

San Joaquin County and Delta Water Quality Coalition

San Joaquin County Resource Conservation District
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April 30, 2013

Pamela Creedon
Chris Jimmerson
Central Valley Regional Water Quality Control Board
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Dear Ms. Creedon,

The San Joaquin County and Delta Water Quality Coalition (SJCDWQC) is submitting the 2013 Management Plan Update Report (MPUR) which updates the SJCDWQC Management Plan approved on January 23, 2009. The report includes information on activities conducted during 2012. The 2013 MPUR is being submitted to inform the Regional Board of progress made on the management of water quality within the Coalition region. The 2013 MPUR includes:

- A status update of constituents and site subwatersheds requiring management plans
- An evaluation of the current Management Plan strategy including a status update of High Priority Site Subwatershed Performance Goals
- An updated summary of newly implemented management practices in the first (2008-2010) and second (2010-2012) priority site subwatersheds as a result of additional focused outreach in 2012
- A summary of newly implemented management practices in the third (2011-2013) priority site subwatersheds
- A summary of current management practices in fourth (2012-2014) priority site subwatersheds
- An evaluation of management practice effectiveness
- A status review of TMDL constituents and Basin Plan requirements

Submitted respectfully,



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Management Plan Update Report



San Joaquin County & Delta Water Quality Coalition



January 2012 – December 2012

April 30, 2013

Irrigated Lands Regulatory Program

Central Valley Regional Water Quality Control Board

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APPENDICES

Appendix I. High Priority Site Subwatershed Analysis

LIST OF ACRONYMS

A	Assessment
AI	Active Ingredient
AMR	Annual Monitoring Report
APN	Assessor Parcel Number
AWEP	Agricultural Water Enhancement Program
BMP	Best Management Practice
C	Core
CALPIP	California Pesticide Information Portal
CURES	Coalition for Urban/Rural Environmental Stewardship
CVRWQCB	Central Valley Regional Water Quality Control Board
CV-SALTS	Central Valley Salinity Alternatives for Long-Term Sustainability
DDD	Dichlorodiphenyldichloroethane
DDE	Dichlorodiphenyldichloroethylene
DDT	Dichlorodiphenyltrichloroethane
DO	Dissolved Oxygen
DPR	Department of Pesticide Regulation
DWSC	Deep Water Ship Channel
EQIP	Environmental Quality Incentives Program
HCH	Hexachlorocyclohexane
ILRP	Irrigated Lands Regulatory Program
MERP	Mercury Exposure Reduction Program
MLJ-LLC	Michael L. Johnson, LLC
MPM	Management Plan Monitoring
MPUR	Management Plan Update Report
MRP	Monitoring and Reporting Program Order No. R5-2008-0005
MRPP	Monitoring and Reporting Program Plan
NA	Not Applicable
ND	Not Detected
NM	Normal Monitoring
NPS	Nonpoint Sources
NRCS	Natural Resource Conservation Service
PCA	Pesticide Control Advisor
pH	Power of Hydrogen
PUR	Pesticide Use Report

RPD	Relative Percent Difference
SC	Specific Conductance
SG	Statistically significantly different from control; Greater than 80% threshold
SJCDWQC	San Joaquin County & Delta Water Quality Coalition
SL	Statistically significantly different from control; Less than 80% threshold
TAC	Technical Advisory Committee
TDS	Total Dissolved Solids
TIE	Toxicity Identification Evaluation
TMDL	Total Maximum Daily Load
TOC	Total Organic Carbon
TRS	Township, Range, Section
UC ANR	University of California Division of Agriculture and Natural Resources
WQO	Water Quality Objective
WQTL	Water Quality Trigger Limit

LIST OF UNITS

cfs	cubic feet per second
cm	centimeter
L	Liter
lbs	pounds
mg	milligram
MPN/100mL	most probable number per 100 milliliters
sec	second
µg	microgram
µS	microsiemens
µg/kg dw	microgram per kilogram of dry weight

SJCDWQC MANAGEMENT PLAN UPDATES AND AMENDMENTS

Table A. SJCDWQC Management Plan Updates and Amendments Summary.

ITEM NUMBER	AMENDMENTS DESCRIPTIONS	DATE SUBMITTED ¹	MANAGEMENT PLAN PAGE NUMBER	DATE APPROVED
Original SJCDWQC Management Plan Report		September 30, 2008		January 23, 2009
1	2009 Management Plan Update Report.	April 1, 2009	NA	October 14, 2009
2	Request for additional guidance for Management Plan Update Reports.	May 20, 2009	NA	October 22, 2009
3	Request to modify Management Plan schedules.	August 3, 2009	NA	December 29, 2009
4	2010 Management Plan Update Report.	April 1, 2010	NA	August 24, 2010
5	2010 Management Plan Update Report Addendum to Management Practice Summary section.	June 1, 2010	Pages 1-16 of Addendum	August 24, 2010
6	Submittal of updated Addendum to 2010 Management Plan Update Report to correct Exceedance Tally results, Performance Goals table, and Appendix I Site Subwatershed table and verbiage.	June 4, 2010	Table 4, page 9, Table 11, page 32-33, Appendix I Table IV-5, pages 102-104	August 24, 2010
7	Request to update Management Plan Performance Goals table for 3rd priority.	December 14, 2010	NA	January 10, 2011
8	2011 Management Plan Update Report.	April 1, 2011	NA	June 8, 2011
9	Request to update Management Plan Performance Goals table for 4th priority.	October 24, 2011	NA	November 14, 2011
10	Request to remove constituents from site specific management plan.	January 6, 2012	NA	March 22, 2012 April 17, 2012 May 21, 2012
11	Due to a typo and inconsistency between Figures 1 and 2, follow up due dates have been updated in Figure 1 to be consistent with the Coalitions approved Performance Goal deadline schedule.	April 1, 2012	MPUR 2012, page 18	NA
12	Request to remove constituents from site specific management plans.	November 13, 2012	NA	February 27, 2013
13	Request to extend the MPUR 2013 submittal deadline from April 1, 2013 to April 30, 2013.	March 7, 2013	NA	March 15, 2013

¹ All deliverables are submitted electronically (quarterly monitoring data reports, Annual Monitoring Report, Annual Management Plan Update Report).

NA-Not applicable.

TBD-To Be Determined; Regional Board is still reviewing.

EXECUTIVE SUMMARY

The San Joaquin County and Delta Water Quality Coalition (SJCDWQC or Coalition) is submitting a Management Plan Update Report (MPUR) on the status and methods used to identify agriculture sources of discharges resulting in exceedances of Water Quality Trigger Limits (WQTL), track implemented management practices, and progress toward meeting its performance goals as outlined in the SJCDWQC Management Plan. A Management Plan Update is submitted every April 1 to report on the previous year's activities and update management plan implementation schedules and timelines for reporting to the Central Valley Regional Water Quality Control Board (CVRWQCB or Regional Board).

This is the fifth yearly update to the Coalition's Management Plan. In this report, previous year's monitoring data are reviewed and assessed for exceedances and water quality improvements. This update includes an assessment of water quality based on 2012 monitoring results, including new exceedances and new site/constituents requiring management plans.

To date, the Coalition has been approved to remove 39 constituents from active management plans at eleven high priority site subwatersheds (Table 1, approved March 22, April 17, May 21, 2012, and February 27, 2013).

Table 1. Constituents removed from active management plans per site subwatershed.

SITE SUBWATERSHED	DO*	pH*	SC*	COPPER (TOTAL & DISSOLVED)	LEAD (TOTAL & DISSOLVED)	CHLORPYRIFOS	DIAZINON	DIELDRIN	DIURON	SIMAZINE	C. DUBIA TOXICITY	H. AZTECA TOXICITY	P. PROMELAS TOXICITY	S. CAPRICORNUTUM TOXICITY	TOTAL (PER SITE)
Duck Creek @ Hwy 4		•					•							•	3
French Camp Slough @ Airport Way				•	•		•	•	•		•			•	7
Grant Line Canal @ Clifton Court Rd		•		•	•										3
Grant Line Canal near Calpack Rd						•									1
Kellogg Creek along Hoffman Ln	•			•	•						•				4
Littlejohns Creek @ Jack Tone Rd							•							•	2
Lone Tree Creek @ Jack Tone Rd	•		•	•			•		•			•		•	7
Mokelumne River @ Bruella Rd	•			•							•			•	4
Sand Creek @ Hwy 4 Bypass						•	•				•				3
Terminus Tract Drain @ Hwy 12													•	•	2
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd									•	•				•	3
TOTAL (PER CONSTITUENT)	3	2	1	5	2	3	5	1	2	1	5	1	1	7	39

Water quality monitoring was conducted during every month from January through December 2012 as described in the SJCDWQC Monitoring and Reporting Program Plan (MRPP, pages 32-39). Management Plan sampling was conducted based on prior exceedances of the WQTLs of high priority constituents at Coalition monitoring sites. Monitoring was performed at 15 Management Plan Monitoring (MPM) sites; Duck Creek @ Highway 4, Lone Tree Creek @ Jack Tone Road, and Unnamed Drain to Lone Tree Creek @

Jack Tone Road (also known as Temple Creek), Grant Line Canal @ Clifton Court Rd, Grant Line Canal near Calpack Rd, Littlejohns Creek @ Jack Tone Rd, French Camp Slough @ airport Way, Mokelumne River @ Bruella Rd, Terminous Tract Drain @ Hwy 12, Kellogg Creek along Hoffman Ln, Mormon Slough @ Jack Tone Rd, Sand Creek along Hwy 4 Bypass, Bear Creek @ North Alpine Rd, Roberts Island @ Whiskey Slough Pump and Walthall Slough @ Woodward Ave. Based on the prioritization of constituents with exceedances, MPM was conducted for water column toxicity to *Ceriodaphnia dubia* and *Selenastrum capricornutum*, and sediment toxicity to *Hyalella azteca*, copper, lead, chlorpyrifos, diazinon, dieldrin, diuron, disulfoton, malathion and simazine.

As a result of 2012 monitoring, two new site/constituent specific management plans are required including:

- *Hyalella azteca* toxicity
 - Duck Creek @ Hwy 4
- Specific conductance (SC)
 - Lone Tree Creek @ Jack Tone Rd

The Coalition developed an updated flow chart for its MPM strategy. The strategy is updated to include MPM for high priority site subwatersheds during Year 0, Year 1, and Year 2. Year 0 refers to the year prior to when the site subwatershed becomes high priority and allows the Coalition to utilize results from recent monitoring when contacting growers in the site subwatershed. When a site subwatershed rotates into high priority status, the Coalition makes contacts with individuals who have the potential for direct drainage and are known to apply constituents of concern. Contacts occur between January 1 and March 30 of Year 1 or growers schedule meetings with Coalition representatives to fill out surveys between February 1 and September 30.

During meetings, growers are informed about current water quality impairments and potential management practices that can be implemented to reduce impairments of water quality due to agricultural discharge. At the meetings, growers are encouraged to complete surveys and return them to Coalition representatives (either at the meeting or by mail). It is anticipated that all surveys are completed by October 1 and entered into the survey database by October 31 of Year 1. Surveys document the current management practices, and they identify additional management practices that the member intends to implement in Year 1 and/or Year 2.

The Coalition conducts follow up surveys with growers between September 1 of Year 1 and March 30 of Year 2. Follow up may be extended to Year 3 depending on information obtained from the grower on when they plan to implement practices; in some cases a third year or more may be necessary for funds to be available for structural improvements. Follow up surveys document what practices growers have implemented since initial contacts were complete. The returned surveys document whether growers implemented those practices in Year 1 and if not, whether they plan to implement those practices in Year 2. If the grower indicates that they do not intend to implement additional practices despite their previous declaration that they would, they are queried as to why they decided not to implement practices (e.g. they no longer farm, no available funds).

The Coalition developed High Priority Site Subwatershed Performance Goals (hereafter referred to as Performance Goals) for the first three high priority site subwatersheds. Performance goals are submitted for approval each time a new set of site subwatersheds rotates into high priority status and are built on the following actions essential to the Management Plan strategy:

1. Determine number/type of management practices currently in place, based on Assessor Parcel Number (APN) associated with baseline survey responses
2. Grower Group Contacts / Individual Contacts
3. Implementation of new management practices
4. Assess number/type of new management practices implemented
5. Evaluate effectiveness of new management practices

The goals were developed in coordination with Regional Board staff after the evaluation of the effectiveness of the Coalition's Management Plan strategy.

The Coalition targeted additional growers in the Duck Creek @ Hwy 4 site subwatershed in the first set of priority site subwatersheds during 2010 that may have been contributing to continued water quality impairments, specifically the exceedances of the Water Quality Trigger Limit (WQTL) for chlorpyrifos. In 2012, additional outreach occurred in all first priority site subwatersheds (Duck Creek @ Hwy 4, Lone Tree Creek to Jack Tone Rd and Unnamed Drain to Lone Tree Creek @ Jack Tone Rd) as well as Littlejohns Creek @ Jack Tone Rd in the second priority site subwatersheds. Topics discussed during additional focused outreach meetings included managing storm and irrigation runoff (including improving water infiltration, capturing and/or recycling runoff water, and treating runoff with PAM), reducing drift to water sources (including noting application conditions, equipment, product choice, buffer zones, and application method) as well as discontinuing, reducing, or changing the type of pesticide used (switching from liquid to granule form).

Performance goals, measures, outputs and completion dates for third priority site subwatersheds were approved by the Regional Board on January 10, 2011. For the third set of high priority site subwatersheds (2011–2013), the Coalition completed Performance Measure 1.1 (100% of identified growers contacted) and Performance Measure 1.2 (Contact owners/operators with direct drainage acreage) of Performance Goal 1; Performance Measure 2.1 (document current management practices at 100% of identified growers) and performance measure 2.2 (document management practices that growers were encouraged to implement) of Performance Goal 2. Performance Measure 3.1 (document new management practices implemented by growers) of Performance Goal 3, Performance Measure 4.1 (Assess water quality results from Coalition monitoring locations) of Performance Goal 4, and Performance Goal 5 are complete.

Performance goals, measures, outputs and completion dates for fourth priority site subwatersheds were approved by the Regional Board on November 14, 2011. For the fourth set of high priority sites (2012–2014), the Coalition completed Performance Measure 1.1 (100% of identified growers contacted) and Performance Measure 1.2 (contact owners/operators with direct drainage acreage) of Performance Goal 1; Performance Measure 2.1 (document current management practices at 100% of identified growers)

and Performance Measure 2.2 (document management practices that growers were encouraged to implement) of Performance Goal 2. Performance Measure 3.1 (document new management practices implemented by growers) of Performance Goal 3, Performance Measure 4.1 (Assess water quality results from Coalition monitoring locations) of Performance Goal 4, and Performance Goal 5 are in progress.

Performance goals, measures, outputs and completion dates for fifth priority site subwatersheds were approved by the Regional Board on November 6, 2012. For the fifth set of high priority sites (2013–2015), the Coalition completed Performance Measure 1.1 (100% of identified growers contacted) and Performance Measure 1.2 (contact owners/operators with direct drainage acreage) of Performance Goal 1. Performance Measure 2.1 (document current management practices at 100% of identified growers) and Performance Measure 2.2 (document management practices that growers were encouraged to implement) of Performance Goal 2 are in progress.

The SJCDWQC will proceed with the monitoring program outlined in the letter submitted to the Regional Board on April 27, 2012 and approved on March 15, 2013 (monitoring for chlorpyrifos and diazinon at four designated compliance sites once during a storm event between January and March and monthly from May through August).

On April 27, 2012 the Coalition submitted a letter to the Regional Board proposing to update its current monitoring program to include monitoring for chlorpyrifos and diazinon at four designated compliance sites once during a storm event between January and March and monthly from May through August. The letter was approved on March 15, 2013 and this monitoring will be used to characterize agricultural discharge of chlorpyrifos and diazinon to comply with the Sacramento San Joaquin Delta Total Maximum Daily Load (TMDL) requirements. Until the Coalition received approval from the Regional Board, monitoring continued as outlined under the current 2008 MRPP.

Additionally, the SJCDWQC established monitoring and management activities for the Total Maximum Daily Load (TMDL) constituents as required in the Regional Board's Basin Plan for the Sacramento and San Joaquin River basins.

The SJCDWQC is responsible for determining compliance with the Sacramento and San Joaquin Delta chlorpyrifos and diazinon TMDL, which was approved by the US EPA on October 10, 2007 and documented in an amendment to the Basin Plan (Amendments to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins for the Control of Diazinon and Chlorpyrifos Runoff into the Sacramento-San Joaquin Delta). As dictated by the Basin Plan Amendment, the Coalition worked with the Regional Board to develop a surveillance and monitoring program to collect information necessary to assess compliance with the seven monitoring objectives. The monitoring objectives are 1) determine load capacity compliance, 2) determine load allocation compliance, 3) determine degree of implemented management practices, 4) determine effectiveness of implemented management practices, 5) determine if alternative pesticides are impairing water quality, 6) determine if additive or

synergistic effects of multiple pollutants are causing toxicity, and 7) demonstrate management practices achieve the lowest pesticide levels technically and economically achievable.

To establish compliance with Water Quality Objectives (WQOs), loading capacity and loading allocations applicable to chlorpyrifos and diazinon discharges into Delta Waterways, the Coalition monitors at least one location monthly within each of the listed Delta Waterway areas (export area, central portion, eastern portion and southern portion) based on the Coalition's zone monitoring strategy. All samples were compliant with load capacity in 2012. The concentration of chlorpyrifos in a single sample collected from Zone 2 in December exceeded the WQO for chlorpyrifos and consequently the load allocation during 2012. The sample represents water quality in the eastern Delta subarea and the Stockton Ship Channel. Growers in the SJCDWQC region have implemented several management practices that are effective at reducing the offsite movement of chlorpyrifos and diazinon. Pyrethroids are an applicable alternative to chlorpyrifos and diazinon, and the chemicals were found in toxic sediment samples in the SJCDWQC region in 2012. There is evidence of the potential for additive or synergistic interactions between chlorpyrifos and other agricultural chemicals as chlorpyrifos and pyrethroids were present in samples resulting in sediment toxicities in 2012. Management practices implemented by growers are resulting in a reduction of discharges, and growers are in the process of achieving the lowest pesticide levels technically and economically achievable.

The Amendments to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins for the Control of Salt and Boron Discharges into the Lower San Joaquin River was approved by the US EPA on February 7, 2007 and established load allocations to meet the existing WQOs for salt and boron in the San Joaquin River at Airport Way (Vernalis). The approved amendment includes a requirement for a second phase TMDL to prepare and implement new salt and boron objectives in the San Joaquin River upstream of Airport Way (Vernalis). The SJCDWQC recognizes that salt, nitrate and boron water quality impairments are a Central Valley wide concern. The Coalition closely follows the planning and reviewing of studies relevant to the development of a Basin Plan amendment for salt and boron. The Coalition will participate in the efforts concerning the Delta area once the Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS) process is complete. In addition, the Coalition monitored for salt (SC and/or TDS) and nitrate in every zone and boron in one zone during 2012 and includes these constituents in conversations with growers about water quality impairments and applicable management practices.

The EPA approved the Amendments to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins for the Control Program for Factors Contributing to the Dissolved Oxygen Impairment in the Stockton Deep Water Ship Channel (hereafter, DO Basin Plan Amendment) on February 27, 2007. Agriculture is identified as a contributing source to low dissolved oxygen (DO) levels in the Stockton DWSC. The Coalition reviews DO monitoring results in the Stockton DWSC and from within its tributaries to assess compliance with the DO WQOs required in the TMDL. The measured DO concentration was less than the WQO of 5.0 mg/L (requirements for January through August and December) during 21 days in June, 20 days in July and 27 days in August and less than the WQO of 6.0 mg/L (September through November) during 16 days in September and eight days in October of 2012.

The Coalition reviewed tributary monitoring results from the sampling events immediately prior to the noncompliant DO measurements in the Stockton DWSC. Zone 2 contains agriculturally-influenced tributaries that may drain to the Stockton DWSC and could contribute oxygen demanding substances. There were 13 exceedances of the WQTL for DO at five SJCDWQC tributary sites in Zone 2. Given other factors that could affect DO levels in water en route to the Delta, such as changing flow rates and water temperature, it is unlikely these low DO levels contributed to the noncompliant measurements of DO in the Stockton DWSC. The Coalition includes discussions of DO water quality concerns during outreach to growers and encourages the implementation of management practices to reduce the offsite movement of agricultural constituents, which will aid in reducing offsite movement of organic matter. In addition, the Coalition continues to follow developments in achieving DO WQOs in the Stockton DWSC.

On October 20, 2011, the US EPA approved the Amendments to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins for the Control of Methyl mercury and Total Mercury in the Sacramento-San Joaquin River Delta Estuary (hereafter, Methyl Mercury Basin Plan Amendment). The program put forth in the Methyl Mercury Basin Plan Amendment intends to reduce the amount of methyl mercury in the Sacramento-San Joaquin Delta and is to be implemented through a phased, adaptive management approach. The Delta Methyl mercury TMDL Nonpoint Sources (NPS) Workgroup was formed to provide nonpoint dischargers with an organizational structure for developing collaborative control studies and carrying out the actions dictated for Phase 1. Coalition representatives participated in NPS Workgroup and Methyl Mercury TMDL for the Delta Technical Advisory Committee (Methyl Mercury TAC) meetings throughout 2012, and Coalition representative Mike Wackman serves on the NPS Workgroup Steering Committee. The Coalition is contributing to the Methyl Mercury Control Study Workplan prepared by the NPS Workgroup, which will be submitted by April 20, 2013. In addition, Coalition representatives are participating in the Mercury Exposure Reduction Program (MERP).

Overall, the following conclusions can be drawn regarding Coalition efforts under its focused management plan outreach and tracking strategy and per the requirements of TMDLs:

1. Fewer exceedances have occurred in high priority site subwatersheds receiving focused outreach (there was a single exceedance of the WQTL for chlorpyrifos in December 2012).
2. Growers in the SJCDWQC region are taking advantage of available funding resources to be used to implement management practices that improve water quality.
3. Growers across the SJCDWQC region are aware of water quality impairments and are implementing management practices designed to address these impairments even if the Coalition has yet to conduct focused outreach in the site subwatershed.
4. The drop in exceedances and water column toxicity coincides with additional focused outreach and the implementation of management practices encouraged by the Coalition.
5. The Coalition's focused management practice outreach and tracking strategy is effective at improving water quality. Monitoring results indicate two consecutive years of monitoring with no exceedances of the WQTL for several specific site subwatershed/ constituent pairs, which indicates improved grower awareness of the offsite movement of agricultural constituents and/or newly implemented management practices. To date, the Coalition has received approval

for the removal of 39 constituents from eleven high priority site subwatersheds (approval letters received March 22, April 17, May 21, 2012, and February 27, 2013).

6. Due to effective outreach and education, diazinon has been completely removed from all SJCDWQC site subwatershed management plans.
7. Growers continue to help prevent offsite movement of agricultural constituents into adjacent waterways.
8. During 2012, the SJCDWQC was in compliance with load capacity requirements of the chlorpyrifos and diazinon TMDL. A single sample with elevated concentrations of chlorpyrifos resulted in a single noncompliant load allocation in 2012.

The Coalition includes brief descriptions of all site subwatersheds listed in the SJCDWQC Management Plan as of April 1, 2013 at the end of this report. Further analysis of the first (2008-2010), second (2010-2012), third (2011-2013), fourth (2012-2014) and fifth (2013-2015) high priority site subwatersheds is included in Appendix I.

INTRODUCTION

The San Joaquin County and Delta Water Quality Coalition (SJCDWQC or Coalition) is submitting a Management Plan Update Report (MPUR) on the status of water quality in the region. Included are identifying the sources of agricultural discharges, tracking implemented management practices, and reporting progress toward meeting performance goals as outlined in the SJCDWQC Management Plan.

The MPUR includes the following:

1. Status of constituents and site subwatersheds requiring a management plan
2. Evaluation of the current Management Plan strategy
3. Status of high priority site subwatershed performance goals
4. Summary of newly implemented management practices
5. Evaluation of management practice effectiveness
6. Status of Total Maximum Daily Load (TMDL) constituents and Basin Plan requirements

The Coalition compiled a detailed analysis of high priority site subwatersheds (2008–2010, 2010–2012, 2011–2013, 2012–2014 and 2013–2015) including monitoring and exceedance histories, sourcing, outreach and management practice tracking. The site subwatershed analysis is supplemental to this report and is attached in Appendix I.

OVERVIEW OF MONITORING AND RESULTS

This is the fifth annual update to the Coalition’s Management Plan. In this report, monitoring data for the previous year are evaluated for exceedances and water quality improvements. This update includes an assessment of water quality based on 2012 monitoring results including new exceedances and new site/constituents requiring management plans.

During 2012, monitoring was conducted from January through December as outlined in the Coalition’s MRPP (pages 32-60). In addition, Management Plan Monitoring (MPM) in 2012 was conducted at high priority locations from January through December for high priority constituents requiring a management plan. The Coalition’s Annual Monitoring Report (AMR) submitted on March 1, 2013 lists the locations, dates and types of sampling conducted 2012.

There were 15 sites monitored for management plan constituents from January through December 2012 (Table 2). Thirteen of the 15 sites were monitored for management plan constituents either additionally or as part of Assessment Monitoring. Management Plan Monitoring was conducted for copper, chlorpyrifos, diazinon, dieldrin, diuron, disulfoton, lead, malathion, simazine, water column toxicity (*C. dubia* and *S. capricornutum*) and sediment toxicity (*H. azteca*).

Table 2. SJCDWQC January through December 2012 sample locations (sorted by zone and site name).

ZONE	SITE TYPE ¹	2012 MONITORING	SITE NAME	STATION CODE	LATITUDE	LONGITUDE
1	Assessment	MPM	Bear Creek @ North Alpine Rd	531BCANAR	38.07386	-121.21215
1	Core	C, MPM	Mokelumne River @ Bruella Rd	531XMRABR	38.16022	-121.20643
2	Assessment	A, MPM	Duck Creek @ Highway 4	531XDCAHF	37.94949	-121.18208
2	Core	C, MPM	French Camp Slough @ Airport Way	531SJC504	37.88172	-121.24933
2	Assessment	MPM	Littlejohns Creek @ Jack Tone Rd	531XLCAJR	37.88958	-121.14727
2	Assessment	MPM	Lone Tree Creek @ Jack Tone Rd	531XLTCLR	37.83754	-121.14460
2	Assessment	MPM	Mormon Slough @ Jack Tone Road	544MSAJTR	37.96470	-121.14880
2	Assessment	MPM	Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	531UDLTAJ	37.85360	-121.14570
3	Core	C, MPM	Terminus Tract Drain @ Hwy 12	544XTTHWT	38.11558	-121.49380
4	Assessment	MPM	Grant Line Canal @ Clifton Court Rd	544XGLCAA	37.84182	-121.52999
4	Assessment	MPM	Grant Line Canal near Calpack Rd	544XGLCCR	37.82084	-121.50009
4	Assessment	MPM	Kellogg Creek along Hoffman Lane	544XKCAHL	37.88188	-121.65221
4	Core	C, MPM	Roberts Island @ Whiskey Slough Pump	544RIAWSP	37.96737	-121.46434
5	Core	C, MPM	Walthall Slough @ Woodward Ave	544WSAWAV	37.77046	-121.29227
6	NA	MPM	Sand Creek @ Hwy 4 Bypass	544SCAHFB	37.94750	-121.74300

A-Assessment Monitoring

C-Core Monitoring

MPM-Management Plan Monitoring

NA-Not Applicable

¹Site types are either Assessment or Core based on the MRPP (pages 33-35). The type of monitoring conducted at sample locations depends on the rotation schedule outlined in the MRPP (Table 9, page 55) where Core Monitoring locations rotate into Assessment Monitoring locations every third year.

Water quality results from MPM are used to evaluate the effectiveness of Coalition outreach in priority site subwatersheds and the effectiveness of management practices implemented by growers within those site subwatersheds. The following four pesticides were the constituents with no exceedances during 2012 MPM: diazinon, disulfoton, malathion, and simazine (Table 3). Samples collected for *C. dubia* (25 samples collected) and *S. capricornutum* (43 samples collected) toxicity were toxic only once each in 2012. The *C. dubia* exceedance was at Grant Line Canal near Calpack Rd in August, and the *S. capricornutum* exceedance was at Grant Line Canal @ Clifton Court Rd in May. Of three samples collected for dieldrin analysis, there was one exceedance of the Water Quality Trigger Limit (WQTL), which occurred from samples collected from Sand Creek @ Hwy 4 Bypass in June. Of the 57 samples collected for chlorpyrifos analysis, only one exceedance of the WQTL occurred (2%) at Unnamed Drain to Lone Tree Creek in December. Of the eight samples collected for diuron analysis, there was one exceedance of the WQTL (13%) at Unnamed Drain to Lone Tree Creek in February. Sediment toxicity to *H. azteca* occurred in one out of 20 management plan samples collected (5%, Table 3). There were exceedances of other WQTLs for other constituents during Core and Assessment Monitoring; 2012 monitoring results were reported in the SJCDWQC AMR submitted March 1, 2012.

Each high priority site subwatershed is discussed in more detail in the high priority site subwatershed summaries including the exceedances of the WQTLs, sourcing of exceedances, outreach, and evaluation of management practice effectiveness (Appendix I).

Table 3. 2012 MPM results including a percentage of samples with exceedances.

“X” indicates that a sample was collected for a management plan constituent and no exceedance of a WQYL occurred. Red numbers indicate exceedances of a WQTL in a MPM sample. Dark grey shaded cells indicate no MPM was conducted on that date for that constituent. Black shaded cells indicate constituent was approved for removal from active management plan.

Site Name	Sample Date	Copper	Lead	Chlorpyrifos	Diazinon	Dieldrin	Disulfoton	Diuron	Malathion	Simazine	<i>C. dubia</i>	<i>H. azteca</i>	<i>S. capricornutum</i>
Bear Creek @ North Alpine Rd	1/17/2012			X					X				
French Camp Slough @ Airport Way	1/17/2012				X			X					
Grant Line Canal @ Clifton Court Rd	1/17/2012			X									X
Grant Line Canal near Calpack Rd	1/17/2012												X
Lone Tree Creek @ Jack Tone Rd	1/17/2012	X		X	X			X					X
Roberts Island @ Whiskey Slough Pump	1/17/2012			X				X					X
Sand Creek @ Hwy 4 Bypass	1/17/2012				X								
Terminus Tract Drain @ Hwy 12	1/17/2012												X
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	1/17/2012			X				X		X	X		
Duck Creek @ Hwy 4	2/14/2012				X†								X
French Camp Slough @ Airport Way	2/14/2012	X		X	X			X			X		X
Grant Line Canal @ Clifton Court Rd	2/14/2012			X									
Grant Line Canal near Calpack Rd	2/14/2012												X
Kellogg Creek along Hoffman Ln	2/14/2012	X		X							X		
Littlejohns Creek @ Jack Tone Rd	2/14/2012	X		X	X								
Lone Tree Creek @ Jack Tone Rd	2/14/2012	X		X	X			X					X
Mokelumne River @ Bruella Rd	2/14/2012										X		
Roberts Island @ Whiskey Slough Pump	2/14/2012			X									
Terminus Tract Drain @ Hwy 12	2/14/2012												X
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	2/14/2012			X				2.4		X	X		X

Site Name	Sample Date	Copper	Lead	Chlorpyrifos	Diazinon	Dieldrin	Disulfoton	Diuron	Malathion	Simazine	C. dubia	H. azteca	S. capricornutum
French Camp Slough @ Airport Way	3/15/2012										X	X	
Grant Line Canal @ Clifton Court Rd	3/15/2012			X								X	
Grant Line Canal near Calpack Rd	3/15/2012			X							X	X	
Kellogg Creek along Hoffman Ln	3/15/2012										X	X	
Littlejohns Creek @ Jack Tone Rd	3/15/2012												X
Lone Tree Creek @ Jack Tone Rd	3/15/2012											X	X
Mokelumne River @ Bruella Rd	3/15/2012										X		X
Roberts Island @ Whiskey Slough Pump	3/15/2012										X	X	
Sand Creek @ Hwy 4 Bypass	3/15/2012											63	
Terminus Tract Drain @ Hwy 12	3/15/2012											X	
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	3/15/2012											X	X
Walthall Slough @ Woodward Ave	3/15/2012											X	
Duck Creek @ Hwy 4	4/12/2012			X							X		X
French Camp Slough @ Airport Way	4/12/2012			X									X
Grant Line Canal near Calpack Rd	4/12/2012												X
Kellogg Creek along Hoffman Ln	4/12/2012										X		X
Littlejohns Creek @ Jack Tone Rd	4/12/2012			X									X
Lone Tree Creek @ Jack Tone Rd	4/12/2012												X
Mokelumne River @ Bruella Rd	4/12/2012												X
Mormon Slough @ Jack Tone Rd	4/12/2012												X
Roberts Island @ Whiskey Slough Pump	4/12/2012												X
Sand Creek @ Hwy 4 Bypass	4/12/2012												X
Terminus Tract Drain @ Hwy 12	4/12/2012												X+
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	4/12/2012	X											
Bear Creek @ North Alpine Rd	5/16/2012								X				
Duck Creek @ Hwy 4	5/16/2012			X									
French Camp Slough @ Airport Way	5/16/2012	X	X	X									
Grant Line Canal @ Clifton Court Rd	5/16/2012												57
Grant Line Canal near Calpack Rd	5/16/2012			X							X		X
Kellogg Creek along Hoffman Ln	5/16/2012												X
Littlejohns Creek @ Jack Tone Rd	5/16/2012	X											
Lone Tree Creek @ Jack Tone Rd	5/16/2012												X
Mokelumne River @ Bruella Rd	5/16/2012												X
Mormon Slough @ Jack Tone Rd	5/16/2012			X							X		X
Roberts Island @ Whiskey Slough Pump	5/16/2012												X
Sand Creek @ Hwy 4 Bypass	5/16/2012			X		X	X				X		
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	5/16/2012	X		X									X
Duck Creek @ Hwy 4	6/19/2012			X									
French Camp Slough @ Airport Way	6/19/2012	X	X										
Grant Line Canal @ Clifton Court Rd	6/19/2012												
Littlejohns Creek @ Jack Tone Rd	6/19/2012	X		X									
Mokelumne River @ Bruella Rd	6/19/2012										X		
Sand Creek @ Hwy 4 Bypass	6/19/2012			X		0.096	X				X		
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	6/19/2012			X									
Duck Creek @ Hwy 4	7/17/2012			X							X		
French Camp Slough @ Airport Way	7/17/2012	X		X									
Grant Line Canal near Calpack Rd	7/17/2012			X									X
Kellogg Creek along Hoffman Ln	7/17/2012	X											
Littlejohns Creek @ Jack Tone Rd	7/17/2012			X									X
Lone Tree Creek @ Jack Tone Rd	7/17/2012			X									
Mokelumne River @ Bruella Rd	7/17/2012												X
Mormon Slough @ Jack Tone Rd	7/17/2012			X									X
Roberts Island @ Whiskey Slough Pump	7/17/2012							X			X		X
Sand Creek @ Hwy 4 Bypass	7/17/2012				X						X		

Site Name	Sample Date	Copper	Lead	Chlorpyrifos	Diazinon	Dieldrin	Disulfoton	Diuron	Malathion	Simazine	C. dubia	H. azteca	S. capricornutum
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	7/17/2012	X		X									
Duck Creek @ Hwy 4	8/21/2012			X									
French Camp Slough @ Airport Way	8/21/2012	X		X									
Grant Line Canal near Calpack Rd	8/21/2012			X							60		
Kellogg Creek along Hoffman Ln	8/21/2012												X
Littlejohns Creek @ Jack Tone Rd	8/21/2012												X
Lone Tree Creek @ Jack Tone Rd	8/21/2012			X									
Mokelumne River @ Bruella Rd	8/21/2012												X
Mormon Slough @ Jack Tone Rd	8/21/2012			X									
Roberts Island @ Whiskey Slough Pump	8/21/2012			X									
Sand Creek @ Hwy 4 Bypass	8/21/2012					X	X						X
Terminus Tract Drain @ Hwy 12	8/21/2012			X									
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	8/21/2012	X		X									
Bear Creek @ North Alpine Rd	9/18/2012			X					X				
Duck Creek @ Hwy 4	9/18/2012			X							X		
French Camp Slough @ Airport Way	9/18/2012			X								X	
Grant Line Canal @ Clifton Court Rd	9/18/2012			X								X	
Grant Line Canal near Calpack Rd	9/18/2012											X	
Kellogg Creek along Hoffman Ln	9/18/2012											X	
Littlejohns Creek @ Jack Tone Rd	9/18/2012	X											
Lone Tree Creek @ Jack Tone Rd	9/18/2012												
Mokelumne River @ Bruella Rd	9/18/2012										X		
Mormon Slough @ Jack Tone Rd	9/18/2012			X							X		
Roberts Island @ Whiskey Slough Pump	9/18/2012			X								X	
Sand Creek @ Hwy 4 Bypass	9/18/2012											X	
Terminus Tract Drain @ Hwy 12	9/18/2012			X								X	
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	9/18/2012	X		X								X	
Walthall Slough @ Woodward Ave	9/18/2012			X								X	
Bear Creek @ North Alpine Rd	10/16/2012			X									
French Camp Slough @ Airport Way	10/16/2012			X									
Walthall Slough @ Woodward Ave	10/16/2012			X									
Littlejohns Creek @ Jack Tone Rd	11/6/2012			X									
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	11/6/2012			X									
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	12/3/2012			0.019									
Total MPM Exceedances		0	0	1	0	1	0	1	0	0	1	1	1
Total MPM Samples Collected		19	2	57	8	3	3	8	3	2	25	20	43
% Exceedances		0%	0%	2%	0%	33%	0%	13%	0%	0%	4%	5%	2%

Black cells- indicate constituent was removed from the schedule due to the approval to remove the constituent from the sites management plan.

Grey cells- indicate no MPM conducted for that site and constituent.

MPM-Management Plan Monitoring

'X'-No exceedance (only refers to samples that have been collected and results have been received).

**constituent has been removed from the site's active management plan but was sampled for MPM before approval to remove.

2004 - 2012 EXCEEDANCES

One objective of the SJCDWQC Management Plan is to provide yearly updates of exceedances based on the most recent WQTLs. Table 4 provides a tally of exceedances of WQTLs for sites monitored from 2004 through 2012. Sites not included in this tally, as described in the SJCDWQC Management Plan are Marsh Creek and Potato Slough and Stanislaus River Drain @ South Airport Way.

Sites monitored as upstream MPM sites in 2008 are not included in Table 4 or 5. These sites and associated exceedances were included in the MPUR submitted on April 1, 2009 and are referenced in the site subwatershed section of this MPUR (Appendix I).

Table 5 includes a tally of exceedances that occurred since the last update (April 1, 2012) and includes monitoring results from 2012. In both Tables 3 and 4, cells with blue highlights indicate constituents that are currently under the SJCDWQC Management Plan. In Table 5, green highlights indicate sites/constituents that have been added to the SJCDWQC Management Plan due to exceedances in 2012.

Table 4. SJCDWQC exceedance tally based on all results through December 2012.

Sites are listed alphabetically by site name and constituents are listed alphabetically within each of the following groups: field parameters (F), inorganics (I), bacteria (B), metals (M), pesticides (P) and toxicity (T). Constituents under a management plan are highlighted. The tally only includes field duplicate exceedances if the environmental sample did not also have an exceedance.

SITE NAME	F			I			B	M														P											T										
	OXYGEN, DISSOLVED	pH	SPECIFIC CONDUCTIVITY	TOTAL DISSOLVED SOLIDS	AMMONIA	NITRATE AS N	NITRATE + NITRITE AS N	E. COLI	ARSENIC	BORON	COPPER DISSOLVED†	COPPER TOTAL†	LEAD	MOLYBDENUM	NICKEL	AZINPHOS METHYL	CARBOFLURAN	CHLORPYRIFOS	CYPERMETHRIN	DDD (p,p')	DDE (p,p')	DDT (p,p')	DIAZINON	DIELDRIN	DIMETHOATE	DISULFOTON	DIURON	ENDRIN	HCH, DELTA	LINURON	MALATHION	METHIDATHION	METHOMYL	METHYL PARATHION	PARAQUAT DICHLORIDE	PERMETHRIN, TOTAL	THIOBENCARB	SIMAZINE	C. DUBIA	P. PROMELAS	S. CAPRICORNUTUM	H. AZTECA	
Bear Creek @ North Alpine Rd	11	2					2										3													3													
Drain @ Woodbridge Rd	16		16	15			2	13									1																										1
Duck Creek @ Hwy 4	44	3					7			1							18					1								1							7		3	3			
French Camp Slough @ Airport Way	17	7					36				12	2			1	1	12					2	2	1		2					1					2		2		2	5		
Grant Line Canal @ Clifton Court Rd	35	7	33	16	1		19	10			6	3		1	1	6				2	1			1												1		4	6				
Grant Line Canal near Calpack Rd	46		61	25	1		19	4									4			1					1	1			1	1						4		11	9				
Kellogg Creek @ Hwy 4	3	1	8	5			5										1 ³																	1		1	2 ³	1	3				
Kellogg Creek along Hoffman Ln	9	12	4	3	1		4				3						0 ³			3	2														2	0 ³	4	6					
Littlejohns Creek @ Jack Tone Rd	25	2 ⁵					6			2	5				1	9							1													1	5	2*					
Lone Tree Creek @ Jack Tone Rd	18	5	1	1	4		26				7	1 ¹					9	1		1	1	2					3							2	1	1	2	7	2				
Mokelumne River @ Bruella Rd	5	10					5				3										1 ²														5		10						
Mormon Slough @ Jack Tone Rd	13	7					1										8																		1	2		4	1				
Roberts Island Drain @ Holt Rd	36	1	59	45			12	1									4			3						2									2		5	2					
Roberts Island Drain along House Rd	23	3	22	14			7	1									2	1		2	1														2*		4	4					
Roberts Island @ Whiskey Slough Pump ⁴	9		12	11		1	4																																				
Sand Creek @ Hwy 4 Bypass	36		52	19			17										2		1	5	3	2	6		3		1								3	1	3	13					
South Webb Tract Drain	17	1	5	5	1		5	12	1				1																						1								
Terminus Tract Drain @ Hwy 12	54	1	46	37		1	14	7									3				1									1							1 ⁶	4	1				
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	7	1	3	1			10			2	5	2			1	19				1						4				1						3	2	5		5	8		
Walthall Slough @ Woodward Ave	36		13	11	1	4	6										2			1								3												1	2		
GRAND TOTAL	460	63	335	208	8	1	6	207	48	1	5	41	8	1	1	1	4	103	2	1	19	10	8	8	2	4	12	1	3	1	6	2	1	1	1	1	1	7	4	38	7	73	68

¹ A lead exceedance at Lone Tree Creek @ Jack Tone Rd occurred on 2/11/2007; however it was previously overlooked and was not reported in this table in previous reports.
² Field blank exceedance (DDT on 6/20/2006) was incorrectly reported in previous MPURs has been excluded from table; the exceedance was not representative of water quality in Mokelumne River.
³ Exceedances from the Kellogg Creek @ Hwy 4 site count toward the management plan for Kellogg Creek along Hoffman Ln (site location was moved in May 2006 due to urban influences).
⁴ All MPM for the three Roberts Island monitoring locations takes place at the Roberts Island @ Whiskey Slough Pump Core Monitoring site (as of January 2012).
⁵ pH was not added to the management plan because the exceedances did not occur within a three year period, one was in 2005 and the other was in 2011.
⁶ Only one toxicity occurred at the Hwy 12 location; *P. promelas* was in a management plan due to toxicity that occurred at the Delta Drain off Glasscock Rd location on the same date, the Coalition petitioned to remove the constituent and the Regional Board approved removal on 4/17/2012.
*Not prioritized for MPM; both toxic samples were from the same sampling event (sample and resample to test for persistence).
† Exceedances of the copper WQTL determined by either total or dissolved copper are evaluated under the same copper management plan.

Table 5. SJCDWQC exceedance tally based 2012 sampling events.

All sites are listed that have had at least one exceedance in 2012. Sites are listed alphabetically by site name and constituents are listed alphabetically within each of the following groups: field parameters (F), inorganics (I), bacteria (B), metals (M), pesticides (P) and toxicity (T). Green highlighted cells refer to sites/constituents that require a management plan due to 2012 exceedances; blue highlights refer to sites/constituents already in a management plan. The tally only includes field duplicate exceedances if the environmental sample did not also have an exceedance.

Zone	SITE NAME	F			I		B	M	P			T		
		OXYGEN, DISSOLVED	PH	SPECIFIC CONDUCTIVITY	DISSOLVED SOLIDS	NITRATE + NITRITE AS N	E. COLI	COPPER DISSOLVED†	CHLORPYRIFOS	DIELDRIN	DIURON	C. DUBIA	S. CAPRICORNUTUM	H. AZTECA
1	Bear Creek @ North Alpine Rd	3												
2	Duck Creek @ Hwy 4	10					1	1						2
2	French Camp Slough @ Airport Way	2	1				5							
4	Grant Line Canal @ Clifton Court Rd	4		5									1	1
4	Grant Line Canal near Calpack Rd	6		7							1			1
4	Kellogg Creek along Hoffman Ln	1	4											
2	Littlejohns Creek @ Jack Tone Rd	5												
2	Lone Tree Creek @ Jack Tone Rd			1										
1	Mokelumne River @ Bruella Rd		1				1							
2	Mormon Slough @ Jack Tone Rd	2	1											
4	Roberts Island @ Whiskey Slough Pump	9		12	11	1	4							
6	Sand Creek @ Hwy 4 Bypass	5		7						1				1
3	Terminus Tract Drain @ Hwy 12	9		6	6	1	2							
2	Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	1							1		1			1
5	Walthall Slough @ Woodward Ave	11		3	4	1								
GRAND TOTAL		68	7	41	21	3	13	1	1	1	1	1	1	6

† Exceedances of the copper WQTL determined by either total or dissolved copper are evaluated under the same copper management plan.

2012 NEW SITE/CONSTITUENTS REQUIRING MANAGEMENT PLANS

New sites that require a focused management plan approach were added to the priority list (Table 6). Source identification, outreach, and evaluation of management practices will be addressed at all new site subwatersheds based on the schedule in Table 6.

As a result of 2012 monitoring, several new site/constituent specific management plans are required (see green highlights in Table 5). Below is a list of constituents with 2012 exceedances that triggered a new site/constituent specific management plan:

- *Hyalella azteca* toxicity
 - Duck Creek @ Hwy 4
- Specific Conductance (SC)
 - Lone Tree Creek @ Jack Tone Rd

MANAGEMENT PLAN PROCESS

The SJCDWQC Management Plan process was first outlined in the SJCDWQC Management Plan submitted on September 30, 2008 and updated in the 2010 MPUR. Updates were made to reflect the monitoring strategy outlined in the SJCDWQC MRPP (pages 32-34) of rotating Core and Assessment Monitoring locations. The Coalition has focused its efforts on documenting changes in management practices and performing outreach at both an individual and grower group level.

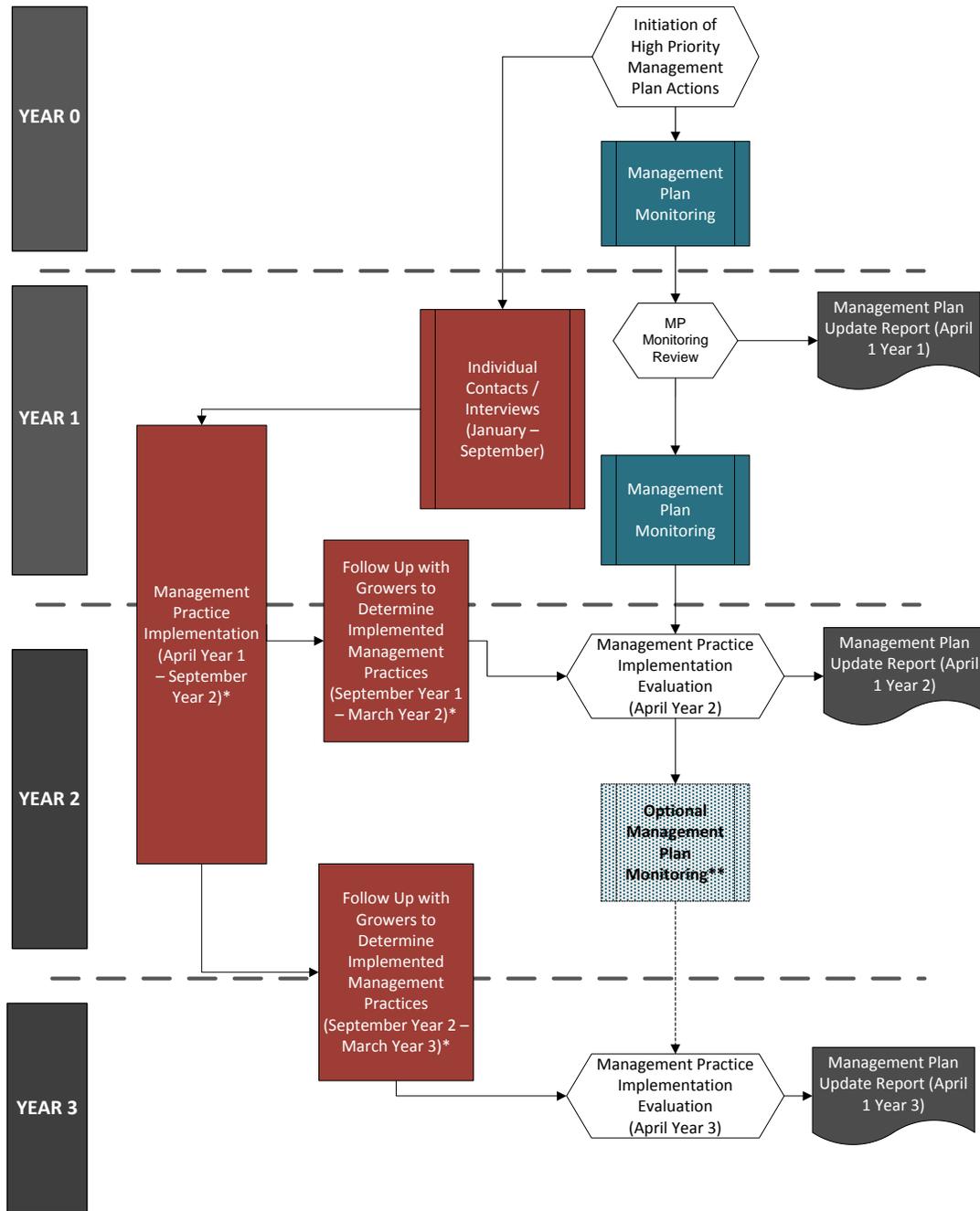
MANAGEMENT PLAN MONITORING STRATEGY

The Coalition developed an updated flow chart for its MPM strategy (Figure 1). Sites are rotated to high priority based on a schedule approved by the Regional Board (Table 6). The strategy is updated to include MPM during months of past exceedances for high priority site subwatersheds during Year 0, Year 1, and Year 2. Year 0 refers to the year before the site subwatershed becomes high priority and allows the Coalition to have recent water quality data when contacting growers in the site subwatershed. Year 0 monitoring began in 2010 at sites scheduled for focused outreach in 2011 through 2013.

If there are two years with no exceedances of the WQTLs of high priority constituents (either in Year 0 and Year 1 or Year 1 and Year 2), the Regional Board is petitioned to remove that site/constituent from an active management plan. Monitoring will occur for those constituents when the site is rotated back into Assessment Monitoring. Management Plan Monitoring may continue beyond two years if the Coalition determines that an extra year of monitoring is necessary to evaluate improvements in water quality and/or the effectiveness of newly implemented management practices. Growers in the first set of high priority site subwatersheds were contacted late in the first year; therefore implementation of some management practices may have been delayed. Further MPM and outreach is required to more accurately evaluate water quality improvements.

Figure 1. SJCDWQC high priority subwatershed Management Plan Monitoring strategy and management practice evaluation.

SJCDWQC High Priority Management Practice Evaluations



*Structural management practices may take longer to implement due to cost and time required to install; such cases will be reported to the Regional Board and followed up with individually.

**The Coalition may choose to continue conducting Management Plan Monitoring during the third year if water quality problems persist; if no exceedances occur during Year 0 and Year 1 MP Monitoring, the Coalition will not continue monitoring during Year 2.

