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November 30, 2010

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

Subject: Westside San Joaquin River Watershed Coalition
Submittal of November 30, 2010 semi-annual monitoring report

Dear Pamela,

Attached is the November 30, 2010 semi-annual monitoring report as required under our Monitoring and Reporting Program Order No. R5-2008-0831. This report covers the irrigation season monitoring from March 2010 through August 2010.

Laboratory reports associated with this monitoring period are included electronically (on a CD) as Appendix C, along with associated electronic data deliverables (EDDs). Hard copies of the laboratory reports can be provided upon request.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for violations.

If you should have any questions on the information submitted in this report, please give me a call directly at 559-582-9237.

Joseph C. McGahan
Watershed Coordinator
Westside San Joaquin River Watershed Coalition

San Joaquin Valley Drainage Authority

Westside San Joaquin River Watershed Coalition

Semi-Annual Monitoring Report
2010 Irrigation Season Report

Covering the period: March through August 2010
(Sampling Events 65 through 70)

November 30, 2010

Prepared by:
Summers Engineering, Inc.
Consulting Engineers
Hanford California

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SECTION 1: EXECUTIVE SUMMARY

This report covers the 2010 irrigation season sampling events beginning March 2010 through August 2010 (Event 65 through Event 70). Nineteen of the 26 monitoring sites within the Westside San Joaquin River Watershed Coalition (Westside Coalition) are located on streams that are dominated by summer agricultural drainage runoff, most of which discharge during the irrigation season. There was measurable precipitation in the Patterson, Los Banos, and Dos Palos subareas during March, April, and May, with April precipitation exceeding 1.4" in all three regions. However there did not appear to be any runoff contribution from the associated rainfall. See **Section 3** for a discussion of measured rainfall. Irrigation season samples were collected at all sites containing sufficient water in accordance with the Westside Coalition's Monitoring and Reporting Plan (MRP – see MRP Order No. R5-2008-0831). Additionally, sediment samples were collected in March 2010 at 10 sites and tested for toxicity. Sediment toxicity was observed at Ingram Creek, Hospital Creek and Del Puerto Creek near Cox Road. See **Sections 6** and **8.**

Attachment 1 details the samples collected at each site during each sampling event. A summary of the monitoring results is presented in **Appendix A**. Significant aquatic toxicity was measured six times, three of which were for *Ceriodaphnia dubia*, two for algae, and one for fathead minnow. The fathead minnow observed toxicity was measured in the field duplicate sample, but not in the event sample. These are summarized in **Table 1** below.

Table 1: Summary of Toxicity

Event	Site	Species/% Survival or % Control Growth
Event 65 (March)	Del Puerto Creek at Hwy 33	*Ceriodaphnia dubia* - 40% survival
Event 67 (May)	Marshall Road Drain	*Ceriodaphnia dubia* - 0% survival
Event 67 (May)	Westley Wasteway	Algae - 77% of Control
Event 68 (June)	Westley Wasteway	Algae - 45% of Control
Event 70 (August)	Turner Slough	*Ceriodaphnia dubia* - 75% survival
Event 70 (August)	Los Banos Creek at China Camp Rd. (Field Duplicate only)	Fathead Minnow - 87.5% survival

During Event 69 (July) the *Ceriodaphnia dubia* control sample did not meet acceptability criteria for all samples. Retests were initiated two days later and all tests were completed successfully. These results, along with associated water quality and flow data, are summarized in **Attachment 2**. Details of the aquatic toxicity analyses are shown in **Appendix C**.

Quality control samples were collected in addition to the event analysis sample. The quality control samples included field blanks, field duplicates, and matrix spike/matrix spike duplicate samples (MS/MSD).

There were also a handful of minor quality control issues, including apparent contamination of field blank samples and exceedance of the field duplicate relative percent difference (RPD) value. None of these issues are expected to affect data usability. Results of the Quality Control samples are discussed in **Section 4** and **Attachment 3**.

Four sites within San Luis Water District (SLWD) were monitored monthly in accordance with the Monitoring and Reporting Plan. SLWD has implemented an aggressive tailwater prohibition and none of these sites discharged during this reporting period. During Event 65 (March), Los Banos Reservoir discharged into Los Banos Creek at Sunset Avenue. Although the discharge was not a direct result from rainfall, storm event samples were collected at this site. No flow was measured at any of the other monitoring sites within SLWD for this reporting period.

Table 2: March through August 2010 Sampling Events Summary

Map Designation	Monitoring Site	Event 65		Event 66	Event 67	Event 68	Event 69	Event 70
	Discharge Sites	Mar		Apr	May	June	Jul	Aug
1	Hospital Cr at River Road	NF	SS	S	S	S	S	S
2	Ingram Cr at River Road	S	SS	S	S	S	S	S
3	Westley Wasteway near Cox Road	NA	NA	NA	S	S	S	S
4	Del Puerto Cr near Cox Road	S	SS	S	S	S	S	S
5	Del Puerto Cr at Hwy 33	S	SS	S	NF	NF	NF	NF
7	Ramona Lake near Fig Avenue	S	SS	S	S	S	S	S
8	Marshall Road Drain near River Road	NF	NP	NF	S	S	S	S
9	Orestimba Cr at River Road	S	SS	S	S	S	S	S
10	Orestimba Cr at Hwy 33	S	SS	S	S	S	S	S
11	Newman Wasteway near Hills Ferry Road	S	SS	S	S	S	S	S
13	San Joaquin River at Lander Avenue	S	NP	S	S	S	S	S
14	Mud Slough u/s San Luis Drain	S	NP	S	S	S	S	S
15	Salt Slough at Lander Avenue	S	NP	S	S	S	S	S
16	Salt Slough at Sand Dam	S	NP	S	S	S	S	S
17	Los Banos Creek at Highway 140	S	NP	S	S	S	S	S
18	Los Banos Creek at China Camp Road	S	SS	S	S	S	S	S
19	Turner Slough near Edminster Road	S	NP	S	S	S	S	S
20	Blewett Drain near Highway 132	NF	NP	S	S	S	S	S
21	Poso Slough at Indiana Avenue	S	NP	S	S	S	S	S
24	Los Banos Creek at Sunset Ave	S	SS	NF	NF	NF	NF	NF
25	Little Panoche Cr at Western Boundary	NF	NF	NF	NF	NF	NF	NF
26	Little Panoche Cr at San Luis Canal	NF	NF	NF	NF	NF	NF	NF
27	Russell Ave. Drain at San Luis Canal	NF	NF	NF	NF	NF	NF	NF
	Source Water Sites							
12	San Joaquin River at Sack Dam	S	NP	S	S	S	S	S
22	San Joaquin River at PID Pumps	S	NP	S	S	S	S	S
23	Delta Mendota Canal at Del Puerto WD	S	NP	S	S	S	S	S

