Status
Butte Yuba Sutter	Gilsizer Slough	Registered Pesticides	Diazinon	Continue monitoring; Gilsizer Diazinon RTC submitted December 2015
	Lower Snake River	Registered Pesticides	Chlorpyrifos	Approved for completion (March 2015)
	Lower Snake River	Toxicity	<i>Ceriodaphnia</i>	Continue monitoring; RTC in preparation for 2016
Colusa Glenn	Colusa Drain	Registered Pesticides	<i>Malathion</i>	Continue monitoring; RTC in preparation for 2016
	Stony Creek	Toxicity	<i>Hyalella</i>	Submitted in 2013; Approved as completed September 2015;
	Stony Creek	Toxicity	<i>Ceriodaphnia</i>	Continue monitoring; waiting for RTC approval (submitted 2013)
El Dorado	Coon Hollow Creek	Legacy Pesticides	DDE/DDT	Monitoring required; Other tasks suspended; Draft RTC submitted in 2013, revisions submitted May 2013 and April 2015
	North Canyon Creek	Legacy Pesticides	DDE	Monitoring required; Other tasks suspended; Draft RTC submitted in 2013, revision submitted May 2013 and April 2015
Pit River	Pit River	Trace Metals	Lead	Continue monitoring; Source Evaluation submitted in 2013; RTC submitted January 2016.
Sacramento Amador	Cosumnes River	Toxicity	<i>Hyalella</i>	Approved for completion (February 2015)
Solano	Ulati Creek	Toxicity, Registered Pesticides	<i>Selenastrum</i> , diuron	Continue monitoring; Willow Slough <i>Selenastrum</i> /diuron RTC submitted December 2015
Yolo	Cache Creek	Toxicity	<i>Ceriodaphnia</i>	Continue monitoring; RTC submitted Dec 2013; approved in August 2015
	Willow Slough	Salinity	Boron	Continue monitoring; Willow Slough Boron RTC in preparation for 2016
	Willow Slough	Registered Pesticides	<i>Malathion</i>	Continue monitoring; RTC in preparation for 2016
	Willow Slough	Toxicity, Registered Pesticides	<i>Ceriodaphnia</i> , chlorpyrifos	Continue monitoring; Willow Slough <i>Ceriodaphnia</i> /chlorpyrifos RTC submitted December 2015
	Willow Slough	Toxicity, Registered Pesticides	<i>Selenastrum</i> , diuron	Continue monitoring; Willow Slough <i>Selenastrum</i> /diuron RTC submitted December 2015

GOALS FOR IMPLEMENTATION OF MANAGEMENT PRACTICES

The Coalition is required to develop performance goals and a schedule for implementation of management practices when it is determined that agriculture is a contributor to exceedances of water quality objectives or ILRP Trigger Limits. These goals are developed as independent documents for specific Management Plan elements. The status of Management Practice Implementation Performance Goals (MPIPG) that have been submitted to date is provided in **Table 5**. Many MPIPGs that were initially submitted were not officially reviewed by the Water Board. Instead, in 2013, Water Board staff requested a change in the scope, content, and specificity of the MPIPGs generally, and, additionally, requested preparation of specific “addenda” to update the information basis and goals for the MPIPGs. Most of these addenda have been submitted, and several additional addenda or MPIPGs are currently in preparation.

Table 5. Status: Submitted Management Practices Implementation and Performance Goals

Management Plan Analytes	Water Body	Status
Malathion	Colusa Drain	MPIPG submitted May 2013
Diazinon	Gilsizer Slough	Addendum submitted April 2013
Chlorpyrifos	Pine Creek	Final Action Plan submitted April 2012
Chlorpyrifos	Ulatis Creek	MPIPG submitted April 2013
<i>Selenastrum</i> toxicity and diuron	Ulatis Creek	MPIPG submitted May 2013
Malathion	Willow Slough	MPIPG submitted June 2013
<i>Hyalella</i> toxicity and pyrethroid pesticides	Z-Drain	Addendum submitted April 2013

UPDATE TO REQUIRED MANAGEMENT PLANS

This section provides an update to the Coalition’s currently approved Management Plan. Data collected by the Coalition through September 2015 were evaluated to update the Management Plan requirements for this Progress Report. Requirements for new management plan elements were based on observations of more than one exceedance in a three-year period, as required by the ILRP. Proposed tasks and schedules to implement the new elements were developed. If modifications to the existing scope or schedule for implementation in the approved Management Plan were proposed, these are also described.