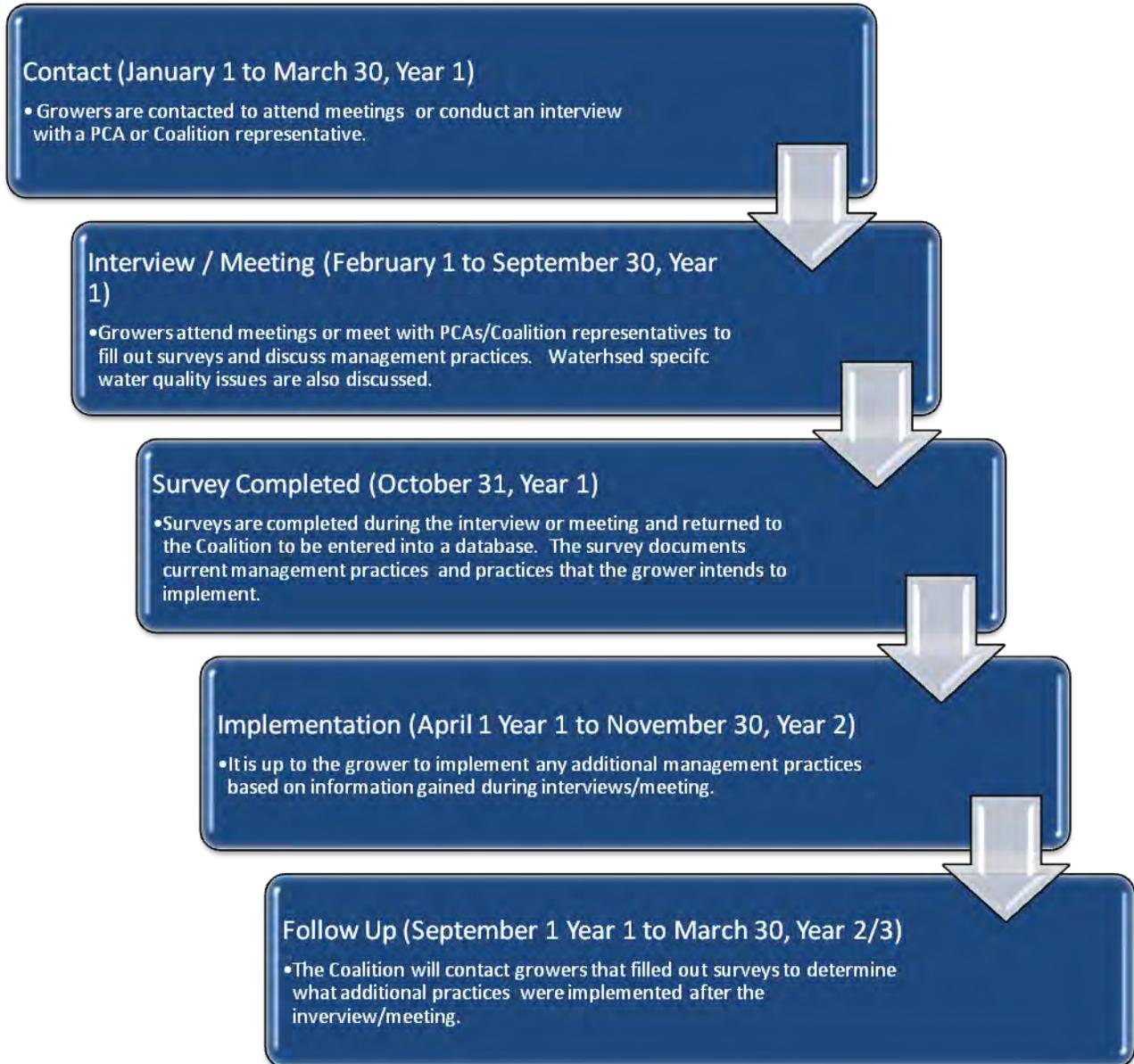
MANAGEMENT PRACTICE TRACKING STRATEGY

The schedule outlined in Figure 2 lists a timeline of actions in Years 1, 2 and 3 of the flow chart represented in Figure 1. When a water body becomes a high priority site subwatershed, the Coalition contacts individuals within the site subwatershed who have the potential to directly drain to the creek and who have applied the constituents of concern. Growers are contacted between January 1 and March 30 of Year 1 to schedule meetings which are held between February 1 and September 30. Meetings inform growers of current water quality concerns and management practices that can be implemented to reduce impairments of water quality due to agricultural inputs.

At the meetings, growers are asked to complete surveys and return them to Coalition representatives (either at the meeting or by mail). The Coalition's goal is that all surveys will be completed by October 31 of Year 1. Surveys document current management practices and are used to identify additional management practices that the member intends to implement in Year 1 and/or Year 2. Implementation is anticipated to occur between April of Year 1 and November of Year 2. It is difficult to predict when implementation will occur because structural management practices may take multiple years to fund and construct.

The Coalition conducts follow up surveys with growers between September of Year 1 and March of Year 2. Follow up may be extended to Year 3 depending on information obtained from the grower on when they plan to implement practices. Follow up surveys document the additional practices that the grower planned to implement. The returned surveys document whether or not growers implemented those practices in Year 1 and if not, whether they plan to implement the practices in Year 2. If the grower indicates that they do not intend to implement additional practices despite their previous declaration that they would, they are asked to provide an explanation for not implementing the practice(s) (e.g. they no longer farm that parcel, no available funds).

Figure 2. Schedule for Coalition Management Plan strategy activities to document management practices for high priority subwatersheds.



PRIORITIZATION OF CONSTITUENTS WITH EXCEEDANCES

The SJCDWQC developed a prioritization process (Figure 3) which allows the Coalition to focus on constituents of the greatest concern. The prioritization process was developed in collaboration with the Regional Board and allows the Coalition to focus on constituents where sourcing is possible (i.e. pesticides) and for which management practices are available. Following the process outlined in Figure 3, a priority level is assigned to all constituents with two or more past exceedances in a site subwatershed. Priority levels assigned to a constituent determine the level of effort used for sourcing, outreach, and evaluation.

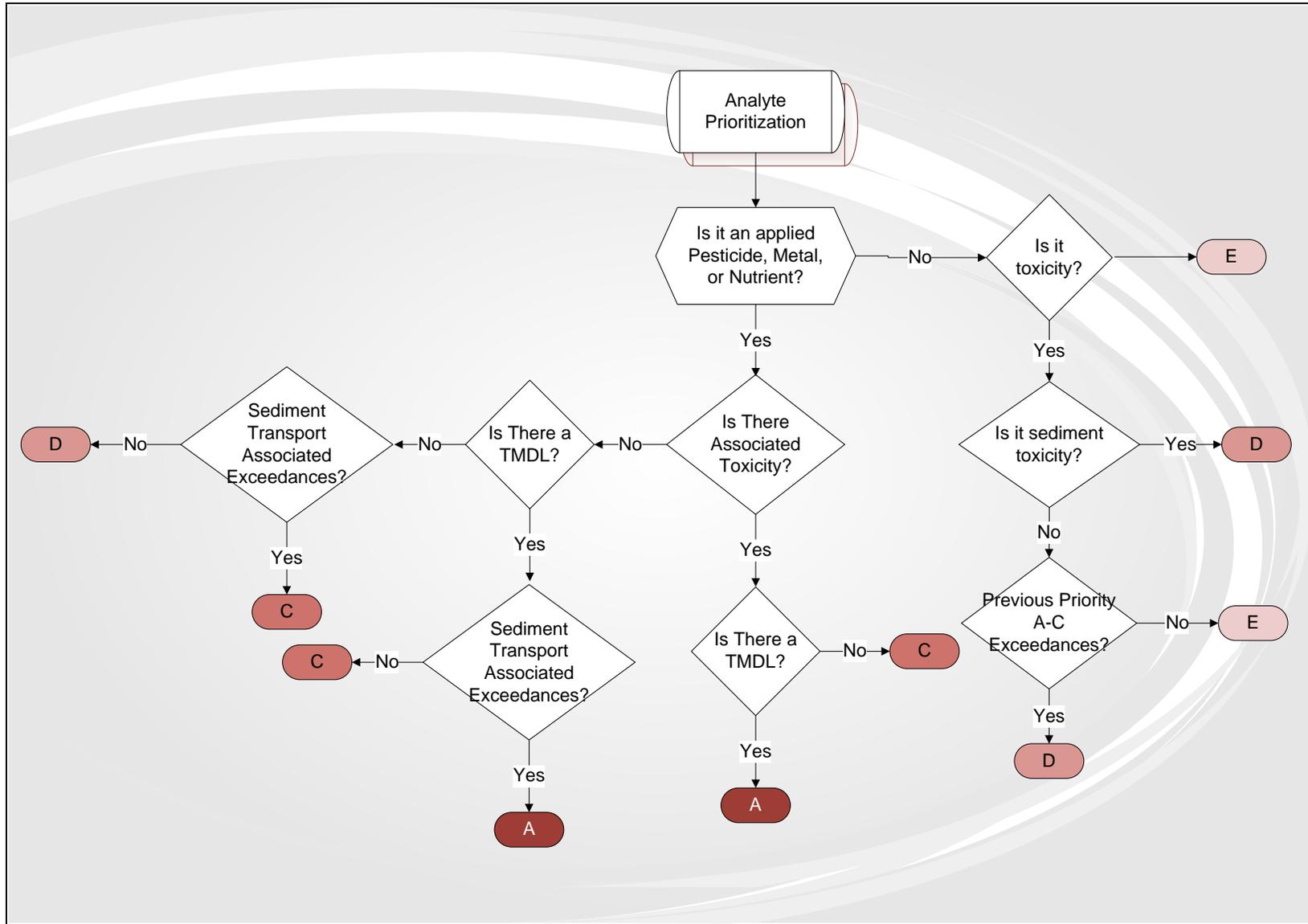
Identifying the source of pesticides found in samples is conducted by utilizing Pesticide Use Reports (PUR) available from the offices of the County Agricultural Commissioners. These PUR data obtained directly from the County Agricultural Commissioners are considered preliminary and may contain some level of inaccuracy until they have been finalized and made available through California Pesticide Information Portal (CalPIP). The most recently available CalPIP data for PURs are through December 2010. Preliminary PUR data associated with 2012 exceedances that were available for review include data from Contra Costa (January through December), San Joaquin (January through May) and Stanislaus counties (January through December). Any outstanding PUR data that become available after this report is submitted will be included in an addendum to the Coalition's AMR to be submitted on August 30, 2013.

Source analysis is also conducted by analyzing any relevant MPM data (may include upstream and/or increased frequency of monitoring conducted in previous years). Monitoring is conducted for priority constituents A through D. Priority E constituents do not have MPM except for field parameters which are collected each time monitoring occurs.

The Coalition continues to provide information to growers regarding management practices and exceedances of WQTLs during annual meetings held by the County Agricultural Commissioners, and site subwatershed meetings as needed. Outreach occurs for all constituents; however, growers using high priority constituents (i.e. TMDL pesticides such as chlorpyrifos) are targeted for individual contacts.

The Coalition evaluates information about management practices obtained from individual surveys including follow up surveys that document newly implemented practices. The Coalition expects that as a result of individual contacts and newly implemented practices, downstream water quality will improve. However, it is possible that due to discharges by non-members, there may continue to be downstream water quality impairments. Therefore evaluation of management practices involves both an assessment of water quality and the degree of implementation of management practices at the site subwatershed level.

Figure 3. SJCDWQC constituent prioritization process.



MANAGEMENT PLAN DEVELOPMENT TIMELINES

The Coalition developed a schedule (Table 6) establishing when sites become high priority and undergo a focused management plan approach as described in the previous section. This schedule was submitted as an addendum to the SJCDWQC Management Plan and was approved on January 23, 2009 (Table C); a request to extend the dates in the Coalition's prioritization schedule by one year was submitted on June 5, 2009. The schedule is evaluated and updated in each yearly MPUR with 1) new sites requiring a management plan, and 2) changes involving focused outreach. Based on the Management Plan process, any new site that requires a management plan is added to the schedule. Changes such as time line extensions, removal of sites and/or changing the year of prioritization must be approved by the Regional Board's Executive Officer.

Table 6 provides an updated schedule that includes the approved changes to the prioritization scheme. There are currently 16 site subwatersheds included in the SJCDWQC Management Plan that are scheduled for high priority status between 2008 and 2016. Management Plan Monitoring occurs during years of focused outreach to evaluate the effectiveness of management practices. The Coalition initiated MPM in the year before focused outreach (Year 0) to evaluate current water quality and documents any water quality improvements since the last time the waterbody was monitored (Table 6).

Upon completion of 2009 Assessment Monitoring at South Webb Tract Drain, several constituents were placed in the South Webb Tract Drain management plan due to multiple exceedances (DO, SC, TDS, *E. coli* and arsenic). However, the site was not added to the priority schedule because at the time no parcels on the island were being farmed and the growers on the island were selling their water rights and not applying any agricultural constituents of concern.

As a result of 2012 monitoring, new site/constituent specific management plans are required; however, no new sites have been added to the priority schedule. All sites requiring new management plans due to 2012 exceedances were already on the priority schedule (Table 6).

Table 6. Schedule for addressing each site subwatershed with a detailed focused Management Plan approach.

SITE SUBWATERSHED NAME	MANAGEMENT PLAN MONITORING INITIATION YEAR ¹	YEAR FOR FOCUSED APPROACH
Duck Creek @ Hwy 4	NA	2008-2010
Lone Tree Creek @ Jack Tone Rd	NA	2008-2010
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	NA	2008-2010
Grant Line Canal @ Clifton Court Rd	NA	2010-2012
Grant Line Canal near Calpack Rd	NA	2010-2012
Littlejohns Creek @ Jack Tone Rd	NA	2010-2012
Terminus Tract Drain @ Hwy 12	2010	2011-2013
French Camp Slough @ Airport Way	2010	2011-2013
Mokelumne River @ Bruella Rd	2010	2011-2013
Sand Creek @ Hwy 4 Bypass	2011	2012-2014
Kellogg Creek along Hoffman Ln	2011	2012-2014
Mormon Slough @ Jack Tone Rd	2011	2012-2014
Bear Creek @ North Alpine Rd ²	2012	2013-2015
Roberts Island @ Whiskey Slough Pump ³	2012	2013-2015
Walthall Slough @ Woodward Ave	2012	2013-2015
Drain @ Woodbridge Rd	2013	2014-2016
RE-EVALUATE ALL SITE SUBWATERSHEDS AND REVISE SCHEDULE		ANNUALLY

¹Year 0 was incorporated into the Coalition's Management Plan Process beginning in 2010.

²Site added to the list following 2011 exceedances.

³Roberts Island @ Whiskey Slough Pump replaced two site subwatersheds (Roberts Island Drain @ Holt Rd and Roberts Island Drain along House Rd) previously scheduled to become high priority in 2013-2015 (approved January 12, 2012). All constituents requiring management plans from the two previous locations now undergo MPM at Roberts Island @ Whiskey Slough Pump.

PRIORITY SITE MANAGEMENT

MANAGEMENT OBJECTIVES

The Coalition prioritizes constituents and site subwatersheds to allow for focused source identification, outreach, and evaluation of management practices. Prioritization of site subwatersheds currently is based on the number, frequency and magnitude of chlorpyrifos and diazinon exceedances.

The objective of the prioritization process is to identify watersheds where exceedances are common and where management practices can be implemented to decrease discharges that contribute to downstream impairments. Although the Coalition is focusing on chlorpyrifos and diazinon exceedances and associated applications, management practices implemented to reduce the runoff of these constituents will also reduce the runoff of other pesticides, nutrients, salts, and metals.

The Coalition monitors for Priority A - D constituents the year before a site becomes a high priority site subwatershed (in 2012, Year 0 monitoring began in the fifth priority site subwatersheds, Figure 1). The purpose of monitoring is to evaluate improvements in water quality and the effectiveness of management practices. A site subwatershed analysis is included in Appendix I for all high priority site subwatersheds.

2013 MANAGEMENT PLAN MONITORING SCHEDULE

In 2013, the SJCDWQC will conduct MPM at the following high priority sites:

First Priority (2008 – 2010)

- Duck Creek @ Hwy 4
- Lone Tree Creek @ Jack Tone Rd
- Unnamed Drain to Lone Tree Creek

Second Priority (2010 – 2012)

- Grant Line Canal near Calpack Rd
- Grant Line Canal @ Clifton Court Rd
- Littlejohns Creek @ Jack Tone Rd

Third Priority (2011 – 2013)

- French Camp Slough @ Airport Way
- Mokelumne River @ Bruella Rd
- Terminous Tract @ Hwy 12

Fourth Priority (2012 – 2014)

- Kellogg Creek along Hoffman Ln
- Mormon Slough @ Jack Tone Rd
- Sand Creek @ Hwy 4 Bypass

Fifth Priority (2013 – 2015)

- Bear Creek @ North Alpine Rd
- Roberts Island @ Whiskey Slough Pump
- Walthall Slough @ Woodward Ave

Sixth Priority (2014 – 2016)

- Drain @ Woodbridge Rd

After two consecutive years without exceedances the Coalition can petition to have the constituents removed from that site subwatershed’s active management plan. The Coalition has received approval to remove 40 constituents from eleven high priority site subwatershed management plans (approval letters received March 22, April 17, May 21, 2012, and February 27, 2013). Due to an exceedance of the WQTL for SC at Lone Tree Creek @ Jack Tone Rd in 2012, SC was added back into the site’s management plan. Therefore, to date 39 constituents have been removed from active management plans at sites in the SJCDWQC (Table 7). As sites were approved for the removal of specific constituents from active management plans, the Coalition updated the MPM schedule accordingly. Table 7 includes the high priority sites and constituents approved for removal from active management plans: Duck Creek @ Hwy 4 (pH, diazinon, and toxicity to *S. capricornutum*), French Camp Slough @ Airport Way (copper, lead, diazinon, dieldrin, diuron, and toxicity to *C. dubia* and *S. capricornutum*), Grant Line Canal @ Clifton Court Rd (pH, copper, and lead), Grant Line Canal Near Calpack Rd (chlorpyrifos), Kellogg Creek along Hoffman Ln (DO, copper, chlorpyrifos, and toxicity to *C. dubia* and *S. capricornutum*), Littlejohns Creek @ Jack Tone Rd (diazinon and toxicity to *S. capricornutum*), Lone Tree Creek @ Jack Tone Rd (DO, SC, copper, diazinon, diuron, and toxicity to *S. capricornutum* and *H. azteca*), Mokelumne River @ Bruella Rd (DO and copper, and toxicity to *C. dubia* and *S. capricornutum*), Terminous Tract Drain @ Hwy 12 (toxicity to *P. promelas* and *S. capricornutum*), and Unnamed Drain to Lone Tree Creek @ Jack Tone Rd (simazine and toxicity to *C. dubia* and *S. capricornutum*). Monitoring for the constituents removed from a management plan will occur at Terminous Tract Drain @ Hwy 12 during 2013 Assessment Monitoring and will not occur in the other six site subwatersheds until they rotate back into Assessment Monitoring. Table 8 includes the 2013 MPM schedule by month.

Table 7. Constituents removed from active management plans per site subwatershed.

SITE SUBWATERSHED	DO*	pH*	SC*	COPPER (TOTAL & DISSOLVED)	LEAD (TOTAL & DISSOLVED)	CHLORPYRIFOS	DIAZINON	DIELDRIN	DIURON	SIMAZINE	C. DUBIA TOXICITY	H. AZTECA TOXICITY	P. PROMELAS TOXICITY	S. CAPRICORNUTUM TOXICITY	TOTAL (PER SITE)
Duck Creek @ Hwy 4		•					•							•	3
French Camp Slough @ Airport Way				•	•		•	•	•		•			•	7
Grant Line Canal @ Clifton Court Rd		•		•	•										3
Grant Line Canal near Calpack Rd						•									1
Kellogg Creek along Hoffman Ln	•			•	•						•				4
Littlejohns Creek @ Jack Tone Rd							•							•	2
Lone Tree Creek @ Jack Tone Rd	•		•	•			•		•			•		•	7
Mokelumne River @ Bruella Rd	•			•							•			•	4
Sand Creek @ Hwy 4 Bypass						•	•				•				3
Terminous Tract Drain @ Hwy 12													•	•	2
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd										•	•			•	3
TOTAL (PER CONSTITUENT)	3	2	1	5	2	3	5	1	2	1	5	1	1	7	39

Table 8. January through December 2013 MPM schedule.

SITE NAME	HIGH PRIORITY SUBWATERSHED	MONTH	COPPER	CHLORPYRIFOS	DIAZINON	DIELDRIN	DISULFOTON	DIURON	HCH	MALATHION	C. DUBIA	S. CAPRICORNUTUM	H. AZTECA
Bear Creek @ North Alpine Rd	5th	January		X						X			
French Camp Slough @ Airport Way	3rd	January			X			X					
Grant Line Canal @ Clifton Court Rd	2nd	January		X								X	
Grant Line Canal near Calpack Rd	2nd	January										X	
Lone Tree Creek @ Jack Tone Rd	1st	January		X									
Roberts Island @ Whiskey Slough Pump	5th	January		X				X				X	
Sand Creek @ Hwy 4 Bypass	4th	January			X								
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	1st	January		X				X					
Walthall Slough @ Woodward Ave	5th	January							X				
French Camp Slough @ Airport Way	3rd	February	X	X	X			X			X	X	
Grant Line Canal @ Clifton Court Rd	2nd	February		X									
Grant Line Canal near Calpack Rd	2nd	February										X	
Kellogg Creek along Hoffman Ln	4th	February	X	X							X		
Littlejohns Creek @ Jack Tone Rd	2nd	February	X	X	X								
Lone Tree Creek @ Jack Tone Rd	1st	February		X									
Mokelumne River @ Bruella Rd	3rd	February									X		
Roberts Island @ Whiskey Slough Pump	5th	February		X									
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	1st	February		X				X					
Duck Creek @ Hwy 4	1st	March											X
French Camp Slough @ Airport Way	3rd	March											X
Grant Line Canal @ Clifton Court Rd	2nd	March		X									X
Grant Line Canal near Calpack Rd	2nd	March									X		X
Kellogg Creek along Hoffman Ln	4th	March											X
Roberts Island @ Whiskey Slough Pump	5th	March									X		X
Sand Creek @ Hwy 4 Bypass	4th	March											X
Terminus Tract Drain @ Hwy 12	3rd	March											X
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	1st	March											X
Walthall Slough @ Woodward Ave	5th	March											X
Duck Creek @ Hwy 4	1st	April		X							X		
Drain @ Woodbridge Rd	6th	April		X									
French Camp Slough @ Airport Way	3rd	April		X									
Grant Line Canal near Calpack Rd	2nd	April										X	
Kellogg Creek along Hoffman Ln	4th	April										X	
Littlejohns Creek @ Jack Tone Rd	2nd	April		X									
Mormon Slough @ Jack Tone Rd	4th	April										X	
Roberts Island @ Whiskey Slough Pump	5th	April										X	
Sand Creek @ Hwy 4 Bypass	4th	April										X	
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	1st	April	X										
Bear Creek @ North Alpine Rd	5th	May								X			
Duck Creek @ Hwy 4	1st	May		X									
French Camp Slough @ Airport Way	3rd	May		X									
Grant Line Canal @ Clifton Court Rd	2nd	May										X	
Grant Line Canal near Calpack Rd	2nd	May									X	X	
Kellogg Creek along Hoffman Ln	4th	May										X	
Littlejohns Creek @ Jack Tone Rd	2nd	May	X										
Mormon Slough @ Jack Tone Rd	4th	May		X							X	X	
Roberts Island @ Whiskey Slough Pump	5th	May										X	
Sand Creek @ Hwy 4 Bypass	4th	May				X	X						
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	1st	May	X	X									
Duck Creek @ Hwy 4	1st	June		X									
Littlejohns Creek @ Jack Tone Rd	2nd	June	X	X									

SITE NAME	HIGH PRIORITY SUBWATERSHED	MONTH	COPPER	CHLORPYRIFOS	DIAZINON	DIELDRIN	DISULFOTON	DIURON	HCH	MALATHION	C. DUBIA	S. CAPRICORNUTUM	H. AZTECA
Sand Creek @ Hwy 4 Bypass	4th	June											
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	1st	June		X									
Duck Creek @ Hwy 4	1st	July		X							X		
French Camp Slough @ Airport Way	3rd	July		X									
Grant Line Canal near Calpack Rd	2nd	July										X	
Littlejohns Creek @ Jack Tone Rd	2nd	July		X									
Lone Tree Creek @ Jack Tone Rd	1st	July		X									
Mormon Slough @ Jack Tone Rd	4th	July		X								X	
Roberts Island @ Whiskey Slough Pump	5th	July					X				X	X	
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	1st	July	X	X									
Duck Creek @ Hwy 4	1st	August		X									
French Camp Slough @ Airport Way	3rd	August		X									
Grant Line Canal near Calpack Rd	2nd	August									X		
Kellogg Creek along Hoffman Ln	4th	August										X	
Lone Tree Creek @ Jack Tone Rd	1st	August		X									
Mormon Slough @ Jack Tone Rd	4th	August		X									
Roberts Island @ Whiskey Slough Pump	5th	August		X									
Sand Creek @ Hwy 4 Bypass	4th	August				X	X					X	
Terminus Tract Drain @ Hwy 12	3rd	August		X									
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	1st	August	X	X									
Bear Creek @ North Alpine Rd	5th	September		X						X			
Duck Creek @ Hwy 4	1st	September		X							X		X
French Camp Slough @ Airport Way	3rd	September		X									X
Grant Line Canal @ Clifton Court Rd	2nd	September		X									X
Grant Line Canal near Calpack Rd	2nd	September											X
Kellogg Creek along Hoffman Ln	4th	September											X
Littlejohns Creek @ Jack Tone Rd	2nd	September	X										
Mormon Slough @ Jack Tone Rd	4th	September		X							X		
Roberts Island @ Whiskey Slough Pump	5th	September		X									X
Sand Creek @ Hwy 4 Bypass	4th	September											X
Terminus Tract Drain @ Hwy 12	3rd	September		X									X
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	1st	September	X	X									X
Walthall Slough @ Woodward Ave	5th	September		X									X
Bear Creek @ North Alpine Rd	5th	October		X									
French Camp Slough @ Airport Way	3rd	October		X									
Walthall Slough @ Woodward Ave	5th	October		X									
Littlejohns Creek @ Jack Tone Rd	2nd	November		X									
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	1st	November		X									
Walthall Slough @ Woodward Ave	5th	November							X				
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	1st	December		X									
Walthall Slough @ Woodward Ave	5th	December							X				

PERFORMANCE GOALS AND SCHEDULES

The Coalition Strategic Plan is outlined in Table 18 of the original Management Plan (approved on January 23, 2009) and is designed to meet the following management goal:

“To continue to monitor and analyze the water and sediment quality of SJCDWQC site subwatersheds and to facilitate the implementation of management practices by providing outreach and support to growers in order to effectively enhance water quality in the Coalition region.”

The Coalition developed High Priority Site Subwatershed Performance Goals (hereafter referred to as Performance Goals) for its first five sets of high priority site subwatersheds: first priority (2008-2010), second priority (2010- 2012), third priority (2011-2013), fourth priority (2012-2014), and fifth priority (2013-2015). Performance goals are submitted for approval each time a new set of site subwatersheds rotates into high priority status. Performance Goals are built on the following actions essential to the Management Plan strategy:

1. Determine number/type of management practices currently in place, based on APN (Assessor Parcel Number) associated with baseline survey responses
2. Grower Group Contacts / Individual Contacts to recommend additional practices
3. Implementation of new management practices by growers
4. Assess number/type of new management practices implemented
5. Evaluate effectiveness of new management practices using MPM data

Performance Goals were approved for each group of priority site subwatersheds by the Regional Board as amendments to the SJCDWQC Management Plan on December 29, 2009 (first priority site subwatersheds), December 29, 2009 (second priority site subwatersheds), January 10, 2011 (third priority site subwatersheds), November 14, 2011 (fourth priority site subwatersheds) and November 6, 2012 (fifth priority site subwatersheds). The following sections describe Coalition actions to meet the approved Performance Goals and the status of each of the Performance Goals and associate measure/outputs.

First Priority Subwatersheds (2008 – 2010)

The amended Performance Goals for the first priority site subwatersheds are presented in Table 9. Amendments are discussed in detail in the request for an extension of the schedule submitted on August 3, 2009 and approved on December 29, 2009. The first priority site subwatershed performance goals 1-5 are complete for initial outreach contacts. Each goal is discussed in detail in the Performance Goals and Schedules section 2012 MPUR (pages 24-28).

The Coalition twice extended its outreach to additional members in the first priority site subwatersheds due to continued exceedances of the WQTL for chlorpyrifos. In 2010, 12 additional members in the Duck Creek site subwatershed were contacted and encouraged to switch to a new product or implement management practices that would reduce or eliminate discharge. A summary of additional focused outreach from 2010 contacts was included in the First Priority Summary of Management Practices section of the 2012 MPUR (pages 45-47).

In early 2012, The Coalition again initiated additional contacts, this time in all three first priority site subwatersheds. The growers selected for additional outreach were targeted based on the following criteria: 1) the grower is a member of the Coalition, 2) PUR data indicated the grower applied chlorpyrifos, 3) applications of chlorpyrifos were associated with an exceedance of the WQTL for chlorpyrifos (applied no more than 30 days prior to an exceedance), 4) the parcels with chlorpyrifos use had the potential to drain into the creek or the potential for spray drift into the creek, and 5) past survey results indicated additional management practices or improvements to management practices could be

implemented. The results of these contacts are summarized in the Management Practices section of this report.

The Coalition continues to discuss Management Plan activities with the Regional Board during meetings; quarterly meetings held in 2012 are listed in Table 14. Management Plan Monitoring in the first priority site subwatersheds is scheduled to occur during months of past exceedances in 2013.

All Coalition activities related to outreach (including mailings, grower meetings, individual meetings, etc.), in the first, second, third, fourth, and fifth priority site subwatersheds are listed in Table 16.

Table 9. High Priority Performance Goals status for 2008-2010 high priority subwatersheds (Duck Creek @ Hwy 4, Lone Tree Creek @ Jack Tone Rd and Unnamed Drain to Lone Tree Creek @ Jack Tone Rd), revised on August 3, 2009 and approved on December 29, 2009.

Original performance goals were for Duck Creek @ Hwy 4 and were extended to Lone Tree Creek and Unnamed Drain to Lone Tree Creek.

PERFORMANCE GOAL/PERFORMANCE MEASURE	OUTPUTS	WHO	STATUS AS OF APRIL 1, 2013		
			DUCK CREEK @ HWY 4	LONE TREE CREEK @ JACK TONE RD	UNNAMED DRAIN TO LONE TREE CREEK @ JACK TONE
Performance Goal 1: Conduct grower group meetings.					
Performance Measure 1.1 – Hold at least two meetings for members in the Duck Creek @ Hwy 4 site subwatershed focused on high priority constituents (i.e. chlorpyrifos) during the 2008/2009 winter season.	Report meeting dates, attendance numbers and agendas in Management Plan update (April 2009).	MLJ-LLC	Complete	Complete	Complete
Performance Goal 2: Individually contact members on adjacent properties to waterways where discharges have been identified during winter 2008/2009.					
Performance Measure 2.1 – 100% of identified growers contacted.	Report ratio of individual contacts made versus total growers identified with discharges.	Mike Wackman	35 of 35 (100%)	43 of 43 (100%)	34 of 34 (100%)
Performance Measure 2.2 – Contact owners/operators representing at least 1,000 acre of membership acreage in the site subwatershed.	Report ratio of acreage represented by individual contacts versus total subwatershed acreage ¹ .	MLJ-LLC	4,978 of 15,046 ² (33%)	3,742 of 29,232 ² (13%)	6,463 of 29,892 ^{2,3} (22%)
Performance Goal 3 Update: Establish current practices (beyond established baseline practices) by September 2009 on adjacent properties to waterways or where discharges are identified.					
Performance Measure 3.1 – Obtain current management practice information from 100% of targeted growers	Completed individual contact checklists recorded in an Access database.	Mike Wackman / MLJ-LLC	35 of 35 (100%)	43 of 43 (100%)	34 of 34 (100%)
Performance Measure 3.2 – Document current management practices of the targeted growers during individual contacts and encourage the adoption of new practices not currently implemented.	Record of management practices used that may reduce agricultural impact on water quality.	MLJ-LLC			
Performance Measure 3.3 – Document management practices targeted grower was encouraged to implement.	Summary of management practice evaluations on a site subwatershed level in the Management Plan update (April 2010).	MLJ-LLC	Complete	Complete	Complete
Performance Goal 4: Encourage growers to implement additional management practices based on water quality results.					
Performance Measure 4.1 –By February 2010, document additional management practices implemented by identified growers.	Summary of management practices implemented as a result of individual contacts.	MLJ-LLC	Complete	Complete	Complete
Performance Goal 5 Update: Evaluate effectiveness of the new management practices implemented during 2009 and 2010.					
Performance Measure 5.1 Update – Assess water quality results for 90 % completeness, 90% accuracy, and 90% precision from Coalition monitoring location within the priority site subwatershed.	Summary of 2009 and 2010 water quality data from site subwatershed (April 2010 and 2011).	MLJ-LLC	Complete April 1, 2012 ⁴	Complete April 1, 2012 ⁴	Complete April 1, 2012 ⁴
Performance Goal 6: Consult with CVRWQCB at least once during 2008/2009 to discuss Management Plan activities and consider if changes need to be made in Management Plan strategy for High Priority waterbodies.					

¹Performance Goal states that ‘total subwatershed acreage’ was reported; however, the Coalition reported overall irrigated acres for the first priority site subwatersheds.

²Irrigated acreage for first priority site subwatersheds comes from 2008/2009 parcel data layers.

³Due to a 2012 boundary update, the irrigated acreage in the Unnamed Drain to Lone Tree Creek @ Jack Tone Rd site subwatershed now totals 27,900 acres.

⁴The Coalition will continue MPM in the Duck Creek @ Hwy 4, Lone Tree Creek @ Jack Tone Rd and Unnamed Drain to Lone Tree Creek @ Jack Tone Rd site subwatersheds.

Second Priority Subwatersheds (2010 – 2012)

Performance goals, measures, outputs and completion dates for second priority site subwatersheds are included in Table 10 and were approved by the Regional Board on December 29, 2009. Performance Goals 1-5 are complete for all second priority watersheds. Each performance goal is discussed in detail in the 2012 MPUR (pages 29-31).

The Coalition initiated additional contacts in early 2012 in the Littlejohns Creek @ Jack Tone Rd second priority site subwatershed. Growers were targeted based on the same criteria as the 2012 first priority additional contacts. The results of these contacts are summarized in the Management Practices section of this report.

All Coalition activities related to outreach (including mailings, grower meetings, individual meetings, etc.), in the first, second, third, fourth, and fifth priority site subwatersheds are listed in Table 16.

Table 10. High Priority Performance Goals status for 2010 - 2012 high priority subwatersheds (Grant Line Canal near Calpack, Grant Line Canal @ Clifton Ct and Littlejohns Creek @ Jack Tone), originally approved on December 29, 2009, revised on June 4, 2010 and approved on August 24, 2010.

PERFORMANCE GOAL/PERFORMANCE MEASURE	OUTPUTS	WHO	STATUS AS OF APRIL 1, 2013		
			GRANT LINE CANAL NEAR CALPACK RD	GRANT LINE CANAL @ CLIFTON CT	LITTLEJOHNS CREEK @ JACK TONE
Performance Goal 1: Individually contact members on adjacent properties to waterways where discharges have been identified to fill out surveys.					
Performance Measure 1.1 – 100% of identified growers contacted to fill out surveys.	Report ratio of individual initial contacts made versus total growers identified to contact.	Mike Wackman	2 of 2 (100%)	2 of 2 (100%)	16 of 16 (100%)
Performance Measure 1.2 – Contact owners/operators representing at least 1,000 acre of membership acreage in the site subwatershed (if subwatershed is greater than 800 acres).	Report ratio of acreage represented by individual contacts versus subwatershed acreage determined to have direct drainage.	MLJ-LLC	686 of 686 ¹ (100%)	259 of 259 ¹ (100%)	2,796 of 5,277 ¹ (53%)
Performance Goal 2: Establish current practices (beyond established baseline practices) on adjacent properties to waterways or where discharges are identified.					
Performance Measure 2.1 – Document current management practices of 100% of identified growers during individual contacts and encourage the adoption of new practices not currently implemented.	Record current management practices used that may reduce agricultural impact on water quality.	Mike Wackman	2 of 2 (100%)	2 of 2 (100%)	16 of 16 (100%)
Performance Measure 2.2 – Document management practices that the identified growers were encouraged to implement.	Summary of management practice evaluations on a site subwatershed level in the Management Plan update.	MLJ-LLC	Complete	Complete	Complete
Performance Goal 3: Encourage growers to implement additional management practices based on water quality results.					
Performance Measure 3.1 – Document (e.g. assess number/type) new management practices implemented by identified growers.	Record implemented management practices (Access database).	Mike Wackman / MLJ-LLC	Complete	Complete	Complete
	Summary of management practices implemented as a result of individual contacts.	MLJ-LLC			
Performance Goal 4: Evaluate effectiveness of the new management practices implemented during years that site is high priority.					
Performance Measure 4.1 Update – Assess water quality results from Coalition monitoring location within the priority site subwatershed.	Summary of water quality data from Management Plan Monitoring.	MLJ-LLC	Complete April 1, 2012 ²	Complete April 1, 2012 ²	Complete April 1, 2012 ²
Performance Goal 5: Consult with CVRWQCB at least once to discuss Management Plan activities and consider if changes need to be made in the Management Plan strategy for high priority waterbodies.					

¹Overall irrigated direct drainage acreage for second priority site subwatersheds comes from 2009/2011 parcel data layers.

²The Coalition will continue MPM in the Grant Line Canal near Calpack Rd, Grant Line Canal @ Clifton Court Rd and Littlejohns Creek @ Jack Tone Rd site subwatersheds.

Third Priority Subwatersheds (2011 – 2013)

The third high priority site subwatersheds include French Camp Slough @ Airport Way, Mokelumne River @ Bruella Rd and Terminous Tract Drain @ Hwy 12. Performance Goals for this set of site subwatersheds are similar to the second high priority site subwatershed Performance Goals and were approved on January 10, 2011 (Table 11).

Performance Goal 1: Individually contact members on adjacent properties to waterways where discharges have been identified to fill out surveys.

The Coalition contacted 100% of targeted growers in the third priority site subwatersheds by March 30, 2011. As reported in the 2011 MPUR, the Coalition conducted grower group meetings in January 2011 at which time targeted members filled out surveys and Coalition representatives discussed water quality impairments and management practices that could be implemented.

A total of 29 growers were contacted representing 6,482 acres or 29% of the acreage determined to have the potential for direct drainage in the third priority site subwatersheds (Table 11). Of the three site subwatersheds, French Camp Slough @ Airport Way had the highest percent of acreage represented by contacted growers (45%) followed by Terminous Tract Drain @ Hwy 12 (40%) and Mokelumne River @ Bruella Rd (10%, Table 11).

Performance Goal 2: Establish current practices (beyond established baseline practices) on adjacent properties to waterways or where discharges are identified.

The Coalition met with growers during the January 2011 meetings to assist with the completion of surveys. One hundred percent of completed management practice surveys from the third priority site subwatersheds have been received and recorded into the Access database.

A summary of implemented and recommended management practices is included in the Third Priority Subwatersheds Summary of Management Practices section of the 2012 MPUR.

Performance Goal 3: Encourage growers to implement additional management practices based on water quality results.

As discussed in the 2011 MPUR, during grower meetings, the University of California Extension Specialists discussed management practices that could be used to help reduce the impact of agriculture on downstream waterbodies. One hundred percent of the management practices to be implemented by growers in 2011 and 2012 were recorded in an Access database (Table 11). A summary of these practices is included in the Third Priority Subwatersheds Summary of Management Practices section of the 2012 MPUR.

The Coalition mailed follow up post cards to growers in the third priority site subwatersheds on January 13, 2012. One hundred percent of the postcards were returned and the management practices were recorded in an Access database (Table 11). A summary of these management practices is included in the Third Priority Subwatersheds Summary of Management Practices section of this report.

Performance Goal 4: Evaluate effectiveness of the new management practices implemented during years that site is high priority.

The Coalition conducted MPM in the third priority site subwatersheds in 2012 and will continue monitoring in 2013 to assess water quality improvements (Table 8). Water quality results for each site subwatershed are located in the High Priority Subwatershed Analysis Appendix I. An evaluation of management practice effectiveness on water quality results for third priority site subwatersheds is included in the Evaluation of Management Plan Effectiveness section of this report.

Performance Goal 5: Consult with the Central Valley Regional Water Quality Control Board (CVRWQCB or Regional Board) at least to discuss Management Plan activities and consider if changes need to be made in the Management Plan strategy for high priority waterbodies.

The Coalition met with the Regional Board staff quarterly to discuss Coalition activities (Table 14). The Coalition continues to discuss Management Plan activities with the Regional Board staff during meetings.

All Coalition activities related to outreach (including mailings, grower meetings, individual meetings, etc.), in the first, second, third, fourth, and fifth priority site subwatersheds are listed in Table 16.

Table 11. High Priority Performance Goals status for 2011 - 2013 high priority subwatersheds (French Camp Slough @ Airport Way, Mokelumne River @ Bruella Rd, Terminous Tract Drain @ Hwy 12), approved on January 10, 2011.

PERFORMANCE GOAL/PERFORMANCE MEASURE	OUTPUTS	WHO	STATUS AS OF APRIL 1, 2013		
			FRENCH CAMP SLOUGH @ AIRPORT WAY	MOKELUMNE RIVER @ BRUELLA RD ²	TERMINOUS TRACT DRAIN @ HWY 12
Performance Goal 1: Individually contact members on adjacent properties to waterways where discharges have been identified to fill out surveys.					
Performance Measure 1.1 – 100% of identified growers contacted to fill out surveys.	Report ratio of individual initial contacts made versus total growers identified to contact.	Mike Wackman	13 of 13 (100%)	12 of 12 (100%)	4 of 4 (100%)
Performance Measure 1.2 – Contact owners/operators representing at least 1,000 acre of membership acreage in the site subwatershed (if subwatershed is greater than 800 acres).	Report ratio of acreage represented by individual contacts versus subwatershed acreage determined to have direct drainage.	MLJ-LLC	3,767 of 8,417¹ (45%)	937 of 9,642¹ (10%)	1,778 of 4,400¹ (40%)
Performance Goal 2: Establish current practices (beyond established baseline practices) on adjacent properties to waterways or where discharges are identified.					
Performance Measure 2.1 – Document current management practices of 100% of identified growers during individual contacts and encourage the adoption of new practices not currently implemented.	Record current management practices used that may reduce agricultural impact on water quality.	Mike Wackman	13 of 13 (100%)	12 of 12 (100%)	4 of 4 (100%)
Performance Measure 2.2 – Document management practices that the identified growers were encouraged to implement.	Summary of management practice evaluations on a site subwatershed level in the Management Plan update.	MLJ-LLC	Complete	Complete	Complete
Performance Goal 3: Encourage growers to implement additional management practices based on water quality results.					
Performance Measure 3.1 – Document (e.g. assess number/type) new management practices implemented by identified growers.	Record implemented management practices (Access database).	Mike Wackman / MLJ-LLC	Complete	Complete	Complete
	Summary of management practices implemented as a result of individual contacts.	MLJ-LLC	Complete	Complete	Complete
Performance Goal 4: Evaluate effectiveness of the new management practices implemented during years that site is high priority.					
Performance Measure 4.1 Update – Assess water quality results from Coalition monitoring location within the priority site subwatershed.	Summary of water quality data from Management Plan Monitoring.	MLJ-LLC	Complete April 1, 2013	Complete April 1, 2013	Complete April 1, 2013
Performance Goal 5: Consult with CVRWQCB at least once to discuss Management Plan activities and consider if changes need to be made in the Management Plan strategy for high priority waterbodies.					

¹Overall irrigated direct drainage acreage for third priority site subwatersheds comes from 2011 parcel data layers.

²Two members were removed from the Mokelumne River @ Bruella Rd site subwatershed targeted grower list due to parcels no longer being farmed and three members were dropped due to not responding to surveys.

Fourth Priority Subwatersheds (2012 – 2014)

The fourth high priority site subwatersheds include Kellogg Creek along Hoffman Ln, Mormon Slough @ Jack Tone Rd and Sand Creek @ Hwy 4 Bypass. Performance Goals (approved November 14, 2011) for this set of site subwatersheds are similar to those for the second and third set of high priority site subwatersheds (Table 12).

Performance Goal 1: Individually contact members on adjacent properties to waterways where discharges have been identified to fill out surveys.

As reported in the 2012 MPUR, the Coalition conducted grower group meetings in January 2012 at which time targeted members filled out surveys and Coalition representatives discussed water quality impairments and management practices that could be implemented.

Performance Goal 2: Establish current practices (beyond established baseline practices) on adjacent properties to waterways or where discharges are identified.

The Coalition has received 100% of the completed surveys from the fourth priority site subwatershed members that participated in outreach. Responses were recorded in an Access database. One member in the Kellogg Creek along Hoffman Ln site subwatershed (accounting for 10 acres) and two members in the Mormon Slough @ Jack Tone Rd site subwatershed (accounting for 63 acres) did not participate in outreach and are in the process of being removed from the Coalition. A summary of currently implemented management practices and management practices to be implemented in 2012 is included in the Fourth Priority Subwatersheds Summary of Management Practices section of this report.

Performance Goal 3: Encourage growers to implement additional management practices based on water quality results.

At the two January meetings held in 2012, University of California Extension Specialists discussed management practices that could be used to help reduce the impact of agriculture on downstream waterbodies. The meetings focused on watershed-specific water quality impairments, crops of targeted growers, and reviewing the efficacy of the various practices. The Coalition mailed follow up postcards to growers in the fourth priority site subwatersheds on February 1, 2013 requesting them to document newly implemented management practices.

Performance Goal 4: Evaluate effectiveness of the new management practices implemented during years that site is high priority.

The Coalition conducted Year 0 and Year 1 MPM in 2011 and 2012 respectively, for the fourth priority site subwatersheds. Year 2 of MPM in these subwatersheds is scheduled for 2013 to assess water quality improvement. The Coalition will evaluate effectiveness of new management practices implemented in 2012 with water quality data obtained from MPM. An interim evaluation will be included in the Management Plan Effectiveness section of this report and a final evaluation will be included in the 2014 MPUR if additional practices are to be implemented in 2013.

Performance Goal 5: Consult with the CVRWQCB at least to discuss Management Plan activities and consider if changes need to be made in the Management Plan strategy for high priority waterbodies.

The Coalition met with the Regional Board staff quarterly to discuss Coalition activities (Table 14).

All Coalition activities related to outreach (including mailings, grower meetings, individual meetings, etc.), in the first, second, third, fourth, and fifth priority site subwatersheds are listed in Table 16.

Table 12. High Priority Performance Goals status for 2012 - 2014 high priority subwatersheds (Kellogg Creek along Hoffman Ln, Mormon Slough @ Jack Tone Rd and Sand Creek @ Hwy 4 Bypass), approved on November 14, 2011.

PERFORMANCE GOAL/PERFORMANCE MEASURE	OUTPUTS	WHO	STATUS AS OF APRIL 1, 2013		
			KELLOGG CREEK ^{2,3}	MORMON SLOUGH @ JACK TONE RD ³	SAND CREEK @ HWY 4 BYPASS
Performance Goal 1: Individually contact members on adjacent properties to waterways where discharges have been identified to fill out surveys.					
Performance Measure 1.1 – 100% of identified growers contacted to fill out surveys.	Report ratio of individual initial contacts made versus total growers identified to contact.	Mike Wackman	10 of 10 (100%) March 30, 2012	29 of 29 (100%) March 30, 2012	1 of 1 (100%) March 30, 2012
Performance Measure 1.2 – Contact owners/operators in the site subwatershed with direct drainage membership acreage.	Report ratio of acreage represented by individual contacts versus subwatershed acreage determined to have direct drainage.	MLJ-LLC	402 of 5,147¹ (8%)	1,789 of 4,209¹ (43%)	116 of 3,758¹ (3%)
Performance Goal 2: Establish current practices (beyond established baseline practices) on adjacent properties to waterways or where discharges are identified.					
Performance Measure 2.1 – Document current management practices of 100% of identified growers during individual contacts and encourage the adoption of new practices not currently implemented.	Record current management practices used that may reduce agricultural impact on water quality.	Mike Wackman	10 of 10 (100%)	29 of 29 (100%)	1 of 1 (100%)
Performance Measure 2.2 – Document management practices that the identified growers were encouraged to implement.	Summary of management practice evaluations on a site subwatershed level in the Management Plan update.	MLJ-LLC	Complete April 1, 2013	Complete April 1, 2013	Complete April 1, 2013
Performance Goal 3: Encourage growers to implement additional management practices based on water quality results.					
Performance Measure 3.1 – Document (e.g. assess number/type) new management practices implemented by identified growers.	Record implemented management practices (Access database).	Mike Wackman / MLJ-LLC	In Progress: November 30, 2013	In Progress: November 30, 2013	In Progress: November 30, 2013
	Summary of management practices implemented as a result of individual contacts.	MLJ-LLC	In Progress: April 1, 2013/2014	In Progress: April 1, 2013/2014	In Progress: April 1, 2013/2014
Performance Goal 4: Evaluate effectiveness of the new management practices implemented during years that site is high priority.					
Performance Measure 4.1 Update – Assess water quality results from Coalition monitoring location within the priority site subwatershed.	Summary of water quality data from Management Plan Monitoring.	MLJ-LLC	In Progress: April 1, 2013/2014	In Progress: April 1, 2013/2014	In Progress: April 1, 2013/2014
Performance Goal 5: Consult with CVRWQCB at least once to discuss Management Plan activities and consider if changes need to be made in the Management Plan strategy for high priority waterbodies.					

¹Overall irrigated direct drainage acreage for fourth priority site subwatersheds comes from 2011 parcel data layers.

²Kellogg Creek includes members who have potential for direct drainage from both Kellogg Creek along Hoffman Ln and Kellogg Creek @ Hwy 4 site subwatersheds.

³Targeted contacts and acreages updated based on one member in Kellogg Creek and two members in Mormon Slough @Jack Tone Rd being removed from the Coalition for not responding to their initial survey.

Fifth Priority Subwatersheds (2013 – 2015)

The fifth high priority site subwatersheds include Bear Creek @ North Alpine Rd, Roberts Island @ Whiskey Slough Pump and Walthall Slough @ Woodward Ave. Performance Goals (approved November 6, 2012) for this set of site subwatersheds are similar to those for the second, third, and fourth sets of high priority site subwatersheds (Table 13).

Performance Goal 1: Individually contact members on adjacent properties to waterways where discharges have been identified to fill out surveys.

The Coalition contacted 100% of members within the Bear Creek @ North Alpine Rd, Roberts Island @ Whiskey Slough Pump and Walthall Slough @ Woodward Ave site subwatersheds. Members were mailed survey packets and notification regarding grower meetings to discuss the Coalition's Management Plan strategy, water quality results and management practices. Growers from all three site subwatersheds were asked to attend the meeting held on January 22, 2013 and bring the survey with them to complete. Members who did not attend the meeting were advised to mail in the completed survey.

Performance Goal 2: Establish current practices (beyond established baseline practices) on adjacent properties to waterways or where discharges are identified.

The Coalition is in the process of receiving and recording all completed surveys from the fifth priority site subwatershed members who were unable to attend the three meetings held in January 2013. To date, the Coalition has received 71% of completed management practice surveys from growers in the Bear Creek @ North Alpine Rd site subwatershed, 29% of the surveys from growers in the Roberts Island @ Whiskey Slough Pump site subwatershed and 50% of the surveys from growers in the Walthall Slough @ Woodward Ave site subwatershed. These surveys have been entered into an Access database. A summary of currently implemented management practices and management practices to be implemented in 2013 within the fifth priority site subwatersheds will be included in the 2014 MPUR.

Performance Goal 3: Encourage growers to implement additional management practices based on water quality results.

During the January 2013 meeting, University of California Extension Specialists discussed management practices that could be used to help reduce the impact of agriculture on downstream waterbodies. The meetings focused on watershed-specific water quality impairments, crops of targeted growers, and reviewing efficacy of the various practices. The Coalition is reviewing the responses provided in the surveys regarding the management practices growers intend to implement in 2013 and 2014. The Coalition will follow up with growers in the fifth priority site subwatersheds in 2014 to document newly implemented management practices and will report its findings in future MPURs submitted annually on April 1.

Performance Goal 4: Evaluate effectiveness of the new management practices implemented during years that site is high priority.

The Coalition conducted Year 0 MPM in 2012 for the fifth priority site subwatersheds. The Coalition will also conduct MPM in these site subwatersheds in 2013 through 2015 to assess water quality improvements. The Coalition will evaluate effectiveness of new management practices implemented in 2013 and 2014 with water quality data obtained from MPM. An interim evaluation will be included in the 2014 MPUR and a final evaluation will be included in the 2015 MPUR if additional practices are implemented in 2014.

Performance Goal 5: Consult with the CVRWQCB at least to discuss Management Plan activities and consider if changes need to be made in the Management Plan strategy for high priority waterbodies.

Quarterly meetings with the Regional Board to discuss Coalition activities have been scheduled for 2013 (Table 15). The Coalition has already met with Regional Board staff on March 12, 2013 for its first quarterly meeting.

All Coalition activities in the first, second, third, fourth, and fifth priority site subwatersheds related to outreach (including mailings, grower meetings and individual meetings) are listed in Table 16.

Table 13. High Priority Performance Goals status for 2013 - 2015 high priority subwatersheds (Bear Creek @ North Alpine Rd, Roberts Island @ Whiskey Slough Pump and Walthall Slough @ Woodward Ave) approved on November 6, 2012.

