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SACRAMENTO VALLEY WATER QUALITY COALITION

Water Quality Management Plan Progress Report

Prepared by

L A R R Y
W A L K E R



ASSOCIATES

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Executive Summary

The purpose of this document is to provide an update on the status of the implementation of the Sacramento Valley Water Quality Coalition's (Coalition) Water Quality Management Plan (2009 Management Plan), which was reorganized into the Comprehensive Surface Water Quality Management Plan (CSQMP) in 2015. The CSQMP was last updated in September 2016 and approved by the Central Valley Regional Water Quality Control Board (Regional Water Board) in November 2016. The 2016 CSQMP documented all active and suspended Coalition Surface Water Quality Management Plans (SQMPs) through September 2016. The Coalition's Waste Discharge Requirements (WDR), Order No. R5-2014-0030-07, specify the requirements for separate SWQMPs, and allow the Coalition the option of submitting separate, site-specific SQMPs when they are triggered or submitting an updated CSQMP on an annual basis that would identify and described any new SQMPs triggered during the preceding monitoring year (October 1 through September 30). Since the 2016 monitoring year, the Coalition has opted to submit separate SQMPs (hereafter, Management Plans), when triggered, to satisfy these requirements. The site-specific Management Plans developed since September 2016 are included as addenda to the CSQMP. The annual updates discussing the implementation of the Coalition's CSQMP and site-specific Management Plans are called Water Quality Management Plan Progress Reports or simply Management Plan Progress Reports (MPPRs).

In general terms, the processes to meet the requirements of the CSQMP 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 a site-specific Management Plan. The Coalition has successfully developed and implemented processes for source evaluation and identification of management practices needed. Source evaluations historically have been completed and provided to the Regional Water Board's Irrigated Lands Regulatory Program (ILRP) 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. Management Plan monitoring performed during the 2020 Monitoring Year (October 2019 through September 2020) occurred at representative, special project, and integration sites for source evaluation and/or compliance purposes. The monitoring proposed and conducted during the 2020 Monitoring Year was submitted to and approved by the Regional Water Board's Executive Officer on November 5, 2019. The Coalition's approved 2020 Monitoring Plan Update included the required monitoring for Management Plan elements, as well as monitoring required by the Coalition's MRP and TMDLs for nutrients in Clear Lake and chlorpyrifos and diazinon in the Sacramento and Feather Rivers.

New Management Plans

As part of this MPPR, data collected by the Coalition through September 2020 were evaluated to assess the necessity for any new Management Plan requirements. Requirements for new Management Plan elements were based on observations of more than one exceedance of an ILRP Trigger Limit in a three-year period, as required by the WDR. Proposed tasks and schedules to implement new Management Plan elements were developed, if necessary. If modifications to the existing scope or schedule for implementation of an approved Management Plan were proposed, then these changes are also described herein, if necessary. A single new Management Plan was triggered as the result of an ILRP Trigger Limit exceedance observed in Coalition monitoring conducted from October 2019 through September 2020. The new Management Plan is for diazinon at Gilsizer Slough, which is defined as high priority (registered pesticide) as per the Coalition's Comprehensive Surface Water Quality Management Plan (SVWQC 2016). The exceedance that triggered the Management Plan was observed in January 2020 and the initial diazinon exceedance occurred in January 2018. The Management Plan for diazinon in Gilsizer Slough was submitted to the Regional Water Board on June 17, 2020 and approved on November 6, 2020. This new Management Plan is documented for the first time in this MPPR.

Evaluation of Progress

Meeting water quality objectives (WQOs) is the ultimate goal and measure of effectiveness of the implemented management practices and progress for a Management Plan. Water quality monitoring to measure this progress is ongoing and assessed annually and has resulted in the completion of 44 Management Plans to date. As measured by the completion and ongoing work on specific Management Plan tasks and deliverables summarized above and documented throughout this MPPR, the Coalition continues to make good progress toward meeting these requirements and expects to achieve the goals of the current approved CSQMP.

Management Plan Progress Report

The purpose of this document is to provide an update on the status of the implementation of the Sacramento Valley Water Quality Coalition's (Coalition) Water Quality Management Plan (2009 Management Plan¹), which was reorganized into the Comprehensive Surface Water Quality Management Plan (CSQMP²) in 2015. The CSQMP was last updated in September 2016 and approved by the Central Valley Regional Water Quality Control Board (Regional Water Board) in November 2016. The 2016 CSQMP documented all active and suspended Coalition Surface Water Quality Management Plans (SQMPs) through September 2016. The Coalition's Waste Discharge Requirements (WDR), Order No. R5-2014-0030-07, specify the requirements for separate SQMPs, and allow the Coalition the option of submitting separate, site-specific SQMPs when they are triggered or submitting an updated CSQMP on an annual basis that would identify and describe any new SQMPs triggered during the preceding monitoring year (October 1 through September 30). Since the 2016 monitoring year, the Coalition has opted to submit separate SQMPs (hereafter, Management Plans), when triggered, to satisfy these requirements. The site-specific Management Plans developed since September 2016 are included as addenda to the CSQMP. The annual updates discussing the implementation of the Coalition's CSQMP and site-specific Management Plans are called Water Quality Management Plan Progress Reports or simply Management Plan Progress Reports (MPPRs).

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 triggered Management Plans. Data compilations for monitoring conducted for the CSQMP 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 MPPR provides summaries of the progress made toward completion of specific Management Plan elements, updates to the list of required Management Plan elements, and recommendations for continuation or modification of individual Management Plans. This MPPR also summarizes the results of initial source identification evaluations, where performed, and results of selected Management Plan monitoring for the previous year, provides documentation of outreach efforts, and provides a summary of baseline and ongoing management practice inventories for Management Plans developed under the Coalition's WDR.

The MPPR includes the following components, as specified in the MRP:

¹ SVWQC 2009. Water Quality Management Plan. Prepared by Larry Walker Associates for the Sacramento Valley Water Quality Coalition (SVWQC). Sacramento, California. January 2009.

² SVWQC 2016, Comprehensive Surface Water Quality Management Plan. Prepared by Larry Walker Associates for the Sacramento Valley Water Quality Coalition (SVWQC). Sacramento, California. September 2016.

Table 1. Management Plan Progress Report Requirements³

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>vi</i>
I.F.(4)	Location map(s) and a brief summary of management plans covered by the report	Results of Monitoring	4-8,13
I.F.(5)	Updated table that tallies all exceedances for the management plans	Results of Monitoring	14-16
I.F.(6)	A list of new management plans triggered since the previous report	New Management Plans	18
I.F.(7)	Status update on preparation of new management plans	New Management Plans	18
I.F.(8)	A summary and assessment of management plan monitoring data collected during the reporting period	Results of Monitoring	9-12
I.F.(9)	A summary of management plan grower outreach conducted	Outreach Documentation	12
I.F.(10)	A summary of the degree of implementation of management practices	Management Plan Status Update; Summary: Evaluation of Progress	18-32, 36-37
I.F.(11)	Results from evaluation of management practice effectiveness	Management Plan Status Update; Summary: Evaluation of Progress	18-32, 36-37
I.F.(12)	An evaluation of progress in meeting performance goals and schedules	Management Plan Status Update; Summary: Evaluation of Progress	18-32, 36-37
I.F.(13)	Any recommendations for changes to the management plan	Proposed Changes to the Management Plan	37

The activities conducted during the 2020 Monitoring Year (October 2019 through September 2020) to implement the Coalition's CSQMP continued to primarily focus 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, where indicated by Department of Pesticide Regulation Pesticide Use Reporting (PUR) data. Implementation efforts 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 historically have been documented in the Source Evaluation Reports submitted for various Management Plan

³ Monitoring and Reporting Program (Attachment B to R5-2014-0030-07), Appendix MRP-1: Third-Party Management Plan Requirements, Section I.F.

elements, where determined necessary.⁴ 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 during the 2020 Monitoring Year are listed in **Table 2**. This table provides the water body and analyte or monitoring category of concern, along with a summary of the major Management Plan task activity and status.

⁴ 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 (Site ID)	Analyte(s)	Summary of Major Management Plan Activity and Status
DO and pH	Butte-Yuba-Sutter	Butte Slough (BTTSL) ¹	DO	Unless otherwise noted, all sites monitored in 2020; Other tasks suspended on direction from Executive Officer (EO); Source Evaluations deferred; statistical analyses for the influence of agricultural activities on DO and pH exceedances submitted in July 2018.
		Gilsizer Slough (GILSL)	DO, pH	
		Lower Honcut Creek (LNHCT)	DO	
		Lower Snake River (LSNKR)	DO, pH	
		Pine Creek (PNCHY)	DO	
		Sacramento Slough (SSKNK)	DO	
	Colusa Glenn	Colusa Basin Drain (COLDR)	DO	
		Freshwater Creek (FRSHC)	pH	
		Stony Creek (STYHY) ¹	pH	
		Sycamore Slough (RARPP) ¹	DO, pH	
		Walker Creek (WLKCH)	DO, pH	
	Goose Lake	Lower Lassen Creek (LOWLC) ²	pH	
Lake	McGaugh Slough (MGSLU)	DO		
	Middle Creek (MDLCR)	DO		
Pit River	Fall River (FRRRB) ¹	pH		
	Pit River at Canby (PRCAN) ¹	DO		
	Pit River at Pittville (PRPIT)	DO, pH		
PNSSNS	Coon Creek at Brewer (CCBRW)	DO, pH ²		
	Coon Creek at Striplin (CCSTR) ¹	DO		
Sacramento/ Amador	Cosumnes River (CRTWN)	DO, pH		
	Dry Creek (DCGLT) ¹	pH		
	Grand Island Drain (GIDLR)	DO, pH		
	Laguna Creek (LAGAM) ¹	DO, pH		
Shasta/Tehama	Anderson Creek (ACACR)	DO		
	Coyote Creek (COYTR) ¹	DO		
Solano	Ulatis Creek (UCBRD)	DO, pH		
	Z-Drain (ZDDIX) ¹	DO, pH		

Management Plan Category	Subwatershed	Waterbody (Site ID)	Analyte(s)	Summary of Major Management Plan Activity and Status
DO and pH (continued)	Yolo	Cache Creek (CCCPY) ¹ Tule Canal (TCHWY) ¹ Willow Slough (WLSPL)	DO, pH DO, pH DO, pH	
Legacy Pesticides	Butte-Yuba-Sutter	Gilsizer Slough (GILSL)	DDE	Request to Complete Mgmt Plan approved Jan. 10, 2020.
	Colusa Glenn	Sycamore Slough (RARPP)	DDE	Request to Complete Mgmt Plan approved Jan. 29, 2020.
	El Dorado	Coon Hollow Creek (COONH)	DDE	Request to Complete Mgmt Plan approved Feb. 11, 2020.
Pathogen Indicators	Butte-Yuba-Sutter	Gilsizer Slough (GILSL) ¹ Lower Honcut Creek (LHNCT) Lower Snake River (LSNKR) Pine Creek (PNCHY) Wadsworth Canal (WADCN) ¹	<i>E. coli</i>	<p>Unless otherwise noted, monitored at all sites in 2020; Other tasks suspended pending Regional Water Board determination of potential new regulatory alternative for irrigated pasture operations.</p> <p>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 majority of bacteria in surface waters sampled were from human sources, and that agricultural contributions from agricultural bovine sources were rare or absent.</p> <p>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.</p> <p>The Coalition submitted to the Regional Water Board on May 1, 2018, a Work Plan to Determine the Need for Pathogen Indicator Management Plans, as required by the Executive Officer [June 13, 2017, comm. from EO]. Regional Water Board staff reviewed the Work Plan, provided informal written comments in September 2018, and held a meeting with the Coalition in December 2018 for further discussion.</p>
	Colusa Glenn	Butte Creek (BUCGR) ¹ Colusa Basin Drain (COLDR) Freshwater Creek (FRSHC) Logan Creek (LGNCR) ¹ Lurline Creek (LRLNC) ¹ Stone Corral Creek (SCCMR) ¹ Sycamore Slough (RARPP) ¹ Walker Creek (WLKCH)		
	El Dorado	North Canyon Creek (NRTCN) ¹		
	Goose Lake	Lower Lassen Creek (LOWLC) ²		
	Lake	McGaugh Slough (MGLSU) ² Middle Creek (MDLCR) ²		
	Napa	Pope Creek (PCULB) ²		
	PNSSNS	Middle Coon Creek (CCBRW)		
	Sacramento/ Amador	Cosumnes River (CRWTN) Dry Creek (DCGLT) ¹ Grand Island (GIDLR) Laguna Creek (LAGAM) ¹		

