

San Joaquin County and Delta Water Quality Coalition

Lead Agency:
San Joaquin County Resource Conservation District

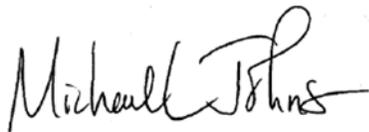
April 1, 2011

Pamela Creedon
Chris Jimmerson
Central Valley Regional Water Quality Control Board
11020 Sun Center Drive, #200
Rancho Cordova, CA 95670-6114

Dear Ms. Creedon,

The San Joaquin County and Delta Water Quality Coalition (SJCDWQC) is submitting the Management Plan Update Report which updates the SJCDWQC Management Plan approved on January 23, 2009. The report includes information on activities conducted during 2010. The 2011 Management Plan Update Report (2011 MPUR) is being submitted to inform the Regional Board of progress made on the management of exceedances within the Coalition region. Included in the report is a status update of constituents and subwatersheds requiring a management plan, an evaluation of the current Management Plan strategy including updates, a status update of high priority subwatershed performance goals, a summary of newly implemented management practices in the 2008-2010 and 2010-2012 high priority subwatersheds. In addition, the 2011 MPUR includes an evaluation of management practice effectiveness and a status review of TMDL constituents and Basin Plan requirements.

Submitted respectfully,



Michael L. Johnson
Technical Program Manager

Management Plan Update Report



San Joaquin County & Delta Water Quality Coalition



January – December 2010

April 1, 2011

Irrigated Lands Regulatory Program

Central Valley Regional Water Quality Control Board

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LIST OF ACRONYMS

A	Assessment
AMR	Annual Monitoring Report
APN	Assessor Parcel Number
AWEP	Agricultural Water Enhancement Program
BMP	Best Management Practice
C	Core
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
F	Field Parameters
HCH	Hexachlorocyclohexane
ID	Identification
ILRP	Irrigated Land and Regulatory Program
MLJ-LLC	Michael L. Johnson, LLC
MPM	Management Plan Monitoring
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
PCA	Pesticide Control Advisor
pH	Power of Hydrogen
PUR	Pesticide Use Report
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
TDS	Total Dissolved Solids
TIE	Toxicity Identification Evaluation
TMDL	Total Maximum Daily Load
TOC	Total Organic Carbon
TRS	Township, Range, Section
USEPA	United States Environmental Protection Agency
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
mph	miles per hour
MPN/100mL	most probable number per 100 milliliters
sec	second
µg	microgram
µS	microsiemens
µg/kg dw	microgram per kilogram of dry weight

EXECUTIVE SUMMARY

The San Joaquin County and Delta Water Quality Coalition (SJCDWQC or Coalition) is submitting a Management Plan Update Report on the status and methods used to identify agriculture sources, 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 second yearly update to the Coalition's Management Plan.

Water quality monitoring was conducted during every month from January through December 2010 as described in the SJCDWQC Monitoring and Reporting Program Plan (MRPP) (pages 32-39). Management Plan sampling was conducted based on prior exceedances at Coalition monitoring sites. Monitoring was performed at nine 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 and Terminous Tract Drain @ Hwy 12. Based on the prioritization of exceedances, MPM was conducted for water column toxicity to *Ceriodaphnia dubia* and *Selenastrum capricornutum*, and sediment toxicity to *Hyalella azteca*, copper, chlorpyrifos, diazinon, dieldrin, diuron and simazine. Additional samples were collected for chlorpyrifos, diazinon and *Hyalella azteca* toxicity for the Coalition's Department of Pesticide Regulation (DPR) grant to reduce the impact of agricultural discharge on water quality. The DPR grant monitoring continued through February 2011.

As a result of the Coalition's normal monitoring in 2010, several new site/constituent specific management plans are required including:

- *E. coli*
 - Drain @ Woodbridge Rd
- Chlorpyrifos
 - Drain @ Woodbridge Rd
- *Ceriodaphnia dubia* toxicity
 - Roberts Island Drain @ Holt Rd
- *Hyalella azteca* sediment toxicity
 - Walthall Slough @ Woodward Ave

The Coalition developed an updated flow chart for its Management Plan Monitoring strategy. The strategy has been updated to include MPM for high priority subwatersheds during Year 0, Year 1, and Year 2. Year 0 refers to the year prior to when the subwatershed becomes high priority and allows the Coalition to have recent monitoring data when contacting growers in the subwatershed. When a site becomes a high priority site subwatershed, the Coalition makes contacts with individuals who have the potential for direct drainage and are known to have applied constituents of concern. Contacts occur between January 1 and March 30 of Year 1 in order to schedule meetings between February 1 and

September 30. Meetings are used to inform growers of current water quality issues 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 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 of Year 1 and February 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 may be necessary for funds to be available for structural improvements. Follow up surveys document the additional practices that the grower planned to implement. 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 has developed High Priority Site Subwatershed Performance Goals (hereafter referred to as Performance Goals) for its first three of high priority site subwatersheds. Performance goals are submitted for approval each time a new set of 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 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

Performance goals, measures, outputs and completion dates for second priority subwatersheds were approved by the Regional Board on December 29, 2009.

For the 2010 – 2012 high priority sites, the Coalition has completed Performance Measure 1.1 (100% of identified growers contacted) and Performance Measure 1.2 (Contact owners/operators representing at least 1,000 acres of member acres) of Performance Goal 1; Performance Measure 2.1 (document current management practices at 100% of identified growers) and 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.

Other compliance issues involve TMDL constituents. The SJCDWQC established monitoring and management activities for TMDL constituents as required in the Regional Board's Basin Plan for the Sacramento and San Joaquin River basins. The San Joaquin River TMDL for chlorpyrifos and diazinon establishes six compliance points along the River including San Joaquin River @ Vernalis. Although a portion of this drainage area is within the SJCDWQC boundary (i.e. the Stanislaus River), this monitoring location is also the most downstream compliance point and therefore receives most of its drainage from areas outside of the Coalition region. It was therefore agreed that this monitoring location and

associated compliance and reporting responsibilities would be managed by the East San Joaquin Water Quality Coalition and the Westside Water Quality Coalition.

Chlorpyrifos and Diazinon

To establish compliance with water quality objectives (WQOs), loading capacity and loading allocations applicable to diazinon and chlorpyrifos discharges into Delta Waterways, the Coalition monitors at least one location 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. Monitoring for chlorpyrifos and diazinon is conducted monthly within at least one location in a zone with the goal of monitoring at least one storm event each year.

From 2004 through 2010, there were 86 exceedances of the chlorpyrifos WQO ($0.015 \mu\text{g/L}$) in 13 subwatersheds and 8 exceedances of the diazinon WQO ($0.1 \mu\text{g/L}$) in five subwatersheds. In 2010, there were a total of 13 exceedances of the chlorpyrifos WQO and no exceedances of the diazinon WQO.

In 2010, chlorpyrifos exceedances resulting in noncompliance with the load allocations occurred in Zones 2, 3 and 4 at seven sites. Six of the seven sites are currently high priority subwatersheds under the SJCDWQC Management Plan. Zone 2 exceedances of the chlorpyrifos WQO occurred at Duck Creek @ Hwy 4, French Camp Slough @ Airport Way, Lone Tree Creek @ Jack Tone Rd, Unnamed Drain to Lone Tree Creek @ Jack Tone Rd (also known as Temple Creek), and Littlejohn's Creek @ Jack Tone Rd. Zone 4 exceedances of the chlorpyrifos WQO occurred at Grant Line Canal @ Clifton Court Rd and in Zone 3 exceedances occurred at Drain @ Woodbridge Rd.

Salt and Boron

The Regional Board and stakeholders initiated the Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS) in July 2008 to facilitate efforts needed for the efficient management of salinity in the Central Valley. Coalition representatives attend CV-SALTS meetings and participate in planning and reviewing studies relevant to the development of a Basin Plan amendment for salt and boron. Coalition technical consultants participated in several CV SALTS committees including the Technical Advisory Committee, the Knowledge Gained and BMP Subcommittees.

Dissolved Oxygen

To demonstrate compliance with the Basin Plan and "The Control Program for Factors Contributing to the Dissolved Oxygen (DO) Impairment in the Stockton Deep Water Ship Channel", agriculturally-influenced tributaries to the San Joaquin River are routinely monitored in Zones 1 - 5, as described in the Coalition's MRPP (page 53-64). Zones 2, 4 and 5 have the potential to drain into the Stockton Deep Water Ship Channel which has an approved TMDL for dissolved oxygen. In general, the Coalition is working to comply with the DO Basin Plan load allocations for oxygen demanding substances by December 2011.

Methyl Mercury

The Regional Board adopted on April 22, 2010 a Sacramento River and San Joaquin River Delta mercury control program. Coalition representatives John Herrick, John Brodie and Mike Wackman attend many of the Stakeholder meetings to ensure the Coalition is well informed. The Coalition will incorporate the outcomes of the mercury control plan into its management plan so that members remain in compliance and continue to implement measures to improve water quality.

INTRODUCTION

The San Joaquin County and Delta Water Quality Coalition (SJCDWQC or Coalition) is submitting a Management Plan Update Report on the status of water quality in the region and methods used to identify the sources of agricultural discharges, 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). Yearly updates allow the Coalition to assess the need to conduct outreach to growers, evaluate information about pesticide use, and obtain water quality data for both irrigation and dormant seasons.

The Management Plan Update Report includes the following:

1. Status of constituents and subwatersheds requiring a management plan
2. Evaluation of the current Management Plan strategy including any updates
3. Status of high priority subwatershed performance goals
4. Summary of newly implemented management practices
5. Evaluation of management practice effectiveness
6. Status of TMDL constituents and Basin Plan requirements

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

OVERVIEW OF MONITORING AND RESULTS

Table 1. January – December 2010 Core (C), Assessment (A) and Management Plan Monitoring (MPM) Sites and Locations.

ZONE	SITE TYPE ¹	2010 MONITORING	SITE NAME	STATION CODE	LATITUDE	LONGITUDE
1	Core	C,MPM	Mokelumne River @ Bruella Rd	531XMRABR	38.1601	-121.2051
2	Assessment	MPM,DPR	Duck Creek @ Highway 4	531XDCAHF	37.9491	-121.1810
2	Core	C,MPM	French Camp Slough @ Airport Way	531SJC504	37.8817	-121.2493
2	Assessment	MPM,DPR	Littlejohns Creek @ Jack Tone Rd	531XLCAJR	37.8896	-121.1461
2	Assessment	MPM,DPR	Lone Tree Creek @ Jack Tone Rd	531XLT CJR	37.8376	-121.1438
2	Assessment	MPM,DPR	Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	531UDLTAJ	37.8535	-121.1457
3	Assessment	A	Drain @ Woodbridge Rd	544DAWRXX	38.1525	-121.5009
3	Assessment	A,MPM	Terminus Tract Drain @ Hwy 12	544XTTHWT	38.1166	-121.4936
4	Assessment	MPM	Grant Line Canal @ Clifton Court Rd	544XGLCAA	37.8414	-121.5288
4	Assessment	MPM	Grant Line Canal near Calpack Rd	544XGLCCR	37.8205	-121.4999
4	Core	C	Roberts Island Drain @ Holt Rd	544RIDAHT	37.9556	-121.4223
5	Assessment	A	Walthall Slough @ Woodward Ave	544WSAWAV	37.7704	-121.2922

A-Assessment Monitoring

C-Core Monitoring

MPM-Management Plan Monitoring

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.

2010 MANAGEMENT PLAN MONITORING

This is the third yearly update to the Coalition's Management Plan. In this report, previous year's monitoring data are reviewed and assessed for water quality improvements and exceedances. This update contains an assessment of water quality based on 2010 monitoring results including new exceedances and new site/constituents requiring management plans.

During 2010, monitoring was conducted as outlined in the Coalition's MRPP (pages 32-60). In addition, Management Plan Monitoring (MPM) in 2010 was conducted at high priority locations for high priority constituents requiring a management plan. The Coalition's Annual Monitoring Report (AMR) submitted on March 1, 2011 lists the locations, dates and type of sampling that was conducted during the irrigation season including Management Plan sampling (MP), Normal monitoring (NM) and sediment sampling.

There were a total of 12 sites monitored from January through December 2010 (Table 1). Additional MPM was conducted at nine sites in 2010 (Table 2). Based on the prioritization of exceedances, MPM was conducted for water column toxicity (*Ceriodaphnia dubia* and *Selenastrum capricornutum*), sediment toxicity (*Hyalella azteca*), copper, chlorpyrifos, diazinon, dieldrin, diuron and simazine (Table 2).

Additional samples were collected for chlorpyrifos and diazinon as part of a Department of Pesticide Regulation (DPR) grant to reduce the impact of agricultural discharge on water quality. The DPR grant monitoring began in June 2010 and continued through February 2011.

Water quality results from MPM are used to evaluate the effectiveness of Coalition outreach in priority subwatershed and the effectiveness of management practices implemented by growers within those subwatersheds. Five of the nine management plan constituents that were monitored had no exceedances in 2010 (Table 3). These include *C. dubia* toxicity and four pesticides; diazinon, dieldrin, diuron and simazine (Table 3). There was a single sample that had *S. capricornutum* toxicity out of 25 samples collected (Grant Line Canal @ Clifton Court Rd on May 11, 2010, Table 3). Of the management plan samples collected for copper and chlorpyrifos, 8% of the copper and 26% of the chlorpyrifos samples exceeded the water quality trigger limit (WQTL) (Table 3). Sediment toxicity also occurred in management plan samples with 100% of the samples collected resulting in significantly decreased survival to *H. azteca* (Table 3).

Each high priority subwatershed is discussed in more detail regarding water quality exceedances, sourcing of exceedances, outreach and evaluation of management practices in relation to water quality in Appendix I.

Table 2. 2010 Management Plan sampling schedule. "X" indicates when a sample was collected for a particular constituent. Grey columns indicate DPR grant monitoring.

SITE NAME	YEAR	MONTH	C. DUBIA	S. CAPRICORNUTUM	COPPER	CHLORPYRIFOS	DIAZINON	DIELDRIN	DIURON	SIMAZINE	H. AZTECA	CHLORPYRIFOS FOR DPR	DIAZINON FOR DPR	H. AZTECA FOR DPR
Lone Tree Creek @ Jack Tone Rd	2010	January		X	X	X	X		X					
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	2010	January	X			X			X	X				
Duck Creek @ Hwy 4	2010	February		X			X							
Lone Tree Creek @ Jack Tone Rd	2010	February		X	X	X	X		X					
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	2010	February	X	X		X			X	X				
Lone Tree Creek @ Jack Tone Rd	2010	March		X										
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	2010	March		X										
Duck Creek @ Hwy 4	2010	April	X	X		X								
Lone Tree Creek @ Jack Tone Rd	2010	April		X										
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	2010	April			X									
Grant Line Canal near Calpack Rd	2010	April		X										
Littlejohns Creek @ Jack Tone Rd	2010	April		X		X								
Terminus Tract Drain @ Hwy 12	2010	April		X										
French Camp Slough @ Airport Way	2010	April		X										
Mokelumne River @ Bruella Rd	2010	April		X										
Duck Creek @ Hwy 4	2010	May		X		X								
Lone Tree Creek @ Jack Tone Rd	2010	May		X										
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	2010	May		X	X	X								
Grant Line Canal @ Clifton Court Rd	2010	May		X	X									
Grant Line Canal near Calpack Rd	2010	May		X		X								
Littlejohns Creek @ Jack Tone Rd	2010	May			X									
Terminus Tract Drain @ Hwy 12	2010	May		X										
French Camp Slough @ Airport Way	2010	May			X	X								
Mokelumne River @ Bruella Rd	2010	May		X										
Duck Creek @ Hwy 4	2010	June				X						X	X	
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	2010	June				X						X	X	
Grant Line Canal @ Clifton Court Rd	2010	June			X									
Littlejohns Creek @ Jack Tone Rd	2010	June			X	X						X	X	
Terminus Tract Drain @ Hwy 12	2010	June												
French Camp Slough @ Airport Way	2010	June			X									
Lone Tree Creek @ Jack Tone Rd	2010	June										X	X	
Mokelumne River @ Bruella Rd	2010	June			X									
Duck Creek @ Hwy 4	2010	July	X			X						X	X	
Lone Tree Creek @ Jack Tone Rd	2010	July			X	X						X	X	
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	2010	July			X	X						X	X	
Grant Line Canal @ Clifton Court Rd	2010	July			X									

SITE NAME	YEAR	MONTH	C. DUBIA	S. CAPRICORNUTUM	COPPER	CHLORPYRIFOS	DIAZINON	DIELDRIN	DIURON	SIMAZINE	H. AZTECA	CHLORPYRIFOS FOR DPR	DIAZINON FOR DPR	H. AZTECA FOR DPR
Grant Line Canal near Calpack Rd	2010	July		X		X								
Littlejohns Creek @ Jack Tone Rd	2010	July		X		X						X	X	
French Camp Slough @ Airport Way	2010	July			X	X		X						
Mokelumne River @ Bruella Rd	2010	July		X	X									
Duck Creek @ Hwy 4	2010	August				X						X	X	
Lone Tree Creek @ Jack Tone Rd	2010	August			X	X						X	X	
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	2010	August			X							X	X	
Grant Line Canal @ Clifton Court Rd	2010	August			X									
Grant Line Canal near Calpack Rd	2010	August				X								
Littlejohns Creek @ Jack Tone Rd	2010	August		X								X	X	
Terminus Tract Drain @ Hwy 12	2010	August				X								
French Camp Slough @ Airport Way	2010	August			X	X								
Mokelumne River @ Bruella Rd	2010	August		X	X									
Duck Creek @ Hwy 4	2010	September	X			X						X	X	X
Lone Tree Creek @ Jack Tone Rd	2010	September			X							X	X	X
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	2010	September	X		X	X				X		X	X	X
Grant Line Canal @ Clifton Court Rd	2010	September			X	X				X				
Littlejohns Creek @ Jack Tone Rd	2010	September			X							X	X	X
Terminus Tract Drain @ Hwy 12	2010	September				X								
French Camp Slough @ Airport Way	2010	September				X				X				
Grant line Canal near Calpack Rd	2010	September								X				
French Camp Slough @ Airport Way	2010	October				X								
Duck Creek @ Hwy 4	2010	October										X	X	
Lone Tree Creek @ Jack Tone Rd	2010	October										X	X	
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	2010	October										X	X	
Littlejohns Creek @ Jack Tone Rd	2010	October										X	X	
Duck Creek @ Hwy 4	2010	November										X	X	
Lone Tree Creek @ Jack Tone Rd	2010	November										X	X	
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	2010	November										X	X	
Littlejohns Creek @ Jack Tone Rd	2010	November										X	X	
Duck Creek @ Hwy 4	2010	December										X	X	
Lone Tree Creek @ Jack Tone Rd	2010	December										X	X	
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	2010	December										X	X	
Littlejohns Creek @ Jack Tone Rd	2010	December										X	X	

Table 3. 2010 Management Plan Monitoring 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 WQTL occurred.

A number in red indicates an exceedance of a WQTL in a MPM sample. Dark grey shaded cells indicate that no MPM was conducted on that date for that constituent and light grey column headers indicate DPR grant monitoring.

SITE NAME	SAMPLE DATE	C. DUBIA (% SURVIVAL)	S. CAPRICORNUTUM (% CONTROL)	COPPER	CHLORPYRIFOS	DIAZINON	DIELDRIN	DIURON	SIMAZINE	H. A AZTECA (% SURVIVAL)	CHLORPYRIFOS FOR DPR	DIAZINON FOR DPR	H. A AZTECA (% SURVIVAL) DPR
Lone Tree Creek @ Jack Tone Rd	1/13/2010		X	X	1.10	X		X					
Unnamed Drain to Lone Tree Creek @ Jack Tone	1/13/2010	X			X			X	X				
Duck Creek @ Hwy 4	2/9/2010		X			X							
Lone Tree Creek @ Jack Tone Rd	2/9/2010		X	X	X	X		X					
Unnamed Drain to Lone Tree Creek @ Jack Tone	2/9/2010	X	X		X			X	X				
Lone Tree Creek @ Jack Tone Rd	3/16/2010		X										
Unnamed Drain to Lone Tree Creek @ Jack Tone	3/16/2010		X										
Duck Creek @ Hwy 4	4/13/2010	X	X		X								
Lone Tree Creek @ Jack Tone Rd	4/13/2010		X										
Unnamed Drain to Lone Tree Creek @ Jack Tone	4/13/2010			5.5 (4.7)									
Grant Line Canal near Calpack Rd	4/13/2010		X										
Littlejohns Creek @ Jack Tone Rd	4/13/2010		X		X								
Terminus Tract Drain @ Hwy 12	4/13/2010		X										
French Camp Slough @ Airport Way	4/13/2010		X										
Mokelumne River @ Bruella Rd	4/13/2010		X										
Duck Creek @ Hwy 4	5/11/2010		X		0.055								
Lone Tree Creek @ Jack Tone Rd	5/11/2010		X										
Unnamed Drain to Lone Tree Creek @ Jack Tone	5/11/2010		X	X	X								
Grant Line Canal @ Clifton Court Rd	5/11/2010		11	X									
Grant Line Canal near Calpack Rd	5/11/2010		X		X								
Littlejohns Creek @ Jack Tone Rd	5/11/2010			1.7 (1.46)									
Terminus Tract Drain @ Hwy 12	5/11/2010		X										
French Camp Slough @ Airport Way	5/11/2010			X	X								
Mokelumne River @ Bruella Rd	5/11/2010		X										
Duck Creek @ Hwy 4	6/8/2010				X						X	X	
Unnamed Drain to Lone Tree Creek @ Jack Tone	6/8/2010				X						X	X	
Grant Line Canal @ Clifton Court Rd	6/8/2010			X									
Littlejohns Creek @ Jack Tone Rd	6/8/2010			X	X						X	X	
Terminus Tract Drain @ Hwy 12	6/8/2010												
French Camp Slough @ Airport Way	6/8/2010			X									

SITE NAME	SAMPLE DATE	C. DUBIA (% SURVIVAL)	S. CAPRICORNUTUM (% CONTROL)	COPPER	CHLORPYRIFOS	DIAZINON	DIELDRIN	DIURON	SIMAZINE	H. A AZTECA (% SURVIVAL)	CHLORPYRIFOS FOR DPR	DIAZINON FOR DPR	H. A AZTECA (% SURVIVAL) DPR
Lone Tree Creek @ Jack Tone Rd	6/8/2010										X	X	
Mokelumne River @ Bruella Rd	6/8/2010			X									
Duck Creek @ Hwy 4	7/13/2010	X			0.02						0.02	X	
Lone Tree Creek @ Jack Tone Rd	7/13/2010			X	0.27						0.27	X	
Unnamed Drain to Lone Tree Creek @ Jack Tone	7/13/2010			X	X						X	X	
Grant Line Canal @ Clifton Court Rd	7/13/2010			X									
Grant Line Canal near Calpack Rd	7/13/2010		X		X								
Littlejohns Creek @ Jack Tone Rd	7/13/2010		X		X						X	X	
French Camp Slough @ Airport Way	7/13/2010			X	X	X							
Mokelumne River @ Bruella Rd	7/13/2010		X	X									
Duck Creek @ Hwy 4	8/10/2010				0.30						0.30	X	
Lone Tree Creek @ Jack Tone Rd	8/10/2010			X	X						X	X	
Unnamed Drain to Lone Tree Creek @ Jack Tone	8/10/2010			X							0.039	X	
Grant Line Canal @ Clifton Court Rd	8/10/2010			X									
Grant Line Canal near Calpack Rd	8/10/2010				X								
Littlejohns Creek @ Jack Tone Rd	8/10/2010		X								X	X	
Terminus Tract Drain @ Hwy 12	8/10/2010				X								
French Camp Slough @ Airport Way	8/10/2010			X	0.022								
Mokelumne River @ Bruella Rd	8/10/2010		X	X									
Duck Creek @ Hwy 4	9/7/2010	X			0.023						0.023	X	17
Lone Tree Creek @ Jack Tone Rd	9/7/2010			X							X	X	X
Unnamed Drain to Lone Tree Creek @ Jack Tone	9/7/2010	X		X	X					76	X	X	76
Grant Line Canal @ Clifton Court Rd	9/7/2010			X	0.044					30			
Littlejohns Creek @ Jack Tone Rd	9/7/2010			X							X	X	X
Terminus Tract Drain @ Hwy 12	9/7/2010				X								
French Camp Slough @ Airport Way	9/7/2010				X					1			
Grant line Canal near Calpack Rd	9/7/2010									91			
French Camp Slough @ Airport Way	10/12/2010				X								
Duck Creek @ Hwy 4	10/12/2010										X	X	
Lone Tree Creek @ Jack Tone Rd	10/12/2010										X	X	
Unnamed Drain to Lone Tree Creek @ Jack Tone	10/12/2010										X	X	
Littlejohns Creek @ Jack Tone Rd	10/12/2010										X	X	
Duck Creek @ Hwy 4	11/9/2010										X	X	
Lone Tree Creek @ Jack Tone Rd	11/9/2010										X	X	
Unnamed Drain to Lone Tree Creek @ Jack Tone	11/9/2010										0.052	X	
Littlejohns Creek @ Jack Tone Rd	11/9/2010										0.04	X	
Duck Creek @ Hwy 4	12/7/2010										X	X	

SITE NAME	SAMPLE DATE	C. DUBIA (% SURVIVAL)	S. CAPRICORNUTUM (% CONTROL)	COPPER	CHLORPYRIFOS	DIAZINON	DIELDRIN	DIURON	SIMAZINE	H. A AZTECA (% SURVIVAL)	CHLORPYRIFOS FOR DPR	DIAZINON FOR DPR	H. A AZTECA (% SURVIVAL) DPR
Lone Tree Creek @ Jack Tone Rd	12/7/2010										X	X	
Unnamed Drain to Lone Tree Creek @ Jack Tone	12/7/2010										0.068	X	
Littlejohns Creek @ Jack Tone Rd	12/7/2010										X	X	
Total MPM Exceedances		0	1	2	8	0	0	0	0	4	8	0	2
Total MPM Samples Collected		6	25	25	30	3	1	4	2	4	28	28	4
% Exceedances		0	4	8	26	0	0	0	0	100	29	0	50

MPM-Management Plan Monitoring
WQTL-Water Quality Trigger Limit

2004 - 2010 Exceedances

An important aspect of the SJCDWQC Management Plan is to provide yearly updates of exceedances based on the most recent water quality trigger limits (WQTLs). Table 4 provides a tally of exceedances for sites monitored from 2004 through 2010. Sites not included in this tally, as described in the SJCDWQC Management Plan include Marsh Creek and Potato Slough. In addition, Stanislaus River Drain @ South Airport Way is not included in Table 4 (sampled from October – December 2008) since it was removed from the SJCDWQC MRPP due to the large number of dairies upstream. The Coalition began monitoring at a downstream location on Walthall Slough in January 2009. Kellogg Creek @ Hwy 4 was removed from Table 4 since it was replaced by Kellogg Creek along Hoffman Lane due to the large amount of urban growth in the Highway 4 area.

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

Table 5 includes a tally of exceedances experienced since the last update (April 1, 2010) and includes monitoring results from 2010. In both tables, cells with blue highlights indicate exceedances that are under the SJCDWQC Management Plan. In Table 5, green highlights indicate sites/constituents that are included in the SJCDWQC Management Plan due to exceedances experienced in 2010.

Table 4. SJCDWQC exceedance tally based on all results through December 2010.

Sites are listed alphabetically by station name and constituents are listed alphabetically within each of the following groups: field parameters, inorganics, bacteria, metals, pesticides and toxicity. Constituents under a management plan are highlighted.

STATION NAME	OXYGEN, DISSOLVED, MG/L	PH, NONE	SPECIFIC CONDUCTIVITY, µS/CM	TOTAL DISSOLVED SOLIDS, MG/L	AMMONIA, MG/L	NITRATE AS N, MG/L	NITRATE + NITRITE AS N, MG/L	E. COLI, MPN/100 ML	ARSENIC, µG/L	BORON, µG/L	COPPER DISSOLVED, µG/L	COPPER TOTAL, µG/L	LEAD, µG/L	MOLYBDENUM, µG/L	NICKEL, µG/L	AZINPHOS METHYL1, µG/L	CARBOFURAN	CHLORPYRIFOS, µG/L	CYPERMETHRIN, TOTAL, µG/L	DDD (P,P'), µG/L	DDE (P,P'), µG/L	DDT (P,P'), µG/L	DIAZINON, µG/L	DIELDRIN, µG/L	DIMETHOATE, µG/L	DISULFOTON, µG/L	DIURON, µG/L	ENDRIN, µG/L	HCH, DELTA, µG/L	LINURON, µG/L	MALATHION, µG/L	METHIDATHION	METHOMYL, µG/L	METHYL PARATHION, µG/L	PARAQUAT DICHLORIDE, µG/L	THIOBENCARB, µG/L	SIMAZINE, µG/L	C. DUBIA, SURVIVAL (%)	P. PROMELAS, SURVIVAL (%)	S. CAPRICORNUTUM, TOTAL CELL	H. AZTECA, SURVIVAL (%)						
Bear Creek @ North Alpine Rd	4							1																																							
Drain @ Woodbridge Rd	16		16	15				2	13									1																											1		
Duck Creek @ Hwy 4	30	3						6										17				1									1								6		3	1					
French Camp Slough @ Airport Way	15	3						26			12	2				1	1	10				2	2	1		2						1				2		2		2	4						
Grant Line Canal @ Clifton Court Rd	27	7	22	16	1			19	10		6	3			1		1	6			2	1			1														1		3	3					
Grant Line Canal near Calpack Rd	38		47	25	1			19	4									4			1				1	1			1	1									3		10	7					
Kellogg Creek along Hoffman Ln	8	4	3	3		1		4			3										3	2																		2		4	4				
Littlejohns Creek @ Jack Tone Rd	17	1						6		1	5						1	8					1																	1	5	2*					
Lone Tree Creek @ Jack Tone Rd	18	3		1	4			26			7							9	1		1	1	2				3										2	1	1	2	7	2					
Mokelumne River @ Bruella Rd	5	6						2			3										2																			5		10					
Mormon Slough @ Jack Tone Rd	11	4						1										7																					1	2		4	1				
Roberts Island Drain @ Holt Rd	32		49	37				9										2			3					2														2		5	2				
Roberts Island Drain along House Rd	23	3	22	14				7	1									2	1		2	1																	2*		4	4					
Sand Creek @ Hwy 4 Bypass	25		36	19				17										2		1	5	3	2	4		3		1										1		3	1	3	10				
South Webb Tract Drain	17	1	5	5	1			5	12	1					1																										1						
Terminus Tract Drain @ Hwy 12	36	1	32	24				10	7									2				1																				1	4	1			
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	6	1	2	1				10		1	5	2					1	16			1						3														3	2	5		5	5	
Walthall Slough @ Woodward Ave	17		6	4	1		1	5																																			1	2			
GRAND TOTAL	345	37	240	164	8	1	1	175	47	1	2	41	7	1	1	1	4	86	2	1	19	11	8	6	2	4	11	1	3	1	3	2	1	1	1	1	7	4	35	5	70	49					

All data were evaluated including field duplicates. If a field duplicate has an exceedance, and the associated environmental sample does NOT have an exceedance, the field duplicate exceedance is included in the tally.

*Not prioritized for Management Plan Monitoring; both toxic samples were from the same sampling event (sample and resample to test for persistence).

Table 5. SJCDWQC exceedance tally based 2010 sampling events.

All sites are listed that have had at least one exceedance in 2010. Sites are listed alphabetically by station name and constituents are listed alphabetically within each of the following groups: field parameters, inorganics, bacteria, metals, pesticides and toxicity. Green highlighted cells refer to sites/constituents that require a management plan due to 2010 exceedances; blue highlights refer to sites/constituents already in a management plan.

STATION NAME	OXYGEN, DISSOLVED, MG/L	PH, NONE	SPECIFIC CONDUCTIVITY, µS/CM	DISSOLVED SOLIDS, MG/L	NITRATE + NITRITE AS N, MG/L	E. COLI, MPN/100 ML	ARSENIC, µG/L	COPPER DISSOLVED, µG/L	CHLORPYRIFOS, µG/L	DDE (P,P'), µG/L	C. DUBIA, SURVIVAL (%)	H. AZTECA, SURVIVAL (%)	S. CAPRICORNUTUM, GROWTH
Drain @ Woodbridge Rd	12		11	10		1	9		1			1	
Duck Creek @ Hwy 4	8								4			1	
French Camp Slough @ Airport Way	2					5			1			1	
Grant Line Canal @ Clifton Court Rd	4		3						1			1	1
Grant Line Canal near Calpack Rd	3		5									1	
Littlejohns Creek @ Jack Tone Rd	4							1	1				
Lone Tree Creek @ Jack Tone Rd	1								2				
Mokelumne River @ Bruella Rd		1											
Roberts Island Drain @ Holt Rd	4		12	11		3					1		
Terminus Tract Drain @ Hwy 12	7		6	6		1	2					1	
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	1							1	3			1	
Walthall Slough @ Woodward Ave	6		3	1	1	3				1		1	
GRAND TOTAL	52	1	40	28	1	13	11	2	13	1	1	8	1

All data were evaluated including field duplicates. If a field duplicate has an exceedance, and the associated environmental sample does NOT have an exceedance, the field duplicate exceedance is included in the tally.

2010 New Site/Constituents Requiring Management Plans

New sites that require a focused management plan approach have been added to the priority list (Table 6). Source identification, outreach and evaluation of management practices will be addressed at all new site subwatersheds that have been added to the focused management plan list during their years of priority as specified in Table 6.

As a result of 2010 monitoring, several new site/constituent specific management plans are required (see green highlights in Table 5). Below is a list of constituents with 2010 exceedances that have triggered a new site/constituent specific management plan:

- *E. coli*
 - Drain @ Woodbridge Rd

- Chlorpyrifos
 - Drain @ Woodbridge Rd

- *Ceriodaphnia dubia* toxicity
 - Roberts Island Drain @ Holt Rd

- *Hyalella azteca* sediment toxicity
 - Walthall Slough @ Woodward Ave

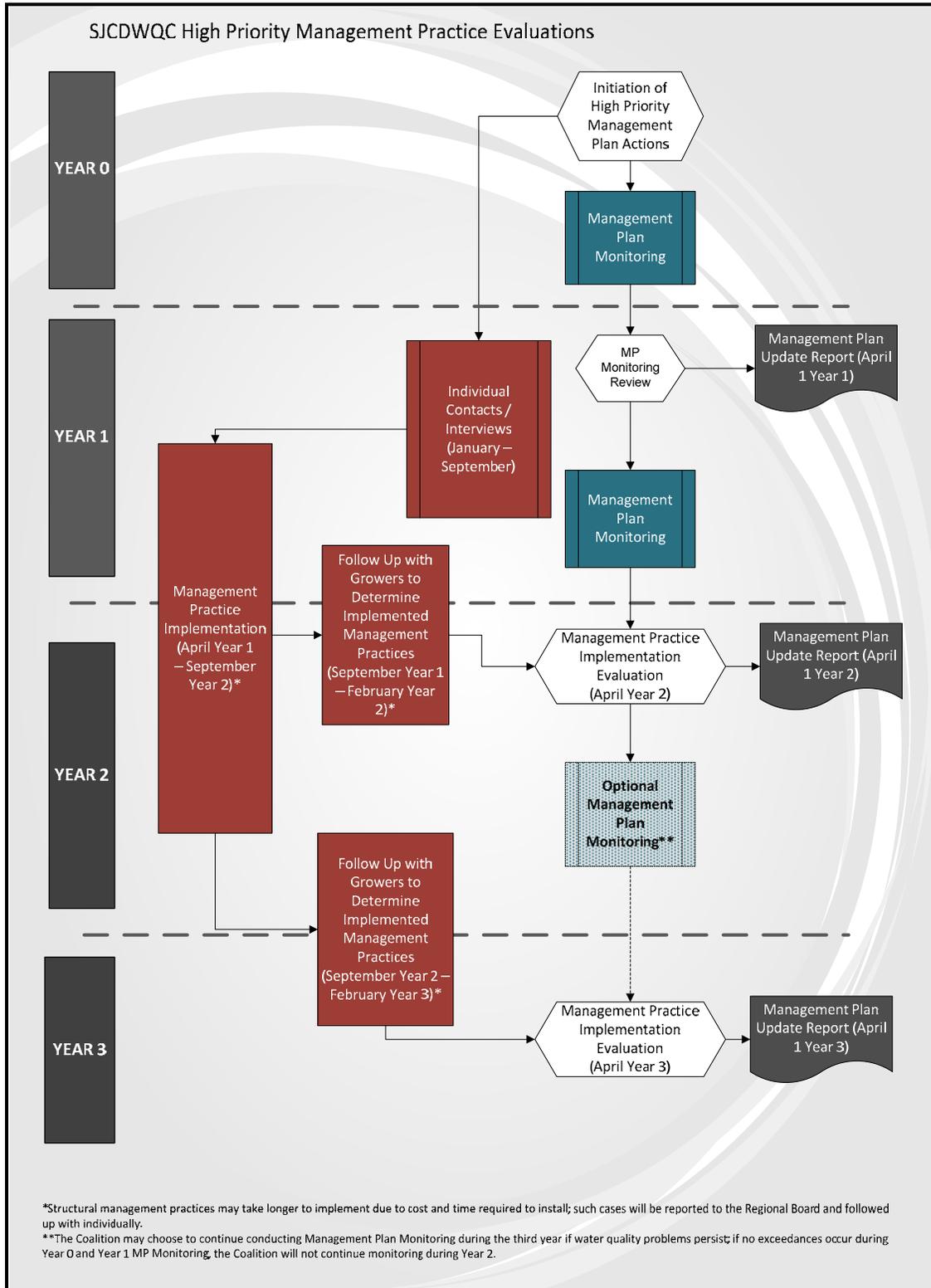
MANAGEMENT PLAN PROCESS

The SJCDWQC Management Plan process was first outlined in the SJCDWQC Management Plan submitted on September 30, 2008 and updated in the 2010 MPUR to reflect the current monitoring strategy outlined in the SJCDWQC MRPP (pages 32-34) of rotating Core and Assessment Monitoring locations. Except for South Webb Tract and Walthall Slough, all other subwatersheds under the SJCDWQC Management Plan followed the original Management Plan flow charts requiring additional monitoring in 2007 and upstream monitoring in 2008 during the irrigation season for high priority constituents during months of past exceedances. In 2009, the Coalition was able to utilize source information gained from MPM during its outreach efforts, especially within high priority site subwatersheds. Due to the extensive amount of monitoring conducted within the Coalition region, 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 Management Plan Monitoring (MPM) strategy (Figure 1). Sites get rotated from non-high priority to high priority based on a schedule approved by the Regional Board (Table 6). The strategy has been updated to include MPM for high priority subwatersheds during Year 0, Year 1, and Year 2. Year 0 refers to the year prior to when the subwatershed will become high priority and allows the Coalition to have recent monitoring data when contacting growers in the subwatershed. If there are two years with no exceedances of high priority constituents (either in Year 0 and Year 1 or Year 1 and Year 2), that site/constituent will be removed from an active Management Plan and will only be monitored when the site is rotated into assessment monitoring.