PERFORMANCE GOAL/PERFORMANCE MEASURE	OUTPUTS	WHO	STATUS AS OF APRIL 1, 2013		
			BEAR CREEK @ NORTH ALPINE RD	ROBERTS ISLAND @ WHISKEY SLOUGH PUMP	WALTHALL SLOUGH @ WOODWARD AVE
Performance Goal 1: Individually contact members on adjacent properties to waterways where discharges have been identified to fill out surveys.					
Performance Measure 1.1 – 100% of identified growers contacted to fill out surveys.	Report ratio of individual initial contacts made versus total growers identified to contact.	Mike Wackman	7 of 7 (100%) March 30, 2013	7 of 7 (100%) March 30, 2013	8 of 8 (100%) March 30, 2013
Performance Measure 1.2 – Contact owners/operators in the site subwatershed with direct drainage membership acreage.	Report ratio of acreage represented by individual contacts versus subwatershed acreage determined to have direct drainage.	MLJ-LLC	655 of 13,448¹ (5%)	1,618 of 13,711¹ (12%)	1,490 of 2,436¹ (61%)
Performance Goal 2: Establish current practices (beyond established baseline practices) on adjacent properties to waterways or where discharges are identified.					
Performance Measure 2.1 – Document current management practices of 100% of identified growers during individual contacts and encourage the adoption of new practices not currently implemented.	Record current management practices used that may reduce agricultural impact on water quality.	Mike Wackman	5 of 7 (71%) October 31, 2013	2 of 7 (29%) October 31, 2013	4 of 8 (50%) October 31, 2013
Performance Measure 2.2 – Document management practices that the identified growers were encouraged to implement.	Summary of management practice evaluations on a site subwatershed level in the Management Plan update.	MLJ-LLC	In Progress: April 1, 2014	In Progress: April 1, 2014	In Progress: April 1, 2014
Performance Goal 3: Encourage growers to implement additional management practices based on water quality results.					
Performance Measure 3.1 – Document (e.g. assess number/type) new management practices implemented by identified growers.	Record implemented management practices based on survey information in an Access database.	MLJ-LLC	In Progress: November 30, 2014	In Progress: November 30, 2014	In Progress: November 30, 2014
	Summary of management practices implemented as a result of individual contacts.	MLJ-LLC	In Progress: April 1, 2014/2015	In Progress: April 1, 2014/2015	In Progress: April 1, 2014/2015
Performance Goal 4: Evaluate effectiveness of the new management practices implemented during years that site is high priority.					
Performance Measure 4.1 Update – Assess water quality results from Coalition monitoring location within the priority site subwatershed.	Summary of water quality data from Management Plan Monitoring.	MLJ-LLC	In Progress: April 1, 2014/2015	In Progress: April 1, 2014/2015	In Progress: April 1, 2014/2015
Performance Goal 5: Consult with CVRWQCB at least once to discuss Management Plan activities and consider if changes need to be made in the Management Plan strategy for high priority waterbodies.					

¹Overall irrigated direct drainage acreage for fifth priority site subwatersheds comes from 2011 parcel data layers.

Table 14. Quarterly 2012 Regional Board meeting dates.

QUARTERLY MEETINGS	MEETING DATE
First Quarter Meeting	March 1, 2012
Second Quarter Meeting	June 5, 2012
Third Quarter Meeting	September 12, 2012
Fourth Quarterly Meeting	January 8, 2013

Table 15. Quarterly 2013 Regional Board meeting dates (subject to change).

QUARTERLY MEETINGS	MEETING DATE
First Quarter Meeting	March 12, 2013
Second Quarter Meeting	June 11, 2013
Third Quarter Meeting	TBD
Fourth Quarterly Meeting	TBD

TBD-To be determined

Table 16. Coalition outreach in high priority site subwatersheds.

Categories of outreach include Management Practice Tracking, Best Management Practice (BMP) Outreach and Education, Grower Notification, and Collaborations and Special Studies.

AREA	DATE	CATEGORY	DETAILS	WHO
Lone Tree Creek (1st P)	11/21/2008	BMP Outreach and Education / Management Practice Tracking	Individual grower meetings to discuss chlorpyrifos exceedances linked with individual grower use. Meetings included a visit to growers' fields to view runoff conditions and suggest/discuss potential management practices.	Rachelle Antinetti, Terry Prichard, and Joe Gasper (PCA)
Duck Creek @ Hwy 4 (1st P)	11/24/2008	BMP Outreach and Education / Management Practice Tracking	Grower meeting to address measured water quality standard exceedances and to discuss BMPs and pesticide product options. 19 BMP surveys were completed.	Mike Wackman, Terry Prichard
Unnamed Drain to Lone Tree Creek (1st P)	11/30/2009	Grower Notification / Management Practice Tracking	Growers with outstanding surveys contacted and surveys mailed to all growers.	Terry Prichard
Littlejohns Creek (2nd P)	1/06/2010	Grower Notification / Management Practice Tracking	Littlejohns Creek Orchard Grower Meeting Announcement: send to 15 members. Mailing included meeting agenda and individual contact survey to be filled out before and during meeting.	MLJ-LLC Staff
Grant Line Canal, Littlejohns Creek (2nd P)	1/08/2010	Grower Notification / Management Practice Tracking	Grant Line Canal and Littlejohns Creek Row Crop Grower Meeting Announcement: send to 6 members. Mailing included meeting agenda and individual contact survey to be filled out before and during meeting.	MLJ-LLC Staff
Littlejohns Creek (2nd P)	1/25/2010	BMP Outreach and Education / Management Practice Tracking	Littlejohns Creek Orchard Grower Meeting: of the 15 members invited, 10 members were represented; a total of 21 people attended. Discussion topics included Coalition's purpose, current water impairments, ILRP status, and relevant BMPs. Members filled out management practice surveys.	Mike Wackman, Terry Prichard, Mick Canevari
Grant Line Canal, Littlejohns Creek (2nd P)	1/28/2010	BMP Outreach and Education / Management Practice Tracking	Grant Line Canal and Littlejohns Creek Row Crop Grower Meeting: of the 6 members invited, 4 members were in attendance. Discussion topics included Coalition's purpose, current water impairments, ILRP status, and relevant BMPs. Members filled out management practice surveys.	Mike Wackman, Terry Prichard, Mick Canevari
Mokelumne River @ Bruella Rd (3rd P)	12/30/2010	Grower Notification / Management Practice Tracking	Mokelumne River Initial Contact Grower Meeting Announcement Mailing: sent to 12 growers. Mailing included cover letter, meeting agenda, and individual contact survey packet to be filled out by grower during meeting.	Mike Wackman
Terminus Tract @ Hwy 12 (3rd P)	12/30/2010	Grower Notification / Management Practice Tracking	Terminus Tract Initial Contact Grower Meeting Announcement Mailing: sent to 4 growers. Mailing included cover letter, meeting agenda, and individual contact survey packet to be filled out by grower during meeting.	Mike Wackman
French Camp Slough @ Airport Way (3rd P)	12/30/2010	Grower Notification / Management Practice Tracking	French Camp Slough Initial Contact Grower Meeting Announcement Mailing: sent to 13 growers. Mailing included cover letter, meeting agenda, and individual contact survey packet to be filled out by grower during meeting.	Mike Wackman
Mokelumne River @ Bruella Rd (3rd P)	1/13/2011	BMP Outreach and Education / Management Practice Tracking	Mokelumne River Initial Contact Grower Meeting: of the 12 targeted members, 8 attended the meeting. Coalition staff discussed the management plan high priority subwatershed tracking process, the water quality concerns for the local subwatershed, and helped growers to fill out their individual management practice surveys.	Mike Wackman and Terry Prichard
Terminus Tract @ Hwy 12 (3rd P)	1/19/2011	BMP Outreach and Education / Management Practice Tracking	Terminus Tract Initial Contact Grower Meeting: all 4 targeted members attended the meeting. Coalition staff discussed the management plan high priority subwatershed tracking process, the water quality concerns for the local subwatershed, and helped growers to fill out their individual management practice surveys.	Mike Wackman and Terry Prichard

AREA	DATE	CATEGORY	DETAILS	WHO
French Camp Slough @ Airport Way (3rd P)	1/20/2011	BMP Outreach and Education / Management Practice Tracking	French Camp Slough Initial Contact Grower Meeting: of the 13 targeted members, 8 attended the meeting. Coalition staff discussed the management plan high priority subwatershed tracking process, the water quality concerns for the local subwatershed, and helped growers to fill out their individual management practice surveys.	Mike Wackman and Terry Prichard
Duck Creek @ Hwy 4, Lone Tree @ Jack Tone Rd (1st P)	2/03/2011	Grower Notification / Management Practice Tracking	First Priority Follow Up Postcard: Sent to 3 members in the 1st priority subwatersheds who indicated they planned to implement in 2010 (1 grower in Duck Creek and 2 growers in Lone Tree Creek). Members were instructed to indicate which recommended and additional management practices they implemented in 2010 and to mail the return card. Growers were notified if the Coalition did not receive a return card by March 4, 2011; the Coalition would call the grower.	Mike Wackman
Grant Line Canal, Littlejohns Creek (2nd P)	2/03/2011	Grower Notification / Management Practice Tracking	Second Priority Follow Up Postcard: sent to all members with recommended practices in the second priority subwatersheds. Members were instructed to indicate which recommended and additional management practices they implemented in 2010 and to mail the return card. Growers were notified if the Coalition did not receive a return card by March 4, 2011; the Coalition would call the grower.	Mike Wackman
Mokelumne River and French Camp Slough (3rd P)	9/30/2011	Grower Notification / Management Practice Tracking	French Camp Slough and Mokelumne River Initial Contact Grower Survey - Final Attempt to Contact Mailing: sent to 3 growers in French Camp Slough and 4 growers in Mokelumne River. Letter reminded members of their responsibility to provide the Coalition with requested management practice information and indicated if a response was not received by Oct. 21, 2011, the member would be dropped from the Coalition. A management practice survey was also enclosed.	Mike Wackman
Kellogg Creek, Mormon Slough, and Sand Creek (4th P)	12/14/2011	Grower Notification / Management Practice Tracking	4th Priority Initial Contact Grower Meeting Announcement Mailing: sent to 11 Kellogg Creek members, 31 Mormon Slough members, and 1 Sand Creek member. Packet contained a cover letter explaining the management plan process and grower responsibilities, meeting details and agenda, and grower survey.	Mike Wackman
Kellogg Creek, Mormon Slough, and Sand Creek (4th P)	1/05/2012	Grower Notification / Management Practice Tracking	4th Priority Initial Contact Grower Meeting Reminder Postcard: sent to 11 Kellogg Creek members, 34 Mormon Slough members, and 1 Sand Creek member.	Mike Wackman
French Camp Slough, Mokelumne River, and Terminous Tract (3rd P)	1/13/2012	Grower Notification / Management Practice Tracking	3rd Priority Follow Up Mailing: sent to 13 French Camp Slough members, 11 Mokelumne River members, and 4 Terminous Tract members. Mailing included follow up survey with instructions to complete and return the survey to the Coalition.	Mike Wackman
Mormon Slough @ Jack Tone Rd (4th P)	1/19/2012	BMP Outreach and Education / Management Practice Tracking	4th Priority Initial Contact Grower Meeting: 26 of the 31 targeted members attended the meeting. Coalition staff discussed the management plan high priority subwatershed tracking process, the water quality concerns for the local subwatershed, and helped growers to fill out their individual management practice surveys.	Mike Wackman and Terry Prichard
Kellogg Creek and Sand Creek (4th P)	1/20/2012	BMP Outreach and Education / Management Practice Tracking	4th Priority Initial Contact Grower Meeting: 8 of the 12 targeted members attended the meeting (7 from Kellogg Creek and 1 from Sand Creek). Coalition staff discussed the management plan high priority subwatershed tracking process, the water quality concerns for the local subwatershed, and helped growers to fill out individual management practice surveys.	Mike Wackman and Terry Prichard
Duck Creek, Lone Tree Creek, and Unnamed Drain to Lone Tree Creek (1st P) and Littlejohns Creek (2nd P)	May and June 2012	Grower Notification / Management Practice Tracking	Additional Individual Grower Meetings: 15 Duck Creek, 2 Lone Tree Creek, 3 Unnamed Drain to Lone Tree Creek, and 5 Littlejohns Creek growers. Coalition representative met individually with growers to discuss water quality and review management practices. Phone calls were made to schedule the individual meetings.	Terry Prichard

AREA	DATE	CATEGORY	DETAILS	WHO
Kellogg Creek and Mormon Slough (4th P)	1/20/2012	Grower Notification / Management Practice Tracking	4th Priority Initial Contact Grower Surveys Reminder Mailing: sent to 7 Kellogg Creek members and 8 Mormon Slough members who had yet to return their initial grower survey. Cover letter reviewed the Management Plan strategy process and member responsibilities. The mailing included a letter for the CVRWQCB and management practice survey. Growers were instructed to return surveys by October 8, 2012.	Mike Wackman
Kellogg Creek and Mormon Slough (4th P)	October 2012	Grower Notification / Management Practice Tracking	4th Priority Initial Contact Grower Surveys Reminder Phone Calls: to 5 Kellogg Creek members and 2 Mormon Slough members who had yet to return their initial grower survey.	Terry Prichard
Bear Creek, Roberts Island, and Walthall Slough (5th P)	1/08/2013	Grower Notification / Management Practice Tracking	5th Priority Initial Contact Grower Meeting Announcement Mailing: sent to 8 Bear Creek members, 7 Roberts Island members, and 9 Walthall Slough members. Packet contained a cover letter and letter from the Regional Board explaining the management plan process and grower responsibilities, meeting details and agenda, and grower survey.	Mike Wackman
Kellogg Creek and Mormon Slough (4th P)	1/25/2013	Grower Notification / Management Practice Tracking	4th Priority Initial Contact Grower Surveys Final Mailing: sent to 4 Kellogg Creek members and 2 Mormon Slough members who had yet to return their initial grower survey. Cover letter indicated the growers would be dropped from the Coalition if they did not respond by February 15, 2013.	Mike Wackman

BMP- Best Management Practice
ILRP- Irrigated Lands Regulatory Program
P- Priority
PCA-Pesticide Control Advisor

MANAGEMENT PRACTICES

The Coalition documents current management practices, recommended management practices and newly implemented practices based on individual contacts and survey results for each high priority site subwatershed. The Coalition updated its general classifications of management practices (originally listed in the SJCDWQC Management Plan) that would be effective at reducing the impacts of agricultural discharges on water quality. Table 17 includes a list of management practices grouped by either pesticide application or runoff management practices.

Table 17. Management practice categories and associated management practices recommended to growers.

MANAGEMENT PRACTICE CATEGORY	MANAGEMENT PRACTICE
Pesticide Application Management Practices	Reduction in application rates
	Alternative material application
	Spot treating
Runoff Management Practices	Sprinkler or microspray irrigation
	Retention pond/holding basin
	Grass waterways or grass filter strips
	Reduce water volumes using irrigation management
	Treat runoff waters with PAM or other materials

Coalition members with direct drainage and past applications of pesticides of concern were contacted to attend grower meetings and complete surveys. Growers completed surveys by recording their current management practices and whether they planned to implement additional management practices in the next year. Growers that indicated they would implement one or more new management practices are contacted again and asked 1) if they implemented the practice(s) in the last year, 2) if they did not implement the practice(s) in the last year, they are asked why not, and 3) if they implemented other/additional practices not listed. If the grower indicated that they could not implement the intended practice due to insufficient time or financial restraints, they are contacted after an additional year.

The 2012 MPUR includes an analysis of current management practices, management practices planned to be implemented and newly implemented management practices for first, second and third priority site subwatersheds. The analysis of the newly implemented management practices within third priority site subwatersheds was preliminary in the 2012 report; a final analysis is included in the following sections. Due to continued water quality impairments throughout 2010 and 2011, the Coalition initiated additional focused outreach in 2012 with growers in all three first priority watersheds and the Littlejohns Creek @ Jack Tone Rd site subwatershed. A summary of focused outreach for these 2012 additional contacts is in the following sections. Follow up contacts within third priority site subwatersheds were initiated in early 2012 and are complete.

The Coalition began focused outreach in the fourth set of priority site subwatersheds (Kellogg Creek along Hoffman Ln, Mormon Slough @ Jack Tone Rd, and Sand Creek @ Hwy 4 Bypass) in early 2012 and 100% of contacts have been made with individual growers. Management practices that growers in fourth priority site subwatersheds implemented in 2011 and plan to implement in 2012 are summarized in the following sections. Follow up contacts were initiated in January 2013 with growers who indicated they were planning to implement additional management practices in 2012. Results of the follow up contacts within the fourth priority site subwatersheds will be reported in the 2014 MPUR.

The Coalition initiated focused outreach in the fifth set of high priority site subwatersheds (Bear Creek @ North Alpine, Roberts Island @ Whiskey Slough Pump, and Walthall Slough @ Woodward Ave) in January 2013. Growers were targeted in these site subwatersheds based on their potential to drain or spray drift into the waterway and their use of constituents of concern. In early January 2013 management practice surveys were sent to seven members in the Bear Creek @ North Alpine site subwatershed, seven members in the Roberts Island @ Whiskey Slough Pump site subwatershed, and eight members in the Walthall Slough @ Woodward Ave site subwatershed. On January 22, 2013 the Coalition held a joint grower meeting with the targeted growers from all three site subwatersheds. Current management practices and those that the growers plan to implement will be reported in the 2014 MPUR.

FIRST AND SECOND PRIORITY SUBWATERSHEDS SUMMARY OF MANAGEMENT PRACTICES

First Priority Site Subwatersheds

Focused outreach to document current management practices and track implementation of additional management practices in first priority site subwatersheds began in the fall of 2008 and continued through 2012. The first priority site subwatersheds are Duck Creek @ Hwy 4, Lone Tree Creek @ Jack Tone Rd and Unnamed Drain to Lone Tree Creek @ Jack Tone Rd. The Coalition completed initial and follow up surveys with 100% of targeted growers in the Duck Creek @ Hwy 4 (35 growers), Lone Tree Creek @ Jack Tone Rd (43 growers) and Unnamed Drain to Lone Tree Creek @ Jack Tone Rd (34 growers) site subwatersheds (Table 9). Based on survey results, the Coalition reported a final analysis of current practices from 2008 as well as practices implemented from 2009 through 2010 on a site subwatershed level in the 2011 MPUR (pages 43-58). Due to continued exceedances of the chlorpyrifos WQTL within the Duck Creek @ Hwy 4 site subwatershed, the Coalition conducted additional individual meetings in 2010 with growers in the site subwatershed. Coalition representatives discussed the importance of management practices such as reducing the use of chlorpyrifos or using alternatives to chlorpyrifos. Results from these contacts were reported in the 2012 MPUR (pages 45-47) and have been added into the overall assessment of new management practices implemented within first priority site subwatersheds.

Second Priority Site Subwatersheds

Focused outreach to document current management practices and track implementation of new management practices in the second priority site subwatersheds began in 2010 and concluded in 2011.

One hundred percent of targeted growers completed surveys in 2009 documenting current management practices and indicated management practices to be implemented in the following year in the Grant Line Canal @ Clifton Court Rd (2 growers), Grant Line Canal @ Calpack Rd (2 growers), and Littlejohns Creek @ Jack Tone Rd (16 growers) site subwatersheds (Table 10). Follow up contacts were completed with all targeted growers who indicated they intended to implement a new practice in 2010. The Coalition reported an analysis of current practices from 2009 as well as newly implemented management practices for all second priority site subwatersheds in the 2011 MPUR (pages 59-71).

In 2012, the Coalition initiated additional outreach in the first and second priority site subwatersheds due to continued water quality impairments, specifically exceedances of the WQTL for chlorpyrifos. Growers were targeted in a total of four site subwatersheds; Duck Creek @ Hwy 4, Lone Tree Creek @ Jack Tone Rd, Unnamed Drain to Lone Tree Creek, and Littlejohns Creek @ Jack Tone Rd.

Summary of Management Practices from First and Second Priority Additional Contacts (2012)

The Coalition identified seven growers representing 2,065 acres, in the first priority site subwatersheds and five growers representing 645 acres in the Littlejohns Creek @ Jack Tone Rd site subwatershed for additional focused outreach (Table 18). Growers were selected for additional outreach based on five factors:

1. The grower is a member of the Coalition
2. PUR data indicated the grower applied chlorpyrifos in 2010 or 2011
3. Applications of chlorpyrifos were associated with an exceedance of the WQTL for chlorpyrifos (applied no more than 30 days prior to an exceedance)
4. The parcels with chlorpyrifos use had the potential to drain into the creek or the potential for spray drift into the creek
5. The past survey results indicated additional management practices or improvements to management practices could be implemented

Topics discussed during the additional focused outreach meetings in 2012 included managing storm and irrigation runoff (including improving water infiltration, capturing and/or recycling runoff water, and treating irrigation water with PAM), reducing drift to water sources (including noting application conditions, equipment, product choice, buffer zones, and application method) as well as discontinuing, reducing, or changing the type of pesticide used. The growers were asked to fill out a survey; 100% of targeted growers returned the surveys by the end of May 2012.

Table 18. First and second priority additional targeted member counts and acreages.

If a member was already contacted once, the total counts the member and sums their acreage only once.

PRIORITY	SITE SUBWATERSHED	COUNT OF PERMITTEES	COUNT OF MEMBERS	SUM OF ACREAGE
FIRST PRIORITY	DUCK CREEK @ HWY 4			
	<i>Previously Contacted in 2009</i>	1	2	363
	<i>Not Previously Contacted</i>	2	1	200
	LONE TREE CREEK @ JACK TONE RD			
	<i>Previously Contacted in 2009</i>	2	2	264

PRIORITY	SITE SUBWATERSHED	COUNT OF PERMITTEES	COUNT OF MEMBERS	SUM OF ACREAGE
	<i>Not Previously Contacted</i>	0	0	0
	UNNAMED DRAIN TO LONE TREE CREEK @ JACK TONE RD			
	<i>Previously Contacted in 2009</i>	1	1	1,201
	<i>Not Previously Contacted</i>	1	1	37
	LITTLEJOHNS CREEK @ JACK TONE RD			
SECOND PRIORITY	<i>Previously Contacted in 2010</i>	1	1	386
	<i>Not Previously Contacted</i>	4	5	259

Within the first priority site subwatersheds seven members were contacted to document additional management practice information; two of the members had not been contacted to document management practices in 2009 and 2010 (Table 18). Six members were contacted within the Littlejohns Creek @ Jack Tone Rd site subwatershed (second priority); five of these members were not previously contacted (Table 18).

Figures 4-7 depict the member parcels of the additional targeted members in the Duck Creek @ Hwy 4, Lone Tree Creek @ Jack Tone Rd, Unnamed Drain to Lone Tree Creek @ Jack Tone Rd, and Littlejohns Creek @ Jack Tone Rd site subwatersheds.

Analysis of the 2012 additional contact surveys indicate that only one grower in the Lone Tree Creek @ Jack Tone Rd site subwatershed, accounting for only 3% of the additional total acreage, is currently applying chlorpyrifos (Table 19). The grower indicated they have a retention pond, holding basin, or return system and also have reduced runoff water volumes using irrigation management to prevent offsite movement of chlorpyrifos. In addition, the grower indicated there is no spray drift or storm runoff into the creek. The growers contacted in the Duck Creek @ Hwy 4, Unnamed Drain to Lone Tree Creek @ Jack Tone Rd, and Littlejohns Creek @ Jack Tone Rd site subwatersheds are not currently applying chlorpyrifos. Growers from these three site subwatersheds are currently implementing at least four out of the five management practices listed in Table 19, and one grower in the Littlejohns Creek @ Jack Tone Rd site subwatershed is currently implementing all five (Table 19). None of the growers indicated that they are planning any new management practices for next year.

Table 19. 2012 additional contacts survey responses.

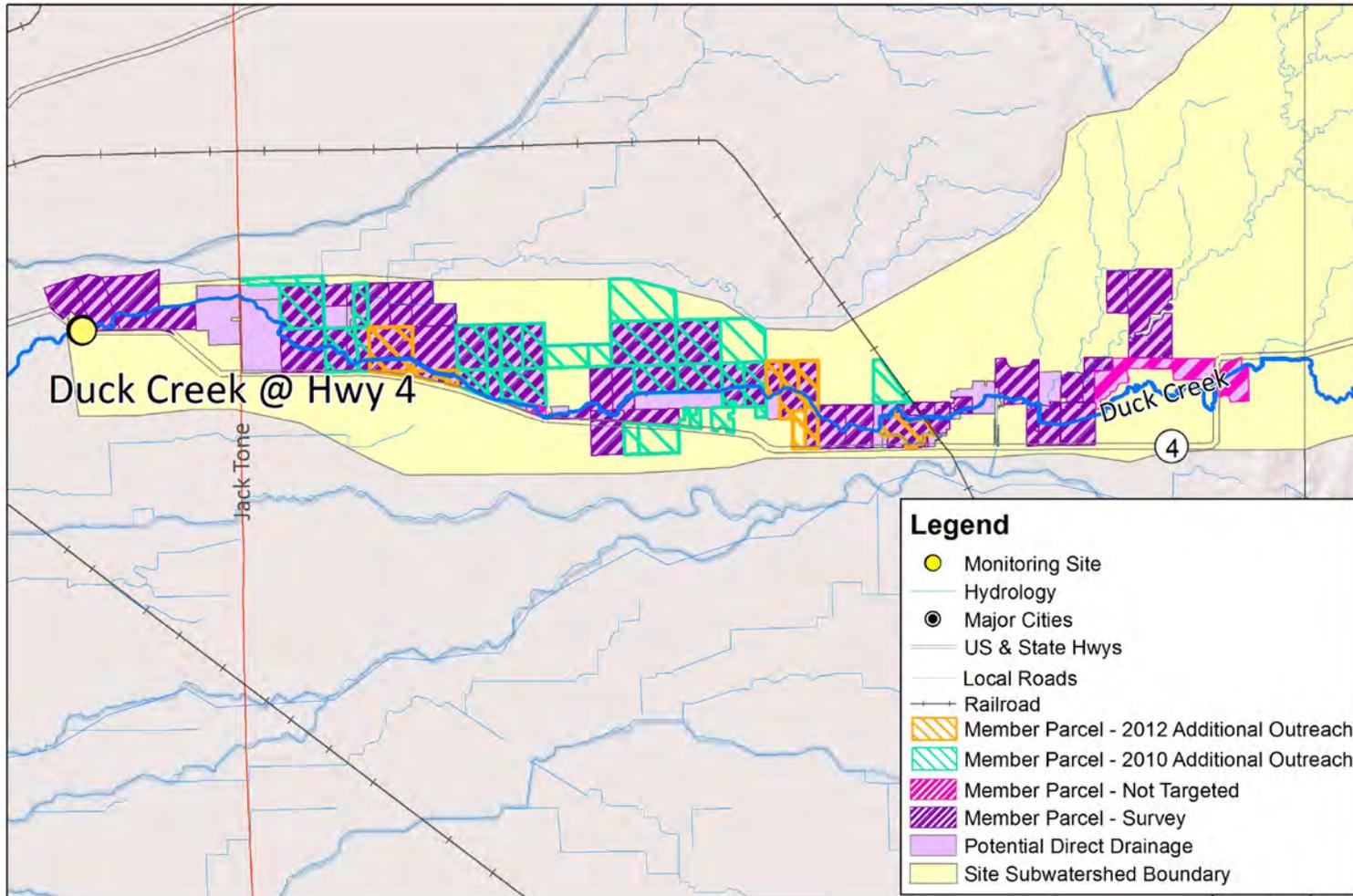
Values are percent of acreage contacted.

QUESTION TYPE	SURVEY QUESTION	FIRST PRIORITY			SECOND PRIORITY
		DUCK CREEK @ HWY 4 (563 ACRES)	LONE TREE CREEK @ JACK TONE RD (264 ACRES)	UNNAMED DRAIN TO LONE TREE CREEK (1,238 ACRES)	LITTLEJOHNS CREEK @ JACK TONE RD (645 ACRES)
Application and Irrigation	Currently applying chlorpyrifos	0%	34%	0%	0% ¹
	Spray drift into creek	0%	0%	97%	60%
	Storm or irrigation runoff into the creek	100%	0%	97%	0%
Current Management Practices (2012)	Installation of retention pond / holding basin / return systems	0%	100%	0%	13%
	Installation of sprinkler or micro irrigation when an option	64%	0%	100%	100%
	Reduce runoff water volumes using irrigation management	51%	100%	100%	100%
	Reduce use of the pesticide types found in exceedance	100%	0%	100%	100%
	Use of center grass rows, grass waterways, or grass filter strips	64%	0%	100%	100%

¹One grower did not indicate whether or not they currently apply chlorpyrifos.

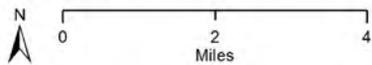
Figure 4. Duck Creek @ Hwy 4 member parcels with direct drainage potential.

Parcels with additional outreach are indicated for additional outreach completed in 2010 and 2012.



Source of Layers:
 Hydrology - NHD hydrodata, 1:24,000-scale, <http://nhd.usgs.gov/>
 Roads, highways, railroads, county boundary, city outlines - California Spatial Information Library.
 Parcel Layer - Contra Costa County, 2011, San Joaquin County, 2011
 Basemap, Shaded Relief - ESRI
 Datum - NAD 1983

Date Prepared: 03/11/13
 SJCDWQC

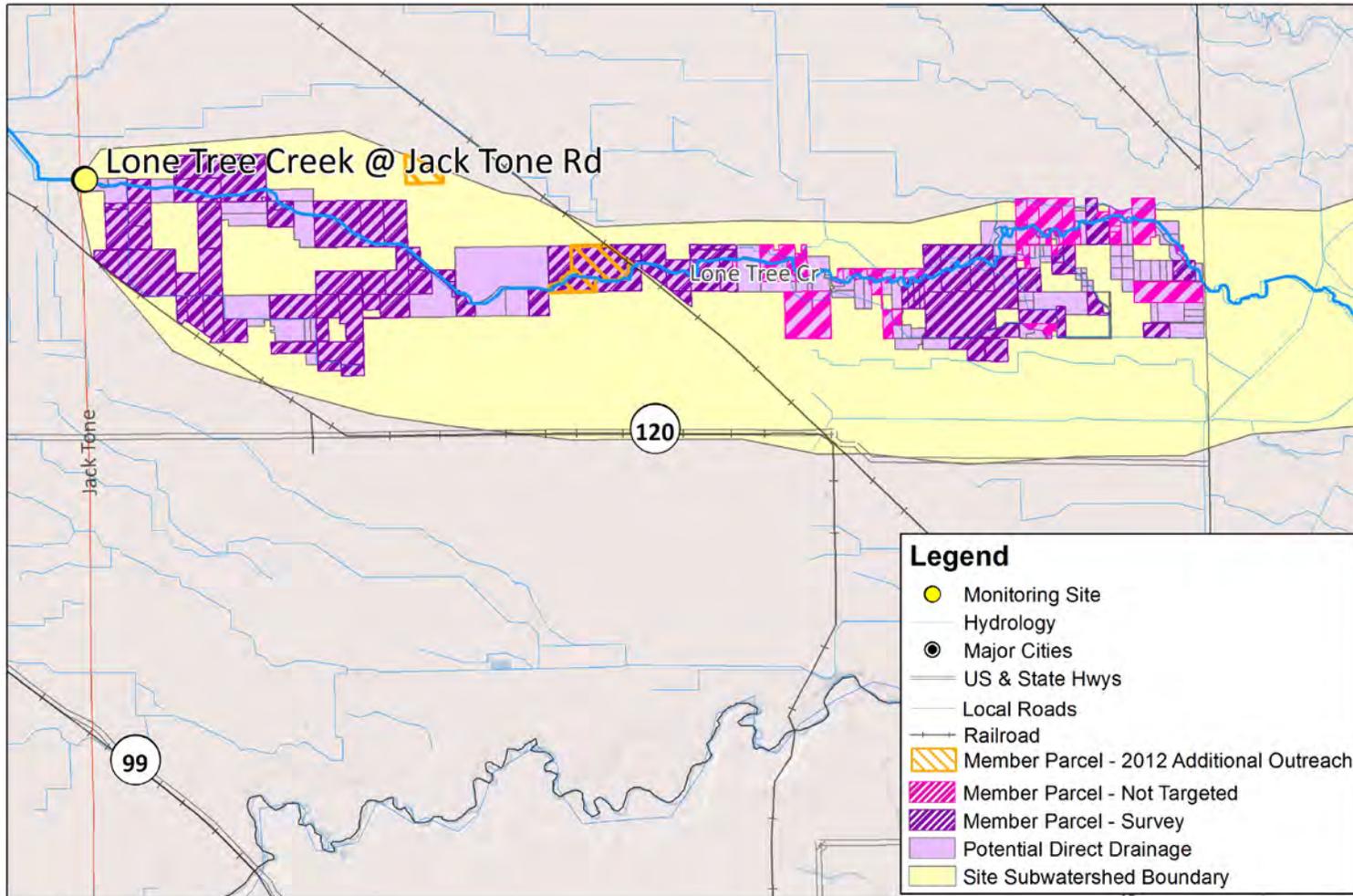


**Duck Creek @ Hwy 4 -
 1st Priority Subwatershed Parcels**

SJCDWQC_2012

Figure 5. Lone Tree Creek @ Jack Tone Rd member parcels with direct drainage potential.

Parcels with additional outreach are indicated for additional outreach completed in 2012.



Source of Layers:
 Hydrology - NHD hydrodata, 1:24,000-scale, <http://nhd.usgs.gov/>
 Roads, highways, railroads, county boundary, city outlines - California Spatial Information Library.
 Parcel Layer - Contra Costa County 2011, San Joaquin County: 2011
 Basemap, Shaded Relief - ESRI
 Datum - NAD 1983

Date Prepared: 03/11/13
 SJCDWQC

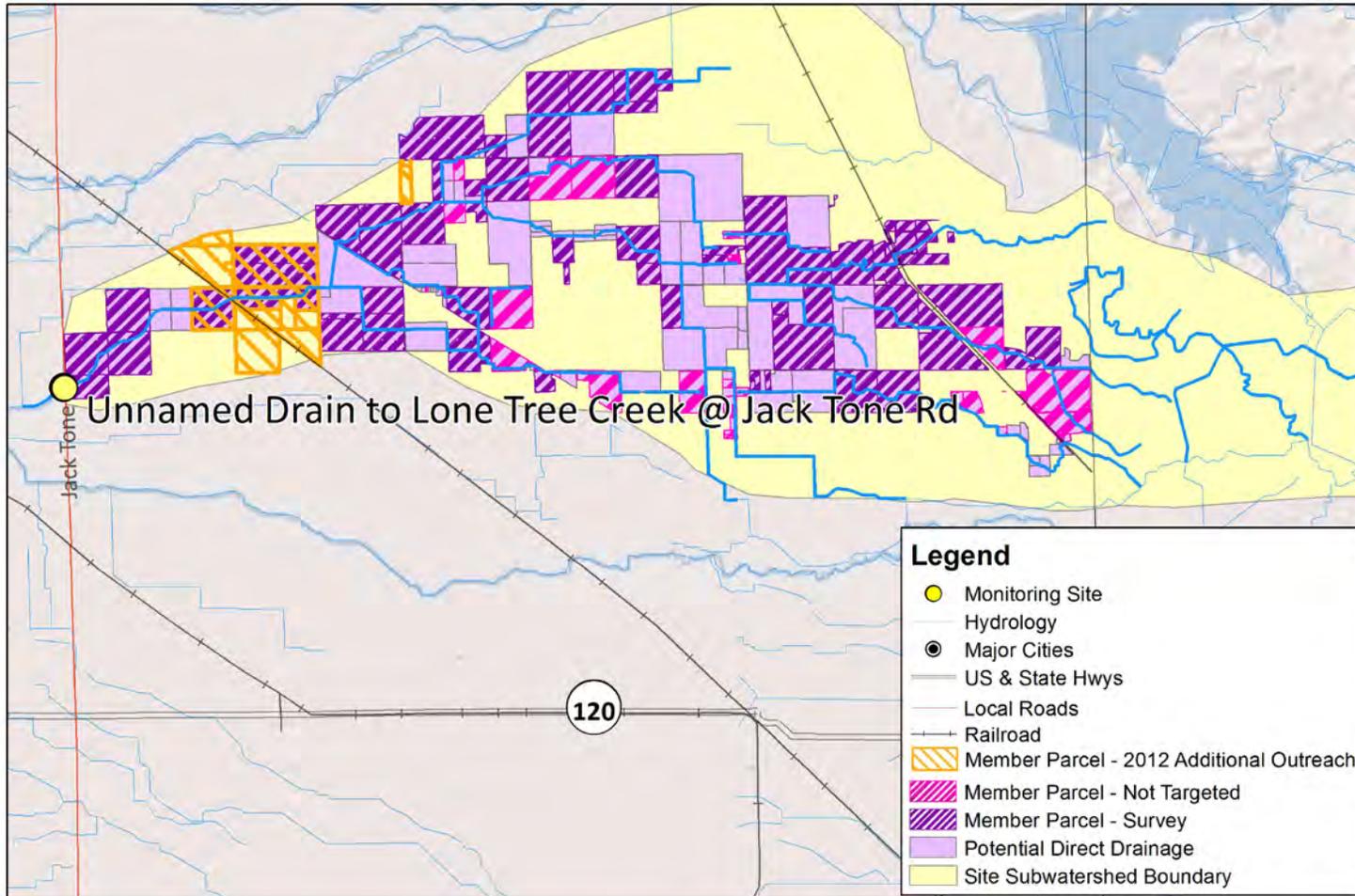


**Lone Tree Creek @ Jack Tone Rd -
 1st Priority Subwatershed Parcels**

SJCDWQC_2012

Figure 6. Unnamed Drain to Lone Tree Creek @ Jack Tone Rd member parcels with direct drainage potential.

Parcels with additional outreach are indicated for additional outreach completed in 2012.



Source of Layers:
 Hydrology - NHD hydrodata, 1:24,000-scale, <http://nhd.usgs.gov/>
 Roads, highways, railroads, county boundary, city outlines - California Spatial Information Library.
 Parcel Layer - Contra Costa County: 2011, San Joaquin County: 2011
 Basemap, Shaded Relief - ESRI
 Datum - NAD 1983

Date Prepared: 03/11/13
 SJCDWQC

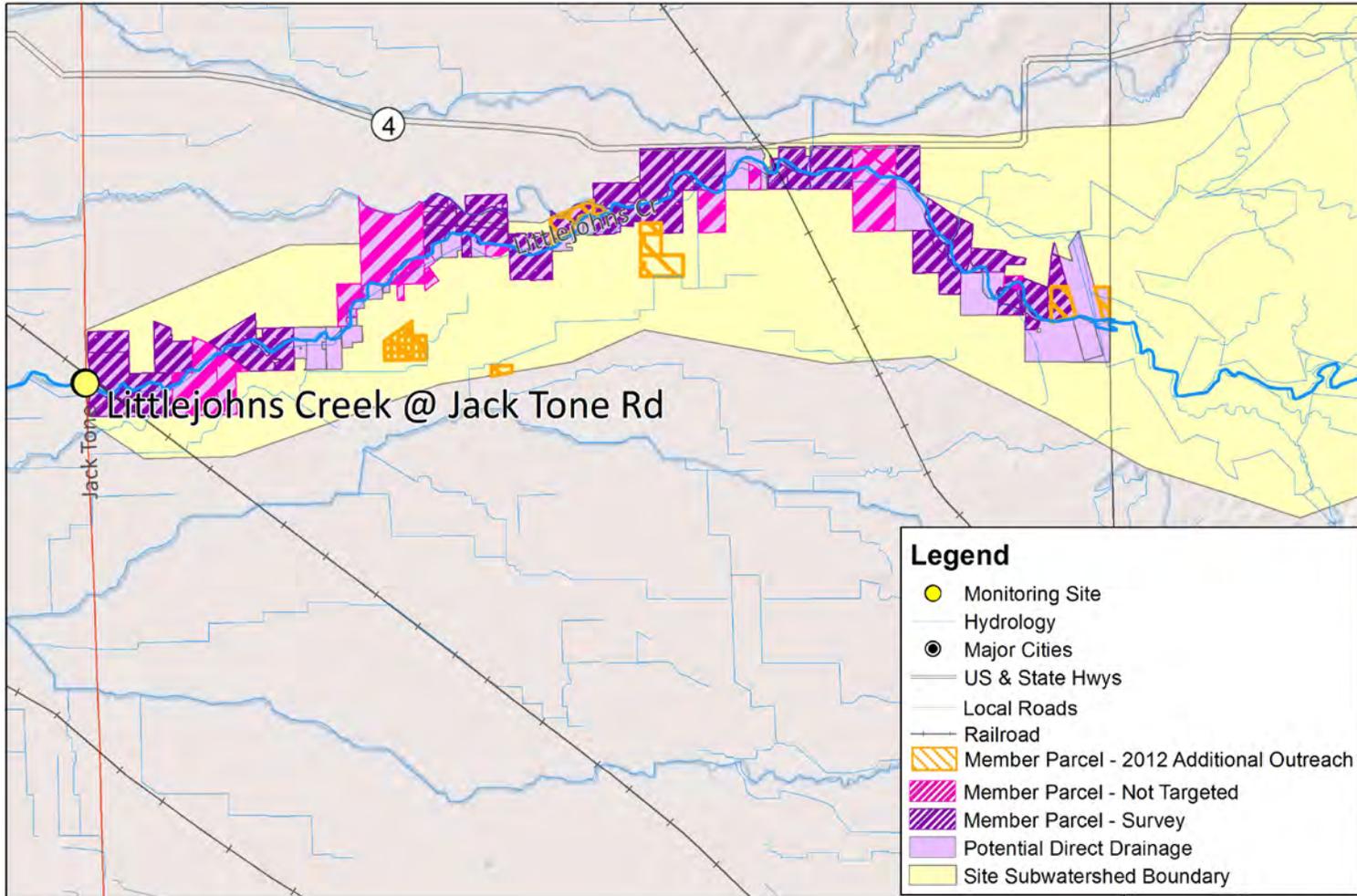


**Unnamed Drain to Lone Tree Creek @ Jack Tone Rd -
 1st Priority Subwatershed Parcels**

SJCDWQC_2012

Figure 7. Littlejohns Creek @ Jack Tone Rd member parcels with direct drainage potential.

Parcels with additional outreach are indicated for additional outreach completed in 2012.



Source of Layers:
 Hydrology - NHD hydrodata, 1:24,000-scale, <http://nhd.usgs.gov/>
 Roads, highways, railroads, county boundary, city outlines - California Spatial Information Library.
 Parcel Layer - Contra Costa County: 2011, San Joaquin County: 2011
 Basemap, Shaded Relief - ESRI
 Datum - NAD 1983

Date Prepared: 03/11/13
 SJCDWQC



**Littlejohns Creek @ Jack Tone Rd -
 1st Priority Subwatershed Parcels**

SJCDWQC_2012

THIRD PRIORITY SUBWATERSHEDS SUMMARY OF MANAGEMENT PRACTICES (2011-2013)

Focused outreach to document current management practices and track implementation of additional management practices in third priority site subwatersheds began in 2011 and is scheduled to continue through 2013. The third priority site subwatersheds are French Camp Slough @ Airport Way, Mokelumne River @ Bruella Rd and Terminous Tract Drain @ Hwy 12. The Coalition completed initial contacts with all targeted growers (members who were determined to have direct drainage, were currently farming and were applying pesticides of concern) in the third priority site subwatersheds. One hundred percent of targeted growers completed surveys documenting current and recommended management practices in French Camp Slough @ Airport Way (13 growers), Mokelumne River @ Bruella Rd (12 growers) and Terminous Tract Drain @ Hwy 12 (4 growers) site subwatersheds (Table 11). The management practice surveys focused primarily on pesticide application management and runoff management. The following sections include an analysis of practices current in 2010.

Follow up contacts were initiated with growers who indicated they intended to implement additional practices in 2011. Postcard surveys were mailed in January 2012. Growers completed individual follow up surveys to record newly implemented management practices. If growers were unable to implement an intended management practices, they were encouraged to specify a reason. All contacted growers completed and returned follow up surveys. The Coalition provides an evaluation of newly implemented management practices for all third priority site subwatersheds in the following sections.

French Camp Slough @ Airport Way

Between 2011 and 2012, the Coalition contacted 13 targeted growers representing 3,767 acres within the French Camp Slough @ Airport Way site subwatershed (Table 11). Management practices were documented for 45% of the acreage identified as having direct drainage (Figure 8). Grower meetings were conducted in 2011 and 100% of targeted members returned surveys with their current management practice information. A full summary of those management practices (2010) and management practices to be implemented (2011) can be found in the 2012 MPUR (pages 50-54). All 13 growers indicated that they intended to implement new management practices in 2011, and follow up surveys were sent to all growers in January 2012. The Coalition received 100% of follow up surveys.

Summary of Implemented Management Practices (2011)

A final analysis of follow up surveys indicate that reducing runoff water volumes using irrigation management and reducing use of the pesticide of concern were the most popular newly implemented practices; each accounting for 33% of the acreage with new management practices (Figure 9). The two most popular management practices also had the highest implementation rate; they were both implemented on 100% of the acres where growers planned to implement them (Table 20). While installation of sprinkler or micro irrigation was only implemented on 19% of acreage, it had an implementation rate of 84% compared to the acres on which it was planned to be implemented (Figure

9, Table 20). Treating runoff waters with PAM or another material was not implemented by either grower that indicated they would implement that practice. However, both growers implemented a different management practice instead. One of the growers reduced runoff water volume using irrigation management and the other grower indicated that they now apply pesticides under safe weather conditions (Table 20). Other management practices implemented in 2011 included the installation of retention pond/holding basin/return systems and use of center grass rows, grass waterways, or grass filter strips (Figure 9). Of the acreage associated with members contacted in French Camp Slough, 93% is associated with increased irrigation management and 95% associated with reduced use of pesticides such as chlorpyrifos (Figure 9).

Table 20. Acreage of planned and newly implemented practices in the French Camp Slough @ Airport Way site subwatershed.

Results are based on initial surveys and follow up surveys.

MANAGEMENT PRACTICE	ACREAGE: PRACTICE TO BE IMPLEMENTED IN 2011	ACREAGE: NEWLY IMPLEMENTED PRACTICE IN 2011	PERCENT IMPLEMENTED COMPARED TO PLANNED ACREAGE	PERCENT IMPLEMENTED COMPARED TO DIRECT DRAINAGE ACREAGE ¹
Installation of retention pond / holding basin / return systems	1,335	205	15%	5%
Installation of sprinkler or micro irrigation when an option	2,469	2,074	84%	55%
Reduce runoff water volumes using irrigation management	3,442	3,504	102%	93%
Reduce use of the pesticide types found in exceedance	3,562	3,562	100%	95%
Treat runoff waters with PAM or other materials	643	0	0%	0%
Use of center grass rows, grass waterways, or grass filter strips	2,216	1,388	63%	37%
Applying pesticides under safe weather conditions	0	58	NA	2%

¹Based on 3,767 contacted member acreage with direct drainage.

Figure 8. French Camp Slough @ Airport Way member parcels with direct drainage potential.

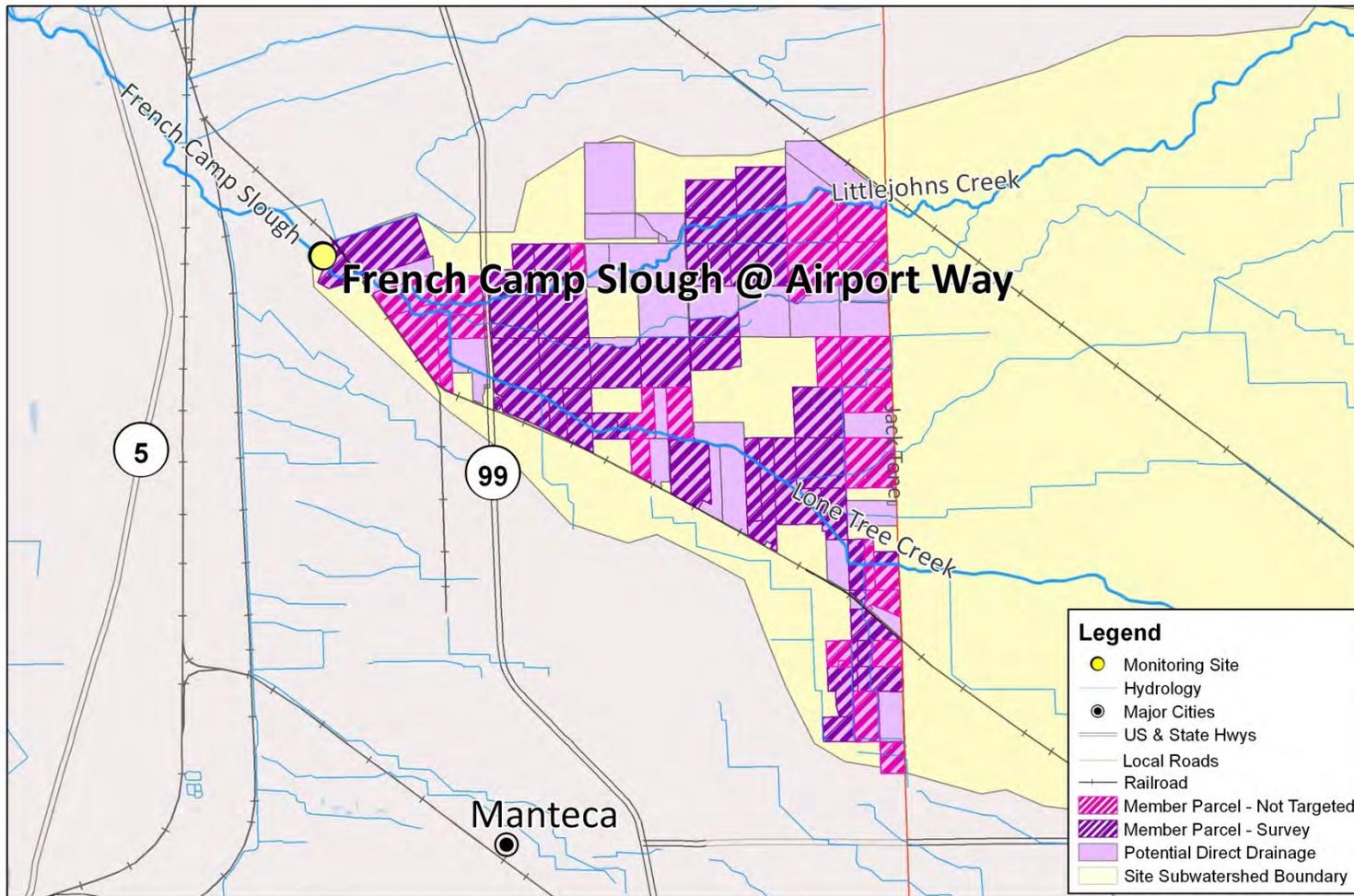
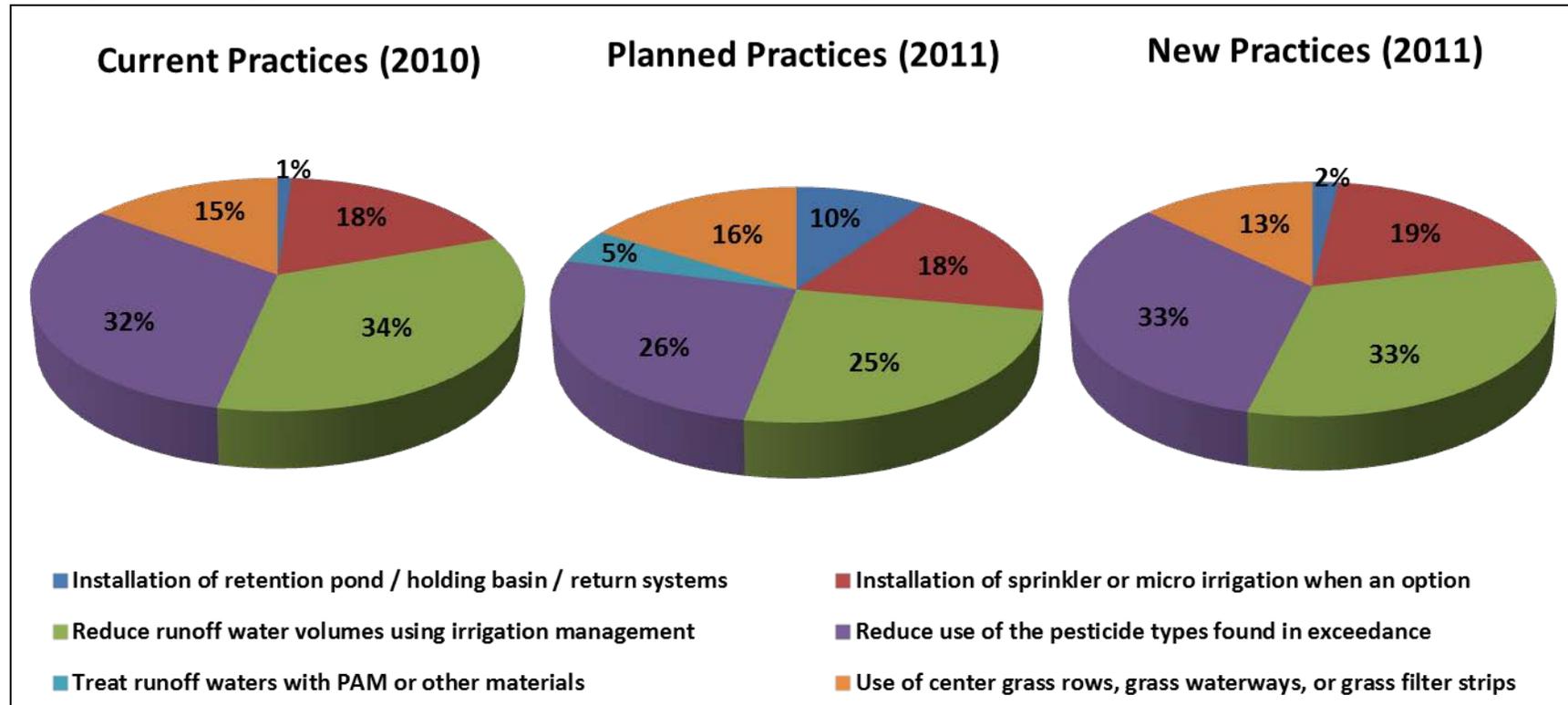


Figure 9. French Camp Slough @ Airport Way summary of management practices.