Management Plan Category	Subwatershed	Waterbody (Site ID)	Analyte(s)	Summary of Major Management Plan Activity and Status
Pathogen Indicators (continued)	Shasta Tehama	Anderson Creek (ACACR) Coyote Creek (COYTR) ¹	<i>E. coli</i> (continued)	In May 2019, the Regional Water Board informed the Coalition that it had begun an investigation with support from University of California Cooperative Extension staff to determine the risk to surface water quality posed by the potential discharge of <i>E. coli</i> from irrigated pasture operations. In January 2021, Regional Water Board staff released irrigated pasture regulatory recommendations for the Goose Lake Subwatershed. The recommendations included the finding that <i>E. coli</i> within this specific watershed do not appear to be a significant issue associated with irrigated pasture and likely can be addressed through an alternative regulatory pathway.
	Solano	Ulatis Creek (UCBRD) Shag Slough (SSLIB) Z-Drain (ZDDIX) ¹		
	Upper Feather River	Indian Creek (INDAB) ¹ Spanish Creek (SPGRN) ¹		
	Yolo	Tule Canal (TCHWY) ¹ Willow Slough (WLSPL)		
Registered Pesticides	Butte-Yuba-Sutter	Gilsizer Slough (GILSL)	Chlorpyrifos	Management Plan submitted to the Regional Water Board on November 30, 2016 and approved on December 16, 2016; monitoring and implementation in progress.
		Gilsizer Slough (GILSL) ³	Diazinon	Management Plan submitted to the Regional Water Board on June 17, 2020 and approved on November 6, 2020; monitoring and implementation in progress.
		Pine Creek (PNCHY)	Chlorpyrifos	Management Plan submitted to the Regional Water Board on November 14, 2016 and approved on December 6, 2016; Request for completion was submitted on May 21, 2020 and approved on August 28, 2020.
Salinity	Butte-Yuba-Sutter	Gilsizer Slough (GILSL)	EC	Unless otherwise noted, all sites monitored in 2020; Continued active participation in CV-SALTS; SVWQC joined Central Valley Salinity Coalition as funding partner.
		Lower Snake River (LSNKR)	EC	
	Colusa Glenn	Colusa Basin Drain (COLDR)	EC	
		Freshwater Creek (FRSHC)	EC	
		Logan Creek (LGNCR) ¹	TDS	
	Colusa Glenn (continued)	Lurline Creek (LRLNC) ¹	EC	
		Stone Corral Creek (SCCMR) ¹	EC	
Sycamore Slough (RARPP) ¹		EC		
	Walker Creek (WLKCH)	EC		
Lake	McGaugh Slough (MGSLU)	EC		

Management Plan Category	Subwatershed	Waterbody (Site ID)	Analyte(s)	Summary of Major Management Plan Activity and Status
Salinity (continued)	Sacramento/ Amador	Dry Creek (DCGLT) ¹ Grand Island Drain (GIDLR)	TDS EC	
	Solano	Ulatis Creek (UCBRD) Shag Slough (SSLIB) Z-Drain (ZDDIX) ¹	EC EC EC	
	Upper Feather River	Middle Fork Feather River (MFFGR) ²	EC	
	Yolo	Cache Creek (CCCPY) ¹ Tule Canal (TCHWY) ^{1,4} Willow Slough (WLSPL)	Boron, EC Boron, EC Boron, EC	
Toxicity	Solano	Ulatis Creek (UCBRD)	<i>Selenastrum</i> (unknown water column toxicity)	Outreach actions were taken beginning in November 2017 to address the three <i>Selenastrum</i> toxicity exceedances (Sep. 2015, Feb. 2016, Nov. 2016) observed under Delta RMP monitoring that triggered the Management Plan. The Regional Water Board approved the Management Plan on November 19, 2018.
			<i>Hyalella</i> (sediment toxicity) ²	Outreach actions were taken beginning in May 2018 to address the sediment toxicity exceedances (April 2018, April 2019). Management Plan submitted to the Regional Water Board on November 22, 2019 and approved on January 30, 2020.
Trace Metals	Butte-Yuba-Sutter	Lower Honcut Creek (LHNCT)	Copper	Management plan submitted to Regional Water Board on January 20, 2017 and approved on March 7, 2017; Request for completion was submitted on May 20, 2020 and approved on August 18, 2020
		Pine Creek (PNCHY)	Copper	
		Lower Snake River (LSNKR)	Arsenic	Source Evaluation submitted August 2013; Monitoring continued in 2020.
	Sacramento/ Amador	Grand Island Drain (GIDLR)	Arsenic	Monitoring continued in 2020.

Notes: DO = Dissolved Oxygen, EC = Electrical Conductivity

1. Non-representative Site. Addressed through representative monitoring.
2. Subwatershed is operating under a Reduced Monitoring Option (RMO) and monitoring at representative sites is conducted once every five year. Monitoring will next occur during the 2021 Monitoring Year.
3. Management Plan triggered during 2020 Monitoring Year.
4. Addressed by Delta Regional Monitoring Program (RMP) monitoring.

RESULTS OF MONITORING

Management Plan monitoring was conducted as scheduled in the Coalition's 2020 Monitoring Plan Update, as approved by the Regional Water Board. The results of monitoring conducted during the 2020 Monitoring Year (October 1, 2019 through September 30, 2020) for all Management Plan analytes have been reported in the Coalition's 2020 Annual Monitoring Report (AMR) and submitted to the Regional Water Board. Additionally, exceedances for all Management Plan sampling conducted from October 1, 2019 through September 30, 2020 have been reported in Exceedance Reports as required by the Coalition's MRP.

The 2020 Monitoring Year was a "Non-Assessment" Monitoring year for all representative Coalition sites. Management Plan monitoring for the 2020 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 summarized in **Table 3**.

It should be noted that the number of sites with active Management Plan requirements – identified by Management Plan Category below – are not always sampled in a given monitoring year if (1) the site is not a representative site for the Coalition, (2) the active Management Plan is not for a registered pesticide, toxicity, or a trace metal, and/or (3) monitoring at a non-representative site without an active Management Plan for a registered pesticide, toxicity, or a trace metal is suspended by the Regional Water Board (e.g., Coalition monitoring in Tule Canal) as part of the Coalition's overall financial support to the Delta Regional Monitoring Program.

DO and pH

There are 25 sites with active Management Plan requirements for DO and 19 sites with active Management Plan requirements for pH.

- There were 38 samples collected for 16 sites with active Management Plan requirements for DO. There were 11 exceedances (29%) of the ILRP Trigger Limit for DO observed at eight sites.
- There were 24 samples collected from ten sites with active Management Plan requirements for pH. There were two exceedances (8%) of the ILRP Trigger Limit for pH observed at one site.

Pathogen indicators

There are 32 sites with Management Plan requirements for pathogen indicator bacteria. Management Plan tasks for pathogen indicators are currently under review by Regional Water Board staff at the direction of the Executive Officer. The Coalition submitted to the Regional Water Board on May 1, 2018 a Work Plan to Determine the Need for Pathogen Indicator Management Plans, as required by the Executive Officer [June 13, 2017, comm. from EO]. Regional Water Board staff reviewed the Work Plan, provided informal written comments in September 2018, and held a meeting with the Coalition in December 2018 for further discussion. In May 2019, the Regional Water Board informed the Coalition that it had begun an investigation with support from University of California Cooperative Extension staff to determine the risk to surface water quality posed by the potential discharge of *E. coli* from irrigated pasture operations.

In January 2021, Regional Water Board staff released irrigated pasture regulatory recommendations for the Goose Lake Subwatershed. The recommendations included the finding that *E. coli* within this specific watershed do not appear to be a significant issue associated with irrigated pasture and likely can be addressed through an alternative regulatory pathway. The Regional Water Board still must consider how best to address potential *E. coli* contributions from irrigated pasture and other irrigated lands in the other subwatersheds that comprise the Sacramento Valley Coalition.

Management Plan monitoring for *E. coli* during the 2020 Monitoring Year consisted of sampling at representative and integration monitoring sites, which resulted in the collection of 42 samples from 13 sites with active Management Plan requirements for pathogen indicators. There were ten exceedances of the ILRP Trigger Limit for *E. coli* observed at seven sites during the 2020 Monitoring Year.

Registered Pesticides

The following remarks pertain to the two Coalition sites with active Management Plans for registered pesticides.

- Seven samples were collected and analyzed for chlorpyrifos in Gilsizer Slough. Chlorpyrifos was not detected in any of the samples.
- Seven samples were collected and analyzed for chlorpyrifos in Pine Creek. Chlorpyrifos was not detected in any of the samples. This Management Plan was approved for completion on August 28, 2020 and no additional Management Plan monitoring was conducted after this date.
- Seven samples were analyzed for diazinon in Gilsizer Slough. One of these samples (January 2020) exceeded the ILRP Trigger Limit for the OP pesticide and triggered a Management Plan due to an earlier exceedance observed in January 2018. The Management Plan was submitted to the Regional Water Board on June 17, 2020 and approved on November 6, 2020.

Salinity

There are 19 sites with active Management Plan requirements for parameters related to salinity (specific conductivity, boron, and/or TDS). There were 30 sample events for specific conductivity at 10 sites, with seven observed exceedances (23%) of the ILRP Trigger Limit for specific conductivity. In addition to a Management Plan for specific conductivity, Willow Slough also has a Management Plan requirement for boron. Four samples from Willow Slough were analyzed for boron and all samples exceeded the ILRP Trigger Limit for this analyte. Boron is naturally occurring in the soils in the region and is found in the groundwater pumped and used to irrigate crops during periods when surface water supplies are limited.

Toxicity

- Ulatis Creek has a Management Plan requirement for *Selenastrum* toxicity, and six samples were analyzed for toxicity to this test organism. None of the samples were observed to be toxic to *Selenastrum*.

- Two samples were analyzed in 2020 for *Hyalella* toxicity at Ulatis Creek. None of the samples were observed to be toxic to *Hyalella*.

Trace Metals

There were four active Management Plans for trace metals for which monitoring was conducted during the 2020 Monitoring Year: copper in Pine Creek and Lower Honcut Creek, and arsenic in Grand Island Drain and Lower Snake River. The copper Management Plans were approved for completion on August 18, 2020 (Pine Creek) and August 28, 2020 (Lower Honcut Creek). All management plan monitoring had been completed at the time of these approvals.

Six samples were analyzed for copper (total and dissolved; dissolved samples were collected in duplicate) in Pine Creek and none exceeded either the 1,300 µg/L Basin Plan objective (Primary MCL) for total copper or the hardness-dependent CTR criterion that serves as the ILRP Trigger Limit for dissolved copper.

Three samples were analyzed for copper (total and dissolved; dissolved sample was collected in duplicate) in Lower Honcut Creek and none exceeded either the 1,300 µg/L Basin Plan objective (Primary MCL) for total copper or the hardness-dependent CTR criterion that serves as the ILRP Trigger Limit for dissolved copper.