New Management Plan Elements

There were nine Management Plans triggered by exceedances observed in Coalition monitoring conducted from October 2014 through September 2015. The Butte-Yuba-Sutter subwatershed had exceedances that triggered a total of four new management plans at Gilsizer Slough, Lower Honcut Creek, and Lower Snake River. Gilsizer Slough requires a Management Plan for chlorpyrifos, Lower Honcut Creek needs one for copper, and Lower Snake River requires Management Plans for conductivity and arsenic. The Colusa Glenn subwatershed had two waterbodies that require new management plans: Walker Creek requires an ammonia Management Plan¹ and Rough and Ready Pumping Plant needs one for pH. Middle Creek, located in the Lake Subwatershed, and Tule Canal, located in the Yolo Subwatershed, both require a dissolved oxygen Management Plan. Pope Creek, in the Napa Subwatershed, needs a Management Plan for *E. coli*. The chlorpyrifos Management Plan at Gilsizer Slough is deemed

High Priority, while the rest of the Management Plans are identified as Low Priority. The new Management Plan requirements based on monitoring data through September 2015 are listed in Table 6.

Table 6. Additions to Management Plan for Data through September 2015

Subwatershed	Water Body	Category	Analyte	Priority
Butte-Yuba-Sutter	Gilsizer Slough	Registered Pesticides	Chlorpyrifos	HIGH
Butte-Yuba-Sutter	Lower Honcut Creek	Trace Metals	Copper	MED
Butte-Yuba-Sutter	Lower Snake River	Salinity	Conductivity	LOW
Butte-Yuba-Sutter	Lower Snake River	Trace Metals	Arsenic	MED
Colusa Glenn	Rough and Ready Pumping Plant	DO and pH	pH	LOW
Colusa Glenn	Walker Creek	Nutrients	Ammonia	MED
Lake	Middle Creek	DO and pH	DO	LOW
Napa	Pope Creek	Pathogen Indicators	E. coli	LOW
Yolo	Tule Canal	DO and pH	DO	LOW

[1] As mentioned earlier, the Coalition is drafting a letter requesting that the exceedances that triggered the management plan at Walker Creek be invalidated due to site conditions not attributable to agricultural runoff. This would eliminate the need for a Management Plan or would revise the priority to "LOW"

Implementation Tasks and Schedule for New Elements

Tasks and schedules to implement the new Management Plan requirements were developed to be consistent with the Coalition's existing Management Plan, unless otherwise specified. In cases where it was possible, the existing schedules for a category were adopted without modification. In others, the schedules were adjusted to conform to agricultural cycles, Coalition reporting schedules, or other ILRP programmatic constraints. The only modifications to the approaches or scope for specific Management Plan categories are the elimination of the "Review Regulatory Basis" task for analytes if this has already been completed or is not necessary for the specific parameter.

The tasks and schedules proposed for the new Management Plan elements are provided in **Table 7**.

Proposed Changes to the Management Plan

The Coalition's currently approved Management Plan and updates have been integrated into a Comprehensive Surface Water Quality Management Plan (CSQMP) to meet the requirements of the Coalition's Waste Discharge Requirements (WDR) Order No. R5-2014-0030 Monitoring and Reporting Program (MRP) adopted by the Water Board in March 2014. The CSQMP was submitted in June 2015 and is currently being revised in response to Regional Water Board comments received March 2016.

Deliverables and Schedule for Ongoing Management Plan Elements

Deliverables to be completed in 2016 for existing Management Plan elements are listed in **Table 8**. The specific detailed tasks for these existing Management Plan elements have been provided previously.