Percentage based on acreage associated with a specific practice compared to the summed acreage associated with all practices for each survey response.



Mokelumne River @ Bruella Rd

Between 2011 and 2012, the Coalition contacted 12 targeted growers representing 937 acres within the Mokelumne River @ Bruella Rd site subwatershed (Table 11). Management practices were documented for 10% of the acreage identified as having direct drainage (Figure 10). Grower meetings were conducted in 2011 and 100% of targeted members returned surveys with current management practice information. A full summary of those management practices (2010) and management practices to be implemented (2011) can be found in the 2012 MPUR (pages 56-60). Follow up surveys were sent in January 2012 to the 11 growers that indicated that they intended to implement new management practices in 2011. The Coalition received 100% of follow up surveys.

Summary of Implemented Management Practices (2011)

A final analysis of follow up surveys indicate that reducing use of the pesticide of concern and reducing runoff water volume using irrigation management were the most popular newly implemented practices accounting for 47% and 32% of the acreage with new management practices respectively (Figure 11). The two most popular management practices also had the highest implantation rate; they were both implemented on 100% of the acres on which growers planned to implement them (Table 21). Use of center grass rows, grass waterways, or grass filter strips, and installation of sprinkler or micro irrigation make up the remaining 21% of the newly implemented management practices recommended by the Coalition (Figure 11). Additionally, one grower implemented no till cover cropping on 369 acres which is not specifically recommended by the Coalition (Table 21). Of the acreage associated with members contacted in the Mokelumne River @ Bruella Rd site subwatershed, 96% is associated with reduced use of pesticides such as chlorpyrifos and 65% is associated with increased irrigation management (Table 21).

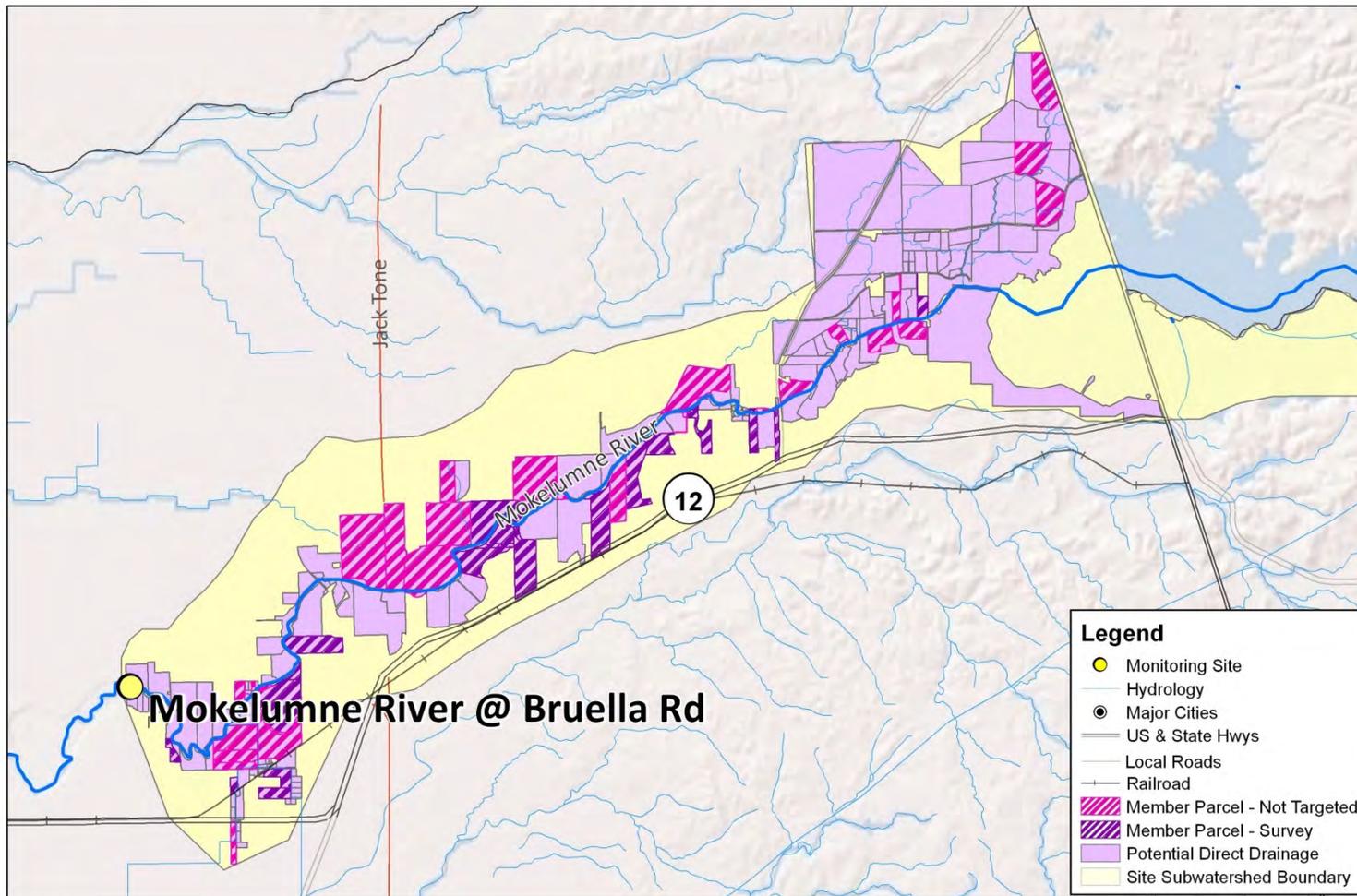
Table 21. Acreage of planned and newly implemented practices in the Mokelumne River @ Bruella site subwatershed.

Results are based on initial surveys and follow up surveys.

MANAGEMENT PRACTICE	ACREAGE: PRACTICE TO BE IMPLEMENTED IN 2011	ACREAGE: NEWLY IMPLEMENTED PRACTICE IN 2011	PERCENT IMPLEMENTED COMPARED TO PLANNED	PERCENT IMPLEMENTED COMPARED TO DIRECT DRAINAGE ACREAGE ¹
Installation of retention pond / holding basin / return systems	0	0	NA	NA
Installation of sprinkler or micro irrigation when an option	358	172	48%	18%
Reduce runoff water volumes using irrigation management	610	610	100%	65%
Reduce use of the pesticide types found in exceedance	898	898	100%	96%
Treat runoff waters with PAM or other materials	0	0	NA	NA
Use of center grass rows, grass waterways, or grass filter strips	378	227	60%	24%
No till cover cropping	0	369	NA	39%

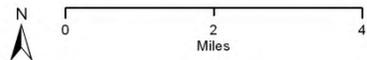
¹Based on 937 contacted member acreage with direct drainage.

Figure 10. Mokelumne River @ Bruella Rd member parcels with direct drainage potential.



Source of Layers:
 Hydrology - NHD hydrodata, 1:24,000-scale, <http://nhd.usgs.gov/>
 Roads, highways, railroads, county boundary, city outlines - California Spatial Information Library
 TRS - Teale Public Land Survey System, Pub. date, 20090101, California Spatial Information Library
 Basemap, Shaded Relief - ESRI
 GSC North America 1983

Date Prepared: 02/28/12
 SJCDWQC

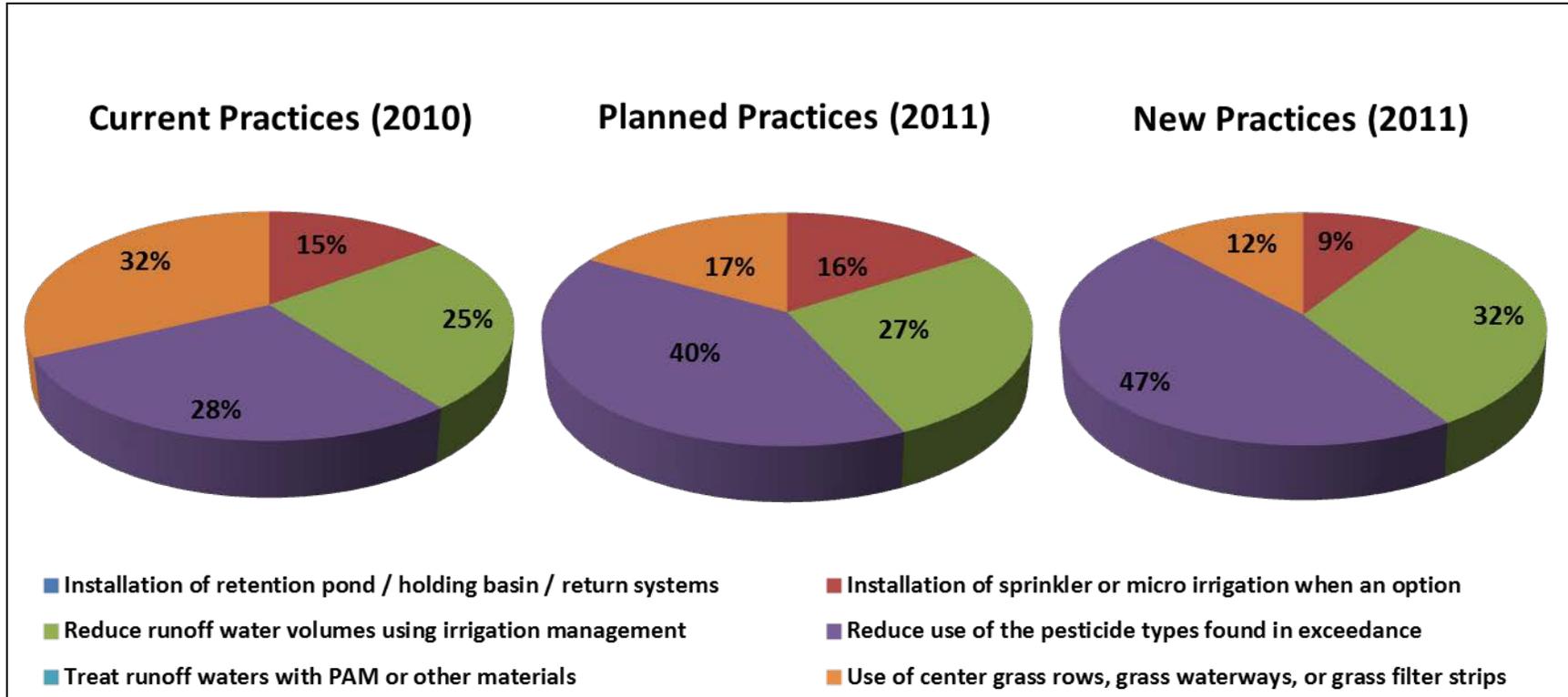


**Mokelumne River @ Bruella Rd -
 3rd Priority Subwatershed Parcels**

SJCDWQC_2011_v2

Figure 11. Mokelumne River @ Bruella Rd summary of management practices.

Percentage based on acreage associated with a specific practice compared to the summed acreage associated with all practices for each survey response.



Terminous Tract Drain @ Hwy 12

In 2011, the Coalition contacted four targeted growers representing 1,778 acres within the Terminous Tract Drain @ Hwy 12 site subwatershed (Table 11). Management practices were documented for 40% of the acreage identified as having direct drainage (Figure 12). Grower meetings were conducted during 2011 and 100% of targeted members returned surveys with current management practice information. A full summary of those management practices (2010) and management practices to be implemented (2011) can be found in the 2012 MPUR (pages 61-65). All four growers indicated that they intended to implement new management practices in 2011; follow up surveys were sent to all growers in January 2012. The Coalition received 100% of follow up surveys.

Summary of Implemented Management Practices (2011)

A total of five recommended management practices were planned for implementation in 2011. However, according to follow up survey results, only three of the five were implemented (Figure 13). Reducing water volume using irrigation management accounted for 50% acreage on which new management practices were implemented. Installation of sprinkler or micro irrigation and use of center grass rows, grass waterways, or grass filter strips make up the remaining 50% (Figure 13). Although use of center grass rows, grass waterways or grass filter strips only accounted for 14% of the newly implemented practices, it was implemented on 100% of planned acres. Reducing runoff water volume was also implemented on 100% of planned acres, and installation of sprinkler or micro irrigation was implemented on 71% of planned acres (Table 22). Of the acreage associated with members contacted in the Terminous Tract Drain @ Hwy 12 site subwatershed, 100% is associated with increased irrigation management and 71% is associated with installation of more efficient irrigation systems (Table 22).

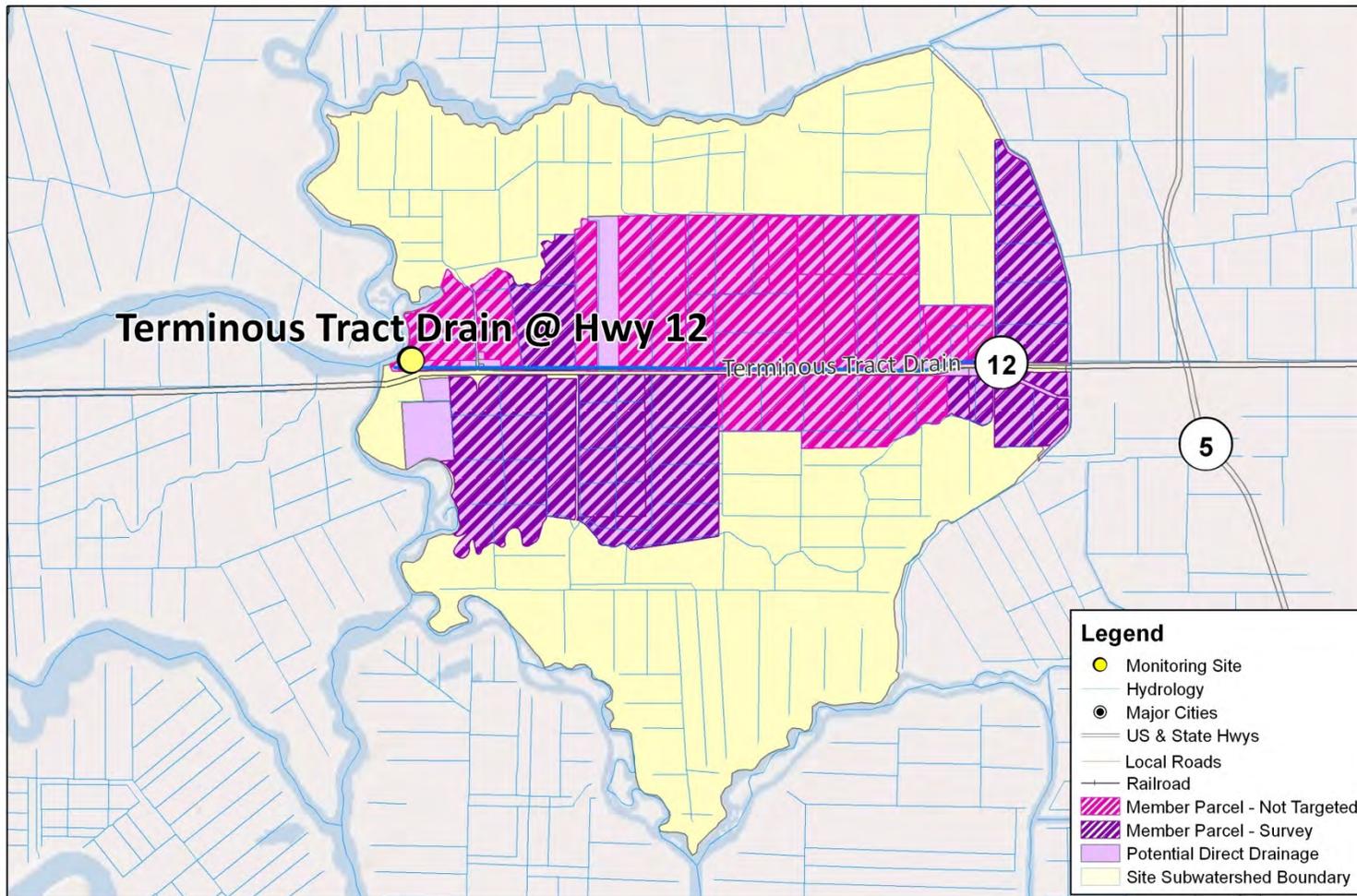
Table 22. Acreage of planned and newly implemented practices in the Terminous Tract Drain @ Hwy 12 site subwatershed.

Results are based on initial surveys and follow up surveys.

MANAGEMENT PRACTICE	ACREAGE: PRACTICE TO BE IMPLEMENTED IN 2011	ACREAGE: NEWLY IMPLEMENTED PRACTICE IN 2011	PERCENT IMPLEMENTED COMPARED TO PLANNED	PERCENT IMPLEMENTED COMPARED TO DIRECT DRAINAGE ACREAGE ¹
Installation of retention pond / holding basin / return systems	1,263	0	0%	0%
Installation of sprinkler or micro irrigation when an option	1,778	1,263	71%	71%
Reduce runoff water volumes using irrigation management	1,778	1,778	100%	100%
Reduce use of the pesticide types found in exceedance	1,778	0	0%	0%
Treat runoff waters with PAM or other materials	0	0	NA	NA
Use of center grass rows, grass waterways, or grass filter strips	515	515	100%	29%

¹Based on 1,778 contacted member acreage with direct drainage.

Figure 12. Terminous Tract Drain @ Hwy 12 member parcels with direct drainage potential.



Source of Layers:
 Hydrology - NHD hydrodata, 1:24,000-scale, <http://nhd.usgs.gov/>
 Roads, highways, railroads, county boundary, city outlines - California Spatial Information Library
 TRS - Teale Public Land Survey System, Pub. date, 20090101, California Spatial Information Library
 Basemap, Shaded Relief - ESRI
 GSC North America 1983

Date Prepared: 02/28/12
 SJCDWQC

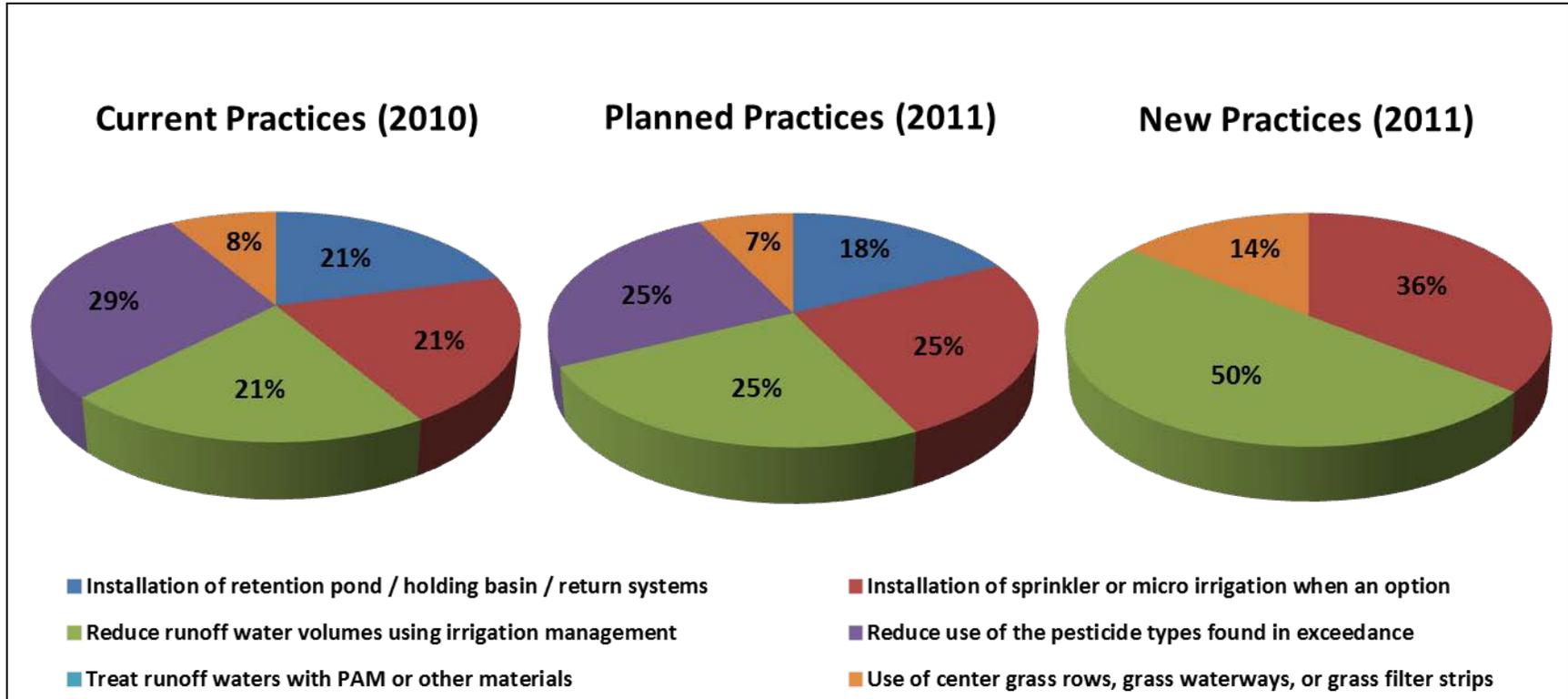


Terminous Tract Drain @ Hwy 12 - 3rd Priority Subwatershed Parcels

SJCDWQC_2011_v2

Figure 13. Terminous Tract Drain @ Hwy 12 summary of management practices.

Percentage based on acreage associated with a specific practice compared to the summed acreage associated with all practices for each survey response.



FOURTH PRIORITY SUBWATERSHEDS SUMMARY OF MANAGEMENT PRACTICES (2012-2014)

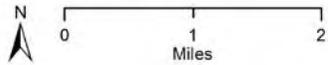
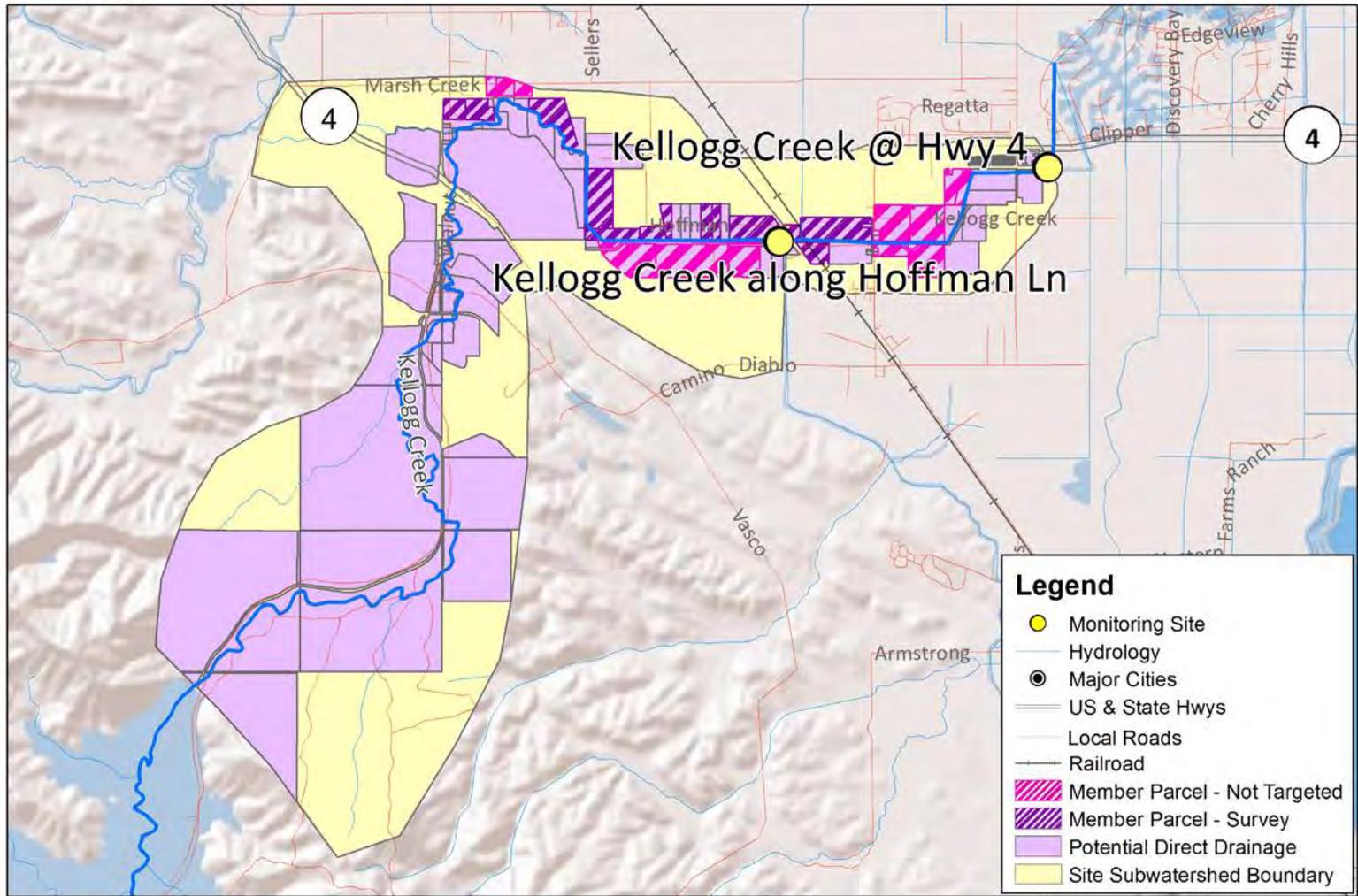
Focused outreach to document current management practices and track implementation of additional management practices in fourth priority site subwatersheds began in 2012 and is scheduled to continue through 2014. The fourth priority site subwatersheds are Kellogg Creek along Hoffman Ln, Mormon Slough @ Jack Tone Rd, and Sand Creek @ Hwy 4 Bypass. The Coalition initiated outreach with targeted growers in the Kellogg Creek along Hoffman Ln (10 growers), Mormon Slough @ Jack Tone Rd (29 growers) and Sand Creek @ Hwy 4 Bypass (1 grower) site subwatersheds by way of grower meetings held in January 2012. One member in the Kellogg Creek along Hoffman Ln site subwatershed and two members in the Mormon Slough @ Jack Tone Rd site subwatershed did not return management practice surveys and are in the process of being removed from the Coalition.

In early 2013, follow up survey postcards were sent to growers who indicated on their initial surveys that they would be implementing additional management practices by the end of 2012. Growers recorded newly implemented management practices on the surveys they were mailed and then returned them to the Coalition. To date, 21 of 34 members have returned follow up surveys for the three site subwatersheds. A preliminary evaluation of newly implemented management practices for all fourth priority site subwatersheds is included in the following section. A final analysis of newly implemented management practices will be included in the 2014 MPUR.

Kellogg Creek along Hoffman Ln

In 2012, the Coalition contacted 10 targeted growers representing 402 acres in the Kellogg Creek along Hoffman Ln site subwatershed (Table 12). Management practices were documented for 8% of the acreage identified as having direct drainage (Figure 14). One-hundred percent of the contacted growers returned an initial survey, and all ten growers indicated they were going to implement new practices in 2012. Growers in the Kellogg Creek along Hoffman Ln site subwatershed were sent a follow up survey in early 2013 and 50% of the follow up surveys have been returned. The following section contains a summary of 2011 current management practices, 2012 planned management practices, and a preliminary summary of 2012 newly implemented management practices.

Figure 14. Kellogg Creek along Hoffman Ln member parcels with direct drainage potential.



**Kellogg Creek along Hoffman Ln & @ Hwy 4 -
 4th Priority Subwatershed Parcels**

SJCDWQC_2012

Current (2011), Planned (2012), and Implemented (2012) Management Practices

Survey responses by members in the Kellogg Creek along Hoffman Ln site subwatershed indicate that 137 acres with recorded management practices have irrigation runoff leaving the fields and 66 acres have storm water runoff leaving the fields (Figure 15). The most common management practices that members were implementing when focused outreach began were reducing runoff water volumes, installation of sprinkler or micro irrigation, and use of center grass rows/grass waterways/grass filter strips (Figure 16). In 2011, all targeted members in the Kellogg Creek along Hoffman Ln site subwatershed had one or more management practices currently in place that were specific to runoff management or pesticide application management.

Returned surveys indicate each of the six recommended management practices are planned for implementation in 2012 by at least one grower. The most common management practices planned for implementation in 2012 were reducing runoff water volume, reducing the use of the pesticide of concern, and installation of sprinkler or micro irrigation (Figure 16).

Based on the follow up surveys the Coalition has received thus far, reducing runoff water volumes and reducing the use of pesticides of concern are the most common new practices implemented in 2012 (Figure 16). Currently, those two practices have been implemented on 33% and 30%, respectively, of the acres that growers planned to implement them on. Based on preliminary data, growers implemented new management practices on 23% of the acreage that practices were planned (Table 23). Of the acreage associated with members contacted in the Kellogg Creek along Hoffman Ln site subwatershed, 28% is associated increased irrigation management and 23% is associated with reduced use of pesticides such as chlorpyrifos (Table 23).

Table 23. Acreage of 2012 planned and newly implemented practices in the Kellogg Creek along Hoffman Ln site subwatershed.

Results are based on initial surveys and follow up surveys.

MANAGEMENT PRACTICE	ACREAGE: PLANNED PRACTICES IN 2012	ACREAGE: NEWLY IMPLEMENTED PRACTICE IN 2012 [†]	PERCENT IMPLEMENTED COMPARED TO PLANNED	PERCENT IMPLEMENTED COMPARED TO DIRECT DRAINAGE ACREAGE ¹
Installation of retention pond / holding basin / return systems	15	0	0%	0%
Installation of sprinkler or micro irrigation when an option	293	32	11%	8%
Reduce runoff water volumes using irrigation management	339	113	33%	28%
Reduce use of the pesticide types found in exceedance	308	93	30%	23%
Treat runoff waters with PAM or other materials	89	0	0%	0%
Use of center grass rows, grass waterways, or grass filter strips	186	32	17%	8%
No Response	0	15	NA	4%

[†]Newly implemented practices acreage is preliminary; not all follow up surveys have been returned.

¹Based on 402 member acres targeted within direct drainage.

Figure 15. Kellogg Creek along Hoffman Ln targeted member acreage with irrigation or storm runoff.

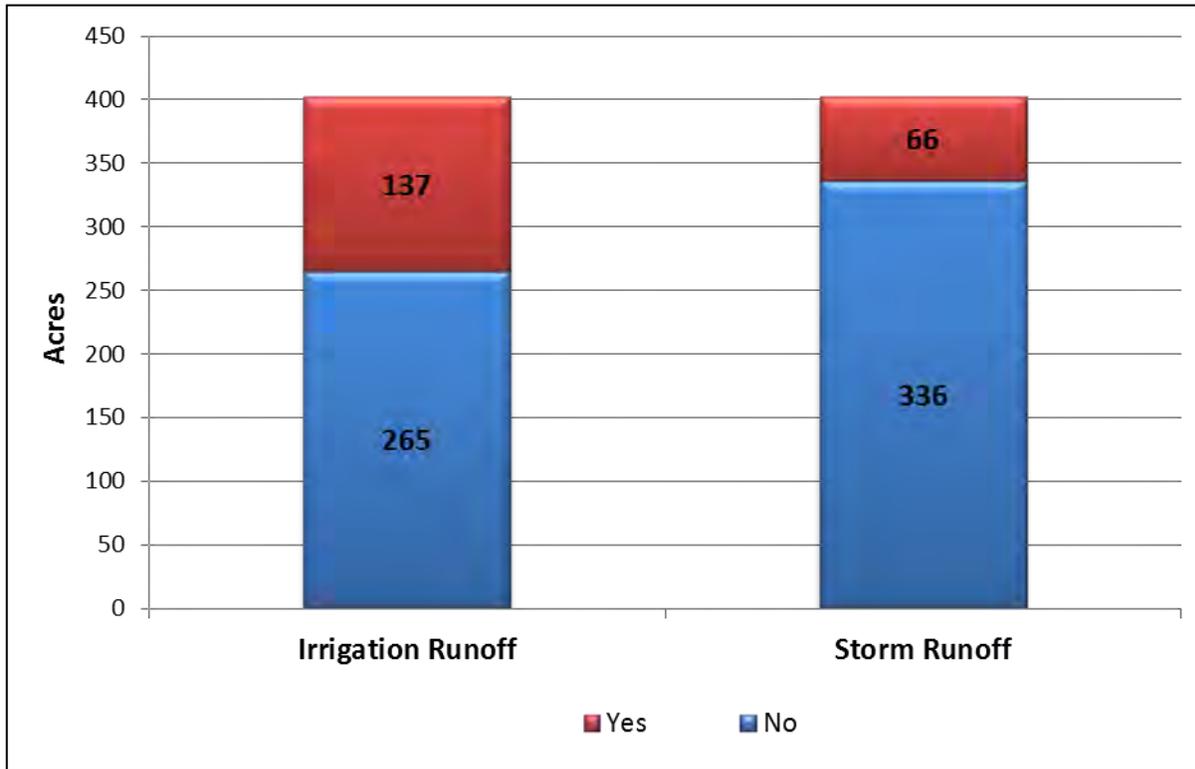
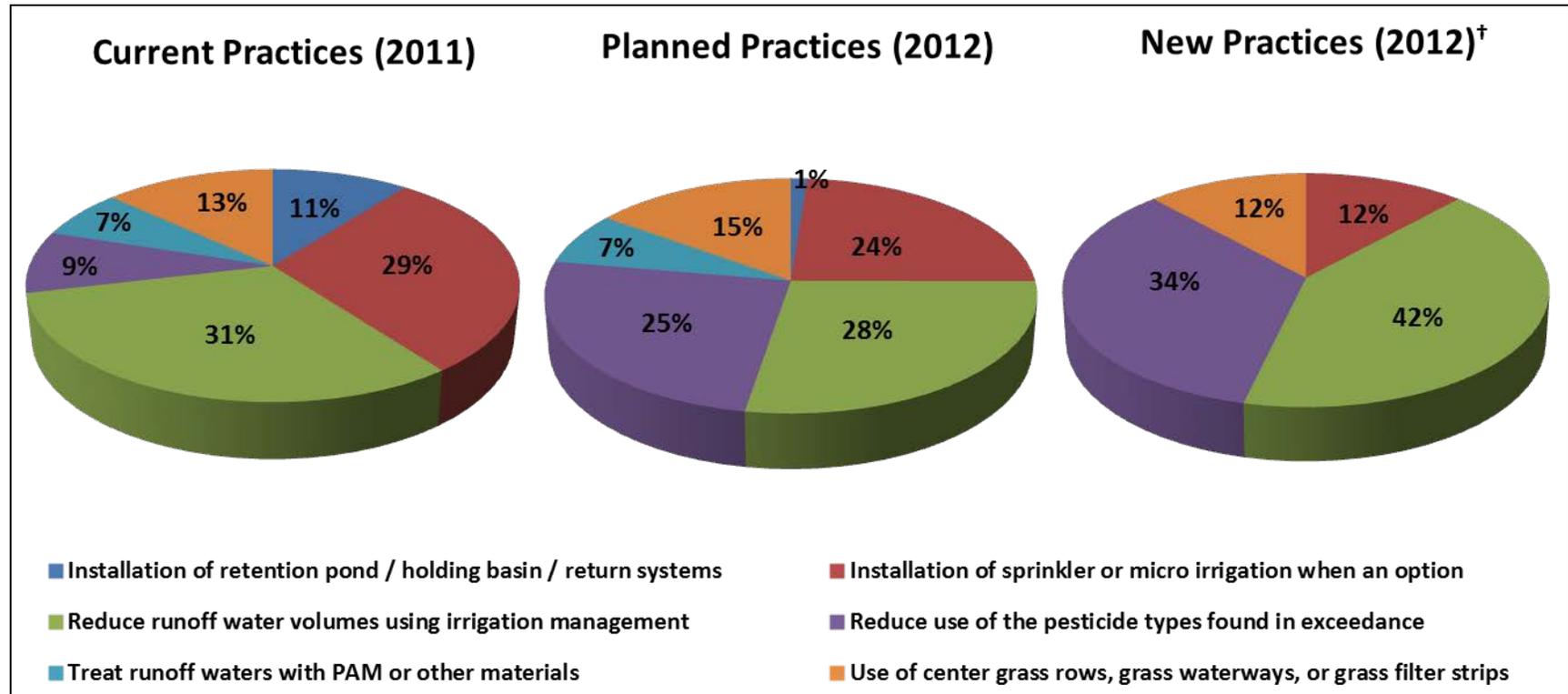


Figure 16. Kellogg Creek along Hoffman Ln summary of management practices.

Percentage based on acreage associated with a specific practice compared to the summed acreage associated with all practices for each survey response.

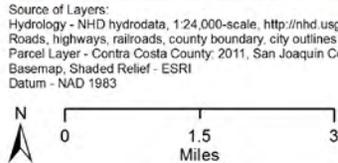
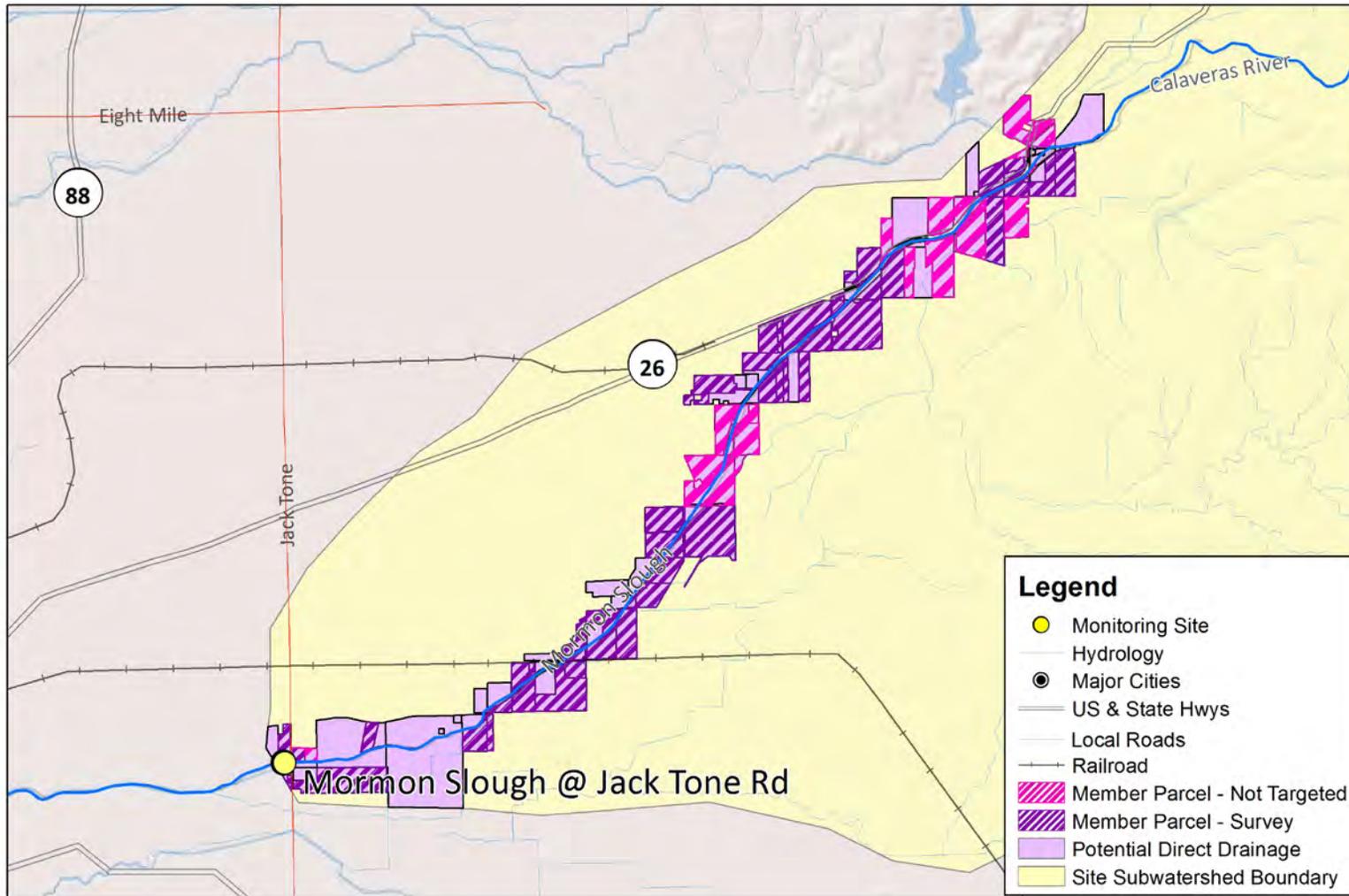


[†]Preliminary data; not all follow up surveys have been returned.

Mormon Slough @ Jack Tone Rd

In 2012, the Coalition contacted 29 targeted growers representing 1,789 acres in the Mormon Slough @ Jack Tone Rd site subwatershed (Table 12). Management practices were documented for 42% of the acreage identified as having direct drainage (Figure 17). One-hundred percent of the contacted growers returned an initial survey, and 28 growers indicated they were going to implement new practices in 2012. Growers in the Mormon Slough @ Jack Tone Rd site subwatershed were sent a follow up survey in early 2013 and 54% of the follow up surveys have been returned. The following section contains a summary of 2011 current management practices, 2012 planned management practices, and a preliminary summary of 2012 newly implemented management practices.

Figure 17. Mormon Slough @ Jack Tone Rd member parcels with direct drainage potential.



Mormon Slough @ Jack Tone Rd - 4th Priority Subwatershed Parcels

SJCDWQC_2012

Current (2011), Planned (2012), and Implemented (2012) Management Practices

Survey responses by members in the Mormon Slough @ Jack Tone Rd site subwatershed indicate that 28 acres have irrigation runoff and 1092 acres have storm water runoff leaving the fields (Figure 18). The most common management practices already implemented by members when focused outreach began were reducing use of the pesticide of concern, reducing runoff water volumes, and installing sprinkler or micro irrigation systems (Figure 19). In 2011, all targeted members in the Mormon Slough @ Jack Tone Rd site subwatershed had one or more management practices currently in place that were specific to runoff management or pesticide application management.

Returned surveys indicate that five of the six recommended management practices are planned for implementation by growers. The most common practices planned for implementation in 2012 were reducing use of the pesticides of concern, reducing runoff water volume, and installation of sprinkler or micro irrigation systems (Figure 19).

Based on the follow up surveys the Coalition has received thus far, reducing the use of pesticides of concern and reducing runoff water volume were the most common new practices implemented in 2012 (Figure 19). Currently, those two practices have been implemented on 79% and 61%, respectively, of the acres on which growers planned to implement them. In 2012, growers implemented new management practices on 58% of the acreage that practices were planned for according to the preliminary data (Table 24). Of the acreage associated with members contacted in the Mormon Slough @ Jack Tone Rd site subwatershed, 56% is associated with reduced use of pesticides such as chlorpyrifos and 27% is associated with increased irrigation management (Table 24).

Table 24. Acreage of 2012 planned and newly implemented practices in the Mormon Slough @ Jack Tone Rd site subwatershed.

Results are based on initial surveys and follow up surveys.

MANAGEMENT PRACTICE	ACREAGE: PLANNED PRACTICES IN 2012	ACREAGE: NEWLY IMPLEMENTED PRACTICE IN 2012 [†]	PERCENT IMPLEMENTED COMPARED TO PLANNED	PERCENT IMPLEMENTED COMPARED TO DIRECT DRAINAGE ACREAGE [‡]
Installation of retention pond / holding basin / return systems	0	0	NA	NA
Installation of sprinkler or micro irrigation when an option	362	82	23%	5%
Reduce runoff water volumes using irrigation management	784	479	61%	27%
Reduce use of the pesticide types found in exceedance	1,255	994	79%	56%
Treat runoff waters with PAM or other materials	63	0	0%	0%
Use of center grass rows, grass waterways, or grass filter strips	93	81	88%	5%
No Response	287	0	NA	0%

[†]Newly implemented practices acreage is preliminary; not all follow up surveys have been returned.

[‡]Based on 1,789 contacted member acreage with direct drainage.

Figure 18. Mormon Slough @ Jack Tone Rd targeted member acreage with irrigation or storm runoff.

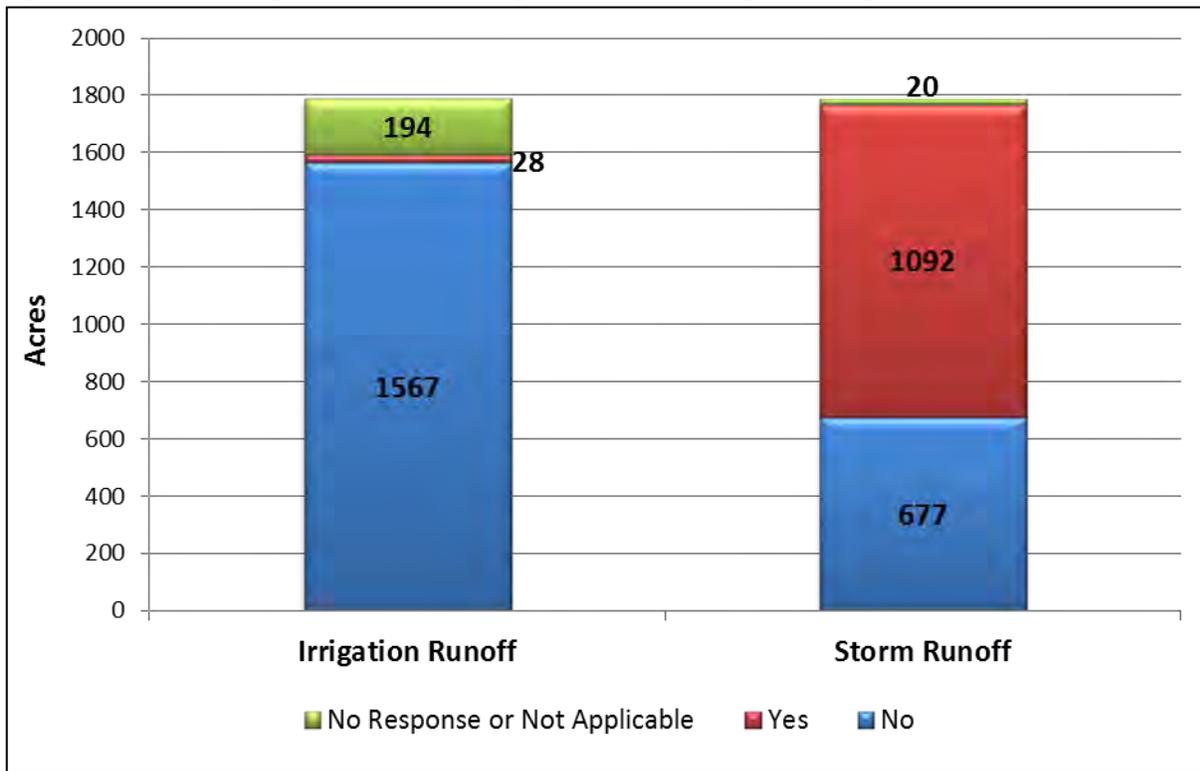
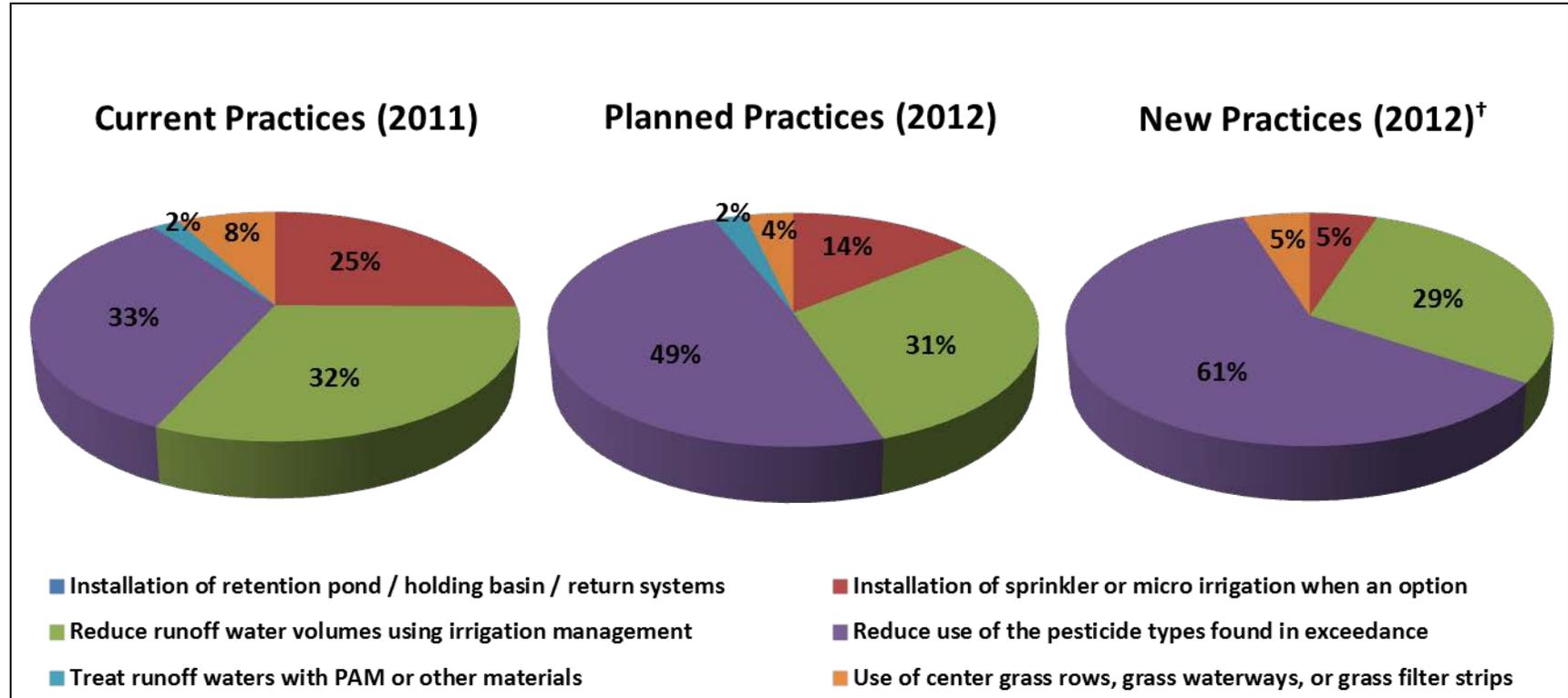


Figure 19. Mormon Slough @ Jack Tone Rd summary of management practices.

Percentage based on acreage associated with a specific practice compared to the summed acreage associated with all practices for each survey response.