Four samples were collected for arsenic in Grand Island Drain and the concentration of the trace metal in two of the samples was above 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 a review of the Department of Pesticide Regulation's (DPR) Pesticide Use Reporting (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 monitoring 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 poultry litter is used on the field.

Four samples were analyzed for total arsenic in Lower Snake River and none exceeded the 10 µg/L Basin Plan objective (Primary MCL).

Nutrients

The Coalition has no active Management Plans for nutrients. However, a nutrient-related Management Plan requirement exists for the Clear Lake Nutrient TMDL. Monitoring for this Management Plan requirement consisted of phosphorus analyses for two sample events at the McGaugh Slough site and four sample events at the Middle Creek site in the Lake County Subwatershed. No water quality objective currently exists for phosphorus in the Sacramento Valley Watershed.

SOURCE EVALUATIONS

There were no new Source Evaluations conducted for Management Plan elements during the 2020 Monitoring Year.

OUTREACH DOCUMENTATION

The Coalition and its subwatersheds continue to work with the Regional Water Board and its staff to implement the Coalition's *Landowner Outreach and Management Practices Communications Process* and the Coalition's approved CSQMP 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 were initially focused on but were not limited to, growers who operate directly adjacent to or within proximity to a waterbody 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 best management practices (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 and/or requests for additional information regarding the management practices they currently implement. This same approach has been used to conduct management practice surveys in areas targeted by site-specific Management Plans.

Descriptions of the outreach and education activities conducted by the Coalition's subwatersheds during the 2020 Monitoring Year are provided in Appendix F (*SVWQC Outreach Materials*) of the Coalition's 2020 AMR.

MEMBER SURVEYS

Starting in 2014, the WDR required the Coalition to collect and aggregate summarized information from Farm Evaluations; surveys filled out by growers regarding the various management practices implemented on the acreage they farm. In 2018, the Regional Water Board revised the reporting schedule for these surveys and the Coalition will now collect, aggregate, and summarize Farm Evaluations on a five-year cycle beginning with the 2020 crop year. The Coalition will submit the 2020 crop year data to the Regional Water Board no later than November 30, 2021. Until the 2020 crop year data are available for reporting, data from the 2017 Farm Evaluations will be the primary source for management practices information, with additional surveys conducted on an as-needed basis (see the Management Plan Status Updates section for a description of Focused Outreach Surveys).

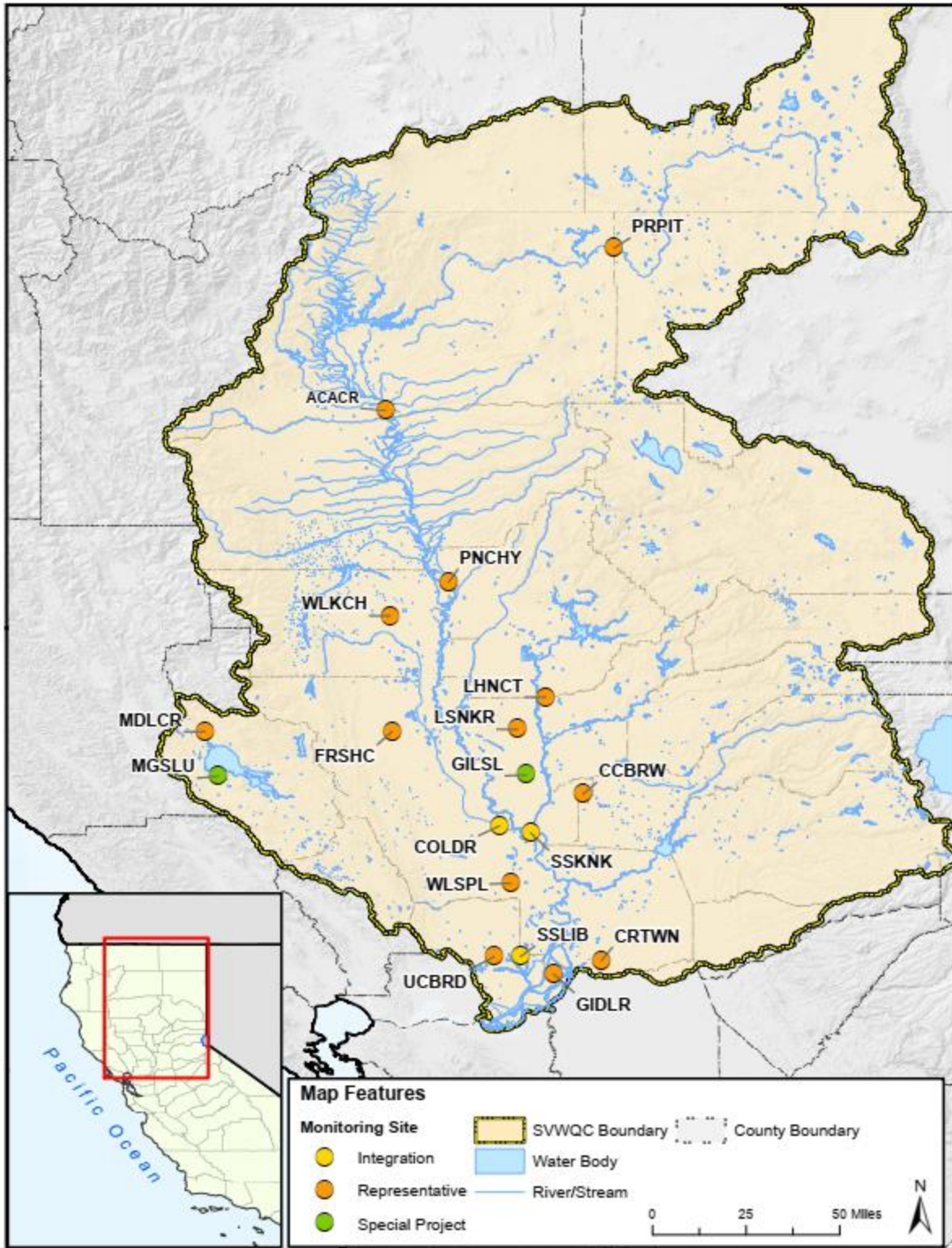


Figure 1. 2020 Monitoring Year Coalition Sites Visited for Regular and Management Plan Monitoring

Table 3. Summary of Management Plan Compliance Monitoring Outcomes (October 2019 through September 2020)

Management Plan Category	Analyte	Subwatershed	Site Name	Analyses	Pesticide Detections	Exceedances
DO and pH	Dissolved Oxygen	Butte-Yuba-Sutter	Gilsizer Slough at George Washington Road	4	NA	1
			Lower Honcut Creek at Hwy 70	1	NA	0
			Lower Snake River at Nuestro Road	2	NA	0
			Pine Creek at Highway 32	6	NA	3
			Sacramento Slough bridge near Karnak	2	NA	1
		Colusa Glenn	Colusa Basin Drain above KL	3	NA	1
			Walker Creek near 99W and CR33	2	NA	1
		Lake	McGaugh Slough at Finley Road East	2	NA	2
			Middle Creek u/s from Highway 20	3	NA	1
		Pit River	Pit River at Pittville	1	NA	0
		PNSSNS	Coon Creek at Brewer Road	2	NA	0
		Sacramento/Amador	Cosumnes River at Twin Bridges Road	1	NA	0
			Grand Island Drain near Leary Road	2	NA	0
		Shasta/Tehama	Anderson Creek at Ash Creek Road	2	NA	0
		Solano	Ulatis Creek at Brown Road	4	NA	1
	Yolo	Willow Slough Bypass at Pole Line	1	NA	0	
	pH	Butte-Yuba-Sutter	Gilsizer Slough at George Washington Road	5	NA	2
			Lower Snake River at Nuestro Road	3	NA	0
		Colusa Glenn	Freshwater Creek	2	NA	0
			Walker Creek	2	NA	0
		Pit River	Pit River at Pittville	1	NA	0
		PNSSNS	Coon Creek at Brewer	2	NA	0
Sacramento/Amador		Cosumnes River at Twin Cities Road	1	NA	0	
		Grand Island Drain	2	NA	0	
Solano		Ulatis Creek at Brown Road	4	NA	0	
Yolo		Willow Slough Bypass at Pole Line	2	NA	0	
Pathogen Indicators	<i>E. coli</i>	Butte-Yuba-Sutter	Lower Honcut Creek at Hwy 70	1	NA	0
			Lower Snake R. at Nuestro Rd	2	NA	1

Management Plan Category	Analyte	Subwatershed	Site Name	Analyses	Pesticide Detections	Exceedances
Pathogen Indicators (continued)	<i>E. coli</i> (continued)		Pine Creek at Highway 32	7	NA	1
		Colusa Glenn	Colusa Basin Drain above KL	6	NA	1
			Freshwater Creek at Gibson Rd	2	NA	0
			Walker Creek near 99W and CR33	2	NA	1
		PNSSNS	Coon Creek at Brewer Road	2	NA	0
		Sacramento/Amador	Cosumnes River at Twin Bridges Road	1	NA	0
			Grand Island Drain near Leary Road	2	NA	0
		Shasta/Tehama	Anderson Creek at Ash Creek Road	3	NA	2
		Solano	Shag Slough at Liberty Island Road	4	NA	0
			Ulati Creek at Brown Road	7	NA	3
Yolo	Willow Slough Bypass at Pole Line	2	NA	1		
Registered Pesticides	Chlorpyrifos	Butte-Yuba-Sutter	Gilsizer Slough at George Washington Road	7	0	0
			Pine Creek at Highway 32	7	0	0
	Diazinon	Butte-Yuba-Sutter	Gilsizer Slough at George Washington Road	7	0	1
Salinity	Boron	Yolo	Willow Slough Bypass at Pole Line	4	NA	4
	Conductivity	Butte-Yuba-Sutter	Gilsizer Slough at George Washington Road	5	NA	0
			Lower Snake R. at Nuestro Rd	3	NA	0
		Colusa Glenn	Colusa Basin Drain above KL	4	NA	0
			Freshwater Creek at Gibson Rd	2	NA	0
Salinity (continued)	Conductivity (continued)	Colusa Glenn	Walker Creek near 99W and CR33	2	NA	0
		Lake	McGaugh Slough at Finley Road East	2	NA	1
		Sacramento/Amador	Grand Island Drain near Leary Road	2	NA	0
		Solano	Ulati Creek at Brown Road	4	NA	4
			Shag Slough	4	NA	0
		Yolo	Willow Slough Bypass at Pole Line	2	NA	2
Toxicity	<i>Hyalella</i> survival	Solano	Ulati Creek at Brown Road	2	NA	0
	<i>Selenastrum</i> growth	Solano	Ulati Creek at Brown Road	6	NA	0

Management Plan Category	Analyte	Subwatershed	Site Name	Analyses	Pesticide Detections	Exceedances
Trace Metals	Arsenic	Sacramento/Amador	Grand Island Drain near Leary Road	4	NA	2
		Butte-Yuba-Sutter	Lower Snake R. at Nuestro Rd	4	NA	0
	Copper	Butte-Yuba-Sutter	Lower Honcut Creek at Hwy 70S	3	NA	0
			Pine Creek at Highway 32	6	NA	0

NA = Not applicable

RECOMMENDATIONS FOR MANAGEMENT PLAN MONITORING

Special project monitoring for Management Plan elements includes specific targeted monitoring or studies to address implementation of a TMDL or implementation of a site-specific 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 a general schedule for Management Plan implementation have been presented previously in the Sacramento Valley Coalition Group's approved *2009 Management Plan*, approved 2016 CSQMP, site-specific Management Plans approved by the Regional Water Board since 2016, *Management Plan Progress Reports (2010 – 2018)*, the *Addendum to Sacramento Valley Water Quality Coalition Management Plan: Chlorpyrifos and Diazinon TMDLs*, and in the Coalition's Monitoring Plan Update that is submitted annually for approval by the Executive Officer.