Table 7. Initial Deliverables for New Management Plan Elements

Waterbody (Subwatershed)	Analyte (Category)	Management Plan Deliverables	Element Detail	Proposed Due Date
Gilsizer Slough (Butte-Yuba-Sutter)	Chorpyrifos (Registered Pesticides)	Management Plan	Monitoring required;	Management Plan
Lower Honcut Creek (Butte-Yuba-Sutter)	Copper (Trace Metals)	Management Plan	Monitoring required;	Management Plan
Lower Snake River (Butte Yuba Sutter)	Conductivity (Salinity)	No deliverable requirements established	Monitoring required; Other management plan tasks suspended by Executive Officer of the CVRWQCB;	None
Lower Snake River (Butte-Yuba-Sutter)	Arsenic (Trace Metals)	Deliverable TBD	Monitoring required; Other management plan tasks suspended by Executive Officer of the CVRWQCB;	None
Rough and Ready Pumping Plant (Colusa Glenn)	pH (DO and pH)	No deliverable requirements established	Monitoring required; SVWQC to confer with Regional Water Board in 2016 to determine whether there is a need for full Management Plan for non-agricultural groundwater source of arsenic; Schedule also TBD;	None
Walker Creek (Colusa Glenn)	Ammonia (Nutrients)	Management Plan TBD ¹	Monitoring required; Other tasks TBD	None
Middle Creek (Lake)	DO (DO and pH)	No deliverable requirements established	Monitoring required; Other management plan tasks suspended by Executive Officer of the CVRWQCB;	None
Pope Creek (Napa)	E. coli (Pathogen Indicators)	No deliverable requirements established	Monitoring required; Other management plan tasks suspended by Executive Officer of the CVRWQCB;	None
Tule Canal (Yolo)	DO (DO and pH)	No deliverable requirements established	Monitoring required; Other management plan tasks suspended by Executive Officer of the CVRWQCB;	None

[1] The Coalition is drafting a letter requesting that the exceedances that triggered the management plan at Walker Creek be invalidated due to site conditions not attributable to agricultural runoff. This would eliminate the need for a Management Plan.

Table 8. 2016 Deliverables for Ongoing Management Plans

	Analytes	Subwatershed	Water Body	Status	Next Deliverable ⁽¹⁾
Registered Pesticides	Chlorpyrifos	Butte-Yuba-Sutter	Pine Creek	Continue monitoring and implementation; Management Plan submitted;	None
	Chlorpyrifos	Solano	Ulatis Creek	Continue monitoring & implementation per MPIPG/addendum;	IPR, 2016
	Chlorpyrifos	Yolo	Willow Slough	Continue monitoring & implementation; RTC submitted for approval;	None
	Diazinon	Butte-Yuba-Sutter	Gilsizer Slough	Continue monitoring & implementation; RTC submitted for approval;	None
	Diuron	Solano	Ulatis Creek	Continue monitoring & implementation; RTC submitted for approval;	None
	Diuron	Yolo	Willow Slough	Continue monitoring; RTC submitted for approval;	None
	Malathion	Colusa Glenn	Colusa Drain	Continue monitoring & implementation per MPIPG/addendum;	Prepare RTC, IPR, 2016
	Malathion	Yolo	Willow Slough	Continue monitoring & implementation per MPIPG/addendum;	Prepare RTC, IPR, 2016
Toxicity	Ceriodaphnia	Butte-Yuba-Sutter	Lower Snake River	Continue monitoring; RTC in preparation;	Prepare RTC,
	Ceriodaphnia	Colusa Glenn	Stony Creek	Continue monitoring; RTC submitted for approval;	None
	Ceriodaphnia	Yolo	Willow Slough	Continue monitoring & implementation; RTC submitted for approval;	None
	Hyalella	Solano	Z Drain	Continue monitoring and implementation per MPIPG and 2012 addendum;	None
	Selenastrum	Solano	Ulatis Creek	Continue monitoring and implementation; RTC submitted for approval;	None
	Selenastrum	Yolo	Willow Slough	Continue monitoring; RTC submitted for approval;	None
Trace Metals	Arsenic	Sacramento Amador	Grand Island Drain	Continue monitoring; SER submitted in 2013;	None established
	Lead	Pit River	Pit River	Continue monitoring; RTC submitted for approval;	None
	Copper	Butte-Yuba-Sutter	Pine Creek	Continue monitoring;	Management Plan
Legacy Pesticides	DDE	Butte-Yuba-Sutter	Gilsizer Slough	Monitoring required; Other tasks suspended by Executive Officer of the CVRWQCB;	None established
	DDE	Colusa Glenn	Lurline Creek		
	DDE	Yolo	Willow Slough		
	DDE/DDT	Colusa Glenn	Sycamore Slough	Monitoring required; Other tasks suspended; Amended RTC submitted in 2015;	None established
	DDE/DDT	Sacramento Amador	Grand Island Drain		
	DDE/DDT	El Dorado	Coon Hollow Creek		
	DDE	El Dorado	North Canyon Creek		