Notes: S = Water sampled according to the MRP.
SS = Sediment sampled according to the MRP.
NA = Not sampled due to lack of safe access.
NF = Not sampled due to lack of flow.
NP = Not included in the sampling plan.

SECTION 2: COALITION AND MONITORING PROGRAM DESCRIPTION

In June, 2003, the San Joaquin Valley Drainage Authority (SJVDA) submitted a Conditional Waiver Report for the Westside San Joaquin River Watershed Coalition (Westside Coalition). The Westside Coalition watershed generally lies on the westside of the San Joaquin River from approximately the Stanislaus River on the north to 10 miles south of Mendota and encompasses an area of approximately 460,500 acres. There are approximately 4,000 landowners and 1,500 operators within the watershed. Most of the watershed receives water supplies from the Central Valley Project, while certain areas receive water from the State Water Project. In addition, some areas receive supplies from the San Joaquin River and local water sources, one area receives a Kings River supply, and some areas receive water from groundwater wells. The Delta-Mendota Canal and San Luis Canal run through the center of the watershed. Water deliveries are made to Federal Central Valley Project Contractors and to San Joaquin River Exchange Contractors from these facilities. State water deliveries are also made to one area.

The Grassland Drainage Area encompasses 97,400 acres that are geographically within the watershed. The Grassland Drainage Area is covered under waste discharge requirements (No. 5-01-234), which regulates the discharge of subsurface drainage water through the San Luis Drain to the San Joaquin River. Tailwater is aggressively controlled and not allowed to discharge from the region. The area coordinates its separate monitoring and reporting program under the above waste discharge requirements.

The described Westside Coalition area also includes federal, state and private managed wetlands. These areas share water delivery and drainage conveyance systems with the surrounding agricultural areas. Due to the integrated nature of the water facilities the managed wetlands have joined the Westside Coalition as a wetland sub-watershed participant to comply with the Conditional Waiver and effectively and efficiently address water quality issues. The effects of discharges from the wetland areas are covered in this monitoring program.

The communities of Grayson, Westley, Vernalis, Crows Landing, Patterson, Newman, Gustine, Stevinson, Los Banos, Dos Palos, South Dos Palos, Firebaugh, Mendota and Tranquillity lie within the geographic area of the Westside Coalition. These communities do not have discharges from irrigated lands and are not included in the Westside Coalition, but contribute storm waters and municipal waste waters to the watershed and may impact discharges from irrigated lands.

Interstate Highway 5 and State Highways 33, 140, 165 and 152 and many county roads run through the geographic area of the Westside Watershed. Storm water discharges from these roads and highways can contribute contaminants to the same water bodies that carry agricultural return water.

The San Joaquin Valley Drainage Authority, a joint powers agency, is the umbrella organization for the Westside Coalition for purposes of the Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands within the Central Valley Region (Resolution No.R5-2003-0105). On July 30, 2004, the Westside Coalition received approval for its irrigated agricultural monitoring plan from the Central Valley Regional Water Quality Control Board.

The first sampling event took place on July 6, 2004, with subsequent event samples collected monthly. In February, 2008, the Westside Coalition received approval for a revised Monitoring and Reporting Plan (Revised MRP). The Revised MRP was designed to focus monitoring efforts at sites with known water or sediment issues and to support the Management Plan issues. The Revised MRP was implemented in March of 2008. Monitoring and Reporting Program Order No. R5-2008-0831 (MRP Order or MRP) was issued by the Regional Board in September 2008. This order was largely reflective of the Revised MRP and took effect in March 2009.

The MRP Order includes a targeted monthly sampling plan for 26 monitoring sites within the Coalition area as well as plans for sampling for two rain events during each year. The monitoring sites include three source water sites and 23 sites that discharge agricultural drain water. Four of the discharge sites are within San Luis Water District, which maintains a tailwater discharge prohibition. These sites generally only discharge during severe storm events.

During any given sampling event, each accessible site is visited, visually assessed, and samples are collected in accordance with the field sampling manual. **Table 2** shows the monitoring events summary by site for the reporting period.

The objectives of the original monitoring program are:

- To assess the existing water quality characteristics of major agricultural drains within the watershed area.
- To determine the location and magnitude of water quality problems.
- To determine the cause of water quality problems and develop solutions.