Figure 1. SJCDWQC High Priority Subwatershed Management Plan Monitoring Strategy and management practice evaluation.



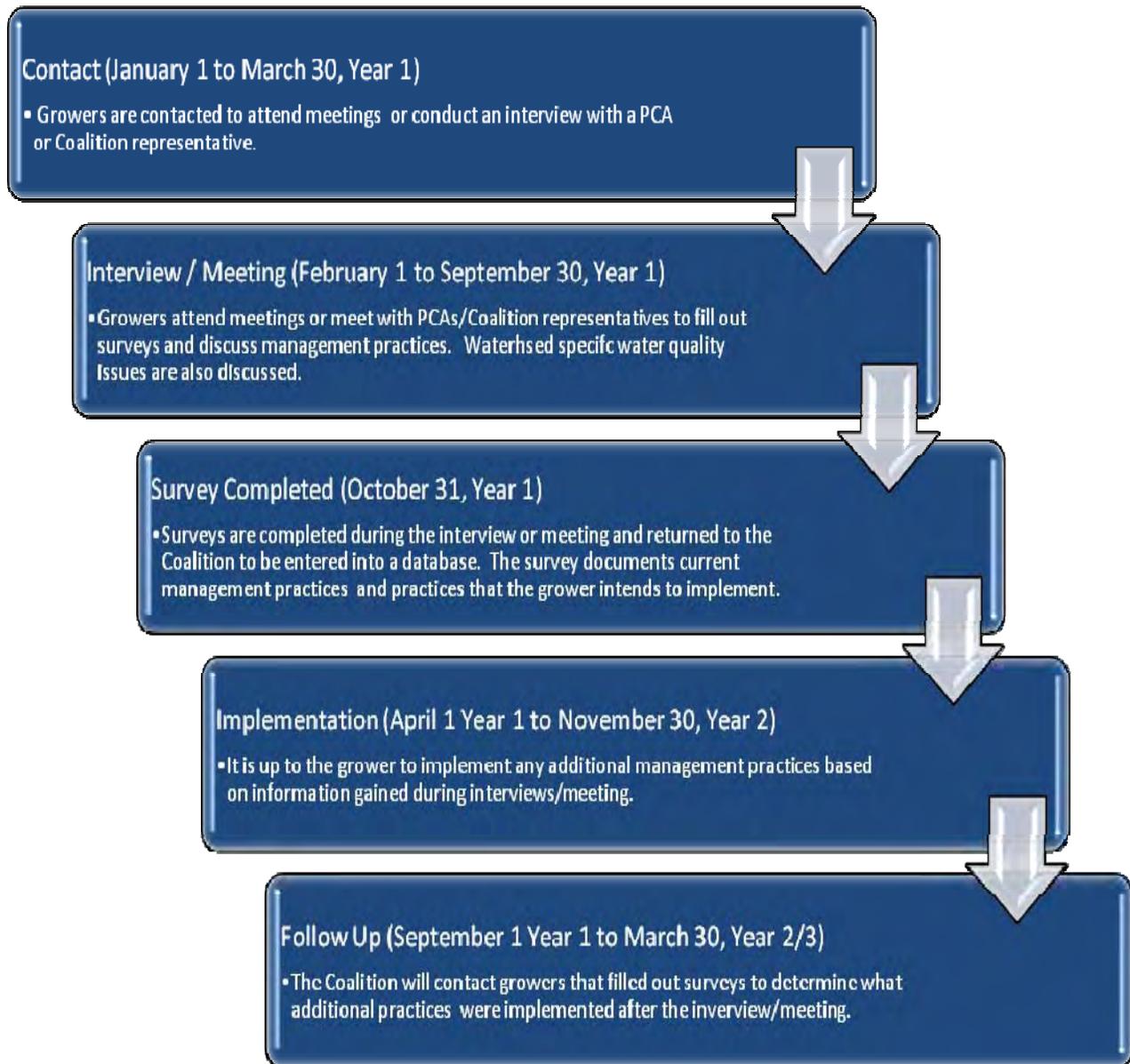
MANAGEMENT PRACTICE TRACKING STRATEGY

The schedule presented in Figure 2 provides a general timeline of actions in Years 1, 2 and 3 of the flow chart in Figure 1. When a site becomes a high priority site subwatershed, the Coalition makes contacts to individuals who have the potential for direct drainage and are known to have applied constituents of concern. Contacts occur between January 1 and March 30 of Year 1 in order to schedule meetings between February 1 and September 30. Meetings are used to inform growers of current water quality issues and potential management practices that can be implemented to reduce impairments of water quality due to agricultural inputs.

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 will be completed by October 1 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 although it is difficult to predict since some practices such as structural management practices may take multiple years to implement.

The Coalition conducts follow up surveys with growers between September of Year 1 and February 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 may be necessary for funds to be available for structural improvements. 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 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 that parcel, no available funds).

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



PRIORITIZATION OF EXCEEDANCES

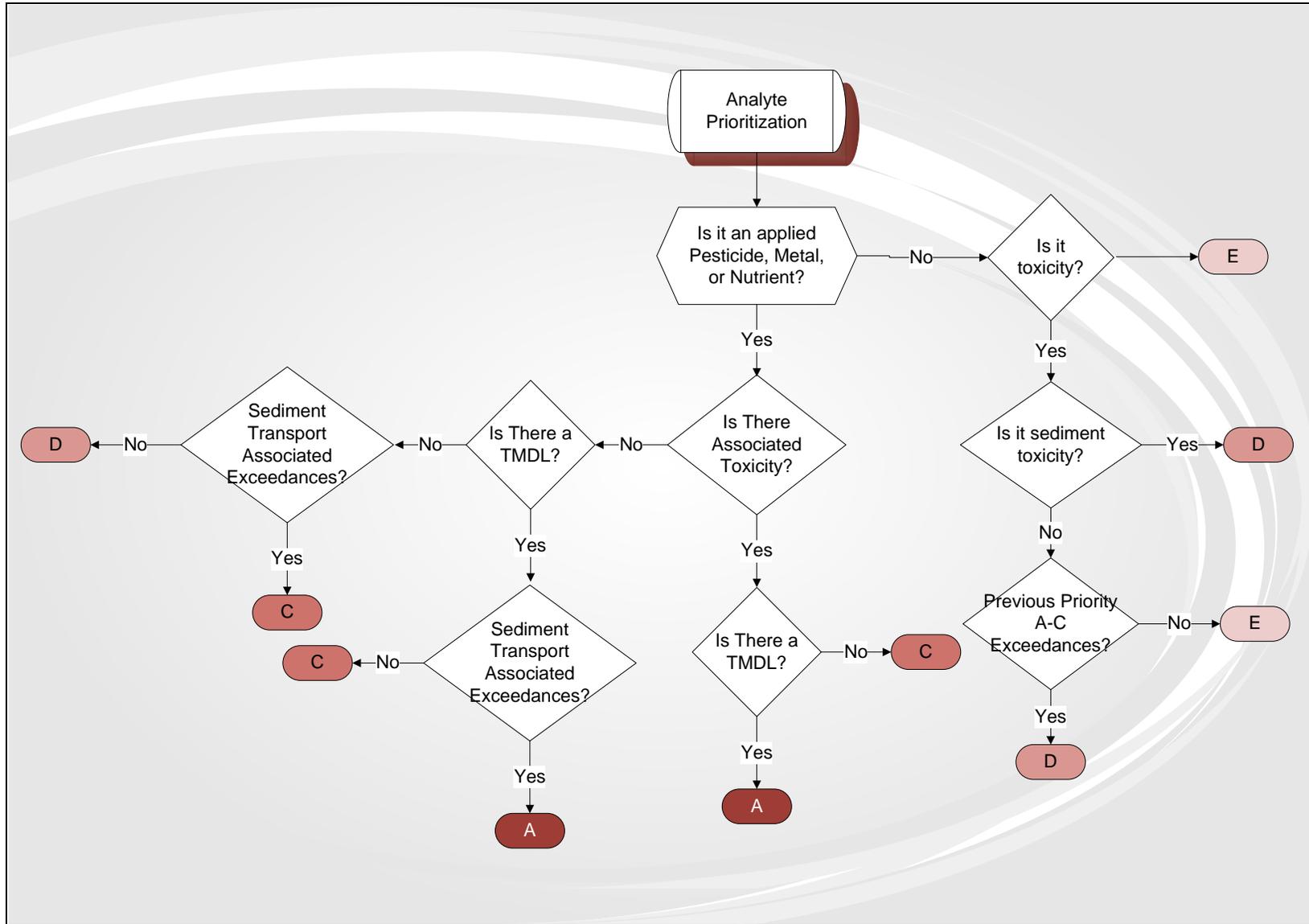
The SJCDWQC developed a prioritization process which allows the Coalition to focus on constituents of the greatest concern. These constituents are included in the Management Plan process outlined in Figure 3. The prioritization process was developed in collaboration with the Regional Board and allows the Coalition to focus on constituents where sourcing is possible (i.e. pesticide use reports) and for which management practices are available. Following the process outlined in the flow chart in Figure 3, a priority level is assigned to a constituent for a specific site subwatershed. Priority levels determine the level of activity for sourcing, outreach, and evaluation.

Source analysis is conducted by utilizing Pesticide Use Reports (PUR) and any relevant MPM data. 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.

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

The Coalition evaluates management practice information obtained from individual surveys including follow up surveys which 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 member, there may continue to be downstream exceedances. Therefore evaluations of management practices involve both an assessment of water quality and the degree of implementation of management practices at the subwatershed level.

Figure 3. SJCDWQC constituent prioritization process.



MANAGEMENT PLAN DEVELOPMENT TIMELINES

The Coalition developed a schedule outlining when sites reach high priority status and undergo the focused management plan approach described in the previous section (Figure 2). This schedule was submitted as an addendum to the SJCDWQC Management Plan and was approved on January 23, 2009 (Table C). The schedule is evaluated and updated in each yearly MPUR for any new sites requiring a management plan and changes to the years for focused outreach. Based on the Management Plan process, any new site that requires a management plan due to the previous year's monitoring is added to the bottom of the schedule. Any time line changes, such as time extensions, removal of sites, changing the year of prioritization, must be approved by the Regional Board's Executive Officer.

The Coalition submitted on June 5, 2009 a request to extend the dates in its prioritization schedule (originally submitted on December 23, 2008) by one year. The prioritization schedule is re-evaluated yearly and updated with new monitoring locations and updates in prioritization based on monitoring results and available resources. Changes to this schedule may require a request for approval by the Regional Board which are submitted by the Coalition to the Regional Board prior to the MPUR due date.

Table 6 provides an updated schedule that includes the approved changes to prioritization years. There are currently 16 site subwatersheds included in the SJCDWQC Management Plan that will become high priority sites between 2008 and 2015.

Due to 2010 exceedances at Walthall Slough @ Woodward Ave (*Hyalella azteca* sediment toxicity) and Drain @ Woodbridge Rd (chlorpyrifos and *E. coli*), both of these monitoring sites have been added to the schedule for focused Management Plan approach (Table 6). Following the preapproved MP process criteria both Walthall Slough @ Woodward Ave and Drain @ Woodbridge Rd are now scheduled to be addressed for source identification, outreach, and evaluation of management practices in 2013-2015.

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

SITE SUBWATERSHED NAME	YEAR FOR FOCUSED APPROACH
Duck Creek @ Highway 4	2008-2010
Lone Tree Creek @ Jack Tone Rd	2008-2010
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	2008-2010
Grant Line Canal @ Clifton Court Rd	2010-2012
Grant Line Canal near Calpack Rd	2010-2012
Littlejohns Creek @ Jack Tone Rd	2010-2012
Terminus Tract Drain @ Hwy12	2011-2013
French Camp Slough @ Airport Way	2011-2013
Mokelumne River @ Bruella Rd	2011-2013
Sand Creek @ Hwy 4 Bypass	2012-2014
Kellogg Creek along Hoffman Lane	2012-2014
Mormon Slough @ Jack Tone Road	2012-2014
Roberts Island Drain @ Holt Rd	2013-2015
Roberts Island Drain along House Rd	2013-2015
*Walthall Slough @ Woodward Ave	2013-2015
*Drain @ Woodbridge Rd	2014-2016
RE-EVALUATE ALL SITE SUBWATERSHEDS AND REVISE SCHEDULE	ANNUALLY

*Sites have been added to the list following 2010 exceedances.

PRIORITY SITE MANAGEMENT

MANAGEMENT OBJECTIVES

The Coalition has prioritized constituents and site subwatersheds to allow for focused investigation of sources, outreach and evaluation of management practices. Prioritization of subwatersheds is based on the number, frequency and magnitude of chlorpyrifos and diazinon exceedances. Other factors considered include size of the subwatershed and known management practices that have been implemented.

The objective of the prioritization process is to develop a process that results in a decrease of agricultural discharges that contribute to downstream exceedances of WQTLs. Although the Coalition is focusing on chlorpyrifos and diazinon exceedances, management practices implemented to reduce the runoff of these constituents will reduce the runoff of other pesticides, nutrients, salts and metals.

The Coalition monitors for Priority A- D constituents when a site is a high priority subwatershed. The purpose of monitoring is to evaluate improvements in water quality and the effectiveness of management practices (Figure 1). The Coalition in 2010 began monitoring as Year 0 in the third group of priority subwatersheds. A site subwatershed analysis is conducted for high priority subwatersheds and is included in Appendix I.

2011 MANAGEMENT PLAN MONITORING (MPM) SCHEDULE

The SJCDWQC will conduct MPM at the following sites; Years 1, 2 and 3 refer to the Management Plan year in which the site is a high priority site (see Figure 1):

Year 3: First Priority (2008 – 2010)

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

Year 2: Second Priority (2010 – 2012)

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

Year 1: Third Priority (2011 – 2013)

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

Year 0: Fourth Priority (2012 – 2014)

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

The above sites will be monitored for priority constituents during months in which exceedances have occurred in previous years (Table 7).

Starting in September 2010, sediment toxicity was added to the MPM schedule for high priority subwatersheds to coincide with the post irrigation sediment sampling period for Normal Monitoring. Sediment sampling was omitted from previous monitoring schedules when the Coalition was monitoring at the same locations from year to year. Due to the new MRPP monitoring design (page 65), the Coalition added MPM for sediment during months of past exceedances to assess if there has been improvement in sediment quality due to outreach and implemented management practices.

Table 7. 2011 Management Plan sampling schedule (columns shaded in grey are DPR grant monitoring).

SITE NAME	YEAR	MONTH	C. DUBIA	S. CAPRICORNUTUM	COPPER	CHLORPYRIFOS	DIAZINON	DIELDRIN	DIURON	SIMAZINE	DISULFOTON	H. AZTECA
Duck Creek @ Hwy 4	2011	January										
French Camp Slough @Airport Way	2011	January			X		X		X			
Grant Line Canal @ Clifton Court Rd	2011	January		X		X						
Grant line Canal near Calpack Rd	2011	January		X								
Littlejohns Creek @ Jack Tone Rd	2011	January										
Lone Tree Creek @ Jack Tone Rd	2011	January		X	X	X	X		X			
Sand Creek @ Hwy 4 Bypass	2011	January					X					
Terminus Tract Drain @ Hwy 12	2011	January		X								
Unnamed Drain to Lone Tree Creek @ Jack Tone	2011	January	X			X			X	X		
Duck Creek @ Hwy 4	2011	February		X			X					
French Camp Slough @Airport Way	2011	February	X	X		X	X		X			
Grant Line Canal @ Clifton Court Rd	2011	February				X						
Grant line Canal near Calpack Rd	2011	February		X								
Kellogg Creek along Hoffman Ln	2011	February	X		X	X						
Littlejohns Creek @ Jack Tone Rd	2011	February			X	X	X					
Lone Tree Creek @ Jack Tone Rd	2011	February		X	X	X	X		X			
Terminus Tract Drain @ Hwy 12	2011	February		X								
Unnamed Drain to Lone Tree Creek @ Jack Tone	2011	February	X	X		X			X	X		
French Camp Slough @Airport Way	2011	March	X								X	
Grant Line Canal @ Clifton Court Rd	2011	March				X					X	
Grant line Canal near Calpack Rd	2011	March	X			X					X	
Kellogg Creek along Hoffman Ln	2011	March	X								X	
Littlejohns Creek @ Jack Tone Rd	2011	March		X								
Lone Tree Creek @ Jack Tone Rd	2011	March		X							X	
Mokelumne River @ Bruella Rd	2011	March		X								
Sand Creek @ Hwy 4 Bypass	2011	March									X	
Unnamed Drain to Lone Tree Creek @ Jack Tone	2011	March		X							X	
Duck Creek @ Hwy 4	2011	April	X	X		X						
French Camp Slough @Airport Way	2011	April		X								
Grant line Canal near Calpack Rd	2011	April		X								
Kellogg Creek along Hoffman Ln	2011	April	X	X								
Littlejohns Creek @ Jack Tone Rd	2011	April		X		X						

SITE NAME	YEAR	MONTH	C. DUBIA	S. CAPRICORNUTUM	COPPER	CHLORPYRIFOS	DIAZINON	DIELDRIN	DIURON	SIMAZINE	DISULFOTON	H. AZTECA
Lone Tree Creek @ Jack Tone Rd	2011	April		X								
Mokelumne River @ Bruella Rd	2011	April		X								
Mormon Slough @ Jack Tone Rd	2011	April		X								
Sand Creek @ Hwy 4 Bypass	2011	April		X								
Terminus Tract Drain @ Hwy 12	2011	April		X								
Unnamed Drain to Lone Tree Creek @ Jack Tone	2011	April			X							
Duck Creek @ Hwy 4	2011	May		X		X						
French Camp Slough @Airport Way	2011	May			X	X						
Grant Line Canal @ Clifton Court Rd	2011	May		X	X							
Grant line Canal near Calpack Rd	2011	May	X	X		X						
Kellogg Creek along Hoffman Ln	2011	May		X								
Littlejohns Creek @ Jack Tone Rd	2011	May			X							
Lone Tree Creek @ Jack Tone Rd	2011	May		X								
Mokelumne River @ Bruella Rd	2011	May		X								
Mormon Slough @ Jack Tone Rd	2011	May	X	X		X						
Sand Creek @ Hwy 4 Bypass	2011	May	X			X		X				X
Terminus Tract Drain @ Hwy 12	2011	May		X								
Unnamed Drain to Lone Tree Creek @ Jack Tone	2011	May		X	X	X						
Duck Creek @ Hwy 4	2011	June				X						
French Camp Slough @Airport Way	2011	June			X							
Grant Line Canal @ Clifton Court Rd	2011	June			X							
Littlejohns Creek @ Jack Tone Rd	2011	June			X	X						
Mokelumne River @ Bruella Rd	2011	June			X							
Sand Creek @ Hwy 4 Bypass	2011	June	X			X		X				X
Unnamed Drain to Lone Tree Creek @ Jack Tone	2011	June				X						
Duck Creek @ Hwy 4	2011	July	X			X						
French Camp Slough @Airport Way	2011	July			X	X		X				
Grant Line Canal @ Clifton Court Rd	2011	July			X							
Grant line Canal near Calpack Rd	2011	July		X		X						
Kellogg Creek along Hoffman Ln	2011	July			X							
Littlejohns Creek @ Jack Tone Rd	2011	July		X		X						
Lone Tree Creek @ Jack Tone Rd	2011	July			X	X						
Mokelumne River @ Bruella Rd	2011	July		X	X							
Mormon Slough @ Jack Tone Rd	2011	July		X		X						
Sand Creek @ Hwy 4 Bypass	2011	July	X				X					
Unnamed Drain to Lone Tree Creek @ Jack Tone	2011	July			X	X						
Duck Creek @ Hwy 4	2011	August				X						
French Camp Slough @Airport Way	2011	August			X	X						
Grant Line Canal @ Clifton Court Rd	2011	August			X							
Grant line Canal near Calpack Rd	2011	August	X			X						
Kellogg Creek along Hoffman Ln	2011	August		X								
Littlejohns Creek @ Jack Tone Rd	2011	August		X								
Lone Tree Creek @ Jack Tone Rd	2011	August			X	X						
Mokelumne River @ Bruella Rd	2011	August		X	X							
Mormon Slough @ Jack Tone Rd	2011	August				X						
Sand Creek @ Hwy 4 Bypass	2011	August		X				X				X

SITE NAME	YEAR	MONTH	C. DUBIA	S. CAPRICORNUTUM	COPPER	CHLORPYRIFOS	DIAZINON	DIELDRIN	DIURON	SIMAZINE	DISULFOTON	H. AZTECA
Terminus Tract Drain @ Hwy 12	2011	August				X						
Unnamed Drain to Lone Tree Creek @ Jack Tone	2011	August			X	X						
Duck Creek @ Hwy 4	2011	September	X			X						
French Camp Slough @Airport Way	2011	September				X					X	
Grant Line Canal @ Clifton Court Rd	2011	September			X	X					X	
Grant line Canal near Calpack Rd	2011	September									X	
Kellogg Creek along Hoffman Ln	2011	September									X	
Littlejohns Creek @ Jack Tone Rd	2011	September			X							
Lone Tree Creek @ Jack Tone Rd	2011	September			X						X	
Mormon Slough @ Jack Tone Rd	2011	September	X			X						
Sand Creek @ Hwy 4 Bypass	2011	September									X	
Terminus Tract Drain @ Hwy 12	2011	September				X						
Unnamed Drain to Lone Tree Creek @ Jack Tone	2011	September	X		X	X					X	
French Camp Slough @Airport Way	2011	October				X						
Littlejohns Creek @ Jack Tone Rd	2011	November				X						
Unnamed Drain to Lone Tree Creek @ Jack Tone	2011	November				X						
Unnamed Drain to Lone Tree Creek @ Jack Tone	2011	December				X						

PERFORMANCE GOALS AND SCHEDULES

The Coalition Strategic Plan is outlined in Table 18 of the original Management Plan (submitted on September 30, 2008) 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 has developed High Priority Site Subwatershed Performance Goals (hereafter referred to as Performance Goals) for its first three of high priority site subwatersheds. Performance goals are submitted for approval each time a new set of 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 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

Priority site subwatershed Performance Goals were approved by the Regional Board as amendments to the SJCDWQC Management Plan on December 29, 2009 (first priority subwatersheds), December 29, 2009 (second priority subwatersheds), and January 10, 2011 (third priority subwatershed). The following sections describe the 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 subwatersheds (amendments are discussed in detail in the schedule extension request submitted on August 3, 2009 and approved on December 29, 2009) are presented in Table 8. Below each performance goal is an update on the status of the associated measures and outputs.

Table 8. High Priority Performance Goals status for 2008-2010 high priority subwatersheds (Duck Creek @ Hwy 4, Lone Tree Creek and Unnamed Drain), 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. Completion deadlines are in bold; if applicable, status updates are included below completion deadlines.

PERFORMANCE GOAL/PERFORMANCE MEASURE	OUTPUTS	WHO	STATUS AS OF APRIL 1, 2011 ¹		
			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 (March 5, 2009)	Complete (March 5, 2009)	Complete (March 5, 2009)
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 43² (100%)	34 of 34³ (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.	MLJ-LLC	4,978 of 15,046 (33%)	3,742 of 29,232 (13%)	6,463 of 29,892 (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 43² (100%)	34 of 34³ (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 (May 30, 2010)	Complete (May 30, 2010)	Complete (May 30, 2010)
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 (April 1, 2011)	Complete (April 1, 2011)	Complete (April 1, 2011)
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	2010 Summary Complete (April 1, 2011) ⁴	2010 Summary Complete (April 1, 2011) ⁴	2010 Summary Complete (April 1, 2011) 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.					

¹Acreage has been updated since the 2010 MPUR due to updated GIS parcel layers (actual parcels did not change); acreage of individual contacts now based on irrigated acres (previously based on enrolled acres).

²46 reported in 2010 MPUR. Three members removed due to no pesticide use.

³35 reported in 2010 MPUR. Duplicate member removed (filled out by both permittee and member).

⁴MPM continues in Duck Creek, Lone Tree Creek, and Unnamed Drain to Lone Tree Creek. The Coalition will assess water quality data collected in 2011 from all three sites in the 2012 MPUR.

Table 9. Updated Management Practices survey, outreach, implementation and evaluation tracking schedule based on the table submitted with the SJCDWQC schedule extension request on August 3, 2009 to reflect status of April 1, 2011.

PRIORITY SUBWATERSHED EVALUATION OF MANAGEMENT PRACTICES	DUCK CREEK @ HWY 4		LONE TREE CREEK @ JACK TONE RD		UNNAMED DRAIN TO LONE TREE CREEK @ JACK TONE RD	
	2009 Schedule	Status April 1, 2011	2009 Schedule	Status April 1, 2011	2009 Schedule	Status April 1, 2011
1a) Associate baseline survey responses with member APNs	Completed	Completed	Completed	Completed	Completed	Completed
1b) Determine number/type of management practices currently in place	Completed (December 30, 2008)	Completed	Completed (December 30, 2008)	Completed	Completed (December 30, 2008)	Completed
2a) Group Grower Contacts	Completed (November 24, 2008)	Completed	Completed (March 5, 2009)	Completed	Completed (November 24, 2008 and March 5, 2009)	Completed
2b) Individual Contacts*	November 2008 – September 2009	Completed	March 2009 – September 2009	Completed	March 2009 – September 2009	Completed
3) Implementation of new management practices	April 2009 – February 2010	Completed ¹	April 2009 – February 2010	Completed	April 2009 – February 2010	Completed
4) Assess number/type of new management practices implemented	October 2009 - February 2010	Completed ¹	October 2009 - February 2011	Completed	October 2009 -February 2011	Completed
5) Evaluate effectiveness of new management practices	April 2009 - February 2011	Completed ²	April 2009 - February 2011	Completed	April 2009 - February 2011	Completed

*Individual contacts in this table refers to contacts resulting in returned surveys; in all other places in this document contact refers to initial contact by the Coalition with a targeted member to review management practices and fill out/return a survey.

Performance Goal 1: Conduct grower group meetings.

As described in the 2010 MPUR, the Coalition conducted grower group meetings in November 2008 and March 2009 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: Individually contact members on adjacent properties to waterways where discharges have been identified during winter 2008/2009.

The Coalition successfully identified and contacted targeted members in 2008 and 2009 to attend grower group meetings, document current management practices and indicate what additional management practices may be implemented in 2009 and 2010 (Table 8).

Performance Goal 3: Establish current practices (beyond established baseline practices) by April 2009 on adjacent properties to waterways or where discharges are identified.

Performance Goal 2 was completed by the required date as reported in the 2010 MPUR (page 27). The actions taken by the Coalition to meet this performance goal between November 2008 and September 2009 were described in the 2010 MPUR including dates of contacts.

The Coalition has contacted 100% of the targeted growers and has recorded 100% of management practice information in a Microsoft Access database (Table 8). A summary of management practice evaluations was presented as an addendum to the 2010 MPUR and has been updated in the section “Summary of Implemented Management Practices” of this report.

Performance Goal 4: Encourage growers to implement additional management practices based on water quality results.

All recommended practices have been recorded in a database (in addition to current management practice information) and are summarized in the section “Summary of Implemented Management Practices” (Table 8). The Coalition conducted follow up meetings and phone calls to obtain follow up information regarding practices that were implemented in 2009 and 2010. The Coalition has obtained management practice implementation information from all growers who recorded that they planned to implement additional practices.

It is the primary focus of both grower group and individual meetings to encourage the adoption of practices that will result in reducing runoff of constituents that have been detected at exceedance levels in the past. Many of the management practices that reduce runoff of chlorpyrifos will also result in the reduction of runoff of other constituents (e.g. converting to drip irrigation, spray nozzle calibrations, increased buffer zones, and spray drift management).

Performance Goal 5: Evaluate effectiveness of the new management practices implemented during 2009 and 2010.

The evaluation of the effectiveness of new management practices is assessed using water quality monitoring results from 2009 and 2010 (Table 9). An evaluation of the water quality data collected to date in relation to management practice information is included in the section “Evaluation of

Management Practice Effectiveness” for the first priority subwatersheds. The Coalition is continuing to monitor all three first high priority sites for an additional third year for management plan constituents. Results from 2011 monitoring will be reviewed in relation to previous monitoring results and an evaluation will be included in the 2012 MPUR to be submitted April 1, 2012. Due to funds available for structural management practices through a Proposition 84 grant it is anticipated that additional practices may be implemented in these subwatersheds.

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 for High Priority waterbodies.

The Coalition met with Regional Board staff to discuss the Management Plan activities for high priority waterbodies including status of individual contacts, survey completion, and time extensions for completing Performance Goals in 2009 and 2010. Quarterly meeting dates from 2009 were reported in the 2010 MPUR (see Table 10, page 30). Quarterly meeting notes from 2010 can be found in Table 11.

Second Priority Subwatersheds (2010 – 2012)

In the pre-quarterly meeting with Regional Board staff on October 7, 2009 the Coalition proposed modified Performance Goals for the second set of high priority site subwatersheds (Grant Line Canal near Calpack, Grant Line Canal @ Clifton Ct and Littlejohns Creek @ Jack Tone Rd). The second priority subwatershed performance goals include the following changes from the first priority subwatershed performance goals:

1. Deleted Performance Goal 1 (Conduct grower group meetings).
2. Updated Performance Measure 2.2 Output (now 1.2) to be specific to the subwatershed acreage with direct drainage.
3. Combined Performance Measure 3.1 and 3.2 (now 2.1 and 2.2); deleted Performance Measure 3.1 (Obtain current management practice from 100% of identified growers / Completed individual contact checklists recorded in an Access database).
4. Updated Performance Goal 5 (now 4) – refers to years that the subwatershed is high priority rather than specifying the exact years of evaluation.
5. Updated Performance Measure 5.1 (now 4.1) and omitted “90% completeness, 90% accuracy and 90% precision”.

Performance goals, measures, outputs and completion dates for second priority subwatersheds are included in Table 10 and were approved by the Regional Board on December 29, 2009.

Table 10. Subwatershed specific performance goals for 2010 - 2012 high priority subwatersheds (Grant Line Canal near Calpack, Grant Line Canal @ Clifton Ct and Littlejohns Creek @ Jack Tone). Completion deadlines are in bold; if applicable, status updates are included below completion deadlines.

PERFORMANCE GOAL/PERFORMANCE MEASURE	OUTPUTS	WHO	STATUS AS OF APRIL 1, 2011 ¹		
			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	March 30, 2010 2 of 2 (100%)	March 30, 2010 2 of 2 (100%)	March 30, 2010 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	Quarterly 686 of 686 acres (100%)	Quarterly 259 of 259 acres (100%)	Quarterly 2796 of 5277 acres (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	April 30, 2010 2 of 2 (100%)	June 30, 2010 2 of 2 (100%)	Oct. 31, 2010 16 of 16 (100%)
Performance Measure 2.2 – Document management practices that the identified grower were encouraged to implement.	Summary of management practice evaluations on a site subwatershed level in the Management Plan update.	MLJ-LLC	April 1, 2011 Complete	April 1, 2011 Complete	April 1, 2011 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	November 30, 2010 Complete	November 30, 2011 Complete	November 30, 2011 Complete
	Summary of management practices implemented as a result of individual contacts.	MLJ-LLC	April 1, 2011 Complete	April 1, 2011 April 1, 2012 Complete	April 1, 2011 April 1, 2012 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	April 1, 2011 (Complete) April 1, 2012	April 1, 2011 (Complete) April 1, 2012	April 1, 2011 (Complete) April 1, 2012
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.					

¹County overall direct drainage acreage has been updated; the assessment of the acreages has been updated to be more accurate by updating GIS parcel layers (actual parcels did not change).

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

One hundred percent of targeted members were contacted by March 30, 2010 as scheduled in the second priority subwatershed Performance Goal 1 (Table 10). Growers were mailed survey packets which included maps of grower parcels, PUR data associated with exceedances, and the management practice survey specific to parcels enrolled in the Coalition that were determined to have direct drainage to the waterway. The growers were asked to attend the meeting and bring the survey with them to fill out at the meetings held on January 25 and 28, 2010 (Table 14).

A total of 20 growers were contacted by March 30, 2010 representing 3,741 acres or 60% of the acreage determined to have the potential for direct drainage into the second group of high priority subwatersheds (Table 10).

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

The Coalition created the second priority subwatershed Individual Contact Packets and met with growers during 2010 to record current management practices (see the 2010 MPUR pages 27-28 for more details regarding individual grower visits). The Coalition met with and documented current management practices for 100% of targeted growers within the Grant Line Canal @ Clifton Court Rd, Grant Line Canal near Calpack Rd and Littlejohns Creek @ Jack Tone Rd subwatersheds (total growers = 20, Table 10). Surveys document current management practices regarding irrigation practices, storm water runoff, pest management and dormant sprays (when applicable). One hundred percent of the management practices documented on the surveys have been recorded in an Access database.

A summary of management practice evaluations is included in the section “Summary of Implemented Management Practices” and in the High Priority Subwatershed Analysis Appendix (Appendix I).

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

One hundred percent of the management practices that growers indicated that they would implement in 2010 and 2011 were recorded in the management practice tracking database (Table 10). A summary of these management practices is included in the section “Summary of Implemented Management Practices” under the subsection “Second Priority Subwatersheds: Recommended Management Practices – 2010/2011”.

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

The Coalition conducted MPM in the second high priority sites during 2010 and will continue monitoring in 2011 to assess water quality improvements that have occurred since these subwatersheds have become high priority. Water quality monitoring results are included in Appendix I and are tabulated in Table 3. Second priority site subwatershed water quality results before and after the implementation of additional practices is evaluated in the section “Summary of Implemented Management Practices” under the subsection “Second Priority Subwatersheds: Implemented Management Practices – 2010/2011”.

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 quarterly to discuss Coalition activities in relation to the first and second high priority subwatersheds in February, May, August and November 2010 (Table 11).

Table 11. 2010 Regional Board Quarterly Meeting dates (subject to change).

QUARTERLY MEETINGS	MEETING DATE
First Quarter Meeting	February 10, 2010
Second Quarter Meeting	May 4, 2010
Third Quarter Meeting	August 3, 2010
Fourth Quarterly Meeting	November 2, 2010

Third Priority Subwatersheds (2011 – 2013)

The third group of high priority subwatersheds includes French Camp Slough @ Airport Way, Mokelumne River @ Bruella Rd and Terminous Tract Drain @ Hwy 12. Performance goals (approved January 10, 2011) for this group follow the same format as for the second group of high priority subwatershed performance goals.

Performance goals, measures, outputs and completion dates are included in Table 12. The Coalition anticipates using the following performance goals for future priority subwatersheds as they rotate into priority status.

Table 12. Subwatershed-specific performance goals for 2011 - 2013 high priority subwatersheds (French Camp Slough @ Airport Way, Mokelumne River @ Bruella Rd, Terminus Tract Drain @ Hwy 12). Completion deadlines are in bold; if applicable, status updates are included below completion deadlines.

PERFORMANCE GOAL/PERFORMANCE MEASURE	OUTPUTS	WHO	STATUS AS OF APRIL 1, 2011		
			FRENCH CAMP SLOUGH @ AIRPORT WAY	MOKELUMNE RIVER @ BRUELLA RD	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	March 30, 2011 13 of 13 (100%)	March 30, 2011 14 of 14 (100%)	March 30, 2011 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	Quarterly 3,767 of 11,355 (33%)	Quarterly 985 of 11,809 (8%)	Quarterly 1,778 of 10,413 (17%)
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	October 31, 2011 8 of 13 (62%)	October 31, 2011 8 of 14 (57%)	October 31, 2011 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	April 1, 2012	April 1, 2012	April 1, 2012
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	November 30, 2011 November 30, 2012	November 30, 2011 November 30, 2012	Nov. 30, 2011 Nov. 30, 2012
	Summary of management practices implemented as a result of individual contacts.	MLJ-LLC	April 1, 2012 April 1, 2013	April 1, 2012 April 1, 2013	April 1, 2012 April 1, 2013
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	April 1, 2012 April 1, 2013	April 1, 2012 April 1, 2013	April 1, 2012 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.					