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 and/or sediment sampling, field evaluations, or surveys of agricultural practices. Management Plan monitoring performed during the 2020 Monitoring Year occurred at representative, special project, and integration sites for source evaluation and/or compliance purposes. The monitoring proposed and conducted during the 2020 Monitoring Year was submitted to and approved by the Regional Water Board's Executive Officer on November 5, 2019. The Coalition's approved 2020 Monitoring Plan Update included the required monitoring for Management Plan elements, as well as monitoring required by the Coalition's MRP and TMDLs for nutrients in Clear Lake and chlorpyrifos and diazinon in the Sacramento and Feather Rivers.

Based on the evaluations of Management Plan monitoring results through September 2020 and earlier source evaluation efforts, the Coalition has submitted requests to deem complete the monitoring and other requirements for six Management Plans, which all received approval during the 2020 Monitoring Year. These Management Plans are summarized in **Table 4**.

Table 4. Requests for Completion of Management Plans

Subwatershed	Water Body	Category	Analyte	RTC Status
Butte-Yuba-Sutter	Gilsizer Slough	Legacy Pesticides	DDE	Completion approved Jan. 10, 2020
Butte-Yuba-Sutter	Lower Honcut Creek	Trace Metals	Copper	Completion approved Aug. 18, 2020
Butte-Yuba-Sutter	Pine Creek	Registered Pesticides	Chlorpyrifos	Completion approved Aug. 28, 2020
Butte-Yuba-Sutter	Pine Creek	Trace Metals	Copper	Completion approved Aug. 28, 2020
Colusa Glenn	Sycamore Slough	Legacy Pesticides	DDE	Completion approved Jan. 29, 2020
El Dorado	Coon Hollow Creek	Legacy Pesticides	DDE	Completion approved Feb. 11, 2020

RTC = Request to Complete Management Plan

NEW MANAGEMENT PLANS

As part of this MPPR, data collected by the Coalition through September 2020 were evaluated to assess the necessity for any new Management Plan requirements. Requirements for new Management Plan elements were based on observations of more than one exceedance in a three-year period, as required by the WDR. Proposed tasks and schedules to implement new Management Plan elements were developed, if necessary. If modifications to the existing scope or schedule for implementation of an approved Management Plan were proposed, then these changes are also described herein, if necessary. A single new Management Plan was triggered as the result of an ILRP Trigger Limit exceedance observed in Coalition monitoring conducted from October 2019 through September 2020. The new Management Plan is for diazinon at Gilsizer Slough, which is defined as high priority (registered pesticide) as per the Coalition's Comprehensive Surface Water Quality Management Plan (SVWQC 2016). The exceedance that triggered the Management Plan was observed in January 2020 and the initial diazinon exceedance occurred in January 2018. The Management Plan for diazinon in Gilsizer Slough was submitted to the Regional Water Board on June 17, 2020 and approved on November 6, 2020. This new Management Plan is documented for the first time in this MPPR.

MANAGEMENT PLAN STATUS UPDATES

Management Plans submitted to the Regional Water Board since 2016 (see **Table 2**) have been crafted to conform to the requirements for separate Management Plans elements specified in the Coalition's WDR, Order No. R5-2014-0030-07. In some ways, these new requirements differ from those set forth in the previously approved 2009 Management Plan. Current Management Plan requirements emphasize a sound Management Plan approach that includes performance goals, mechanisms for achieving goals, quantitative measures of progress, and a schedule for achieving goals. This approach requires more quantitative tracking of outreach and education efforts, as well as pesticide application practices and management practices implemented by growers that are targeted toward eliminating or reducing the concentrations of the constituent for which a particular Management Plan was developed.

In order to track changes in the implementation of specific categories of management practices by growers, the Butte-Yuba-Sutter Water Quality Coalition (BYSWQC) developed a Focused Outreach Survey that is designed to document on an annual basis the management practices implemented by growers who apply the pesticide that is the subject of a particular Management Plan. The Regional Water Board has used this same approach to specifically survey growers who apply a pesticide of concern in a drainage that has an active Management Plan for a particular pesticide or category of pesticides in its newly introduced Management Practice Implementation Reporting (MPIR) requirement.

The initial Focused Outreach Surveys sent to growers in specific drainages of the Butte-Yuba-Sutter Subwatershed in 2017 were used to capture baseline management practice implementation information and subsequent annual surveys are used to track changes in management practice implementation over the course of Management Plan implementation. The implementation status of two active BYSWQC Management Plans are discussed below, followed by the discussion of two active Management Plans in the Solano Subwatershed.

Chlorpyrifos in Gilsizer Slough

A Management Plan for Chlorpyrifos in Gilsizer Slough was approved by the Regional Water Board on December 16, 2016. An initial Focused Outreach Survey (FOS) was sent to growers in the Gilsizer Slough Drainage on March 20, 2017, to collect baseline information upon which to compare management practice implementation information provided by future surveys from those growers who apply chlorpyrifos. A third annual FOS that covered management practices implemented during the 2019 calendar year was sent to growers in the Management Plan area in January 2020. The management practices implemented by members in the Gilsizer Slough Drainage who applied chlorpyrifos during the 2020 crop year will be contained in the 2020 MPIR data compilation that will be submitted to the Regional Water Board no later than November 30, 2021.

Outreach activities and water quality measurements related to the satisfaction of this Management Plan's Performance Goals that occurred during the 2020 Monitoring Year are described below.

Performance Goal Status

PG 1: Chlorpyrifos applied by entity receiving pesticide use permit information from Sutter County Agricultural Commissioner's office.

According to the Sutter County Agricultural Commissioner's office, no restricted material permits for the application of chlorpyrifos were approved in Sutter County for a grower farming in the Gilsizer Slough Drainage during the calendar year 2020.

PG 2, 3, & 4: Increased education and awareness of (a) end of row shutoff when spraying, (b) mechanisms to control drift, and (c) drift minimization.

Due to COVID-19 restrictions in place during much of the 2020 Monitoring Year, in-person outreach opportunities to discuss (1) the chlorpyrifos exceedances that triggered the Management Plan, (2) cultural practices for managing sediment and erosion, and (3) pesticide application practices to avoid/limit the movement of pesticides from where they are applied were limited the BYSWQC Annual Meeting held on January 21, 2020. To augment and reinforce much of the

information presented during the Annual Meeting, BYSWQC and University of California Cooperative Extension staff produced a 20-minute online video in September 2020 that discusses the two active Management Plans in the Butte-Yuba-Sutter Subwatershed and practices to reduce pesticide loss from orchards, with an emphasis on over spray, drift control, and sprayer calibration during dormant and growing season applications. Additional information regarding these outreach events is provided in Appendix F (*SVWQC Outreach Material*) of the Coalition's 2020 AMR.

PG 5: Tracking of management practices implemented to reduce or prevent the discharge of chlorpyrifos to surface waters in the Gilsizer Slough Drainage is now being accomplished through the MPIR process. As noted above, 2020 MPIR data will be submitted to the Regional Water Board no later than November 30, 2021. The Year 1 (baseline), Year 2, and Year 3 FOS completion statistics are provided in **Table 5** and the management practice implementation results compiled through the 2019 crop year are shown in **Table 6**. A summary of the individual management practice implementation acreage as compared to the total acres reported as receiving chlorpyrifos applications from 2016 through 2019 is provided in **Appendix A**.

The baseline FOS survey (Year 1) of growers who applied chlorpyrifos in the Gilsizer Slough Drainage covered applications made during the 2015 calendar year because a chlorpyrifos exceedance was observed in August 2015 shortly before development of the Management Plan. The Year 3 FOS includes surveys of chlorpyrifos applications made in both the 2018 and 2019 calendar years as a means to bring documentation of management practice implementation in the drainage in line with those of the other Management Plans in the Butte-Yuba-Sutter (BYS) Subwatershed.

PG 6: Maintain chlorpyrifos concentrations in Gilsizer Slough at George Washington Blvd (GILSL) to below the trigger limit for the organophosphate pesticide.

Chlorpyrifos monitoring performed at the GILSL site since February 2006 is shown in **Figure 2**. A chlorpyrifos detection (0.023 µg/L) just below the Basin Plan acute objective of 0.025 µg/L was observed on August 22, 2018. This exceedance of the chronic ILRP trigger limit (0.015 µg/L) for chlorpyrifos in Gilsizer Slough extended the Management Plan requirements for the organophosphate insecticide in the drainage through at least the year 2022. The Sutter and Yuba County Agricultural Commissioners specifically addressed the August 22, 2018 chlorpyrifos exceedance with 120 members during a meeting held specifically for this purpose on November 28, 2018.

Table 5. Year 1 (Baseline), Year 2, and Year 3 Focused Outreach Survey Completion Statistics for Chlorpyrifos Applications in the Gilsizer Slough Drainage

Survey Year	Time Period Evaluated	# Surveys Sent	# Responses Received	% Received
1 (baseline)	1/1/2015 – 12/31/2015	142	82	57.7
2 (survey 1)	1/1/2016 – 12/31/2016	131	67	51.1
2 (survey 2)	1/1/2017 – 12/31/2017	131	67	51.1
3 (survey 1)	1/1/2018 – 12/31/2018	152	76	50.0
3 (survey 2)	1/1/2019 – 12/31/2019	152	77	50.7

Table 6. Year 1 (Baseline), Year 2, and Year 3 Focused Outreach Survey Management Practice Implementation Results for Chlorpyrifos Applications in the Gilsizer Slough Drainage

Pesticide Application and Management Practice Implementation	FOS Responses				
	Year 1	Year 2 (survey 1)	Year 2 (survey 2)	Year 3 (survey 1)	Year 3 (survey 2)
Did you apply chlorpyrifos during the time period evaluated?	No = 63 Do not recall = 2 Yes = 17	No = 62 Do not recall = 0 Yes = 5	No = 62 Do not recall = 0 Yes = 5	No = 72 Do not recall = 0 Yes = 4	No = 75 Do not recall = 0 Yes = 5
Number of growers applying chlorpyrifos who implemented at least one management practice.	17	5	5	4	2
Total number of pesticide application practices implemented by those applying chlorpyrifos.	158	51	51	32	10
Total number of cultural practices for managing sediment and erosion implemented by those applying chlorpyrifos.	82	32	32	19	1
Total number of management practices implemented by those applying chlorpyrifos.	240	83	83	51	11