Three sampling crews have been trained by the analytical laboratories to collect samples according to the Westside Coalition's QAPP and Field Sampling Manual. These crews are responsible for collecting samples at each of the 26 sites; the field coordinator for the northerly region is responsible for collecting samples north of Newman Wasteway. The field coordinator for the southerly region is responsible for collecting samples south of (and including) Newman Wasteway, and staff from San Luis Water District are responsible for monitoring and sampling sites within that district. The sampling responsibilities include completion of the field data sheets, collection of water and sediment samples, completion of labels and chain of custody sheets, and coordination with the labs for sample pickup. The parameters analyzed at each site are shown in **Table 3**. The laboratory, method, and constituents analyzed are shown in **Table 4.**

Table 3: Monitoring Stations and Samples

Monitoring Site	Site Code	Season: Irrigation (Mar-Aug)*	Season: Non-Irrigation (Sep-Feb)*	Season: Rain Event (2x per year)	Ceriodaphnia Toxicity	Fathead Toxicity	Algae Toxicity	Sediment Toxicity	Pesticides: OP	Pesticides: OC	Pesticides: Group A	Pesticides: Carb	Pesticides: Herb
Discharge Sites													
Blewett Drain at Highway 132	VH132	Core	Core	Assmt									
Poso Slough at Indiana Avenue	PSAIA	Core	Core	Assmt									
Hospital Cr at River Road	HCARR	Special	-	Rain**	x			x	x	x			x
Ingram Cr at River Road	ICARR	Core + Special	Core	Rain**	x			x	x	x	x	x	x
Westley Wasteway near Cox Road	WWNCR	Core + Special	Core	Rain**	x		x	x	x	x	x		x
Del Puerto Cr near Cox Road	DPCCR	Core + Special	Core	Rain**	x			x	x	x	x		x
Del Puerto Cr at Hwy 33	DPCHW	Special	-	Rain**	x			x	x	x	x		x
Ramona Lake near Fig Avenue	ROLFA	Core + Special	Core	Rain**	x			x	x	x			x
Marshall Road Drain near River Road	MRDRR	Core + Special	Core	Rain**	x				x	x	x		x
Orestimba Cr at River Road	OCARR	Core + Special	Core	Rain**	x			x	x	x	x		x
Orestimba Cr at Hwy 33	OCAHW	Special	-	Rain**	x		x	x	x	x	x		x
Newman Wasteway near Hills Ferry Road	NWHFR	Core + Special	Core	Rain**	x			x	x	x	x		x
San Joaquin River at Lander Avenue	SJRLA	Core + Special	Core + Special	Rain**	x		x		x				x
Mud Slough u/s San Luis Drain	MSUSL	Core + Special	Core + Special	Rain**	x				x	x	x	x	x
Salt Slough at Lander Avenue	SSALA	Core + Special	Core + Special	Rain**	x		x		x	x	x	x	x
Salt Slough at Sand Dam	SSASD	Special	-	Rain**	x		x		x	x		x	x
Los Banos Creek at Highway 140	LBCHW	Core + Special	Core + Special	Rain**	x				x				x
Los Banos Creek at China Camp Road	LBCCC	Core + Special	Core	Rain**	x	x	x	x	x				x
Turner Slough near Edminster Road	TSAER	Core + Special	Core	Rain**	x	x			x				x
Little Panoche Cr at Western Boundary	LPCWB	Core	Core	Rain**	x		x	x					
Little Panoche Cr at San Luis Canal	LPCSL	Core	Core	Rain**	x		x	x					
Russell Ave. Drain at San Luis Canal	RADSL	Core	Core	Rain**	x		x	x					
Los Banos Creek at Sunset Ave	LBCSA	Core	Core	Rain**	x		x	x					
Source Water Sites													
San Joaquin River at Sack Dam	SJRSD	Source	Source	Source									
Delta Mendota Canal at Del Puerto WD	DMCDP	Source	Source	Source									
San Joaquin River at PID Pumps	SJRPP	Source	Source	Source									

* Irrigation season will run from March through August. Non-irrigation season will run from September through February. The Westside Coalition, in colaboration with the Regional Water Quality Control Board, may shift the seasons up or back 1 month to accont for actual practices.

Table 4: Analytes, Laboratories, and Methods

	Constituent	Laboratory	Method	Units	Laboratory SOP No.
Field Data	pH	Field Crew	YSI meter	-	Field Manual
	Temperature	Field Crew	YSI meter	ºC	Field Manual
	Conductivity	Field Crew	YSI meter	µmhos/cm	Field Manual
	Dissolved Oxygen	Field Crew	YSI meter	mg/L	Field Manual
	Flow	Field Crew	Estimate	cfs	Field Manual
	pH	Caltest	SM 4500-H+B	-	PH-rev4
	TDS	Caltest	SM 2540C	mg/L	TDS-rev4E
	TSS	Caltest	SM 2540D	mg/L	TSS-rev4
	Turbidity	Caltest	SM 2130B	NTU	TURB-rev4E
	Hardness	Caltest	EPA 130.2	mg/L	HARD-rev5E
	Metals	Caltest	EPA 200.7, 200.8	mg/L	M-ICP-rev10E & 2008rev5Ea
	Bromide/Nitrate	Caltest	EPA 300.0	mg/L	DIONEX-rev5E
	Nitrogen, Nitrite	Caltest	EPA 354.1	mg/L	NO2-rev6
	TKN	Caltest	EPA 351.3	mg/L	NH3-TKN-rev6E
	Phosphate	Caltest	EPA 365.2	mg/L	PHOS-rev4
	Ammonia (as N)	Caltest	EPA 350.2	mg/L	NH3-TKN-rev6E
	DOC	Caltest	SM 5310-B/C	mg/L	TOC-D0C-rev7E
	TOC	Caltest	SM 5310-B/C	mg/L	TOC-D0C-rev7E
	E. Coli	Caltest	SM 9221BF/9223-B	mpn/100ml	MMOMUG-rev8E
Pesticides	Organophosphates	APPL	EPA 8141A	µg/L	ANA8141A
	Organochlorines	APPL	8081A/8082	µg/L	ANA8081A
	Carbamates	APPL	EPA 8321A LL	µg/L	HPL8321A
	Herbicides	APPL	EPA 619	µg/L	ANA8151A
Sediment	Organochlorine	Caltest	SW846 8081	mg/kg (dry)	8081rev8
	Pyrethroid	Caltest	SW846 8270(SIM)	mg/kg (dry)	Pyrethroidsrev4a
	% Solids	Caltest	EPA 160.3	%	Residue-rev6
	TOC	Caltest	EPA 9060A	%	WalkleyBlack TOC
Toxicity	*Ceriodaphnia d.*	PER	EPA-821-R-02-012	% survival	Acute Cerio SOP
	Selenastrum c.	PER	EPA-821-R-02-013 & EPA-600-4-91-002	cell growth	Chronic Selenastrum SOP
	Pimephales p.	PER	EPA-821-R-02-012	% survival	Acute FHM SOP
	Hyalella a.	PER	EPA-600-R-99-064	% survival	10-D HyalellaAcuteSedTest