	Analytes	Subwatershed	Water Body	Status	Next Deliverable⁽¹⁾
Pathogen Indicators	<i>E. coli</i>	Butte-Yuba-Sutter, Colusa Glenn, Lake, Napa, Sacramento-Amador, Shasta-Tehama, Pit River, Solano, Yolo, Upper Feather River	31 water bodies	All Management Plan tasks suspended by Executive Officer of the CVRWQCB pending development of a region-wide strategy;	Workplan for Source ID Studies
Salinity	Conductivity, TDS, Boron	Butte-Yuba-Sutter, Colusa Glenn, Lake, Sacramento-Amador, Solano, Yolo, Upper Feather River	18 water bodies	Monitoring required; Other tasks suspended by Executive Officer of the CVRWQCB;	No deliverable requirements established
DO and pH	DO, pH	Butte-Yuba-Sutter, Colusa Glenn, Lake, Sacramento-Amador, Shasta Tehama, Pit River, PNSSNS, Solano, Yolo,	34 water bodies	Monitoring required; Other tasks suspended by Executive Officer of the CVRWQCB;	Workplan for Source ID Studies

¹ MPIPG = Management Practices Implementation and Performance Plan; RTC = Request to Complete Management Plan; IPR = Implementation Progress Report; CSQMP = Comprehensive Surface Water Management Plan;

TMDL COMPLIANCE REPORTING

Currently, TMDL compliance monitoring and reporting by the Coalition is limited to the TMDLs for chlorpyrifos and diazinon discharges to the Sacramento and Feather Rivers and the Sacramento-San Joaquin Delta, and for the Clear Lake Nutrient TMDL.

Chlorpyrifos and Diazinon TMDL

The Basin Plan amendments (R5-2007-0034 and R5-2006-0061) require dischargers, either individually or as a coalition, to submit a management plan that describes the actions that they will take to reduce diazinon and chlorpyrifos discharges and meet the applicable allocations by the required compliance dates. The Coalition's Management Plan (SVWQC 2009) includes a process for source identification and identification of additional management practices that may be needed to achieve additional reductions in diazinon and chlorpyrifos discharges. Quarterly meetings are held with the Water Board in order to evaluate progress in meeting these reductions and other Management Plan requirements, and revisions to the Management Plan will be made if sufficient progress is not being achieved.

The Coalition continues to monitor chlorpyrifos and diazinon according to the SVWQC 2010-2014 MRP Order¹⁰ and the Coalition's approved 2014 ILRP Monitoring schedule. The monitoring locations are representative of discharges to the Sacramento River, Feather River, and Delta. This monitoring will continue to provide information on the wide range of discharges and hydrologic conditions likely to occur in the Sacramento Valley watershed and Delta. The Coalition's Addendum to the Management Plan presents the technical rationale for selecting the representative monitoring locations for the TMDL compliance monitoring and for the schedule for chlorpyrifos and diazinon monitoring. The schedule for TMDL monitoring at these locations is included in the Coalition's annual monitoring plans.