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 French Camp Slough, Mokelumne River, and Terminous Tract Drain subwatersheds with a request to attend grower meetings to discuss the Coalition's Management Plan strategy, water quality results and pertinent management practices. Growers were mailed survey packets which included maps of grower parcels, PUR data associated with exceedances and the management practice survey. The growers were asked to attend the meeting and bring the survey with them to complete at the meetings held on January 13, 19, and 20, 2011 (Table 14).

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

After the three meetings in January, the Coalition has received 62% of completed management practice surveys from French Camp Slough growers, 57% of the surveys from growers along the Mokelumne River and 100% of the surveys from growers on Terminous Tract Drain.

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

At the three January meetings held in 2011, 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 still reviewing the responses provided in the surveys regarding management practices that growers intend to implement in 2010 and 2011.

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

The Coalition conducted Year 0 monitoring for the third group of priority subwatersheds in 2010. The Coalition will also conduct MPM in these watersheds during 2011 and possibly 2012 depending on whether or not there are continued water quality issues. The Coalition will evaluate effectiveness of new management practices implemented in 2011 and 2012 with water quality data obtained from MPM. An interim evaluation will be included in the 2012 Management Plan Update Report and a final evaluation will be included in the 2013 Management Plan Update Report if additional practices are to be implemented in 2012. If the Coalition is aware of structural management practices that will take longer than two years to implement, this information will be included in the annual updates and may result in an extension to the final evaluation of management practice effectiveness.

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 2011 (Table 13). The Coalition has already met with Regional Board staff on February 8, 2011 for its first quarterly meeting. Other Coalition activities (meetings, outreach/education) that occurred during 2010 and early 2011 can be referenced in Table 14.

Table 13. 2011 Regional Board quarterly meeting dates (subject to change).

QUARTERLY MEETINGS	MEETING DATE
First Quarter Meeting	February 8, 2011
Second Quarter Meeting	May 3, 2011
Third Quarter Meeting	TBD
Fourth Quarterly Meeting	TBD

Table 14. Priority subwatershed contacts including grower notifications and outreach/education meetings to track management practices.

AREA	DATE	CATEGORY	DETAILS	CONSTITUENTS ADDRESSED	WHO
Stockton Area	Jan. 2010	Grower Notification	Spray Safe Sponsored Grower Meeting Announcement: ran in the Farm Bureau News, the UCCE San Joaquin newsletter, and several Central Valley newspapers (Stockton Record, Lodi Sentinel, etc.).	All	Terry Prichard
Littlejohns Creek	6-Jan-10	Grower Notification / Management Practice Tracking	Littlejohns Creek Orchard Grower Meeting Announcement (15 members). Mailing included meeting agenda and individual contact survey to be filled out before and during meeting.	All	MLJ-LLC Staff
Grant Line Canal, Littlejohns Creek	8-Jan-10	Grower Notification / Management Practice Tracking	Grant Line Canal and Littlejohns Creek Row Crop Grower Meeting Announcement (6 members). Mailing included meeting agenda and individual contact survey to be filled out before and during meeting.	All	MLJ-LLC Staff
Littlejohns Creek	25-Jan-10	BMP Outreach and Education / Management Practice Tracking	Littlejohns Creek Orchard Grower Meeting: 15 members invited, 10 members were represented; a total of 21 people attended. Discussion topics included Coalition's purpose, current water issues, ILRP status, and relevant BMPs. Members filled out management practice surveys.	All (focus on chlorpyrifos, diazinon, copper)	Mike Wackman, Terry Prichard, Mick Canevari
Grant Line Canal, Littlejohns Creek	28-Jan-10	BMP Outreach and Education / Management Practice Tracking	Grant Line Canal and Littlejohns Creek Row Crop Grower Meeting: 6 members invited, 4 members were in attendance. Discussion topics included Coalition's purpose, current water issues, ILRP status, and relevant BMPs. Members filled out management practice surveys.	All (focus on chlorpyrifos, diazinon, copper and algae toxicity)	Mike Wackman, Terry Prichard, Mick Canevari
Stockton Area	10-Feb-10	BMP Outreach and Education	Spray Safe Sponsored Grower Meeting. Discussed the grower's responsibility for safety and employee training, safety practices for pesticide applicators, and best management practices and new technologies used to promote safe pesticide use. Included a presentation by Coalition representative Terry Prichard.	All	Terry Prichard

AREA	DATE	CATEGORY	DETAILS	CONSTITUENTS ADDRESSED	WHO
Duck Creek, Lone Tree Creek, Littlejohns Creek, and Unnamed Drain to Lone Tree Creek	19-Mar-10	Grower Notification	Terry Prichard identified and called 15 winegrape growers and their 8 associated PCAs to inform them they would be sent a copy of the DPR Grant--Winegrape Management Practice Workbook. Growers and PCAs were also invited to a winegrape workshop.	All	Terry Prichard
Duck Creek, Lone Tree Creek, Littlejohns Creek, and Unnamed Drain to Lone Tree Creek	22-Mar-10	BMP Outreach and Education	Emailed DPR Grant--Winegrape Management Practice Workbook to 15 identified winegrape growers and their 8 associated PCAs.	All	Terry Prichard
Duck Creek, Lone Tree Creek, Littlejohns Creek, and Unnamed Drain to Lone Tree Creek	25-Mar-10	BMP Outreach and Education	Winegrape Grower Workshop: meeting to introduce and explain how to use the DPR Grant--Winegrape Management Practice Workbook. Of the 15 growers and 8 associated PCAs invited, 90% attended.	All	Terry Prichard, Mike Wackman
Duck Creek, Lone Tree Creek, Littlejohns Creek, and Unnamed Drain to Lone Tree Creek	28-Apr-10	Grower Notification	Terry Prichard identified and contacted 68 walnut growers and their associated PCAs in the target area to inform them they would be sent a copy of the DPR Grant--Walnut Management Practice Workbook. Growers and PCAs were also invited to a walnut workshop.	All	Terry Prichard
Duck Creek, Lone Tree Creek, Littlejohns Creek, and Unnamed Drain to Lone Tree Creek	10-May-10	BMP Outreach and Education	Walnut Grower Workshop: meeting to introduce and explain how to use the DPR Grant--Walnut Management Practice Workbook. Of the 68 growers and associated PCAs invited, 21 attended.	All	Terry Prichard, Mike Wackman, Joe Grant
Duck Creek, Lone Tree Creek, Littlejohns Creek, and Unnamed Drain to Lone Tree Creek	15-Jun-10	Grower Notification	Terry Prichard identified and contacted 26 alfalfa growers and their associated PCAs in the target area to inform them they would be sent a copy of the DPR Grant--Alfalfa Management Practice Workbook. Growers and PCAs were also invited to an alfalfa workshop.	All	Terry Prichard

AREA	DATE	CATEGORY	DETAILS	CONSTITUENTS ADDRESSED	WHO
Duck Creek, Lone Tree Creek, Littlejohns Creek, and Unnamed Drain to Lone Tree Creek	22-Jun-10	BMP Outreach and Education	Mailed DPR Grant--Alfalfa Management Practice Workbook draft to 26 identified alfalfa growers and their 26 associated PCAs.	All	Terry Prichard
Duck Creek, Lone Tree Creek, Littlejohns Creek, and Unnamed Drain to Lone Tree Creek	6-Jul-10	BMP Outreach and Education	Alfalfa Grower Workshop: meeting to introduce and explain how to use the DPR Grant--Alfalfa Management Practice Workbook. Of the 26 growers and associated PCAs invited, 14 attended.	All	Terry Prichard, Mick Canevari
Duck Creek, Lone Tree Creek, Littlejohns Creek, and Unnamed Drain to Lone Tree Creek	28-Jul-10	Grower Notification	Terry Prichard identified and contacted 12 tomato growers and their associated PCAs in the target area to inform them they would be sent a copy of the DPR Grant--Tomato Management Practice Workbook.	All	Terry Prichard
Duck Creek, Lone Tree Creek, Littlejohns Creek, and Unnamed Drain to Lone Tree Creek	12-Aug-10	BMP Outreach and Education	Mailed DPR Grant--Tomato Management Practice Workbook to 12 identified tomato growers and their 12 associated PCAs.	All	Terry Prichard
Entire Coalition Region	31-Aug-10	Grower Notification	Email sent to all Coalition members to inform of proposed Long Term Irrigated Lands Regulatory Program that seeks to regulate irrigation water discharges to surface water (current program) and groundwater (new in long term program). Email included proposed public workshop dates and several links to additional information.	All	Mike Wackman
Duck Creek, Lone Tree Creek, Littlejohns Creek, and Unnamed Drain to Lone Tree Creek	29-Sep-10	BMP Outreach and Education	Tomato Grower Workshop: meeting to introduce and explain how to use the DPR Grant--Tomato Management Practice Workbook. Of the 12 growers and associated PCAs invited, 8 attended.	All	Terry Prichard and Brenna Aegerter

AREA	DATE	CATEGORY	DETAILS	CONSTITUENTS ADDRESSED	WHO
Entire Coalition Region	18-Oct-10	Grower Notification	San Joaquin County Agricultural Commissioner Meeting Announcement. All permitted growers received notice of the meeting and were informed if they failed to attend, they would be required to pass a test to keep their permit. Advertising was done by the County Commission	All	San Joaquin County Agricultural Commission
San Joaquin County	10-Nov-10	BMP Outreach and Education	San Joaquin County Agricultural Commissioner Meeting: 155 growers attended, 7 of which were license holders. Reviewed past year's pesticide use and Coalition monitoring results. Discussed relevant regulations and applicable management practices, among other topics.	All	Mike Wackman
San Joaquin County	16-Nov-10	BMP Outreach and Education	San Joaquin County Agricultural Commissioner Meeting: 201 growers attended, 9 of which were license holders. Reviewed past year's pesticide use and Coalition monitoring results. Discussed relevant regulations and applicable management practices, among other topics.	All	Mike Wackman
San Joaquin County	18-Nov-10 (3 meetings)	BMP Outreach and Education	San Joaquin County Agricultural Commissioner Meeting, three meetings occurred on this date at 10:00 AM, 2:00 and 7:00 PM: a combined 395 growers attended the 3 meetings, 18 of which were license holders. Reviewed past year's pesticide use and Coalition monitoring results. Discussed relevant regulations and applicable management practices, among other topics.	All	Mike Wackman
Entire Coalition Region	23-Nov-10	Grower Notification	Role for PCAs/CCAs (Certified Crop Adviser) in Water Quality Protection Meeting Announcement. An email invitation with meeting agenda attached was sent to California Association of PCAs members listed in the Stockton area. A meeting agenda was also sent to local agriculture chemical supply houses.	All	Terry Prichard, Rachele Antinetti
Entire Coalition Region	30-Nov-10	BMP Outreach and Education	Statewide Irrigated Pest Management Alfalfa Workshop (Parlier, CA) -- Managing Pests While Protecting the Environment: 120 growers and PCAs attended. Coalition representative Terry Prichard gave a presentation on Mitigation Practices to Protect Water Quality.	All	Terry Prichard

AREA	DATE	CATEGORY	DETAILS	CONSTITUENTS ADDRESSED	WHO
Entire Coalition Region	1-Dec-10	BMP Outreach and Education	Statewide California Alfalfa Symposium (Visalia, CA) -- Preventing Offsite Movement of Pesticide Residues in Alfalfa and Corn: 463 registered attendees. Coalition representative Terry Prichard was in attendance.	All	Terry Prichard
Entire Coalition Region	6-Dec-10	BMP Outreach and Education	A Role for PCAs/CCAs in Water Quality Protection Meeting: 42 attendees. Discussed new ILRP requirements, a PCA's role in water quality issues, and the relationship between CCA programs and waste quality issues. Also discussed were pesticide fate and pathways to surface waters and nitrate in groundwater.	All	Terry Prichard, Mike Wackman, Rachelle Antinetti, Mick Canevari
San Joaquin County	7-Dec-10	BMP Outreach and Education	San Joaquin County Agricultural Commissioner Meeting: 158 growers attended, 19 of which were license holders. Reviewed past year's pesticide use and Coalition monitoring results. Discussed relevant regulations and applicable management practices, among other topics.	All	Mike Wackman
San Joaquin County	8-Dec-10 (3 meetings)	BMP Outreach and Education	San Joaquin County Agricultural Commissioner Meeting; three meetings occurred on this date at 10:00 AM, 2:00 and 7:00 PM; a combined 342 growers attended the three meetings, 18 of which were license holders. Reviewed past year's pesticide use and Coalition monitoring results. Discussed relevant regulations and applicable management practices, among other topics.	All	Mike Wackman, Terry Prichard

BMP-Best Management Practice
DPR-Department of Pesticide Regulation
PCA-Pesticide Control Advisor

SUMMARY OF IMPLEMENTED MANAGEMENT PRACTICES

The Coalition identified four general classifications of management practices that would be effective at reducing negative impacts of agricultural discharges on water quality including:

1. Reduction of pesticide application rates (including switching to low risk products),
2. Sprinkler, drip, or microspray irrigation,
3. Retention pond/holding basin, and
4. Grass waterways or grass filter strips.

For the first group of priority subwatersheds, the Coalition submitted a schedule of when the above four practices would be implemented. The Coalition scheduled an evaluation of the first group of priority subwatershed to be completed by April 2010 and April 2011 (see Table 12, page 34 in the 2009 MPUR); these deadlines have been met. The four management practices originally listed in the SJCDWQC Management Plan have been updated to include additional practices and grouped according to either pesticide application management practices or runoff management practices (Table 15).

Table 15. 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

Based on individual contacts and survey results for each high priority site subwatershed, the Coalition documents current management practices, intended/recommended management practices, and implemented management practices. Currently the Coalition has three sets of high priority subwatersheds for which it is documenting management practices through individual contacts; the dates in parenthesis indicates the years in which that the subwatershed undergoes the focused outreach process:

First Priority Subwatersheds (2008 – 2010)

- Duck Creek @ Hwy 4
- Lone Tree Creek @ Jack Tone Rd
- Unnamed Drain to Lone Tree Creek @ Jack Tone Rd (also known as Temple Creek)

Second Priority Subwatersheds (2010 – 2012)

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

Third Priority Subwatersheds (2011 – 2013)

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

Coalition members with direct drainage and past applications of pesticides of concern were contacted to attend grower meetings and fill out management practice surveys. Growers filled out surveys about their current management practices and whether or not they are planning to implement management practices in the next two years. Growers that indicate that 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 why not, and 3) if they implemented any other/additional practices not already listed.

FIRST PRIORITY SUBWATERSHEDS

Duck Creek @ Hwy 4

Fifty-nine percent of the Duck Creek subwatershed has direct drainage (8,904 acres) based on GIS analysis (Figure 4). Fifty-nine percent of the parcels with direct drainage are enrolled in the Coalition (5,254 acres) and 35 members representing 4,978 acres filled out surveys with current management practice information (Table 8).

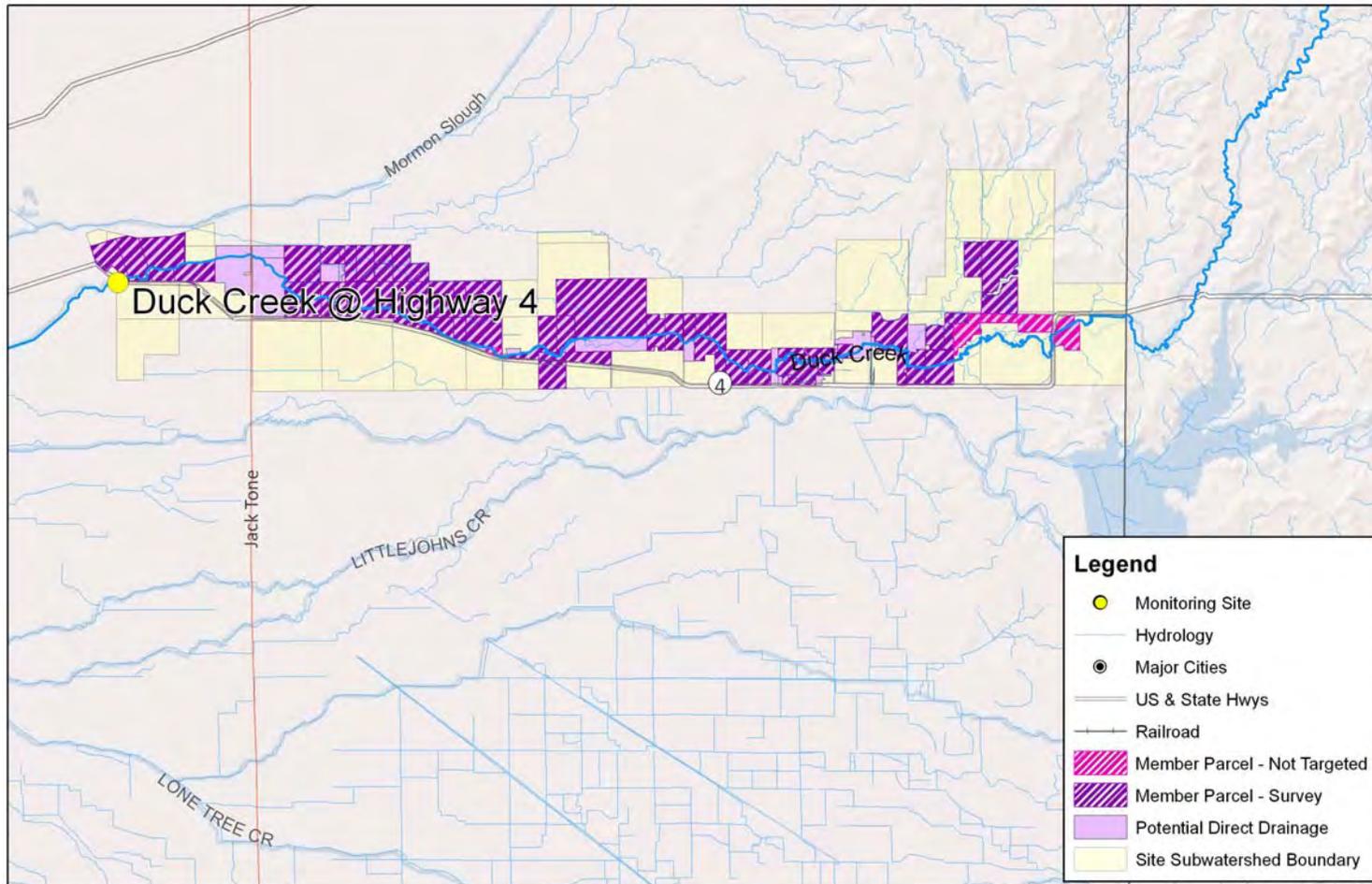
Of the members who filled out the surveys, 43% of the acreage has tailwater runoff and 90% of acreage has storm water runoff (Figures 5 and 6). The most common management practice implemented by growers within Duck Creek during 2008 was using less of pesticides such as chlorpyrifos (37% of acreage, Figure 7). Additional management practices include reduction of runoff using irrigation management, use of center grass rows, grass waterways or grass filter strips, and installation of micro sprinkler or drip irrigation. A small percentage of grower acreage (5%) has installed retention ponds, holding basins or tailwater return systems (Figure 7). In 2008, approximately half of the direct drainage acreage enrolled in the Coalition used one or more management practice specific to runoff management and/or pesticide application management.

Twenty-one percent of acres represented by the growers who filled out a survey indicated that they would not implement any additional practices in 2009, and are not included in Figure 8. Of the growers that indicated that they intended to implement additional practices in 2009, 39% of the total acres intend to reduce applications of pesticides (Figure 8). Growers intend to place vegetation (center grass rows, grass waterways or grass filter strips) to reduce both water and sediment runoff on thirty percent of their acreage (Figure 8). Additional irrigation management practices to reduce runoff will be implemented on 17% of the acres, 8% of acres will have the installation of sprinkler or micro irrigation, and retention ponds, holding basins or tailwater return systems will be installed on 2% of acres (Figure 8). Growers on 4% of the total acreage indicated that they do not make management practices decisions but would talk to the appropriate person, and less than one percent indicated they do not intend to change their current practices (Figure 8).

Growers who filled out surveys indicating that they intended to implement additional management practices were contacted during the spring of 2010 with follow up surveys. The Coalition has followed up with growers and has received surveys back from 100% of those contacted. One grower indicated that they intended to implement additional practices in 2010, and they were contacted again in the

winter of 2011. The results of those surveys indicate that additional management practices were implemented across 2,425 member acres with direct drainage to Duck Creek. In the 2010 MPUR, 3,332 were reported due to duplicative surveys being returned. Of the management practices implemented, the most common strategy (applied to 48% of the acres) was to reduce use of the pesticides of concern. Using center grass rows, grass waterways or grass filter strips, reducing runoff water volume using irrigation management, and installation of sprinkler or microspray irrigation were implemented on 26%, 15%, and 11% of the acres, respectively (Figure 9).

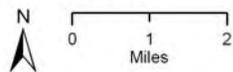
Figure 4. Duck Creek @ Hwy 4 member parcels with direct drainage potential.



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.
 Parcel Layer - Contra Costa County: 2011, San Joaquin County: 2011
 Basemap, Shaded Relief - ESRI
 GSC North America 1983

Date Prepared: 03/02/11

SJCDWQC



Duck Creek @ Hwy 4 - 1st Priority Subwatershed Parcels

Figure 5. Percentage of acreage of priority members within Duck Creek with tailwater runoff due to irrigation.

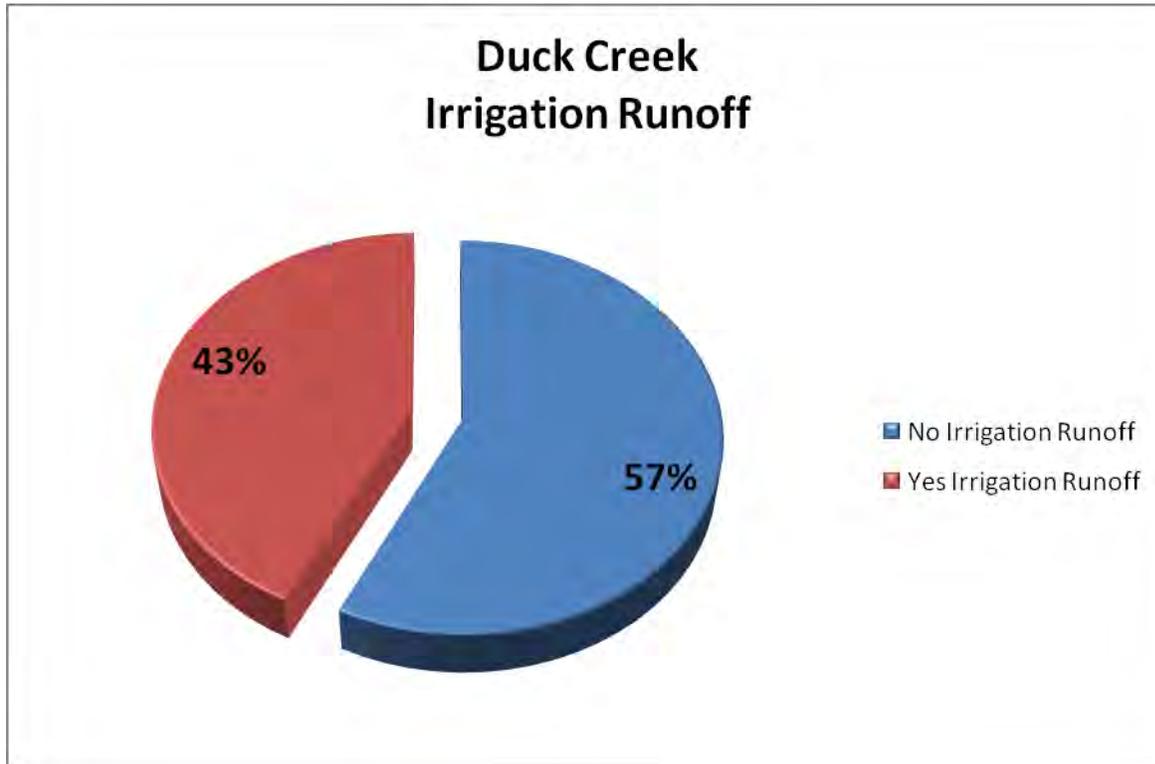


Figure 6. Percentage of acreage of priority members within Duck Creek with storm water runoff.

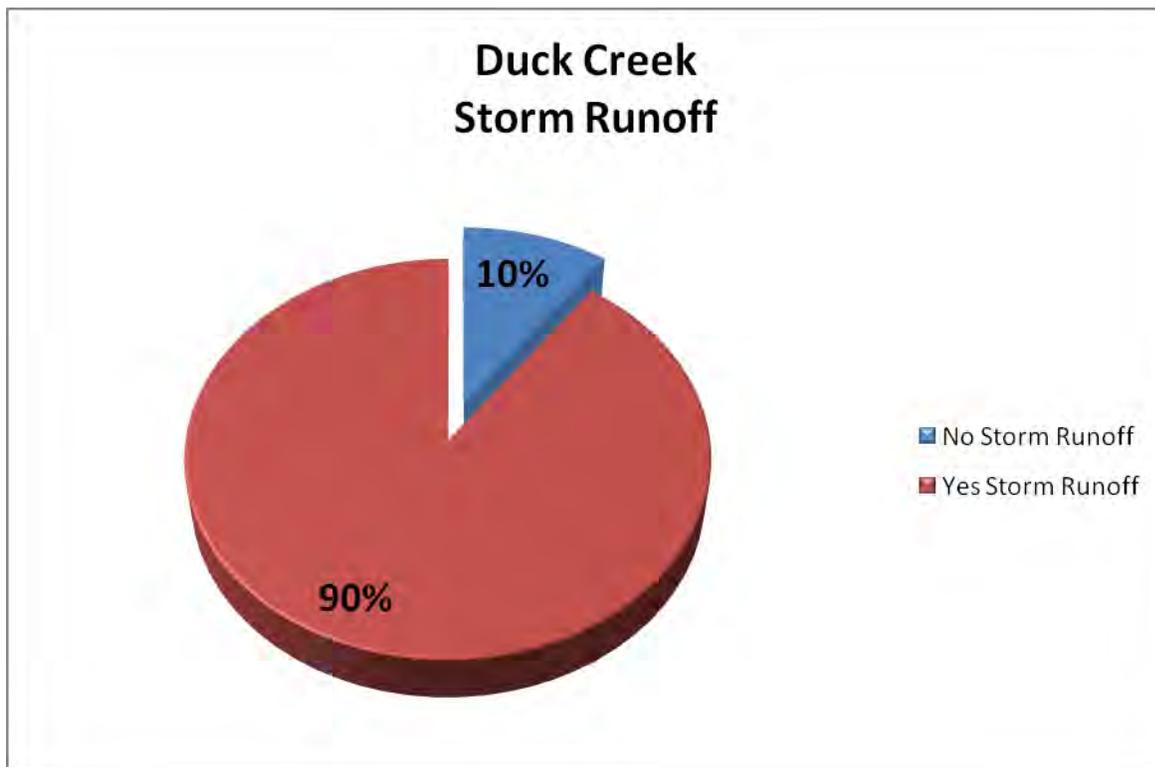


Figure 7. Duck Creek @ Hwy 4 2008 management practices. Results based on priority member acreages from 2009 surveys.

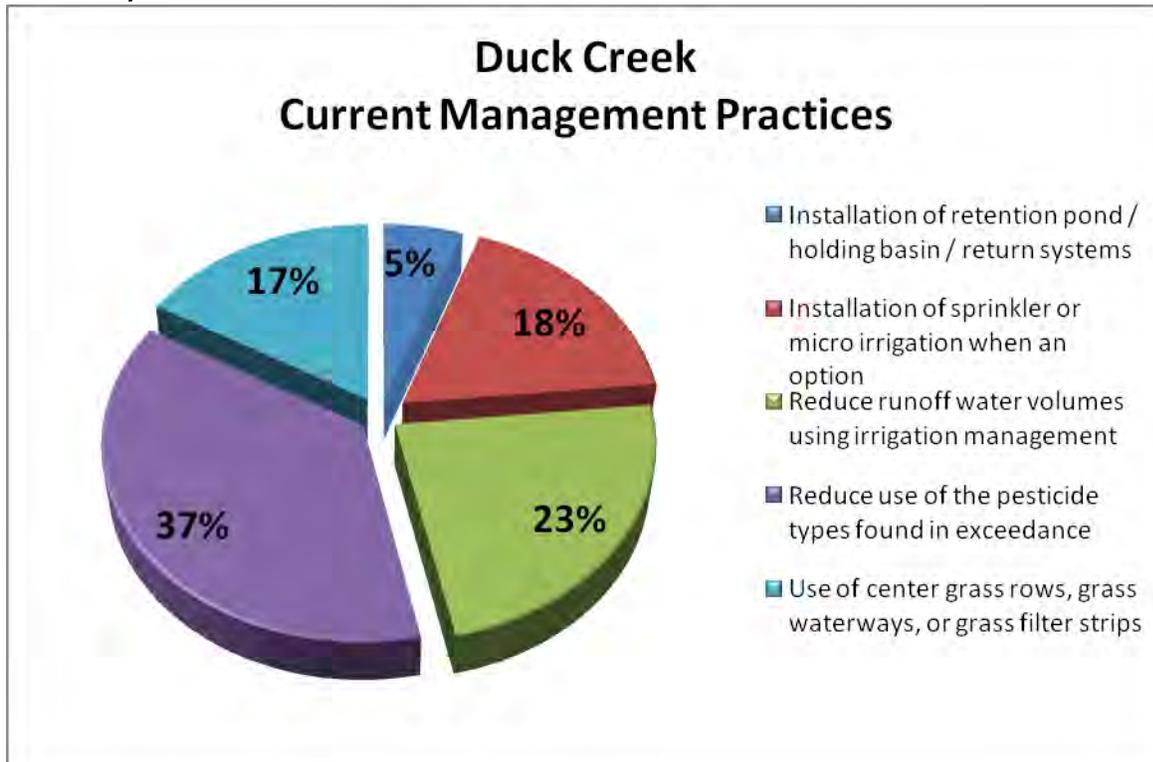


Figure 8. Duck Creek @ Hwy 4 2009 management practices (to be implemented). Results based on priority member acreages from 2009 surveys.

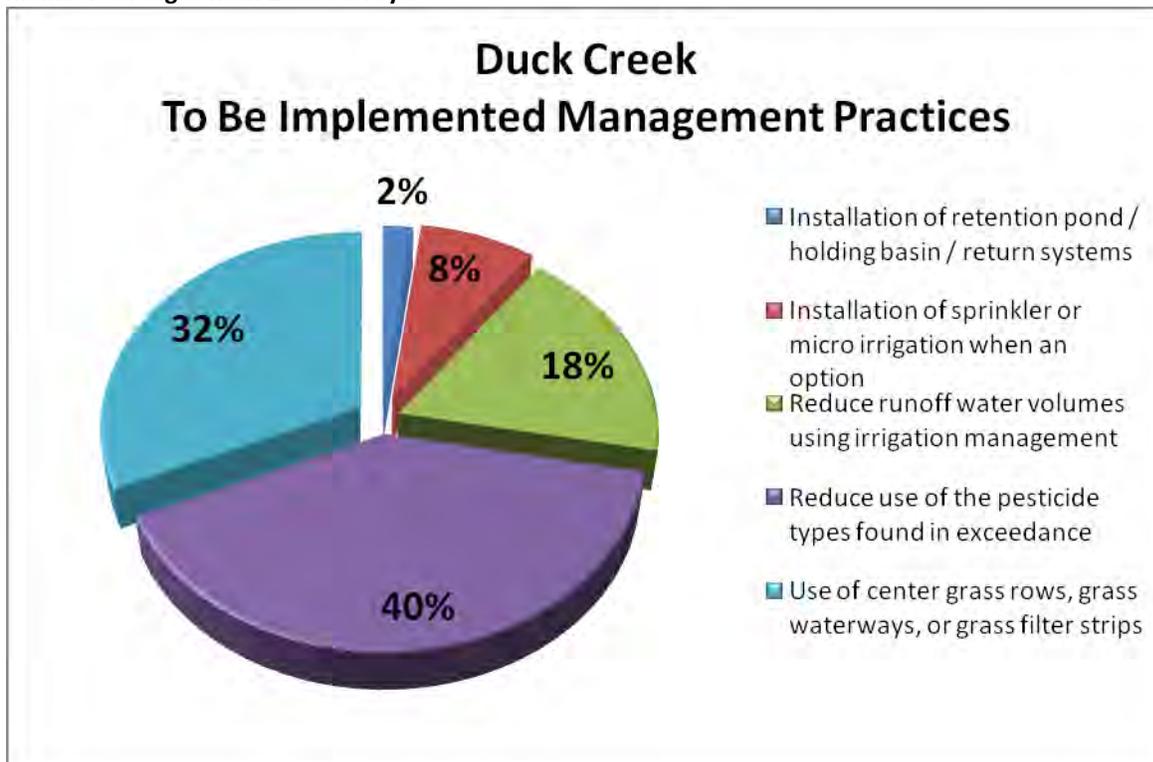
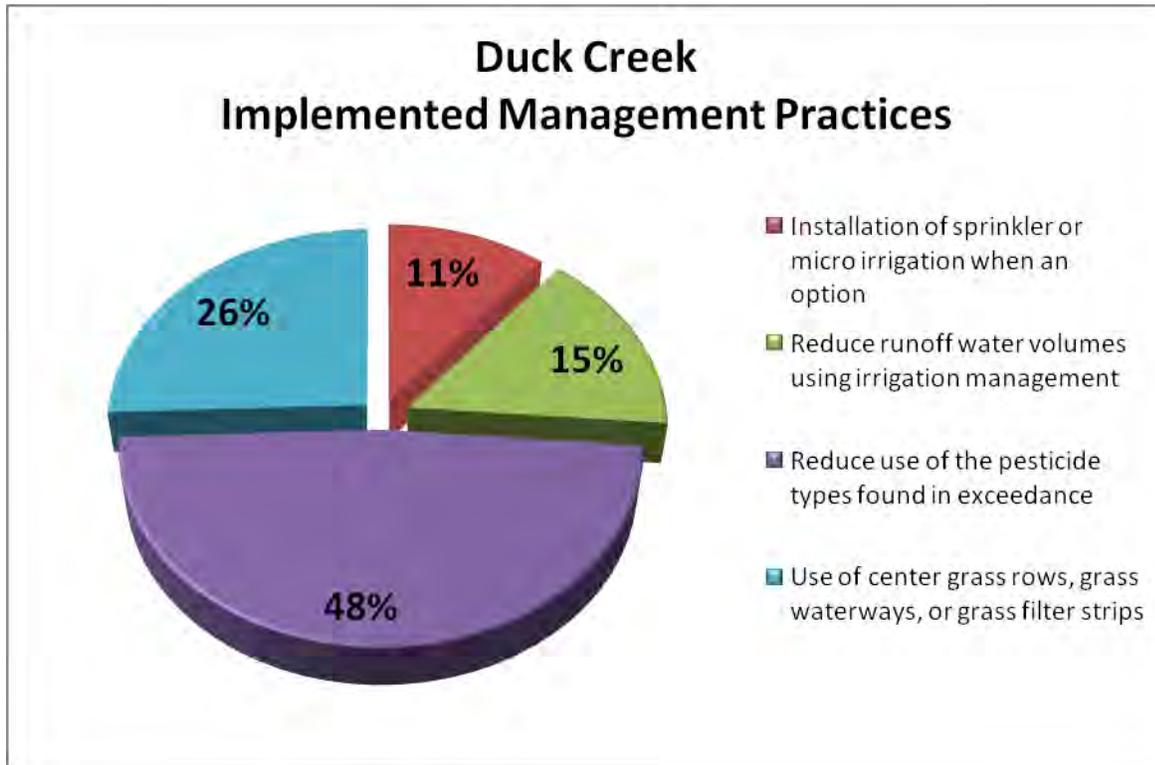


Figure 9. Duck Creek @ Hwy 4 2009-2010 implemented management practices. Results based on priority member acreages from 2010 and 2011 follow up surveys.