CalTest Labs in Napa, California
APPL labs in Fresno, California
Pacific Ecorisk (PER) in Martinez, California

Aquatic toxicity samples were collected and analyzed by Pacific Ecorisk, Inc. using the methods described below:

- *Ceriodaphnia dubia*: "Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms" (USEPA 2002a).
- *Pimephales promelas*: "Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms" (USEPA 2002a).
- *Selenastrum capricornutum*: "Short-term Methods for Estimated the Chronic Toxicity of Effluents and Receiving Water to Freshwater Organisms" (USEPA 2002b).
- *Hyalella azteca*: "Methods for Measuring the Toxicity and Bioaccumulation of Sediment-associated Contaminants with Freshwater Organisms" (USEPA 2000).

SECTION 3: MONITORING EVENT SUMMARIES

Monitoring Toxicity Event Summaries.
Each site was visited monthly during the reporting period and samples were collected from every site with sufficient water to submerge and fill a sample container. Discharges from Los Banos Reservoir resulted in sufficient flow in Los Banos Creek at Sunset Avenue for sample collection in March. However none of the other San Luis Water District Sites contained water for the reporting period.

Three CIMIS[1] stations are monitored by the Westside Coalition for rainfall: Patterson, Los Banos, and Panoche. **Table 5** summarizes the monthly rainfall measured at each station.

Table 5: Monthly Rainfall in Inches

Month	Patterson	Los Banos	Panoche
March	0.55	0.16	0.54
April	1.89	2.04	1.44
May	0.2	0.11	0.30
June	0	0.02	0
July	0	0	0
August	0	0	0

Although significant rainfall was measured coalition-wide in April, it was not sufficient to cause wide-spread runoff and trigger a storm sample event.

Event 65, March 3rd, 8th and 9th, 2010.
Sediment samples were collected on March 3rd (Los Banos Creek at Sunset Avenue) and March 8th at nine other monitoring sites (see **Sections 6** and **8**). Irrigation season water samples were collected on March 3rd and March 9th. A total of 19 sites were sampled, including Los Banos Creek at Sunset Avenue, which was collected on March 3rd as a storm water sample due to releases from Los Banos Reservoir. There was insufficient flow for sample collection at Hospital Creek, Marshall Road Drain, Blewett Drain, Little Panoche Creek (both sites) and the Russell Avenue Drain. Recent rains prevented access to Westley Wasteway. Significant aquatic toxicity was observed to *Ceriodaphnia dubia* at Del Puerto Creek at Highway 33 (40% survival). A TIE was initiated, however the toxicity was not persistent and interpretation of the TIE was not possible. No pesticides were detected in the sample. Sediment toxicity was measured at Hospital Creek, Ingram Creek, and Del Puerto Creek near Cox Road, however the measured survival was significantly higher than previous results. Sediment samples from all three sites were tested for pesticides. See **Section 8**.

Event 66, April 13th, 2010.
Irrigation season water samples were collected on April 13th in accordance with the Westside Coalition MRP. No aquatic toxicity was observed in any of tested sites. Wet road conditions

[1] California Irrigation Management Information System, http://wwwcimis.water.ca.gov/cimis/welcome.jsp

prevented access to Westley Wasteway and there was no flow in Marshall Road Drain and all four SLWD sites.

Event 67, May 11th, 2010.
Irrigation season water samples were collected on May 11th in accordance with the Westside Coalition's MRP. Samples were collected at 21 monitoring sites in all, with no flow observed at Del Puerto Creek at Highway 33 and all four SLWD sites. Significant aquatic toxicity was observed to algae at Westley Wasteway (77% of the control growth) and to *Ceriodaphnia dubia* at Marshall Road Drain (0% survival). A dilution series and TIE were initiated for the Marshall Road Drain sample. The dilution series measured 1.46 toxic units and the TIE indicated that a pesticide was likely the cause. Chlorpyrifos was detected in the sample at 0.53 µg/L. No follow up testing was performed for the Westley Wasteway sample, however diuron was detected (13 µg/L) and likely contributed to the reduction in growth. An exceedance of dissolved copper was detected at Hospital Creek (7.4 µg/L with a threshold of 6 µg/L).

Event 68, June 8th, 2010.
Irrigation season water samples were collected on June 8th in accordance with the Westside Coalition's MRP. Samples were collected at 21 sites, with no flow at Del Puerto Creek at Highway 33 and at the four SLWD sites. Aquatic toxicity to algae was observed at Westley Wasteway (45% of control growth) and a TIE was initiated on the sample. A foreign algal species had contaminated all of the TIE treatments, complicating interpretation, however carbon filtering did reduce the measured toxicity, implying that a pesticide may be the cause. Diuron (11 µg/L) was present in the sample and likely contributed to the toxicity. No other aquatic toxicity was observed.