The seven Basin Plan requirements for TMDL compliance monitoring are:

- Determine compliance with established water quality objectives and loading capacities in Sacramento-San Joaquin Delta and the Sacramento and Feather rivers;
- Determine compliance with established waste load allocations and load allocations for diazinon and chlorpyrifos;
- Determine the degree of implementation of management practices to reduce off-site migration of diazinon and chlorpyrifos;
- Determine the effectiveness of management practices and strategies to reduce off-site migration of diazinon and chlorpyrifos;
- Determine whether alternatives to diazinon and chlorpyrifos are causing surface water quality impacts;
- Determine whether the discharge causes or contributes to a toxicity impairment due to additive or synergistic effects of multiple pollutants; and

¹⁰ Monitoring And Reporting Program Order No. R5-2009-0875 for Sacramento Valley Water Quality Coalition Under Amended Order No. R5-2006-0053 Coalition Group Conditional Waiver Of Waste Discharge Requirements For Discharges From Irrigated Lands. California Regional Water Quality Control Board Central Valley Region, Rancho Cordova, California. December 2009.

- Demonstrate that management practices are achieving the lowest pesticide levels technically and economically achievable.

The Coalition's approach in addressing these requirements has been described previously in the *Addendum to Sacramento Valley Water Quality Coalition Management Plan: Chlorpyrifos and Diazinon TMDLs*.

The results of the Coalition's TMDL compliance monitoring through September 2015 were reported in *Management Of Chlorpyrifos And Diazinon Discharges To The Sacramento And Feather Rivers And The Sacramento-San Joaquin Delta: 2015 TMDL Compliance Monitoring Report* (SVWQC 2016). The conclusions of this report of TMDL compliance monitoring results were as follows:

- Based on the results of ILRP and TMDL monitoring, compliance with the TMDL water quality objectives and load allocations is achieved in the overwhelming percentage of samples. These results demonstrate that outreach and education, the resulting changes in use patterns and changes in management practices, and modifications to labeling have been successful in reducing instream ambient concentrations of chlorpyrifos and diazinon to the degree required by the TMDL. The relatively low rate of exceedances since the beginning of the ILRP suggests that many of the changes were successfully implemented prior to or soon after 2005. Although exceedances are still occasionally observed, the overall trend from 2005 through September 2015 has been a decrease in the rate of annual exceedances. Exceedances observed in the TMDL tributaries monitored for compliance were determined to be unlikely to cause exceedances of the TMDL Load Allocations in the named TMDL receiving water bodies under any reasonably probable scenario.
- Continuing efforts to further reduce exceedances are being implemented through the Coalition Management Plans for sites that have triggered a Management Plan requirement for these pesticides. Additionally, the Coalition aggressively investigates all exceedances and conducts follow-up contacts with growers reporting applications with the potential to cause specific observed exceedances. These combined efforts are expected to result in continuation of the decreasing trend in the number of exceedances for these pesticides.

Clear Lake Nutrient TMDL

In 2006, the Water Board adopted the Clear Lake Nutrient TMDL with the goal of achieving a 40% reduction in non-point source contributions. Nonpoint source dischargers – the U.S. Bureau of Land Management, the U.S. Forest Service, irrigated agricultural dischargers and Lake County – were given a combined load allocation of 85,000 kg phosphorus per year. As specified in the TMDL, responsible parties may choose to estimate their phosphorus loading through monitoring. At the request of the Water Board staff, the Sacramento Valley Water Quality Coalition (Coalition) provided information to assist them in preparation of its 2012 update of the Clear Lake Nutrient TMDL¹¹. Key findings and conclusions of the TMDL Update that were relevant to agricultural stakeholders in the region include:

¹¹ *Clear Lake Nutrient Total Maximum Daily Load Control Program 5-Year Update*. Regional Water Quality Control Board Central Valley Region. September 2012.