Lone Tree Creek @ Jack Tone Rd

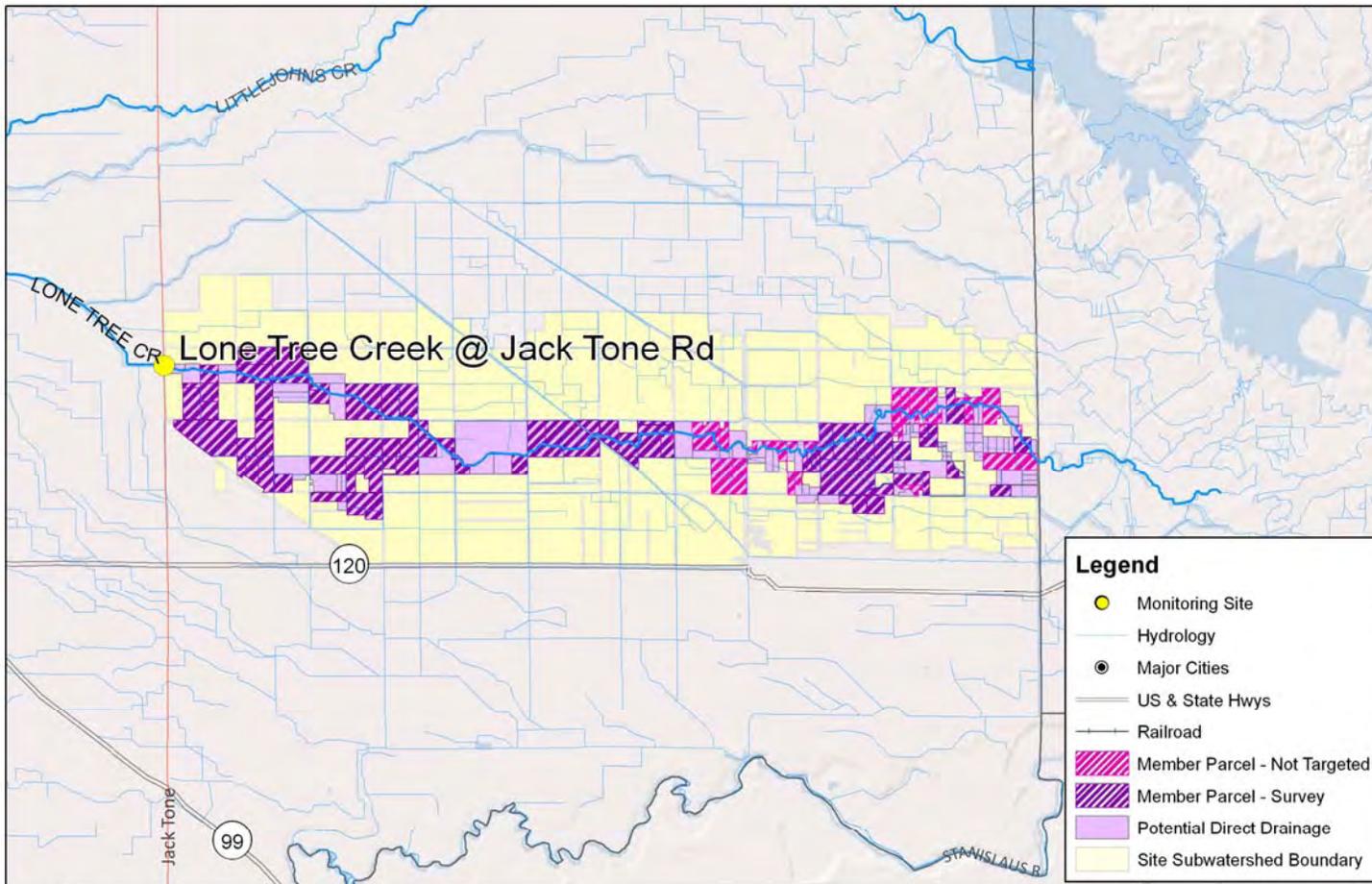
Fifty percent of the Lone Tree Creek subwatershed (San Joaquin County portion) was determined to have direct drainage (14,583 of 29,232 acres) based on GIS analysis (Figure 10). Thirty-one percent of the parcels with direct drainage are enrolled in the Coalition (4,586) and 43 members representing 3,742 acres filled out surveys with current management practice information (Table 8).

Growers with 15% of the acres did not respond regarding current management practices. Of the members who did record their current management practices, 42% of the acreage has tailwater runoff and 65% of the acres have storm water runoff (Figures 11 and 12). The most common management practice implemented by growers during 2008 in Lone Tree Creek is using less pesticides such as chlorpyrifos (30% of acreage) followed closely by reducing runoff water volumes through irrigation management (24% of acres, Figure 13). Additional management practices include use of center grass rows, grass waterways or grass filter strips and installation of micro sprinkler or drip irrigation (Figure 13). A small percentage of grower acreage (9%) has installed retention ponds, holding basins or return systems, and 2% of the acreage is treated with Polyacrylamide (PAM) (Figure 13). In 2008, a majority of the acreage with direct drainage enrolled in the Coalition recorded the current use one or more management practices specific to runoff management and/or pesticide application management (68%).

Growers with 12% of the acres indicated that they would not implement any additional practices in 2009. Of the growers that indicated that they intended to implement additional practices in 2009, reducing applications of pesticides was to occur on 41% of the acres (Figure 14). Irrigation management practices to reduce runoff was to be implemented on 28% of the total acres, micro sprinkler or drip irrigation was to be installed on 13% of the acres, center grass rows, grass waterways or grass filter strips were to be installed on 10% of the acres, and installation of a retention pond, holding basin or return system was to occur on 8% of the acres (Figure 14).

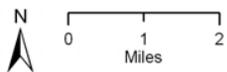
Final results of the follow up surveys indicate that additional management practices were implemented across 1,923 acres that have direct drainage to Lone Tree Creek (2,958 acres were reported in the 2010 MPUR. To ensure the proper person filled out a survey, multiple surveys were completed for a single member; the previous acreage figure is representative of the total number of surveys returned). The most common practices implemented were reducing pesticide use, installing sprinklers or micro irrigation, and managing irrigation to reduce runoff volumes. Implementation of all practices resulted in 91% of acreage in the subwatershed having with new practices relative to 2009-2010 (Figure 15). Other practices included installing retention ponds/ holding basins/return systems (seven percent of acres implemented) and using center grass rows, grass waterways or grass filter strips (two percent of acres implemented).

Figure 10. Lone Tree Creek @ Jack Tone 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
 Parcel Layer - Contra Costa County, 2011, San Joaquin County, 2011
 Basemap, Shaded Relief - ESRI
 GSC North America 1983

Date Prepared: 03/03/11
 SJCDWQC



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

Figure 11. Percentage of acreage of priority members within Lone Tree Creek with tailwater runoff.

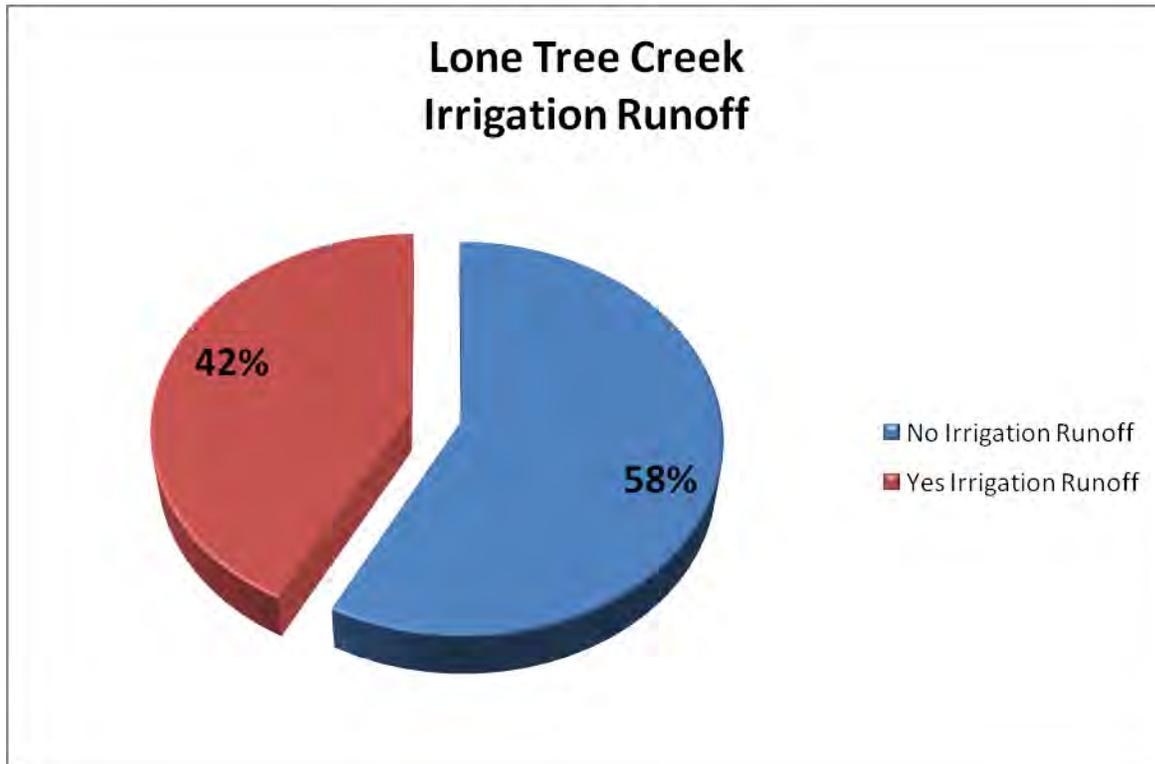


Figure 12. Percentage of acreage of priority members within Lone Tree Creek with storm water runoff.

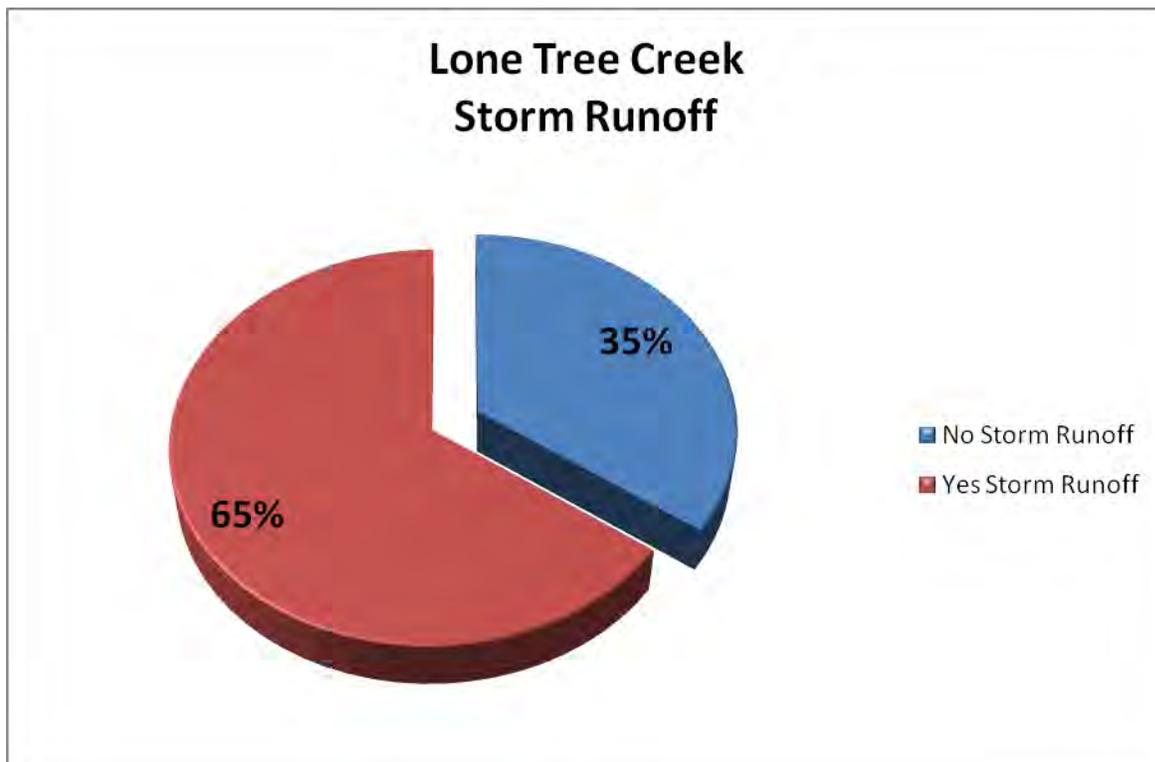


Figure 13. Lone Tree Creek @ Jack Tone Rd 2008 management practices. Results based on priority member acreages from 2009 surveys.

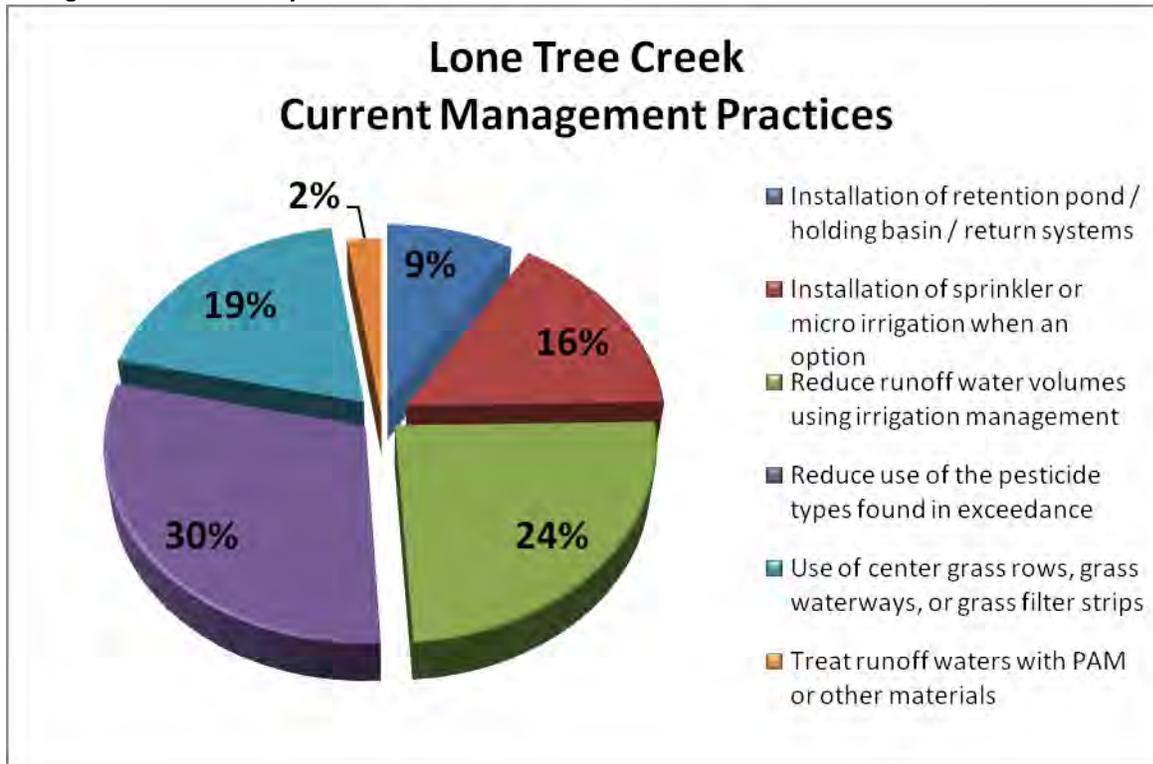


Figure 14. Lone Tree Creek @ Jack Tone Rd 2009 management practices (to be implemented). Results based on priority member acreages from 2009 surveys.

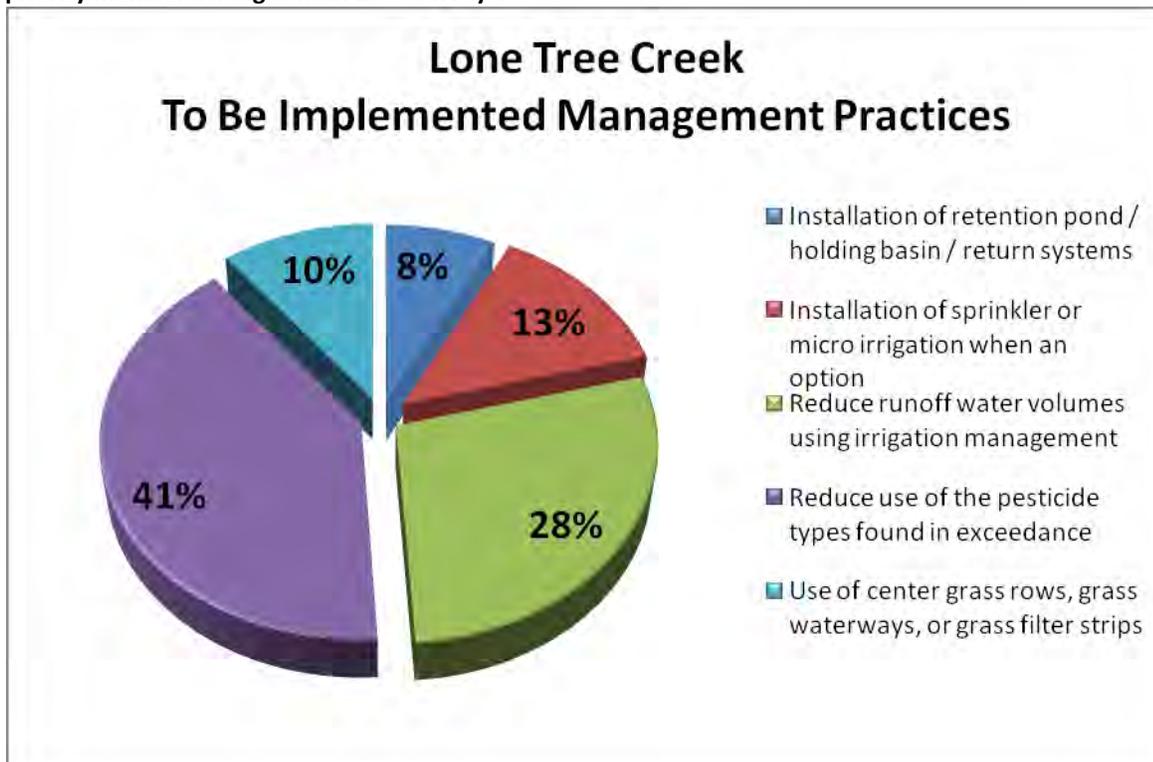
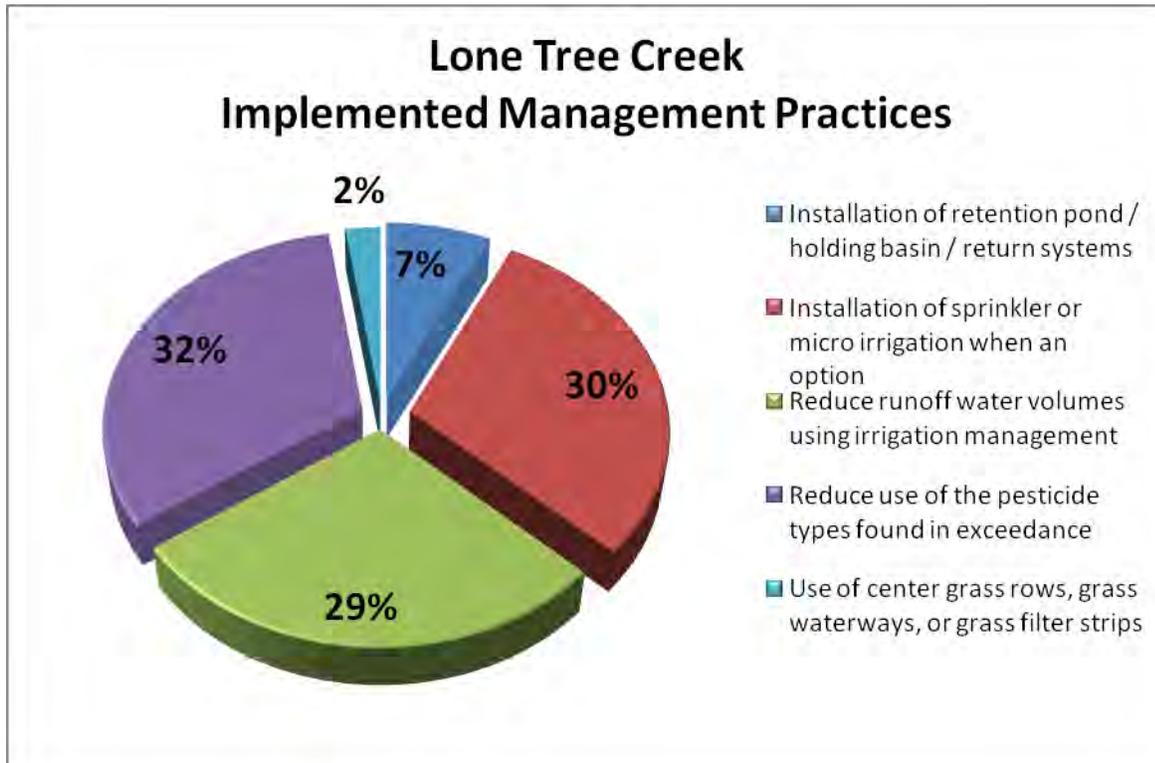


Figure 15. Lone Tree Creek @ Jack Tone Rd 2009-2010 implemented practices. Results based on priority member acreages from 2010 and 2011 follow up surveys.



Unnamed Drain to Lone Tree Creek @ Jack Tone Rd (Temple Creek)

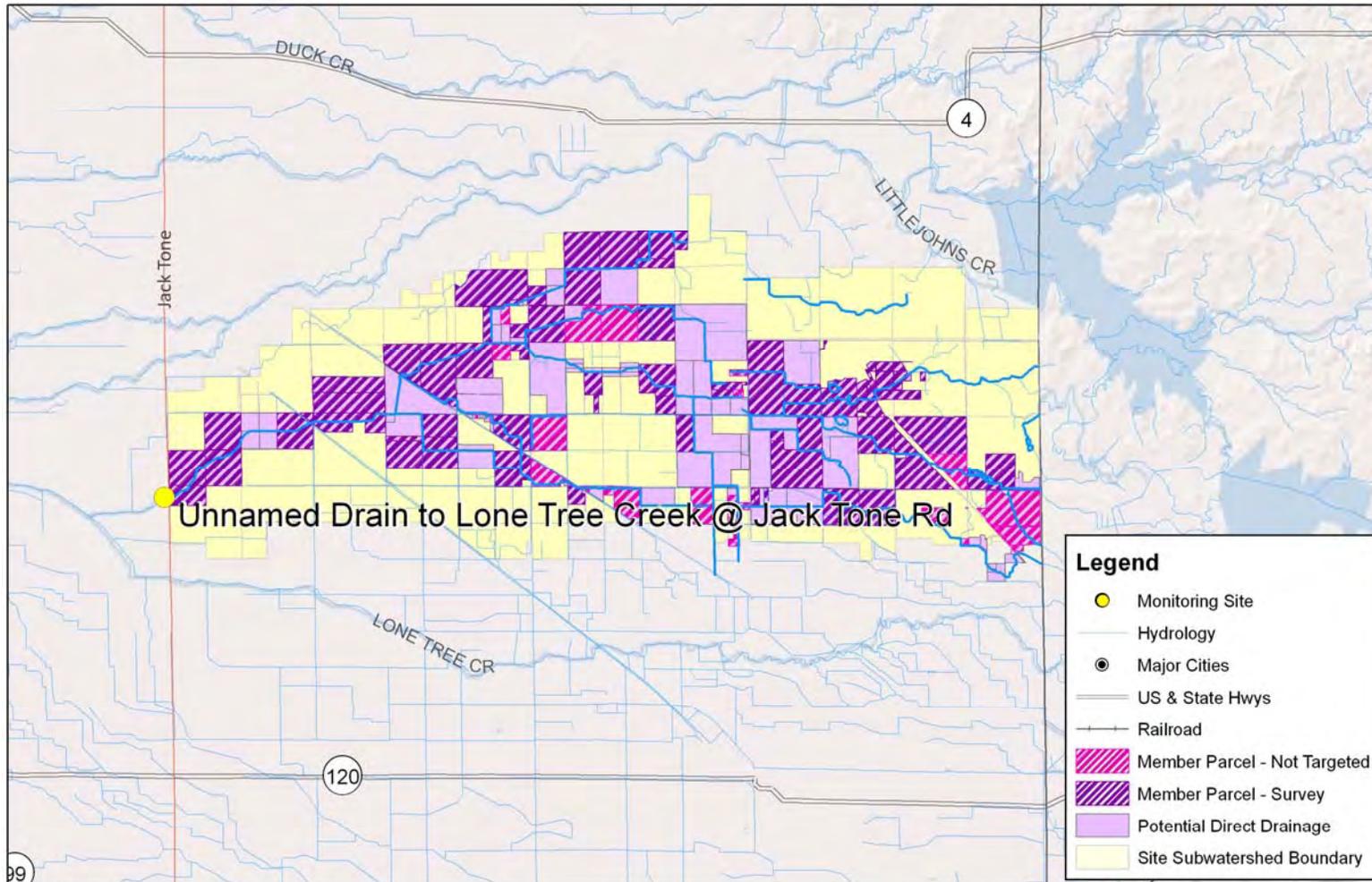
Sixty-five percent of the Unnamed Drain to Lone Tree Creek subwatershed (also known as Temple Creek, San Joaquin County portion) was identified as having direct drainage (19,417 of 29,892 acres) to the creek based on GIS analysis (Figure 16). Forty-one percent of the parcels with direct drainage are enrolled in the Coalition (7,994) and 34 members representing 6,463 acres filled out surveys with current management practice information (Table 8).

Of the members who filled out the surveys, 32% of their acres had tailwater runoff and 77% had storm water runoff (Figures 17 and 18). The most common management practice currently implemented by growers in the Unnamed Drain to Lone Tree Creek subwatershed was reduced use of pesticides (27% of acres), followed closely by installing sprinkler or microspray irrigation (26% of acres), and reducing runoff water volumes through irrigation management (20% of acres, Figure 19). Additional management practices include use of center grass rows, grass waterways or grass filter strips (15% of acres), and installation of a retention pond, holding basin or return system (12% of acres, Figure 19). In 2008, a majority of the direct drainage acreage (68%) enrolled in the Coalition had one or more management practices specific to runoff management and/or pesticide application management.

Growers owning 10% of the acres indicated they would not implement any additional practices in 2009. Of the growers that indicated that they intended to implement additional practices in 2009, reduced pesticide use was to occur on 31% of the total acreage (Figure 20). Installation of micro sprinklers or drip irrigation was to occur on 25% of the acres, implementation of irrigation management was to occur on 18% of acres, installation of a retention pond, holding basin or return system was to occur on 12% of the acres, and center grass rows, grass waterways or grass filter strips were to be placed on 11% of the acres (Figure 20). Growers with 1% of the acres indicated that they do not make management practice decisions but would talk to the appropriate person about management practices.

Final results of the follow up surveys indicate that additional management practices were implemented on 3,934 member acres with direct drainage to Lone Tree Creek (4,649 acres were reported in the 2010 MPUR. To ensure the proper person filled out a survey, multiple surveys were completed for a single member; the previous acreage figure is representative of the total number of surveys returned). Thirty-seven percent of the acres had the installation of sprinklers or micro irrigation, 31% of the acres had reduced pesticide applications, and 24% of the acres had reduced runoff water volumes due to irrigation management (Figure 21). The remaining eight percent of the acres had the installation of retention pond, holding basin, or return systems, or using center grass rows, grass waterways or grass filter strips (Figure 21).

Figure 16. Unnamed Drain to Lone Tree Creek @ Jack Tone Rd member parcels with direct drainage potential.



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

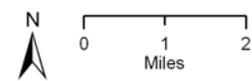


Figure 17. Percentage of acreage of priority members within Unnamed Drain to Lone Tree Creek with tailwater runoff.

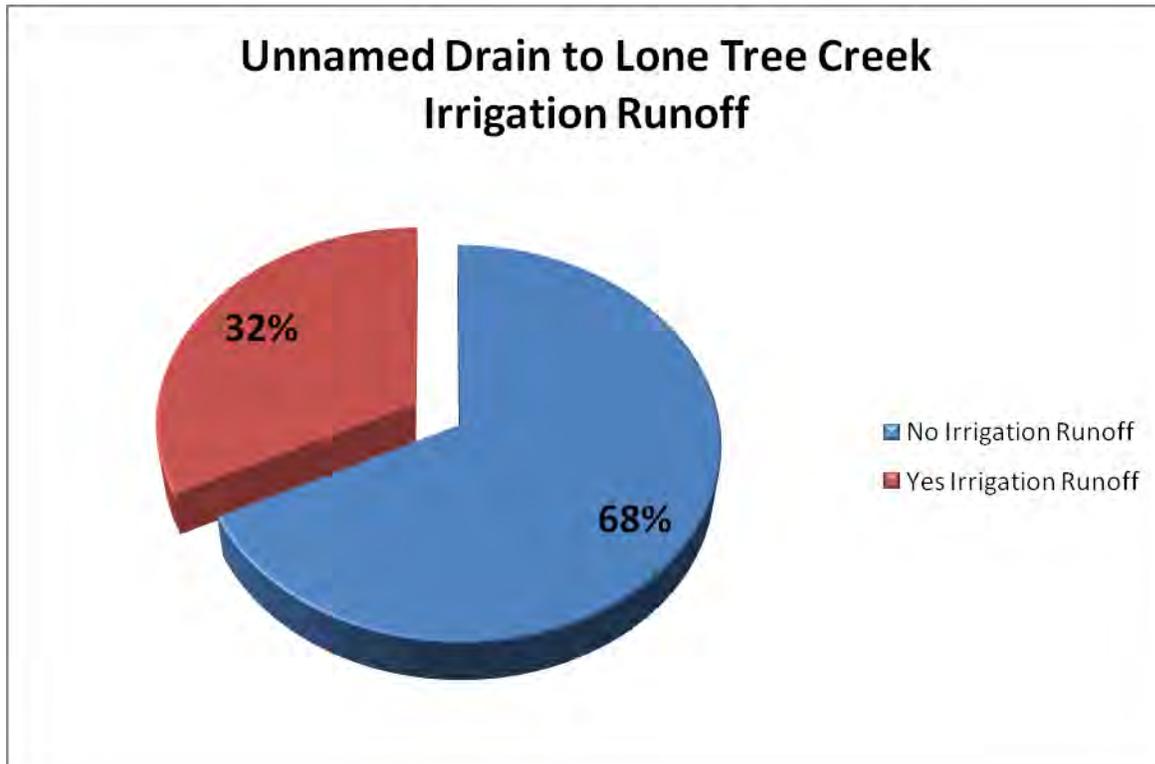


Figure 18. Percentage of acreage of priority members within Unnamed Drain to Lone Tree Creek with storm water runoff.

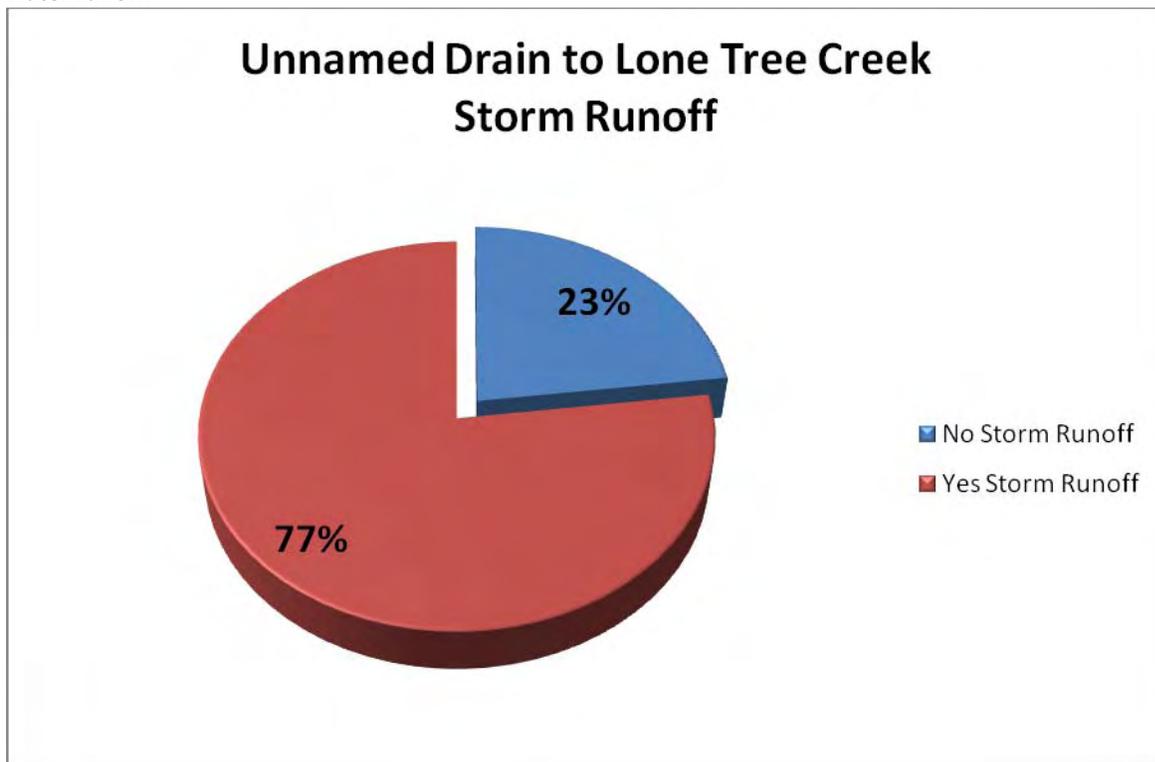


Figure 19. Unnamed Drain to Lone Tree Creek @ Jack Tone Rd 2008 management practices. Results based on priority member acreages from 2009 surveys.

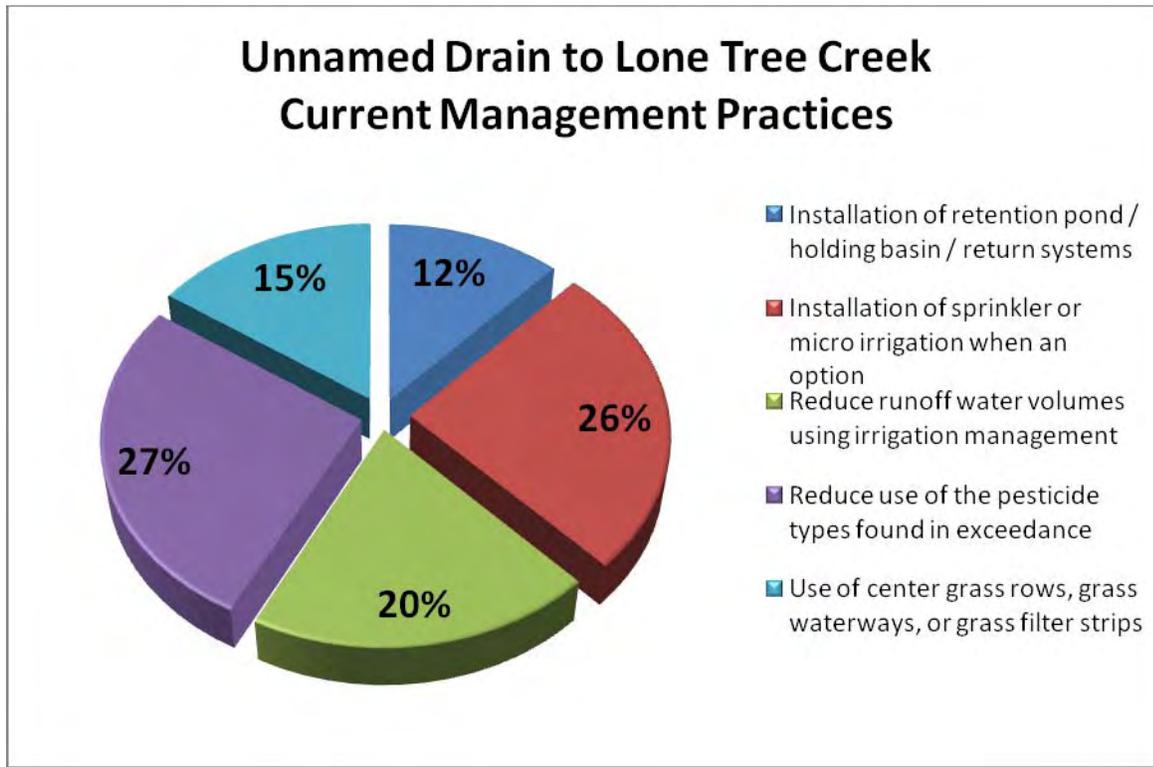


Figure 20. Unnamed Drain to Lone Tree Creek @ Jack Tone Rd 2009 management practices (to be implemented). Results based on priority member acreages from 2009 surveys.