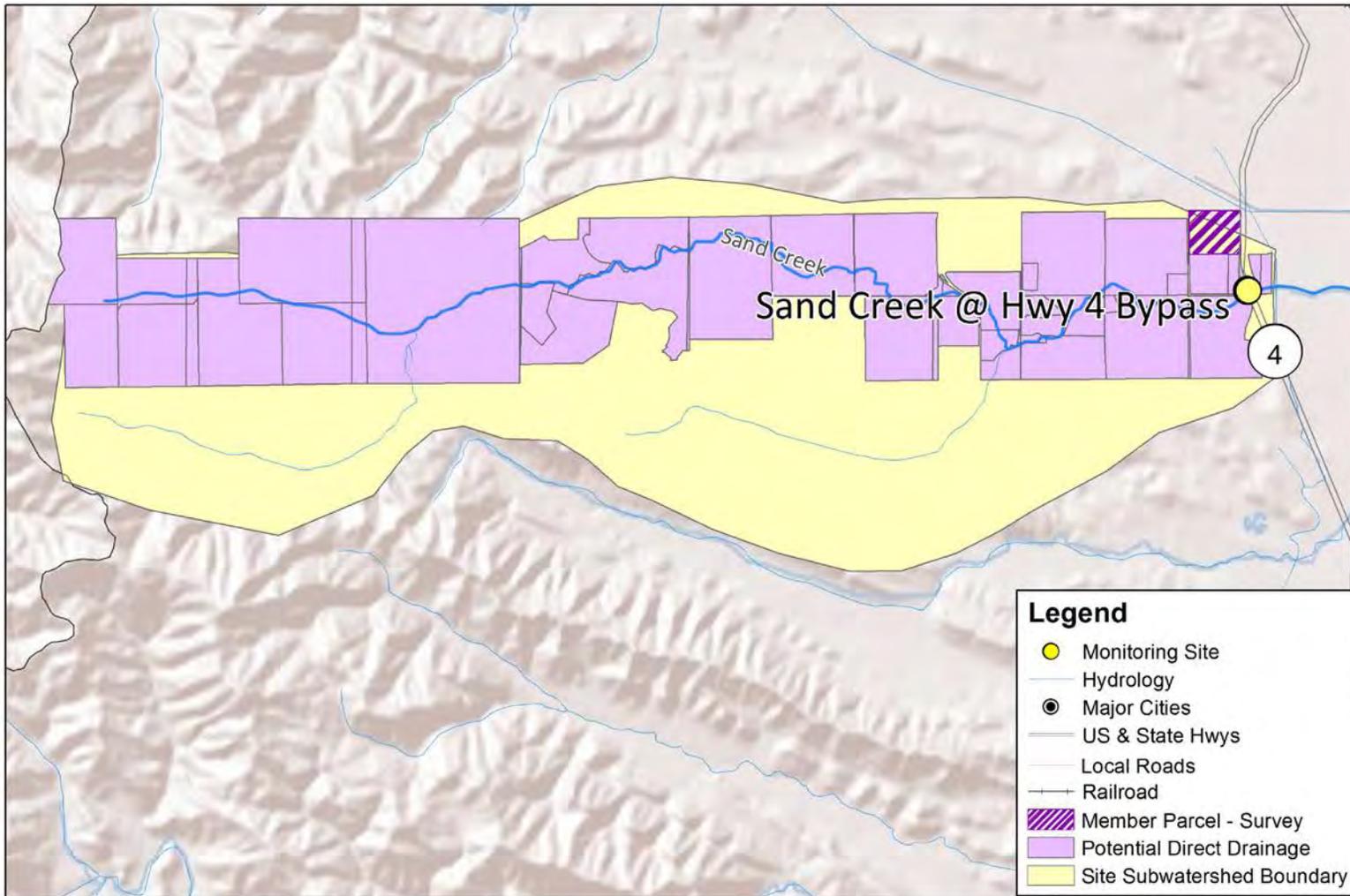


[†]Preliminary data; not all follow up surveys have been returned.

Sand Creek @ Hwy 4 Bypass

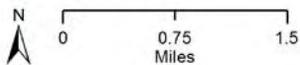
In 2012, the Coalition contacted a single targeted grower representing 116 acres in the Sand Creek @ Hwy 4 Bypass site subwatershed (Table 12). Management practices were documented for 3% of the acreage identified as having direct drainage (Figure 20). A majority of the land use upstream of the monitoring location is not irrigated agriculture; this site subwatershed is not included in the SJCDWQC MRPP list of rotating Assessment Monitoring locations for this reason. The grower returned a survey with current management practices and management practices planned for 2012. The Grower was sent a follow up survey in early 2013 and the survey has been returned. The following section contains a summary of 2011 current management practices, 2012 planned management practices, and a complete summary of 2012 newly implemented management practices.

Figure 20. Sand Creek @ Hwy 4 Bypass member parcels with direct drainage potential.



Source of Layers:
 Hydrology - NHD hydrodata, 1:24,000-scale, <http://nhd.usgs.gov/>
 Roads, highways, railroads, county boundary, city outlines - California Spatial Information Library.
 Parcel Layer - Contra Costa County, 2011, San Joaquin County, 2011
 Basemap, Shaded Relief - ESRI
 Datum - NAD 1983

Date Prepared: 03/06/13
 SJCDWQC



Sand Creek @ Hwy 4 Bypass - 4th Priority Subwatershed Parcels

SJCDWQC_2012

Current (2011), Planned (2012), and Implemented (2012) Management Practices

The survey response by the member in the Sand Creek @ Hwy 4 Bypass site subwatershed indicated that both irrigation and storm runoff occur on the 116 acres farmed (Figure 21). Management practices that were implemented as of 2011 in the site subwatershed included reducing or eliminating use of pesticides found in exceedances of WQTLs, such as the installation of a drip irrigation system, and reduction of runoff water volume (Figure 22). The grower in Sand Creek indicated that in 2012 he intended to implement five of the six specifically recommended practices. The only recommended management practice the grower did not plan to implement in 2012 was the installation of a retention pond/holding basin/return system. On the follow up survey returned in January 2013, the grower indicated that they implemented three out of the five practices planned. The grower installed a sprinkler or micro irrigation system, reduced runoff water volume using irrigation management, and reduced use of the pesticide of concern on 100% of the reported acres (Table 25).

Table 25. Acreage of 2012 planned and newly implemented practices in the Sand Creek @ Hwy 4 Bypass site subwatershed.

Results are based on initial surveys and follow up surveys.

MANAGEMENT PRACTICE	ACREAGE: PLANNED PRACTICES IN 2012	ACREAGE: NEWLY IMPLEMENTED PRACTICE IN 2012	PERCENT IMPLEMENTED COMPARED TO PLANNED	PERCENT IMPLEMENTED COMPARED TO DIRECT DRAINAGE ACREAGE ¹
Installation of retention pond / holding basin / return systems	0	0	NA	NA
Installation of sprinkler or micro irrigation when an option	116	116	100%	100%
Reduce runoff water volumes using irrigation management	116	116	100%	100%
Reduce use of the pesticide types found in exceedance	116	116	100%	100%
Treat runoff waters with PAM or other materials	116	0	0%	0%
Use of center grass rows, grass waterways, or grass filter strips	116	0	0%	0%
No Response	0	0	NA	NA

¹Based on 116 contacted member acreage with direct drainage.

Figure 21. Sand Creek @ Hwy 4 Bypass targeted member acreage with irrigation or storm runoff.

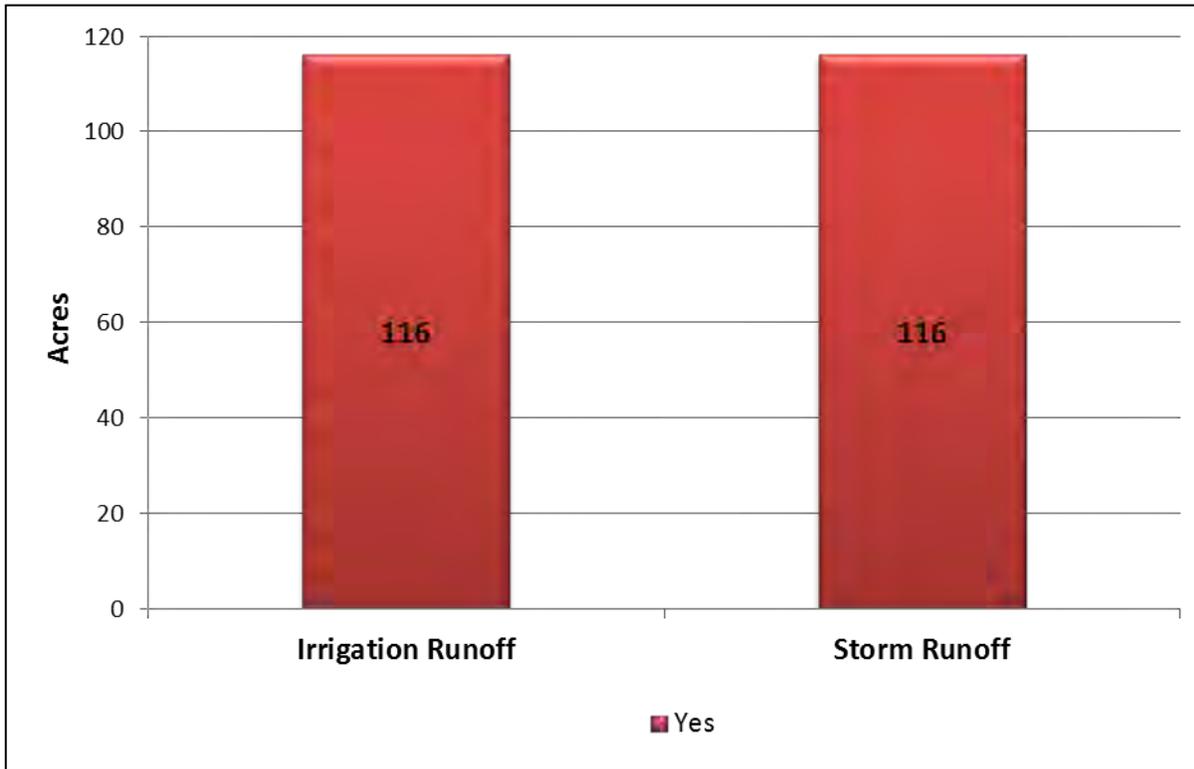
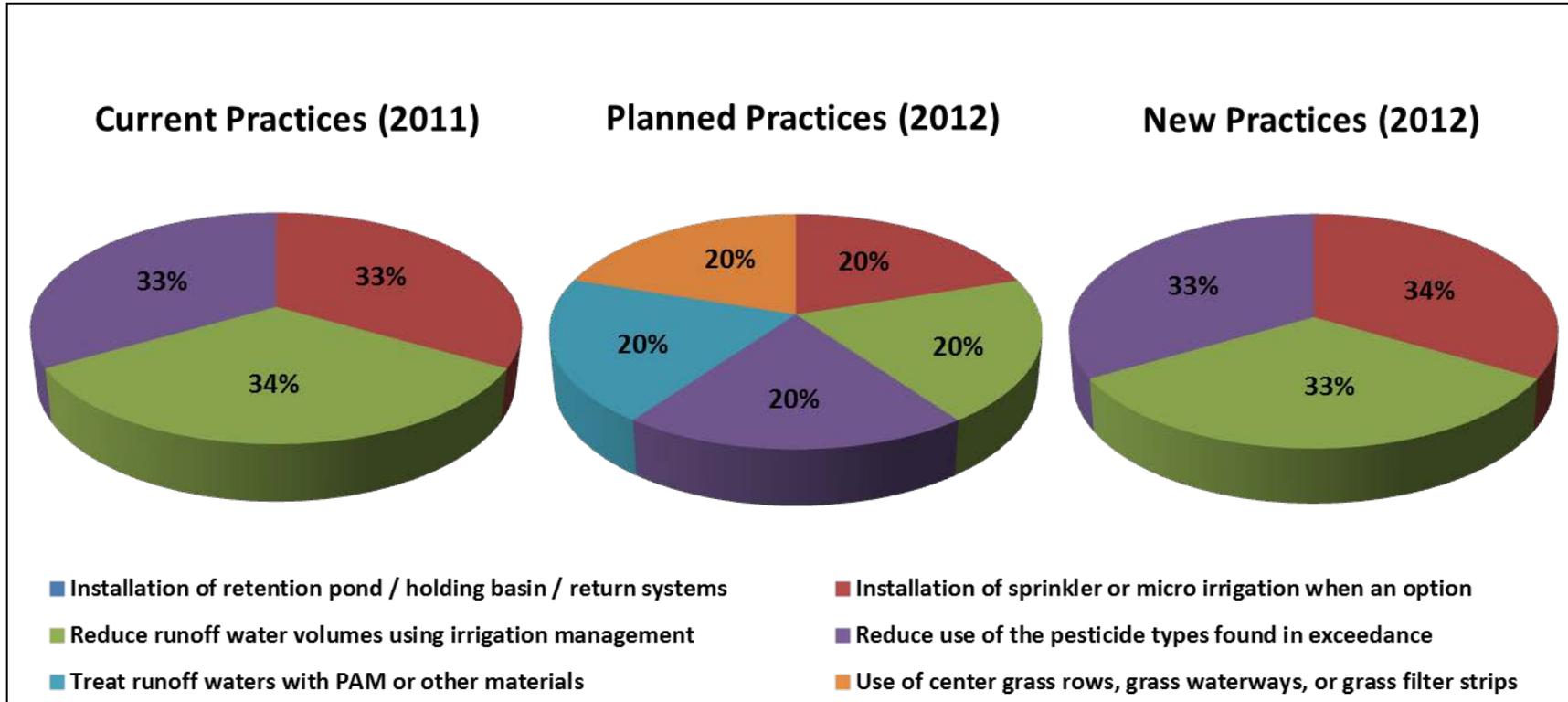


Figure 22. Sand Creek @ Hwy 4 Bypass summary of management practices.

Percentage based on acreage associated with a specific practice compared to the summed acreage associated with all practices for each survey response.



FIFTH PRIORITY SUBWATERSHEDS SUMMARY OF MANAGEMENT PRACTICES (2013-2015)

Focused outreach to document current management practices and track implementation of additional management practices in fifth priority site subwatersheds began in 2013 and is scheduled to continue through 2015. During survey completion, management practices are being documented for the acreage identified as having direct drainage in the Bear Creek @ North Alpine Rd (5%), Roberts Island @ Whiskey Slough Pump (12%) and Walthall Slough @ Woodward Ave (16%) site subwatersheds (Table 13). The Coalition initiated outreach with targeted growers in the Bear Creek @ North Alpine Rd (7 growers), Roberts Island @ Whiskey Slough Pump (7 growers) and Walthall Slough @ Woodward Ave (8 growers) site subwatersheds and conducted a single grower meeting held on January 22, 2013.

Surveys of current management practices (2012) will be summarized in the 2014 MPUR. Follow up contacts with growers who indicate on their survey that they plan to implement additional practices in 2013 will take place in early 2014. A final analysis of the fifth priority site subwatersheds management practices will be included in the 2015 MPUR.

EVALUATION OF MANAGEMENT PRACTICE EFFECTIVENESS

The Coalition implemented its management plan process for four years in the first priority site subwatersheds and for three years in the second and third priority (Table 26). Since the initiation of focused outreach, there have been two or more years for growers to implement new management practices in these nine site subwatersheds. In addition, there has been at least two years of data collected of water quality results during MPM. Therefore, the following evaluation of management practice effectiveness includes these nine site subwatersheds. An evaluation of management practice effectiveness within the fourth priority site subwatersheds will be included in the 2014 MPUR.

Table 26. Years of current management practice assessment, newly implemented management practices and water quality assessment for evaluating management practice effectiveness.

PRIORITY GROUP	CURRENT MANAGEMENT PRACTICE YEAR	YEAR(S) OF NEWLY IMPLEMENTED MANAGEMENT PRACTICES	YEARS OF WATER QUALITY ASSESSMENT FOR EVALUATION ¹
FIRST PRIORITY SITE SUBWATERSHEDS			
Duck Creek @ Hwy 4	2008	2009-2010, 2012	2009-2012
Lone Tree Creek @ Jack Tone Rd	2008	2009-2010, 2012	2009-2012
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	2008	2009-2010, 2012	2009-2012
SECOND PRIORITY SITE SUBWATERSHEDS			
Grant Line Canal @ Clifton Court Rd	2009	2010	2010-2012
Grant Line Canal near Calpack Rd	2009	2010	2010-2012
Littlejohns Creek @ Jack Tone Rd	2009	2010, 2012	2010-2012
THIRD PRIORITY SITE SUBWATERSHEDS			
French Camp Slough @ Airport Way	2010	2011	2010-2012
Mokelumne River @ Bruella Rd	2010	2011	2010-2012
Terminus Tract Drain @ Hwy 12	2010	2011	2010-2012

¹Year 0 monitoring began in 2010 and is used to evaluate effectiveness of current management practices.

As part of its management plan process, the Coalition documents all management practices implemented by its members. Management practices are documented by having growers complete management practice surveys. Practices include installing retention ponds or holding basins, installing sprinkler or micro spray irrigation, reducing runoff water volume, reducing the use of pesticides of concern (i.e. chlorpyrifos), implementing center grass rows, grass waterways or grass filter strips, and treating runoff water with PAM or other materials. The Coalition has been successful at informing growers of local water quality concerns and working with growers to actively address these concerns by encouraging the implementation of new management practices. In addition to recommending management practices, the Coalition continues to notify members about available funding opportunities and encourage them to take advantage of the application process.

An evaluation of management practice effectiveness for the first and second sets of priority site subwatersheds was submitted in the Evaluation of Management Practice Effectiveness section of the

2012 MPUR (Pages 69-80). The Coalition targeted 112 growers in the first priority site subwatersheds and 20 growers in the second priority site subwatersheds for focused outreach. New management practices were implemented by 48% and 85% of growers in the first and second priority site subwatersheds respectively (Table 27). The Coalition targeted 13 growers in the French Camp Slough @ Airport Way site subwatershed, 12 growers in the Mokelumne River @ Bruella Rd site subwatershed, and 4 growers in the Terminous Tract Drain @ Hwy 12 site subwatershed (Table 27). New management practices were implemented by 100% of growers contacted in the French Camp Slough @ Airport Way and Terminous Tract Drain @ Hwy 12 site subwatersheds. New management practices were implemented by 92% of contacted growers in the Mokelumne River @ Bruella Rd site subwatershed across 918 acres; accounting for 83% of acreage farmed by targeted growers (Table 27).

Due to continued exceedances of the WQTL for chlorpyrifos, additional focused outreach occurred in 2010 and 2012. In 2010, additional outreach was initiated in the Duck Creek @ Hwy 4 site subwatershed and in 2012, additional outreach occurred at all first priority sites plus Littlejohns Creek @ Jack Tone Rd, a second priority site subwatershed (Table 28). A total of 25 growers, accounting for 5,188 acres, were targeted during additional focused outreach. Survey results indicate that 88% of targeted growers implemented management practices across 90% of the targeted acreage (Table 28).

Table 27. Percentage of implemented management practices for first, second, and third priority site subwatersheds.

Based on irrigated acres and number of members contacted.

	FIRST PRIORITY (2008-2010)	SECOND PRIORITY (2010-2012)	THIRD PRIORITY (2011-2013)			TOTAL ¹
			FRENCH CAMP SLOUGH @ AIRPORT WAY	MOKELUMNE RIVER @ BRUELLA RD	TERMINOUS TRACT DRAIN @ HWY 12	
# of Targeted Members	112	20	13	12	4	161
# Members with New Practices	54	17	13	11	4	99
Percent of Contacted Members with New Practices	48%	85%	100%	92%	100%	61%
Acreage of Targeted Members	15,183	6,496	3,767	937	1,778	28,161
Acreage with New Practices	8,282	6,256	3,767	918	1,778	21,001
Percent of Targeted Acreage with New Practices	55%	96%	100%	83%	100%	75%

¹The acreages and counts of all members are counted only once in the 'total' column, even if they are represented in more than one site subwatershed or were contacted more than once.

Table 28. Percentage of implemented management practices for 2010 and 2012 additional contacts.

Based on irrigated acres and number of members contacted.

ADDITIONAL OUTREACH YEAR	DUCK CREEK @ HWY 4		LONE TREE CREEK @ JACK TONE RD	UNNAMED DRAIN TO LONE TREE CREEK @ JACK TONE RD	LITTLEJOHNS CREEK @ JACK TONE RD	TOTAL ¹
	2010	2012	2012	2012	2012	
# of Targeted Members	12	3	2	2	6	25
<i>Members Not Previously Contacted</i>	4	1	1	1	4	11
# Members with New Management Practices	9	3	2	2	6	22
Percent of Contacted Members with Management Practices	75%	100%	100%	100%	100%	88%
Acreage of Targeted Members	2,552	563	264	1,238	571	5,188
Acreage with New Management Practices	2,053	563	264	1,238	571	4,689
<i>Acreage Not Previously Contacted</i>	1,332	200	90	37	259	1,918
Percent of Targeted Acreage with New Management Practices	80%	100%	100%	100%	100%	90%

¹The acreages and counts of all members are counted only once in the 'total' column, even if they are represented in more than one site subwatershed or were contacted more than once.

A total of 29,516 member acres were targeted as part of focused outreach across all first, second, and third priority site subwatersheds, including the acres targeted for additional focused outreach in 2010 and 2012. Growers representing 66% of the targeted member acreage reduced the use of pesticides of concern (Table 29). Reducing runoff water volume using irrigation management was also widely implemented. Growers in the three high priority sets of site subwatersheds implemented this practice on 58% of their acres (Table 29). Installation of sprinkler or micro irrigation systems and use of center grass rows, grass waterways, or grass filter strips were also implemented in the first, second, and third priority site subwatersheds; however these practices were only implemented on 34% and 24% respectively of the targeted acreage (Table 29). Treating runoff water with PAM or other materials was implemented in both Grant Line Canal @ Clifton Court Rd and Grant Line Canal near Calpack Rd in the second priority site subwatersheds across 6% of the targeted acreage. Installation of retention ponds, holding basins, or return systems was implemented on only 3% of targeted acreage; the fewest acres of all recommended practices (Table 29). Overall, the most common practices implemented after outreach include reducing the use of pesticides found in exceedances and reducing runoff water volumes using irrigation management.

Table 29. First, second, and third priority site subwatershed acreage with newly implemented management practices.

Includes 2010 and 2012 additional contacts in first and second priority site subwatersheds. Targeted acreage based on acreage of members contacted.

	FIRST PRIORITY (2008-2010)	SECOND PRIORITY (2010-2012)	THIRD PRIORITY (2011-2013)			SUM OF ACREAGE	PERCENT OF TARGETED ACREAGE
			FRENCH CAMP SLOUGH @ AIRPORT WAY	MOKELUMNE RIVER @ BRUELLA RD	TERMINOUS TRACT DRAIN @ HWY 12		
TARGETED ACRES	15,967	7,067	3,767	937	1,778	29,516	NA
MANAGEMENT PRACTICES							
Installation of retention pond / holding basin / return systems	704	87	205	0	0	996	3%
Installation of sprinkler or micro irrigation when an option	4,998	1,643	2,074	172	1,263	10,150	34%
Reduce runoff water volumes using irrigation management	4,376	6,948	3,504	610	1,778	17,216	58%
Reduce use of the pesticide types found in exceedance	8,398	6,521	3,562	898	0	19,379	66%
Use of center grass rows, grass waterways, or grass filter strips	2,310	2,572	1,388	227	515	7,012	24%
Treat runoff waters with PAM or other materials	0	1,748	0	0	0	1,748	6%

Between 2009 and 2012, the Coalition monitored for the effectiveness of newly implemented management practices during focused outreach. High priority management plan constituents monitored to determine the effectiveness of management practices include chlorpyrifos, copper, diazinon, diuron, simazine, water column toxicity to *C. dubia* and *S. capricornutum*, and sediment toxicity to *H. azteca*. The number of samples collected for these constituents has varied from year to year due to changes in MPM schedules and the rotation of Assessment and Core Monitoring constituents. Figure 23 depicts the reduction in the number of exceedances for a majority of these priority constituents in sites that have completed two years of water quality assessment (first, second, and third priority site subwatersheds). Due to improved water quality across the SJCDWQC region, many constituents within priority site subwatersheds were approved by the Regional Board for removal from management plans including diazinon which has been removed from all management plans in the Coalition region. Table 30 provides the status of management plan constituents within all high priority site subwatersheds where focused outreach has been initiated or is complete. To date, the Coalition has received approval for the removal of 39 constituents from management plans at eleven high priority site subwatersheds (approval letters received March 22, April 17, May 21, 2012, and February 27, 2013).

The Coalition initiated MPM for high priority management plan constituents during months of past exceedances at first priority site subwatersheds in 2009, and at second and third priority site subwatersheds in 2010. Results from MPM in years during or after focused outreach indicate a significant decrease in water quality impairments compared to years prior to outreach (Table 31, Table 32). Table 31 includes a summary of all exceedances, samples, and pounds of Active Ingredient (AI) applied for high priority constituents in the first through third priority site subwatersheds.

Figure 23. Number of exceedances of high priority constituents and toxic samples from 2006 through 2012 in first, second, and third priority site subwatersheds.

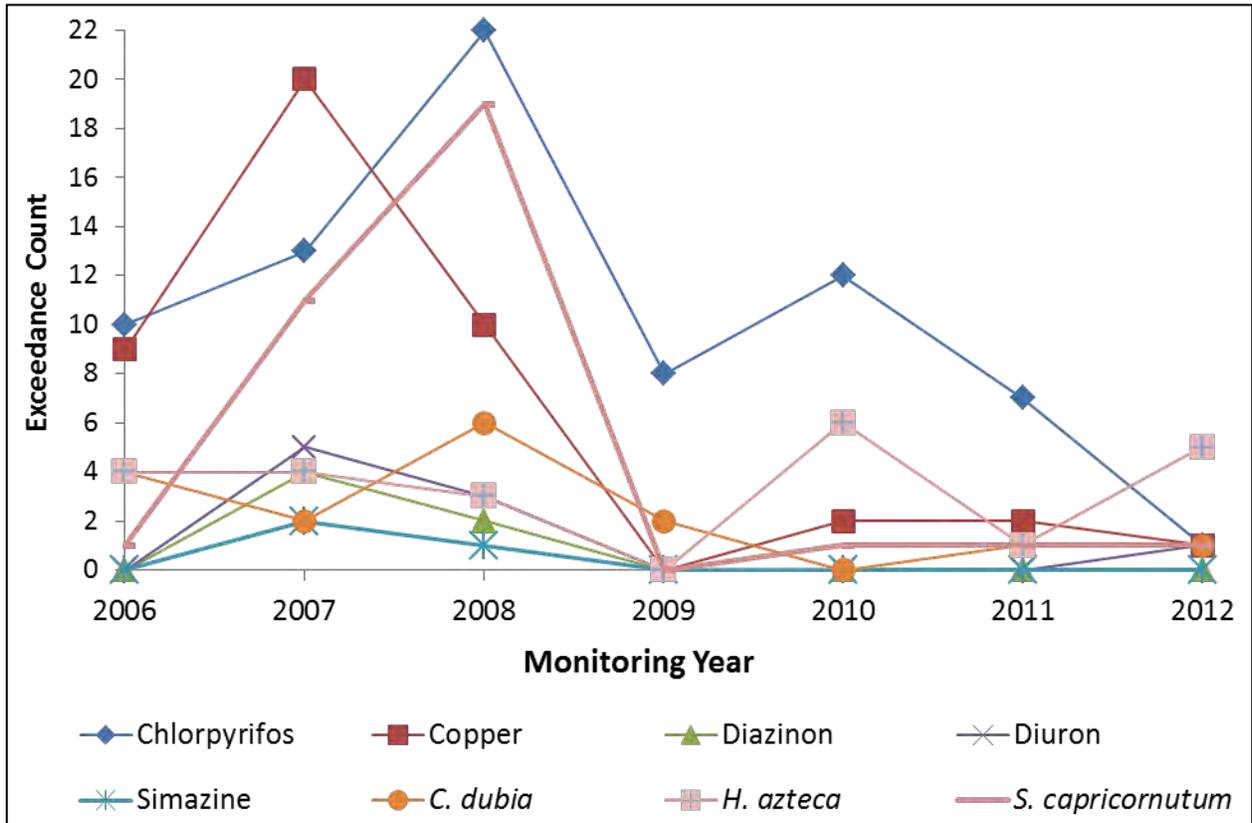


Table 30. Status of management plan constituents in all high priority site subwatersheds where focused outreach has been initiated.

PRIORITY	SITE SUBWATERSHED	MOST RECENT ASSESSMENT MONITORING	FUTURE ASSESSMENT MONITORING	DO*	PH*	SC*	ARSENIC	COPPER (TOTAL & DISSOLVED)	LEAD (TOTAL & DISSOLVED)	AMMONIA	E. COLI	NITRATE/NITRITE	TDS	CHLORPYRIFOS	DDE	DDT	DIAZINON	DIELDRIN	DIURON	DISULFOTON	HCH, DELTA	MALATHION	SIMAZINE	C. DUBIA TOXICITY	H. AZTECA TOXICITY	P. PROMELAS TOXICITY	S. CAPRICORNUTUM TOXICITY
				First	Duck Creek @ Hwy 4	2012	2035	X							X			X									
	Lone Tree Creek @ Jack Tone Rd	2008†	2026		X					X	X		X	X												X	
	Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	2008†	2030	X		X		X	X	X	X		X	X					X						X		
Second	Grant Line Canal @ Clifton Court Rd	2008†	after 2035	X		X	X				X		X	X	X										X		X
	Grant Line Canal near Calpack Rd	2008†	after 2035	X		X	X				X		X	X											X		X
	Littlejohns Creek @ Jack Tone Rd	2008†	2021	X				X			X			X													
Third	French Camp Slough @ Airport Way	2011	2014	X	X						X			X											X		
	Mokelumne River @ Bruella Rd	2011	2014		X						X																
	Terminus Tract Drain @ Hwy 12	2010	2013	X		X	X				X		X	X											X		
Fourth	Kellogg Creek along Hoffman Ln	2008†	after 2035		X	X					X		X	X	X										X		X
	Mormon Slough @ Jack Tone Rd	2008†	2017	X	X									X										X			X
	Sand Creek @ Hwy 4 Bypass	2008†	NA	X		X					X		X	X	X	X		X		X					X		X
Fifth	Bear Creek @ North Alpine Rd	2011	after 2035	X	X						X			X								X					
	Roberts Island @ Whiskey Slough Pump	2014	2017	X	X	X					X		X	X	X				X					X	X		X
	Walthall Slough @ Woodward Ave	2010	2013	X		X					X	X	X	X							X				X		
Total Management Plan Constituents Removed (Grey Cells)				3	2	1	0	5	2	0	0	0	0	3	0	0	5	1	2	0	0	0	1	5	1	1	7
Total Management Plan Constituents Remaining Active (X)				12	7	8	3	2	1	1	14	1	9	11	4	2	0	1	2	1	1	1	0	3	10	1	6

*Field parameters will continue to be monitored during Assessment, Core and Management Plan Monitoring events.

†Site was monitored for Assessment Monitoring constituents under the 2006 MRPP where monitoring was not defined as Core or Assessment Monitoring.

"X" the constituent is still in an active management plan.

Grey shaded cells indicate the constituent has been approved for removal from the site subwatershed management plan.

NA-No Assessment Monitoring will occur in Zone 6 due to large urban influence

Table 31. Exceedances, samples, and pounds AI applied for chlorpyrifos, diazinon, copper, diuron, and simazine in first through third priority site subwatersheds.

PUR data only complete through May 2012 for San Joaquin County; PUR data are complete through December 2012 for all other counties.

YEAR	CHLORPYRIFOS				DIAZINON				COPPER ¹				DIURON				SIMAZINE			
	EXCEEDANCE COUNT	SAMPLES ²	% EXCEEDANCE	LBS APPLIED	EXCEEDANCE COUNT	SAMPLES ²	% EXCEEDANCE	LBS APPLIED	EXCEEDANCE COUNT	SAMPLES ²	% EXCEEDANCE	LBS APPLIED	EXCEEDANCE COUNT	SAMPLES ²	% EXCEEDANCE	LBS APPLIED	EXCEEDANCE COUNT	SAMPLES ²	% EXCEEDANCE	LBS APPLIED
2006	10	61	16%	49,196	0	61	0%	4,707	9	35	26%	214,086	0	31	0%	14,530	0	15	0%	8,539
2007	14	83	17%	39,145	4	73	5%	1,777	20	62	32%	186,617	6	50	12%	10,359	2	24	8%	8,522
2008	22	78	28%	22,307	2	69	3%	2,289	10	82	12%	141,237	3	49	6%	4,008	1	24	4%	5,059
2009	8	27	30%	38,401	0	15	0%	1,169	0	11	0%	164,724	0	4	0%	6,080	0	3	0%	8,434
2010	12	57	21%	29,456	0	43	0%	1,612	2	37	5%	146,842	0	16	0%	3,538	0	2	0%	4,272
2011	7	61	11%	14,202	0	32	0%	1,305	2	43	5%	152,792	0	28	0%	10,686	0	2	0%	4,606
2012	1	47	2%	20,430	0	17	0%	479	1	25	4%	135,383	1	18	6%	3,860	0	14	0%	1,814

¹Since October 2008, the Coalition analyzes for both the total and dissolved fraction of copper. For counting exceedances and samples scheduled for copper analysis, this table ignores fraction (e.g. if site A is scheduled for copper total and copper dissolved analysis in Event 1, the table counts only one sample for copper). There has never been an exceedance of both the total and dissolved WQTLs for copper at any one site.

²Refers to all samples scheduled for constituent analysis (dry sites are included).

Table 32. Toxicity count and samples collected for toxicity analysis in the first through third priority site subwatersheds.

Year	<i>C. DUBIA</i> TOXICITY			<i>S. CAPRICORNUTUM</i> TOXICITY			<i>H. AZTECA</i> TOXICITY		
	TOXICITIES	SAMPLES ¹	% TOXIC	TOXICITIES	SAMPLES ¹	% TOXIC	TOXICITIES	SAMPLES ¹	% TOXIC
2006	4	58	7%	1	57	2%	4	14	29%
2007	2	73	3%	11	73	15%	4	19	21%
2008	6	68	9%	19	69	28%	3	16	19%
2009	2	7	29%	0	8	0%	0	0	NA
2010	0	18	0%	1	31	3%	6	10	60%
2011	1	17	6%	1	35	3%	6	10	60%
2012	1	23	4%	1	41	2%	5	13	38%

¹Refers to all samples scheduled for constituent analysis (dry sites are included). Resampling events are not scheduled monitoring events and are not included.

Chlorpyrifos

Management plans for chlorpyrifos have been implemented at all first, second and third priority site subwatersheds except Mokelumne River @ Bruella Rd. There were 74 exceedances of the WQTL for chlorpyrifos at first, second, and third priority sites since 2006. Forty-six exceedances occurred prior to the initiation of focused outreach in 2008, and 28 have occurred since (Table 31). Additional focused outreach was initiated in 2010 in the Duck Creek @ Hwy 4 site subwatershed and in 2012 in all first priority site subwatersheds and in the Littlejohns Creek @ Jack Tone Rd site subwatershed. There have been eight exceedances in the first, second and third priority site subwatersheds since additional focused outreach was initiated in 2010. The percentage of samples with chlorpyrifos concentrations above the WQTL has decreased during this time as well. Prior to the initiation of focused outreach in 2008, concentrations in 28% of samples analyzed for chlorpyrifos exceeded the WQTL. In 2011, after all first through third priority sites had completed at least one year of focused outreach, the percentage dropped to 11%, and after additional focused outreach was initiated the percentage dropped to 2% (Table 31). During focused outreach with growers, the Coalition discussed the importance of irrigation management to reduce runoff into the creek and encouraged growers to eliminate spray drift. The majority of targeted growers in the first, second and third priority site subwatersheds implemented practices to prevent chlorpyrifos from entering the waterway, most notably reducing use of the products containing chlorpyrifos. In addition, PUR data indicate an average decline in chlorpyrifos use since 2006. On February 27, 2013 the Regional Board approved the Coalition's request to remove chlorpyrifos from Grant Line Canal near Calpack Rd management plan.

Diazinon

Management plans for diazinon were implemented in the Duck Creek @ Hwy 4, Lone Tree Creek @ Jack Tone Rd, Littlejohns Creek @ Jack Tone Rd, and French Camp Slough @ Airport Way site subwatersheds. There have been six exceedances of the WQTL for diazinon at first, second, and third priority sites since 2006; however, there have been no exceedances since the initiation of focused outreach in 2008 (Table 31). Although PUR data indicate that diazinon use remained relatively consistent between 2007 and 2011, the results of MPM indicate the diazinon that is applied is not entering the waterways. The Coalition believes that management practices implemented as a result of focused outreach contributed to water quality improvements. The Regional Board approved the removal of diazinon from the Duck Creek @ Hwy 4 (April 17, 2012), Lone Tree Creek @ Jack Tone Rd (May 21, 2012), Littlejohns Creek @ Jack Tone Rd (February 27, 2013), and French Camp Slough @ Airport Way (February 27, 2013) management plans.

Copper

Management plans for copper have been implemented in the Lone Tree Creek @ Jack Tone Rd, Unnamed Drain to Lone Tree Creek @ Jack Tone Rd, Grant Line Canal @ Clifton Court Rd, Littlejohns Creek @ Jack Tone Rd, French Camp Slough @ Airport Way, and Mokelumne River @ Bruella Rd site subwatersheds. There have been 44 exceedances of the WQTL for copper at first, second, and third priority sites since 2006; however there have only been five exceedances since focused outreach was initiated in 2008 (Table 31). The only exceedance of the hardness based WQTL for copper in the entire Coalition region during 2012 occurred in the first priority site subwatersheds at Duck Creek @ Hwy 4

during Assessment Monitoring. This was the first exceedance of the hardness based WQTL for copper in the site subwatershed and did not result in a new management plan. Analysis of the PUR data indicates a decreasing trend in copper use since 2006 (Table 31). The recent improvements in water quality concerning copper are most likely due to growers implementing management practices that prevent copper applications from entering the waterway via runoff or spray drift. The Coalition added the analysis of the dissolved fraction of copper in October 2008 to better characterize copper contamination. The bioavailable fraction of copper in the water column is more accurately estimated in samples collected after October 1, 2008. On April 17, 2012, the Coalition received approval from the Regional Board to remove copper from the Grant Line Canal @ Clifton Court Rd and Mokelumne River @ Bruella Rd management plans. On May 21, 2012 the Regional Board approved the removal of copper from the Lone Tree Creek @ Jack Tone Rd management plan. On February 27, 2013 the Coalition received approval from the Regional Board to remove copper from French Camp Slough @ Airport Way management plan.

Diuron and Simazine

Management plans have been implemented in the Lone Tree Creek @ Jack Tone Rd and French Camp Slough @ Airport Way site subwatersheds for diuron and in the Unnamed Drain to Lone Tree Creek @ Jack Tone Rd for diuron and simazine. There have been a total of ten exceedances of the WQTL for diuron and three exceedances of the WQTL for simazine (Table 31). All exceedances of the WQTL for diuron have occurred during storm or winter sampling in January or February, except for a single exceedance that occurred in August 2008 at Grant Line Canal near Calpack Rd. The three exceedances of the WQTL for simazine occurred only in first priority site subwatersheds and all three happened during events where there was also an exceedance of the WQTL for diuron. Since the initiation of focused outreach in the first, second, and third priority sites, there has been a single exceedance of the WQTL for diuron and no exceedances of the WQTL for simazine (Table 31). The Coalition believes that management practices implemented as a result of focused outreach have contributed to the improved water quality results in addition to the decreasing use of products containing simazine or diuron. On May 21, 2012, the Coalition received approval from the Regional Board to remove diuron from the Lone Tree Creek @ Jack Tone Rd management plan and simazine from the Unnamed Drain to Lone Tree Creek @ Jack Tone Rd management plan. On February 27, 2013 the Coalition received approval from the Regional Board to remove diuron from the French Camp Slough @ Airport Way management plan.

***C. dubia* toxicity**

Toxicity to *C. dubia* is listed in the management plans for Duck Creek @ Hwy 4, Grant Line Canal near Calpack Rd, French Camp Slough @ Airport Way, and Mokelumne River @ Bruella Rd site subwatersheds. Across the SJCDWQC region, water toxicity to *C. dubia* is often caused, either partially or entirely, by organophosphates in surface waterways. The Coalition's strategy has been to focus on chlorpyrifos and diazinon water quality impairments to address the toxicity. The Coalition believes its strategy of focusing on chlorpyrifos and diazinon is effective in reducing toxicity to *C. dubia*. The Coalition emphasizes during general and focused outreach that all pesticides carry risks for water quality and preventing the offsite movement of all pesticides through storm water, irrigation tailwater, and sediment management is the most effective method to reduce agriculturally induced water quality

impairments. Since focused outreach was initiated in 2009, there have been two toxicities to *C. dubia* in the high priority site subwatersheds (Table 32). In 2011 one sample collected from Duck Creek @ Hwy 4 was toxic to *C. dubia* which coincided with an exceedance of the WQTL for chlorpyrifos. However, the Toxicity Identification Evaluation (TIE) was inconclusive since the sample lost all detectable toxicity prior to the TIE. In 2012, an MPM sample was toxic to *C. dubia* for the first time since focused outreach began at second priority sites in 2010. A TIE was not initiated because survival was greater than 50% compared to the control; however PUR data indicate that applications of permethrin and malathion occurred prior to the sampling event. There have not been any samples toxic to *C. dubia* in third priority site subwatersheds since 2007. The Coalition received approval to remove toxicity to *C. dubia* from the Lone Tree Creek @ Jack Tone Rd (May 21, 2012) management plan as well as the French Camp Slough @ Airport Way and Mokelumne River @ Bruella Rd (both on February 27, 2013) management plans.

***S. capricornutum* toxicity**

Management plans have been implemented for toxicity to *S. capricornutum* at all first, second, and third priority site subwatersheds. Toxicity to *S. capricornutum* has not occurred at any first or third priority sites since focused outreach began in 2009 (Table 32). There have been three toxicities to *S. capricornutum* at second priority sites since outreach began. Two occurred at Grant Line Canal @ Clifton Court Rd during MPM in May 2010 and May 2012. The other occurred at Grant Line near Calpack Rd during MPM in January 2011. The Coalition believes its focused outreach strategy has been successful in reducing toxicity to *S. capricornutum* in the high priority site subwatersheds. In letters received from the Regional Board on March 22, 2012, April 17, 2012, May 21, 2012, and February 27, 2013, the Coalition received approval to remove toxicity to *S. capricornutum* from the management plans at all first, second, and third priority sites except Grant Line Canal @ Clifton Court Rd and Grant Line Canal near Calpack. In 2013, MPM will occur at these two sites during the months of past toxicities. Monitoring for *S. capricornutum* will next occur at all other sites as they rotate back into Assessment Monitoring. Terminous Tract Drain @ Hwy 12 will be monitored for toxicity to *S. capricornutum* in 2013 because the site has rotated into Assessment Monitoring.

***H. azteca* toxicity**

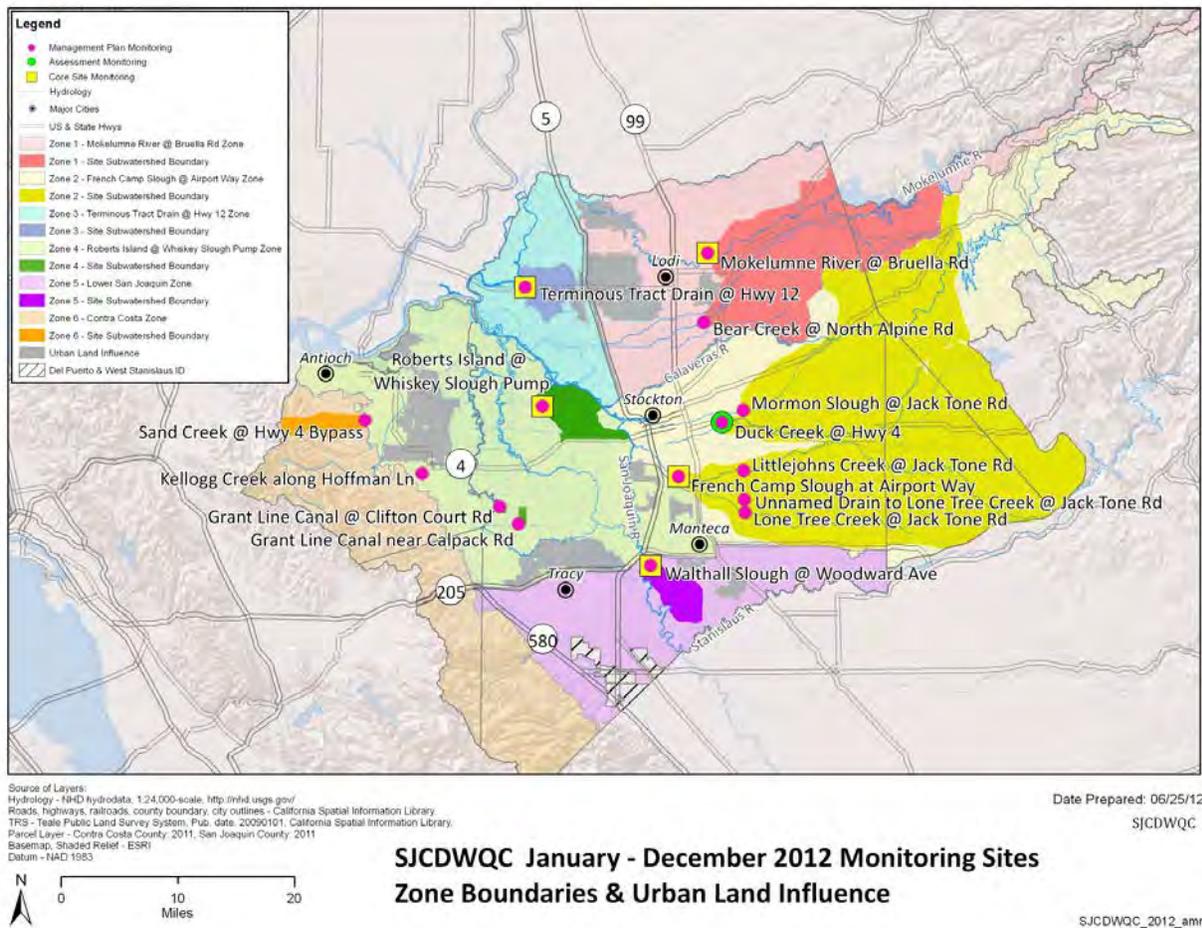
Management plans have been implemented for sediment toxicity to *H. azteca* at all first, second, and third priority site subwatersheds except Littlejohns Creek @ Jack Tone Rd (second priority) and Mokelumne River @ Bruella Rd (third priority). There have been 17 sediment samples toxic to *H. azteca* since the initiation of focused outreach in 2009; seven each in the first and second priority site subwatersheds and three in the third priority site subwatersheds (Table 32). Since focused outreach began, toxicity to *H. azteca* has occurred three times at Duck Creek @ Hwy 4, four times at Unnamed Drain to Lone Tree Creek @ Jack Tone Road, four times at Grant Line Canal @ Clifton Court Rd, three times at Grant Line Canal near Calpack Rd, twice at French Camp Slough @ Airport Way and once at Terminous Tract Drain @ Hwy 12. However, samples collected from Lone Tree Creek @ Jack Tone Rd have not tested toxic to *H. azteca* since it was added to the management plan in 2006 and the Coalition received approval from the Regional Board to remove it from the management plan on May 21, 2012. In 2012, the samples collected during sediment monitoring in September at Duck Creek @ Hwy 4, Unnamed Drain to Lone Tree Creek @ Jack Tone Rd, Grant Line Canal @ Clifton Court Rd, and Grant Line

Canal near Calpack Rd were toxic to *H. azteca*. The March 2012 sample collected at Duck Creek @ Hwy 4 was toxic as well. The Coalition included discussions of sediment-bound constituents and management practices to address sediment toxicity during its focused outreach with growers in the first, second, and third priority site subwatersheds and will continue to discuss the risks associated with offsite movement of storm water, irrigation tailwater, and sediment regardless of the pesticides or herbicides applied. Growers are also encouraged to take further steps to eliminate all discharges that lead to sediment toxicity.

COALITION WIDE EVALUATION

During 2012, the Coalition conducted monitoring at 15 sites within the SJCDWQC region. Core Monitoring occurred at the Core sites for Zones 1-5, Assessment Monitoring occurred only at Duck Creek @ Hwy 4, and MPM occurred at all 15 sites (Table 2, Figure 24). Coalition wide management practices were documented in 2007 for practices growers were implementing in 2006. Focused outreach at the first set of high priority site subwatersheds began in 2008. Since then, focused outreach has occurred at 12 of the 15 site subwatersheds monitored in 2012. The remaining three site subwatersheds are scheduled for focused outreach in early 2013. The year of priority for management plan site subwatersheds is not based on where they are located (e.g. zones) but rather prioritized based on number and magnitude of exceedances. Growers across all zones recognize the effect of management practices on water quality and are implementing new management practices as a result of, and in some cases prior to, focused outreach. As a result, water quality across the entire SJCDWQC region has improved.

Figure 24. SJCDWQC January through December 2012 sample locations and zone boundaries.



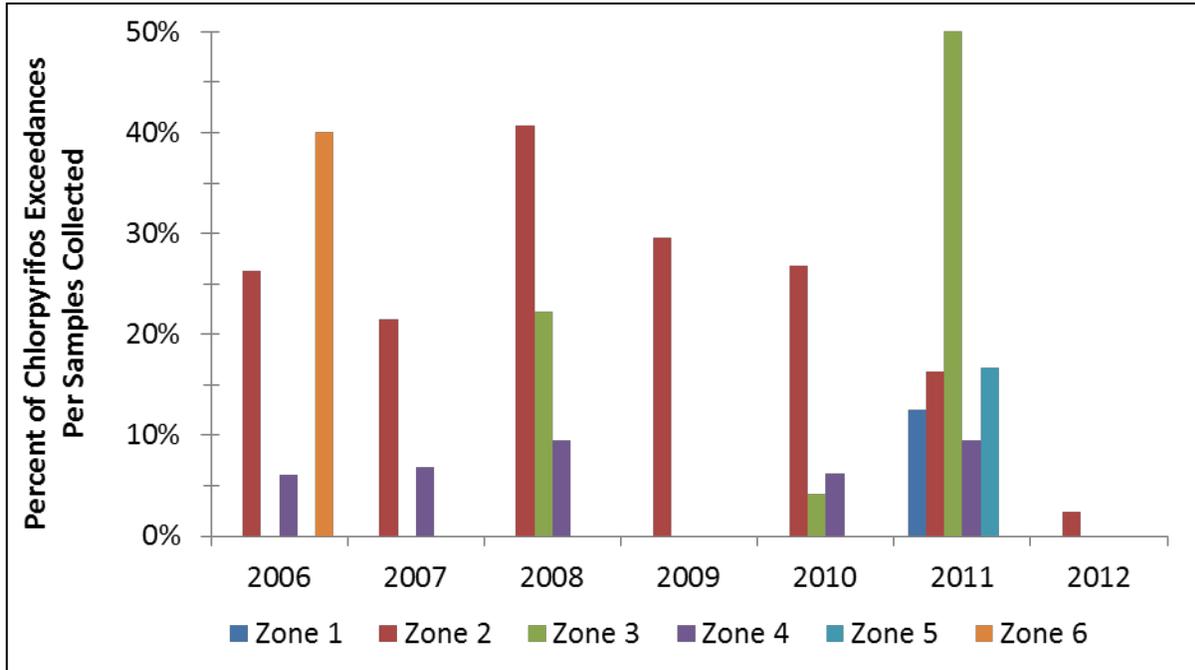
Monitoring results from recent years indicate that water quality has improved in most SJCDWQC high priority management plan site subwatersheds. Monitoring results in eleven site subwatersheds

demonstrated two or more consecutive years without exceedances for several management plan constituents. The Coalition submitted letters to the Regional Board on January 6, 2012 and November 13, 2012 petitioning to remove constituents from the management plans of these high priority site subwatersheds. To date, the Coalition has received approval for the removal of 39 constituents from eleven high priority site subwatersheds (approved on March 22, April 17, May 21, 2012, and February 27, 2013).

The percentage of chlorpyrifos, diazinon, and copper exceedances by zone and year were evaluated to look for trends in water quality across the entire SJCDWQC region (Figures 25-27). The Coalition evaluates these three constituents because they are widely used, they are high priority, and they are listed on more management plans than any other pesticides. The SJCDWQC has developed site subwatershed management plans and implemented focused outreach for chlorpyrifos (14), diazinon (5) and copper (7, Table 30). As a result of improved water quality, the Coalition has removed 3 chlorpyrifos, 5 diazinon and 5 copper site subwatershed management plans. Not all zones were monitored for chlorpyrifos, diazinon, or copper during every year; the zones with years of no monitoring are noted in Figures 25-27. The number of samples collected changes from year to year as a result of rotating Assessment Monitoring and MPM schedules. Years with only MPM may result in a higher percentage of exceedances due to 1) monitoring in areas with known water quality problems and 2) fewer samples being collected based on monitoring during only months of past exceedances.

Figure 25. SJCDWQC 2006-2012 percentage of exceedances of the WQTL for chlorpyrifos in Zones 1-6.

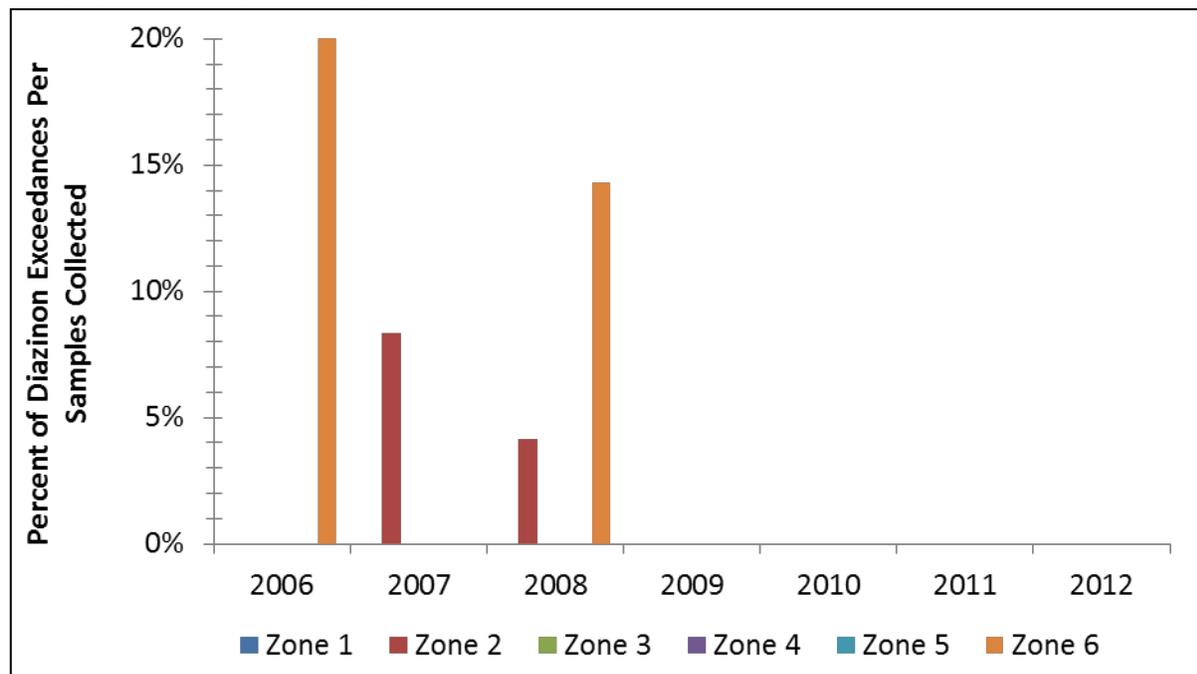
Zone 5 was not sampled for chlorpyrifos from 2006-2008; Zone 6 from 2009-2010. Assessment and MPM results included.