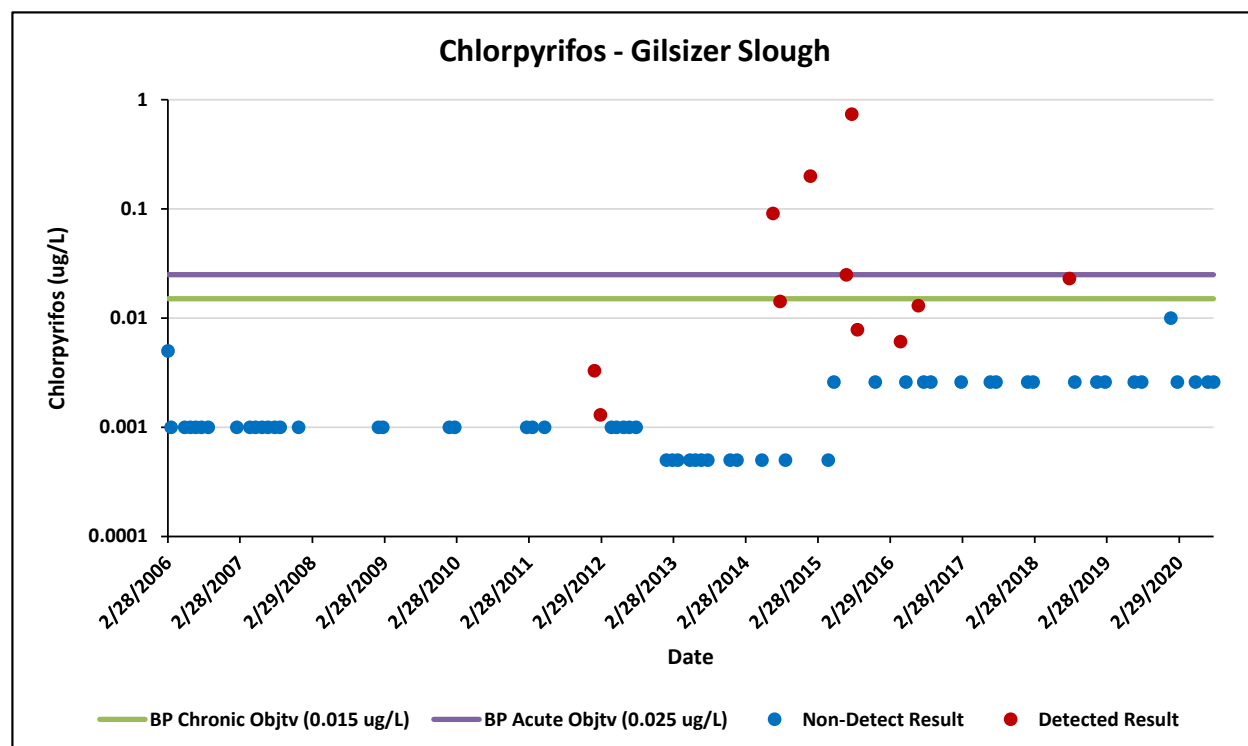


Figure 2. Chlorpyrifos Monitoring Results in Gilsizer Slough at George Washington Blvd: 2006 – 2020

Diazinon in Gilsizer Slough

A Management Plan for Diazinon in Gilsizer Slough was approved by the Regional Water Board on November 6, 2020. The Management Plan was triggered by an exceedance of both the chronic (0.10 $\mu\text{g/L}$) and acute (0.16 $\mu\text{g/L}$) Basin Plan objectives for the orthophosphate pesticide on January 17, 2020. The prior diazinon exceedance observed in Gilsizer Slough occurred on January 23, 2018. Both exceedances occurred when the vast majority of diazinon applications in the drainage were dormant season applications to peaches. An initial FOS was sent to growers in the Gilsizer Slough Drainage in September 2020 to collect baseline 2019 crop year management practice implementation information upon which to compare future management practice implementation information collected through the MPIR process. The management practices implemented by members in the Gilsizer Slough Drainage who applied diazinon during the 2020 crop year will be contained in the 2020 MPIR data compilation that will be submitted to the Regional Water Board no later than November 30, 2021.

Outreach activities and water quality measurements related to the satisfaction of this Management Plan's Performance Goals that occurred during the 2020 Monitoring Year are described below.

Performance Goal Status

PG 1, 2, & 3: Increased education and awareness of (a) end of row shutoff when spraying, (b) mechanisms to control drift, and (c) drift minimization.

Due to COVID-19 restrictions in place during much of the 2020 Monitoring Year, in-person outreach opportunities to discuss (1) the diazinon exceedances that triggered the Management Plan, (2) cultural practices for managing sediment and erosion, and (3) pesticide application practices to avoid/limit the movement of pesticides from where they are applied were limited the BYSWQC Annual Meeting held on January 21, 2020. To augment and reinforce much of the information presented during the Annual Meeting, BYSWQC and University of California Cooperative Extension staff produced a 20-minute online video in September 2020 that discusses the two active Management Plans in the Butte-Yuba-Sutter Subwatershed and practices to reduce pesticide loss from orchards, with an emphasis on over spray, drift control, and sprayer calibration during dormant and growing season applications. Additional information regarding these outreach events is provided in Appendix F (*SVWQC Outreach Material*) of the Coalition's 2020 AMR.

PG 4: Tracking of management practices implemented to reduce or prevent the discharge of diazinon to surface waters in the Gilsizer Slough Drainage is being accomplished through the MPIR process. As noted above, 2020 MPIR data will be submitted to the Regional Water Board no later than November 30, 2021. Baseline FOS completion statistics are provided in **Table 7** and the management practice implementation results compiled for the 2019 crop year are shown in **Table 8**. A summary of the individual management practice implementation acreage as compared to the total acres reported as receiving diazinon applications during the 2019 crop year (baseline year) is provided in **Appendix A**.

PG 5: Maintain diazinon concentrations in Gilsizer Slough at George Washington Blvd (GILSL) to below the trigger limit for the organophosphate pesticide.

Diazinon monitoring performed at the GILSL site since February 2006 is shown in **Figure 3**. Diazinon concentrations above either the chronic or acute Basin Plan objectives measured from February 2006 through February 2011 were addressed through an early Management Plan that was deemed complete by the Regional Water Board on July 11, 2016. The focus of the current Management Plan for Diazinon in Gilsizer Slough is the exceedances that were observed in January 2018 and January 2020. No additional exceedances of the Basin Plan chronic and acute objectives have been observed in the last four samples collected at the monitoring site.

Table 7. Baseline 2019 Focused Outreach Survey Completion Statistics for Diazinon Applications in the Gilsizer Slough Drainage

Survey Year	Time Period Evaluated	# Surveys Sent	# Responses Received	% Received
2019 (baseline)	1/1/2019 – 12/31/2019	150	80	53.3%

Table 8. Baseline 2019 Focused Outreach Survey Management Practice Implementation Results for Diazinon Applications in the Gilsizer Slough Drainage

Pesticide Application and Management Practice Implementation	FOS Responses
	2019 Baseline Survey
Did you apply diazinon during the time period evaluated?	No = 75 Yes = 5

Number of growers applying diazinon who implemented at least one management practice.	5
Total number of pesticide application practices implemented by those applying diazinon.	13
Total number of cultural practices for managing sediment and erosion implemented by those applying diazinon.	12
Total number of management practices implemented by those applying diazinon.	25

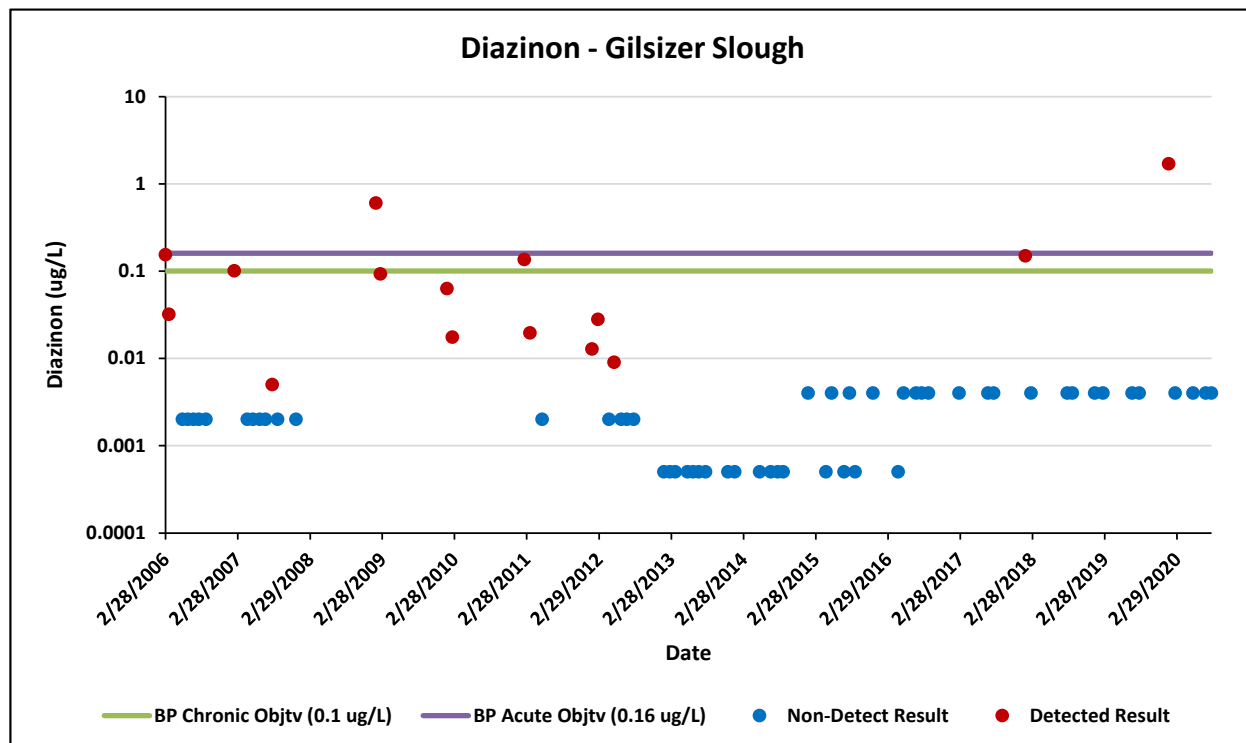


Figure 3. Diazinon Monitoring Results in Gilsizer Slough at George Washington Blvd: 2006 – 2020

Unknown Toxicity to *Selenastrum capricornutum* in Ulatis Creek

Three water column toxicity to algae (*Selenastrum capricornutum*) events were observed in Ulatis Creek in 2015 and 2016 while the Delta Regional Monitoring Program was performing surface water quality monitoring in the waterbody on behalf of the Coalition to satisfy its ILRP monitoring requirements. These toxicity events were observed in September 2015, February 2016, and November 2016. Based on Delta RMP water column pesticides data and inconclusive toxicity identification evaluation (TIE) results for the November 2016 sample, the potential cause of the three observed *Selenastrum* toxicities is unknown. A review of contemporaneous pesticide analyses associated with the three observed toxicity events showed no individual pesticide or collection of pesticides as the potential cause of the observed toxicity when comparing detected pesticide concentrations to relevant ecotoxicology benchmarks for algae. A

Management Plan for Unknown Toxicity to *Selenastrum capricornutum* in Ulatis Creek was approved by the Regional Water Board on November 19, 2018.

Activities and water quality measurements related to the satisfaction of this Management Plan's Performance Goals that occurred during the 2020 Monitoring Year are described below.

PG 1: Maintain education and awareness of herbicide application and runoff management practices that minimize the potential for impacts to surface waters.

Due to COVID-19 restrictions in place during much of the 2020 Monitoring Year, in-person outreach opportunities to discuss (1) the *Selenastrum* toxicity exceedances that triggered the Management Plan, (2) cultural practices for managing sediment and erosion, and (3) pesticide application practices to avoid/limit the movement of pesticides from where they are applied were limited to four meetings: the Annual General Member Information Meeting (held on November 19, 2019) and three Pesticide Applicator Trainings provided by the Solano County Agricultural Commissioner (held on November 14, December 12, 2019, and January 16, 2020). The three Pesticide Applicator Trainings collectively reached 99 people and covered all pesticides applied in the subwatershed. In addition, 30 Coalition members were updated on the *Selenastrum* Toxicity Management Plan in Ulatis Creek at the Annual General Member Information Meeting, and all 600 members received an update in the annual member newsletter dated October 15, 2019. Additional information regarding these outreach events is provided in Appendix F (*SVWQC Outreach Material*) of the Coalition's 2020 AMR.

PG 2: Maintain implementation of herbicide application and runoff management practices that minimize the potential for impacts to surface waters in the Cache Slough and represented drainages.

Tracking of management practices implemented to reduce or prevent the discharge of herbicides to surface waters in the Cache Slough drainage and represented drainages is now being accomplished through the MPIR process. As noted above, 2020 MPIR data will be submitted to the Regional Water Board no later than November 30, 2021. Pesticide application practices and culture practices to manage sediment and erosion taken from Coalition Farm Evaluations are presented in **Table 9** for the crop years 2016 and 2017. Because all Dixon/Solano Coalition members receive the same outreach and education information, regardless of the pesticides they apply, historically it was not necessary to track separately the management practice implementation of herbicide applicators.