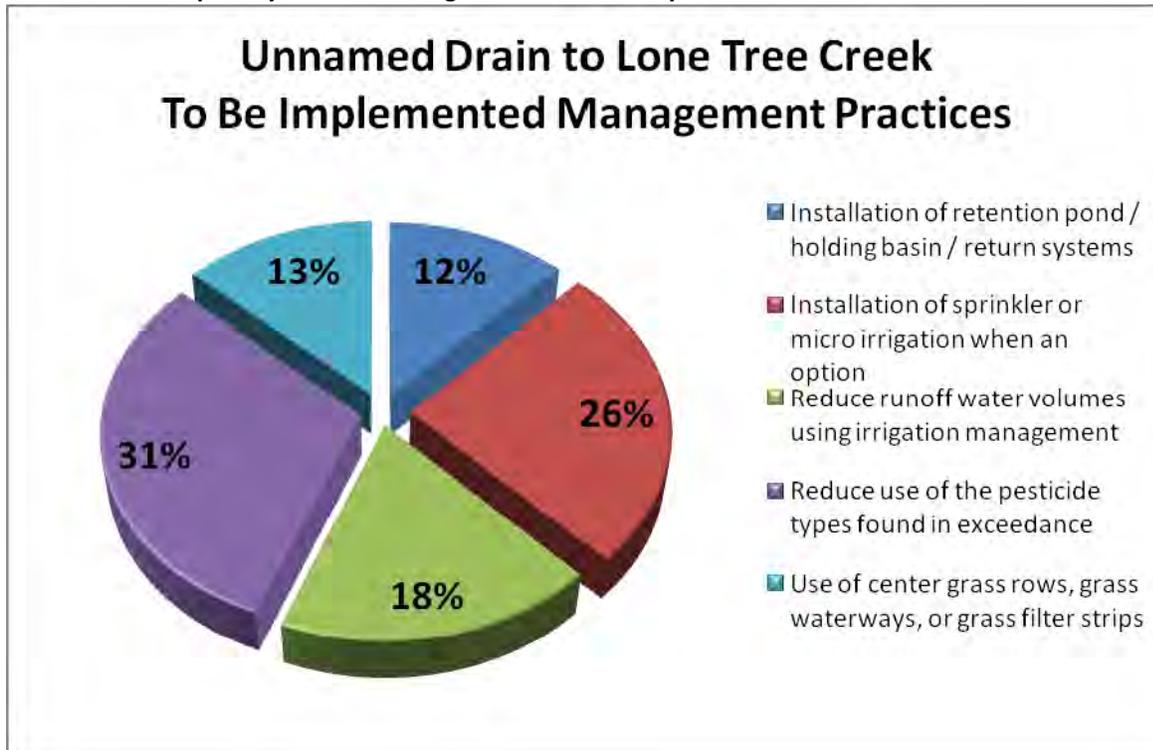
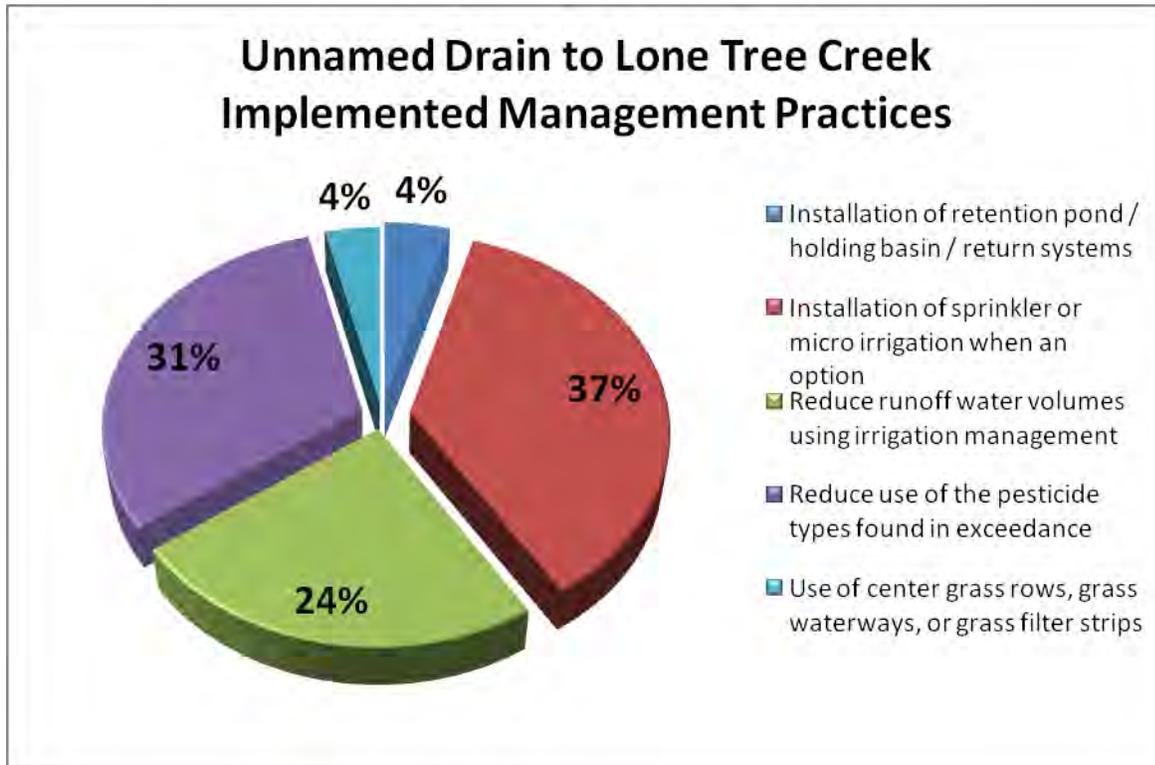


Figure 21. Unnamed Drain to Lone Tree Creek Rd 2009 implemented practices. Results based on priority member acreages from 2010 follow up surveys.



SECOND PRIORITY MANAGEMENT PRACTICES – 2010-2012

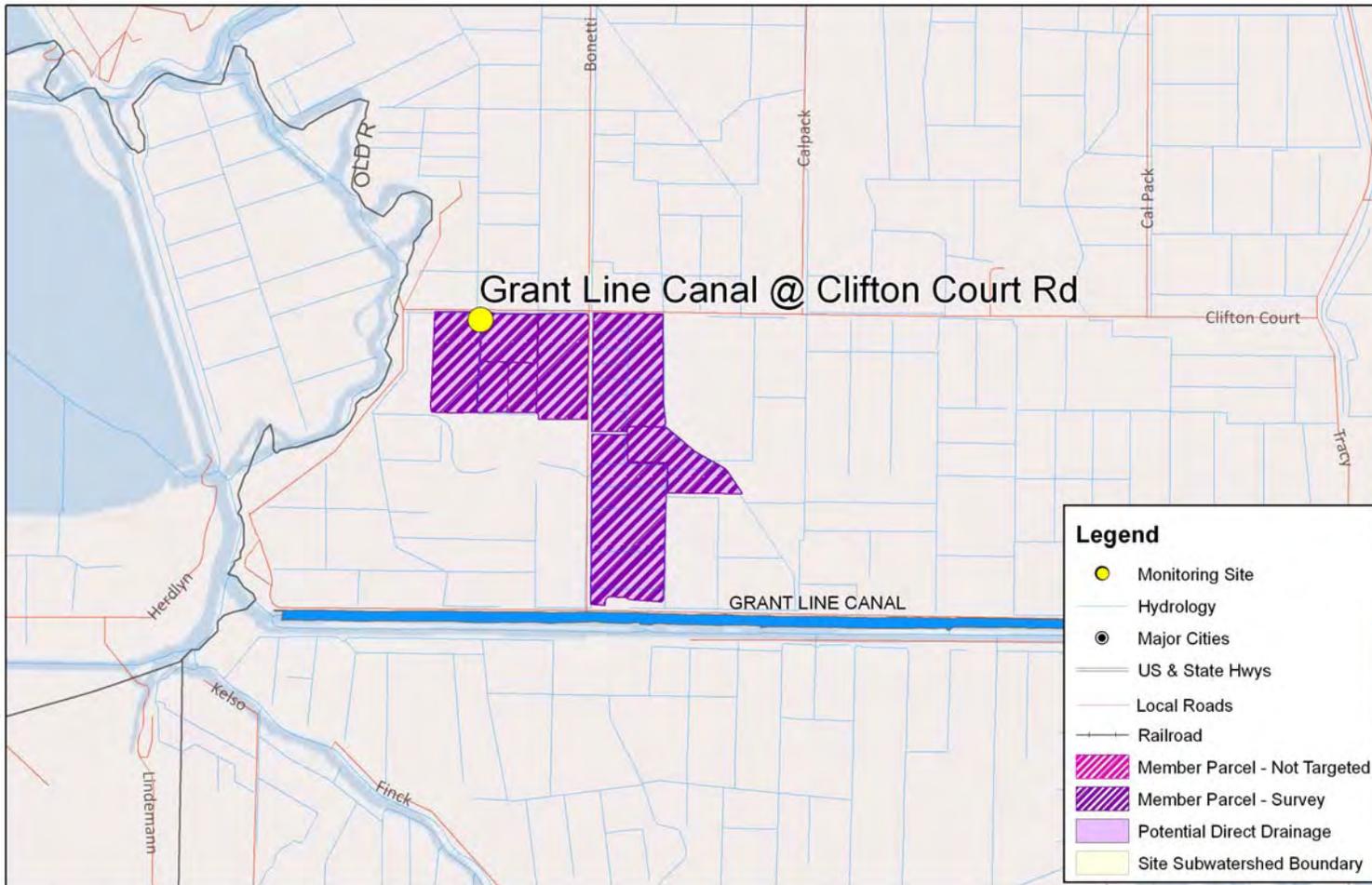
Grant Line Canal @ Clifton Court Rd

The entirety of the Grant Line Canal @ Clifton Ct subwatershed was determined to have direct drainage (259 acres) based on GIS analysis (Table 10, Figure 22). One-hundred percent of the parcels with direct drainage are enrolled in the Coalition and 2 members representing all of the direct drainage acreage filled out surveys with current management practice information (Table 10). Due to the small size of the subwatershed, the parcels owned by these two members extend beyond its boundaries; a total of 2,176 acres have had current and additional management practices implemented in 2009 and 2010. Figures 23-25 are based on this total enrolled irrigated acreage owned by these two members.

Both members recorded that they had tailwater runoff. Neither member indicated if water left their farm but water management on Delta Islands is such that eventually that water is pumped to the Delta. The distribution of management practices currently implemented in the Grant Line @ Clifton Ct subwatershed in 2009 were nearly equal between reducing runoff water volumes using irrigation management, reducing the use of pesticides such as chlorpyrifos, and treating ditches with PAM (34%,34% and 33% of acreage, respectively; Figure 23). In 2009, one or more management practices specific to runoff management and/or pesticide application management were used on approximately 40% of the direct drainage acreage enrolled in the Coalition.

Growers indicated that they intended to reduce runoff water volumes using irrigation management on 42% of their acreage, and they intended to reduce the use of pesticides causing exceedances on 42% of acres (Figure 24). Additionally, sixteen percent of acreage was to be treated with PAM or other materials in 2010 (Figure 24). Follow up surveys from 100% of growers indicates that all intended management practices were implemented (Figure 25).

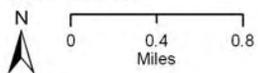
Figure 22. Grant Line Canal @ Clifton Court Rd member parcels with direct drainage potential.



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
 Parcel Layer - Contra Costa County: 2011, San Joaquin County: 2011
 Basemap, Shaded Relief - ESRI
 GSC North America 1983

Date Prepared: 03/03/11

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Grant Line @ Clifton Court Rd - 2nd Priority Subwatershed Parcels

Figure 23. Grant Line Canal @ Clifton Court Rd 2009 management practices. Results based on priority member acreages from 2010 surveys.

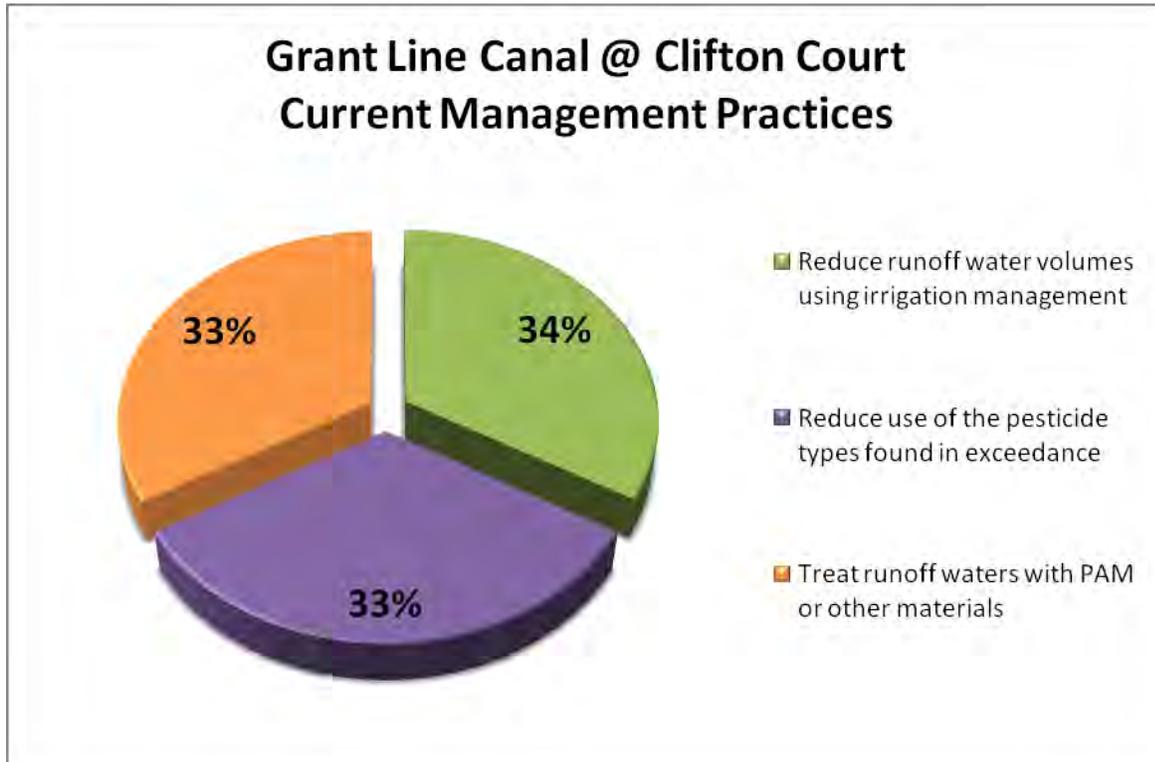


Figure 24. Grant Line Canal @ Clifton Court Rd 2010 management practices (to be implemented). Results based on priority member acreages from 2010 surveys.

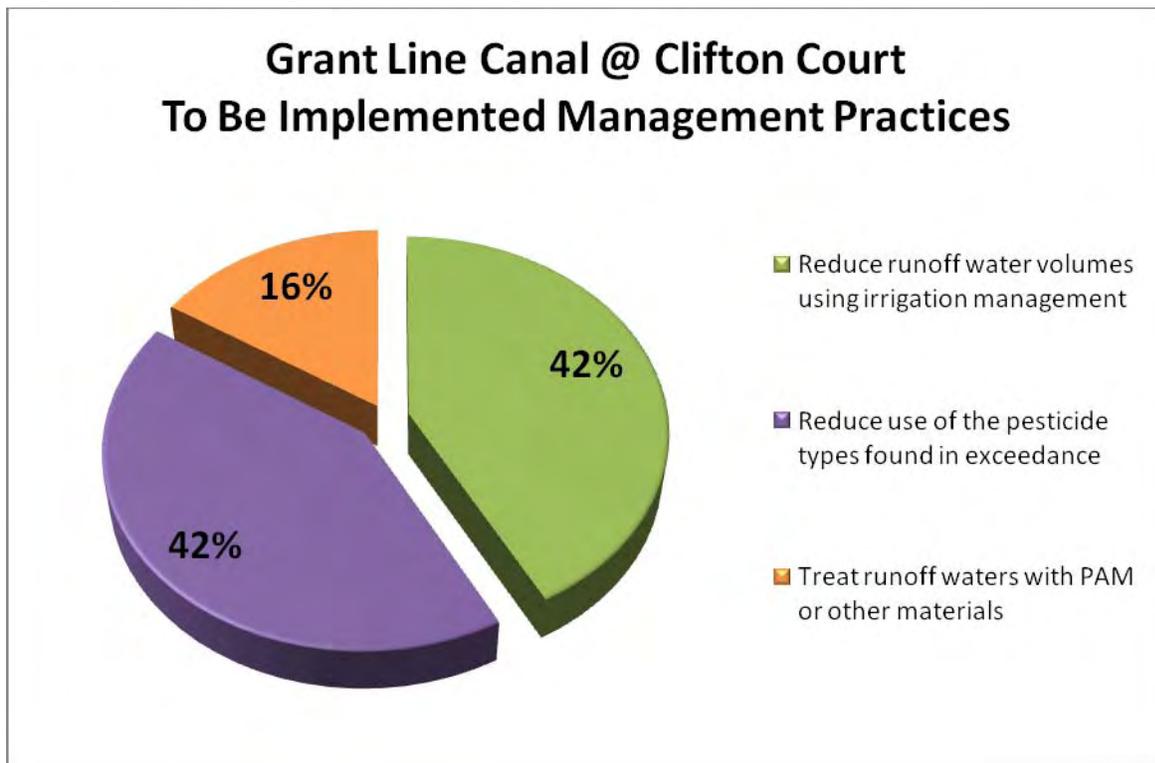
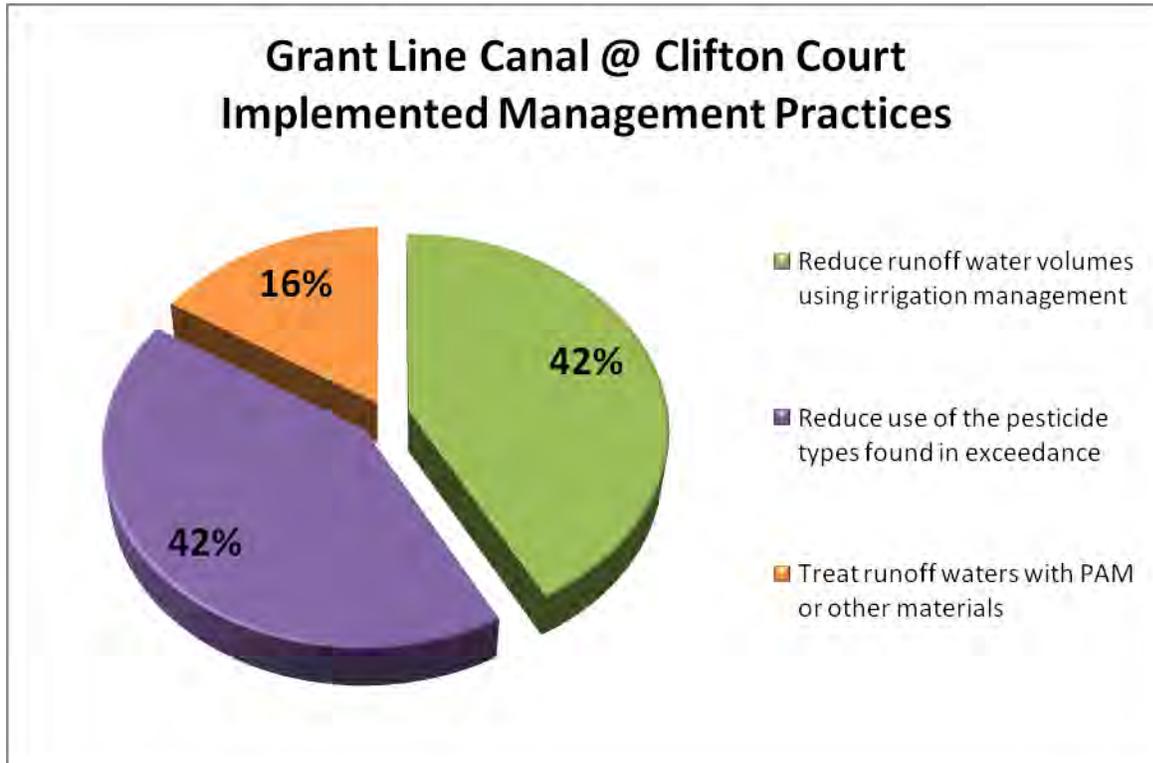


Figure 25. Grant Line Canal @ Clifton Court Rd 2010 implemented management practices. Results based on priority member acreages from 2011 follow up surveys.



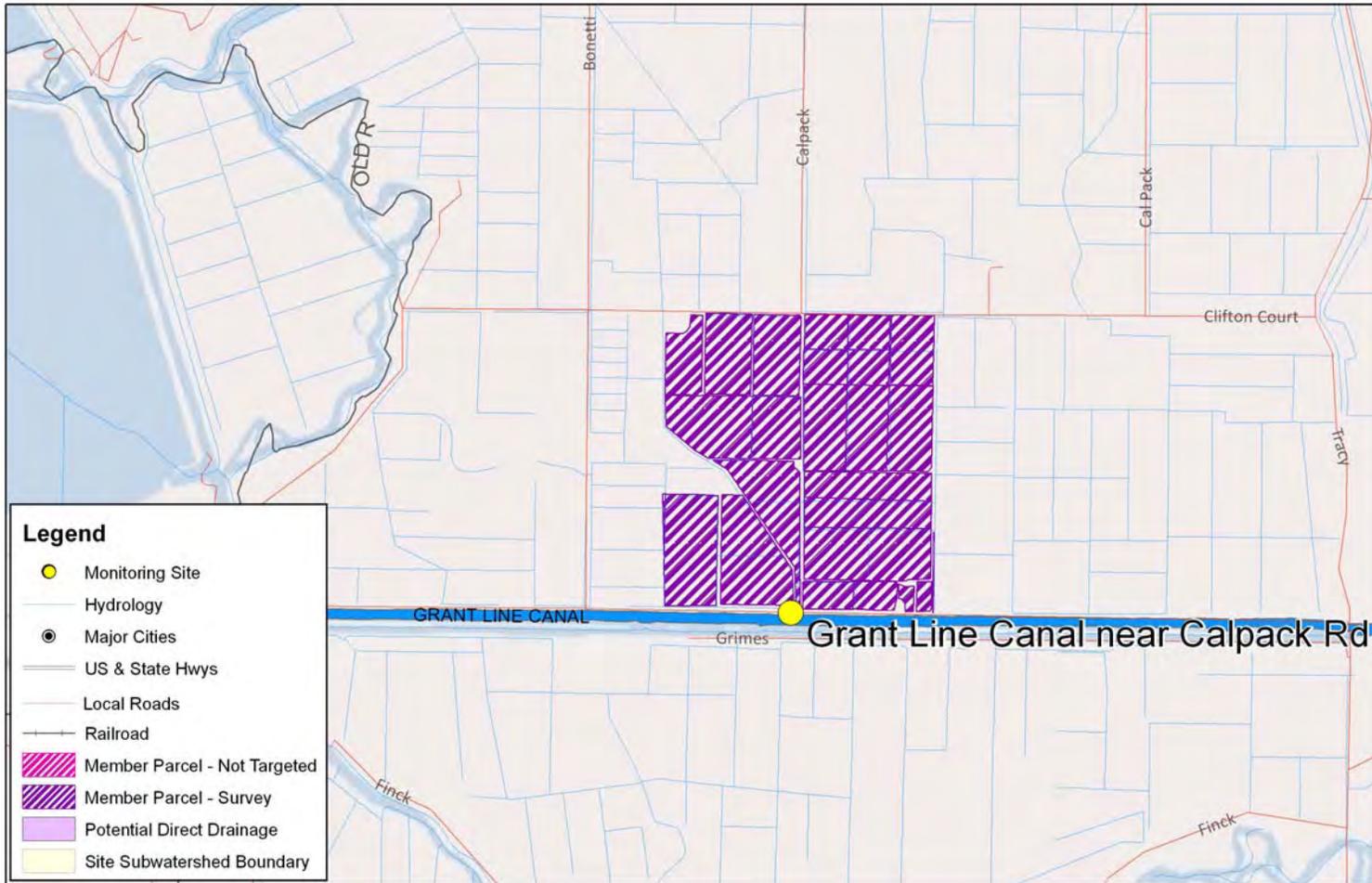
Grant Line Canal near Calpack Rd

Sixty-four percent of the Grant Line Canal near Calpack Rd subwatershed was determined to have direct drainage (686 of 1,070 acres) based on GIS analysis (Table 10, Figure 26). Two members representing 100% of the parcels with direct drainage are enrolled in the Coalition and filled out surveys with current management practice information (Table 10). Due to the small size of the subwatershed, the parcels owned by these two members extend beyond its boundaries, and a total of 1,524 acres have had current and additional management practices implemented in 2009 and 2010. Figures 27-29 are based on this total enrolled irrigated acreage owned by these two members.

Both members recorded that they had tailwater runoff and storm water runoff. The most common management practices implemented by growers during 2009 in the Grant Line Canal near Calpack Rd subwatershed is using a reduced amount of pesticides causing exceedances (38% of acres) and reducing runoff water volumes through irrigation management (39% of acres, Figure 27). Additionally, growers treated 23% of acres with PAM or other materials (Figure 27). In 2009, 100% of the direct drainage acreage enrolled in the Coalition had the current use of one or more management practices specific to runoff management and/or pesticide application management.

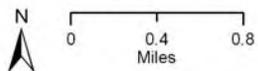
The two growers indicated that they intended to implement the same practices in 2010 that they had implemented in 2009 (Figure 28). Final results of the follow up surveys indicate that additional management practices were implemented across all 686 acres in the Grant Line Canal near Calpack Rd subwatershed. Both members indicated that the practices they intended to implement were in fact implemented across all direct drainage acreage in 2010 (Figure 29).

Figure 26. Grant Line Canal near Calpack 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
 Parcel Layer - Contra Costa County; 2011, San Joaquin County; 2011
 Basemap, Shaded Relief - ESR
 GSC North America 1983

Date Prepared: 03/03/11
 SJCDWQC



**Grant Line near Calpack Rd -
 2nd Priority Subwatershed Parcels**

Figure 27. Grant Line Canal near Calpack Rd 2009 management practices. Results based on priority member acreages from 2010 surveys.

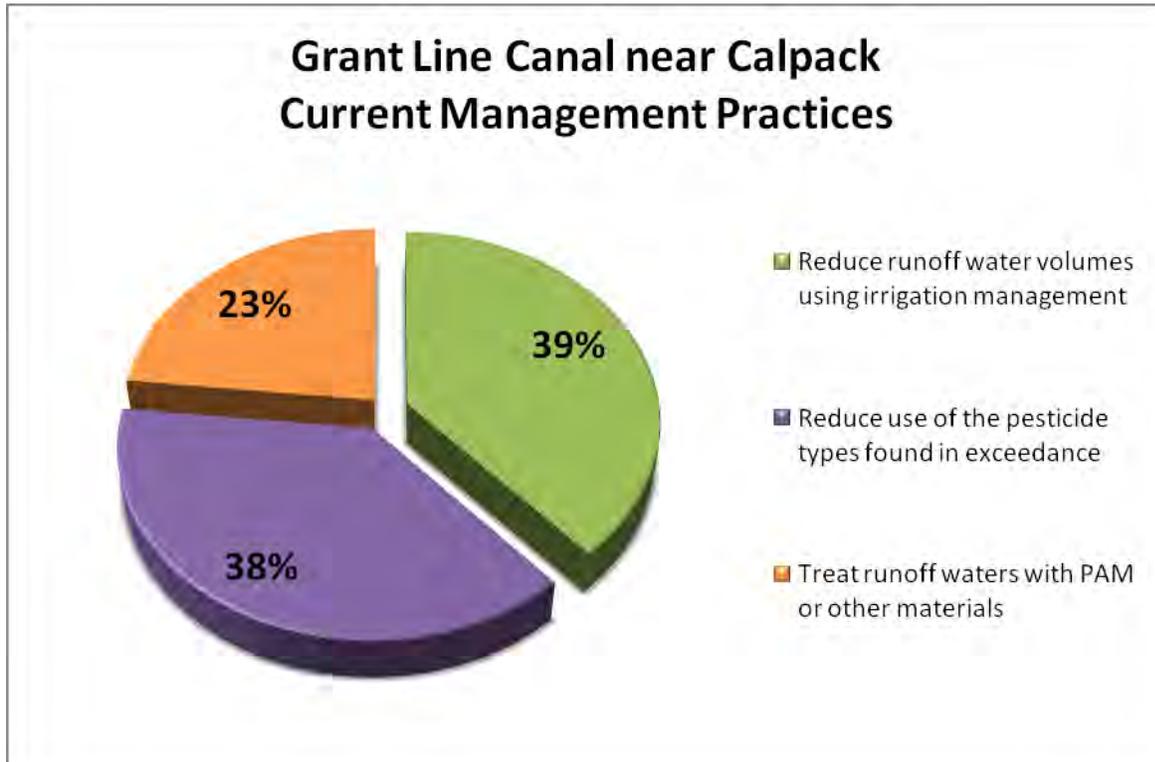


Figure 28. Grant Line Canal near Calpack Rd 2010 management practices (to be implemented). Results based on priority member acreages from 2010 surveys.

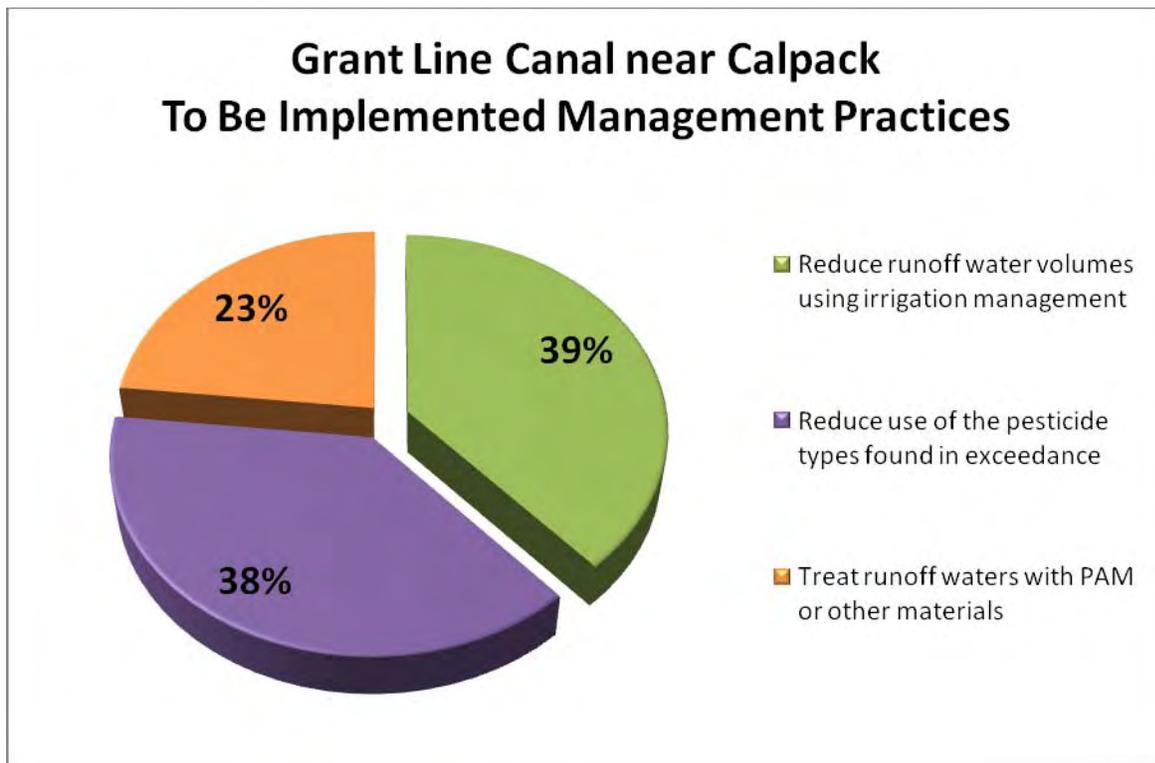
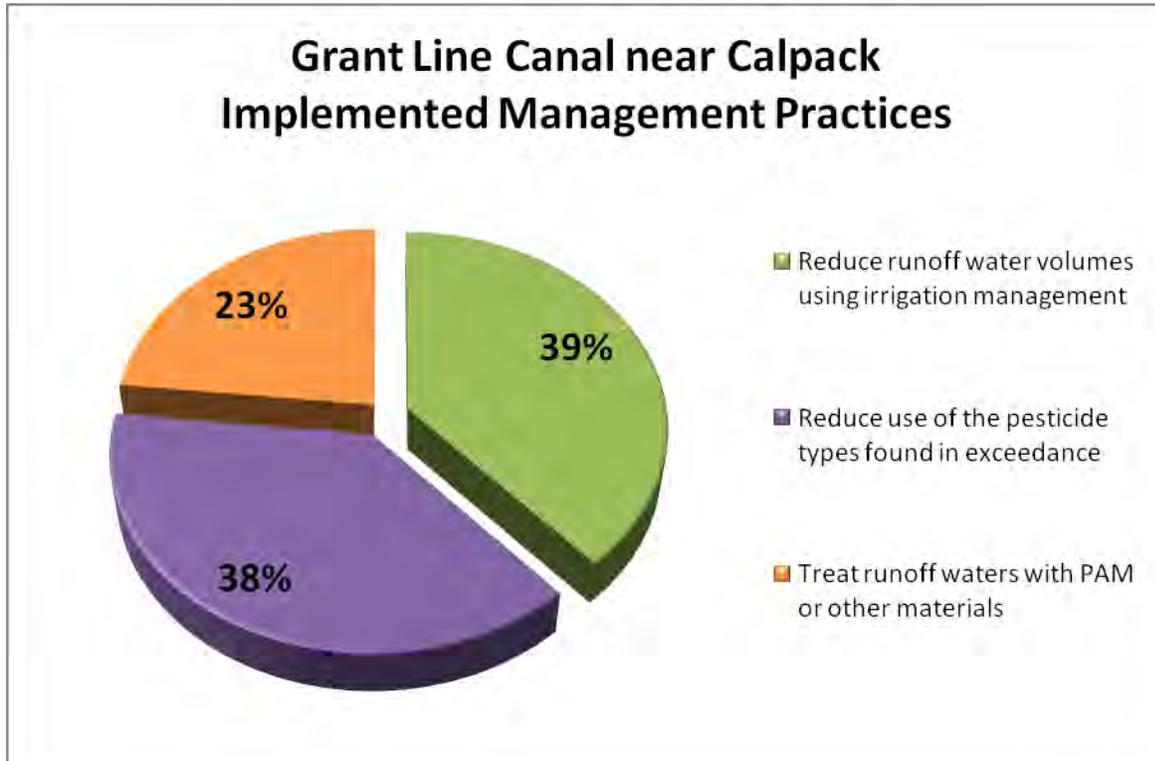


Figure 29. Grant Line Canal near Calpack Rd 2010 implemented practices. Results based on priority member acreages from 2011 follow up surveys.



Littlejohns Creek @ Jack Tone Rd

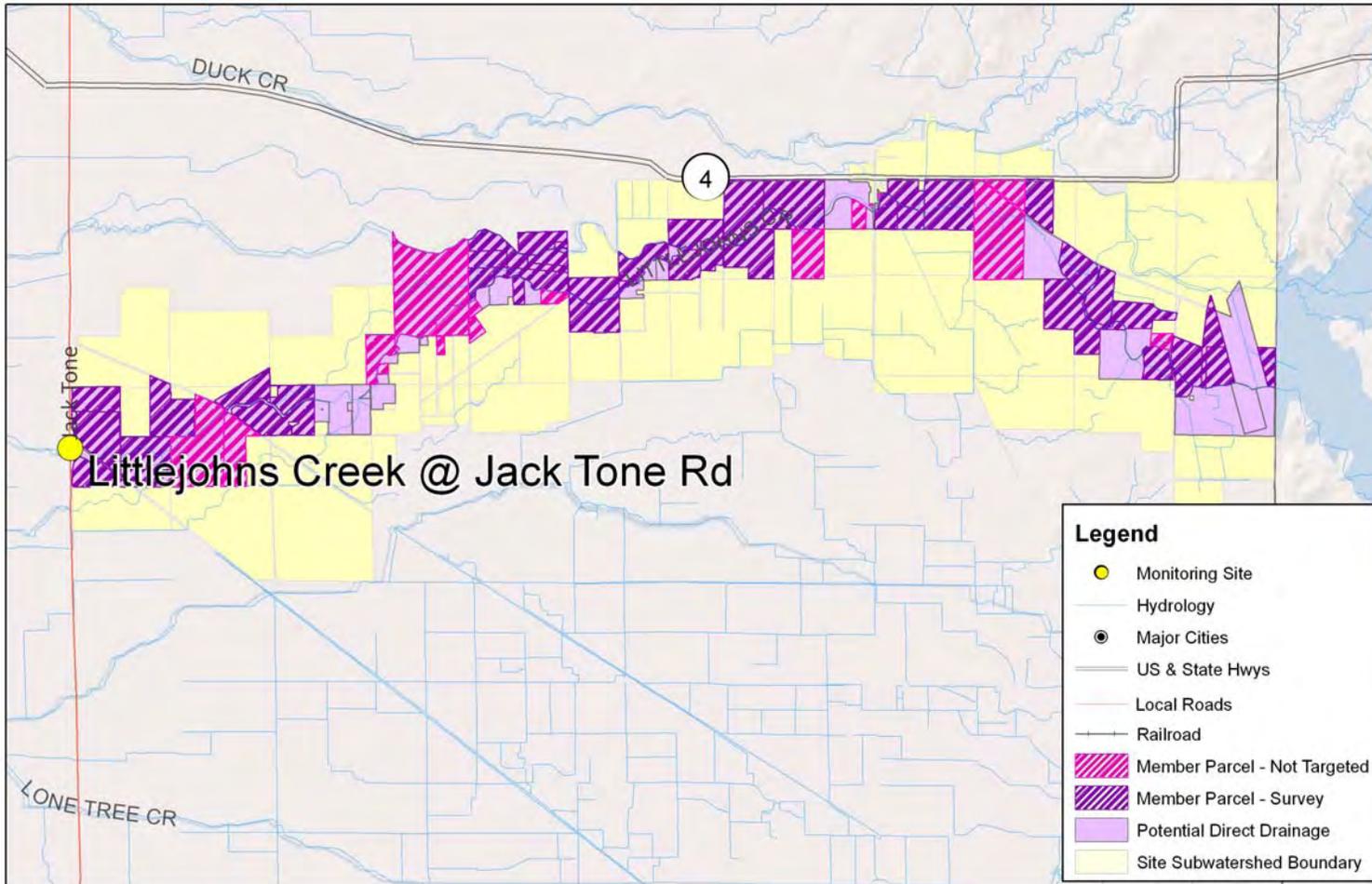
Fifteen percent of the Littlejohns Creek subwatershed was determined to have direct drainage (5,277 of 34,050 acres) based on GIS analysis (Table 10, Figure 30). Ninety percent of the parcels with direct drainage are enrolled in the Coalition (4,739 acres) and 16 members representing 2,796 acres filled out surveys with current management practice information (Table 10).

Survey results indicate that 26% of the acres had tailwater runoff and 72% of acres had storm water runoff (Figures 31 and 32). The most common management practice implemented by growers in 2009 was reducing runoff water volumes through irrigation management (29% of acres) followed closely by use of center grass rows, grass waterways or grass filter strips (26% of acres) and reducing the use of pesticides such as chlorpyrifos (25% of acres, Figure 33). Additionally, 20% of acres have sprinklers or micro irrigation (Figure 33). In 2009, growers responsible for approximately 57% of the direct drainage acreage enrolled in the Coalition (2,692 of 4,739 acres) implemented one or more management practices specific to runoff management and/or pesticide application management.