Event 69, July 14th, 2010.
Irrigation season water samples were collected on July 14th in accordance with the Westside Coalition's MRP. Samples were collected at 21 sites, with no flow at Del Puerto Creek at Highway 33 and at the four SLWD sites. No aquatic toxicity was observed in any of the tested samples, however poor quality *Ceriodaphnia dubia* organisms caused the control samples to fail for the initial test set up in all tests. New organisms were obtained and the samples were re-tested two days later. Despite the absence of observed toxicity, chlorpyrifos was detected in 14 of the samples, 12 of which were in excess of the recommended water quality value.

Event 70, August 10th, 2010.
Irrigation season water samples were collected on August 10th in accordance with the Westside Coalition's MRP. Samples were collected at 21 sites, with no flow at Del Puerto Creek at Highway 33 and at the four SLWD sites. Mild aquatic toxicity to *Ceriodaphnia dubia* was observed at Turner Slough (75% survival) and to fathead minnow toxicity was observed at Los Banos Creek at China Camp Road (87.5% survival). The observed toxicity at Los Banos Creek at China Camp Road was in the field duplicate sample and the event sample survival was 92.5% (RPD=5.6%) and was not toxic. No pesticides were detected in either site.

SECTION 4: SAMPLING SITE AND WATERSHED DESCRIPTIONS

Figure 1 shows the Westside Coalition area and the location of the monitoring sites. Following is a description and rationale for the monitoring sites.

- Blewett Drain near Highway 132 (also called Vernalis at Highway 132 [VH132]). This site is located at the northerly boundary of the Westside Coalition. The cropping pattern for discharges into this drain is similar to that of Hospital Creek. Flow at this site is calculated as an estimated velocity and measured flow area. The Westside Coalition began monitoring this site in 2008.
- Poso Slough at Indiana Avenue (PSAIA). This site is located on Poso Slough near the boundary between San Luis Canal Company and Central California Irrigation District in the Dos Palos Subarea of the Westside Coalition. Flow at this site is calculated as an estimated velocity and measured flow area. The Westside Coalition began monitoring this site in 2008.
- Hospital Creek at River Road (HCARR). This site is a significant drainage for the Patterson Subarea of the Westside Coalition and has been monitored since July 2004 for a variety of constituents. Sediment discharge, sediment toxicity, aquatic toxicity (water flea), and pesticides have been measured at this site. It is on the 303(d) list for pesticides. Flow at this site is measured by a rectangular weir.
- Ingram Creek at River Road (ICARR). This site is a significant drainage for the Patterson Subarea of the Westside Coalition and has been monitored since July 2004 for a variety of constituents. Sediment discharge, sediment toxicity, aquatic toxicity (water flea), and pesticides have been measured at this site. It is on the 303(d) list for pesticides. Flow at this site is measured by a rectangular weir.
- Westley Wasteway near Cox Road (WWNCR). Westley Wasteway is a significant drainage for the Patterson Subarea for both tailwater and storm runoff. Land use upstream of this monitoring station is similar to that of Del Puerto Creek. This site has been monitored for a variety of constituents since 2004. Sediment discharge, sediment toxicity, aquatic toxicity (water flea), and pesticides have been measured at this site. Flow at this site is measured by a rectangular weir.
- Del Puerto Creek near Cox Road (DPCCR) and Del Puerto Creek near Highway 33 (DPCHW). Del Puerto Creek is on the 303(d) list for pesticides and is a major drainage for the Patterson Subarea and major storm runoff collector. Two stations are identified on this waterbody; one near the discharge to the San Joaquin River, and one at Highway 33, near the middle of the Patterson Subarea. Biological assessments are performed on Del Puerto Creek to assess its overall health, which will be useful in relating to collected water quality data. Both of these sites have been monitored for a variety of constituents since 2004. Sediment discharge, sediment toxicity, aquatic toxicity (water flea), and pesticides have been measured at both sites. Flow at this site is measured through a stream rating.
- Ramona Lake near Fig Avenue (ROLFA). This site monitors discharge from a small lake as it flows into the San Joaquin River. Agricultural and storm runoff from the Patterson Subarea can discharge into the lake. This site has been monitored for a variety of constituents since 2004. Some pesticides have been measured at this site.