Table 9. Comparison of Management Practices Implemented in the Cache Slough Drainage and Represented Drainages in 2016 and 2017 to Prevent Herbicides from Entering Surface Waters

PRACTICE CATEGORY	2016 % Total Acres (121,236 acres)	2017 % Total Acres (127,088 acres)
Individual Practice		
PESTICIDE APPLICATION PRACTICES		
Follow label restrictions	91.0	91.1
Avoid surface water when spraying	89.8	90.0
Monitor wind conditions	89.9	89.6
County permit followed	88.0	87.9
Use PCA recommendations	87.3	86.8
Attend trainings	85.9	85.4
Monitor rain forecasts	86.5	86.4
Use appropriate buffer zones	82.7	82.3
End of row shutoff when spraying	82.2	83.2
Use drift control agents	81.9	82.2
Sensitive areas mapped	59.8	62.8
Reapply rinsate to treated field	52.9	52.5
Use vegetated drain ditches	38.7	39.3
Target sensing sprayer used	16.0	17.1
No pesticides applied	9.5	9.3
Other1	4.2	5.1
Chemigation	4.8	--
No Selection	0.1	0.02
CULTURAL PRACTICES TO MANAGE SEDIMENT AND EROSION		
Soil water penetration has been increased through the use of amendments, deep ripping and/or aeration.	69.4	71.3
Crop rows are graded, directed and at a length that will optimize the use of rain and irrigation water.	60.6	60.5
Minimum tillage incorporated to minimize erosion.	52.0	51.2
Vegetated ditches are used to remove sediment as well as water soluble pesticides, phosphate fertilizers and some forms of nitrogen.	40.4	39.4
Cover crops or native vegetation are used to reduce erosion.	35.8	38.1
Storm water is captured using field borders.	37.6	36.7
Berms are constructed at low ends of fields to capture runoff and trap sediment.	22.7	21.6
Sediment basins / holding ponds are used to settle out sediment and hydrophobic pesticides such as pyrethroids from irrigation and storm runoff	19.7	17.7
Subsurface pipelines are used to channel runoff water.	18.2	15.9
Creek banks and stream banks have been stabilized.	15.1	15.6
Vegetative filter strips and buffers are used to capture flows.	14.4	17.2

PRACTICE CATEGORY	2016 % Total Acres (121,236 acres)	2017 % Total Acres (127,088 acres)
Individual Practice		
CULTURAL PRACTICES TO MANAGE SEDIMENT AND EROSION		
Hedgerows or trees are used to help stabilize soils and trap sediment movement.	13.9	15.9
No storm drainage due to field or soil conditions.	6.5	7.9
Other	5.6	5.6
Field is lower than surrounding terrain.	3.1	4.5
No Selection	1.5	0.9

PG 3: Avoid exceedances (caused by agricultural activities) of ILRP toxicity trigger limit in Ulatis Creek at Brown Road water column samples.

The ILRP trigger limit (based on the Basin Plan’s narrative toxicity objective) for water column toxicity to algae (*Selenastrum capricornutum*) is a statistically significant reduction in growth as compared to the control. The Basin Plan’s narrative toxicity objective exists to control toxic substances in concentrations that produce detrimental responses in human, plant, animal, or aquatic life. The Coalition compares all its *Selenastrum* monitoring data to this ILRP trigger limit.

Water column toxicity monitoring for algae performed using water samples collected at the UCBRD site has shown no exceedances of the ILRP trigger limit since November 2016, as shown in **Figure 4**.

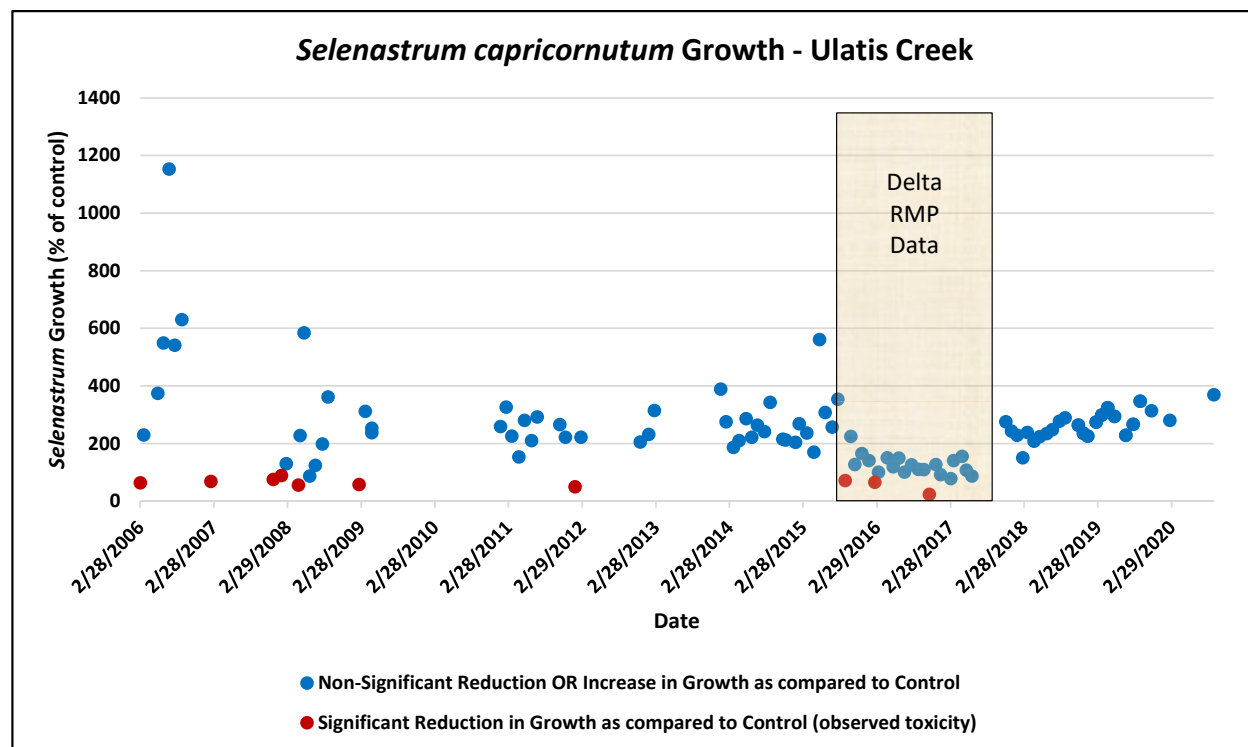


Figure 4. Selenastrum Toxicity Monitoring Results in Ulatis Creek at Brown Road: 2006 – 2020

Sediment Toxicity to *Hyaella azteca* in Ulatis Creek

Two sediment toxicity to amphipod (*Hyaella azteca*) events were observed in Ulatis Creek in April 2018 and April 2019. *Hyaella* is sensitive to a group of synthetic pesticides named pyrethroids that are similar to the natural pesticide pyrethrum. A review of California Department of Pesticide Regulation (CDPR) Pesticide Use Reporting (PUR) data showed pyrethroid applications in the Cache Slough drainage during the two months prior to the observed toxicity exceedances. These pyrethroid applications were made for both agricultural and non-agricultural purposes. Based on the review of contemporaneous sediment pesticide analyses associated with the two observed *Hyaella* sediment toxicity exceedances, no individual pyrethroid or collection of pyrethroids were identified as the potential cause of the *Hyaella* sediment toxicity observed in April 2018 when comparing detected pesticides concentrations to a relevant ecotoxicology benchmark for the freshwater amphipod (Amweg et al., 2005⁵).

Sediment pesticide analyses associated with the April 2019 *Hyaella* sediment toxicity exceedance did indicate that the pyrethroids bifenthrin and lambda-cyhalothrin were present in the sediment at concentrations sufficient to cause the observed toxicity to *Hyaella*. A Management Plan for Sediment Toxicity to *Hyaella azteca* in Ulatis Creek was submitted to the Regional Water Board on November 22, 2019 and approved on January 30, 2020. The implementation goals included in the Management Plan are intended to maintain management practices that minimize pyrethroid discharges and prevent sediment toxicity to sensitive invertebrates due to the agricultural uses of pyrethroids in the Cache Slough drainage and represented drainages.

Even though the Management Plan was not submitted for approval until the beginning of the 2020 Monitoring Year, the Solano Subwatershed continued its education and outreach activities related to the initial April 2018 sediment toxicity exceedance as part of its 2019 education and outreach efforts. Activities and water quality measurements related to the satisfaction of this Management Plan's Performance Goals that occurred during the 2020 monitoring year are described below.

PG 1: Maintain education and awareness of pyrethroid application and runoff management practices that minimize the potential for impacts to surface waters.

Due to COVID-19 restrictions in place during much of the 2020 Monitoring Year, in-person outreach opportunities to discuss (1) the *Hyaella* toxicity exceedances that triggered the Management Plan, (2) cultural practices for managing sediment and erosion, and (3) pesticide application practices to avoid/limit the movement of pesticides from where they are applied were limited to five meetings: the Annual General Member Information Meeting (held on November 19, 2019), a sediment toxicity meeting (held on October 17, 2019), and three Pesticide Applicator Trainings provided by the Solano County Agricultural Commissioner (held on November 14, December 12, 2019, and January 16, 2020). The three Pesticide Applicator Trainings collectively reached 99 people and covered all pesticides applied in the subwatershed. In addition, 30 Coalition members were updated on the *Hyaella* Toxicity Management Plan in Ulatis Creek at the Annual General Member Informational Meeting, and all 600 members received an update in the annual member newsletter dated October 15, 2019. Due to the timing

⁵ Amweg, E.L., D.P. Weston, N.M. Ureda. 2005. Use and toxicity of pyrethroid pesticides in the Central Valley, California, USA. *Environ Toxicol Chem* 24:966-972; Correction: 24L1300-1301.

of the exceedances coinciding with the use of pyrethroids on alfalfa and tomato, nearly 50 growers and advisors were invited to the sediment toxicity workshop and 28 attended. Another 20 members were contacted via either email or phone to discuss the *Hyaella* sediment toxicity Management Plan. Finally, a follow-up email was sent to 55 members on February 19, 2020, reminding the alfalfa and tomato growers of the BMPs to employ when applying pyrethroids. Additional information regarding these outreach events is provided in Appendix F (*SVWQC Outreach Material*) of the Coalition's 2020 AMR.

PG2: Maintain implementation of pyrethroid application and runoff management practices that minimize the potential impacts to surface waters in the Cache Slough drainage and represented drainages.

Tracking of management practices implemented to reduce or prevent the discharge of pyrethroid pesticides to surface waters in the Cache Slough drainage and represented drainages is now being accomplished through the MPIR process. As noted above, 2020 MPIR data will be submitted to the Regional Water Board no later than November 30, 2021. The most recent available tabulation of management practices implemented in the Cache Slough drainage and represented drainages was derived from the 2017 Farm Evaluation and presented in **Table 9**. Because all Dixon/Solano Coalition members receive the same outreach and education information, regardless of the pesticides they apply, historically it was not necessary to track separately the management practice implementation of members who applied pyrethroid pesticides.

PG 3: Avoid exceedances (caused by agricultural activities) of ILRP toxicity trigger limit in Ulatis Creek at Brown Road sediment samples.

The ILRP trigger limit (based on the Basin Plan's narrative toxicity objective) for sediment toxicity to a sensitive amphipod (*Hyaella azteca*) is statistically significant toxicity and less than (<) 80% organism survival as compared to controls. The Basin Plan's narrative toxicity objective exists to control toxic substances in concentrations that produce detrimental responses in human, plant, animal, or aquatic life. The Coalition compares all of its *Hyaella* monitoring data to this ILRP trigger limit.