During 2012, there was one exceedance of the WQTL for chlorpyrifos out of 80 samples collected throughout the year (Table 33). The single exceedance occurred in the Unnamed Drain to Lone Tree Creek @ Jack Tone Rd site subwatershed (Zone 2) during storm sampling in December (0.019 μg). This is an improvement from the number of chlorpyrifos exceedances that occurred in 2012 (15 out of 104 samples, Table 33). On November 13, 2012 the Coalition petitioned the Regional Board to remove chlorpyrifos from the Grant Line Canal @ Clifton Court Rd, Grant Line Canal near Calpack Rd, Kellogg Creek along Hoffman Lane, Lone Tree Creek @ Jack Tone Rd, and Sand Creek @ Hwy 4 Bypass management plans. On February 27, 2013 the Coalition received approval from the Regional Board to remove chlorpyrifos from three of the five listed site subwatersheds. The Regional Board did not approve removal of chlorpyrifos from the Lone Tree Creek @ Jack Tone Rd or Grant Line Canal @ Clifton Court Rd management plans.

Figure 26. SJCDWQC 2006-2012 percentage of exceedances of the WQTL for diazinon in Zones 1-6.

Zone 1 was not sampled for diazinon in 2010 or 2012; Zone 3 in 2011-2012; Zone 5 from 2006-2008; Zone 6 from 2009-2010. Assessment and MPM results included.



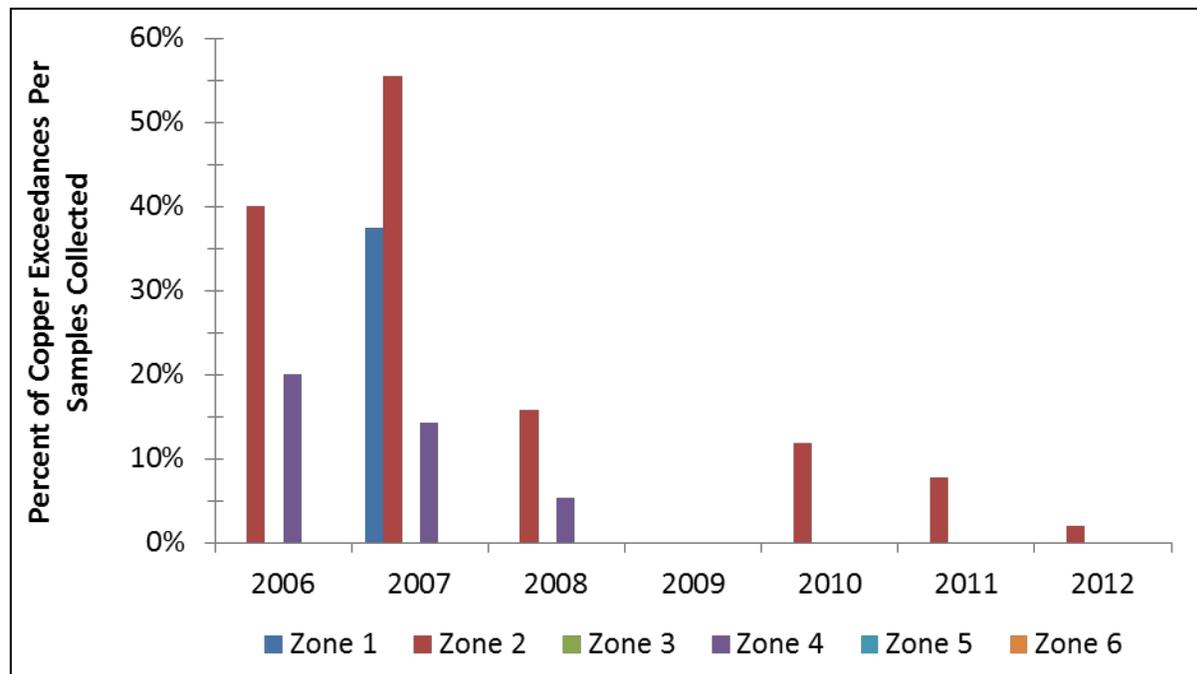
Only eight exceedances of the WQTL for diazinon have occurred within the SJCDWQC region from 2006 through 2012; none since early 2008 (Table 33). Six of the eight exceedances occurred in Zone 2 site subwatersheds; the other two occurred at Sand Creek @ Hwy 4 Bypass in Zone 6. All five sites that have a management plan for diazinon also have a management plan for chlorpyrifos. The PUR data indicate that throughout the Coalition region the pounds of diazinon applied yearly is much less than chlorpyrifos and use has been declining in recent years (Table 33). In addition, focused outreach has occurred at all of these sites and the growers have implemented management practices to reduce the amount of chlorpyrifos and diazinon discharged into the waterway. The Coalition was approved to remove diazinon from the management plan of two site subwatersheds in Zone 2 (Duck Creek @ Hwy 4 on March 22, 2012 and Lone Tree Creek @ Jack Tone Rd on May 21, 2012). The Coalition petitioned the Regional Board to remove diazinon from the management plans of the three remaining site subwatersheds on November 13, 2012 (French Camp Slough @ Airport Way, Littlejohns Creek @ Jack Tone Rd, and Sand Creek @ Hwy 4 Bypass). The Coalition received approval on February 27, 2013 and diazinon is no longer a high priority constituent in the SJCDWQC region (Table 30). Sites in the SJCDWQC will be monitored for diazinon as part of TMDL compliance and Assessment Monitoring events.

During 2012 monitoring, there were 60 samples analyzed for copper and only one exceedance of the copper WQTL, which occurred at Duck Creek @ Hwy 4 (Table 33). Focused outreach first began in the Coalition in 2008 and has expanded to new subwatersheds every year since. Copper applications have remained relatively steady in the region; however, since outreach began there has been a decrease in the percent of samples collected that resulted in exceedances (Table 33 and Figure 27). When monitoring began in 2012, copper was listed in seven site subwatershed management plans. The

Regional Board approved the removal of copper from two site subwatersheds on April 17, 2012, and one site subwatershed on May 21, 2012. On February 27, 2013 the Coalition was approved to remove copper from two more site subwatersheds. Copper remains in the management plans of Littlejohns Creek @ Jack Tone Rd and Unnamed Drain to Lone Tree Creek @ Jack Tone Rd, both of which are in Zone 2 (Table 30).

Figure 27. SJCDWQC 2006-2012 percentage of exceedances of the WQTL for copper in Zones 1-6.

Zone 1 was not sampled for copper in 2012; Zone 3 from 2011-2012; Zone 5 from 2006-2008 and 2011-2012; Zone 6 from 2006-2007 and 2009-2012. Assessment and MPM results included.



The Coalition believes its management practice tracking and outreach strategy is successful in improving water quality as evidenced by the decrease in the number and percentage of exceedances of water quality trigger limits, especially since the beginning of focused outreach. While chlorpyrifos remains a constituent of concern in waterways in the Coalition region, the number of samples resulting in exceedances of the WQTL for chlorpyrifos has drastically decreased from a high of 30 in 2008 to a single exceedance in 2012. Likewise, exceedances of the WQTL for copper have decreased from a high of 22 in 2007 to one in 2012; diazinon has been completely removed from active SJCDWQC management plans (Table 33).

Table 33. Count of exceedances and samples collected for high priority pesticides across the SJCDWQC region.

YEAR	CHLORPYRIFOS				DIAZINON				COPPER ¹			
	EXCEEDANCE COUNT	SAMPLES ²	% EXCEEDANCE	LBS APPLIED	EXCEEDANCE COUNT	SAMPLES ²	% EXCEEDANCE	LBS APPLIED	EXCEEDANCE COUNT	SAMPLES ²	% EXCEEDANCE	LBS APPLIED
2006	14	94	15%	92,672	1	94	1%	10,257	9	40	23%	460,834
2007	15	125	12%	81,123	4	114	4%	9,561	22	71	31%	387,484
2008	30	129	23%	50,150	3	116	3%	6,520	11	123	9%	238,364
2009	8	61	13%	78,791	0	49	0%	5,826	0	41	0%	263,895
2010	13	93	14%	63,848	0	79	3%	17,576	2	61	3%	314,325

YEAR	CHLORPYRIFOS				DIAZINON				COPPER ¹			
	EXCEEDANCE COUNT	SAMPLES ²	% EXCEEDANCE	LBS APPLIED	EXCEEDANCE COUNT	SAMPLES ²	% EXCEEDANCE	LBS APPLIED	EXCEEDANCE COUNT	SAMPLES ²	% EXCEEDANCE	LBS APPLIED
2011	15	104	14%	46,957	0	70	0%	5,198	2	69	3%	286,749
2012	1	80	1%	32,085 ³	0	43	0%	5,280 ³	1	60	2%	330,346 ³

¹Since October 2008, the Coalition analyzes for both the total and dissolved fraction of copper in every event. For counting exceedances and samples scheduled for copper analysis, this table ignores fraction (e.g. if site A is scheduled for copper total and copper dissolved analysis in Event 1, the table counts only one sample for copper). There has never been an exceedance of both the total and dissolved copper WQTLs at any one site.

² Refers to all samples collected for constituent analysis (dry sites not included).

³PUR data only available through May 2012 for San Joaquin County.

Funding Resources

In 2012, growers across the Coalition region utilized external funding resources to aid in the implementation of management practices designed to address water quality impairments caused by agriculture. The Coalition continues to be committed to collaboration with entities that fund the implementation of management practices. In addition to focused outreach with targeted growers, the Coalition strives to secure unique opportunities that enhance the Coalition's ability to achieve its goal of reducing the impact of agricultural discharge on water quality. The Coalition reviewed funding data provided by organizations managing the distribution of financial support to growers for the implementation of management practices. The two main organizations that manage Coalition funding are the Coalition for Urban/Rural Environmental Stewardship (CURES) and the Natural Resources Conservation Service (NRCS). The CURES manages the distribution of Proposition 84 funds and the associated cost share program. The county NRCS offices manage the distribution of the Agricultural Water Enhancement Program (AWEP) and the Environmental Quality Incentives Program (EQIP) funding cost share programs. The data provided below are from the Contra Costa and San Joaquin County NRCS offices.

The AWEP funds are specific to agriculture and a group must apply for the funds before they are made available. On July 30, 2009, AWEP funding of \$10 million was awarded to the Coalition, CURES, the Westside San Joaquin River Watershed Coalition, the West and East Stanislaus Resource Conservation District and NRCS and is currently being distributed through the county NRCS offices. Funds were made available to support management practice implementation on farms and dairies with operations bordering waterways within site subwatersheds covered by management plans. EQIP funds are regularly allocated to counties from the federal government for any projects focused on implementing management practices designed to protect and/or improve the quality of surface water, groundwater, soil, and/or air.

In 2012, micro irrigation and tailwater return systems were the only practices funded by Proposition 84 (Table 34). Data obtained from CURES regarding Proposition 84 funding indicate there were 13 contracts awarded in 2012 between Contra Costa and San Joaquin Counties worth \$1,237,269 for the implementation of micro irrigation and tailwater return systems associated with 1,500 acres (Table 34). Proposition 84 funding is a 50% cost share program, therefore the total cost of the management practices is twice the amount listed (Table 34). The Proposition 84 funds focus on irrigation management (micro irrigation).

Table 34. Proposition 84 funding contracts awarded, contract dollars and contract acres in San Joaquin and Contra Costa Counties.

COUNTY	FUNDING YEAR	PROGRAM	PRACTICE NAME	TOTAL NUMBER OF CONTRACTS AWARDED	TOTAL CONTRACT DOLLARS ¹	TOTAL CONTRACT ACREAGE
Contra Costa	2012-2013	Proposition 84	Micro irrigation	3	\$73,722	76
San Joaquin	2011-2012			4	\$548,791	546
	2012-2013			4	\$568,454	658
	2012-2013			Tailwater Return System	2	\$46,302
Total				13	\$1,237,269	1,500

Data provided to the Coalition are considered preliminary.

¹ Proposition 84 funding is a 50% cost share program, therefore the total cost of the management practices is twice the amount listed.

The NRCS offices for the two counties in the SJCDWQC region award 100% of their appropriated AWEP and EQIP funds. Table 35 summarizes total contract dollars awarded for EQIP and AWEP funded management practices in 2012 for both Contra Costa County and San Joaquin County growers. Figure 28 includes the overall percentages of the dollars for management practices implemented with Proposition 84, AWEP and EQIP funding in 2012. In total, \$3,108,408 of AWEP and EQIP funds were made available in 2012 for the implementation of management practices designed to protect water quality in the two counties (Table 35). These data indicate that growers in the Coalition region are taking steps to implement additional management practices that are recommended during focused outreach.

In addition, data from CURES and the NRCS offices provide insight as to the type of management practices growers are implementing in the SJCDWQC region. Micro irrigation systems (\$1,325,707) was the highest awarded agricultural use management practice that received AWEP and EQIP award funding in 2012 (Table 35).

Table 35. Funding amounts associated with management practices awarded for AWEP and EQIP in Contra Costa and San Joaquin Counties.

Data provided to the Coalition are considered preliminary since counties may still be updating funding award records.

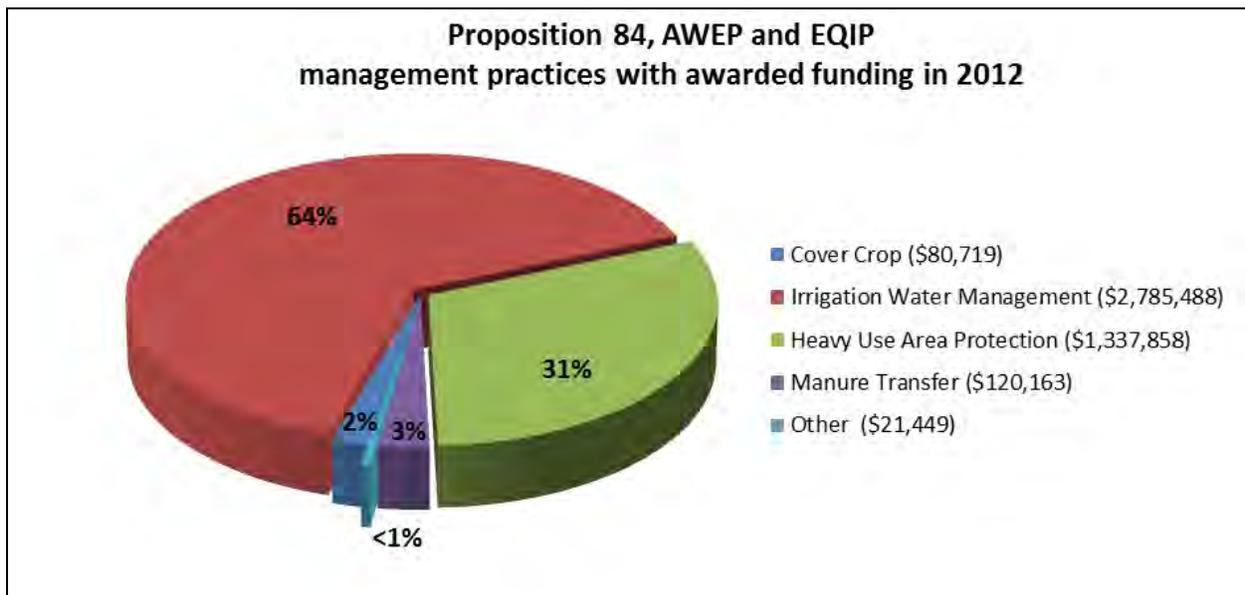
MANAGEMENT PRACTICES PLANNED IN 2012	AWEP			EQIP			TOTAL CONTRACT DOLLARS AWARDED PER PRACTICE
	San Joaquin		Contra Costa ¹	San Joaquin			
Cover Crop				\$2,995	\$65,156	\$12,567	\$80,719
Irrigation Land Leveling	\$6,156		\$21,563		\$12,544	\$38,029	\$78,292
Irrigation Water Management			\$112	\$1,078			\$1,190
Microirrigation				\$7,500	\$169,539	\$1,148,668	\$1,325,707
Sprinkler System						\$127,845	\$127,845
Tailwater Return System	\$15,185						\$15,185
Heavy Use Area Protection	\$65,835	\$369,269	\$562,688		\$340,066		\$1,337,858
Manure Transfer	\$12,250	\$1,320	\$69,559		\$37,034		\$120,163
Nutrient Management				\$825			\$825
Pest Management				\$2,166		\$5,304	\$7,470
Pumping Plant			\$4,000				\$4,000
Roof Runoff Structure		\$524					\$524
Structure for Water Control			\$2,451			\$6,179	\$8,630
Total							\$3,108,408

¹Data provided to the Coalition from Contra Costa County was obtained for management practices from the locations of Lower Marsh Creek (microirrigation, nutrient management, cover crop, and irrigation water management), Lower Kellogg Creek (cover crop) and Arroyo del Hambre-frontal Suisun Bay Estuaries (pest management).

When all funding awarded to the Coalition in 2012 are combined, 64% of Proposition 84, AWEP and EQIP funding was awarded for the implementation of irrigation water management (land leveling, water management, micro irrigation, sprinkler system and tailwater return system), 31% to heavy use area protection, 3% to manure transfer, 2% to crop cover, and less than 1% to other practices (nutrient management, pest management, pumping plant, roof runoff structure, and structure for water control, Figure 28). The practices funded by Proposition 84, AWEP and EQIP programs to date include several of the practices recommended by the Coalition during focused outreach. These data indicate targeted growers in the SJCDWQC region have some options for financial resources to aid in implementing recommended practices designed to improve water quality.

Figure 28. Proposition 84, AWEP and EQIP management practices awarded funding in Contra Costa and San Joaquin Counties in 2012.

'Irrigation Water Management' includes land leveling, water management, microirrigation, sprinkler system and tailwater return system (Tables 34 and 35). 'Other' includes nutrient management, pest management, pumping plant, roof runoff structure and structure for water control (Table 35).



STATUS OF TMDL CONSTITUENTS

The Basin Plan includes Total Maximum Daily Load (TMDL) monitoring and reporting requirements, and dischargers must comply with the monitoring and management criteria specified per each TMDL. A narrative concerning each EPA-approved TMDL constituent is provided below to document the Coalition’s strategy and actions taken to meet the TMDL requirements for Coalition members during 2012. The Coalition conducts representative monitoring based on zones outlined in the SJCDWQC MRPP (pages 8-25 and 32-34) for constituents and waterbodies or sections with approved TMDLs. Table 36 contains TMDL constituents and lists both the associated waterbody name or section and the Coalition zone that overlaps the waterbody or section. Some Coalition zones overlap multiple TMDL waterbodies or sections. The San Joaquin River (Stanislaus River to Delta Boundary) was previously 303(d) listed for both boron and diazinon; however, the waterbody was delisted for the constituents in 2008 and therefore the San Joaquin River is not included in Table 36 for boron or diazinon.

If an exceedance of a water quality objective occurs for an EPA-approved TMDL constituent, a management plan is required for that constituent in that site subwatershed. Actions taken as part of a management plan for a TMDL constituent include additional focused monitoring, analysis to determine the source of the exceedance, and outreach within the site subwatershed. Coalition efforts include: 1) MPM, 2) conducting site subwatershed grower meetings, 3) encouraging the implementation of and evaluating the efficacy of management practices, and 4) addressing the seven surveillance and monitoring objectives described in the Basin Plan, where applicable. These actions allow the Coalition to address water quality with respect to TMDL constituents and adhere to TMDL requirements put forth in the Basin Plan.

Table 36. Waterbodies within the Coalition boundaries with US EPA approved TMDLs.

TMDL CONSTITUENT	WATERBODY NAME/SECTION	OVERLAPPING COALITION ZONE(S)
Chlorpyrifos	Delta Waterways (central portion)	3, 4
	Delta Waterways (eastern portion)	1, 2, 3, 5
	Delta Waterways (export area)	4
	Delta Waterways (southern portion)	4,6
	Delta waterways (Stockton Ship Channel)	2
	Delta Waterways (western portion)	4,6
	San Joaquin River (Stanislaus River to Delta Boundary)	5
Diazinon	Delta Waterways (central portion)	3, 4
	Delta Waterways (eastern portion)	1, 2, 3, 5
	Delta Waterways (export area)	4
	Delta Waterways (southern portion)	4,6
	Delta waterways (Stockton Ship Channel)	2
	Delta Waterways (western portion)	4,6
	Five Mile Slough (Alexandria Place to Fourteen Mile Slough; partly in Delta Waterways, eastern portion)	4
	Marsh Creek (Marsh Creek Reservoir to San Joaquin River; partly in Delta Waterways, western portion) ¹	6
Mosher Slough (downstream of I-5; partly in Delta Waterways, eastern portion)	4	
Electrical	San Joaquin River (Stanislaus River to Delta Boundary)	5

TDML CONSTITUENT	WATERBODY NAME/SECTION	OVERLAPPING COALITION ZONE(S)
Conductivity		
Dissolved Oxygen	Delta waterways (Stockton Ship Channel)	2
Mercury and methyl mercury	Delta Waterways (central portion)	3, 4
	Delta Waterways (western portion)	4
	Marsh Creek (Marsh Creek Reservoir to San Joaquin River; partly in Delta Waterways, western portion) ¹	6
	Mokelumne/Cosumnes Rivers	1
	San Joaquin River (Stanislaus River to Delta Boundary)	5

¹Based on approval from the Regional Board, the SJCDWQC no longer monitors Marsh Creek due to the amount of urban influence and development within this site subwatershed.

CHLORPYRIFOS AND DIAZINON TMDL

There are two approved chlorpyrifos and diazinon TMDLs applicable to drainage from the SJCDWQC region. The Lower San Joaquin River chlorpyrifos and diazinon TMDL was approved by the US EPA on December 20, 2006. It establishes six compliance points along the San Joaquin River, the furthest downstream of which is the San Joaquin River @ Vernalis. A relatively small portion of the drainage to the San Joaquin River @ Vernalis compliance point is within the SJCDWQC boundary (e.g. some drainage to the Stanislaus River), but because this compliance point is the furthest downstream point in the San Joaquin River, it receives most of its drainage from areas outside of the Coalition region. Therefore, it was agreed this monitoring location and the associated compliance and reporting responsibilities would be managed by the East San Joaquin Water Quality Coalition and the Westside San Joaquin River Watershed Coalition.

The SJCDWQC is responsible for determining compliance with the Sacramento and San Joaquin Delta chlorpyrifos and diazinon TMDL, which was adopted by the Regional Board on June 23, 2006 and documented in an amendment to the Basin Plan (*Amendments to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins for the Control of Diazinon and Chlorpyrifos Runoff into the Sacramento-San Joaquin Delta*, hereafter chlorpyrifos and diazinon Basin Plan Amendment). The US EPA approved this TMDL on October 10, 2007. The Basin Plan includes requirements that dischargers, either individually or as a member of a coalition, describe actions taken to reduce chlorpyrifos and diazinon discharges and meet the applicable WQOs, loading capacity, and load allocations by the required compliance dates (December 1, 2011 for the dormant season and March 2, 2012 for the irrigation season). The Coalition collaborated with the Regional Board to establish a monitoring and reporting strategy to demonstrate compliance with the chlorpyrifos and diazinon TMDL. The strategy includes assessing compliance with the chlorpyrifos and diazinon TMDL program Monitoring Objectives:

1. Determine compliance with established water quality objectives and the loading capacity applicable to diazinon and chlorpyrifos in the Delta Waterways.
2. Determine compliance with established load allocations for diazinon and chlorpyrifos.
3. Determine the degree of implementation of management practices to reduce off site movement of diazinon and chlorpyrifos.
4. Determine the effectiveness of management practices and strategies to reduce off site migration of diazinon and chlorpyrifos.

5. Determine whether alternatives to diazinon and chlorpyrifos are causing surface water quality impacts.
6. Determine whether the discharge causes or contributes to a toxicity impairment due to additive or synergistic effects of multiple pollutants.
7. Demonstrate that management practices are achieving the lowest pesticide levels technically and economically achievable.

Meetings are held quarterly with Regional Board staff to evaluate progress in meeting the Monitoring Objectives, and revisions to the Management Plan will be made if sufficient progress is not being achieved (Table 14).

During 2012, the Coalition evaluated compliance with WQOs through representative monitoring to assess loading capacity and load allocations within the Delta waterway subareas and waterbodies. Portions or all of one or more Coalition zones overlap portions or all of the Delta subareas and waterbodies (Table 37). The Coalition associated water quality monitoring results from any site within a zone with the Delta subareas and/or waterbodies within that zone (Table 37). For example, Zone 2 overlaps portions of the eastern Delta subarea and includes the Stockton Ship Channel. The Duck Creek @ Hwy 4 site is within Zone 2 and is considered representative of water quality within Zone 2. Therefore, the Coalition considers monitoring results from Duck Creek @ Hwy 4 representative of water quality within the eastern Delta subarea and Stockton Ship Channel (Table 37).

The Coalition designated two of its Core Monitoring locations, Roberts Island @ Whiskey Pump Slough and Walthall Slough @ Woodward Ave, as loading capacity sites (Table 38, Figure 29). Monitoring occurred monthly at the two locations for chlorpyrifos and diazinon. In addition, loading capacity is also assessed at sites that are within the legal Delta boundaries and are named Delta waterbodies (chlorpyrifos and diazinon Basin Plan Amendment, Appendix A; Table 38, Figure 29). Management Plan Monitoring for chlorpyrifos and/or diazinon occurred during 2012 at two sites that fit these criteria, Kellogg Creek along Hoffman Ln and Sand Creek @ Hwy 4 Bypass.

The Coalition assesses load allocation compliance at SJCDWQC sites that are tributaries to the named Delta waterbodies. Ten sites were monitored for load allocation compliance during 2012, including sites within and outside of the legal Delta boundary (Table 38, Figure 29).

Table 37. Delta TMDL subareas and waterbodies within the SJCDWQC region and the associated Coalition zone and 2012 monitoring sites evaluated for compliance with the TMDL.

Representative Coalition site used to assess loading capacity per each Delta TMDL subarea/waterbody is bolded.

WATERBODY TYPE	TMDL CONSTITUENT	WATERBODY NAME	OVERLAPPING COALITION ZONE	SITE NAME	LATITUDE	LONGITUDE
Delta TMDL Subareas	Chlorpyrifos, Diazinon	Delta Waterways (central portion)	Zone 3	Terminus Tract Drain @ Hwy 12	38.11558	-121.49380
			Zone 4	Grant Line Canal @ Clifton Court Rd	37.84182	-121.52999
				Grant Line Canal near Calpack Rd	37.82084	-121.50009
				Kellogg Creek along Hoffman Lane	37.88188	-121.65221
				Roberts Island @ Whiskey Slough Pump	37.96737	-121.46434
	Chlorpyrifos, Diazinon	Delta Waterways (eastern portion)	Zone 1	Bear Creek @ North Alpine Rd	38.07386	-121.21215
				Mokelumne River @ Bruella Rd	38.16022	-121.20643
			Zone 2	Duck Creek @ Highway 4	37.94949	-121.18208
				French Camp Slough @ Airport Way	37.88172	-121.24933
				Littlejohns Creek @ Jack Tone Rd	37.88958	-121.14727
				Lone Tree Creek @ Jack Tone Rd	37.83754	-121.14460
				Mormon Slough @ Jack Tone Road	37.96470	-121.14880
			Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	37.85360	-121.14570	
	Zone 3	Terminus Tract Drain @ Hwy 12	38.11558	-121.49380		
	Zone 5	Walthall Slough @ Woodward Ave	37.77046	-121.29227		
	Chlorpyrifos, Diazinon	Delta Waterways (southern portion)	Zone 4	Grant Line Canal @ Clifton Court Rd	37.84182	-121.52999
				Grant Line Canal near Calpack Rd	37.82084	-121.50009
				Kellogg Creek along Hoffman Lane	37.88188	-121.65221
				Roberts Island @ Whiskey Slough Pump	37.96737	-121.46434
			Zone 6	Sand Creek @ Hwy 4 Bypass	37.94750	-121.74300
Chlorpyrifos, Diazinon	Delta Waterways (western portion)	Zone 4	Grant Line Canal @ Clifton Court Rd	37.84182	-121.52999	
			Grant Line Canal near Calpack Rd	37.82084	-121.50009	
			Kellogg Creek along Hoffman Lane	37.88188	-121.65221	
					Roberts Island @ Whiskey Slough Pump	37.96737
		Zone 6	Sand Creek @ Hwy 4 Bypass	37.94750	-121.74300	
Delta TMDL Waterbody	Chlorpyrifos, Diazinon	Delta Waterways (export area)	Zone 4	Grant Line Canal @ Clifton Court Rd	37.84182	-121.52999
				Grant Line Canal near Calpack Rd	37.82084	-121.50009
				Kellogg Creek along Hoffman Lane	37.88188	-121.65221
				Roberts Island @ Whiskey Slough Pump	37.96737	-121.46434
	Chlorpyrifos, Diazinon	Delta Waterways (Stockton Ship Channel)	Zone 2	Duck Creek @ Highway 4	37.94949	-121.18208
				French Camp Slough @ Airport Way	37.88172	-121.24933
			Littlejohns Creek @ Jack Tone Rd	37.88958	-121.14727	
			Lone Tree Creek @ Jack Tone Rd	37.83754	-121.14460	
			Mormon Slough @ Jack Tone Road	37.96470	-121.14880	
			Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	37.85360	-121.14570	

WATERBODY TYPE	TMDL CONSTITUENT	WATERBODY NAME	OVERLAPPING COALITION ZONE	SITE NAME	LATITUDE	LONGITUDE
Delta TMDL Waterbody	Diazinon	Five Mile Slough (Alexandria Place to Fourteen Mile Slough; partly in Delta Waterways, eastern portion)	Zone 4	Grant Line Canal @ Clifton Court Rd	37.84182	-121.52999
				Grant Line Canal near Calpack Rd	37.82084	-121.50009
				Kellogg Creek along Hoffman Lane	37.88188	-121.65221
				Roberts Island @ Whiskey Slough Pump	37.96737	-121.46434
	Diazinon	Mosher Slough (downstream of I-5; partly in Delta Waterways, eastern portion)	Zone 4	Grant Line Canal @ Clifton Court Rd	37.84182	-121.52999
				Grant Line Canal near Calpack Rd	37.82084	-121.50009
				Kellogg Creek along Hoffman Lane	37.88188	-121.65221
				Roberts Island @ Whiskey Slough Pump	37.96737	-121.46434
	Chlorpyrifos, Diazinon	San Joaquin River (Stanislaus River to Delta Boundary) ¹	Zone 5	Walthall Slough @ Woodward Ave	37.77046	-121.29227

¹ This section is addressed in the Lower San Joaquin River Diazinon and Chlorpyrifos TMDL and is associated with the compliance location San Joaquin River @ Vernalis. This waterbody section was delisted from the 303(d) list for diazinon in 2008.

Figure 29. Legal Delta boundary, chlorpyrifos and diazinon Delta TMDL subareas, and 2012 SJCDWQC monitoring sites.

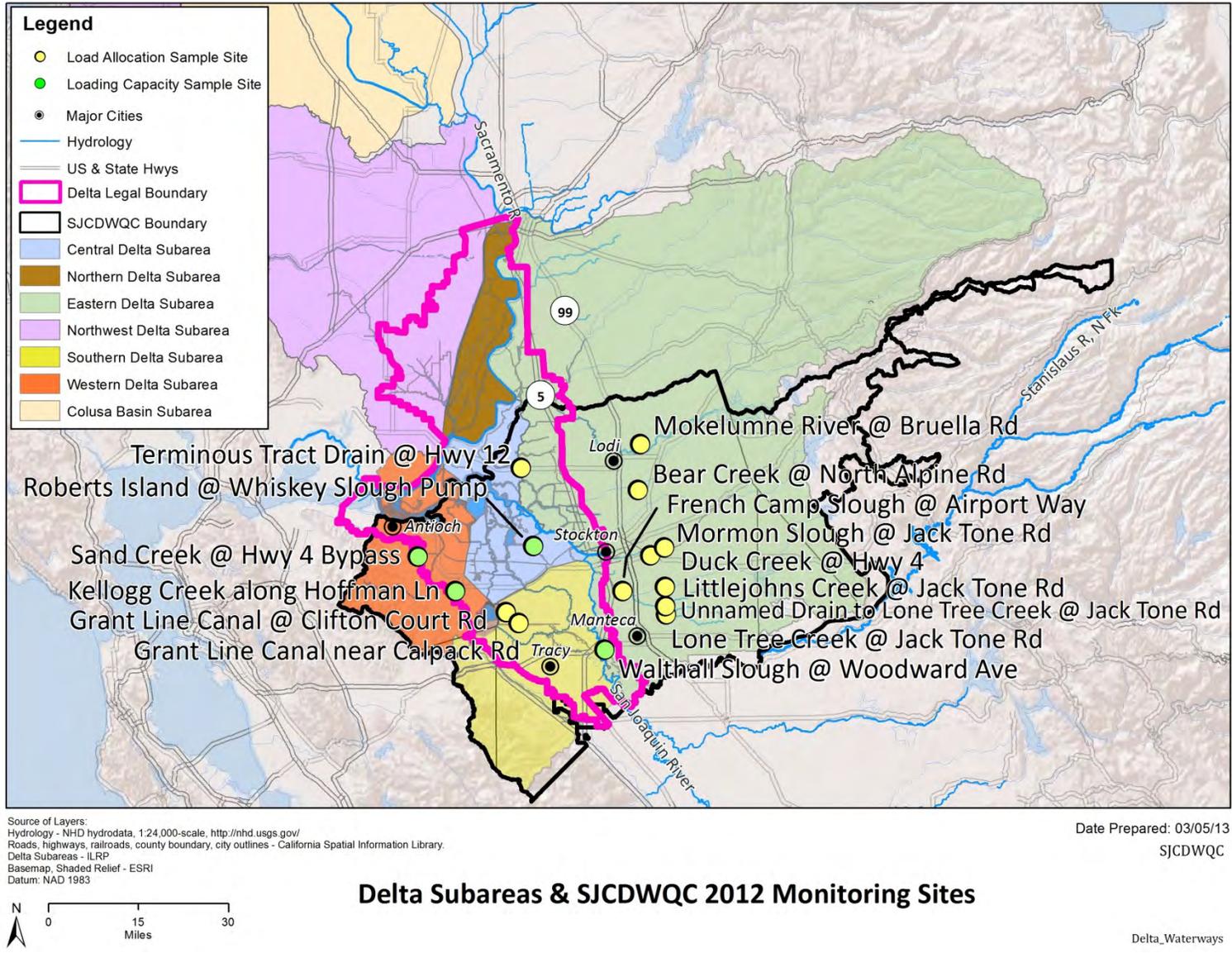


Table 38. Type of compliance (load capacity or load allocation) evaluated and monitoring schedule at each SJCDWQC 2012 monitoring site.

Each site was monitored for chlorpyrifos (C) and/or diazinon (D) in one or more months.

MONITORING COMPLIANCE TYPE	TMDL WATERBODY TYPE ¹	SITE NAME	COALITION MONITORING TYPE IN 2012 ²	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	REPRESENTED DELTA TMDL SUBAREAS AND WATERBODIES	
Load Capacity	Delta WB (Named)	Kellogg Creek along Hoffman Ln	MPM		C											Delta Waterways (central portion), Delta Waterways (export area), Delta Waterways (southern portion), Delta Waterways (western portion), Five Mile Slough, Mosher Slough	
		Sand Creek @ Hwy 4 Bypass	MPM	D				C	C	D							Delta Waterways (western portion), Delta Waterways (southern portion)
	Walthall Slough @ Woodward Ave	C+TMDL	C,D	C,D	C,D	C,D	C,D	C,D	C,D	C,D	C,D	C,D	C,D	C,D	C,D	Delta Waterways (eastern portion), San Joaquin River (Stanislaus River to Delta Boundary)	
	Delta WB (Unnamed)	Roberts Island @ Whiskey Slough Pump	C+TMDL	C,D	Delta Waterways (central portion), Delta Waterways (export area), Delta Waterways (southern portion), Delta Waterways (western portion), Five Mile Slough, Mosher Slough												
Load Allocation	Delta WB (Unnamed)	Grant Line Canal @ Clifton Court Rd ³	MPM	C	C	C						C				Delta Waterways (central portion), Delta Waterways (export area), Delta Waterways (southern portion), Delta Waterways (western portion), Five Mile Slough, Mosher Slough	
		Grant Line Canal near Calpack Rd ³	MPM			C		C		C	C						Delta Waterways (central portion), Delta Waterways (export area), Delta Waterways (southern portion), Delta Waterways (western portion), Five Mile Slough, Mosher Slough
		Terminus Tract Drain @ Hwy 12	MPM								C	C					Delta Waterways (central portion), Delta Waterways (eastern portion)
	Tributary to Delta	Bear Creek @ North Alpine Rd	MPM	C									C	C			Delta Waterways (eastern portion)
		Duck Creek @ Hwy 4	Assessment	C,D	Delta Waterways (eastern portion), Delta Waterways (Stockton Ship Channel)												
		French Camp Slough @ Airport Way	MPM	D	C,D		C	C		C	C	C	C				Delta Waterways (eastern portion), Delta Waterways (Stockton Ship Channel)
		Littlejohns Creek @ Jack Tone Rd	MPM		C,D		C		C	C					C		Delta Waterways (eastern portion), Delta Waterways (Stockton Ship Channel)
		Lone Tree Creek @ Jack Tone Rd	MPM	C,D	C,D						C	C					Delta Waterways (eastern portion), Delta Waterways (Stockton Ship Channel)
		Mormon Slough @ Jack Tone Rd	MPM						C		C	C	C				Delta Waterways (eastern portion), Delta Waterways (Stockton Ship Channel)
		Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	MPM	C	C				C	C	C	C	C		C	C	Delta Waterways (eastern portion), Delta Waterways (Stockton Ship Channel)

¹Named Delta waterbody (WB) within legal Delta boundary, Unnamed Delta waterbody within legal Delta boundary, or Tributary to Delta outside of legal Delta boundary.

²Assessment Monitoring, MPM, or Core Monitoring with the addition of chlorpyrifos and diazinon for TMDL compliance (Core + TMDL).

³Grant Line Canal is a named Delta waterbody. The two Coalition sampling sites named 'Grant Line Canal' are located on Union Island and not within Grant Line Canal (refer to coordinates in Table 2).

Compliance with Chlorpyrifos and Diazinon WQOs

The Coalition evaluates compliance with the chlorpyrifos and diazinon WQOs by reviewing monthly monitoring results from all sites. In 2012, the concentration of chlorpyrifos in a single sample exceeded the WQO for chlorpyrifos (Table 39). The sample was collected from Unnamed Drain to Lone Tree Creek @ Jack Tone Rd in December 2012. The site subwatershed is within Zone 2 and represents water quality in the eastern Delta subarea and the Stockton Ship Channel. Aside from the single exceedance, chlorpyrifos was not detected in any other samples collected during 2012. Diazinon was not detected in any sample collected during 2012.

Table 39. SJCDWQC 2012 exceedances of the WQO for chlorpyrifos at sites within the Delta waterway sections.
There were no exceedances of the WQO for diazinon at any site in the SJCDWQC region in 2012.

ZONE	SITE NAME	TMDL WATERBODY TYPE	SAMPLE DATE	CHLORPYRIFOS (0.015 µG/L)
2	Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	Tributary	12/03/2012	0.019

Compliance with Chlorpyrifos and Diazinon Loading Capacity and Load Allocations

Loading capacity and load allocations for nonpoint source discharges, including agricultural discharges, are based on the following equation for discharges to Sacramento-San Joaquin Delta Waterways:

$$S = \frac{C_D}{WQO_D} + \frac{C_C}{WQO_C} \leq 1.0$$

S= load capacity

C_D = diazinon concentration in µg/L

C_C = chlorpyrifos concentration in µg/L

WQO_D = diazinon water quality objective; 0.1 µg/L

WQO_C = chlorpyrifos water quality objective; 0.015 µg/L

As described above, the Coalition assesses load capacity compliance monthly at the two representative sites (Roberts Island @ Whiskey Slough Pump in Zone 4 and Walthall Slough @ Woodward Ave in Zone 5) and conducted MPM for chlorpyrifos and/or diazinon at the two named Delta waterbodies during 2012 (Kellogg Creek @ Hoffman Ln in Zone 4 and Sand Creek @ Hwy 4 Bypass in Zone 6; Figure 29 and Table 40). The Coalition did not detect chlorpyrifos or diazinon in any of the samples assessed for load capacity; therefore all samples collected in 2012 were in compliance with the established load capacity (Table 40).

The Coalition assesses load allocation compliance at monitoring sites on tributaries to the Delta (Figure 29 and Table 41). A single sample collected from Unnamed Drain to Lone Tree Creek @ Jack Tone Rd in December 2012 was out of compliance with the established load allocations (Table 41). Aside from the single exceedance, chlorpyrifos was not detected in any other sample and diazinon was not detected in any sample assessed for load allocation compliance during 2012.

Table 42 provides a summary of load capacity and load allocation compliance by Delta subarea and waterbody for 2012. The Unnamed Drain to Lone Tree Creek @ Jack Tone Rd site subwatershed is

located in Zone 2 and represents water quality in the eastern Delta subarea and the Stockton Ship Channel.

Table 40. Sacramento-San Joaquin Delta Waterways TMDL load capacity compliance calculations for diazinon and chlorpyrifos runoff for nonpoint source discharges in 2012.

If a site was scheduled for chlorpyrifos and/or diazinon analysis during an event and the result is not included in this table, the site was dry during the event.

ZONE	SITE NAME	SAMPLE DATE	CHLORPYRIFOS (µG/L)	DIAZINON (µG/L)	LOAD	LOAD CAPACITY COMPLIANCE
4	Roberts Island @ Whiskey Slough Pump	1/17/2012	<0.0026	<0.004	0	In compliance
6	Sand Creek @ Hwy 4 Bypass	1/17/2012	NS	<0.004	0	In compliance
5	Walthall Slough @ Woodward Ave	1/17/2012	<0.0026	<0.004	0	In compliance
4	Kellogg Creek along Hoffman Ln	2/14/2012	<0.0026	NS	0	In compliance
4	Roberts Island @ Whiskey Slough Pump	2/14/2012	<0.0026	<0.004	0	In compliance
5	Walthall Slough @ Woodward Ave	2/14/2012	<0.0026	<0.004	0	In compliance
4	Roberts Island @ Whiskey Slough Pump	3/15/2012	<0.0026	<0.004	0	In compliance
5	Walthall Slough @ Woodward Ave	3/15/2012	<0.0026	<0.004	0	In compliance
4	Roberts Island @ Whiskey Slough Pump	4/12/2012	<0.0026	<0.004	0	In compliance
5	Walthall Slough @ Woodward Ave	4/12/2012	<0.0026	<0.004	0	In compliance
4	Roberts Island @ Whiskey Slough Pump	5/16/2012	<0.0026	<0.004	0	In compliance
6	Sand Creek @ Hwy 4 Bypass	5/16/2012	<0.0026	NS	0	In compliance
5	Walthall Slough @ Woodward Ave	5/16/2012	<0.0026	<0.004	0	In compliance
4	Roberts Island @ Whiskey Slough Pump	6/19/2012	<0.0026	<0.004	0	In compliance
6	Sand Creek @ Hwy 4 Bypass	6/19/2012	<0.0026	NS	0	In compliance
5	Walthall Slough @ Woodward Ave	6/19/2012	<0.0026	<0.004	0	In compliance
4	Roberts Island @ Whiskey Slough Pump	7/17/2012	<0.0026	<0.004	0	In compliance
6	Sand Creek @ Hwy 4 Bypass	7/17/2012	NS	<0.004	0	In compliance
5	Walthall Slough @ Woodward Ave	7/17/2012	<0.0026	<0.004	0	In compliance
4	Roberts Island @ Whiskey Slough Pump	8/21/2012	<0.0026	<0.004	0	In compliance
5	Walthall Slough @ Woodward Ave	8/21/2012	<0.0026	<0.004	0	In compliance
4	Roberts Island @ Whiskey Slough Pump	9/18/2012	<0.0026	<0.004	0	In compliance
5	Walthall Slough @ Woodward Ave	9/18/2012	<0.0026	<0.004	0	In compliance
4	Roberts Island @ Whiskey Slough Pump	10/16/2012	<0.0026	<0.004	0	In compliance
5	Walthall Slough @ Woodward Ave	10/16/2012	<0.0026	<0.004	0	In compliance
4	Roberts Island @ Whiskey Slough Pump	11/6/2012	<0.0026	<0.004	0	In compliance
5	Walthall Slough @ Woodward Ave	11/6/2012	<0.0026	<0.004	0	In compliance
4	Roberts Island @ Whiskey Slough Pump	12/3/2012	<0.0026	<0.004	0	In compliance
5	Walthall Slough @ Woodward Ave	12/3/2012	<0.0026	<0.004	0	In compliance

NS-Not sampled; analyte not scheduled for analysis during event.

Table 41. Sacramento-San Joaquin Delta Waterways TMDL load allocation compliance calculations for diazinon and chlorpyrifos runoff for nonpoint source discharges in 2012.

If a site was scheduled for chlorpyrifos and/or diazinon analysis during an event and the result is not included in this table, the site was dry during the event.

ZONE	SITE NAME	SAMPLE DATE	CHLORPYRIFOS	DIAZINON	LOAD	LOAD ALLOCATION COMPLIANCE
2	Duck Creek @ Hwy 4	1/17/2012	<0.0026	<0.004	0	In compliance
2	French Camp Slough at Airport Way	1/17/2012	NS	<0.004	0	In compliance
4	Grant Line Canal @ Clifton Court Rd	1/17/2012	<0.0026	NS	0	In compliance
2	Lone Tree Creek @ Jack Tone Rd	1/17/2012	<0.0026	<0.004	0	In compliance
2	Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	1/17/2012	<0.0026	NS	0	In compliance
2	Duck Creek @ Hwy 4	2/14/2012	<0.0026	<0.004	0	In compliance
2	French Camp Slough at Airport Way	2/14/2012	<0.0026	<0.004	0	In compliance
4	Grant Line Canal @ Clifton Court Rd	2/14/2012	<0.0026	NS	0	In compliance
2	Littlejohns Creek @ Jack Tone Rd	2/14/2012	<0.0026	<0.004	0	In compliance
2	Lone Tree Creek @ Jack Tone Rd	2/14/2012	<0.0026	<0.004	0	In compliance
2	Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	2/14/2012	<0.0026	NS	0	In compliance

ZONE	SITE NAME	SAMPLE DATE	CHLORPYRIFOS	DIAZINON	LOAD	LOAD ALLOCATION COMPLIANCE
2	Duck Creek @ Hwy 4	3/15/2012	<0.0026	<0.004	0	In compliance
4	Grant Line Canal @ Clifton Court Rd	3/15/2012	<0.0026	NS	0	In compliance
4	Grant Line Canal near Calpack Rd	3/15/2012	<0.0026	NS	0	In compliance
2	Duck Creek @ Hwy 4	4/12/2012	<0.0026	<0.004	0	In compliance
2	French Camp Slough at Airport Way	4/12/2012	<0.0026	NS	0	In compliance
2	Littlejohns Creek @ Jack Tone Rd	4/12/2012	<0.0026	NS	0	In compliance
2	Duck Creek @ Hwy 4	5/16/2012	<0.0026	<0.004	0	In compliance
2	French Camp Slough at Airport Way	5/16/2012	<0.0026	NS	0	In compliance
4	Grant Line Canal near Calpack Rd	5/16/2012	<0.0026	NS	0	In compliance
2	Mormon Slough @ Jack Tone Rd	5/16/2012	<0.0026	NS	0	In compliance
2	Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	5/16/2012	<0.0026	NS	0	In compliance
2	Duck Creek @ Hwy 4	6/19/2012	<0.0026	<0.004	0	In compliance
2	Littlejohns Creek @ Jack Tone Rd	6/19/2012	<0.0026	NS	0	In compliance
2	Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	6/19/2012	<0.0026	NS	0	In compliance
2	Duck Creek @ Hwy 4	7/17/2012	<0.0026	<0.004	0	In compliance
2	French Camp Slough at Airport Way	7/17/2012	<0.0026	NS	0	In compliance
4	Grant Line Canal near Calpack Rd	7/17/2012	<0.0026	NS	0	In compliance
2	Littlejohns Creek @ Jack Tone Rd	7/17/2012	<0.0026	NS	0	In compliance
2	Lone Tree Creek @ Jack Tone Rd	7/17/2012	<0.0026	NS	0	In compliance
2	Mormon Slough @ Jack Tone Rd	7/17/2012	<0.0026	NS	0	In compliance
2	Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	7/17/2012	<0.0026	NS	0	In compliance
2	Duck Creek @ Hwy 4	8/21/2012	<0.0026	<0.004	0	In compliance
2	French Camp Slough at Airport Way	8/21/2012	<0.0026	NS	0	In compliance
4	Grant Line Canal near Calpack Rd	8/21/2012	<0.0026	NS	0	In compliance
2	Lone Tree Creek @ Jack Tone Rd	8/21/2012	<0.0026	NS	0	In compliance
2	Mormon Slough @ Jack Tone Rd	8/21/2012	<0.0026	NS	0	In compliance
3	Terminus Tract Drain @ Hwy 12	8/21/2012	<0.0026	NS	0	In compliance
2	Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	8/21/2012	<0.0026	NS	0	In compliance
1	Bear Creek @ North Alpine Rd	9/18/2012	<0.0026	NS	0	In compliance
2	Duck Creek @ Hwy 4	9/18/2012	<0.0026	<0.004	0	In compliance
2	French Camp Slough at Airport Way	9/18/2012	<0.0026	NS	0	In compliance
4	Grant Line Canal @ Clifton Court Rd	9/18/2012	<0.0026	NS	0	In compliance
2	Mormon Slough @ Jack Tone Rd	9/18/2012	<0.0026	NS	0	In compliance
3	Terminus Tract Drain @ Hwy 12	9/18/2012	<0.0026	NS	0	In compliance
2	Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	9/18/2012	<0.0026	NS	0	In compliance
1	Bear Creek @ North Alpine Rd	10/16/2012	<0.0026	NS	0	In compliance
2	Duck Creek @ Hwy 4	10/16/2012	<0.0026	<0.004	0	In compliance
2	French Camp Slough at Airport Way	10/16/2012	<0.0026	NS	0	In compliance
2	Duck Creek @ Hwy 4	11/6/2012	<0.0026	<0.004	0	In compliance
2	Littlejohns Creek @ Jack Tone Rd	11/6/2012	<0.0026	NS	0	In compliance
2	Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	11/6/2012	<0.0026	NS	0	In compliance
2	Duck Creek @ Hwy 4	12/3/2012	<0.0026	<0.004	0	In compliance
2	Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	12/3/2012	0.019	NS	1.27	Out of compliance

NS-Not sampled; analyte not scheduled for analysis during event.

Table 42. Summary of 2012 load capacity and allocation compliance in the Sacramento-San Joaquin Delta Subareas and TMDL Listed Waterways.

Samples may represent multiple subareas/waterbodies and therefore counts may be repeated.

TYPE OF LOAD COMPLIANCE	REPRESENTED DELTA TMDL SUBAREAS AND WATERBODIES	COALITION ZONE	COUNT OF SAMPLES:		TOTAL SAMPLES
			IN COMPLIANCE	OUT OF COMPLIANCE	
Load Allocation	Delta Waterways (central portion)	3	2	0	2
		4	8	0	8
	Delta Waterways (eastern portion)	1	2	0	2
		2	41	1	42
		3	2	0	2
Load	Delta Waterways (southern portion)	4	8	0	8

TYPE OF LOAD COMPLIANCE	REPRESENTED DELTA TMDL SUBAREAS AND WATERBODIES	COALITION ZONE	COUNT OF SAMPLES:		TOTAL SAMPLES
			IN COMPLIANCE	OUT OF COMPLIANCE	
Allocation	Delta Waterways (western portion)	4	8	0	8
	Delta Waterways (export area)	4	8	0	8
	Delta Waterways (Stockton Ship Channel)	2	41	1	42
	Five Mile Slough	4	8	0	8
	Mosher Slough	4	8	0	8
Load Capacity	Delta Waterways (central portion)	4	13	0	13
	Delta Waterways (eastern portion)	5	12	0	12
	Delta Waterways (southern portion)	4	13	0	13
		6	4	0	4
	Delta Waterways (western portion)	4	13	0	13
		6	4	0	4
	Delta Waterways (export area)	4	13	0	13
	Five Mile Slough	4	13	0	13
	Mosher Slough	4	13	0	13
	San Joaquin River (Stanislaus River to Delta Boundary)	5	12	0	12

Implementation and Effectiveness of Management Practices to Reduce Chlorpyrifos and Diazinon Offsite Movement

As discussed in previous MPURs (2010 and 2011), the General Survey Summary Report submitted by the SJCDWQC to the Regional Board on December 30, 2008 presented information on management practices utilized by growers across the Coalition region. Based on 2008 membership information, 2,483 members representing 322,146 acres (61% of enrolled irrigated acreage in 2008) could be linked to a survey with at least one question completed.