Growers indicated that they intended to implement additional practices in 2010 including irrigation management practices to reduce water runoff (32% of acres), reduce application of pesticides of concern such as chlorpyrifos (29% of acres) and intend to use center grass rows, grass waterways or grass filter strips (28% of acres, Figure 34). Additionally, 10% of acres will have micro sprinkler or drip irrigation installed and about 1% of acres intend to install a retention pond, holding basin or return system (Figure 34).

Final results of the follow up surveys indicate that additional management practices were implemented across 2566 acres with direct drainage to Littlejohns Creek. Implemented practices include reducing runoff water volumes using irrigation management (34% of acres), reducing use of pesticides of concern (28% of acres), using center grass rows, grass waterways or grass filter strips (25% of acres), and installation of sprinkler or microspray irrigation (13% of acres, Figure 35).

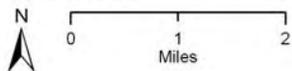
Figure 30. Littlejohns Creek @ Jack Tone Rd member parcels with direct drainage potential.



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
 Parcel Layer - Contra Costa County: 2011, San Joaquin County: 2011
 Basemap, Shaded Relief - ESR!
 GSC North America 1983

Date Prepared: 03/07/11

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Littlejohns Creek @ Jack Tone Rd - 2nd Priority Subwatershed Parcels

Figure 31. Percentage of acreage of priority members within Littlejohns Creek @ Jack Tone Rd with tailwater runoff.

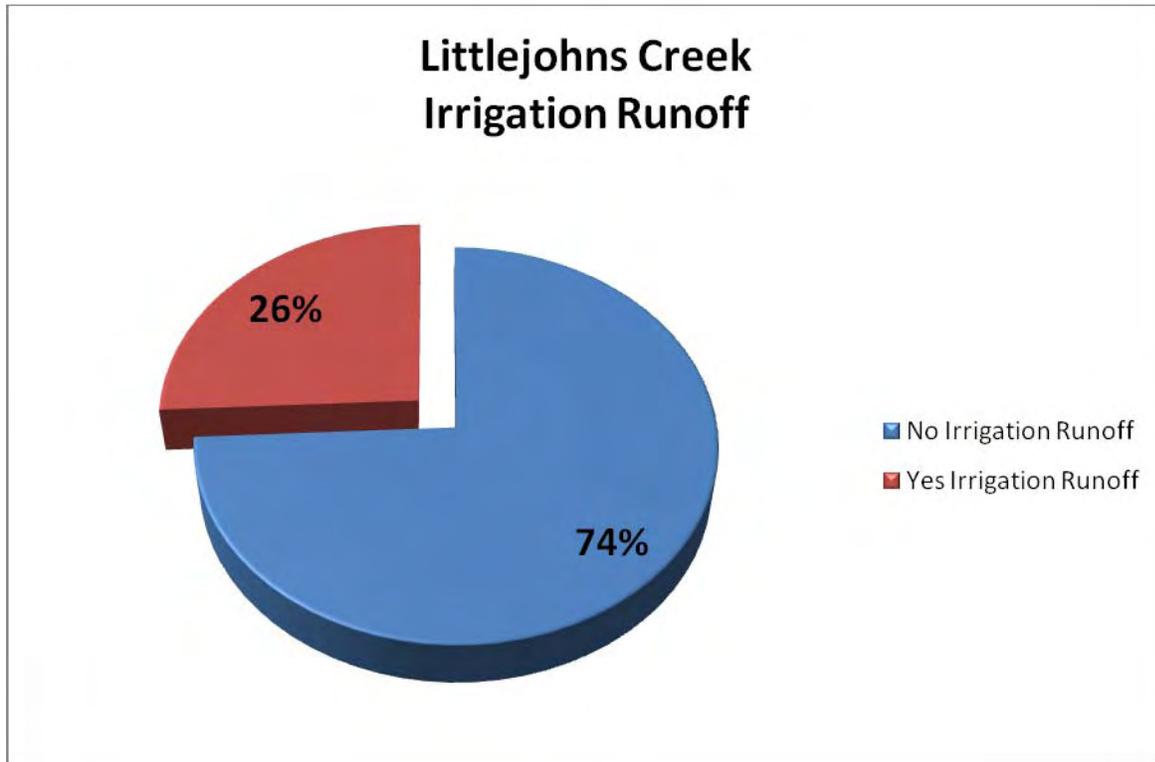


Figure 32. Percentage of acreage of priority members within Littlejohns Creek @ Jack Tone Rd with storm water runoff.

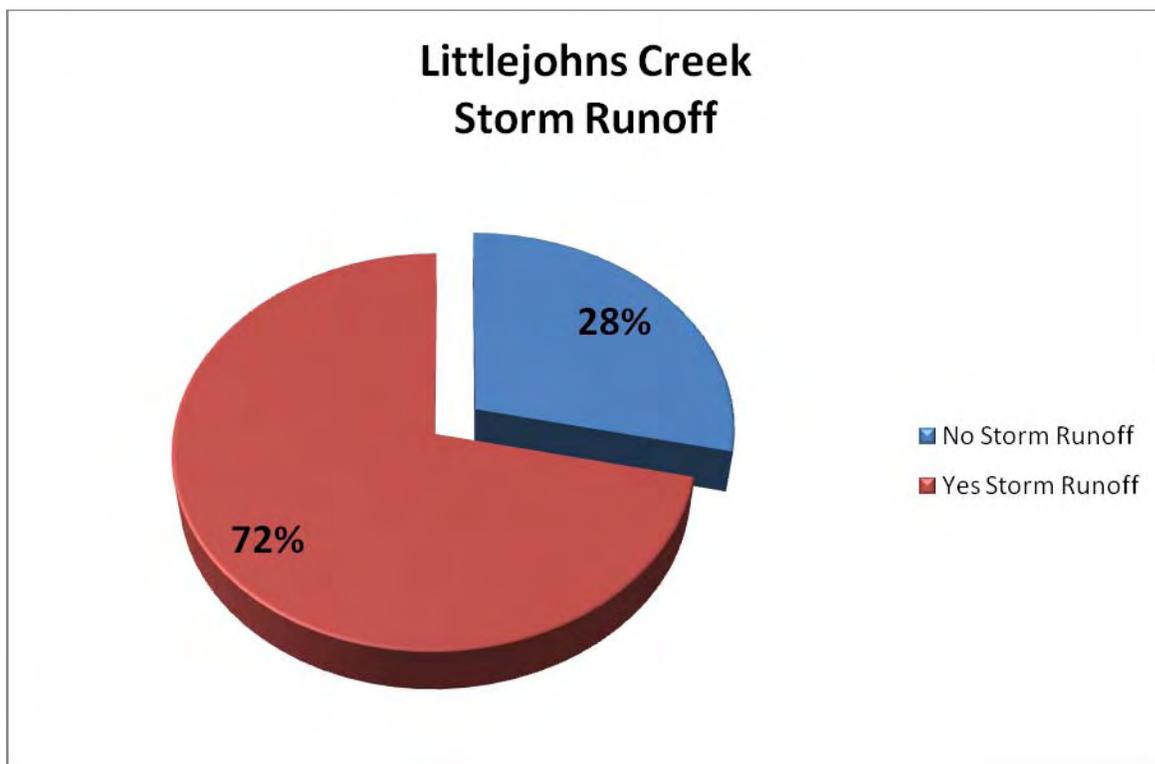


Figure 33. Littlejohns Creek @ Jack Tone Rd 2009 management practices. Results based on priority member acreages from 2010 surveys.

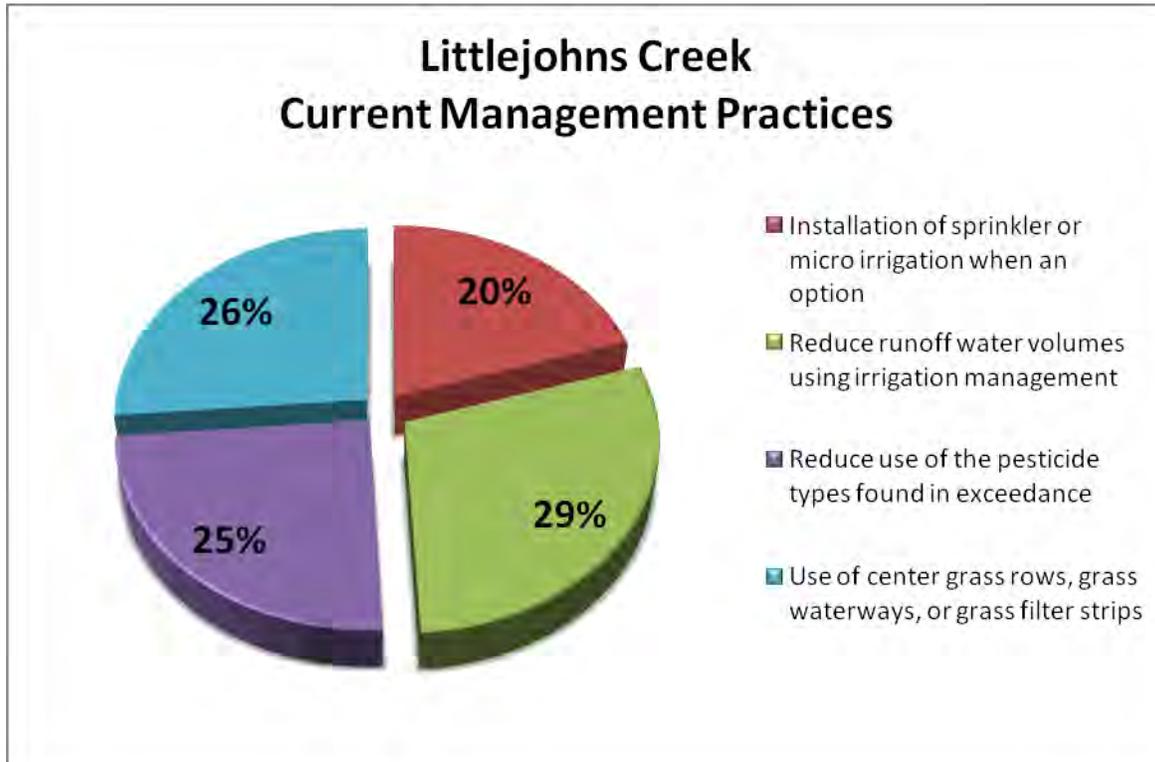


Figure 34. Littlejohns Creek @ Jack Tone Rd 2010 management practices (to be implemented). Results based on priority member acreages from 2010 surveys.

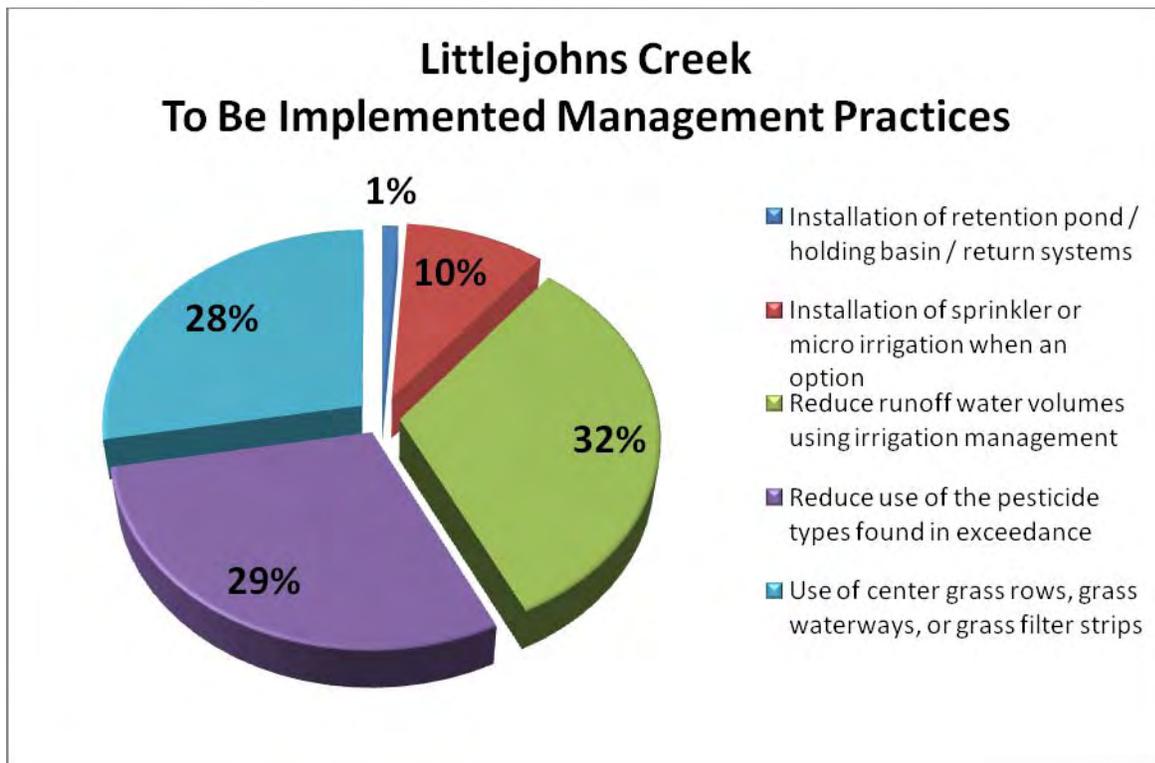
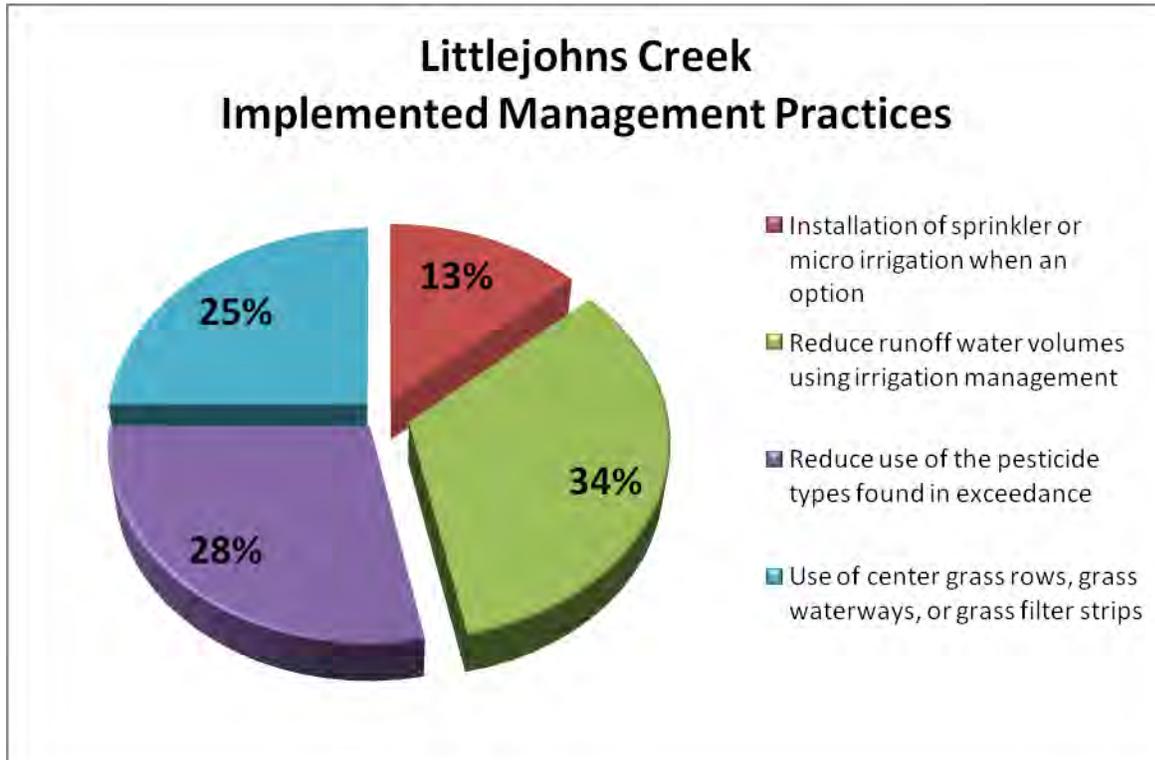


Figure 35. Littlejohns Creek @ Jack Tone Rd 2010 implemented practices. Results based on priority member acreages from 2011 follow up surveys.



EVALUATION OF MANAGEMENT PRACTICE EFFECTIVENESS

Throughout 2010 the Coalition continued to conduct second year MPM at Duck Creek @ Hwy 4, Lone Tree Creek @ Jack Tone Rd and Unnamed Drain to Lone Tree Creek @ Jack Tone Rd, and first year MPM at Grant Line Canal at Clifton Ct Rd, Grant Line Canal near Calpack, and Littlejohns Creek at Jack Tone Rd. Results from management practice follow up surveys have been received for these six sites and are complete. The third group of priority sites, Mokelumne River @ Bruella Rd, Terminous Tract Drain at Hwy 12, and French Camp Slough at Airport Way, also had MPM in 2010 as Year 0. A preliminary evaluation of management plan effectiveness for the third group of priority subwatersheds will be included in the MPUR to be submitted on April 1, 2012.

FIRST GROUP OF HIGH PRIORITY SUBWATERSHEDS (2008-2010)

Growers within the first group of high priority subwatersheds implemented new management practices including a reduction in the use of pesticides of concern such as chlorpyrifos, reduction in the runoff of water volumes due to irrigation management, implementation of center grass rows, grass waterways or grass filter strips, treatment of runoff waters with PAM and installation of sprinkler or micro irrigation (Figure 36 and 37). A majority of the acreage with new practices reduced the amount of pesticide in surface waters (Figure 37).

Chlorpyrifos exceedances continued to occur in all three high priority subwatersheds despite increased outreach and grower commitments to implement additional management practices. In addition, sediment toxicity to *H. azteca* occurred twice in 2010 between the three subwatersheds and both times were associated with the presence of chlorpyrifos in the sediment sample. Four of the nine chlorpyrifos exceedances experienced in 2010 were from the Duck Creek @ Hwy 4 sampling location (Figure 42). While the Coalition has performed follow up contacts and obtained 100% of the surveys for members within the Duck Creek @ Hwy 4 subwatershed, additional contacts with growers were made to address the high number of chlorpyrifos exceedances in the past year. A representative of the Coalition spoke with both members and non-members with direct drainage to Duck Creek to address concerns regarding irrigation run-off, spray drift, and appropriate buffer zones. Of the six growers who were visited, nearly all of them indicated that they intended to use less or no chlorpyrifos in the future. More visits are planned for 2011, and it is anticipated that as a result, water quality will improve within the Duck Creek subwatershed.

Similarly to Duck Creek @ Hwy 4, Lone Tree Creek @ Jack Tone Rd had increased exceedances of chlorpyrifos. In 2009, there was a single exceedance in samples collected from Lone Tree Creek; in 2010, two exceedances were experienced (Figure 38). Two growers in the Lone Tree Creek subwatershed indicated that they had implemented additional practices in 2010 and it is hoped that these additional practices will result in improved water quality in 2011. Unnamed Drain to Lone Tree Creek at Jack Tone Rd had three chlorpyrifos exceedances in 2009 and 2010 (Figure 38). While growers with 61% of the targeted acres in Unnamed Drain reported new management practices in 2009 (Table 16), no additional management practices were recorded as being implemented in 2010. Chlorpyrifos remains a high priority for these three subwatersheds and the Coalition will continue to monitor for chlorpyrifos and toxicity to *H. azteca*.

Unnamed Drain to Lone Tree Creek @ Jack Tone Rd was the only high priority site to experience an exceedance of copper in 2010. This site had no copper exceedances in 2009; however it had five exceedances of total copper in 2008 when management plan sampling was initiated at this site. Although there was an exceedance in 2010, the overall trend is decreasing number of exceedances. The Coalition will continue to monitor for copper in 2011 during months of past exceedances and it anticipates results indicating improved copper management practices.

Growers representing roughly half of the targeted acres adjacent to Duck Creek @ Hwy 4 and Lone Tree Creek @ Jack Tone Rd indicated that new practices were being implemented from 2009-2010. Growers operating 61% of targeted acreage in Unnamed Drain to Lone Tree Creek implemented new practices in 2009 although no new practices were recorded in 2010. While the water quality results from 2010 show slight increases in overall water quality prior to MPM, more monitoring will occur in months of past exceedances to gauge the effectiveness of new management practices.

Figure 36. Percentage of acreage that intended to implement new practices in 2009 or 2010 for all first priority subwatersheds.

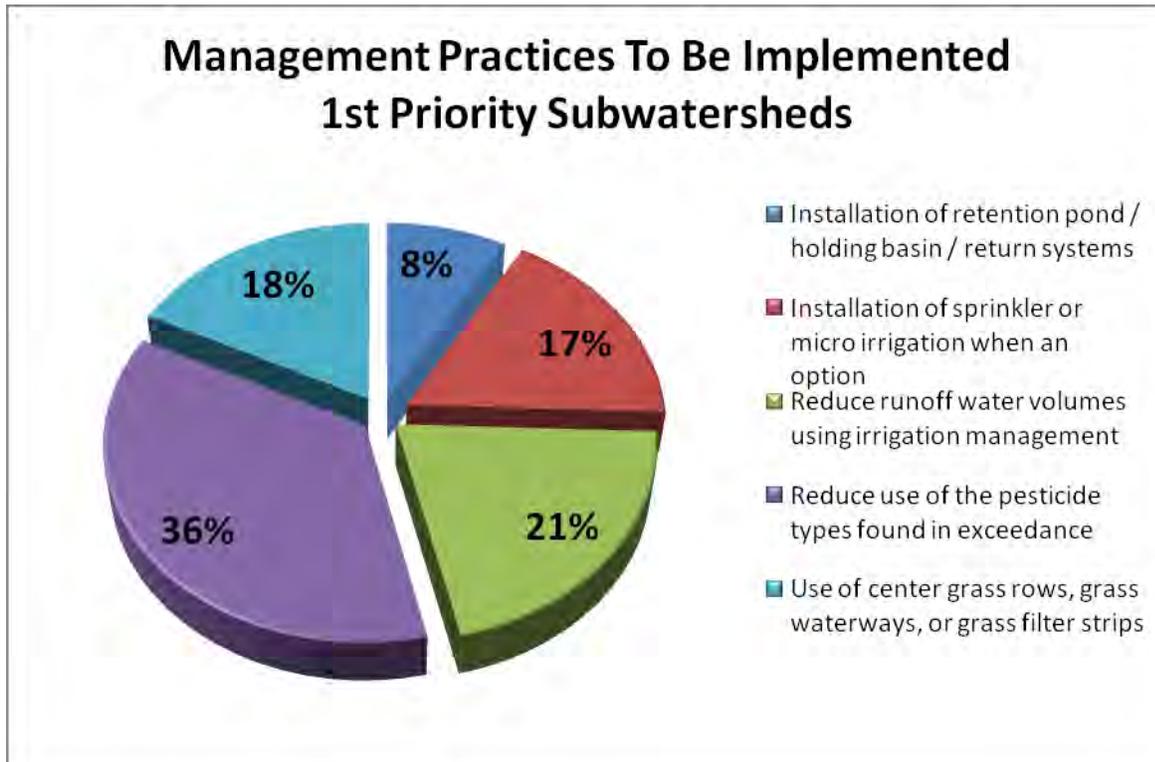


Figure 37. Percentage of acreage that implemented new practices in 2009 or 2010 for all first priority subwatersheds.

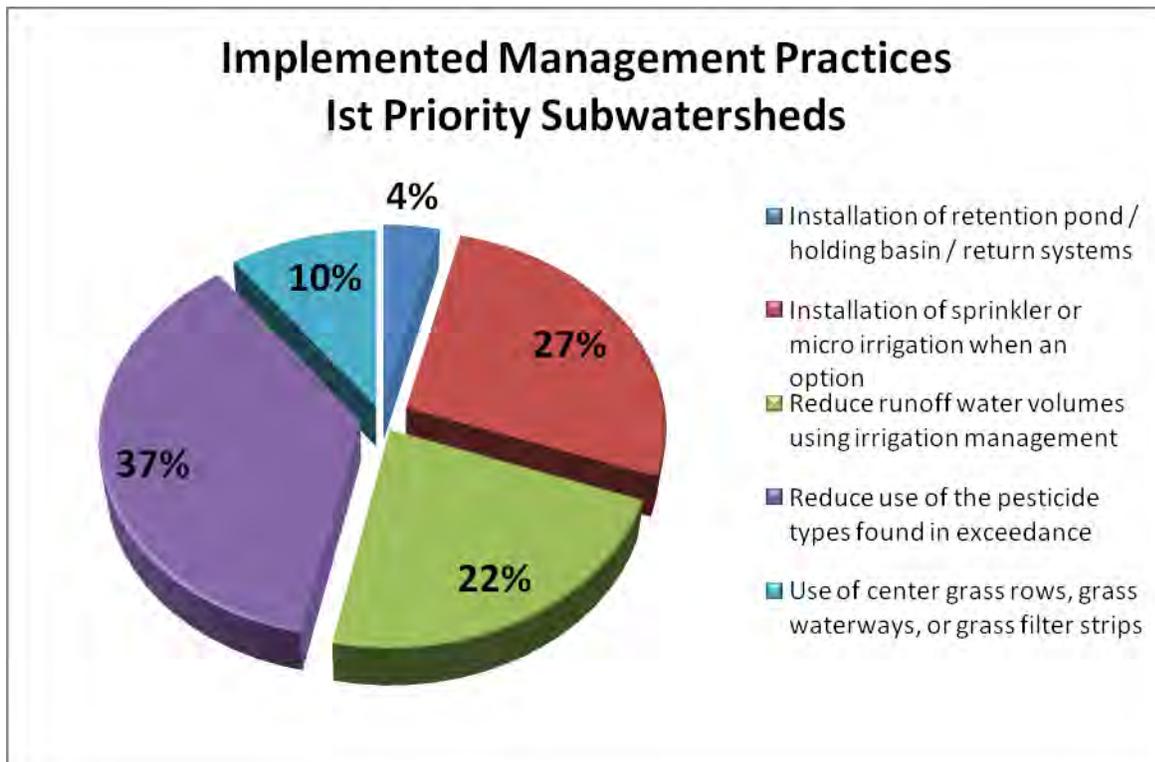


Figure 38. Count of 1st priority chlorpyrifos exceedances from 2004-2010.

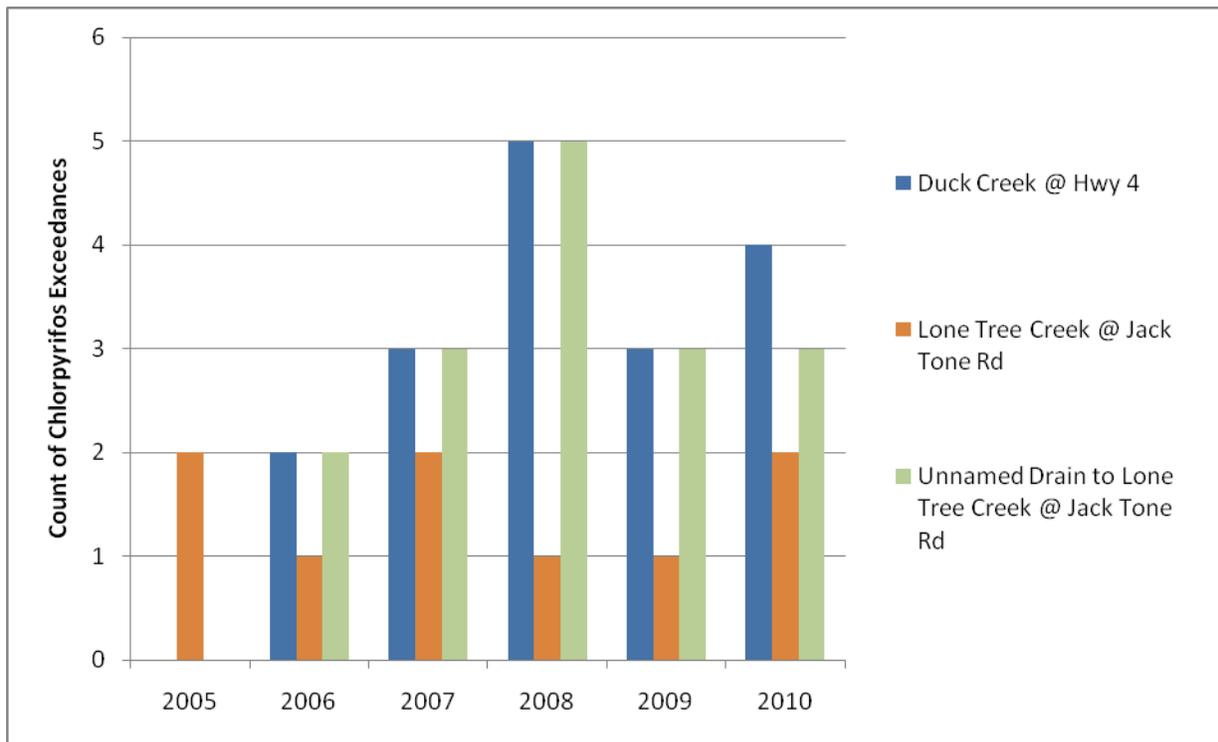


Table 16. Percentage of 1st priority contacts with new management practices. Results based on irrigated acres.

SUBWATERSHED	ACREAGE OF TARGETED MEMBERS	TARGETED ACRES WITH NEW PRACTICES	PERCENT OF CONTACTED ACRES WITH NEW PRACTICES	YEARS IMPLEMENTED
Duck Creek @ Hwy 4	4,978	2,425	49%	2009-2011 ¹
Lone Tree Creek @ Jack Tone Rd	3,742	1,923	51%	2009-2010
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	6,463	3,934	61%	2009-2010
TOTAL ACRES	15,183	8,282	55%	

¹Additional contacts have been made with growers in the Duck Creek subwatershed and more practices are planned for 2011.

SECOND GROUP OF HIGH PRIORITY SUBWATERSHEDS (2010-2012)

Growers within the second group of high priority subwatersheds implemented mostly practices to reduce the amount of pesticides in surface waters including reducing the amount of runoff volume through irrigation management and reducing the use of pesticides of concern such as chlorpyrifos (Figures 39-40). The only practice that was indicated by a grower to be implemented in 2010 that was not implemented was for a retention pond /holding basin / return system (Figure 39). The implementation of such a management practice is costly and it is likely that the grower did not have the funds to implement the practice in 2010.

Starting in April 2010, the Coalition began MPM at Grant Line Canal @ Calpack Rd, Grant Line Canal near Clifton Ct and Littlejohns Creek @ Jack Tone Rd for chlorpyrifos, diazinon, diuron, simazine, dieldrin, copper, water flea toxicity, algae toxicity and sediment toxicity. The Coalition has already conducted successful meetings with targeted growers in all three subwatersheds and have obtained follow up surveys from 100% of growers (17 of 17 surveys returned). The Coalition anticipated that water quality results from 2010 would indicate improvements in all priority constituents due to increased implementation of management practices within all three subwatersheds. The Coalition has reviewed management practice implementation and water quality results in a preliminary way and a final review will be submitted in the Management Plan Update Report to be submitted on April 1, 2012 (after 2 years of MPM).

Two chlorpyrifos exceedances were experienced in 2010 within the second group of high priority subwatersheds (one at Grant Line @ Clifton Ct Rd, one at Littlejohns Creek, Figure 41). One hundred percent of growers within the Grant Line @ Clifton Ct Rd and Grant Line near Calpack Rd subwatersheds began implementation of new management practices in 2010, along with growers controlling 92% of the acres in Littlejohns Creek (Table 17). Growers indicated that they implemented a variety of new practices in 2010 (summarized in the previous section). It is predicted that water quality will improve in 2011 with the continued implementation of new management practices.

A single exceedance of copper was experienced in May 2010 at Littlejohn's Creek @ Jack Tone Rd. Management Plan Monitoring is scheduled for copper in May 2011. Growers with 28% of the acres with direct drainage enrolled in the coalition indicated that they are reducing the use of pesticides and it is anticipated that water quality will continue to improve in 2011.

Water from Grant Line Canal @ Clifton Ct Rd was found to be toxic to *Selenastrum capricornutum* and sediment from the same location was toxic to *Hyalella azteca* on one occasion. Toxicity to *H. azteca* was associated with the detection of chlorpyrifos in the sediment. Sediment from Grant Line near Calpack was also found to be toxic to *H. azteca* on one occasion.

Figure 39. Percentage of acreage that intended to implement new practices in 2009 or 2010 for all second priority subwatersheds.

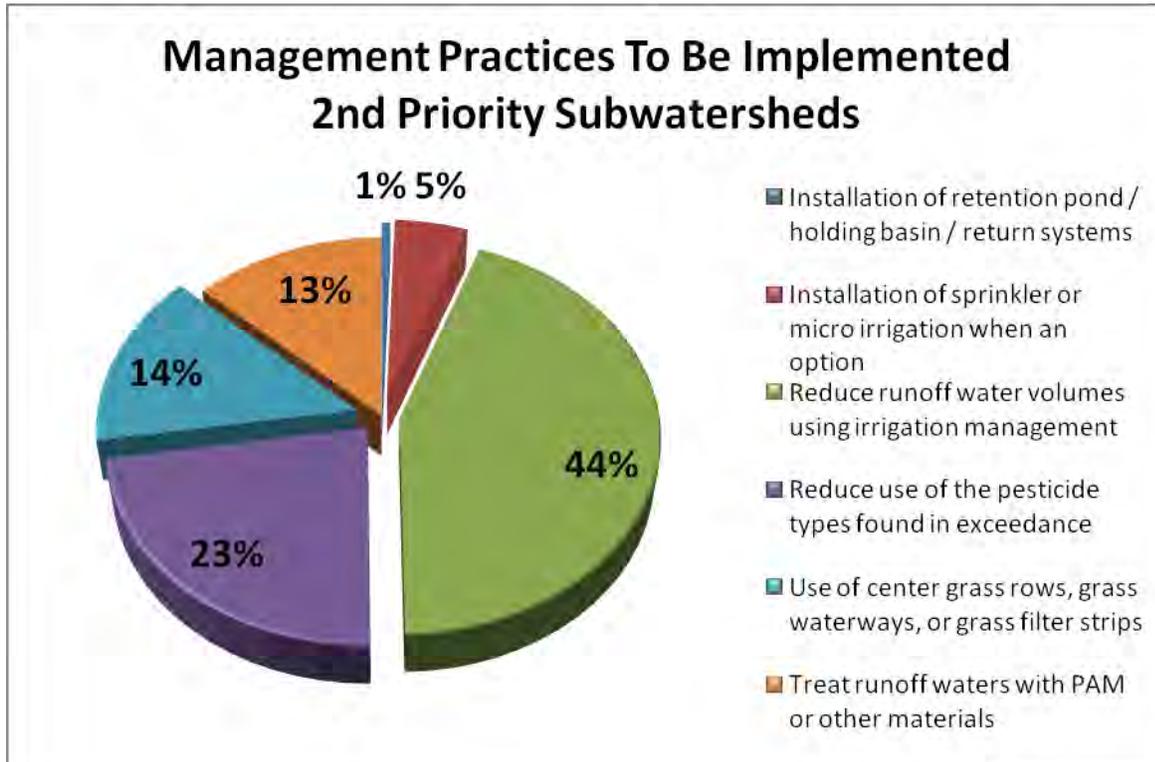


Figure 40. Percentage of acreage that implemented new practices in 2009 or 2010 for all second priority subwatersheds.

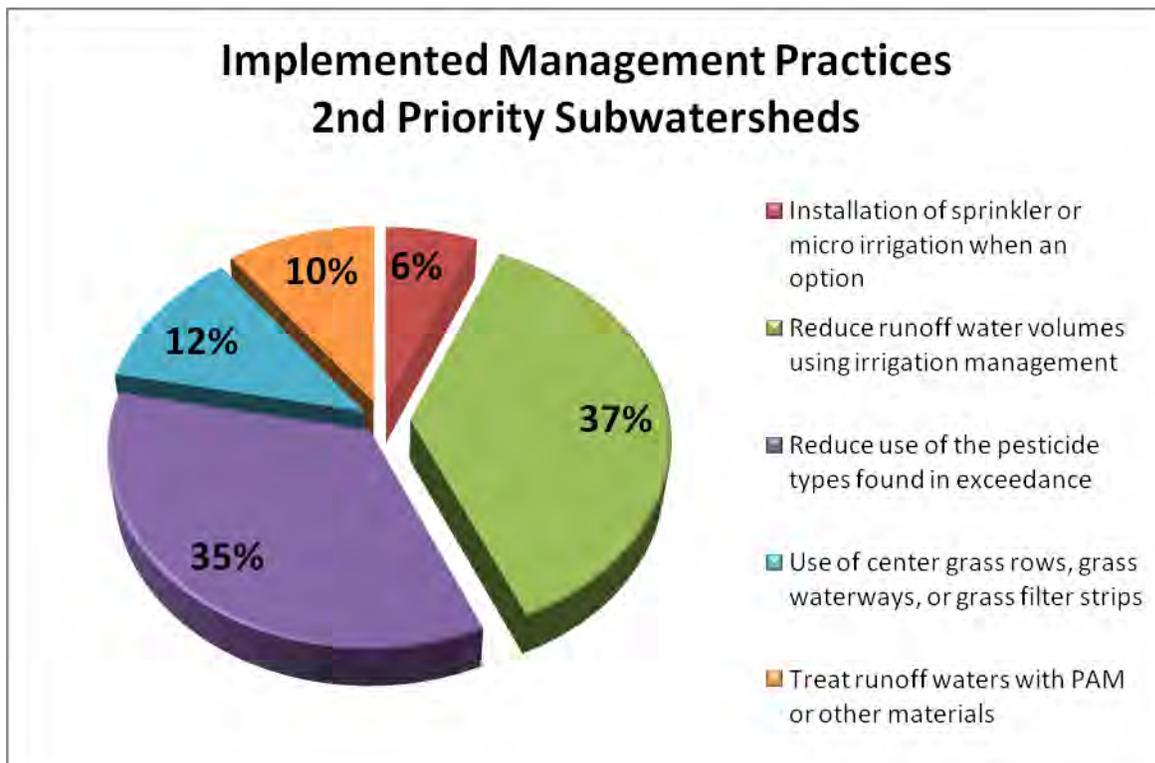


Figure 41. Count of 2nd priority chlorpyrifos exceedances from 2004-2010.