Sediment toxicity results for *Hyaella azteca* using sediment samples collected at the UCBRD monitoring site are shown in **Figure 5**. Two additional sediment toxicity tests were performed subsequent to the April 2019 exceedance that triggered the Management Plan and neither showed toxicity to *Hyaella*.

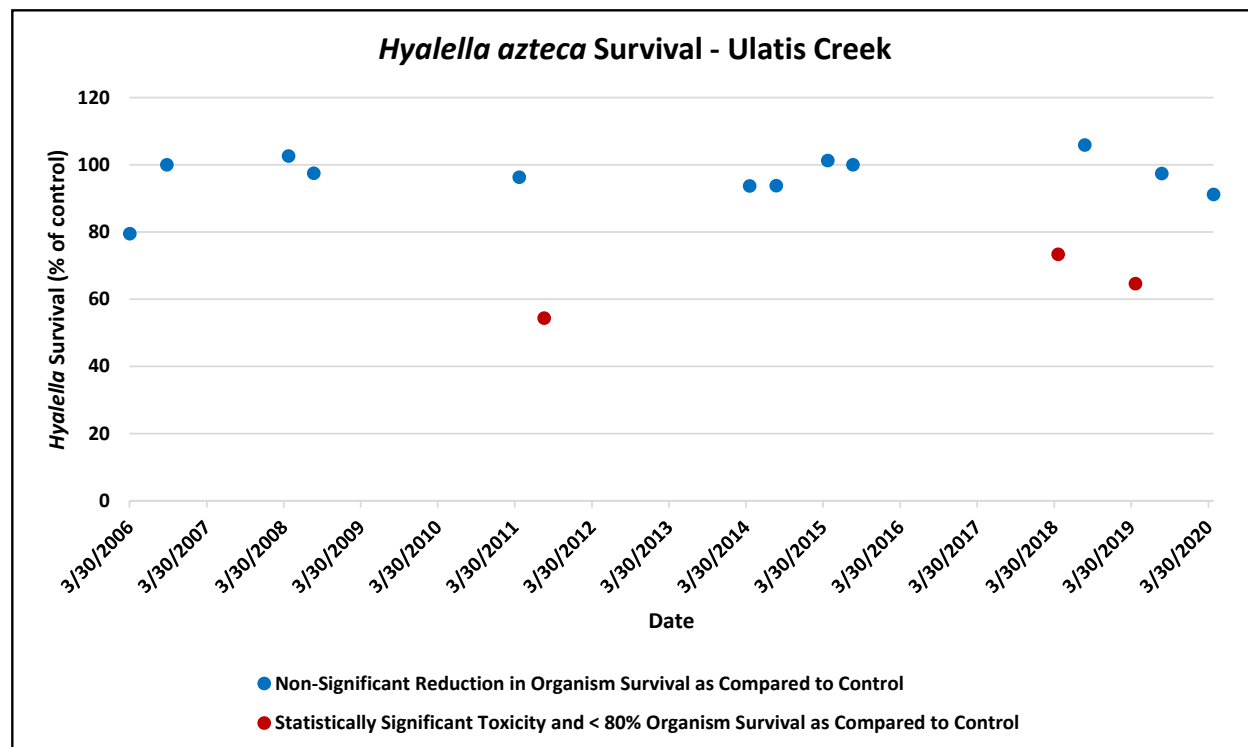


Figure 5. *Hyalella* Sediment Toxicity Monitoring Results in Ulatis Creek at Brown Road: 2006 – 2020

DO and pH Management Plan Approach

Management Plans for dissolved oxygen (DO) and pH were triggered at numerous Coalition monitoring sites during the earliest years of Coalition monitoring and these parameters continue to exceed their relevant water quality objectives (WQOs) at a number of monitoring sites. The development of DO and pH Management Plans has been given a low priority by the Regional Water Board and the Coalition, relative to other parameters, for the following reasons:

DO and pH show (1) moderate potential for affecting aquatic life; (2) low probability of affecting other uses; (3) low probability of significant direct agricultural sources with high probability of natural causes; (4) long-term management of multiple sources likely required even with successful management of agricultural sources; and (5) lower probability of meeting WQOs by implementing management practices.

Regional Water Board Management decided in 2016 to pursue the development of DO and pH Management Plans for all Central Valley Coalitions where such Management Plans have been triggered and asked the SVWQC to develop a Management Plan approach/methodology for these two parameters.

The Coalition has pursued a multistep analysis approach that used statistical methods (conventional parametric multiple regression/ANOVA and non-parametric methods (Spearman's rank-order correlation)) and typical graphical methods to first evaluate all Coalition DO and pH data for relationships with non-agricultural environmental event-based factors including: flow, water temperature, time of day, time of year (season), event type (wet/dry), and electrical

conductivity (EC was included as a factor only in the pH regression analysis). Statistics were calculated for each site for frequency of exceedance and residuals of regression on non-agricultural environmental factors. These tasks constituted Step 1 of the analysis. The results of Step 1 provided the following information:

- The DO regression model explained 21% of observed variability in DO concentration; and
- The pH regression model explained 15% of observed variability in pH concentrations.

Step 2 of the analysis evaluated the relationships between relevant drainage (site) characteristics and DO or pH exceedance statistics for each site using the Spearman's rank-order correlation. Drainage characteristics were divided into the following two groups with a check for inter-relationship between agricultural and non-agricultural characteristics, as necessary:

Agricultural-related Characteristics: percent (%) irrigation method, average nutrient concentration, and percent (%) implementation of sediment and erosion control practices.

Non-Agricultural Characteristics: average gradient, drainage size, and elevation.

The correlation analysis was used to determine the strength of the relationships between both the agricultural-related characteristics and the non-agricultural characteristics and observed exceedances of WQOs. The results of Step 2 provided the following information:

- The agricultural practice of laser leveling fields was the only practice identified as statistically significant, with a negative relationship between (a) implementation and median DO and pH water column concentrations, and (b) exceedances of the WQO for pH.
- Nitrate showed a significant positive relationship between its median concentration and median DO concentrations in the water column.
- Phosphorus showed a significant negative relationship between (a) its median concentration and median DO and pH water column concentrations, (b) a positive relationship between its median concentration and exceedances of the WQO for DO, and (c) a negative relationship between its median concentration and exceedances of the WQO for pH.
- Total organic carbon showed a significant negative relationship between (a) its median concentration and median DO water column concentrations, and (b) a positive relationship between its median concentration and exceedances of the WQO for DO.

The above results were presented to Regional Water Board staff during two separate meetings held on September 22, 2017, and March 1, 2018. With respect to the absence of significant relationships between percent implementation of agricultural-related practices and exceedances of WQOs for DO and pH at the current levels of management practice implementation (with the noted exception of laser leveling), it bears noting that additional implementation of management practices would not be expected to influence observed rates of WQO exceedances for DO and pH. Additionally, it should be noted that because phosphorus naturally occurs in soils of the Sacramento Valley, the agricultural use of phosphorus has little effect on DO exceedances.

The Coalition provided to the Regional Water Board's Executive Officer a summary report of these two statistical analyses on July 23, 2018. The Coalition has yet to receive any comments on

its summary report, nor recommendations or strategies to limit exceedances of these two water quality parameters in receiving waters.

Pathogen Indicator Management Plans

Since the beginning of the Coalition's Monitoring Program, Management Plans for *E. coli* have been triggered at many Coalition monitoring sites. The indicator bacteria, *E. coli*, is used as a surrogate for waterborne pathogens when monitoring streams to assess potential impacts to human health. These triggered Management Plans were suspended by the Executive Officer of the Regional Water Board in a letter dated December 5, 2011, that stated the Board would develop a region-wide approach to the management of pathogens. Before and after the suspension by the Regional Water Board, the Coalition has produced reports outlining the various potential sources of pathogens measured at its monitoring sites. In 2007, the Coalition conducted a Pathogen Source Identification Study, which used Quantitative Polymerase Chain Reaction (qPCR) analysis targeting genetic markers to determine the source(s) of the *E. coli* measured in Coalition water quality samples. In March 2011, LWA submitted a Pathogen Indicator Source Evaluation Report (2011 SER), which analyzed Coalition monitoring data, survey results, and information relating to other pathogen sources to classify a subset of drainages as not requiring a monitoring plan.

All Central Valley Agricultural Water Quality Coalitions received a letter from the Executive Officer dated June 13, 2017, that requested third-party groups to develop a strategy for addressing agricultural discharges of *E. coli* in their jurisdictions. The Coalition submitted to the Regional Water Board a draft Work Plan to Determine the Need for Pathogen Indicator Management Plans (Work Plan) on May 1, 2018. The Coalition received informal written comments from Regional Water Board staff on the draft Work Plan in September 2018 and followed this with an in-person discussion with staff to discuss the comments and other related items on December 5, 2018. The Coalition was revising its Work Plan in Spring 2019 when Regional Water Board staff informed the Coalition via conference call on May 24, 2019, that it had begun an investigation with support from University of California Cooperative Extension staff to determine the risk to surface water quality posed by the potential discharge of *E. coli* from irrigated pasture operations, and that further development of the Work Plan should be stopped. Regional Water Board staff is currently investigating regulatory alternatives for irrigated pasture operations.

In January 2021, Regional Water Board staff released irrigated pasture regulatory recommendations for the Goose Lake Subwatershed. The recommendations included the finding that *E. coli* within this specific watershed did not appear to be a significant issue associated with irrigated pasture and likely can be addressed through an alternative regulatory pathway. The Regional Water Board still must consider how best to address potential *E. coli* contributions from irrigated pasture and other irrigated lands in the other subwatersheds that comprise the Sacramento Valley Coalition. Until the Regional Water Board adopts a new regulatory strategy for irrigated pasture, livestock operators throughout the Coalition will continue to implement current management practices to limit or avoid the discharge of *E. coli* to surface waters.

Deliverables and Schedule for Active Management Plan Elements

Deliverables to be completed in 2021 for existing Management Plans are listed in **Table 10**. The specific tasks for these existing Management Plans have been provided earlier in this document, as well as presented in detail in previously submitted site-specific Management Plans.