- Marshall Road Drain near River Road (MRDRR). This site monitors a pipe drain that carries agricultural and storm runoff from the Patterson Subarea of the Westside Coalition. This site has been monitored for a variety of constituents since 2004. Some pesticides and aquatic toxicity have been measured at this site. Flow from this site is measured by a weir within the pipe. During periods of high flow, the weir can become submerged and inoperable.
- Orestimba Creek at River Road (OCARR) and Highway 33 (OCAHW). There are two monitoring locations on Orestimba Creek; one near the discharge point to the San Joaquin River; and one upstream at Highway 33. Orestimba Creek is similar to that of Del Puerto in both the surrounding landscape and discharged water quality. It is on the 303(d) list for pesticides, is a major drainage for the Patterson Subarea, and is included in the biological assessment portion of the monitoring program. Pesticides, sediment discharge, sediment toxicity, and aquatic toxicity have been measured at these sites. USGS monitors are reports flow at Orestimba Creek at River Road. Flow at Orestimba Creek at Highway 33 is calculated through an estimated velocity and cross-sectional flow area.
- Newman Wasteway near Hills Ferry Road (NWHFR). The Newman Wasteway is a significant drainage for the Patterson Subarea and is on the 303(d) list for salt and pesticides. This site measures drainage that originates from the southerly region of the Patterson Subarea, and has been monitored for a variety of constituents since 2004. Pesticides, sediment discharge, sediment toxicity, and aquatic toxicity have been measured at this site. Flow at this site is calculated through an estimated velocity and cross-sectional flow area.
- The San Joaquin River at Lander Avenue (SJRLA). This site is both a receiving waterbody for agricultural and storm drainage and a source water for districts that pump from the San Joaquin River. It also receives drainage flows from irrigated wetlands in the fall and winter months. It has been monitored for a variety of constituents since 2004, and pesticides, sediment toxicity, and aquatic toxicity have been measured. Flow at this site is reported by CDEC.
- Mud Slough upstream of the San Luis Drain (MSUSL). This site measures drainage originating from the Dos Palos and Los Banos Subareas that flow through the wetlands as well as the wetlands themselves. Mud Slough is on the 303(d) list for a variety of constituents. In addition to the Westside Coalition's monitoring program, the Central Valley Regional Water Quality Control Board, Surface Water Ambient Monitoring Program (SWAMP) collects and analyzes samples from this site throughout the year. These samples are analyzed for selenium, boron, and EC, along with other constituents. Flow at this site is calculated as the difference between the flow downstream of the San Luis Drain (reported by CDEC) and the measured San Luis Drain Discharge. The SWAMP Data is available via the internet at: http://www.waterboards.ca.gov/centralvalley/programs/agunit/swamp/index.html.
- Salt Slough at Lander Avenue (SSALA) Salt Slough at Lander Avenue measures agricultural, storm, and wetland runoff from the Dos Palos and Los Banos Subareas, and has been monitored (and 303(d) listed) for a variety of constituents since 2004. In addition to the Westside Coalition's monitoring program, the Central Valley Regional Water Quality Control Board, SWAMP collects and analyzes samples from this site throughout the year. These samples are analyzed for selenium, boron, and EC, along

with other constituents. Flow at this site is reported by CDEC. The SWAMP Data is available via the internet at:
http://www.waterboards.ca.gov/centralvalley/programs/agunit/swamp/index.html.

- Salt Slough at Sand Dam (SSASD). This site is upstream of the Lander Avenue site and measures agricultural and storm drainage originating in portions of the Dos Palos Subarea. Pesticides and aquatic toxicity have been measured at this site, which has been monitored for a variety of constituents since 2004. Flow at this site is measured by a weir.
- Los Banos Creek at Highway 140 (LBCHW). This site carries agricultural, storm and irrigated wetland runoff from the Los Banos Subarea. Some pesticides have been measured at this site. Flow at this site is calculated through an estimated velocity and cross-sectional flow area.
- Los Banos Creek at China Camp Road (LBCCC). This site monitors agricultural and storm runoff from the Los Banos Subarea. There is a farmer-maintained dam downstream of this site which is frequently used to stop flows so that it may be diverted for irrigation. Flow at this site is calculated through an estimated velocity and cross-sectional flow area.
- Turner Slough near Edminster Road (TSAER). This station is located on the eastside of the San Joaquin River and measures drainage from a portion of the Patterson Subarea. A very small number of pesticides have been detected at this site since 2004. In 2007, Stevinson Water District constructed a drain water return system upstream of the Turner Slough discharge (and monitoring) point. This system captures most of the drainage that flows through Turner Slough and returns it to the Stevinson Water District irrigation system. Since the construction of this system, discharges from Turner Slough into the San Joaquin River have become infrequent. Flow at this site is calculated through an estimated velocity and cross-sectional flow area.
- Little Panoche Creek at Western Boundary (LPCWB) and at San Luis Canal (LPCSL). These two sites were incorporated from the San Luis Water District Water Quality Coalition. Because San Luis Water District has a strict no-discharge policy, these sites will typically measure only storm runoff or releases from the Little Panoche reservoir. These sites typically convey storm water and have not been extensively monitored. Since inclusion within the Westside Coalition, this site has not had any observed flow and has not been sampled.
- Russell Avenue Drain at San Luis Canal (RADSL). This is a small drain along Russell Avenue that discharges into the San Luis Canal. These two sites were incorporated from the San Luis Water District Water Quality Coalition. Because San Luis Water District has a strict no-discharge policy, this site will typically measure only storm runoff. Since inclusion within the Westside Coalition, this site has not had any observed flow and has not been sampled.
- Los Banos Creek at Sunset Avenue (LBCSA). This monitoring site was incorporated from the San Luis Water District Water Quality Coalition, and is located near the western boundary of the Westside Coalition, downstream of the Los Banos Reservoir. There is not a large amount of actively farmed land at or upstream of this site, and discharges here are likely to be storm runoff or releases from the Los Banos Reservoir. This sites was sampled for the first time since inclusion with the Westside Coalition this March (Event 65), caused by releases from Los Banos Reservoir.

- San Joaquin River at Sack Dam (SJRSD). This is a source water monitoring site located at the diversion point for San Luis Canal Company. This site is monitored for source water constituents. Flow at this site is measured across the dam.
- Delta Mendota Canal at Del Puerto Water District (DMCDP). This site monitors water quality in the Delta Mendota Canal at a Del Puerto Water District turnout. This site characterizes the source water quality typical of the Delta Mendota Canal, and is monitored for source water constituents. Flow is not measured at this site.
- San Joaquin River at Patterson Irrigation District Pumps (SJRPP). This monitoring site is located at the Patterson Irrigation District pump station on the San Joaquin River and characterizes the source water quality of the San Joaquin River in the Patterson Subarea. This site is monitored for source water constituents. Flow from this site is reported by CDEC.

Table 6 lists the monitoring sites and coordinates in the WGS84 datum.