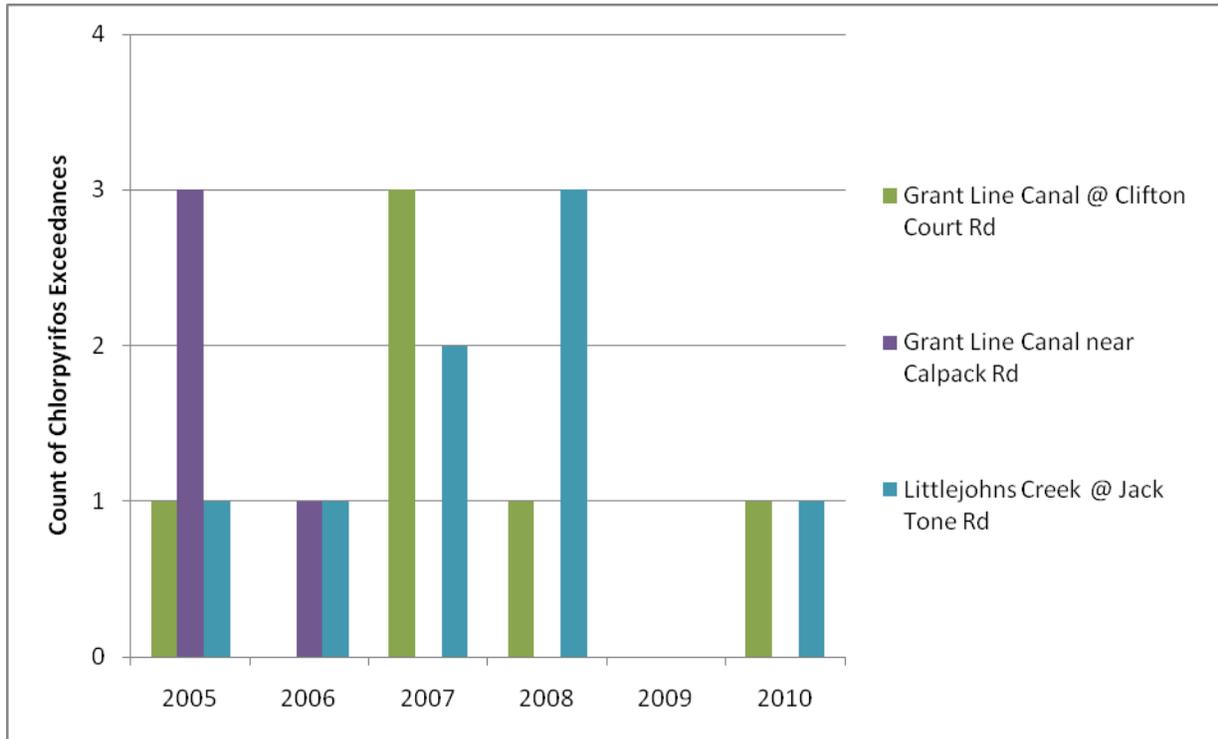


Table 17. Percentage of 2nd priority contacts with new management practices. Results based on irrigated acres.

SUBWATERSHED	ACREAGE OF TARGETED MEMBERS	TARGETED ACRES WITH NEW PRACTICES	PERCENT OF CONTACTED ACRES WITH NEW PRACTICES	YEARS IMPLEMENTED
Grant Line @ Clifton Ct Rd	259	259	100%	2010-2011
Grant Line near Calpack	686	686	100%	2010-2011
Littlejohns Creek @ Jack Tone Rd	2,796	2,566	92%	2010-2011
TOTAL ACRES	3,741	3,511	94%	

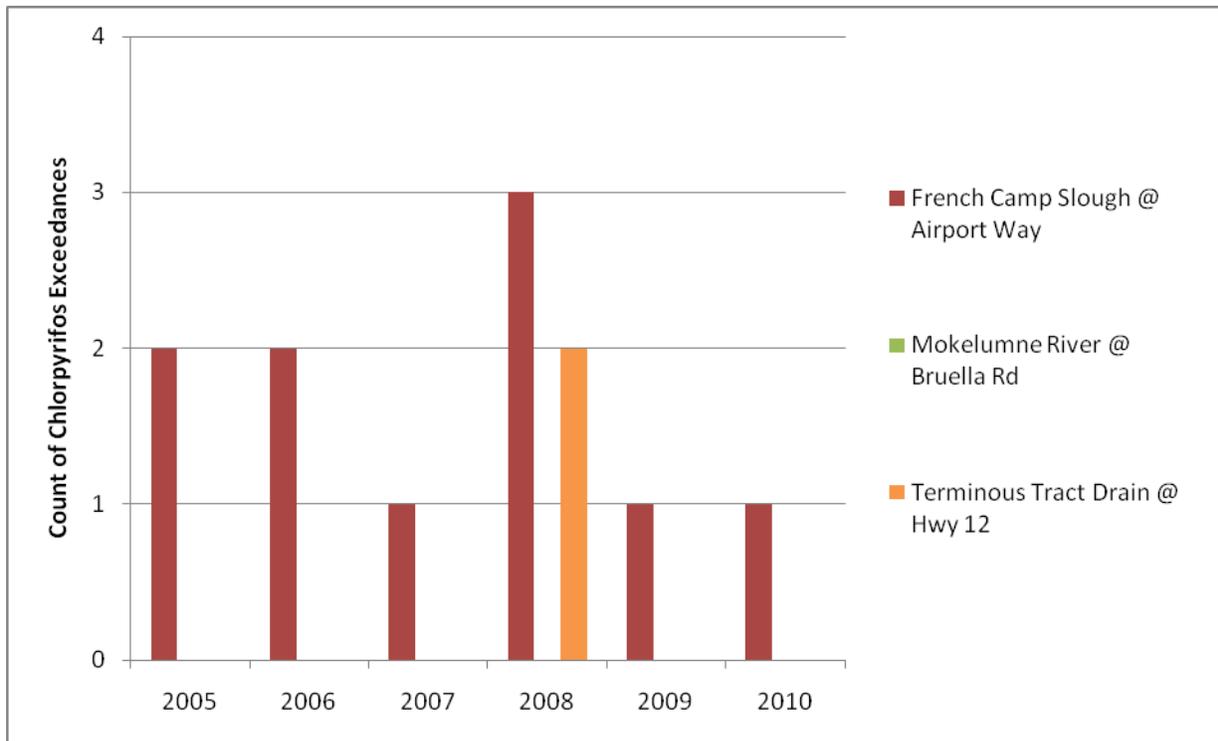
THIRD GROUP OF HIGH PRIORITY SUBWATERSHEDS (2011-2013)

Starting in April 2010, the Coalition added an additional level of MPM by monitoring the next group of subwatersheds to be designated as high priority (Table 12). Management Plan Monitoring was conducted for copper, chlorpyrifos, dieldrin, *H. azteca* toxicity and *S. capricornutum* toxicity. This monitoring is considered to be conducted during “Year 0” since it is the year before the sites become high priority. Year 0 monitoring provides the Coalition with recent water quality information at these sites. The Coalition began Year 0 monitoring in 2010 at French Camp Slough @ Airport Way, Terminous Tract Drain @ Hwy 12 and Mokelumne River @ Bruella Rd (Zones 3, 2, and 1, respectively, Figure 43). French Camp Slough is downstream of Unnamed Drain to Lone Tree Creek (Temple Creek), Lone Tree Creek and Littlejohns Creek. It is anticipated that with the additional implementation of management practices in the upstream subwatersheds, there will also be an improvement in water quality at French Camp Slough. Outreach occurred at grower meetings for these subwatersheds in January 2011 and management practice effectiveness will be evaluated in the Management Plan Update Reports to be submitted in 2012 and 2013.

There was a single exceedance of chlorpyrifos at French Camp Slough @ Airport Way in August 2010 (Figure 42). French Camp Slough is in assessment monitoring in 2011 and will therefore be monitored for chlorpyrifos throughout the year, including the month of prior exceedances.

Sediment from French Camp Slough @ Airport Way and Terminous Tract Drain @ Hwy 12 caused toxicity to *H. azteca* in September 2010. Chlorpyrifos was detected in both sediment samples (Table 25).

Figure 42. Count of 3rd priority chlorpyrifos exceedances from 2004-2010.



OVERALL COALITION WATER QUALITY

The first group of high priority subwatersheds is located within Coalition Zone 2 (Figure 43). The second group of high priority sites is located within Coalition Zones 2 and 4. While this past year Zone 2 has seen a slight increase in chlorpyrifos exceedances (Figure 44), since the management plans were developed for the watersheds there has been a decrease in exceedances. With additional management plans being implemented in 2011 in Littlejohn's Creek @ Jack Tone Rd, water quality is expected to improve in 2011 and beyond. Zone 4 has also seen an increase in chlorpyrifos exceedances from none in 2009 to one in 2010 (Figure 44), however the growers within the Grant Line Canal @ Clifton Ct Rd subwatershed (where the exceedance was experienced) are continuing to implement management practices in 2011, including reducing the use of chlorpyrifos. Results from 2011 MPM are expected to demonstrate fewer exceedances within these zones.

The Coalition was awarded a \$175,000 grant through the California Department of Pesticide Regulation (DPR) with a goal of reducing pesticide runoff (up to 10 percent) by 2011 from tomato, alfalfa, walnut, and wine grapes. With the funds, the Coalition developed crop specific management practice workbooks that are designed to enable individual farmers to easily make management practice decisions specific to their operations (see Appendix 2 for copies of the four workbooks). The wine grape workbook was completed in March 2010. Coalition members within the first three high priority subwatersheds (Duck Creek, Unnamed Drain to Lone Tree Creek and Lone Tree Creek) as well as one of the second high priority subwatershed (Littlejohns Creek) who grow wine grapes were personally contacted to attend a grower workshop to be held on March 25, 2010. The wine grape grower workshop focused on the management practices outlined within the workbook including irrigation management practices, spray drift management and low risk pesticide products. The workbooks were designed to inform growers of effective management practices that will reduce pesticide discharge.

Figure 43. SJCDWQC January through December 2010 Monitoring Sites relative to Zone Boundaries.

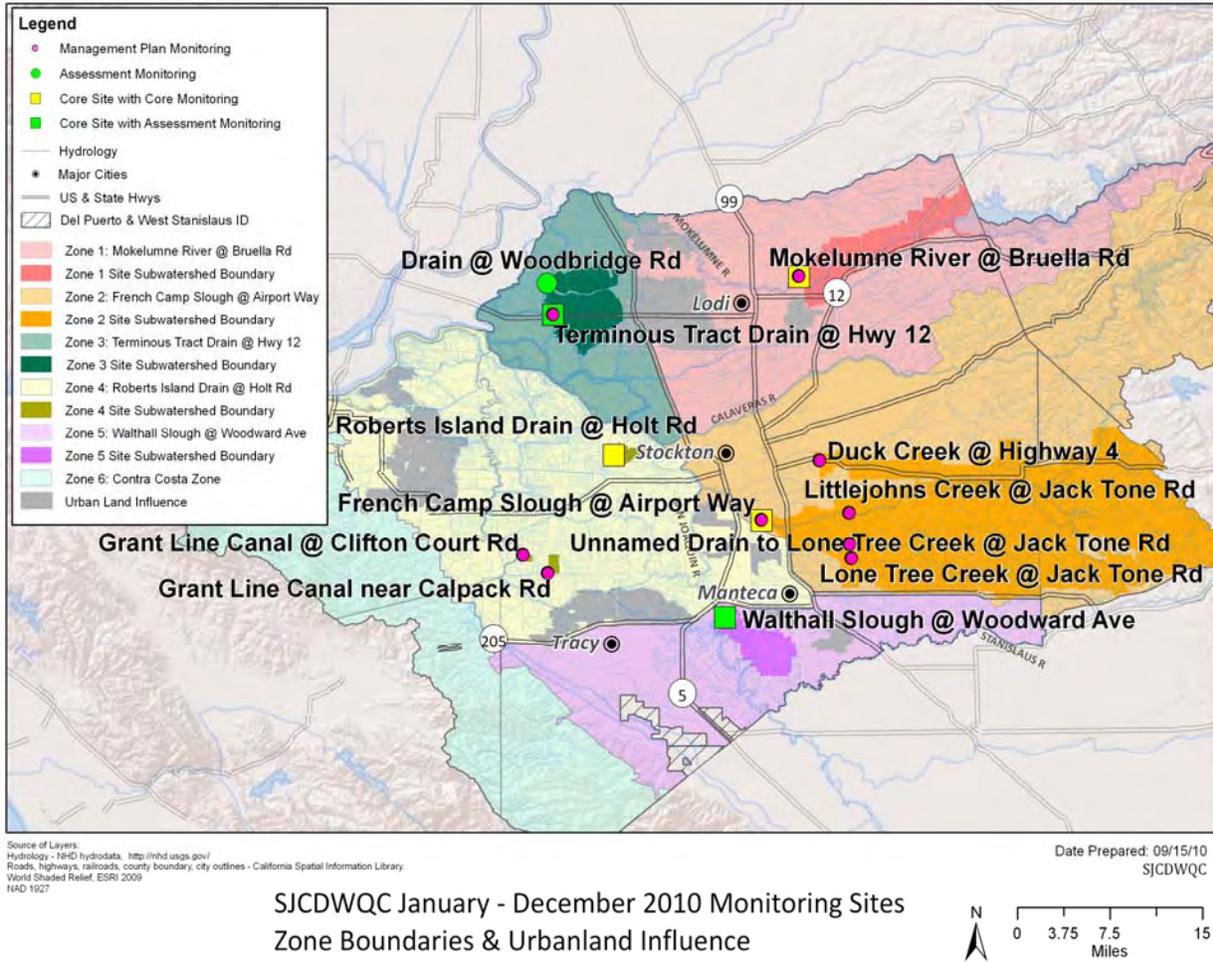
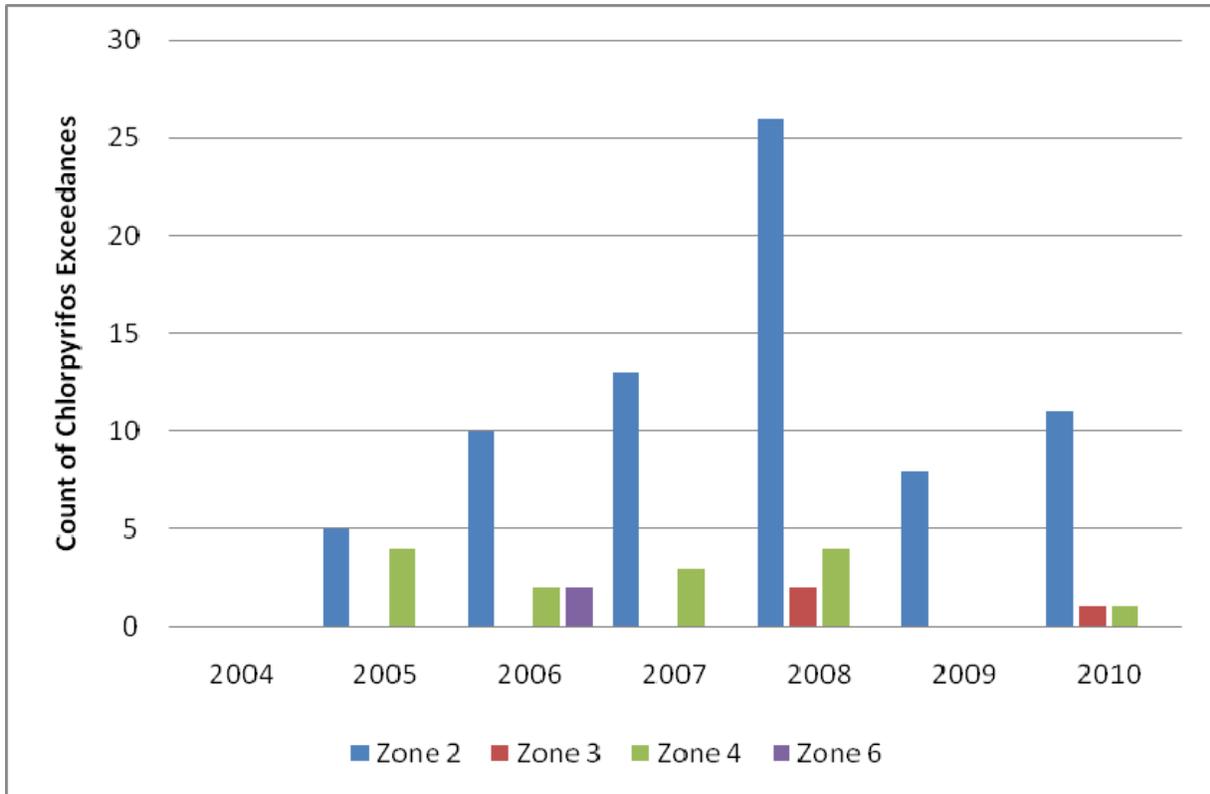


Figure 44. Exceedance counts of the chlorpyrifos water quality trigger limit from 2004 - 2010 within the SJCDWQC Zones, including MPM and normal monitoring sites. Zones 1 and 5 did not experience any chlorpyrifos exceedances.



STATUS OF TMDL CONSTITUENTS

The SJCDWQC established monitoring and management activities for Total Maximum Daily Load (TMDL) constituents as required in the Regional Board’s Basin Plan for the Sacramento and San Joaquin River basins. The Basin Plan establishes TMDL requirements for dischargers and requires that dischargers comply with the monitoring and management criteria defined in the Basin Plan. A narrative concerning each TMDL constituent is provided below to document the Coalition’s efforts to meet its TMDL requirements for Coalition members. The Coalition conducts representative monitoring based on zones outlined in the SJCDWQC MRPP (pages 53-64) for waterbodies and constituents with approved TMDLs (Table 18).

If an exceedance of a water quality objective occurs for a TMDL constituent, a management plan is required for that constituent in that site subwatershed regardless of whether there is a second exceedance. A management plan for a TMDL constituent results in additional focused monitoring, an analysis to determine the source of the exceedance and outreach within the subwatershed. Coalition efforts include but are not limited to: (1) Management Plan Monitoring, (2) conducting site subwatershed grower meetings, (3) encouraging the adoption of and evaluating the efficacy of management practices, and (4) addressing the seven compliance components described in the Basin Plan. The Coalition addresses toxicity, pesticides, and sediment bound analytes with specific management practices whether or not there is a TMDL.

Table 18. Waterbodies with constituents being addressed by USEPA approved TMDLs and associated Coalition zones where representative monitoring occurs.

WATERBODY NAME/SECTION	CONSTITUENT	COALITION ZONE
San Joaquin River (Stanislaus River to Delta Boundary)	Boron	5
Delta Waterways (central portion)	Chlorpyrifos	3, 4
Delta Waterways (eastern portion)	Chlorpyrifos	1, 2, 3, 5
Delta Waterways (southern portion)	Chlorpyrifos	4
Delta Waterways (western portion)	Chlorpyrifos	4
San Joaquin River (Stanislaus River to Delta Boundary)	Chlorpyrifos	5
Delta waterways (Stockton Ship Channel)	Chlorpyrifos	2
Delta Waterways (export area)	Chlorpyrifos	4
Delta Waterways (central portion)	Diazinon	3, 4
Delta Waterways (eastern portion)	Diazinon	1, 2, 3, 5
Delta Waterways (southern portion)	Diazinon	4
Delta Waterways (western portion)	Diazinon	4
Five Mile Slough (Alexandria Place to Fourteen Mile Slough)	Diazinon	4
Mosher Slough (downstream of I-5)	Diazinon	4
San Joaquin River (Stanislaus River to Delta Boundary)	Diazinon	5
Delta waterways (Stockton Ship Channel)	Diazinon	2
Delta Waterways (export area)	Diazinon	4

WATERBODY NAME/SECTION	CONSTITUENT	COALITION ZONE
Marsh Creek (Marsh Creek Reservoir to San Joaquin River; partly in Delta Waterways, western portion) ¹	Diazinon	6
Stockton Deep Water Ship Channel	Dissolved Oxygen	2, 4, 5
San Joaquin River (Stanislaus River to Delta Boundary)	Electrical Conductivity	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 subwatershed.

CHLORPYRIFOS AND DIAZINON TMDL

The Basin Plan requires that dischargers either individually or as a member of a coalition, describe actions taken to reduce chlorpyrifos and diazinon discharges and meet the applicable load allocations by the required compliance date. The Coalition’s Management Plan includes source identification and a means to identify management practices that can reduce chlorpyrifos and diazinon discharges into waterbodies. Improved management practices, including practices to eliminate drift, alternative irrigation practices to reduce runoff, and drainage management practices to reduce the volume of runoff of contaminants have been implemented by growers to meet water quality objectives and load allocations set forth in the Basin Plan. Meetings are held quarterly with the Regional Water Board to evaluate progress in meeting these reductions, and revisions to the Management Plan will be made if sufficient progress is not being achieved.

There are two approved TMDLs for chlorpyrifos and diazinon within the SJCDWQC region which are amendments to the Basin Plan; one for the Sacramento-San Joaquin Delta and the other for the Lower San Joaquin River. The San Joaquin River TMDL for chlorpyrifos and diazinon establishes six compliance points along the River including San Joaquin River @ Vernalis. Although a portion of this drainage area is within the SJCDWQC boundary (i.e. the Stanislaus River), this monitoring location is also the most downstream compliance point and therefore receives most of its drainage from areas outside of the Coalition region. It was therefore agreed that this monitoring location and associated compliance and reporting responsibilities would be managed by the East San Joaquin Water Quality Coalition and the Westside Water Quality Coalition.

Monitoring and reporting developed to address pesticide runoff into the Delta Waterways must be designed to collect the information necessary to do the following:

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

To establish compliance with water quality objectives (WQOs), loading capacity and loading allocations applicable to diazinon and chlorpyrifos discharges into Delta Waterways, the Coalition monitors at least one location 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 (Table 18). Each waterbody with approved chlorpyrifos and diazinon TMDLs is listed in Table 18 with the associated SJCDWQC zone. Table 19 lists the 2010 monitoring locations in each zone for which there is an approved chlorpyrifos and diazinon TMDL. Monitoring for chlorpyrifos and diazinon is conducted monthly within at least one location in a zone with the goal of monitoring at least one storm event each year.

Table 19. SJCDWQC 2010 monitoring schedule for chlorpyrifos and diazinon.

ZONE	SITE NAME	CHLORPYRIFOS	DIAZINON
2	Duck Creek @ Hwy 4	X	X
	French Camp Slough @ Airport Way	X	
	Littlejohns Creek @ Jack Tone Rd	X	X
	Lone Tree Creek @ Jack Tone Rd	X	X
	Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	X	X
3	Drain @ Woodbridge Rd	X	X
	Terminus Tract Drain @ Hwy 12	X	X
4	Grant Line Canal @ Clifton Court Rd	X	
	Grant Line Canal near Calpack Rd	X	
	Roberts Island Drain @ Holt Rd	X	X
5	Walthall Slough @ Woodward Ave	X	X

Compliance with Chlorpyrifos and Diazinon WQOs and Loading Capacity

From 2004 through 2010, there have been 86 exceedances of the chlorpyrifos WQO (0.015 µg/L) in 13 subwatersheds and 8 exceedances of the diazinon WQO (0.1 µg/L) in five subwatersheds (Table 3). In 2010, there were a total of 13 exceedances of the chlorpyrifos WQO and no exceedances of the diazinon WQO (Table 20).

In 2010, chlorpyrifos exceedances occurred in Zones 2, 3 and 4 at seven sites (Table 20). Six of the seven sites are currently high priority subwatersheds under the SJCDWQC Management Plan. Zone 2 exceedances of the chlorpyrifos WQO occurred at Duck Creek @ Hwy 4, French Camp Slough @ Airport Way, Lone Tree Creek @ Jack Tone Rd, Unnamed Drain to Lone Tree Creek @ Jack Tone Rd (also known as Temple Creek), and Littlejohn’s Creek @ Jack Tone Rd. Zone 4 exceedances of the chlorpyrifos WQO occurred at Grant Line Canal @ Clifton Court Rd and in Zone 3 exceedances occurred at Drain @ Woodbridge Rd (Table 20).

Table 20. 2010 chlorpyrifos WQTL exceedances within the SJCDWQC.

ZONE	STATION NAME	SAMPLE DATE	SEASON	CHLORPYRIFOS (µg/L)
3	Drain @ Woodbridge Rd	13/Apr/2010	Irrigation1	0.029
2	Duck Creek @ Hwy 4	11/May/2010	Irrigation2, MPM	0.055
2	Duck Creek @ Hwy 4	13/Jul/2010	Irrigation4, MPM	0.02
2	Duck Creek @ Hwy 4	10/Aug/2010	Irrigation5, MPM	0.3
2	Duck Creek @ Hwy 4	07/Sep/2010	Irrigation6, MPM	0.023
2	French Camp Slough @ Airport Way	10/Aug/2010	Irrigation5, MPM	0.022
4	Grant Line Canal @ Clifton Court Rd	07/Sep/2010	Irrigation6, MPM	0.044
2	Littlejohns Creek @ Jack Tone Rd	09/Nov/2010	Fall2	0.04
2	Lone Tree Creek @ Jack Tone Rd	13/Jan/2010	Storm1, MPM	1.1
2	Lone Tree Creek @ Jack Tone Rd	13/Jul/2010	Irrigation4, MPM	0.27
2	Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	10/Aug/2010	Irrigation5, MPM	0.039
2	Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	09/Nov/2010	Fall2	0.052
2	Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	07/Dec/2010	Fall3	0.068
Environmental Exceedances				1
Non Contiguous Waterbody Exceedances				0
Management Plan Monitoring Exceedances¹				8
DPR Monitoring Exceedances				4
TOTAL Exceedances				13

¹ Refers to Management Plan Monitoring (MPM) for specific constituents at Assessment, Core, and/or MPM locations.

Compliance with Established Load Allocations for Chlorpyrifos and Diazinon

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

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

Where

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

The Coalition reviewed all data collected from 2010 to determine compliance with the load allocation based on the above equation. There were 13 samples collected that were not compliant with established load allocations in tributaries within Coalition Zones 2, 3, and 4 during 2010, all of which experienced at least one exceedance of chlorpyrifos (Table 21). While there were no exceedances of the diazinon WQO in 2010, two samples had detections of diazinon and one (in combination with a chlorpyrifos exceedance) resulted in non-compliance at Lone Tree Creek @ Jack Tone Rd (Table 21). There were no detections of chlorpyrifos or diazinon in Zone 1 in 2010. While all loads were in compliance in Zone 5, Walthall Slough @ Woodward Ave did experience a single detection of

chlorpyrifos on March 16, 2010 (Table 20). As mentioned earlier, no waterways in Zone 6 were sampled in 2010. Data from 2004-2009 was submitted in the 2010 MPUR (Table 15, pages 45 – 49); however the tabulated data did not include non detects. Table 22 includes number of times that waterbodies within a zone have been compliant and non compliant with load allocations. The amount of monitoring in the Coalition region increased in 2007 and 2008 with the addition of Management Plan Monitoring (both upstream and additional monitoring in subwatersheds requiring management plans for chlorpyrifos or diazinon). Except for 2004, the percentage of samples in compliance with the load allocation has been around 85% with a slight decrease in 2008 (74%, Table 22). In 2004, all monitored waterbodies were in compliance with the load allocations however monitoring began late in the irrigation season and only occurred at a few locations. Although growers within high priority subwatersheds have implemented additional management practices, the overall percentage of compliant samples taken from monitored waterbodies has remained roughly the same. This is due to the focused monitoring that still occurs in the first group of high priority subwatersheds which continue to have exceedances of the WQOs. Continued exceedances may be due to 1) a lack of funds to implement structural management practices that would eliminate discharges (i.e. tailwater return systems), 2) nonmembers who are discharging chlorpyrifos and/or diazinon into downstream waterbodies and/or 3) increased pest pressures resulting in increased use during specific times of the year. Based on PUR data (see Appendix I for high priority subwatershed analysis), both chlorpyrifos and diazinon use has decreased since 2004.

Table 21. TMDL load calculations for diazinon and chlorpyrifos runoff in the Sacramento-San Joaquin Delta Waterways for nonpoint source discharges in 2010.

ZONE	STATION NAME	SAMPLE DATE	CHLORPYRIFOS (µG/L)	DIAZINON (µG/L)	LOAD	LOAD ALLOCATION COMPLIANCE
2	Duck Creek @ Hwy 4	2/9/2010	NT	<0.004	0	In Compliance
2	Duck Creek @ Hwy 4	4/13/2010	<0.0026	NT	0	In Compliance
2	Duck Creek @ Hwy 4	5/11/2010	0.055	NT	3.67	Out of compliance
2	Duck Creek @ Hwy 4	6/8/2010	<0.0026	<0.004	0	In Compliance
2	Duck Creek @ Hwy 4	7/13/2010	0.02	<0.004	1.33	Out of compliance
2	Duck Creek @ Hwy 4	8/10/2010	0.3	<0.004	20.00	Out of compliance
2	Duck Creek @ Hwy 4	9/7/2010	0.023	<0.004	1.53	Out of compliance
2	Duck Creek @ Hwy 4	10/12/2010	<0.0026	<0.004	0	In Compliance
2	Duck Creek @ Hwy 4	11/9/2010	<0.0026	<0.004	0	In Compliance
2	Duck Creek @ Hwy 4	12/7/2010	<0.0026	<0.004	0	In Compliance
2	French Camp Slough @ Airport Way	5/11/2010	<0.0026	NT	0	In Compliance
2	French Camp Slough @ Airport Way	7/13/2010	<0.0026	NT	0	In Compliance
2	French Camp Slough @ Airport Way	8/10/2010	0.022	NT	1.47	Out of compliance
2	French Camp Slough @ Airport Way	9/7/2010	0.009	NT	0.60	In Compliance
2	French Camp Slough @ Airport Way	10/12/2010	<0.0026	NT	0	In Compliance
2	Littlejohns Creek @ Jack Tone Rd	4/13/2010	<0.0026	NT	0	In Compliance
2	Littlejohns Creek @ Jack Tone Rd	6/8/2010	<0.0026	<0.004	0	In Compliance
2	Littlejohns Creek @ Jack Tone Rd	7/13/2010	<0.0026	<0.004	0	In Compliance
2	Littlejohns Creek @ Jack Tone Rd	8/10/2010	<0.0026	<0.004	0	In Compliance
2	Littlejohns Creek @ Jack Tone Rd	9/7/2010	0.013	<0.004	0.87	In Compliance
2	Littlejohns Creek @ Jack Tone Rd	10/12/2010	<0.0026	<0.004	0	In Compliance
2	Littlejohns Creek @ Jack Tone Rd	11/9/2010	0.04	<0.004	2.67	Out of compliance
2	Littlejohns Creek @ Jack Tone Rd	12/7/2010	0.014	<0.004	0.93	In Compliance
2	Lone Tree Creek @ Jack Tone Rd	1/13/2010	1.1	0.074	74.07	Out of compliance
2	Lone Tree Creek @ Jack Tone Rd	2/9/2010	<0.0026	<0.004	0	In Compliance
2	Lone Tree Creek @ Jack Tone Rd	6/8/2010	<0.0026	<0.004	0	In Compliance
2	Lone Tree Creek @ Jack Tone Rd	7/13/2010	0.27	<0.004	18.00	Out of compliance
2	Lone Tree Creek @ Jack Tone Rd	8/10/2010	0.015	<0.004	1.00	In Compliance
2	Lone Tree Creek @ Jack Tone Rd	9/7/2010	0.0086	<0.004	0.57	In Compliance
2	Lone Tree Creek @ Jack Tone Rd	10/12/2010	<0.0026	<0.004	0	In Compliance
2	Lone Tree Creek @ Jack Tone Rd	11/9/2010	<0.0026	<0.004	0	In Compliance
2	Lone Tree Creek @ Jack Tone Rd	12/7/2010	<0.0026	<0.004	0	In Compliance
2	Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	1/13/2010	<0.0026	NT	0	In Compliance
2	Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	2/9/2010	<0.0026	NT	0	In Compliance
2	Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	5/11/2010	<0.0026	NT	0	In Compliance
2	Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	6/8/2010	<0.0026	<0.004	0	In Compliance

ZONE	STATION NAME	SAMPLE DATE	CHLORPYRIFOS (µg/L)	DIAZINON (µg/L)	LOAD	LOAD ALLOCATION COMPLIANCE
2	Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	7/13/2010	0.008	<0.004	0.53	In Compliance
2	Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	8/10/2010	0.039	<0.004	2.60	Out of compliance
2	Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	9/7/2010	0.013	<0.004	0.87	In Compliance
2	Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	10/12/2010	<0.0026	<0.004	0	In Compliance
2	Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	11/9/2010	0.052	<0.004	3.47	Out of compliance
2	Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	12/7/2010	0.068	<0.004	4.53	Out of compliance
3	Drain @ Woodbridge Rd	1/13/2010	<0.0026	<0.004	0	In Compliance
3	Drain @ Woodbridge Rd	2/9/2010	<0.0026	<0.004	0	In Compliance
3	Drain @ Woodbridge Rd	3/16/2010	<0.0026	<0.004	0	In Compliance
3	Drain @ Woodbridge Rd	4/13/2010	0.029	<0.004	1.93	Out of compliance
3	Drain @ Woodbridge Rd	5/11/2010	<0.0026	<0.004	0	In Compliance
3	Drain @ Woodbridge Rd	6/8/2010	<0.0026	<0.004	0	In Compliance
3	Drain @ Woodbridge Rd	7/13/2010	<0.0026	<0.004	0	In Compliance
3	Drain @ Woodbridge Rd	8/10/2010	<0.0026	<0.004	0	In Compliance
3	Drain @ Woodbridge Rd	9/7/2010	0.0067	<0.004	0.45	In Compliance
3	Drain @ Woodbridge Rd	10/12/2010	<0.0026	<0.004	0	In Compliance
3	Drain @ Woodbridge Rd	11/9/2010	<0.0026	<0.004	0	In Compliance
3	Drain @ Woodbridge Rd	12/7/2010	<0.0026	<0.004	0	In Compliance
3	Terminus Tract Drain @ Hwy 12	1/13/2010	<0.0026	<0.004	0	In Compliance
3	Terminus Tract Drain @ Hwy 12	2/9/2010	<0.0026	<0.004	0	In Compliance
3	Terminus Tract Drain @ Hwy 12	3/16/2010	<0.0026	<0.004	0	In Compliance
3	Terminus Tract Drain @ Hwy 12	4/13/2010	<0.0026	<0.004	0	In Compliance
3	Terminus Tract Drain @ Hwy 12	5/11/2010	<0.0026	0.074	0.74	In Compliance
3	Terminus Tract Drain @ Hwy 12	6/8/2010	<0.0026	<0.004	0	In Compliance
3	Terminus Tract Drain @ Hwy 12	7/13/2010	<0.0026	<0.004	0	In Compliance
3	Terminus Tract Drain @ Hwy 12	8/10/2010	<0.0026	<0.004	0	In Compliance
3	Terminus Tract Drain @ Hwy 12	9/7/2010	0.011	<0.004	0.73	In Compliance
3	Terminus Tract Drain @ Hwy 12	10/12/2010	<0.0026	<0.004	0	In Compliance
3	Terminus Tract Drain @ Hwy 12	11/9/2010	<0.0026	<0.004	0	In Compliance
3	Terminus Tract Drain @ Hwy 12	12/7/2010	<0.0026	<0.004	0	In Compliance
4	Grant Line Canal @ Clifton Court Rd	9/7/2010	0.044	NT	2.93	Out of compliance
4	Grant Line Canal near Calpack Rd	5/11/2010	<0.0026	NT	0	In Compliance
4	Grant Line Canal near Calpack Rd	7/13/2010	<0.0026	NT	0	In Compliance
4	Grant Line Canal near Calpack Rd	8/10/2010	<0.0026	NT	0	In Compliance
4	Roberts Island Drain @ Holt Rd	1/13/2010	<0.0026	<0.004	0	In Compliance
4	Roberts Island Drain @ Holt Rd	2/9/2010	<0.0026	<0.004	0	In Compliance
4	Roberts Island Drain @ Holt Rd	3/16/2010	<0.0026	<0.004	0	In Compliance
4	Roberts Island Drain @ Holt Rd	4/13/2010	<0.0026	<0.004	0	In Compliance
4	Roberts Island Drain @ Holt Rd	5/11/2010	<0.0026	<0.004	0	In Compliance
4	Roberts Island Drain @ Holt Rd	6/8/2010	<0.0026	<0.004	0	In Compliance
4	Roberts Island Drain @ Holt Rd	7/13/2010	<0.0026	<0.004	0	In Compliance
4	Roberts Island Drain @ Holt Rd	8/10/2010	<0.0026	<0.004	0	In Compliance
4	Roberts Island Drain @ Holt Rd	9/7/2010	0.0074	<0.004	0.49	In Compliance
4	Roberts Island Drain @ Holt Rd	10/12/2010	<0.0026	<0.004	0	In Compliance

ZONE	STATION NAME	SAMPLE DATE	CHLORPYRIFOS (µg/L)	DIAZINON (µg/L)	LOAD	LOAD ALLOCATION COMPLIANCE
4	Roberts Island Drain @ Holt Rd	11/9/2010	<0.0026	<0.004	0	In Compliance
4	Roberts Island Drain @ Holt Rd	12/7/2010	<0.0026	<0.004	0	In Compliance
5	Walthall Slough @ Woodward Ave	1/13/2010	<0.0026	<0.004	0	In Compliance
5	Walthall Slough @ Woodward Ave	2/9/2010	<0.0026	<0.004	0	In Compliance
5	Walthall Slough @ Woodward Ave	3/16/2010	0.006	<0.004	0.40	In Compliance
5	Walthall Slough @ Woodward Ave	4/13/2010	<0.0026	<0.004	0	In Compliance
5	Walthall Slough @ Woodward Ave	5/11/2010	<0.0026	<0.004	0	In Compliance
5	Walthall Slough @ Woodward Ave	6/8/2010	<0.0026	<0.004	0	In Compliance
5	Walthall Slough @ Woodward Ave	7/13/2010	<0.0026	<0.004	0	In Compliance
5	Walthall Slough @ Woodward Ave	8/10/2010	<0.0026	<0.004	0	In Compliance
5	Walthall Slough @ Woodward Ave	9/7/2010	<0.0026	<0.004	0	In Compliance
5	Walthall Slough @ Woodward Ave	10/12/2010	<0.0026	<0.004	0	In Compliance
5	Walthall Slough @ Woodward Ave	11/9/2010	<0.0026	<0.004	0	In Compliance
5	Walthall Slough @ Woodward Ave	12/7/2010	<0.0026	<0.004	0	In Compliance

Table 22. SJCDWQC zone load allocation compliance for monitoring date from 2004 through 2010.