In 2008, the Coalition began focused outreach efforts as part of its Management Plan strategy in high priority site subwatersheds. As explained above, the Coalition prioritized site subwatersheds such that focus is first on constituents that originate from agriculture (e.g. chlorpyrifos and diazinon; Table 8). Per each high priority site subwatershed, the Coalition compiled a list of targeted growers who had the potential to drain (including spray drift) and who had applied chlorpyrifos and/or diazinon (and/or other high priority constituents) in the last two years. Coalition representatives met with each of the targeted growers to review their operations, including currently implemented management practices, and to encourage and recommend new or additional management practices. The Coalition followed up with growers to record newly implemented management practices and reviewed this information in conjunction with continued MPM results to determine the effectiveness of implemented management practices and its overall outreach strategy.

As of 2012, the Coalition has initiated focused outreach in twelve site subwatersheds (Table 8). The Coalition documented currently implemented management practices and made recommendations to growers in all twelve site subwatersheds (refer to First through Fourth Priority Subwatersheds Summary of Management Practices sections of this report). The Coalition documented newly implemented management practices in nine of the twelve site subwatersheds (refer to First through Third Priority Subwatersheds Summary of Management Practices sections in this report). The management practices recommended by the Coalition and implemented by targeted growers are designed to improve water

quality by preventing the offsite movement of agricultural constituents, including chlorpyrifos and diazinon. The Coalition evaluates the effectiveness of implemented management practices by relating data of implemented management practices to monitoring results within high priority site subwatersheds (refer to section Evaluation of Management Practice Effectiveness in this report). In addition, the Coalition evaluates effectiveness of implemented management practices across the entire SJCDWQC region on a zone by zone basis by associating water quality with newly implemented management practices per each zone (refer to section Coalition Wide Evaluation of this report).

Alternatives to Chlorpyrifos and Diazinon

Several alternative pesticide and product options exist, such as other organophosphates, pyrethroids, and neonicotinoids. The Coalition encourages growers to switch to lower-risk, alternative products during outreach (initiated in 2009). However, alternatives to chlorpyrifos and diazinon depend on the product registration, commodity, pest pressures, and time of year, among other factors.

The pounds of diazinon applied in the SJCDWQC region has declined since 2004, with the single exception of pounds applied in 2010 (Figure 30). This increase in use was most likely due to a large outbreak of a relatively new pest, spotted winged drosophila. Spotted wing drosophila was first discovered in California in 2008 and a large outbreak occurred in cherry orchards in 2010 within the SJCDWQC region (Lee et al., 2011). Research is limited on effective treatments. Van Steenwyk (2013) recommends pyrethroids or spinosyns. Carbamates, neonicotinoids or organophosphates (including diazinon) can also be used to manage the pests. Spotted winged drosophila is not a widespread pest concern for cherries in the SJCDWQC region, and use of diazinon continued to decline in 2011. The commodities in the SJCDWQC region with the most pounds of diazinon applied from 2004 through 2011 (PUR data are incomplete for 2012 at this time) include:

1. Almonds (32,550 pounds)
2. Cherries (32,523 pounds)
3. Apples (8,610 pounds)
4. Corn (5,386 pounds)
5. Tomatoes (4,640 pounds)

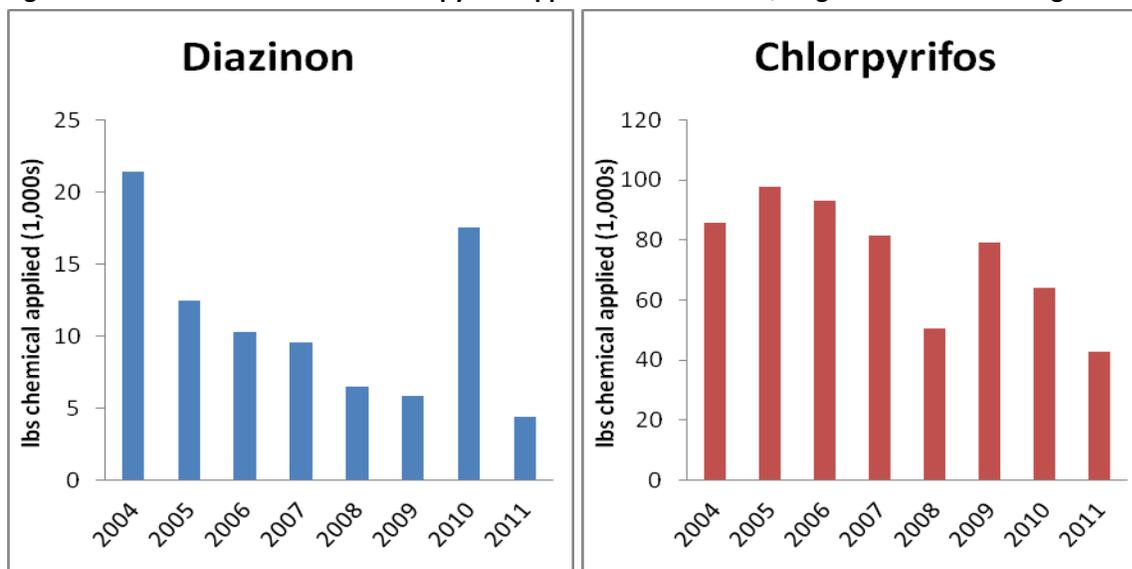
The Coalition has not detected diazinon in any samples collected from waterways within the SJCDWQC region since January 2011 (Bear Creek @ North Alpine Rd, 0.032 µg/L).

Chlorpyrifos use also declined in the region in recent years; growers applied roughly two times as many pounds of chlorpyrifos in 2005 compared to 2011 (Figure 30). The commodities in the SJCDWQC region with the most pounds of chlorpyrifos applied from 2004 through 2011 include:

1. Walnuts (143,940 pounds of chlorpyrifos applied)
2. Alfalfa (51,736 pounds of chlorpyrifos applied)
3. Grapes (42,954 pounds of chlorpyrifos applied)
4. Almonds (28,925 pounds of chlorpyrifos applied)
5. Corn (22,986 pounds of chlorpyrifos applied)

Despite a decline in use, sampling results indicate chlorpyrifos was present in waterways in the Coalition region (Table 39) and in sediment samples collected in 2012 (Table 50).

Figure 30. Pounds of diazinon and chlorpyrifos applied in the SJCDWQC region from 2004 through 2011.



To evaluate the use of alternatives to chlorpyrifos and diazinon, the Coalition identified the pests for which diazinon and/or chlorpyrifos applications are recommended for management (University of California Agriculture and Natural Resources, 2013). The Coalition considered the highest priority pests associated with the commodities to which the greatest pounds of diazinon (almonds and cherries) and chlorpyrifos (walnuts, alfalfa, and grapes) are applied in the SJCDWQC region (Elliott et al., 2004; UC ANR, 2013). The highest priority pests are defined as pests that are of major concern for a commodity and are geographically widespread in the SJCDWQC region. The Coalition reviewed alternative pesticides and other management strategies (i.e. applications of plant growth regulators) for each pest (CA DWR 2013; Elliott et al., 2004; IRAC, 2005; Summers et al., 2007; UC ANR, 2013; Zalom et al., 1999). Tables 43 and 44 list the timing of applications of recommended alternatives to chlorpyrifos and/or diazinon to manage high priority pests.

Several alternative options exist to manage pests per each commodity (Tables 43 and 44). Navel orange worms, peach twig borers and San Jose scales are the highest priority pests for almonds in the SJCDWQC region, and over 10 different classes of pesticides in addition to diazinon and chlorpyrifos can be used to manage these pests (Elliott et al., 2004; UC ANR, 2013; Zalom et al., 1999). Similarly, over 10 classes of pesticides are recommended to manage the highest priority pests in walnuts, which are codling moths and walnut husk flies (UC ANR, 2013). Various leafhoppers are the highest priority pest for cherry orchards, and growers have eight options of different classes of pesticides in addition to diazinon and chlorpyrifos for management of the pests in cherries and in alfalfa (UC ANR, 2013). Weevils and aphids are of concern for alfalfa crops and vine mealy bugs are the only widespread, major concern for grapes in the SJCDWQC region (UC ANR, 2013). Growers can choose from four different classes of pesticides to treat weevils and aphids in alfalfa and to treat vine mealy bugs in grapes (UC ANR, 2013).

In addition to the numerous alternative pesticides available, the timing of application varies both by pesticide choice and target pest (Tables 43 and 44). Applications of pyrethroids are recommended for almonds in August to treat navel orange worms, but pyrethroids should be applied in November through February to target peach twig borers in almonds. Applications of spinosyns to walnuts in March through May, August, and October are recommended to treat codling moths, but spinosyns should be applied in June through August to manage walnut husk flies. Growers can apply organophosphates to alfalfa in March through May to target weevils and blue and pea aphids as well as in June through November to target spotted aphids.

Table 43. Timing of applications of alternative pesticides to diazinon in the SJCDWQC region.

COMMODITY	PEST	PEST APPEARANCE	ALTERNATIVE PESTICIDE CLASS ¹	ALTERNATIVE AI	COMMON PRODUCT NAME	RECOMMENDED APPLICATION PERIOD
Almond	Navel orange worm	All months	Avermectin	Emamectin benzoate	NA	Mar-May
			Bacterium	Bacillus thuringiensis	Vectobac	Mar-May, Aug
			Diacylhydrazine	Methoxyfenozide	Intrepid	Mar-May, Aug
			Diamide	Chlorantraniliprole	Voliam Xpress	Mar-May, Aug
				Flubendiamide	NA	Mar-May, Aug
			Organophosphate	Phosmet	Imidan	Aug
			Pyrethroid	Bifenthrin	Athena	Aug
				Esfenvalerate	Asana	Aug
				Fenpropathrin	NA	Aug
				Lambda-cyhalothrin	Warrior	Aug
	Spinosyn	Spinetoram	Delegate	Mar-May, Aug		
		Spinosad	Success	Mar-May, Aug		
	Unclassified	Buprofezin	Tourismo	Mar-May, Aug		
	Peach twig borer	Feb-Oct	Avermectin	Emamectin benzoate	NA	Mar-May
			Bacterium	Bacillus thuringiensis	Javelin	Mar-May
			Benzoylurea	Diflubenzuron	Dimlin	Nov-Mar
			Diacylhydrazine	Methoxyfenozide	Intrepid	Mar-May
			Diamide	Chlorantraniliprole	Voliam Xpress	Nov-May
				Flubendiamide	NA	Mar-May
			Neonicotinoid	Acetamprid	Assail	Nov-May
			Pyrethroid	Bifenthrin	Athena	Nov-Feb
				Cyfluthrin	Leverage	Nov-Feb
				Esfenvalerate	Asana	Nov-Feb
				Lambda-cyhalothrin	Warrior	Nov-Feb
			Spinosyn	Spinetoram	Delegate	Nov-May
				Spinosad	Success	Nov-May
			Unclassified	Buprofezin	Tourismo	Mar-May
	San Jose scale	Feb-Aug	Carbamate	Carbaryl	Sevin	Nov-Jan
			Organophosphate	Methidathion	Supracide	May
			Unclassified	Buprofezin	Tourismo	Apr
Pyriproxyfen				NA	Nov-Jan, Apr	
Cherry	Cherry leafhopper	Apr-Oct	Neonicotinoid	Thiamethoxam	Cruiser	Nov-Jan, Jun-Aug
			Organophosphate	Methidathion	Supracide	Nov-Jan
			Pyrethroid	Esfenvalerate	Asana	Nov-Jan, Jun-Aug
				Lambda-cyhalothrin	Warrior	Nov-Jan, Jun-Aug
	Fruittree leafhopper	Mar-Jun	Bacterium	Bacillus thuringiensis	Javelin	Apr-May
			Carbamate	Carbaryl	Sevin	Apr-May
			Diacylhydrazine	Methoxyfenozide	Intrpeid	Apr-May
			Diamide	Chlorantraniliprole	Altacor	Apr-May
				Flubendiamide	Belt	Apr-May

COMMODITY	PEST	PEST APPEARANCE	ALTERNATIVE PESTICIDE CLASS ¹	ALTERNATIVE AI	COMMON PRODUCT NAME	RECOMMENDED APPLICATION PERIOD
			Organophosphate	Methidathion	Supracide	Jan-Feb
			Pyrethroid	Esfenvalerate	Asana	Jan-Feb
				Lambda-cyhalothrin	Warrior	Jan-Feb
			Spinosyn	Spinetoram	Delegate	Apr-May
				Spinosad	GF-120 Naturalyte	Apr-May
Cherry	Mountain leafhopper	May-Jul	Neonicotinoid	Thiamethoxam	Cruiser	May-Jul
			Pyrethroid	Esfenvalerate	Asana	May-Jul
				Lambda-cyhalothrin	Warrior	May-Jul

¹For organization purposes, Alternative Pesticide Class includes categories that are not pesticides, such as bacterium.

AI – Active ingredient

NA – Not available; no PUR data available

Source: CA DWR 2013; Elliott et al., 2004; IRAC, 2005; UC ANR, 2013; Zalom et al., 1999

Table 44. Timing of applications of alternative pesticides to chlorpyrifos in the SJCDWQC region by commodity and pest.

COMMODITY	PEST	PEST APPEARANCE	ALTERNATIVE PESTICIDE CLASS ¹	ALTERNATIVE AI	COMMON PRODUCT NAME	RECOMMENDED APPLICATION PERIOD
Walnut	Codling moth	May-Nov	Avermectin	Emamectin benzoate	Proclaim	Mar-May, Aug, Oct
			Bacterium	Bacillus thuringiensis	Javelin	Mar-May, Aug, Oct
			Benzoylurea	Diflubenzuron	Dimlin	Mar-May, Aug, Oct
			Carbamate	Carbaryl	Sevin	Mar-May, Aug, Oct
			Diamide	Methoxyfenozide	Intrpeid	Mar-May, Aug, Oct
				Chlorantraniliprole	Altacor	Mar-May, Aug, Oct
			Organophosphate	Flubendiamide	Belt	Mar-May, Aug, Oct
				Phosmet	Imidan	Mar-May, Aug, Oct
			Pyrethroid	Bifenthrin	Brigade	Mar-May, Aug, Oct
				Cyfluthrin	Leverage	Mar-May, Aug, Oct
	Lambda-cyhalothrin	Warrior		Mar-May, Aug, Oct		
	Spinosyn	Permethrin	Perm-Up	Mar-May, Aug, Oct		
		Spinetoram	Delegate	Mar-May, Aug, Oct		
				Spinosad	GF-120 Naturalyte	Mar-May, Aug, Oct
		Walnut husk fly	Jun-Sep	Neonicotinoid	Imidacloprid	Pasada
Organophosphate	Malathion			Clean Crop	Jun-Aug	
	Phosmet			Imidan	Jun-Aug	
Plant growth regulator	Ethephon			Ethrel	Jun-Aug	
Pyrethroid	Esfenvalerate			Asana	Jun-Aug	
Spinosyn	Spinetoram	Delegate	Jun-Aug			
	Spinosad	GF-120 Naturalyte	Jun-Aug			
Alfalfa	Alfalfa weevil	Feb-Jun	Organophosphate	Malathion	Clean Crop	Mar-May
				Phosmet	Imidan	Mar-May
			Oxadiazine	Indoxacarb	Steward	Mar-May
	Pyrethroid	Cyfluthrin	Leverage	Mar-May		
		Lambda-cyhalothrin	Warrior	Mar-May		
	Blue, pea aphid	Feb-Jun	Botanical	Azadirachtin	Azatin (various)	Mar-May
			Pyrethrin	NA	Mar-May	
	Spotted alfalfa aphid	Jun-Sep	Organophosphate	Dimethoate	Drexel	Mar-May
Botanical			Azadirachtin	Azatin (various)	Jun-Nov	
Pyrethrin			NA	Jun-Nov		
Grapes	Vine mealybug	May-Oct	Organophosphate	Dimethoate	Drexel	Jun-Nov
			Carbamate	Methomyl	Lannate	Jun-Nov
			Neonicotinoid	Acetamiprid	Assail	Jun-Aug
				Imidacloprid	Provado	Apr-Aug
			Organophosphate	Dimethoate	Drexel	Jun-Nov
Unclassified	Buprofezin	Applaud	Feb, Jun-Aug			

¹For organization purposes, Alternative Pesticide Class includes categories that are not pesticides, such as bacterium.

AI – Active ingredient

NA – Not available; no PUR data available

Source: CA DWR 2013; IRAC, 2005; Summers et al., 2007; UC ANR, 2013; Zalom et al., 1999

The Coalition reviewed PUR data for trends in use of diazinon, chlorpyrifos and alternative pesticides per each commodity. Tables 45 and 46 list the pounds of diazinon, chlorpyrifos and alternative pesticides (grouped by class of pesticide) applied per year per each commodity for the SJCDWQC region. The analysis begins with 2007 as this was the year during which general outreach became more focused on management plans, which included discussing alternatives to chlorpyrifos and diazinon with growers. Growers applied fewer pounds of diazinon to almonds every year compared to the previous year. Pounds of diazinon applied to cherries decreased overall, with the exception of the peak in 2010 that included applications in response to an outbreak of spotted wing drosophila. Overall, the pounds of pyrethroids, diacylhydrazines, spinosyns and bacterium applied increased from 2007 to 2011 to almonds and/or cherries (Table 45).

Pounds of chlorpyrifos applied to walnuts, alfalfa and grapes declined every year compared to the year preceding. Conversely, pounds applied of several alternatives increased between 2007 and 2011: other organophosphates (walnuts and alfalfa), pyrethroids (walnut and alfalfa), neonicotinoids (walnut and grapes), diacylhydrazines (walnuts and alfalfa) and bacterium (walnuts). Diamides emerged as an option for pest management in walnuts and alfalfa, and growers began applying carbamates to walnuts in 2009 while using fewer pounds of carbamates on grapes. Use of benzoylureas and spinosyns on walnuts remained consistent from 2007 to 2011. Given the various pests and recommended timing of applications to manage the pests, pesticide use on a year by year level may be too broad in this context to discern meaningful trends for the purpose of evaluating changes in use.

Table 45. Pounds of AI applied of diazinon and alternative pesticide classes in the SJCDWQC region.

AI of each pesticide class is listed in Table 43. Classes sorted by greatest total AI (all years) applied.

COMMODITY	CLASS	LBS AI APPLIED					TOTAL AI (ALL YEARS)
		2007	2008	2009	2010	2011	
Almond	Pyrethroid	1,663	956	1,513	1,730	2,376	8,238
	Diazinon	3,765	2,661	727	340	171	7,665
	Other Organophosphates ¹	3,837	2,272	10	21	20	6,160
	Diacylhydrazine	334	352	348	966	1,435	3,435
	Benzoylurea	571	704	623	554	517	2,969
	Bacterium	220	158	150	162	76	765
	Carbamate	0	0	0	0	148	148
	Neonicotinoid	0	0	57	17	20	95
	Spinosyn	30	48	2	5	4	88
	Diamide	0	0	37	17	20	74
Cherry	Buprofezin-unclassified	0	0	0	0	16	16
	Diazinon	3,028	1,574	1,551	15,449	2,194	23,796
	Diacylhydrazine	1,572	1,611	1,684	1,397	3,325	9,589
	Pyrethroids	576	467	931	454	1,080	3,507
	Carbamate	589	280	70	1,383	326	2,647
	Neonicotinoids	384	302	376	246	329	1,637
	Other Organophosphates ¹	917	53	83	0	0	1,052
	Spinosyns	19	11	23	261	736	1,050
	Bacterium	78	262	44	73	367	824
Diamide	0	0	0	1	2	3	

¹Other organophosphates refers to all pesticides classified as organophosphates except chlorpyrifos and diazinon.

AI – Active ingredient

Table 46. Pounds of AI applied of chlorpyrifos and alternative pesticide classes in the SJCDWQC region.

AI of each pesticide class is listed in Table 44. Classes sorted by greatest total AI (all years) applied.

COMMODITY	CLASS	LBS AI APPLIED					TOTAL AI (ALL YEARS)
		2007	2008	2009	2010	2011	
Walnut	Chlorpyrifos	31,043	20,283	33,668	34,757	24,190	143,940
	Other Organophosphates ¹	11,209	5,820	8,274	12,795	13,201	51,299
	Plant growth regulator	2,669	978	3,407	5,765	7,487	20,306
	Pyrethroids	1,312	966	1,391	1,612	2,794	8,075
	Neonicotinoids	10	316	1,282	1,467	1,422	4,497
	Diacylhydrazine	446	149	413	765	860	2,633
	Benzoylurea	458	443	622	393	425	2,341
	Bacterium	364	259	181	198	513	1,514
	Diamide	0	0	29	116	470	615
	Spinosyns	70	69	83	151	115	489
	Carbamate	0	0	42	26	99	167
Avermectin	0	0	0	0	0.5	0.5	
Alfalfa	Chlorpyrifos	12,557	7,158	14,831	8,570	8,622	51,736
	Other Organophosphates ¹	10,532	4,490	9,262	12,001	12,957	49,243
	Pyrethroids	1,367	1,358	2,022	1,654	1,823	8,223
	Oxadiazine	297	240	1,146	279	237	2,199
	Botanical	15	18	38	12	20	103
Grape	Chlorpyrifos	11,291	6,462	16,886	7,711	604	42,954
	Neonicotinoids	2,206	2,688	5,800	7,641	9,247	27,582
	Buprofezin	1,913	1,356	8,472	10,142	922	22,804
	Other Organophosphates ¹	1,438	730	120	89	46	2,422
	Carbamate	272	254	509	419	34	1,488

¹ Other organophosphates refers to all pesticides classified as organophosphates except chlorpyrifos and diazinon.

AI – Active ingredient

To isolate trends in use, the Coalition used PUR data to compare the pounds of chemicals (active ingredients (AI)) applied by month per each commodity to the recommended timing of applications of each chemical to manage pests. The Coalition focused its analysis on diazinon, chlorpyrifos and the four classes of alternative pesticides with the greatest pounds applied per each commodity. The Coalition determined the Relative Percent Difference (RPD) of pounds applied in the first year that general outreach focused on alternative strategies (2007) and in the most current year with complete PUR data (2011) using the following formula:

$$RPD = \left[\left(\frac{X - Y}{X + Y} \right) / 2 \right] * -100$$

Where X = pounds applied in 2007

Y = pounds applied in 2011

The Coalition linked pesticide applications to pest pressures by evaluating use on a monthly basis.

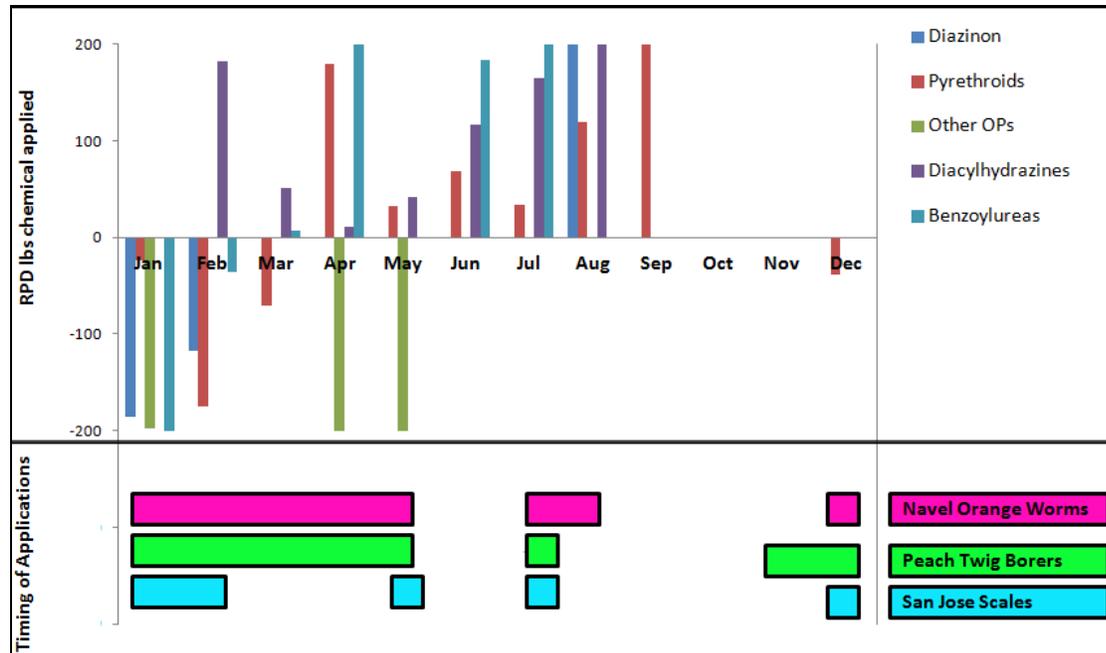
Almonds

Navel orange worm, peach twig borer and San Jose scale are the highest priority pests for almonds in the SJCDWQC region. For control of these three pests, growers can apply diazinon during December through February, May and July (Elliott et al., 2004; UC ANR 2013). Growers can apply pyrethroids, other organophosphates, or benzoylureas in November through February to manage peach twig borer (through March for benzoylureas). Pyrethroids can also target navel orange worm if applied in August, and other organophosphates are effective in managing San Jose scale when applied in May. Another option to manage navel orange worm and peach twig borer is to apply bacterium in March through May

(both pests) and August (navel orange worm only). Overall, growers applied less diazinon, other organophosphates and benzoylureas in 2011 compared to 2007 during months recommended for applications to target pests. Growers applied more diacylhydrazines and benzoylureas in July of 2011 compared to 2007. Applications of the two pesticide classes are recommended in July for control of peach twig borer (Figure 31).

Figure 31. ALMONDS - Relative percent difference of pounds of diazinon and alternative pesticide classes applied in 2007 compared to 2011 to almonds in the SJCDWQC region.

Recommended months for application of pesticides to manage pests are shown on the bottom half of the graph.



Other OPs – Other organophosphates refers to all pesticides classified as organophosphates except chlorpyrifos and diazinon.

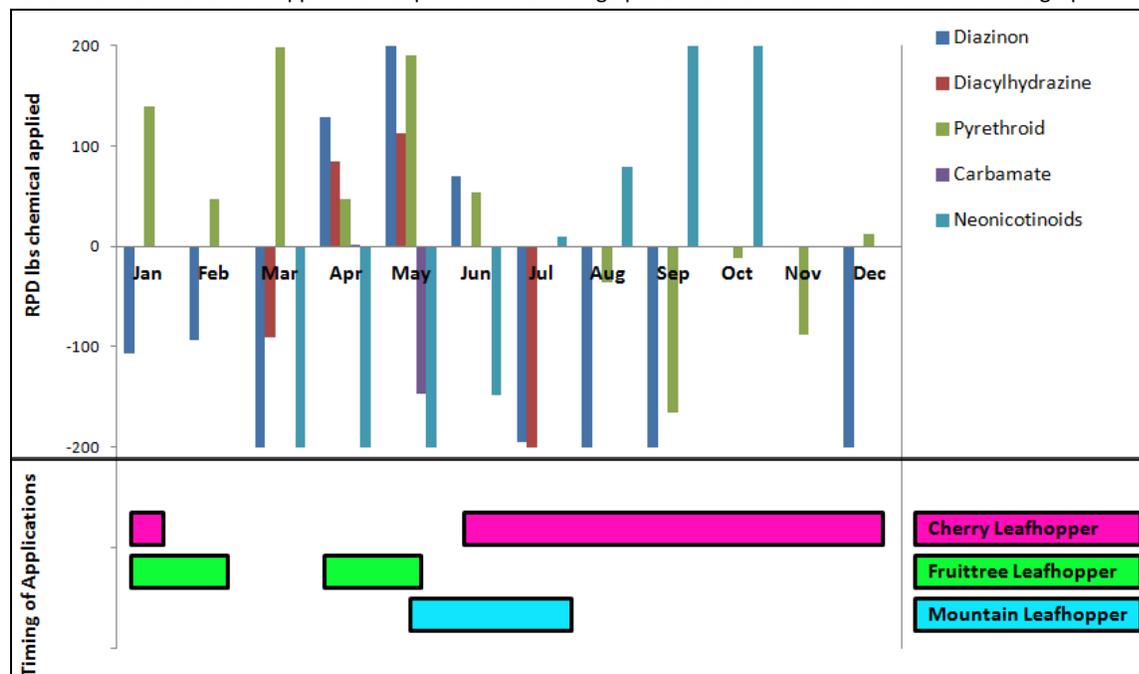
Cherries

Cherry leafhoppers, fruit tree leafhoppers and mountain leafhoppers are the highest priority pests associated with cherries in the SJCDWQC region. The University of California Division of Agriculture and Natural Resources (UC ANR) website recommends applying diazinon, pyrethroids or neonicotinoids as post-harvest and dormant spray applications during June through January to manage cherry leafhoppers (UC ANR 2013). Diazinon or pyrethroids are recommended for the delayed dormant season (January through February) to manage fruit tree leafhoppers. Growers can also target fruit tree leafhoppers with carbamates or diacylhydrazines if applied from petal fall to pre-harvest (April to May). For control of mountain leafhoppers, growers can apply diazinon, pyrethroids or neonicotinoids during harvest (May and June) and in late July. Overall, the pounds of diazinon and carbamates applied in 2011 were less than the pounds applied in 2007 during months recommended for applications to target pests. Pounds of neonicotinoids applied were similar in 2011 compared to 2007, although the timing of applications shifted: more neonicotinoids were applied post-harvest (July to October) in 2011 than in-season (March to June). In 2011, growers applied more pounds of diacylhydrazines in April and May, which are associated with management of fruit tree leafhoppers, than in the same months during 2007. Growers

also applied more pyrethroids in 2011 compared to 2007 during months recommended for management of all three pests (Figure 32).

Figure 32. CHERRIES - Relative percent difference of pounds of diazinon and alternative pesticide classes applied in 2007 compared to 2011 to cherries in the SJCDWQC region.

Recommended months for application of pesticides to manage pests are shown on the bottom half of the graph.



Walnuts

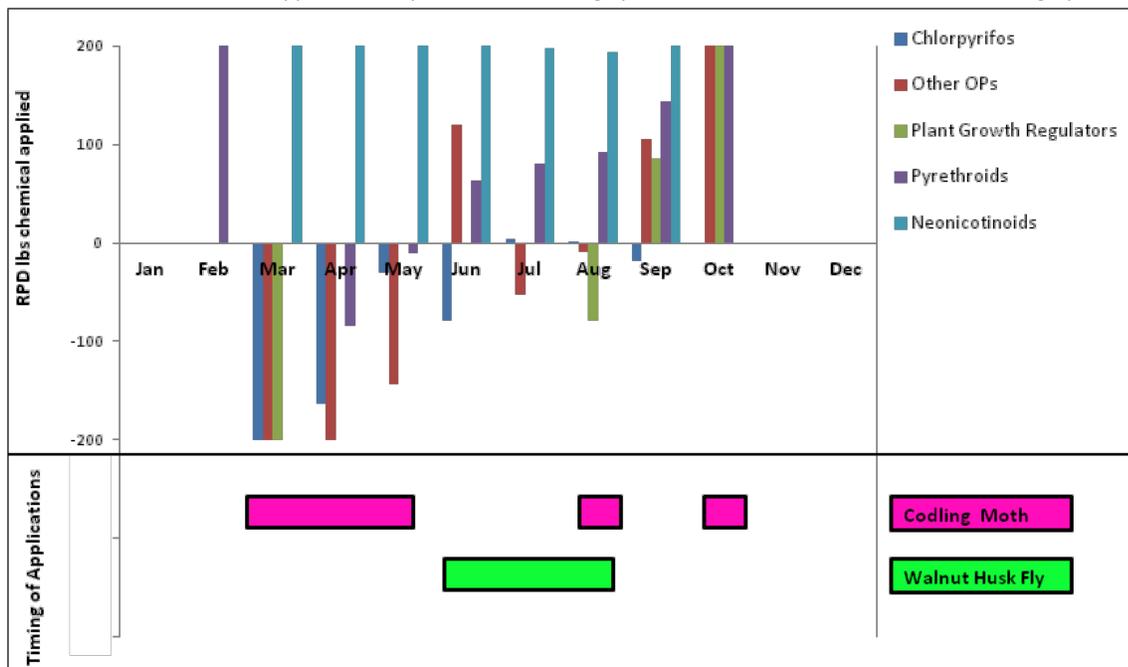
Codling moths are a major concern for walnuts and are widespread in the SJCDWQC region. The UC ANR website (2013) recommends applying chlorpyrifos, other organophosphates, or pyrethroids during March through May, August and October for management of codling moths. In the SJCDWQC region, applications of all classes of pesticides recommended for treatment of codling moth were less during March through May of 2011 compared to 2007. In August and October, however, chlorpyrifos use was relatively the same during each of the two years whereas pounds applied increased for all other classes of recommended pesticides. Growers favored late summer applications over spring application to manage codling moths and relied more heavily on alternatives than chlorpyrifos in 2011 compared to 2007 (Figure 33).

Walnut husk flies are also a concern for walnuts and are widespread in the SJCDWQC region. Applications of chlorpyrifos, neonicotinoids, other organophosphates, pyrethroids or plant growth regulators are recommended from June through August to manage the pest (UC ANR, 2013). The plant growth regulator recommended for walnut husk flies is a hormone that regulates the timing of the husk split. If the husk split occurs earlier, there is less of a chance that it will overlap with the timing of pest outbreaks. During the months recommended for applications, growers applied more neonicotinoids, and pyrethroids, and less organophosphates, including chlorpyrifos, in 2011 compared to 2007 (Figure 33). This trend is consistent with the information gained from conversations with University of

California, Davis Extension personnel: in general, chlorpyrifos is no longer applied to treat walnut husk flies as other alternatives have proven more effective.

Figure 33. WALNUTS - Relative percent difference of pounds of chlorpyrifos and alternative pesticide classes applied in 2007 compared to 2011 to walnuts in the SJCDWQC region.

Recommended months for application of pesticides to manage pests are shown on the bottom half of the graph.



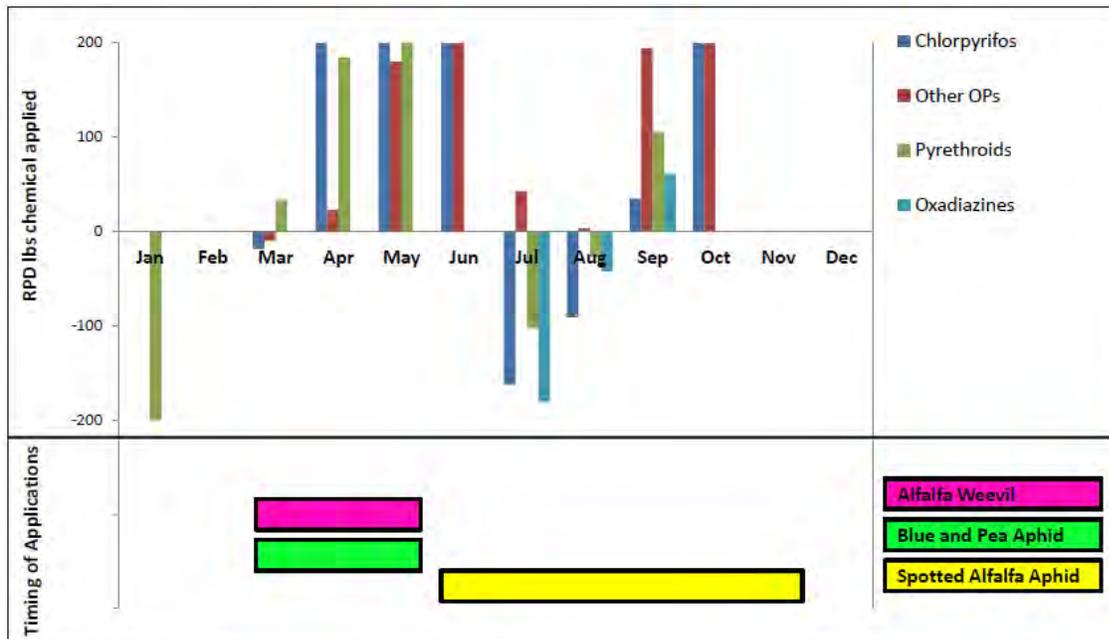
Other OPs – Other organophosphates refers to all pesticides classified as organophosphates except chlorpyrifos and diazinon.

Alfalfa

Alfalfa weevils, blue and pea aphids, and spotted alfalfa aphids are the highest priority pests for alfalfa (Summers et al., 2007; UC ANR, 2013). The UC ANR website (2013) recommends applying chlorpyrifos or other organophosphates during March through May to manage weevils and blue and pea aphids. Applications of oxadiazines or pyrethroids are also recommended during March through May for management of weevils. Pounds of chlorpyrifos, pyrethroids and oxadiazines were relatively consistent in 2011 compared to 2007 during March through May whereas the use of other organophosphates was greater in 2011 compared to 2007, in particular during the months of May and June (Figure 34). Spotted alfalfa aphids are present during June through September (Summers et al., 2007; UC ANR, 2013). Chlorpyrifos or other organophosphates are recommended to manage the pest and should be applied from June through November. Overall, growers applied slightly fewer pounds of chlorpyrifos but more pounds of other organophosphates in 2011 than in 2007 from June through November (Figure 34).

Figure 34. ALFALFA - Relative percent difference of pounds of chlorpyrifos and alternative pesticide classes applied in 2007 compared to 2011 to alfalfa in the SJCDWQC region.

Recommended months for application of pesticides to manage pests are shown on the bottom half of the graph. Botanicals are not included on the graph because of the relatively few pounds applied in the region.



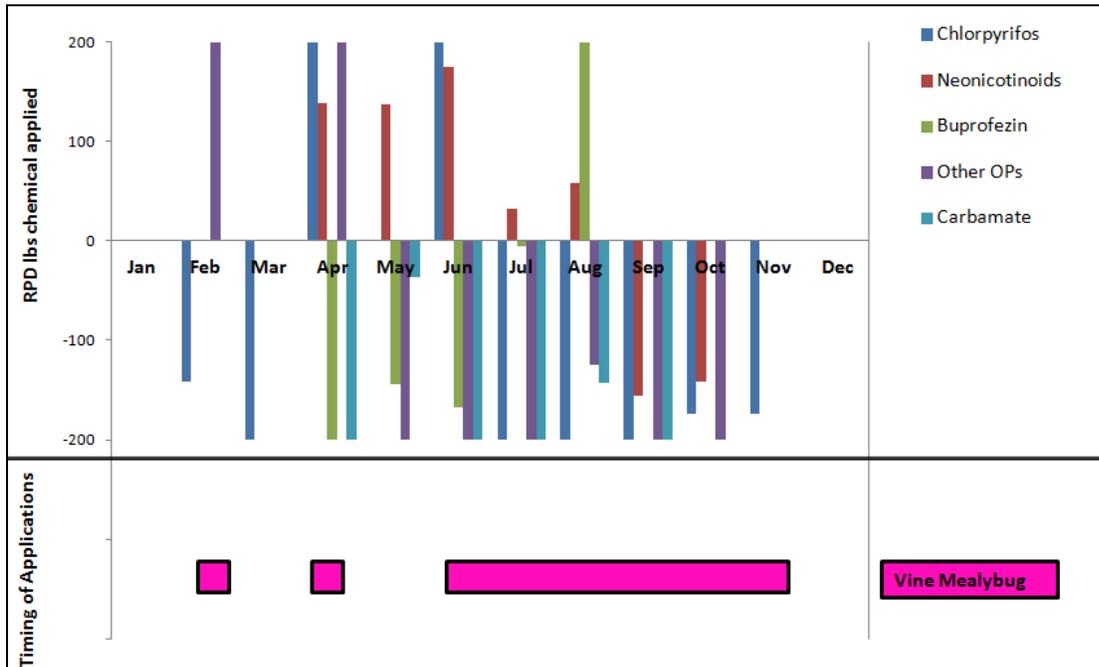
Other OPs – Other organophosphates refers to all pesticides classified as organophosphates except chlorpyrifos and diazinon.

Grapes

Vine mealybugs can attack grapevines from May through October (UC ANR, 2013). The UC ANR website (2013) recommends applying chlorpyrifos, other organophosphates, or carbamates from June through November to manage vine mealybugs; chlorpyrifos applications are also recommended for February. Growers can also apply neonicotinoids in April and June through August or buprofezin in February and June through August to manage vine mealybug. Growers used less chlorpyrifos during months recommended for applications in 2011 compared to 2007. The pounds of buprofezin applied in August of 2011 were greater compared to August of 2007 whereas the pounds of chlorpyrifos applied in August of 2011 were less compared to August of 2007. Growers applied approximately 7,000 more pounds of neonicotinoids to grapes in 2011 compared to 2007; pounds of neonicotinoids applied in April through August of 2011 was much greater compared to the same months in 2007. Overall, growers applied more neonicotinoids and buprofezin and less chlorpyrifos in 2011 compared to 2007 during months recommended for applications to treat vine mealybugs (Figure 35).

Figure 35. GRAPES - Relative percent difference of pounds of chlorpyrifos and alternative pesticide classes applied in 2007 compared to 2011 to grapes in the SJCDWQC region.

Recommended months for application of pesticides to manage pests are shown on the bottom half of the graph.



Other OPs – Other organophosphates refers to all pesticides classified as organophosphates except chlorpyrifos and diazinon.

The analysis of pesticide use by month indicates growers relied more heavily on alternatives to diazinon and chlorpyrifos in 2011 compared to 2007 to manage the highest priority pests (Figures 31-35). Growers applied fewer pounds of diazinon to almonds and cherries and fewer pounds of chlorpyrifos to walnuts and grapes in 2011 compared to 2007. The amount of chlorpyrifos applied to alfalfa in 2011 was slightly less than pounds applied in 2007. During the months with targeted applications, growers applied more pyrethroids to almonds, cherries and walnuts, applied more organophosphates (other than diazinon and chlorpyrifos) to walnuts and alfalfa, and applied more diacylhydrazines to cherries in 2011 compared to 2007. Almond growers also relied more heavily on bacterium during 2011 compared to 2007, and walnut growers applied more neonicotinoids and plant growth regulators in 2011 compared to 2007. Grape growers applied more neonicotinoids in 2011 compared to 2007. Of the six pesticide classes with greater use in 2011 compared to 2007, two pose minimal risks for water quality: bacterium and plant growth regulators. Pyrethroids, other organophosphates, diacylhydrazines and neonicotinoids may impair water quality if applied incorrectly or if moved offsite via irrigation tailwater or storm water runoff. The Coalition monitored for pyrethroids, other organophosphates and carbamates during 2012 (Table 47).

Table 47. SJCDWQC 2012 sites monitored for potential alternatives to chlorpyrifos and diazinon and for toxicity indicative of chlorpyrifos, diazinon and potential alternatives to chlorpyrifos and diazinon.

ZONE	SITE NAME	ORGANOPHOSPHATES										CARBAMATES					TOXICITY			
		AZINPHOS-METHYL	DICHLORVOS	DIMETHOATE	DEMETON-S	DISULFOTON	MALATHION	METHAMIDOPHOS	METHIDATHION	PARATHION, METHYL	PHORATE	PHOSMET	ALDICARB	CARBARYL	CARBOFURAN	METHIOCARB	METHOMYL	OXAMYL	C. DUBIA	P. PROMELAS
Zone 1	Bear Creek @ North Alpine Rd							M												
	Mokelumne River @ Bruella Rd																		M	
Zone 2	Duck Creek @ Hwy 4	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	M ²	A	A
	French Camp Slough at Airport Way																	M		M
	Mormon Slough @ Jack Tone Rd																	M		
	Littlejohns Creek @ Jack Tone Rd																			
	Lone Tree Creek @ Jack Tone Rd																			M ³
	Unnamed Drain to Lone Tree Creek @ Jack Tone Rd																		M ³	M
Zone 3	Terminus Tract Drain @ Hwy 12																			M
Zone 4	Grant Line Canal @ Clifton Court Rd																			M
	Grant Line Canal near Calpack Rd																		M	M
	Kellogg Creek along Hoffman Ln																		M	M
	Roberts Island @ Whiskey Slough Pump																		M	M
Zone 5	Walthall Slough @ Woodward Ave																			M
Zone 6	Sand Creek @ Hwy 4 Bypass						M												M	M

A - Assessment Monitoring constituent

M - Management Plan Monitoring is conducted for Priority A-D constituents during months of past exceedances.

¹If *Hyalella* survival is less than 80% compared to the control, the following pesticides will be analyzed for: bifenthrin, cyfluthrin, cypermethrin, deltamethrin, esfenvalerate, lambda-cyhalothrin, permethrin, fenpropathrin and chlorpyrifos.

²MPM at sites under Assessment Monitoring in 2012

³Constituent was approved for removal from active management plan on 21-May-2012.

Coalition monitoring results indicate the presence of alternatives to chlorpyrifos and diazinon in the waterways. During a storm event in December 2012, carbaryl (carbamate) and dimethoate (organophosphate) were detected in samples collected from the Duck Creek @ Hwy 4 site subwatershed (Table 48). The site subwatershed is located in Zone 2 and therefore represents water quality in the eastern Delta subarea and the Stockton Ship Channel. However, the concentrations of the pesticides detected did not exceed their respective WQTL and therefore did not impair water quality.

Of the water column toxicity tests conducted in 2012, there was a single sample collected at Grant Line Canal near Calpack Rd in Zone 4 during August that tested toxic to *C. dubia* (Table 49). This monitoring location is within a Delta island and water must be pumped out before it reaches the Grant Line Canal. At the time of sampling the pump was not on. The site was scheduled for MPM in August, and no alternative pesticides were analyzed for in the sample. A TIE was not conducted since the survival was greater than 50% compared to the control, and the PUR data associated with the August sediment toxicity were not available for review at the time of this report.

Six sediment samples collected from five different sites resulted in toxicity to *H. azteca* during 2012 (Table 49). The five sites are within Zones 2, 4 and 6 and represent water quality in the four Delta subareas and TMDL listed waterbodies: export area, Stockton Ship Channel, Five Mile Slough, and Mosher Slough. Analysis of toxic sediment indicated the presence of several pyrethroids, including

bifenthrin, cyfluthrin, cypermethrin, deltamethrin, esfenvalerate, lambda-cyhalothrin, permethrin, and fenpropathrin (Table 50).

Table 48. Results of potential alternative pesticides for 2012 SJCDWQC tributary monitoring.

Constituent WQTL in parenthesis after analyte name. Exceedances are bolded.

ZONE	SITE NAME	SAMPLE DATE	CARBARYL (2.53 µg/L)	DIMETHOATE (1.0 µg/L)
2	Duck Creek @ Hwy 4	12/3/2012	0.093	0.25

Monitoring results in 2012 indicate carbaryl, dimethoate and pyrethroids were present in tributaries to the Delta and within the legal Delta boundaries in named and unnamed Delta waterbodies; only pyrethroids are associated with impairing water quality (pyrethroids associated with six sediment toxicities). Pyrethroids were used more heavily in 2011 than in 2007 in the SJCDWQC region. It is possible growers are using pyrethroids as an alternative to chlorpyrifos and/or diazinon. However, PUR data and the analysis presented above can only indicate changes in use of pesticides and cannot be used to evaluate if applied chemicals are used as alternatives to chlorpyrifos and/or diazinon.

The Coalition will continue to inform growers the best way to protect water quality is to prevent the offsite movement of all agricultural constituents including chlorpyrifos, diazinon, and alternative pesticides. The Coalition encourages the implementation of management practices designed to prevent spray drift, irrigation tailwater, sediment, and storm water runoff from carrying pesticides to surface waterways (refer to Management Practices section).

Table 49. Water column and sediment toxicity exceedance summary.

ZONE	STATION NAME	SAMPLE DATE	SEASON & MONITORING TYPE ¹	SPECIES	TOXICITY END POINT	MEAN	PERCENT CONTROL	TOXICITY SIGNIFICANCE	SUMMARY COMMENTS
2	Duck Creek @ Hwy 4	3/15/2012	Storm1 NM, Non-contiguous, SED	<i>H. azteca</i>	Survival (%)	61	68	SL	Pyrethroids and chlorpyrifos detected.
6	Sand Creek @ Hwy 4 Bypass	3/15/2012	Storm1 MPM, SED	<i>H. azteca</i>	Survival (%)	57	63	SL	Pyrethroids detected.
4	Grant Line Canal near Calpack Rd	8/21/2012	Irrigation 4 MPM	<i>C. dubia</i>	Survival (%)	60	60	SL	TIE not conducted.
2	Duck Creek @ Hwy 4	9/18/2012	Irrigation5 MPM, NM, SED	<i>H. azteca</i>	Survival (%)	0	0	SL	Pyrethroids and chlorpyrifos detected.
4	Grant Line Canal @ Clifton Court Rd	9/18/2012	Irrigation5 MPM, SED	<i>H. azteca</i>	Survival (%)	4	4	SL	Pyrethroids and chlorpyrifos detected.
4	Grant Line Canal near Calpack Rd	9/18/2012	Irrigation5 MPM, SED	<i>H. azteca</i>	Survival (%)	0	0	SL	Pyrethroids and chlorpyrifos detected.
2	Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	9/18/2012	Irrigation5 MPM, SED	<i>H. azteca</i>	Survival (%)	9	10	SL	Pyrethroids and chlorpyrifos detected.

NM-Normal Monitoring

MPM – Management Plan Monitoring

SED – Sediment monitoring

SL-Statistically significantly different from control; Less than 80% threshold

¹Season & Sample Type column includes the type of monitoring the toxic species was undergoing during the month of monitoring.

Table 50. Sediment toxicity chemistry results for samples with 80% or less survival compared to control.

ZONE	STATION NAME	SAMPLE DATE	MONITORING TYPE	<i>H. AZTECA</i> (%CONTROL)	SEDIMENT PESTICIDES µg/KG DW										TOC (MG/KG DW)	MEAN GS DESCRIPTION	MEDIAN GS (MM)
					BIFENTHRIN	CHLORPYRIFOS	CYFLUTHRIN	CYHALOTHRIN, LAMBDA	CYPERMETHRIN	DELTA METHRIN:TRALOMETHRIN	ESFENVALERATE/FENVALERATE	FENPROPATHRIN	PERMETHRIN	TETRAMETHRIN			
2	Duck Creek @ Hwy 4	3/15/2012	NM, Non-contiguous, SED	68	1.6	0.40	ND	ND	ND	ND	ND	ND	ND	ND	21000	Sand (Fine) ¹	0.049
6	Sand Creek @ Hwy 4 Bypass	3/15/2012	MPM, SED	63	27.2	ND	4.7	1.7	0.69	1.5	ND	ND	2.4	ND	18000	Silt ²	0.025
2	Duck Creek @ Hwy 4	9/18/2012	MPM, NM, SED	0	59	1.8	ND	0.49	ND	ND	0.25	ND	ND	ND	22000	Sand (Fine) ¹	0.037
4	Grant Line Canal @ Clifton Court Rd	9/18/2012	MPM, SED	0	5.3	3.2	ND	20	1.8	ND	33	ND	ND	ND	45000	Silt ²	0.014
4	Grant Line Canal near Calpack Rd	9/18/2012	MPM, SED	4	45	0.99	ND	0.59	ND	ND	0.20	ND	1.8	ND	21000	Silt ²	0.008
2	Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	9/18/2012	MPM, SED	10	35	13	ND	1.6	ND	ND	7	2	6	ND	21000	Sand (Fine) ¹	0.057

GS- Grain Size

NM- Normal Monitoring

MPM-Management Plan Monitoring

ND- Not Detected

SED-Sediment monitoring

TOC- Total Organic Carbon

¹Sand (Fine): 0.075 to <0.425 mm

²Silt: 0.005 to <0.075 mm

Toxicity Impairment Due to Additive or Synergistic Effects of Multiple Pollutants

To completely understand whether there is additivity or synergy in toxicity caused by different chemicals in an ambient sample, the number of toxic units of each chemical in the ambient sample must be known. While the Coalition analyzes for numerous pesticides, there are far more pesticides applied than are included in the standard water chemistry analyses performed by the laboratories for the Coalition. A full TIE isolates the organic compounds by a solid phase extraction column and then characterizes the compounds by mass spectrometry analysis. The Coalition performs a Phase I and Phase III TIE which allows for the isolation of a compound type (i.e. non-polar organic, metals) but does not analyze the eluate to identify the specific compound. The cost of a full TIE is quite high and the Coalition has found that it can still perform targeted outreach with the results of the Phase I and Phase III TIEs. Consequently, there may always be chemicals in the sample that remain unidentified.