Table 6: Monitoring Site Coordinates

Site	Latitude (N)	Longitude (W)
Hospital Cr at River Road	37.61047	121.23078
Ingram Cr at River Road	37.60022	121.22506
Westley Wasteway near Cox Road	37.55822	121.16372
Del Puerto Cr near Cox Road	37.53936	121.12206
Del Puerto Cr at Hwy 33	37.51406	121.15956
Ramona Lake near Fig Avenue	37.47875	121.06839
Marshall Road Drain near River Road	37.43631	121.03617
Orestimba Cr at River Road	37.41386	121.01489
Orestimba Cr at Hwy 33	37.37717	121.05856
Newman Wasteway near Hills Ferry Road	37.32036	120.98336
San Joaquin River at Sack Dam	36.98353	120.50050
San Joaquin River at Lander Avenue	37.29506	120.85139
Mud Slough u/s San Luis Drain	37.26164	120.90614
Salt Slough at Lander Avenue	37.24797	120.85225
Salt Slough at Sand Dam	37.13664	120.76194
Los Banos Creek at Highway 140	37.27619	120.95547
Los Banos Creek at China Camp Road	37.11447	120.88953
Turner Slough near Edminster Road	37.30411	120.90083
Blewett Drain at Highway 132	37.64053	121.22942
Poso Slough at Indiana Ave	37.00622	120.59033
SJR at PID Pumps	37.49739	121.08267
DMC at Del Puerto WD	37.43678	121.13347
Los Banos Creek at Sunset Ave	37.02747	120.88983
Little Panoche Cr at Western Boundary	36.79100	120.76200
Little Panoche Cr at San Luis Canal	36.81728	120.72614
Russell Ave Drain at San Luis Canal	36.75142	120.65775

More than 59 different varieties of crops are grown within the Westside Coalition watershed area, ranging from fruit and nut trees to melons and cotton. **Table 7** shows the top ten crops within the Coalition area based on 2010 Agricultural Commissioner pesticide use data.

Table 7: Top 10 Crops Grown by County

Fresno	Merced	Stanislaus
Alfalfa	Alfalfa	Alfalfa
Tomatoes	Tomatoes	Tomatoes
Cotton	Cotton	Cotton
Melons	Almonds	Melons
Almonds	Melons	Almonds
Corn	Oats	Corn
Wheat/Barley	Wheat/Barley	Wheat
Onions	Corn	Onions
Asparagus	Rangeland/Uncultivated	Asparagus
Beans	Walnuts	Beans

These crops are dispersed approximately evenly throughout the Coalition area, with the exceptions of cotton (mostly in the Los Banos, Dos Palos and Tranquillity Subareas), and fruit trees and beans (mostly in the Patterson Subarea). The planting practices are typical for conventional agriculture within the Central Valley. A complete crop list and detailed crop calendar was presented in the "Watershed Evaluation Report", submitted in April, 2004.

Annual field crops are typically planted as seed or transplants after the field has been pre-irrigated to provide salt leaching and soil moisture for germination. These crops are usually furrow irrigated using either a plowed head ditch or gated pipe, but may also be sprinkler or sub-surface drip irrigated. Permanent field crops such as pasture or alfalfa are usually flood or sprinkler irrigated. The younger fruit and nut trees are almost universally irrigated with drip or micro-sprinkler systems, though some of the older orchards are still flood irrigated. **Table 8** shows the types of pesticides used in Stanislaus County according to the most recent data available from the Agricultural Commissioner, by sub-watershed and crop type. This area includes 7 of the 23 discharge monitoring sites within the Westside Coalition.

The irrigation season is typically the most active period for agriculture within the Westside Coalition. Planting for most field crops begin in April, will cultivation and irrigation practices beginning immediately after. Harvest activities depend on the crop and can occur as early as July (melons) or as late as October (cotton). Based on historic pesticide detections, July and August appear to have the highest application activities.

FIGURE 1: WATERSHED MAP W/ MONITORING SITES.

Table 8: Stanislaus County 2010 Irrigation Season Pesticide Use by Subwatershed (partial data)

	Pesticide Type	Fallow / Native	Field Crops	Pasture	Orchard Crops	Vineyards	Nursery
Del Puerto Cr. Subwatershed	Carbamates				x		
	Herbicides		x	x	x	x	
	Organochlorine						
	Organophosphorus		x		x		
	Pyrethroid		x		x		
Hospital/Ingram Cr. Subwatershed	Carbamates		x		x		
	Herbicides		x		x	x	
	Organochlorine						
	Organophosphorus		x		x		
	Pyrethroid		x		x		
Orestimba Cr. Subwatershed	Carbamates						
	Herbicides	x	x	x	x		x
	Organochlorine						
	Organophosphorus		x		x		
	Pyrethroid		x		x		
Westley Wasteway Subwatershed	Carbamates				x		
	Herbicides		x		x	x	
	Organochlorine						
	Organophosphorus		x		x		
	Pyrethroid		x		x		

Table 9 shows the 10 most commonly applied pesticides (by acreage) within the three counties occupied by the Westside Coalition.

Table 9: Most Commonly Applied Pesticides by County

Fresno County		Merced County		Stanislaus County	
Pesticide	**Class**	**Pesticide**	**Class**	**Pesticide**	**Class**
Lambda-Cyhalothrin	Pyrethroid	Glyphosate	Herbicide	Glyphosate	Herbicide
Glyphosate	Herbicide	Trifluralin	Herbicide	Lambda-Cyhalothrin	Pyrethroid
Trifluralin	Herbicide	Lambda-Cyhalothrin	Pyrethroid	Pendimethalin	Pyrethroid
Oxyfluorfen	Herbicide	Oxyfluorfen	Herbicide	Esfenvalerate	Pyrethroid
Malathion	Organophosphate	Malathion	Organophosphate	Oxyfluorfen	Herbicide
Pendimethalin	Herbicide	Rimsulfuron	Herbicide	Metolachlor	Herbicide
Chlorpyrifos	Organophospate	Dimethoate	Organophosphate	Dimethoate	Organophosphate
Paraquat Dichloride	Herbicide	Permethrin	Pyrethroid	Ethalfluralin	Herbicide
Rimsulfuron	Herbicide	Bifenthrin	Pyrethroid	2,4-D	Herbicide
Bifenthrin	Pyrethroid	Paraquat Dichloride	Herbicide	Trifluralin	Herbicide

This data was provided by the Agricultural Commissioner for each county. Available data spanned from March through a portion of July 2010, covering approximately 70% of the irrigation season. Data for the remainder of the irrigation season is not yet available.