YEARS	ZONE	IN COMPLIANCE	OUT OF COMPLIANCE	PERCENT IN COMPLIANCE
2004	1	2	0	100%
	2	6	0	100%
2005	1	8		100%
	2	16	6	73%
	3	20	0	100%
	4	17	5	77%
2006	1	7	0	100%
	2	24	13	65%
	3	11	0	100%
	4	31	2	94%
2007	1	8	0	100%
	2	43	13	77%
	3	8	0	100%
	4	39	3	93%
2008	1	10	0	100%
	2	34	25	58%
	3	7	2	78%
	4	37	4	90%
	5	2	1	67%
2009	1	3	0	100%
	2	19	8	70%
	3	3	0	100%
	4	16	0	100%
	5	12	0	100%
2010	2	31	11	74%
	3	23	1	96%
	4	15	1	94%
	5	12	0	100%
2004 TOTAL		8	0	100%
2005 TOTAL		61	11	85%
2006 TOTAL		73	15	83%
2007 TOTAL		98	16	86%
2008 TOTAL		90	32	74%
2009 TOTAL		53	8	87%
2010 TOTAL		81	13	86%
GRAND TOTAL		464	95	83%

Implementation of Management Practices to Reduce Off-Site Movement of Diazinon and Chlorpyrifos

As discussed in the 2010 MPUR, the report “General Survey Summary Report” submitted by the SJCDWQC to the Regional Board on December 30, 2008 assessed management practices utilized by growers within the Coalition region. Based on 2008 membership information, 2483 members representing 322,146 acres (61% of enrolled irrigated acreage as of 2008) could be linked to a survey with at least one question completed.

Focused outreach efforts occurred in nine high priority subwatersheds in the SJCDWQC to document current management practices; newly implemented management practices have been recorded for six of the nine high priority subwatersheds. An assessment of current and newly implemented management practices is included in earlier sections of this report (Summary of Implemented Management Practices and Evaluation of Management Practice Effectiveness). Outreach efforts include meetings within high priority subwatersheds and throughout the Coalition region to inform growers about management practices that will eliminate chlorpyrifos and diazinon from agricultural discharges.

Alternatives to Diazinon and Chlorpyrifos Surface Water Quality Impacts

Alternatives to chlorpyrifos and diazinon depend on the commodity and the registration of alternative products. For many commodities, alternative products include pyrethroid pesticides. Pyrethroids are considered “safe” alternatives because of their low mammalian toxicity. However, recent research has demonstrated that they can be very toxic to aquatic organisms at extremely low concentrations. These products have very high K_{oc} values and tend to bind to sediment and can be moved to surface waters during irrigation or rainfall events. The high K_{oc} values make these products difficult to detect in water as they are seldom found in the dissolved phase. There may be additional products that qualify as organic (e.g. citrus oils) but the Coalition does not track or recommend their use because their efficacy is low relative to synthetic pesticides. From 2006 through October 2008, the Coalition analyzed for pyrethroids in the water column with no detections; however, recent research suggests that much lower detection limits can find pyrethroids in the water column. The Coalition currently monitors for sediment toxicity and if there is a toxic sample that meets the threshold for additional analysis (below 80% survival), the Coalition analyzes the sediment for pyrethroids and chlorpyrifos. Six of the eight sediment toxicities which occurred in 2010 were below the threshold and analyses were conducted for chlorpyrifos and pyrethroids (Table 23). Of the pyrethroids for which the Coalition analyzed, esfenvalerate (51.2 $\mu\text{g}/\text{kg dw}$) had the highest concentration in sample with 30% survival of *H. azteca* when compared to the control. The second highest concentration was of bifenthrin (16 $\mu\text{g}/\text{kg dw}$) followed by chlorpyrifos, cyhalothrin, permethrin, cypermethrin and fenprothrin (Table 23). Bifenthrin was detected in all samples with toxicity (Table 23). It is unknown if the switching of products from organophosphates to pyrethroids is resulting in sediment quality issues since the Coalition has only one year of sediment chemistry data and is unable to determine if the pyrethroids detected in the toxic samples were applied as a replacement for chlorpyrifos.

The Coalition collects information on pesticide use and provides this information to the Regional Board as part of the SJCDWQC Annual Monitoring Report. DPR has reported declines in overall pesticide use in 2009 and 2010. Growers are made aware that switching pesticides may lead to other water quality concerns however it is unknown to what degree growers are switching products.

Table 23. Sediment toxicity and chemistry results.

STATION NAME	SAMPLE DATE	SAMPLE TYPE CODE	H. AZTECA (PERCENT CONTROL; % SURVIVAL)	SEDIMENT PESTICIDES µG/KG DW									TOC (MG/KG DW)	MEAN GS DESCRIPTION	MEDIAN GS (MM)
				BIFENTHRIN	CHLORPYRIFOS	CYFLUTHRIN, TOTAL	CYHALOTHRIN, LAMBDA, TOTAL	CYPERMETHRIN, TOTAL	DELTA METHRIN:TRALOMETHRIN	ESFENVALERATE/FENVALERATE, TOTAL	FENPROPATHRIN	PERMETHRIN, TOTAL			
French Camp Slough @ Airport Way	07/Sep/2010	IN	1	19.6	0.87	ND	0.11	0.14	ND	2.5	0.083	ND	2350	Fine sand ¹	0.051
Grant Line Canal @ Clifton Court Rd	07/Sep/2010	IN	30	2.0	0.25	ND	1.10	ND	ND	51.3	0.2	0.27	32700	Silt ²	0.015
Terminus Tract Drain @ Hwy 12	07/Sep/2010	IN	45	10.5	4.6	ND	2.90	ND	ND	ND	ND	0.50	17900	Fine sand ¹	0.112
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	07/Sep/2010	IN	76	3.4	1.2	ND	ND	ND	ND	ND	ND	ND	7850	Silt ²	0.033
Walthall Slough @ Woodward Ave	07/Sep/2010	IN	69	1.6	ND	ND	0.54	ND	ND	ND	ND	ND	9150	Fine sand ¹	0.7
Walthall Slough @ Woodward Ave (FD)	07/Sep/2010	IN2	74	3.8	ND	ND	0.54	ND	ND	ND	ND	ND	7700	Silt ²	0.066
Walthall Slough @ Woodward Ave	07/Sep/2010	IN3	69	16.0	0.2	ND	0.67	ND	ND	0.15	ND	0.67	10800	Silt ²	0.06
Duck Creek @ Hwy 4	14/Sep/2010	IN	17	1.5	0.55	ND	ND	ND	ND	ND	ND	ND	4100	Silt ²	0.016

¹Fine Sand: 0.075 to <0.425 mm

²Silt: 0.005 to <0.075 mm

DPR-Department of Pesticide Regulation grant monitoring

IN-Integrated sample

IN2-Integrated field duplicate sample

IN3-Integrated toxicity laboratory duplicate; this sample was analyzed for chemistry to compare analytical results of samples frozen verses samples that were not frozen.

MPM-Management Plan Monitoring

ND- Not Detected

FD- Field Duplicate

GS- Grain Size

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 in the ambient sample must be known as well as all of the potential toxic chemicals in the sample. While the Coalition analyzes for numerous pesticides, there are far more pesticides applied than are covered by the standard water chemistry analysis. A full Toxicity Identification Evaluation (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 beyond the capability of the Coalition. 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 for the test species available 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, 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 confidently recognized.

The Coalition has conducted representative monitoring of *C. dubia* and *H. azteca* in Zones 1 – 5 (Table 24). The Coalition has reviewed water column toxicity to *C. dubia* to assess toxicity due to insecticides and sediment toxicity to *H. azteca* for toxicity due to pyrethroids. Results of toxic samples collected in 2010 are included in Table 25.

There was one occurrence of toxicity to *C. dubia*; it is unclear what caused the toxicity since the TIE was inconclusive. The last reported applications that could be associated with the *C. dubia* toxicity were four applications of paraquat dichloride (Firestorm) applied on 126.5 acres of alfalfa between December 20, 2009 and December 24, 2009; these applications were more than two months prior to the sampling date. Paraquat has a high K_{OC} and binds readily to suspended solids and sediment and it is highly unlikely that the paraquat applications were the source of the *C. dubia* toxicity.

To date, there have been eight occurrences of sediment toxicity to *H. azteca* (Table 25). Chemical analyses were performed on six of the toxic samples which met the toxicity threshold and chlorpyrifos and/or pyrethroids were detected in all of the samples (Table 25). Further conclusions about the source(s) of the chemicals responsible for the toxicities are unclear as PUR data were not available to review at the time of this report.

Although there was a high percentage of samples that tested toxic to *H. azteca*, it cannot be assumed that this is the result of switching from chlorpyrifos to pyrethroids. The number of toxic samples in 2010 increased from 2009 however this may be due to a variety of reasons including 1) additional monitoring at sites with management plans for sediment toxicity, 2) additional use of pyrethroids in general resulting in greater pyrethroids and therefore greater toxicity in the sediment samples and/or 3) other

factors contributing/causing sediment toxicity. In 2009, there was no MPM conducted for sediment and therefore only one location was sampled and it was non toxic. When compared to 2008 sediment results, the number of toxic samples decreased in 2010 (10 toxic samples in 2010, 8 toxic samples in 2009). The single toxicity of *C. dubia* in water samples indicates an improvement from previous monitoring years within the Coalition area. Although chlorpyrifos WQOs continue to be exceeded, water column monitoring in 2010 indicates a reduction in water column toxicity impairments.

Table 24. SJCDWQC January-December 2010 Monitoring Schedule for water column and sediment toxicity.

ZONE	SITE NAME	<i>C. DUBIA</i>	<i>H. AZTECA</i> ¹
1	Mokelumne River @ Bruella Rd		
	Duck Creek @ Hwy 4	X	X
	French Camp Slough @ Airport Way		X
2	Littlejohns Creek @ Jack Tone Rd		X
	Lone Tree Creek @ Jack Tone Rd		X
	Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	X	X
3	Drain @ Woodbridge Rd	X	X
	Terminus Tract Drain @ Hwy 12	X	X
4	Grant Line Canal @ Clifton Court Rd		X
	Grant Line Canal near Calpack Rd		X
	Roberts Island Drain @ Holt Rd	X	
5	Walthall Slough @ Woodward Ave	X	X

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

Table 25. Water column and sediment toxicity exceedance summary (2010).

If a field duplicate and an environmental sample both have an exceedance, only the environmental sample exceedance is included in this table.

STATION NAME	SAMPLE DATE	SPECIES	TOXICITY END POINT	MEAN	PERCENT CONTROL	TOXICITY SIGNIFICANCE	SUMMARY COMMENTS
Roberts Island Drain @ Holt Rd	3/16/2010	<i>C. dubia</i>	Survival (%)	75	75	SL	
Drain @ Woodbridge Rd	9/7/2010	<i>H. azteca</i>	Survival (%)	85	88	SG	
French Camp Slough @ Airport Way	9/7/2010	<i>H. azteca</i>	Survival (%)	1	1	SL	
Grant Line Canal @ Clifton Court Rd	9/7/2010	<i>H. azteca</i>	Survival (%)	29	30	SL	Chlorpyrifos and pyrethroids detected.
Grant Line Canal near Calpack Rd	9/7/2010	<i>H. azteca</i>	Survival (%)	88	91	SG	
Terminus Tract Drain @ Hwy 12	9/7/2010	<i>H. azteca</i>	Survival (%)	44	45	SL	Pyrethroids detected.
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	9/7/2010	<i>H. azteca</i>	Survival (%)	74	76	SL	Chlorpyrifos and pyrethroids detected.
Walthall Slough @ Woodward Ave	9/7/2010	<i>H. azteca</i>	Survival (%)	67	69	SL	Chlorpyrifos and pyrethroids detected.
Duck Creek @ Hwy 4	9/14/2010	<i>H. azteca</i>	Survival (%)	15	17	SL	Sample retested due to highly variable replicate response; retest not toxic.

MPM – Management Plan Monitoring

SG-Statistically significantly different from control; Greater than 80% threshold

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

*Additional DPR Grant Monitoring

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

A determination of technical and economical feasibility of achieving the lowest pesticide levels possible needs to be done 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 have no 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 is publicizing the current funding available through the Proposition 84 grant program run by the Coalition for Urban/Rural Environmental Stewardship (CURES) and is working with local NRCS offices to notify growers of available grant funds. These programs offer several million dollars towards the implementation of structural management practices within the Coalition region. However, it will take a few years before the Proposition 84 funding is able to make an improvement in water quality. Also, there remain many growers who are not members of the Coalition and improvement of their operations is not possible through Coalition efforts.

It is technically feasible to eliminate all discharges of chlorpyrifos and diazinon to surface waters, although it could require steps that are not economically feasible for even the most profitable operations. It does seem possible to reduce discharges to surface waters to the point that they do not impair beneficial uses. Within the SJCDWQC region, there has been a reduction in the number of exceedances of chlorpyrifos (diazinon exceedances are almost nonexistent in the Coalition region) from 2008 to 2010. Consequently, the Coalition believes that management practices implemented by growers are resulting in a reduction of discharges, and that it is in the process of achieving the lowest pesticide levels technically and economically achievable.

SALT AND BORON

The Regional Board and stakeholders initiated the Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS) in July 2008 to facilitate efforts needed for the efficient management of salinity in the Central Valley. The Regional Board and State Water Board have initiated this comprehensive effort to address salinity problems in California's Central Valley and adopt long-term solutions that will lead to improved water quality and economic sustainability with the goal of developing a Salt and Boron Basin Plan Amendment. The Coalition monitors for salt (specific conductance) in every zone and boron in two zones (Table 26). Coalition representatives attend CV-SALTS meetings and participate in planning and reviewing studies relevant to the development of a Basin Plan amendment for salt and boron (Table 26). Coalition technical consultants participated in several CV SALTS committees including the Technical Advisory Committee, the Knowledge Gained and BMP Subcommittees (Table 27).

Salt and boron in the San Joaquin River (Stanislaus River to Delta Boundary) is listed as an approved TMDL. In 2010, salt and boron were monitored within Zone 5 at Walthall Slough @ Woodward (Table 27). In compliance with the Basin Plan, 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 26. SJCDWQC January-December 2010 Monitoring Schedule for salt (Specific Conductance) and boron.

ZONE	SITE NAME	SPECIFIC CONDUCTANCE	BORON (TOTAL)
1	Mokelumne River @ Bruella Rd	X	
2	Duck Creek @ Hwy 4	X	
	French Camp Slough @ Airport Way	X	
	Littlejohns Creek @ Jack Tone Rd	X	
	Lone Tree Creek @ Jack Tone Rd	X	
	Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	X	
3	Drain @ Woodbridge Rd	X	X
	Terminus Tract Drain @ Hwy 12	X	X
4	Grant Line Canal @ Clifton Court Rd	X	
	Grant Line Canal near Calpack Rd	X	
	Roberts Island Drain @ Holt Rd	X	
5	Walthall Slough @ Woodward Ave	X	X

Table 27. CV-SALTS meetings attended by Coalition consultants during 2010.

CONSTITUENT / ORGANIZATION	MEETING DATE	COALITION REPRESENTATIVE IN ATTENDANCE	MEETING TITLE
Boron & Salt / CV-SALTS	1/21/2010	MJ, MT	Technical Advisory Committee Meeting
Boron & Salt / CV-SALTS	2/10/2010	MJ, MT	Technical Advisory Committee Meeting
Boron & Salt / CV-SALTS	3/11/2010	MJ, MT	Joint CVRWQCB and Economic and Technical Advisory Committee Meeting
Boron & Salt / CV-SALTS	4/21/2010	MJ, MT	Technical Advisory Committee Meeting
Boron & Salt / CV-SALTS	5/13/2010	MJ, MT	Technical Advisory Committee Meeting
Boron & Salt / CV-SALTS	7/15/2010	MJ, MT	Technical Advisory Committee Meeting
Boron & Salt / CV-SALTS	8/12/2010	MJ, MT	Technical Advisory Committee Meeting

MJ – Michael Johnson, MLJ-LLC

MT – Melissa Turner, MLJ-LLC

DISSOLVED OXYGEN

To demonstrate compliance with the Basin Plan and “The Control Program for Factors Contributing to the Dissolved Oxygen (DO) Impairment in the Stockton Deep Water Ship Channel”, agriculturally-influenced tributaries to the San Joaquin River are routinely monitored in Zones 1 - 5, as described in the Coalition’s MRPP (page 53-64). Zones 2, 4 and 5 have the potential to drain into the Stockton Deep Water Ship Channel which has an approved TMDL for dissolved oxygen (Table 18). The depression of DO in the ship channel has been a significant problem for numerous years and the source area of the problem has been identified to be mostly outside of the Coalition boundary and not within the Coalition’s area of influence. However, the Coalition is addressing DO exceedances through the Management Prioritization process (SJCDWQC Management Plan submitted August 25, 2008). In addition, the Coalition has participated in the DO TMDL Technical Working Group meetings (<http://www.sjrdotmdl.org/meetings.html>). The DO TMDL Technical Working Group held five meetings (Table 28) during 2010 to discuss the progress of several studies and pilot programs. These include the

upper San Joaquin River DO project and the performance of the aeration facility in the Deep Water Ship Channel. At this point, the Regional Board is in negotiations with stakeholders to determine which entity is willing to fund the operation and maintenance of the aeration facility and maintain the DO content of the water in the deep water ship channel above the threshold dictated by the Basin Plan amendment. The role of the Coalition in this process is unknown at this time.

In general, the Coalition is working to comply with the DO Basin Plan load allocations for oxygen demanding substances by December 2011.

Table 28. DO TMDL Technical Working Group Meetings.

DATE	PARTICIPANTS
03/23/2010	MT, MJ
04/20/2010	MT, MJ
06/24/2010	MT, MJ
10/21/2010	MT
12/14/2010	MT

MJ – Michael Johnson, MLJ-LLC

MT – Melissa Turner, MLJ-LLC

METHYL MERCURY

The Regional Board adopted on April 22, 2010 a Sacramento River and San Joaquin River Delta mercury control program. Several meetings have been held over the past year as part of the stakeholder process. Coalition representatives John Herrick, John Brodie and Mike Wackman attend many of the Stakeholder meetings to ensure the Coalition is well informed. The Coalition will incorporate the outcomes of the mercury control plan into its management plan so that members remain in compliance and continue to implement measures to improve water quality.

SITE SUBWATERSHED MANAGEMENT PLAN UPDATE

Below are brief descriptions of all site subwatersheds included the SJCDWQC Management Plan as of April 1, 2011. The descriptions cover both subwatersheds that are listed as currently high priority and those that will reach high priority status in the future. Further analysis of high priority site subwatersheds is included in Appendix I.

Drain @ Woodbridge Rd

Monitoring at the Drain @ Woodbridge Rd began in 2008 and has continued since that time. In 2010 Assessment monitoring occurred during every month of the year and all constituents were monitored. Numerous exceedances of the WQTL have occurred at this location since monitoring began (DO, SC, TDS, *E. coli*, arsenic, chlorpyrifos, and sediment toxicity to *Hyalella azteca*). Drain @ Woodbridge Rd has been added to the Coalition's priority subwatershed list and will begin high priority monitoring in 2014-2016.

Duck Creek @ Hwy 4

The Duck Creek @ Hwy 4 site subwatershed is one of the rotating Assessment Monitoring locations within the SJCDWQC French Camp Slough @ Airport Way Zone. Duck Creek @ Hwy 4 is scheduled to be monitored as an Assessment Monitoring location under the current MRPP in 2012. Management Plan Monitoring for the Coalition was initiated at Duck Creek @ Hwy 4 in June of 2007 and Duck Creek @ Hwy 4 became a high priority subwatershed in 2008. Duck Creek was monitored for chlorpyrifos during the 2007 and 2008 irrigation seasons and for toxicity to *Ceriodaphnia dubia* and *Selenastrum capricornutum* during the 2009 irrigation season as a part of MPM. In 2010, MPM was conducted for chlorpyrifos (irrigation season), diazinon (February), toxicity to *Ceriodaphnia dubia* (April, July and September), and toxicity to *Selenastrum capricornutum* (February, April and May).

During 2010, additional samples were collected for chlorpyrifos, diazinon, and sediment toxicity to *H. azteca* as part of a Department of Pesticide Regulation (DPR) grant to reduce the impact of agricultural discharge on water quality. The DPR grant monitoring began in June 2010 and continued through February 2011. Management Plan Monitoring will continue during 2011 at this site for toxicity to *C. dubia* (April, July and September), *S. capricornutum* (February-May), chlorpyrifos (April-September) and diazinon (February). Due to continued exceedances of the chlorpyrifos WQTL (May, July, August and September) in 2010, additional contacts have been made with growers with direct drainage to Duck Creek (both members and non-members of the coalition). Additional recommendations for new management practice have been made and the coalition is hopeful that improvements in water quality will be made in the next year.

French Camp Slough @ Airport Way

French Camp Slough @ Airport Way is a Core Monitoring location under the new MRPP, but the site is scheduled for Assessment Monitoring during 2011. Core monitoring is scheduled to resume again in January 2012. Management Plan Monitoring began at French Camp Slough in 2007. In 2007, MPM for copper (June-August) and chlorpyrifos (July and August) occurred. In 2008 and 2009, no MPM was scheduled. In 2010, MPM occurred for *Selenastrum* toxicity (April), copper (May through August),

chlorpyrifos (May and July through October), dieldrin (July), and toxicity to *Hyalella* (September). In 2010, numerous exceedances of the DO, *E. coli*, and chlorpyrifos WQTLs occurred as well as sediment toxicity during 2010 MPM. In 2011, French Camp Slough @ Airport Way is scheduled for Assessment Monitoring where all priority constituents will be monitored monthly, and the Coalition continues to conduct MPM at the upstream sites along Lone Tree Creek Unnamed Drain to Lone Tree Creek and Littlejohns Creek. French Camp Slough is a high priority subwatershed from 2011 through 2013 where MPM is scheduled to occur for copper (January and May-August), chlorpyrifos (February, May and July-October), diazinon (January and February), diuron (January and February) and toxicity to *C. dubia* (February and March), *S. capricornutum* (February and April) and *H. azteca* (March and September).

Grant Line Canal @ Clifton Court Rd

Starting in October 2008, Grant Line Canal @ Clifton Court Rd was removed from the monitoring schedule and became an Assessment site under the new Monitoring Reporting Program Plan (MRPP). It is scheduled to be monitored for all Assessment constituents in 2026-2027. Management Plan Monitoring for copper occurred at Grant Line Canal @ Clifton Court Rd in 2007. The site subwatershed was monitored twice a month for copper in 2007 during June, July and September. Monitoring at Grant Line Canal @ Clifton Court Rd continued to through the storm and irrigation season of 2008. During 2009, no monitoring occurred. Grant Line Canal @ Clifton Court Rd became a high priority subwatershed in 2010. In 2010, MPM took place at for copper (May-September), chlorpyrifos (September), toxicity to *S. capricornutum* (May), and sediment toxicity to *H. azteca* (September). Water column toxicity to *S. capricornutum* (May) sediment toxicity to *H. azteca* (September) and a chlorpyrifos exceedance (September) occurred during 2010 MPM. During 2011, MPM will continue during months of past exceedances.

Grant Line Canal near Calpack Rd

Starting in October 2008, Grant Line Canal near Calpack Rd was removed from the monitoring schedule and became an Assessment site under the new Monitoring Reporting Program Plan (MRPP). It is scheduled for Assessment Monitoring in 2028-2029. Management Plan Monitoring occurred at Grant Line Canal near Calpack Rd in 2007 for chlorpyrifos and toxicity to *C. dubia*. The site subwatershed was monitored twice a month for chlorpyrifos during July and August 2007 and twice for *C. dubia* toxicity during July 2007. Monitoring at Grant Line Canal near Calpack Rd continued through 2008. No monitoring occurred in 2009. Grant Line Canal near Calpack Rd became a high priority subwatershed in 2010. In 2010, MPM occurred for chlorpyrifos (May-August), toxicity to *S. capricornutum* (April-July), and sediment toxicity to *H. azteca* (September). The only MPM exceedance to occur at Grant Line near Calpack Rd during 2010 was sediment toxicity (September). During 2011, MPM will continue in months of past exceedances.

Kellogg Creek along Hoffman Lane

Kellogg Creek along Hoffman Lane will become an Assessment Monitoring location under the new MRPP in 2035. Coalition ambient monitoring at the Kellogg Creek @ Hwy 4 sampling site was initiated in the storm season of 2004/2005 and was conducted for three seasons, ending with the storm season of 2005/2006. During monitoring, exceedances of field and physical parameters, *E. coli*, metals, nutrients, pesticides, and sediment and water column toxicity have occurred. In 2007, Management Plan Monitoring was implemented at the Kellogg Creek along Hoffman Lane site for *Pimephales* toxicity. All samples collected during the 2007 irrigation season, including Management Plan Monitoring, had 100%

survival to *Pimephales*. Additional MPM occurred at Kellogg Creek along Hoffman Lane in 2008 for *Ceriodaphnia* toxicity (April) and copper (July). Since *Pimephales* toxicity had not occurred since 2005 the Coalition did not conduct Management Plan monitoring during the 2008 irrigation season. During MPM in 2008, exceedances of the DO, pH, and copper WQTLs and sediment toxicity to *H. azteca* and water column toxicity to *S. capricornutum* occurred. During 2011, the Coalition is scheduled to collect MPM samples for *C. dubia* toxicity (February-April), *S. capricornutum* toxicity (April, May and August), copper (February and July), chlorpyrifos (February) and sediment toxicity to *H. azteca* (March and September). This site is scheduled to become a high priority subwatershed location in 2012-2014.

Littlejohns Creek @ Jack Tone Rd

Starting in October 2008, Littlejohns Creek @ Jack Tone Rd was removed from the monitoring schedule and became an Assessment site under the new Monitoring Reporting Program Plan (MRPP). It is scheduled for Assessment Monitoring in 2013-2014. Management Plan Monitoring occurred within the Littlejohns Creek site subwatershed in 2007 and 2008 for chlorpyrifos and toxicity to *S. capricornutum*. Littlejohns Creek was monitored twice in July for chlorpyrifos and twice in August for *S. capricornutum* toxicity in 2007. Ambient water monitoring conducted at Littlejohns Creek @ Jack Tone Rd continued through the 2008 irrigation season. Management Plan Monitoring did not occur during 2009. Littlejohns Creek became a high priority subwatershed in 2010. MPM was conducted for copper (May-June and September), chlorpyrifos (April and June-July), and toxicity to *S. capricornutum* (April, July and August). Exceedances of DO, copper and chlorpyrifos continued to occur during 2010 MPM.

Additional samples were collected for chlorpyrifos and diazinon (June-December) and for sediment toxicity (September) as part of a DPR grant to reduce the impact of agricultural discharge on water quality. The DPR grant monitoring continued through February 2011. During 2011, MPM is scheduled to continue during months of past exceedances.

Lone Tree Creek @ Jack Tone Rd

The Lone Tree Creek site subwatershed is one of the rotating Assessment Monitoring locations within the SJCDWQC French Camp Slough @ Airport Way Zone. Lone Tree Creek @ Jack Tone Rd is scheduled to be monitored as an Assessment Monitoring location in 2026. Management Plan Monitoring for the Coalition was initiated during June of 2007 and included additional sampling at Lone Tree Creek @ Jack Tone Rd for chlorpyrifos (July and August). Lone Tree Creek @ Jack Tone Rd became a high priority subwatershed in 2008. During 2009 irrigation seasons MPM for *S. capricornutum* toxicity (April-May), chlorpyrifos (July-August) and copper (July-September) occurred. In 2010, MPM for *S. capricornutum* toxicity (January-May), copper (January-February and July-September), chlorpyrifos (January-February and July-August), diazinon, and diuron (January-February) occurred. Due to continued exceedances of the chlorpyrifos WQTL (January and July) in 2010, MPM at Lone Tree Creek @ Jack Tone Rd is scheduled to continue in 2011 during months of past exceedances.

During 2010, additional samples were collected for chlorpyrifos, diazinon, and sediment toxicity to *H. azteca* as part of a DPR grant to reduce the impact of agricultural discharge on water quality. The DPR grant monitoring began in June 2010 and continued through February 2011.

Mokelumne River @ Bruella Rd

Mokelumne River @ Bruella Road is a Core Monitoring location under the new MRPP, but this site is scheduled for Assessment Monitoring during 2011 where all priority constituents will be analyzed monthly; copper (June-August) and *S. capricornutum* (March-May and July-August). Core monitoring will resume at this location again in 2012. Mokelumne River is a high priority subwatershed from 2011 through 2013. Management Plan Monitoring began at Mokelumne River @ Bruella Rd in 2007. In 2007, MPM for water column toxicity to *C. dubia* and *S. capricornutum* took place during the irrigation months (April-September). In 2008, MPM was conducted during the irrigation season of 2008 at Mokelumne River @ Bruella Rd for copper (June, July and August), *C. dubia* toxicity (June and September) and *S. capricornutum* toxicity (May, July and August). In 2009, no MPM was scheduled and Core Monitoring took place. In 2010, MPM occurred at Mokelumne River @ Bruella Rd for *S. capricornutum* toxicity (April, May, July and August) and for total and dissolved copper (June-August). The only exceedance to occur at Mokelumne River during 2010 MPM was for pH.

Mormon Slough @ Jack Tone Road

Mormon Slough @ Jack Tone Rd is scheduled for Assessment Monitoring under the new MRPP beginning in 2017. Monitoring at the Mormon Slough @ Jack Tone Rd sampling site was initiated in the irrigation season of 2006 and continued through 2008. Exceedances of WQTLs for field parameters, *E. coli*, pesticides, and sediment and water column toxicity have occurred. Management Plan Monitoring was not conducted during the 2007 irrigation season. Additional Management Plan Monitoring occurred for chlorpyrifos (May and September) in 2008. Samples collected in 2008 resulted in exceedances of WQTLs for DO, pH, chlorpyrifos, methyl parathion, and simazine, and toxicity to *C. dubia* and *S. capricornutum*. During 2011, the Coalition is scheduled to collect MPM samples for *C. dubia* toxicity (May and September), *S. capricornutum* toxicity (April, May and July) and chlorpyrifos (May, July, August and September). This site is scheduled to become a high priority subwatershed location in 2012-2014.

Roberts Island Drain @ Holt Rd

Roberts Island Drain @ Holt Rd will be a Core Monitoring location under the new MRPP in 2011. Monitoring was initiated at the Roberts Island Drain @ Holt Rd monitoring site during the irrigation season of 2006 and has continued since that time. In 2007, MPM was implemented at the Roberts Island Drain @ Holt Rd monitoring site for lambda cyhalothrin. During 2008, no constituents were monitored at Roberts Island Drain @ Holt Rd. This site was sampled for Core Monitoring constituents in 2009 and 2010. During the monitoring history of this site, exceedances of field and physical parameters, *E. coli*, pesticides and water column and sediment toxicity have been detected. In 2011, Assessment Monitoring is scheduled to occur and this site is scheduled to become a high priority subwatershed location in 2013-2015.

Roberts Island Drain along House Rd

Monitoring was initiated at the Roberts Island Drain along House Rd monitoring site during the irrigation season of 2006 and continued through 2008. In 2007, MPM was implemented at the Roberts Island Drain along House Rd site for lambda cyhalothrin. Normal monitoring occurred at this site during 2008. Exceedances of WQTLs for field and physical parameters, *E. coli*, pesticides, water column and sediment

toxicity have occurred at this site. A summary and discussion of these exceedances is provided in the next section. Roberts Island Drain along House Road is not scheduled for Assessment Monitoring under the new MRPP until after 2035. This site is scheduled to become a high priority subwatershed location in 2013-2015.

Sand Creek @ Hwy 4 Bypass

Sand Creek @ Hwy 4 Bypass will be an Assessment Monitoring location under the new MRPP in 2035. Coalition ambient water monitoring at the Sand Creek @ Hwy 4 Bypass sampling site was initiated in the irrigation season of 2006 and continued through 2008. During monitoring, exceedances of WQTLs occurred for field and physical parameters, *E. coli*, and pesticides, and sediment and water column toxicity occurred. In 2007, MPM was implemented at the Sand Creek @ Hwy 4 Bypass for dieldrin and chlorpyrifos and for water column toxicity to *C. dubia*. WQTL exceedances occurred in 2007 monitoring of DO, SC, TDS, *E. coli*, DDE, and sediment toxicity to *H. azteca*. During 2008, additional MPM was conducted at Sand Creek for chlorpyrifos (May and June), dieldrin (May), and for *Ceriodaphnia* toxicity (May, June and July). In 2008, exceedances of WQTLs for DO, SC, TDS, *E. coli*, DDD, DDE, DDT, diazinon, dieldrin, and disulfoton, and water column toxicity to *S. capricornutum* and sediment toxicity to *H. azteca* occurred. During 2011, the Coalition is scheduled to collect MPM samples for *C. dubia* toxicity (May, June and July), *S. capricornutum* toxicity (April and August), chlorpyrifos (May and June), diazinon (January and July), dieldrin (May, June and August), disulfoton (May, June and August) as well as sediment toxicity to *H. azteca* (March and September). This site is scheduled to become a high priority subwatershed location in 2012-2014.

Terminus Tract Drain @ Hwy 12

Terminus Tract @ Hwy 12 is a Core Monitoring location under the new MRPP. This site is being monitored for Assessment Monitoring constituents in 2011 and will return to Core Monitoring constituents in 2012. Monitoring for metals began during the irrigation season of 2006. During sampling at this site, exceedances of WQTLs for field and physical parameters, *E. coli*, metals, and pesticides, and sediment and water column toxicity have occurred. No MPM occurred at Terminus Tract Drain in 2007 or 2008. Terminus Tract Drain was monitored for Core Monitoring constituents in 2009. In 2010, MPM was initiated for water column toxicity to *S. capricornutum* (April and May) and chlorpyrifos (August and September). There were no exceedances of the WQTL nor were there any toxic samples during 2010 MPM. Terminus Tract Drain @ Hwy 12 is a high priority subwatershed from 2011 through 2013 where MPM is scheduled to occur. Management Plan Monitoring in 2011 includes chlorpyrifos (August-September) and toxicity to *S. capricornutum* (January-May).

Unnamed Drain to Lone Tree Creek @ Jack Tone Rd

Management Plan Monitoring for the Coalition was initiated at Unnamed Drain to Lone Tree Creek @ Jack Tone Rd during the 2007 irrigation season and included additional sampling at Unnamed Drain to Lone Tree Creek @ Jack Tone Rd for chlorpyrifos (July and September). Unnamed Drain to Lone Tree Creek @ Jack Tone Rd became a high priority subwatershed in 2008. In 2009, MPM included sampling during all months of the irrigation seasons for chlorpyrifos, copper, *C. dubia* toxicity, and *S. capricornutum* toxicity.

Beginning in July 2010 additional monitoring was conducted at Unnamed Drain to Lone Tree Creek @ Jack Tone Rd as part of a DPR grant to reduce the impact of agricultural discharge on water quality. The

DPR grant monitoring will continue through February 2011. In addition to the DPR grant samples in 2010, MPM was conducted for copper (April-May and July-September), chlorpyrifos (January-February, May-July and September), diuron and simazine (January-February), *C. toxicity* (January-February and September), *S. capricornutum* toxicity (February-March and May), and *H. azteca* sediment toxicity (September). Due to continued exceedances of the chlorpyrifos (August, November and December) and copper (April) WQTLs in 2010, MPM at Unnamed Drain to Lone Tree Creek @ Jack Tone Rd is scheduled to continue in 2011 during months of past exceedances.

Walthall Slough @ Woodward Ave

Assessment Monitoring at Walthall Slough @ Woodward Ave began in 2009 and continued through 2010. During this time numerous exceedances of WQTLs for field and physical parameters, *E. coli*, and pesticides, and water column and sediment toxicity have occurred at this site. In 2011, Core Monitoring will occur and this location is now scheduled for high priority subwatershed monitoring to begin in 2013-2015. This site is scheduled to become a high priority subwatershed location in 2013-2015.