If all chemicals in a sample were quantified with confidence, the toxic units in the sample quantified, and the LC50 is available for the test species for all quantified chemicals, it is possible to determine if the toxicity observed is matched by the sum of the toxic units of the chemicals in the sample. If the toxic units are accounted for by the toxic units of the individual chemicals and the chemicals have the same mode of action, the toxicity is additive. If the number of toxic units quantified from the ambient sample is greater than the sum of the toxic units of the quantified chemicals, the chemicals are synergistic. If the sum of the toxic units calculated from the concentrations of the chemicals known to be present in the sample is lower than the number of toxic units in the ambient sample determined by toxicity testing, and if there are unknown chemicals in the ambient sample, it cannot be determined if synergy among chemicals is present. Given the lack of exhaustive chemical analysis performed by the Coalition on each sample, it is unlikely that true synergy can be recognized.

The Coalition conducted monitoring of *C. dubia*, *P. promelas* and/or *H. azteca* in all zones during 2012 (Table 47). The Coalition reviewed water column toxicity to *C. dubia* and *P. promelas* to assess toxicity due to pesticides, and sediment toxicity to *H. azteca* for toxicity due to chlorpyrifos and/or pyrethroids (Tables 49 and 50). As discussed above, the single toxicity to *C. dubia* in 2012 occurred in samples collected during August MPM at Grant Line Canal near Calpack Rd in Zone 4, which is associated with the central, southern, and western Delta Waterways and the TMDL listed waterways export area, Five Mile Slough and Mosher Slough. The only other constituent scheduled for MPM during the event was chlorpyrifos. Chlorpyrifos was not detected in the sample and therefore could not have contributed to an additive or synergistic effect. Additionally, the six samples toxic to *H. azteca* were analyzed for pyrethroids and chlorpyrifos. The samples were collected from Zones 2, 4 and 6 and represent water quality in the four Delta subareas, the export area, Stockton Ship Channel, Five Mile Slough, and Mosher Slough. Pyrethroids were found in all of the six samples (including bifenthrin, cyfluthrin, cypermethrin, deltamethrin, esfenvalerate, lambda-cyhalothrin, permethrin, and fenpropathrin) and chlorpyrifos was found in five of the samples (Table 50). Chlorpyrifos and any of the pyrethroids could have interacted to cause the sediment toxicity; however, the Coalition cannot be sure if those were the only constituents causing the toxicity or if the effect was additive or synergistic.

Diazinon was not detected in any samples collected during 2012. Chlorpyrifos was only detected in one sample collected from Unnamed Drain to Lone Tree Creek @ Jack Tone Rd in December (the concentration of chlorpyrifos detected exceeded the WQLT, Table 41). Unnamed Drain to Lone Tree Creek @ Jack Tone Rd was scheduled for MPM for only chlorpyrifos during December 2012. It is unknown if other pesticides or metals were present in the sample and therefore unknown if the chlorpyrifos could have interacted in an additive or synergetic manner with other constituents in the waterway.

There is evidence of the potential for additive or synergistic interactions between chlorpyrifos and other agricultural chemicals resulting in toxicities in the tributaries to the Delta and named Delta waterbodies sampled within the legal Delta boundary. Chemical analysis of toxic sediment indicates chlorpyrifos and pyrethroids were present in samples collected from Duck Creek @ Hwy 4, Grant Line Canal @ Clifton Court Rd, Grant Line Canal near Calpack Rd, Sand Creek @ Hwy 4 Bypass and Unnamed Drain to Lone Tree Creek @ Jack Tone Rd site subwatersheds, but the Coalition can only speculate if the chemicals interacted to cause the toxicity to *H. azteca*. Water column toxicity results during 2012 did not indicate any instance of chlorpyrifos and/or diazinon being present along with other chemicals in samples.

Demonstrate That Management Practices Are Achieving the Lowest Pesticide Levels Technically and Economically Achievable

A determination of technical and economic feasibility of achieving the lowest pesticide levels possible needs to be determined at the individual farm level and consequently is expected to vary with the specific operation and commodity farmed. The goal of the Coalition is for its members to eliminate the discharge of pesticides to surface waters. Economic feasibility is determined by factors outside the control of the Coalition. Profitable operations can afford to implement expensive management practices such as sediment basins or pressurized irrigation, both of which can significantly reduce the runoff of irrigation and storm water carrying agricultural discharges. Marginally profitable operations may not be able to afford these practices. The Coalition publicizes the current funding available through the Proposition 84 grant program run by CURES and works with local NRCS offices to notify growers of available EQIP and AWEP funds (further discussed in the Funding Resources section). There remain many growers who are not members of the Coalition and improvement of their operations is not possible through Coalition efforts.

It is possible to reduce discharges to surface waters to the point that they do not impair beneficial uses. Within the SJCDWQC region, the percentage of samples containing concentrations of chlorpyrifos that exceeded the WQTL in 2012 was smaller compared to the percentage in 2011, and diazinon exceedances have not occurred in the Coalition region since 2008. Management practices implemented by growers are resulting in a reduction of discharges, and growers are in the process of achieving the lowest pesticide levels technically and economically achievable.

SALT AND BORON

The *Amendments to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins for the Control of Salt and Boron Discharges into the Lower San Joaquin River* was approved by the US EPA on February 7, 2007 and established load allocations to meet the existing WQOs for salt and boron in the San Joaquin River at Airport Way (Vernalis). The amendment includes a requirement for a second phase TMDL to prepare and implement new salt and boron objectives in the San Joaquin River upstream of Airport Way (Vernalis).

In 2006, the State Water Board, Regional Board and stakeholders initiated the Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS), a collaborative effort to develop and implement a salinity and nitrate management program and Basin Plan Amendment. The Central Valley Salinity Coalition (CVSC) formed in July 2008 to organize, facilitate and fund efforts to fulfill goals of CV-SALTS.

The SJCDWQC recognizes that salt, nitrate and boron water quality impairments are a Central Valley wide concern. The Coalition closely follows the planning and reviewing of studies relevant to the development of a Basin Plan amendment for salt and boron and will participate in the efforts concerning the Delta area once the CV-SALTS process is complete. In addition, the Coalition monitors salt (SC and/or TDS) and nitrate in every zone and boron in one zone (Table 51) and includes these constituents in discussions with growers about water quality impairments and applicable management practices.

The export area, southern, and western Delta waterways and the San Joaquin River (Stanislaus River to Delta Boundary) are within the SJCDWQC region and are 303(d) listed for salt (electrical conductivity); these areas will likely be included in a salt and boron Basin Plan amendment. The Coalition is communicating with the growers in these areas about the Basin Plan requirements for compliance and the status of the CV-SALTS process.

Table 51. SJCDWQC sites monitored for salt (SC and TDS), nitrate, and boron during 2012.

ZONE	SITE NAME	SC	TDS	NITRATE + NITRITE (AS N)	BORON (TOTAL)
Zone 1	Bear Creek @ North Alpine Rd	F			
	Mokelumne River @ Bruella Rd	C	C	C	
Zone 2	Duck Creek @ Hwy 4	A	A	A	A
	French Camp Slough at Airport Way	C	C	C	
	Littlejohns Creek @ Jack Tone Rd	F			
	Lone Tree Creek @ Jack Tone Rd	F			
	Mormon Slough @ Jack Tone Rd	F			
	Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	F			
Zone 3	Terminus Tract Drain @ Hwy 12	C	C	C	
Zone 4	Grant Line Canal @ Clifton Court Rd	F			
	Grant Line Canal near Calpack Rd	F			
	Kellogg Creek along Hoffman Ln	F			
	Roberts Island @ Whiskey Slough Pump	C	C	C	
Zone 5	Walthall Slough @ Woodward Ave	C	C	C	
Zone 6	Sand Creek @ Hwy 4 Bypass	F			

A—Constituent monitored as part of Assessment Monitoring.

C—Constituent monitored as part of Core Monitoring.

F—Constituent monitored as part of field parameter data collected at sites scheduled for MPM.

DISSOLVED OXYGEN

The EPA approved the *Amendments to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins for the Control Program for Factors Contributing to the Dissolved Oxygen Impairment in the Stockton Deep Water Ship Channel* (hereafter, DO Basin Plan Amendment) on February 27, 2007 to address the low levels of DO in the Stockton Deep Water Ship Channel (DWSC). The Regional Board identifies three contributing factors to DO impairments in the DWSC: 1) loads of oxygen demanding substances from upstream sources, 2) geometry of the DWSC, and 3) reduced flow through the DWSC. All factors are considered 100% responsible for reducing DO concentrations in the DWSC. Discharges from irrigated lands are associated with 60% of the load allocation from upstream nonpoint sources.

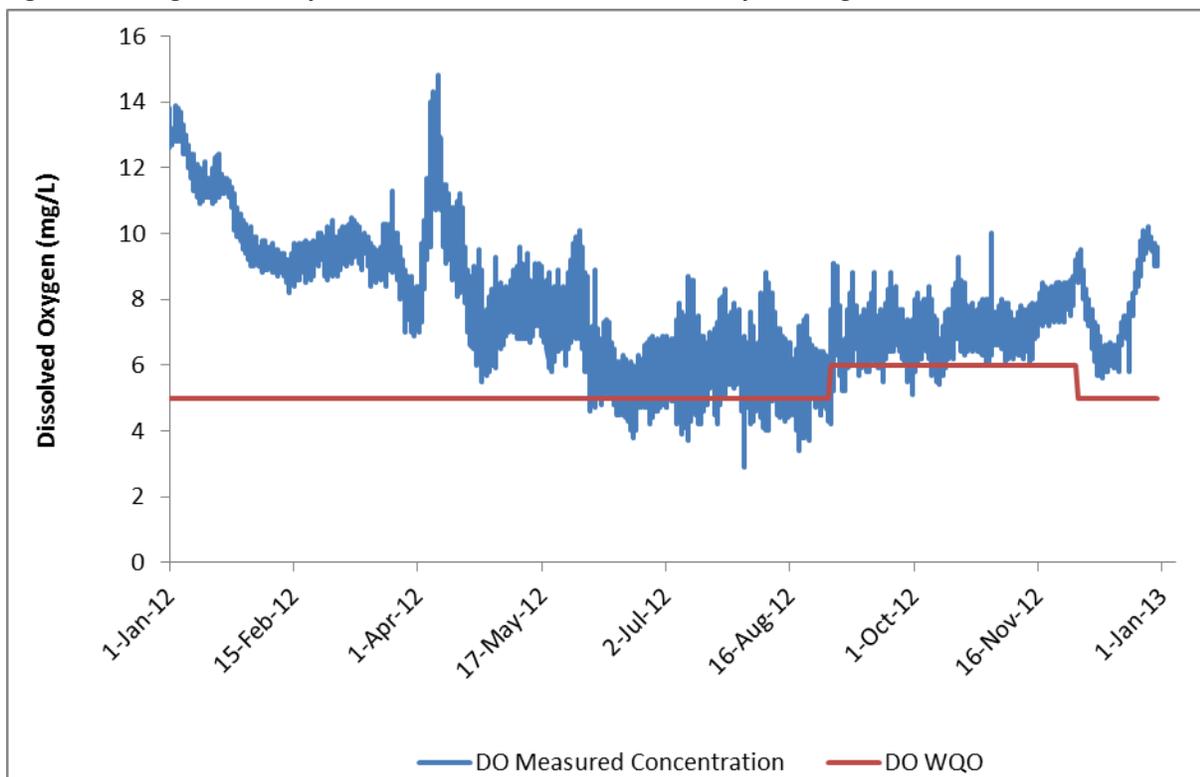
The Coalition reviews DO monitoring results in the Stockton DWSC and from within its tributaries to assess compliance with the DO WQOs required in the TMDL. The DO Basin Plan Amendment specifies that DO concentrations shall not be reduced below 5.0 mg/L from December 1 through August 31 and below 6.0 mg/L from September 1 through November 30 in the legal boundaries of the Delta.

The Coalition reviewed monitoring data from the California Data Exchange Center (CDEC) Rough and Ready Island station to evaluate DO concentrations in the Stockton DWSC during 2012 (Figure 36). The Coalition selected this monitoring station because of its location within the Stockton DWSC and to be consistent with the Stockton DWSC Demonstration DO Aeration Facility reports (last report produced in June 2011). Dissolved oxygen is measured at the station on 15-minute intervals by an auto sampler.

During the months of January through August and December, the measured DO concentration was less than the WQO of 5.0 mg/L during 21 days in June, 20 days in July and 27 days in August (Figure 36). During September through November 2012, the measured DO concentration was less than the WQO of 6.0 mg/L during 16 days in September and eight days in October (the last day of 2012 with a noncompliant DO measurement was October 13, 2012; Figure 36). The Coalition defines a day as noncompliant with the WQO for DO if the measured DO concentration from one or more 15-minute event(s) is less than the WQO. Several of the noncompliant DO measurements occurred in sequences lasting over an hour. In general, the low DO levels occurred in the afternoon and early evening hours when air temperatures and, consequently, water temperature, peak for the day.

There were several more exceedances of the WQO for DO in the Stockton DWSC during 2012 compared to 2011. The only noncompliant DO concentrations were during September of 2011: the DO concentration was less than the WQO of 6.0 mg/L during at least one 15-minute interval event during five days in September 2011 (CA DWR, n.d.1). The reduced discharge during the months of June through October in 2012 compared to 2011 likely contributed to the more frequent low DO levels in 2012. The average measured flow at the Rough and Ready Island station from June through October of 2011 was 4,290 cubic feet per second (cfs) whereas the average measured flow at the station during the same months of 2012 was 3,699 cfs (to account for tidal influence, the absolute values of flow measurements were used to calculate averages; CA DWR, n.d.2).

Figure 36. Rough and Ready Island DO measurements from January 1 through December 31, 2012.



Source: CA DWR, n.d.1

The Coalition reviewed tributary monitoring results from the sampling events immediately prior to the noncompliant DO measurements in the Stockton DWSC: May 16, June 19, July 17, August 21 and September 18, 2012. Zone 2 contains agriculturally-influenced tributaries that may drain to the Stockton DWSC and could contribute oxygen demanding substances. The Coalition monitored for DO at six site subwatersheds within Zone 2 during the five events (Table 52). There were 13 exceedances of the WQTL for DO at five SJCDWQC tributary sites; four in May, one in June, three each in July and August, and two in September (Table 53). The sample days in June, August and September followed several days of clear weather with ambient air temperatures reaching above 30°C, which contributed to high water temperatures. The low DO concentrations in June, August and September coincided with relatively high water temperatures, which were most likely a major causative factor. The ambient air temperatures in the days prior to the sampling May and July were not extreme (highs around 26°C), but the discharge and flow rates at sites were less than 5 cfs, with the exception of Duck Creek @ Hwy 4 in and Littlejohns Creek @ Jack Tone Rd in July (Table 53). However, both the Duck Creek @ Hwy 4 and Littlejohns Creek @ Jack Tone Rd sampling locations have little shade upstream, and the water temperatures measured at the two sites in July were consistent with water temperatures measured at the sites following days of warm air temperatures (i.e. August, Table 53). Given the high water temperatures in the tributaries and the other factors, such as changing flow rates and water hydrology, it is unlikely these low DO levels contributed to the noncompliant measurements of DO in the Stockton DWSC. The Coalition did not review DO results from tributary monitoring during other months because there were no DO impairments in the Stockton DWSC during other months. Even if low DO levels

occurred in tributaries within the SJCDWQC boundaries, the exceedances did not contribute to impairments in the Stockton DWSC.

Table 52. Tributary sites in Zone 2 monitored for DO during months associated with exceedances of the WQOs for DO in the Stockton DWSC.

SITE NAME	5/16/2012	6/19/2012	7/17/2012	8/21/2012	9/18/2012
Duck Creek @ Hwy 4	X	X	X	X	X
French Camp Slough at Airport Way	X	X	X	X	X
Littlejohns Creek @ Jack Tone Rd	X	X	X	X	X
Lone Tree Creek @ Jack Tone Rd	X		X	X	
Mormon Slough @ Jack Tone Rd	X		X	X	X
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	X	X	X	X	X

X – Monitored for DO

Table 53. Exceedances of the WQTL for DO at tributary sites in Zone 2 during months associated with exceedances of the WQO for DO in the Stockton DWSC.

DWSC DO WQO ¹ (MG/L)	SAMPLE DATE	SITE NAME	DO (<7.0 MG/L)	WATER TEMPERATURE (°C)	DISCHARGE (CFS)	OBSERVED FLOW RATE (CFS)
5.0	5/16/2012	Duck Creek @ Hwy 4	6.78	21.2	4.25	1-5
		Littlejohns Creek @ Jack Tone Rd	6.02	21.9	0	0
		Mormon Slough @ Jack Tone Rd	6.48	23.4	0	0
		Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	6.93	25.9	3.71	5-20
	6/19/2012	Duck Creek @ Hwy 4	3.89	23.7	9.54	5-20
		Duck Creek @ Hwy 4	4.25	23.6	NR	20-50
	7/17/2012	Littlejohns Creek @ Jack Tone Rd	6.8	22.3	NR	5-20
		Mormon Slough @ Jack Tone Rd	6.58	25.8	0	0
		Duck Creek @ Hwy 4	3.5	24	18.66	5-20
	8/21/2012	French Camp Slough at Airport Way	6.84	23.8	21.51	50-200
		Littlejohns Creek @ Jack Tone Rd	5.67	22.8	NR	1-5
		Duck Creek @ Hwy 4	0.41	19.7	1.55	0.1-1
6.0	9/18/2012	Littlejohns Creek @ Jack Tone Rd	4.52	27.5	NR	0

NR – Not recorded; too deep to measure discharge.

¹ The WQOs listed in the DO Basin Plan Amendment.

The Coalition is addressing exceedances of the WQTL for DO(>7 mg/L) through its management plan process. Because DO sources are difficult to determine with the resources currently available to the Coalition, DO is classified as a Priority E constituent. The Coalition includes discussions of DO water quality concerns in outreach to growers and encourages growers to implement management practices designed to reduce the offsite movement of agricultural constituents that will aid in reducing offsite movement of organic matter.

In addition, the Coalition continues to follow developments in achieving WQOs for DO in the Stockton DWSC. The Coalition participated in several DO TMDL Technical Working Group meetings during 2010 to discuss the progress of several studies and pilot programs (2011 MPUR, page 99, Table 28). These include the upper San Joaquin River DO project and the performance of the Aeration Facility, located at the west (downstream) end of Rough and Ready Island at the Port of Stockton. The *Stockton Deep Water Ship Channel Demonstration Dissolved Oxygen Aeration Facility Project Final Report* was released in December 2010 and indicates the Aeration Facility is a useful and effective tool to achieve the Basin

Plan DO WQO in the Deep Water Ship Channel. The Coalition will continue to participate in meetings and review technical documents as they are made available.

METHYL MERCURY

On October 20, 2011, the US EPA approved the *Amendments to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins for the Control of Methyl mercury and Total Mercury in the Sacramento-San Joaquin River Delta Estuary* (hereafter, Methyl Mercury Basin Plan Amendment). The program put forth in the Methyl Mercury Basin Plan Amendment intends to reduce the amount of methyl mercury in the Sacramento-San Joaquin Delta and is to be implemented through a phased, adaptive management approach. During Phase 1, stakeholders are to conduct studies and pilot projects to evaluate the effectiveness of management practices to control methyl mercury production and release. The Regional Board will evaluate the outcomes of Phase 1 during the Phase 1 Delta Mercury Control Program Review, which is expected to be complete by October 20, 2020. Phase 2 begins after the Phase 1 Delta Mercury Control Program Review is completed or after October 20, 2022, whichever comes first, and ends in 2030.

The Delta Methyl mercury TMDL Nonpoint Sources (NPS) Workgroup was formed to provide nonpoint dischargers with an organizational structure for developing collaborative control studies and carrying out the actions dictated for Phase 1. Initial funding from a 319(h) planning grant is being applied to identify the potential management practices and potential study sites, support development of Control Study Workplans, and provide outreach and communications for the existing NPS Workgroup throughout the process. The Coalition sent a letter to the Regional Board on March 28, 2012 indicating the Coalition is participating in the NPS Workgroup (Table 54). Coalition representatives participated in NPS Workgroup and Methyl Mercury TMDL for the Delta Technical Advisory Committee (Methyl Mercury TAC) meetings throughout 2012, and Coalition representative Mike Wackman serves on the NPS Workgroup Steering Committee (Table 55). On behalf of all participating stakeholders, the NPS Workgroup submitted the Control Study Workplan Outline (Concept Proposal) and Knowledge Base for Nonpoint Sources Methyl Mercury Control Study on August 17, 2012 (Table 54). The NPS Workgroup is in the process of preparing a Methyl Mercury Control Study Workplan, which will be submitted by April 20, 2013.

In addition, Coalition representatives are participating in the Mercury Exposure Reduction Program (MERP) that was dictated in the Methyl Mercury Basin Plan Amendment. Coalition representatives participated in meetings regarding the development of the MERP Strategy (Table 55); the MERP Strategy final document was released on November 15, 2012. The Coalition continues to participate in the development of the MERP Work Plan to be submitted by October 20, 2013 and is aware a funding commitment letter is due on May 1, 2013.

Table 54. Deliverables pursuant to the requirements of the Methyl Mercury Basin Plan Amendment submitted during 2012.

AUTHOR	RECIPIENT	DATE	ITEM
SJCDWQC	Regional Board	3/28/2012	Participation Letter
NPS Workgroup	Methyl mercury TAC	8/17/2012	Methylmercury Control Study Workplan Outline (Concept Proposal)
NPS Workgroup	Regional Board	8/17/2012	Knowledge Base for Nonpoint Sources Methylmercury Control Study

Table 55. Coalition representatives and MLJ-LLC attendance at meetings concerning the Methylmercury Basin Plan Amendment during 2012.

MEETING DATE	MEETING TITLE	COALITION REPRESENTATIVE IN ATTENDANCE
2/16/2012	NPS Workgroup Meeting	MW
3/06/2012	Methyl Mercury TAC Meeting	MJ, MT
3/20/2012	NPS Workgroup Meeting	JH
3/28/2012	Delta Tributaries Mercury Council Meeting	None
5/24/2012	NPS Workgroup Meeting	JB, MW
6/21/2012	MERP Strategy Development Meeting	None
8/14/2012	NPS Workgroup Meeting	JH
8/21/2012	MERP Strategy Development Meeting	MW
9/19 and 9/20/2012	Methyl Mercury TAC Meeting	MW
10/02/2012	MERP Strategy Development Meeting	MW
10/09/2012	NPS Workgroup Meeting	MW
11/27/2012	NPS Workgroup Meeting	JB, JH

JB – John Brodie, SJCDWQC
 JH – John Herrick, SJCDWQC
 MJ – Michael Johnson, MLJ-LLC
 MT – Melissa Turner, MLJ-LLC
 MW – Mike Wackman, SJCDWQC

CONCLUSIONS

During 2012 monitoring data was collected from sites in the SJCDWQC region during Assessment Monitoring, MPM and Core Monitoring. Results from throughout the year indicate improved water quality in the Coalition region. Conclusions from data provided in the Management Practice Effectiveness, Coalition Wide Evaluation and Status of TMDL Constituents sections of this report indicate:

1. Compared to previous years, fewer exceedances occurred in 2012 in high priority site subwatersheds receiving focused outreach.
2. Growers in the SJCDWQC region are taking advantage of available funding resources to be used to implement management practices that improve water quality.
3. Growers across the SJCDWQC region are aware of water quality impairments and are implementing management practices designed to address these impairments even if the Coalition has yet to conduct focused outreach in the site subwatershed.
4. The decrease in exceedances and water column toxicity coincides with additional focused outreach and the implementation of management practices encouraged by the Coalition.
5. The Coalition's focused management practice outreach and tracking strategy is effective at improving water quality. Monitoring results indicate two consecutive years of monitoring with no exceedances of the WQTL for several specific site subwatershed/ constituent pairs, which indicates improved grower awareness of the offsite movement of agricultural constituents and/or newly implemented management practices. To date, the Coalition has received approval for the removal of 39 constituents from eleven high priority site subwatersheds (approval letters received March 22, April 17, May 21, 2012, and February 27, 2013).
6. Due to effective outreach and education, diazinon has been completely removed from all SJCDWQC site subwatershed management plans.
7. Growers continue to help prevent offsite movement of agricultural constituents into adjacent waterways.
8. During 2012, the SJCDWQC was in compliance with load capacity requirements of the chlorpyrifos and diazinon TMDL. A single sample with elevated concentrations of chlorpyrifos resulted in a single noncompliant load allocation in 2012.

SITE SUBWATERSHED MANAGEMENT PLAN UPDATE

Brief descriptions of all site subwatersheds included the SJCDWQC Management Plan as of April 1, 2013 are listed below. The descriptions include site subwatersheds that are listed as current high priority site subwatersheds and those that will reach high priority status in the future. Further analysis of the first (2008-2010), second (2010-2012), third (2011-2013), fourth (2012-2014) and fifth (2013-2015) high priority site subwatersheds is included in Appendix I of this report.

Bear Creek @ North Alpine Rd

Bear Creek @ North Alpine Rd is a rotating Assessment Monitoring location within the Mokelumne River @ Bruella Rd Zone (Zone 1). Normal Monitoring for Assessment Monitoring constituents began at the site in October 2008 and continued through March 2009. Monitoring was scheduled through 2009; however, the Coalition received approval to revise the monitoring schedule effective April 1, 2009, therefore Normal Monitoring was discontinued at the site beginning April 2009. Assessment Monitoring occurred at Bear Creek @ North Alpine Rd during 2011 and is scheduled to occur again after 2035 under the current 2008 MRPP.

Bear Creek @ North Alpine Rd is one of the Coalition's fifth priority site subwatersheds and management plan constituents include DO, pH, *E. coli*, chlorpyrifos, and malathion. *E. coli*, pH, chlorpyrifos, and malathion were added due to 2011 monitoring results. Management Plan Monitoring occurred in 2012 for chlorpyrifos (September and October) and malathion (May and September). In 2013, MPM will continue during months of past exceedances; however, chlorpyrifos and malathion MPM in January will also occur. The approval to move Bear Creek @ North Alpine Rd into priority status did not come until after January 2012 samples were collected; therefore the Coalition will collect the January samples in 2013.

The Coalition identified growers with the greatest likelihood of contributing to water quality impairments in the Bear Creek @ North Alpine Rd site subwatershed and will begin focused outreach in early 2013. Monitoring results from 2013 and 2014 will allow the Coalition to evaluate the effectiveness of the Coalition outreach strategy.

Drain @ Woodbridge Rd

Drain @ Woodbridge Rd is a rotating Assessment Monitoring location within the Terminous Tract Drain Zone (Zone 3). Normal Monitoring for Assessment Monitoring constituents began at the site in October 2008 and continued through March 2009. Monitoring was scheduled through 2009; however, the Coalition received approval to revise the monitoring schedule effective April 1, 2009, therefore Normal Monitoring was discontinued at the site beginning April 2009. Assessment Monitoring occurred at Drain @ Woodbridge Rd during 2010 under the current 2008 MRPP. Assessment Monitoring is next scheduled after 2035.

Drain @ Woodbridge Rd is a sixth priority site subwatershed and has been added to the priority list (2014-2016) to address these water quality impairments. Management plan constituents include DO, SC, TDS, *E. coli*, arsenic and chlorpyrifos. Year 0 monitoring for MPM constituents will occur in 2013.

Duck Creek @ Hwy 4

The Duck Creek @ Hwy 4 site subwatershed is a rotating Assessment Monitoring location within the French Camp Slough @ Airport Way Zone (Zone 2). This site was first monitored in 2004; Normal Monitoring resumed in 2006 and continued through March 2009. Monitoring was scheduled to continue through 2009; however, the Coalition received approval to revise the monitoring schedule effective April 1, 2009, therefore Normal Monitoring was discontinued at the site beginning April 2009. Assessment Monitoring occurred at Duck Creek @ Hwy 4 in 2012 and is next scheduled in 2035.

Duck Creek @ Hwy 4 was one of the first high priority site subwatersheds and management plan constituents include DO, *E. coli*, chlorpyrifos, and water column toxicity to *C. dubia*. Additional MPM at Duck Creek began in 2007 (September) for chlorpyrifos. In 2008, MPM for chlorpyrifos took place upstream at Duck Creek @ Drais Rd. In 2009, MPM occurred during months of past exceedances for chlorpyrifos and water column toxicity to *C. dubia* and *S. capricornutum*. The Coalition continued MPM in 2010 and 2011 for high priority constituents (chlorpyrifos and toxicity to *C. dubia* and *S. capricornutum*) during months of past exceedances. From June 2010 through February 2011, diazinon, chlorpyrifos and sediment toxicity to *H. azteca* were monitored as a part of a Department of Pesticide Regulation (DPR) grant to reduce the impact of agricultural discharge on water quality. Exceedances of the WQO for chlorpyrifos and *C. dubia* toxicity occurred in 2011. Toxicity to *H. azteca* was added to the management plan as a result of toxic sediment samples collected during 2012 Assessment Monitoring. In 2012, the Regional Board approved the removal of pH, diazinon, and toxicity to *S. capricornutum* from the Duck Creek @ Hwy 4 management plan. Management Plan Monitoring is scheduled to continue through 2013 for all remaining high priority constituents.

In addition, the Coalition carried out its management practice tracking and outreach strategy which included contacting targeted growers in 2008 and following up with the growers in 2009 and 2010. A summary of current, recommended and newly implemented management practices in the Duck Creek @ Hwy 4 site subwatershed is included in this report under the First Priority Subwatersheds Summary. Due to continued exceedances of chlorpyrifos in 2010 (May, July, August and September) and 2011 (September), additional outreach was conducted with growers identified to have the greatest likelihood of contributing to water quality impairments in Duck Creek @ Hwy 4 (both members and non-members of the Coalition) in 2010 and 2011. The Coalition continued outreach to three additional growers in the Duck Creek @ Hwy 4 site subwatershed in 2012. Coalition representatives recommended new management practices to these growers and anticipate improvements in water quality will be evident within the next year.

French Camp Slough @ Airport Way

French Camp Slough @ Airport Way is a Core Monitoring location under the current 2008 MRPP. Normal Monitoring was conducted at the site from 2005 through September 2008, under the 2006

MRPP. Under the current 2008 MRPP, Assessment Monitoring took place at French Camp Slough @ Airport Way in 2011 and is next scheduled for 2014. Core Monitoring occurred in 2012 and is scheduled to occur in 2013.

French Camp Slough @ Airport Way is one of the Coalition's third priority site subwatersheds and 2012 management plan constituents include DO, pH, *E. coli*, copper, lead, chlorpyrifos, diazinon, dieldrin, diuron, *C. dubia* toxicity, *S. capricornutum* toxicity, and *H. azteca* sediment toxicity. Management Plan Monitoring at French Camp Slough @ Airport Way began in 2007 and resumed in 2010 through 2011. Exceedances of high priority constituents occurred in 2011 for chlorpyrifos (April and October) and *H. azteca* sediment toxicity (October). Upstream MPM at Lone Tree Creek @ Jack Tone Rd, Littlejohns Creek @ Jack Tone Rd, and Unnamed Drain to Lone Tree Creek @ Jack Tone Rd took place in varying months from 2007 through 2011. In 2012, MPM occurred for copper (February and May-August), chlorpyrifos (February, April, May, and July-October), diazinon (January and February), dieldrin (July), diuron (January and February), *C. dubia* toxicity (February and March), *S. capricornutum* toxicity (February and April), and sediment toxicity to *H. azteca* (March and September). There were no exceedances of any of the high priority constituents. In 2012, the Regional Board approved the removal of copper, lead, diazinon, dieldrin, diuron, and toxicity to *C. dubia* and *S. capricornutum* from the French Camp Slough @ Airport Way management plan. In 2013, MPM will occur for the remaining management plan constituents during the months of past exceedances.

The Coalition initiated its management practice tracking and outreach strategy during 2011 with targeted growers and completed follow up outreach at the end of 2012; a summary of current and newly implemented practices is included in the Third Priority Subwatersheds Summary of Management Practices section of this report. Management Plan Monitoring and outreach is scheduled to occur through 2013.

Grant Line Canal @ Clifton Court Rd

Grant Line Canal @ Clifton Court Rd is a rotating Assessment Monitoring location within the Roberts Island @ Whisky Slough Pump Zone (Zone 4). Monitoring at Grant Line Canal @ Clifton Court Rd began in the storm season of 2005 and continued through the storm and irrigation seasons of 2006 through 2008. Starting in October 2008, Grant Line Canal @ Clifton Court Rd became a rotating Assessment site under the current 2008 MRPP. Assessment Monitoring is scheduled to occur at this location after 2035.

Grant Line Canal @ Clifton Court Rd is one of the Coalition's second priority site subwatersheds and 2012 management plan constituents include DO, pH, SC, TDS, *E. coli*, arsenic, copper, lead, chlorpyrifos, dichlorodiphenyldichloroethylene (DDE), water column toxicity to *S. capricornutum*, and sediment toxicity to *H. azteca*. During 2007, 2008, and 2010-2012, MPM took place for high priority constituents during months of past exceedances. One *S. Capricornutum* sample (April) and one *H. azteca* sample (September) were toxic in 2012 (March and October), however no other exceedances of high priority constituents occurred. In 2012, the Regional Board approved the removal of pH, copper, and lead from the Grant Line Canal @ Clifton Court Rd management plan. Management Plan Monitoring will continue

in 2013 for chlorpyrifos (January-March and September), water column toxicity to *S. capricornutum* (January and May) and sediment toxicity to *H. azteca* (March and September).

In addition, the Coalition carried out its management practice tracking and outreach strategy which included contacting targeted growers in 2010 and following up with the growers in 2011. A complete summary of current, recommended and newly implemented management practices in the Grant Line Canal @ Clifton Court Rd site subwatershed was included in the 2011 MPUR under the Second Priority Subwatersheds Summary of Management Practices section.

Grant Line Canal near Calpack Rd

Grant Line Canal near Calpack Rd is a rotating Assessment Monitoring location within the Roberts Island @ Whisky Slough Pump Zone (Zone 4). Monitoring at Grant Line Canal near Calpack Rd began in the storm season of 2005 and continued through 2008. Starting in October 2008, Grant Line Canal near Calpack Rd became a rotating Assessment site under the current 2008 MRPP. Assessment Monitoring is scheduled to occur at this location after 2035.

Grant Line Canal near Calpack Rd is one of the Coalition's second priority site subwatersheds. Management plan constituents for 2012 include DO, SC, TDS, *E. coli*, arsenic, chlorpyrifos, water column toxicity to *C. dubia* and *S. capricornutum*, and sediment toxicity to *H. azteca*. During 2007 through 2008 and 2010 through 2012, MPM took place for high priority constituents during months of past exceedances. During 2012, toxicity occurred to *C. dubia* and *H. azteca* one time each (August and September; respectively). No other exceedances of high priority constituents occurred during 2012 monitoring. In 2012, the Regional Board approved the removal of chlorpyrifos from the Grant Line Canal near Calpack Rd management plan. In 2013, MPM will continue for water column toxicity to *C. dubia* (March, May and August), *S. capricornutum* (January, February, April, May and July) and sediment toxicity to *H. azteca* (March and September).

In addition, the Coalition carried out its management practice tracking and outreach strategy which included contacting targeted growers in 2010 and following up with the growers in 2011. A complete summary of current, recommended and newly implemented management practices in the Grant Line Canal near Calpack site subwatershed was included in the 2011 MPUR under the Second Priority Subwatersheds Summary of Management Practices section.

Kellogg Creek along Hoffman Ln

Kellogg Creek along Hoffman Ln is a rotating Assessment Monitoring location within the Roberts Island @ Whisky Slough Pump Zone (Zone 4). Monitoring was initiated at Kellogg Creek @ Hwy 4 in the storm season of 2005 and was carried out for three seasons, ending with the storm season of 2006. Due to a large urban input, Kellogg Creek @ Hwy 4 (which is downstream of the Kellogg Creek along Hoffman Ln) is no longer monitored. The Kellogg Creek along Hoffman Ln site subwatershed monitoring location was established during an upstream sampling event in September 2005 to isolate the source of toxicity related to agriculture. Kellogg Creek along Hoffman Ln is scheduled for Assessment Monitoring after 2035.

Kellogg Creek along Hoffman Ln is one of the Coalition's fourth priority site subwatersheds. Management plan constituents for 2012 include DO, pH, SC, TDS, *E. coli*, copper, DDE, DDT, water column toxicity to *C. dubia* and *S. capricornutum*, and sediment toxicity to *H. azteca*. Management Plan Monitoring occurred for high priority constituents during months of past exceedances in 2007 through 2008 and 2011 through 2012. No exceedances of high priority constituents occurred during MPM in 2012. In 2012, the Regional Board approved the removal of DO, copper, chlorpyrifos, and toxicity to *C. dubia* from the Kellogg Creek along Hoffman Ln management plan. In 2013, MPM will continue for water column toxicity to *S. capricornutum* (April, May and August), and sediment toxicity to *H. azteca* (March and September).

In addition, the Coalition identified growers with the greatest likelihood of contributing to water quality impairments in Kellogg Creek and began focused outreach in early 2012. A summary of current and recommended practices and a preliminary evaluation of management practice effectiveness are included in this report.

Littlejohns Creek @ Jack Tone Rd

Littlejohns Creek @ Jack Tone Rd is a rotating Assessment Monitoring location within the French Camp Slough @ Airport Way Zone (Zone 2). Monitoring was initiated at Littlejohns Creek @ Jack Tone Rd during the irrigation season of 2004 and continued through the 2008 irrigation season. Starting in October 2008, Littlejohns Creek @ Jack Tone Rd became a rotating Assessment site under the current 2008 MRPP and Assessment Monitoring is scheduled to occur in 2021.

Littlejohns Creek @ Jack Tone Rd is one of the Coalition's second priority site subwatersheds and 2012 management plan constituents include DO, pH, *E. coli*, copper, chlorpyrifos, diazinon, and water column toxicity to *S. capricornutum*. Additional MPM for chlorpyrifos and toxicity to *S. capricornutum* occurred at Littlejohns Creek @ Jack Tone Rd in 2007. Management Plan Monitoring continued in 2008 at two upstream locations (Littlejohn's Creek @ 26 Mile Rd and Littlejohns Creek @ Escalon Bellota Rd) in an attempt to source exceedances of metals, chlorpyrifos, and *S. capricornutum* toxicity. Management Plan Monitoring did not occur in 2009. Additional DPR grant monitoring occurred from June 2010 through February 2011 for chlorpyrifos, diazinon and sediment toxicity to *H. azteca*. Management Plan Monitoring occurred in 2010 through 2012 for high priority constituents during months of past exceedances. There were no exceedances of the WQTL for any high priority constituents during 2012 MPM. In 2012, the Regional Board approved the removal of diazinon and toxicity to *S. capricornutum* from the Littlejohns Creek @ Jack Tone Rd management plan. Management Plan Monitoring is scheduled in 2013 for copper (February, May, June and September) and chlorpyrifos (February, April, June, July and November).

In addition, the Coalition carried out its management practice tracking and outreach strategy which included contacting targeted growers in 2010 and following up with the growers in 2011. Additional outreach occurred in Littlejohns Creek @ Jack Tone Rd in 2012. The Coalition anticipates this additional outreach will lead to improved water quality results. A complete summary of management practices implemented by growers in this site subwatershed was included in the 2011 MPUR under the Second

Priority Subwatersheds Management Practices section. A summary of the 2012 additional outreach is included in this report.

Lone Tree Creek @ Jack Tone Rd

Lone Tree Creek @ Jack Tone Rd is a rotating Assessment Monitoring location within the French Camp Slough @ Airport Way Zone (Zone 2). Monitoring was initiated at this location in 2004 and has continued through 2012. Normal Monitoring was last conducted in 2008 under the old MRPP. Lone Tree Creek @ Jack Tone Rd is scheduled for Assessment Monitoring in 2026.

Lone Tree Creek @ Jack Tone Rd is one of the Coalition's first priority site subwatersheds and 2012 management plan constituents include DO, SC, pH, TDS, ammonia, *E. coli*, copper, chlorpyrifos, diazinon, diuron, water column toxicity to *S. capricornutum* and *P. promelas*, and sediment toxicity to *H. azteca*. Management Plan Monitoring for the Coalition was initiated during June of 2007 and included chlorpyrifos (July and August). From 2009 through 2012, MPM occurred during months of past exceedances. From June 2010 through February 2011, additional samples were collected for chlorpyrifos, diazinon, and sediment toxicity to *H. azteca* as part of DPR grant monitoring. There were no exceedances of a WQTL for any high priority constituents from 2012 monitoring results. In 2012, the Regional Board approved the removal of DO, SC, copper, diazinon, diuron, water column toxicity to *S. capricornutum* and sediment toxicity to *H. azteca* from the Lone Tree Creek @ Jack Tone Rd management plan. In 2013, MPM is scheduled to continue at Lone Tree Creek @ Jack Tone Rd for chlorpyrifos (January, February, July and August).

The Coalition completed its management practice tracking and outreach strategy to targeted growers within this site subwatershed in 2008 and followed up with growers in 2009 and 2010. Additional outreach to two targeted growers to address continued water quality impairments occurred at Lone Tree Creek @ Jack Tone Rd in 2012. The Coalition anticipates this additional outreach will lead to improved water quality results in 2012. A complete summary of implemented management practices was included in the 2011 MPUR under the First Priority Subwatersheds Summary of Implemented Management Practices section. A summary of the 2012 additional outreach is included in this report.

Mokelumne River @ Bruella Rd

Mokelumne River @ Bruella Rd is a Core Monitoring location within the Mokelumne River @ Bruella Rd Zone (Zone 1). Monitoring at Mokelumne River @ Bruella Rd began in August 2004 and occurred continuously through 2012. During 2011, Assessment Monitoring took place and is scheduled to occur every third year (2014, 2017, etc.). Core Monitoring occurred in 2012 and is scheduled for 2013.

Mokelumne River @ Bruella Rd is one of the Coalition's third priority site subwatersheds and 2012 management plan constituents include DO, pH, *E. coli*, copper, and water column toxicity to *S. capricornutum* and *C. dubia*. Management Plan Monitoring was initiated at Mokelumne River @ Bruella Rd in 2007. Additional MPM took place at this location from 2007 through 2008. Management Plan Monitoring did not take place in 2009. From 2010 through 2012, MPM for high priority constituents during months of past exceedances continued. There were no exceedances of the WQTL for any high

priority constituents during 2012 monitoring. In 2012, the Regional Board approved the removal of DO, copper, and water column toxicity to *C. dubia* and *S. capricornutum* from the Mokelumne River @ Bruella Rd management plan. The only remaining MPM constituents are pH and *E. coli* which will be monitored during 2013 Core Monitoring.

The Coalition initiated its management practice tracking and outreach strategy during 2011 with targeted growers. A final analysis of outreach results is included in the Third Priority Subwatersheds Summary of Management Practices section of this report.

Mormon Slough @ Jack Tone Road

Mormon Slough @ Jack Tone Rd is a rotating Assessment Monitoring location within the French Camp Slough @ Jack Tone Rd Zone (Zone 2). Monitoring was initiated at Mormon Slough @ Jack Tone Rd in the irrigation season of 2006 and continued through 2008. Sampling did not occur at Mormon Slough @ Jack Tone Rd during 2009 or 2010, but resumed in 2011 and continued through 2012. Assessment Monitoring is scheduled to occur in 2017.

Mormon Slough @ Jack Tone Rd is one of the Coalition's fourth priority site subwatersheds and management plan constituents include DO, pH, chlorpyrifos, and water column toxicity to *C. dubia* and *S. capricornutum*. Management Plan Monitoring was initiated at Mormon Slough @ Jack Tone Rd in 2008 and resumed in 2011 for high priority constituents during months of past exceedances. Management Plan Monitoring continued in 2012 and there were no exceedances of the WQTL for any high priority constituents during 2012 monitoring. In 2013, MPM is scheduled to continue for chlorpyrifos (May and July-September), toxicity to *C. dubia* (May and September) and toxicity to *S. capricornutum* (April, May and July).

Focused outreach occurred in early 2012 in the Mormon Slough @ Jack Tone Rd site subwatershed and monitoring results from future MPM will allow the Coalition to evaluate water quality in the creek. A summary of current and recommended practices and a preliminary evaluation of management practice effectiveness are included in this report.

Roberts Island @ Whisky Slough Pump

Roberts Island @ Whisky Slough Pump replaced two former sites in Zone 4 (Roberts Island @ Holt Rd and Roberts Island Drain along House Rd, approved January 12, 2012). Roberts Island @ Whisky Slough Pump also replaced Roberts Island Drain @ Holt Rd as the Core Monitoring location for Zone 4. In 2012, Core Monitoring and MPM for constituents from the previous sites occurred at Roberts Island @ Whisky Slough Pump. Roberts Island Drain along House Rd was monitored from 2006 through 2008; Roberts Island Drain @ Holt Rd was monitored from 2006 through 2011 as the Core location in Zone 4, although monitoring did not occur at this location in 2008. Assessment Monitoring is scheduled at Roberts Island @ Whiskey Slough Pump in 2014.

Roberts Island @ Whisky Slough Pump is one of the Coalition's fifth priority site subwatersheds and management plan constituents include DO, pH, SC, TDS, *E. coli*, chlorpyrifos, DDE, diuron, water column

toxicity to *C. dubia* and *S. capricornutum* and sediment toxicity to *H. azteca*. Management Plan Monitoring occurred at Roberts Island @ Whiskey Slough Pump in 2011 and 2012. There were two exceedances of chlorpyrifos in 2011 (January and February), however, there were no exceedances of the WQTL for any high priority constituents during 2012 monitoring. In 2013, MPM for chlorpyrifos, diuron, water column toxicity to *C. dubia* and *S. capricornutum* and sediment toxicity to *H. azteca* is scheduled.

The Coalition identified growers with the greatest likelihood of contributing to water quality impairments in the Roberts Island @ Whiskey Slough Pump site subwatershed and will begin focused outreach in early 2013. Monitoring results from 2013 and 2014 will allow the Coalition to evaluate the effectiveness of the Coalition outreach strategy.

Sand Creek @ Hwy 4 Bypass

Sand Creek @ Hwy 4 Bypass is a monitoring location within the Contra Costa Zone (Zone 6). Because Zone 6 has a high urban influence and Sand Creek @ Hwy 4 Bypass is the only MPM location within the zone, it is not scheduled for future Assessment Monitoring. Monitoring was initiated at Sand Creek @ Hwy 4 Bypass in the irrigation season of 2006 and continued through the irrigation season of 2008. Monitoring did not occur in 2009 and 2010; MPM resumed in 2011, continued through 2012, and is scheduled for 2013.

Sand Creek @ Hwy 4 Bypass is one of the Coalition's fourth priority site subwatersheds and management plan constituents in 2012 included DO, SC, TDS, *E. coli*, chlorpyrifos, DD, DDT, diazinon, dieldrin, diuron, water column toxicity to *S. capricornutum* and *C. dubia*, and sediment toxicity to *H. azteca*. In 2012, MPM for high priority constituents during months of past exceedances took place and exceedances of the WQTL for dieldrin (June) and *H. azteca* sediment toxicity (March) occurred. In 2012, the Regional Board approved the removal of chlorpyrifos, diazinon, and water column toxicity to *C. dubia* from the Sand Creek @ Hwy 4 Bypass management plan. In 2013, MPM is scheduled dieldrin (May, June, and August), disulfoton (May, June and August), *C. dubia* toxicity (May-July), *S. capricornutum* toxicity (April and August), and *H. azteca* sediment toxicity (March and September).

Focused outreach occurred in early 2012 in the Sand Creek @ Hwy 4 Bypass site subwatershed. There is only one grower in the site subwatershed that is a member of the Coalition and has parcels that drain directly into the creek. Monitoring results from future MPM will allow the Coalition to evaluate if its outreach strategy is making any progress toward improving water quality in the creek. A summary of current and recommended practices and a preliminary evaluation of management practice effectiveness are included in this report.

Terminus Tract Drain @ Hwy 12

Terminus Tract Drain @ Hwy 12 is a Core Monitoring location with the Terminus Tract Drain @ Hwy 12 Zone (Zone 3). Monitoring was initiated at the Terminus Tract Drain @ Hwy 12 site subwatershed in the storm season of 2005 and occurred continuously through 2011. Assessment Monitoring occurred at the site during 2010 and is scheduled to occur every third year (2013, 2016, etc.). Core Monitoring took place at the site in 2012.

Terminus Tract Drain @ Hwy 12 is one of the Coalition's third priority site subwatersheds and management plan constituents in 2012 included DO, SC, TDS, *E. coli*, arsenic, chlorpyrifos, water column toxicity to *S. capricornutum* and *P. promelas*, and sediment toxicity to *H. azteca*. Management Plan Monitoring began at Terminus Tract Drain @ Hwy 12 in 2010 and continued through 2012. In 2012, there were no exceedances of a WQTL for any high priority constituents. In 2012, the Regional Board approved the removal of water column toxicity to *P. promelas* and *S. capricornutum* from the Terminus Tract Drain @ Hwy 12 management plan. In 2013, MPM is scheduled for chlorpyrifos (August and September) and sediment toxicity to *H. azteca* (March and September).

The Coalition initiated its management practice tracking and outreach strategy during 2011 with targeted growers; a final analysis of outreach results is included in the Third Priority Subwatersheds Summary of Management Practices section of this report.

Unnamed Drain to Lone Tree Creek @ Jack Tone Rd

Unnamed Drain to Lone Tree Creek @ Jack Tone Rd is a rotating Assessment Monitoring site within the French Camp Slough @ Airport Way Zone (Zone 2). Monitoring was initiated at Unnamed Drain to Lone Tree Creek during the irrigation season of 2006 and has continued through 2012. Unnamed Drain is scheduled for Assessment Monitoring in 2030.

Unnamed Drain to Lone Tree Creek @ Jack Tone Rd is one of the Coalition's first priority site subwatersheds and management plan constituents in 2012 included DO, SC, TDS, *E. coli*, copper, lead, chlorpyrifos, diuron, simazine, water column toxicity to *C. dubia* and *S. capricornutum*, and sediment toxicity to *H. azteca*. Management Plan Monitoring was initiated at Unnamed Drain to Lone Tree Creek in 2007 and included additional monitoring for chlorpyrifos. During the 2008 irrigation season, MPM included upstream sampling at Unnamed Drain to Lone Tree Creek @ Wagner Rd for chlorpyrifos. Management Plan Monitoring occurred continuously from 2009 through 2012 during months of past exceedances for high priority constituents. From July 2010 through February 2011, additional monitoring for chlorpyrifos, diazinon and *H. azteca* sediment toxicity was conducted at Unnamed Drain to Lone Tree Creek @ Jack Tone Rd as part of DPR grant monitoring. Monitoring results from 2012 MPM included exceedances of chlorpyrifos (December), diuron (February), and sediment toxicity to *H. azteca* (September). In 2012, the Regional Board approved the removal of simazine and water column toxicity to *C. dubia* and *S. capricornutum* from the Unnamed Drain to Lone Tree Creek @ Jack Tone Rd management plan. In 2013, MPM is scheduled to continue at Unnamed Drain to Lone Tree Creek @ Jack Tone Rd to monitor for copper (April, May, July-September), chlorpyrifos (January, February, May-September, November and December), diuron (January and February), and sediment toxicity to *H. azteca* (March and September).

In addition to MPM, the Coalition completed its management practice tracking and outreach strategy to targeted growers within this site subwatershed in 2008 and followed up with the growers in 2009 and 2010. Additional outreach to two targeted growers to address continued water quality impairments occurred in 2012. The Coalition anticipates this additional outreach will lead to improved water quality results in 2012. A complete summary of implemented management practices was included in the 2011

MPUR under the First Priority Subwatersheds Summary of Implemented Management Practices section. A summary of the 2012 additional outreach is included in this report.

Walthall Slough @ Woodward Ave

Walthall Slough @ Woodward Ave is a Core Monitoring location within the Lower San Joaquin Zone (Zone 5). Assessment Monitoring at Walthall Slough @ Woodward Ave began in 2009 and continued through 2010. Core Monitoring occurred in 2011 and continued through 2012. Assessment Monitoring is scheduled in 2013 at Walthall Slough @ Woodward Ave.

Walthall Slough @ Woodward Ave is one of the Coalition's fifth priority site subwatersheds and management plan constituents include DO, SC, TDS, nitrates, *E. coli*, chlorpyrifos, hexachlorocyclohexane (HCH-delta), and sediment toxicity to *H. azteca*. Nitrates and chlorpyrifos were most recently added to the list due to exceedances of WQTLs in 2011. Management Plan Monitoring occurred in 2012 for high priority constituents and there were no exceedances of MPM high priority constituents. In 2013, MPM is scheduled for HCH (January, November, and December), chlorpyrifos (September and October) and *H. azteca* sediment toxicity (March and September).

The Coalition identified growers with the greatest likelihood of contributing to water quality impairments in the Walthall Slough @ Woodward Ave site subwatershed and will begin focused outreach in early 2013. Monitoring results from 2013 and 2014 will allow the Coalition to evaluate the effectiveness of the Coalition outreach strategy.

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