- The TMDL adopted by the Water Board in 2006 for control of phosphorus in Clear Lake is still appropriate.
- TMDL responsible parties have taken numerous actions directed toward reducing phosphorus inputs to the lake, including developing management plans, implementing sediment reduction BMPs, applying for planning and implementation grants, and conducting monitoring. Nevertheless, there is inadequate information available to 1) determine current phosphorus loading to the Lake from the various sources, 2) evaluate the effectiveness of implemented phosphorus control practices, and 3) evaluate overall compliance with the TMDL.
- The 2017 TMDL compliance date may be unrealistic because a major component of the implementation plan (Middle Creek Flood Damage Reduction and Ecosystem Restoration Project) is behind schedule despite efforts by Lake County to move this project forward.
- Responsible parties should 1) aggressively implement sediment reduction BMPs to decrease phosphorus loading to the Lake, 2) evaluate the effectiveness of BMPs in reducing phosphorus loading to the Lake and 3) provide this information to the Water Board on an annual basis. Staff will consider regulatory options if the above actions are not implemented.

A Memorandum of Understanding (MOU) developed in October 2008 documented a roadmap for a collective approach among all the “responsible parties” for proceeding with the development of the Nutrient TMDL and resulted in a five (5) year plan. The Coalition, in coordination with the Lake County Farm Bureau’s Lake County Farm Bureau Education Corporation (LCFBEC), conducted water quality monitoring as part of the 5-year plan. The Coalition’s November 2011 memorandum¹² to the Water Board provides the results of that monitoring and information on management practices documented by the LCFBEC in 2007, current efforts to increase the use of management practices, and additional goals the LCFBEC will consider as more becomes known about the causes of algae blooms in Clear Lake.

Based on the information provided by the Coalition in 2011, the Coalition is already meeting the “aggressive BMP implementation” objective recommended by the CVRWQCB staff in the TMDL Update:

“To mitigate erosion, Lake County has regulated development of conversion of agricultural properties for over 10 years due to the erosion hazard. Under the current Grading Ordinance (Chapter 30, LCC, adopted July 17, 2007) implementation of BMP’s is required for new agricultural properties (native vegetation to agriculture) and conversions of deep rooted crops (orchard to vineyard) on soils with a moderate to severe hazard rating. Erosion control management practices are implemented to limit the amount of sediment runoff and fertilizer runoff.

A 2007 survey conducted by the Lake County Farm Bureau Watershed Program indicated that 90% of vineyard acreage is maintaining a permanent or winter annual cover crop. The Lake County Winegrape Commission reports that 70% of the vineyard acreage and 145 winegrape growers have begun the process to become certified as

¹² Memorandum: Clear Lake Nutrient TMDL Progress Information Request. November 23, 2011. Prepared for the Sacramento Valley Water Quality Coalition by Larry Walker Associates, Davis, CA.

sustainable winegrowers as part of the California Sustainable Winegrowing Alliance (CSWA). Management practices promoted by the CSWA include: soil management, cover cropping for erosion control and irrigation and nutrient management practices.”

Additionally, the Coalition initiated monitoring at a second site in 2012 to provide additional data for the TMDL and BMP effectiveness assessments. This monitoring has continued through 2014 and 2015. All of the relevant data for the Clear Lake monitoring sites are routinely provided to the Water Board for use in their TMDL assessments.

SUMMARY: EVALUATION OF PROGRESS

The Coalition’s Management Plan approach implements the processes and elements that are outlined in the Sacramento Valley Water Quality Coalition’s (Coalition) Water Quality Management Plan (Management Plan), which was reorganized into the Comprehensive Surface Water Quality Management Plan (CSQMP) in 2015. The CSQMP complies with the requirements set forth in the Coalition’s Waste Discharge Requirements (WDR), Order No. R5-2014-0030-R1:

- 1) Identification of potential sources of the observed exceedances, and identification of the irrigated agriculture source that may be the cause of the water quality problem, or a study design to determine the source.
This requirement is addressed by the Source Evaluation Reports developed for site-specific Management Plan elements (e.g., pesticides or toxicity in specific drainages) or regionally for some categories of Management Plan parameters (e.g., pathogen indicators).
- 2) Identification of management practices to be implemented to address the exceedances.
See 4) below.
- 3) Management practice implementation schedule. (Implementation may occur through another Water Board regulatory program designed to address the specific exceedances.)
See 4) below.
- 4) Management practice performance goals with a schedule.
Requirements 2) – 4) are being addressed in Management Practice Implementation and Performance Goals and schedule documents that are developed after agriculture is determined to be a probable contributor to exceedances of ILRP Trigger Limits. These are developed based on the results of surveys and direct contacts with growers conducted to estimate a baseline level of management practice implementation in the specific drainages.
- 5) Waste-specific monitoring schedule.
A monitoring plan and schedule for Management Plan monitoring and Assessment monitoring is prepared annually for review and approval by the Water Board. The Coalition is currently implementing the approved monitoring plan for 2016.
- 6) A process and schedule for evaluating management practice effectiveness.
The process and schedule is established in the Management Practice Implementation and Performance Goals and schedule documents developed for specific Management Plan requirements (e.g., for diuron in the region represented by Ulatis Creek). The overall effectiveness of the recommended practices and achievement of implementation goals will

be assessed based on monitoring results and compliance with relevant water quality objectives, ILRP Trigger Limits, or relevant toxicity benchmarks.

7) Identification of the participants and Coalition Group(s) that will implement the Management Plan.

The responsibilities to implement specific tasks are described generally in the Coalition's Monitoring Plan and specifically in the detailed descriptions and schedule of Management Plan tasks updated annually with this Management Plan Progress Report. Responsibilities for management practice implementation are further specified in Management Practice Implementation and Performance Goals documents.

8) An identified routine schedule of reporting to the Central Valley Water Board. *This requirement is addressed by the numerous specific reporting requirements for the Management Plan, including Management Plan Progress Reports, Source Evaluation Reports, Management Practice Implementation and Performance Goals documents, and Management Practices Survey Report(s). Additionally, the Coalition conducts regular (approximately quarterly) meetings with designated Water Board ILRP staff to discuss Management Plan progress, products, and decisions.*

In general terms, the processes to meet the requirements of the Management Plan can be distilled to these elements – source evaluation, identification of management practices needed to address exceedances, implementation of management practices, evaluation of effectiveness, and regular assessment of progress toward completion of the Management Plan. The Coalition has successfully developed and implemented processes for source evaluation and identification of management practices needed. Source evaluations have been completed and provided to the Water Board for a large number of management plan requirements for pesticides, toxicity, pathogen indicators, and legacy organochlorine pesticide exceedances.

Changes in practices and implementation of additional management practices to minimize discharges of waste contributing to exceedances have been ongoing since the ILRP was initiated, due to the outreach and education efforts of the Coalition and its members and partners. Specific trackable goals (Management Practice Implementation and Performance Goals MPIP-Gs) for a number of pesticide and toxicity Management Plans have been developed and submitted to the Water Board beginning in 2011. Although most of these MPIP-Gs were never comprehensively reviewed by the Water Board, implementation to meet these goals was initiated in the subwatersheds in anticipation of Water Board approval. Assessment of progress toward specific implementation goals will continue to be conducted regularly as documented in individual approved MPIP-G documents and as required by the current WDR and final approved CSQMP. Meeting water quality objectives is the ultimate goal and measure of effectiveness of the implemented management practices and progress for the Management Plan. Water quality monitoring to measure this progress is ongoing and assessed annually, and has resulted in the completion of 23 management plans to date, and pending requests for completion for 10 additional management plans. As measured by the completion and ongoing work on specific Management Plan tasks and deliverables summarized above and documented throughout this Progress Report, the Coalition continues to make good progress toward meeting all of these requirements and expects to achieve the goals of the current approved Management Plan and the CSQMP update that is currently in development.