Table 10. 2021 Deliverables for Active Management Plans

Analyte Category	Analytes	Subwatershed	Water Body	Status	Next Deliverable
Registered Pesticides	Chlorpyrifos	Butte-Yuba-Sutter	Gilsizer Slough	Continue monitoring and implementation of Management Plan	Provide annual information on Performance Goal achievement
	Diazinon	Butte-Yuba-Sutter	Gilsizer Slough	Management Plan approved November 6, 2020; Continue monitoring and implementation of Management Plan	Provide annual information on Performance Goal achievement
Toxicity	<i>Selenastrum</i> (Unknown Water Column Toxicity)	Solano	Ulatis Creek	Management Plan approved November 19, 2018; continue monitoring and implementation of Management Plan	Submit RTC in Summer/Fall 2021
	<i>Hyalella</i> (Sediment Toxicity)	Solano	Ulatis Creek	Management Plan approved January 30, 2020; continue monitoring and implementation of Management Plan	Provide annual information on Performance Goal achievement
Trace Metals	Arsenic	Sacramento Amador	Grand Island Drain	Continue monitoring; SER submitted in 2013	None established
	Arsenic	Butte-Yuba-Sutter	Lower Snake River	Continue monitoring	None established
Pathogen Indicators	<i>E. coli</i>	Butte-Yuba-Sutter, Colusa Glenn, Lake, Napa, Sacramento-Amador, Shasta-Tehama, Solano, Upper Feather River, Yolo	32 water bodies	Monitoring required; other tasks suspended pending potential new regulation of discharges from irrigated pasture by Regional Water Board	No deliverable requirements established
Salinity	Conductivity, TDS, Boron	Butte-Yuba-Sutter, Colusa Glenn, Lake, Sacramento-Amador, Solano, Yolo, Upper Feather River, Yolo	19 water bodies	Monitoring required; tasks to be conducted pursuant to Notice to Comply letter from Regional Water Board regarding implementation of Central Valley Salt and Nitrate Control Program	No deliverable requirements established
DO and pH	DO, pH	Butte-Yuba-Sutter, Colusa Glenn, Lake, Sacramento-Amador, Shasta Tehama, Pit River, PNSSNS, Solano, Yolo	33 water bodies	Monitoring required; Coalition submitted summary report of DO and pH analyses on July 23, 2018	No deliverable requirements established

Notes: RTC = Request to Complete Management Plan

TMDL COMPLIANCE REPORTING

Chlorpyrifos and Diazinon TMDL

Based on the results of the routine Coalition 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 pesticide 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 Coalition's ILRP monitoring suggests that many of the changes were successfully implemented prior to or soon after 2005. Although exceedances occasionally still are observed, the overall trend from 2005 through September 2020 has been a decrease in the rate of annual exceedances. Exceedances observed in the TMDL tributaries monitored for compliance were determined 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 Management Plan requirements for these pesticides. Currently, the Coalition has one active Management Plan for chlorpyrifos and one active Management Plan for diazinon. Additionally, the Coalition aggressively investigates all exceedances and conducts follow-up contact with growers reporting applications that have the potential to cause specific observed exceedances. It should be noted that the agricultural use of chlorpyrifos was essentially⁶ eliminated as of December 31, 2020, after which it became illegal for growers to possess or use chlorpyrifos products in California. This cancellation of the use of chlorpyrifos by agriculture should act to further reduce concentrations of the OP pesticide in receiving waters of the Sacramento Valley and Delta. These combined efforts are expected to result in a continuation of the decreasing trend in the number of exceedances for both pesticides.

Clear Lake Nutrient TMDL

In 2006, the Regional Water Board adopted the Clear Lake Nutrient TMDL with the goal of achieving a 40% reduction in non-point source contributions. The Coalition provided information to assist in the 2012 update of the TMDL. In July 2016, the Coalition prepared a second memorandum⁷ to support Regional Water Board staff in its 2016 update of the Clear Lake Nutrient TMDL. The 2016 memorandum provides follow-up responses to a set of questions originally asked by Regional Water Board staff in 2011. A summary of this memorandum was included in the 2017 MPPR.

⁶ A few products that apply chlorpyrifos in granular form, representing less than one percent of agricultural use of chlorpyrifos, will be allowed to remain on the market. These products are not associated with detrimental health effects (<https://www.cdpr.ca.gov/docs/pressrls/2019/100919.htm>)

⁷ *Memorandum: Clear Lake Nutrient TMDL Progress Information Update Request: July 15, 2016. Prepared for the Sacramento Valley Water Quality Coalition by Larry Walker Associates, Davis, CA.*

SUMMARY: EVALUATION OF MANAGEMENT PLAN PROGRESS

The Coalition's Management Plan approach implements the processes and elements that are outlined in the Coalition's Water Quality Management Plan (2009 Management Plan), which was reorganized into the Comprehensive Surface Water Quality Management Plan (CSQMP) in 2015. The Coalition's approved CSQMP was most recently updated in September 2016 and approved by the Regional Water Board in November 2016. The site-specific Management Plans developed since September 2016 are included as addenda to the CSQMP. The CSQMP complies with the requirements set forth in the Coalition's Waste Discharge Requirements (WDR), Order No. R5-2014-0030-07, and associated Monitoring and Reporting Program (MRP) adopted by the Regional Water Board in March 2014.

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 Regional Water Board for a 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, as a result of the outreach and education efforts of the Coalition and its members and partners. Specific trackable goals (originally identified in Management Practice Implementation and Performance Goals or MPIPGs) for a number of pesticide and toxicity Management Plans were developed and submitted to the Regional Water Board beginning in 2011. Although most of these MPIPGs were never comprehensively reviewed by the Board, implementation of management practices to meet these goals was initiated in the subwatersheds in anticipation of Regional Water Board approval.

With regard to new Management Plans developed pursuant to the WDR and CSQMP and submitted to the Regional Water Board beginning in 2016, assessment of progress toward completion of the Management Plan is based on the tracking of actions focused on reducing the risk of exceedances of the target constituent above its water quality objective (WQO) and thus, helping to improve surface water quality in the representative drainage and represented drainages, as applicable. Actions will be implemented by responsible parties (subwatershed leads and staff, along with their designees) according to a schedule that results in compliance with a specific WQO in a time frame that is as short as practicable but may not exceed 10 years from the date the Management Plan was submitted for approval by the Regional Water Board's Executive Officer.

The approach to managing a target constituent will include the establishment of performance goals meant to reduce the discharge of the constituent to surface waters. Performance goals are typically represented as changes in behaviors of those applying a particular constituent (pesticide). A typical mechanism for achieving changes in behaviors is through general outreach and education to growers and applicators, as well as targeted outreach and education to growers and applicators who apply a pesticide in the drainage where the Management Plan exists. A quantitative measure of progress is evaluated based on achievement of outreach and education

goals, along with the tracking of changes in behaviors as measured by the frequency of implementation of specific management practices likely to reduce the discharge of a target constituent to surface waters. The frequency of management practices implementation is measured at the beginning of the Management Plan (via baseline management practices assessment – formerly using Farm Evaluation or Focused Outreach Survey data) and over time as growers and applicators are exposed to continued outreach and education and as subsequent water quality monitoring data are collected. Management practices implementation will typically be reassessed on an annual basis. Finally, the Coalition, subwatersheds, and Regional Water Board staff will assess the achievement of performance goals according to the schedule for their attainment included in an approved Management Plan and reported in annual MPPRs.

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 44 Management Plans to date. As measured by the completion and ongoing work on specific Management Plan tasks and deliverables summarized above and documented throughout this MPPR, the Coalition continues to make good progress toward meeting these requirements and expects to achieve the goals of the current approved CSQMP.

PROPOSED CHANGES TO THE COMPREHENSIVE SURFACE WATER QUALITY MANAGEMENT PLAN

The Coalition's approved 2009 Management Plan was reorganized into a Comprehensive Surface Water Quality Management Plan (CSQMP) in 2015 to meet the requirements of the Coalition's WDR, Order No. R5-2014-0030-07, and associated Monitoring and Reporting Program (MRP) adopted by the Regional Water Board in March 2014. The Coalition's approved CSQMP was most recently updated in September 2016 and approved by the Regional Water Board in November 2016. The site-specific Management Plans developed since September 2016 are included as addenda to the CSQMP. The Coalition currently proposes no changes to the 2016 CSQMP.

Appendix A

INDIVIDUAL MANAGEMENT PRACTICE IMPLEMENTATION ACREAGE AS COMPARED TO TOTAL ACRES REPORTED RECEIVING APPLICATIONS OF A PESTICIDE FOR WHICH THERE EXISTS A MANAGEMENT PLAN

Table A-1: Individual Management Practices Implemented by Year for the Chlorpyrifos Management Plan in Gilsizer Slough

	2016	2017	2018	2019
Total Acres Receiving Applications of Chlorpyrifos (as reported in FOS responses)	1,951	1,951	76	33
<i>Cultural Practices for Managing Sediment and Erosion Where Chlorpyrifos Applied (Total Acres Implemented per Year)</i>				
Berms are constructed at low ends of fields to capture runoff and trap sediment.	1,951	1,951	43	---
Cover crops or native vegetation are used to reduce erosion.	---	---	43	---
Crop rows are graded, directed and at a length that will optimize the use of rain and irrigation water.	1,951	1,951	43	---
Soil water penetration has been increased through the use of amendments, deep ripping and/or aeration.	1,914	1,914	43	---
Field is lower than surrounding terrain.	---	---	43	---
Minimum tillage incorporated to minimize erosion.	1,857	1,857	43	9
Vegetated ditches are used to remove sediment as well as water soluble pesticides, phosphate fertilizers and some forms of nitrogen.	1,694	1,694	8	---
Hedgerows or trees are used to help stabilize soils and trap sediment movement.	1,620	1,620	---	---
No storm drainage due to field soil conditions.	1,600	1,600	35	---
Vegetative filter strips and buffers are used to capture flows.	1,600	1,600	43	---
Creek banks and stream banks have been stabilized.	331	331	---	---
Storm water is captured using field borders.	237	237	43	---
Sediment basins/holding ponds are used to settle out sediment and hydrophobic pesticides such as pyrethroids from irrigation and storm runoff.	200	200	---	---
Subsurface pipelines are used to channel runoff water.	200	200	8	---
<i>Pesticide Application Practices Implemented When Applying Chlorpyrifos (Total Acres per Year)</i>				
Avoid surface water when spraying	1,951	1,951	52	9
County Permit followed	1,951	1,951	76	33
Follow label restrictions	1,951	1,951	52	9
Monitor rain forecasts	1,951	1,951	43	9
<i>Pesticide Application Practices Implemented When Applying Chlorpyrifos (Total Acres per Year) – continued</i>				

	2016	2017	2018	2019
Total Acres Receiving Applications of Chlorpyrifos (as reported in FOS responses)	1,951	1,951	76	33
Monitor wind conditions	1,951	1,951	52	9
Use PCA recommendations	1,951	1,951	52	9
Attend pesticide application trainings	1,931	1,931	52	9
Use appropriate buffer zones	1,914	1,914	52	9
End of row shutoff when spraying	1,751	1,751	52	9
Reapply rinsate to treated field	1,694	1,694	43	---
Sensitive areas mapped	331	331	43	---
Use drift control agents	294	294	---	---
Target sensing sprayer used	94	94	---	---
Pesticide applied by licensed commercial spray company	37	37	---	---

Table A-2: Individual Management Practices Implemented by Year for the Diazinon Management Plan in Gilsizer Slough

	2019 (baseline data)
Total Acres Receiving Applications of Diazinon (as reported in FOS responses)	382
<i>Cultural Practices for Managing Sediment and Erosion Where Diazinon Applied (Total Acres Implemented per Year)</i>	
Minimum tillage incorporated to minimize erosion.	335
Cover crops or native vegetation are used to reduce erosion.	307
Soil water penetration has been increased through the use of amendments, deep ripping and/or aeration.	307
Vegetated ditches are used to remove sediment as well as water soluble pesticides, phosphate fertilizers and some forms of nitrogen.	307
Creek banks and stream banks have been stabilized.	247
Crop rows are graded, directed and at a length that will optimize the use of rain and irrigation water.	247
No storm drainage due to field soil conditions.	247
Storm water is captured using field borders.	247
Vegetative filter strips and buffers are used to capture flows.	247
Berms are constructed at low ends of fields to capture runoff and trap sediment.	139
<i>Cultural Practices for Managing Sediment and Erosion Where Diazinon Applied (Total Acres Implemented per Year) – continued</i>	

	2019 (baseline data)
Total Acres Receiving Applications of Diazinon (as reported in FOS responses)	382
Field is lower than surrounding terrain.	139
Sediment basins/holding ponds are used to settle out sediment and hydrophobic pesticides such as pyrethroids from irrigation and storm runoff.	139
<i>Pesticide Application Practices Implemented When Applying Diazinon (Total Acres per Year)</i>	
Avoid surface water when spraying	382
County Permit followed	382
End of row shutoff when spraying	382
Follow label restrictions	382
Monitor wind conditions	382
Use appropriate buffer zones	382
Use PCA recommendations	382
Monitor rain forecasts	354
Attend pesticide application trainings	275
Reapply rinsate to treated field	247
Use drift control agents	247
Use vegetated drainage ditches	247
Target sensing sprayer used	108