SECTION 5: FIELD SAMPLING PROCEDURE

Field water quality data and sample collections were collected as outlined in the Westside Coalition's Quality Assurance Project Plan (QAPP) and Field Sampling Manual. Three sampling crews have been trained by the analytical laboratories to collect samples according to the Westside Coalition's QAPP and Field Sampling Manual. These crews are responsible for collecting samples at each of the 26 sites: The field coordinator for the northerly region is responsible for collecting samples from north of Newman Wasteway. The field coordinator for the southerly region is responsible for collecting samples south of (and including) Newman Wasteway, and staff from San Luis Water District are responsible for monitoring and sampling sites within that district. The sampling responsibilities include completion of the field data sheets, collection of water and sediment samples, completion of labels and chain of custody sheets, and coordination with the labs for sample pickup. Samples are collected either as a direct grab from the waterbody or as a bucket grab, where a large volume of water is collected in a stainless steel bucket and transferred to the sample bottles. Details of these collection methods are explained in the Field Sampling Manual. The list of tested constituents is discussed in the MRP Order.

SECTION 6: FIELD QUALITY CONTROL SAMPLES

Field quality control samples included the collection of field duplicate samples for sediment and aquatic toxicity analysis, and the collection of both field duplicate and field blank samples for pesticides, drinking water, and general physical constituent analysis. It should be noted that the field duplicate samples are typically collected as separate samples simultaneously with the event sample (as opposed to field split samples). The calculated RPD between the event sample and field duplicate sample should be considered a measurement of site water variability.

- **Water Chemistry Analyses.** Six sets of field duplicate and field blank samples were collected during the reporting period and analyzed for general chemistry and drinking water constituents. A comparison of the event samples, duplicate samples, and blank samples is tabulated in **Attachment 3**. A total of 150 duplicate analyses were completed and compared to the event sample results. Twenty one duplicate samples exceeded the 25% relative percent difference (RPD) established in the QAPP for:

Ammonia	Bromide	Cadmium (Total)
E. coli	Hardness	Lead (Total)
Nickel (Total)	Nitrate+Nitrite as N	TKN
Total Suspended Solids		Turbidity

These exceedances of the field duplicate quality control criteria are reflective of the complicated nature of the site water and the naturally occurring variations of the water column quality. Four of the results exceeding the RPD criteria were detected below the reporting limit (flagged "DNQ") where relative small variations between the duplicate and event sample can result in relatively large RPD values. The Westside Coalition does not expect these variations to impact data usability.

Six field blank sample sets were analyzed during the report period (156 results, total). Of these, 5 resulted in values greater than 20% of the event sample result, including:

Ammonia	Copper (dissolved)	TKN

Four of the five field blank results exceeding 20% of the event sample results were detected below the reporting limit ("j" or "DNQ" flagged).

- **Pesticide Analyses.** Six field duplicate and field blank samples sets were collected during the reporting period and analyzed for pesticides (each with 228 results). There were no pesticide detections in any of the field blank samples. Calculated RPD for field duplicate results did not exceed the 25% threshold for any event. The results of the field blank, field duplicate and event sample comparisons are tabulated in **Attachment 3**.

- **Aquatic Toxicity Analyses.** Field duplicate samples were collected and analyzed for toxicity to all species tested during the report period. The calculated RPD value was less than 25% in all cases.

- **Sediment Toxicity Analyses.** A field duplicate sample was collected for sediment toxicity during the March sampling event (Event 65). The measured RPD was 2.6%.

Completeness for sampling collection and analysis was reviewed for samples collected during this monitoring program. Completeness was measured for sample collection and transit, sample analysis, and field quality control samples.

- Collection and Transit: Completeness for this reporting period for sample collection and transit is 100%. One sample bottle for the August pesticide field duplicate (Event 70) was broken during sample collection, however there was sufficient volume in the other bottle for analysis. This bottle loss did not affect sample collection and transit completeness.
- Sample Analysis: Completeness for sample analysis during this reporting period is 100%. The *Ceriodaphnia dubia* control organisms survival failed to meet the acceptability criteria during the July sample event (Event 69). Weak/unhealthy test organisms were the suspected cause. The affected samples were successfully retested two days later with new organisms and usable data was obtained.
- Field Quality Control Samples: Completeness for toxicity duplicate samples is 100% for this reporting period.

SECTION 7: ANALYTICAL METHODS

Table 4 indicates the laboratories responsible for the analytical results of this monitoring program, the analytical method used, and the standard operating procedure (SOP) document number. This table reflects the constituents analyzed as part of the Revised MRP.

Chain of Custody (COC) sheets were maintained from the time of sample collection to receipt at the laboratories. Copies of the COC sheets are included in **Appendix A**, along with a summary of the data results. The data summary includes all of the field readings, analytical chemistry results, pesticide scan results, and toxicity screening test results. The original laboratory reports are included in **Appendix C**. These reports also include all of the field and internal quality control results.

The laboratory original data sheets (raw data) for the toxicity results are included in **Appendix C**, as part of the laboratory reports. Raw data for general physical results, drinking water results, and pesticide results are kept by the laboratories for a minimum of five years and are available upon request.

SECTION 8: DATA INTERPRETATION

The primary objective of the monitoring program is to identify water bodies that are adversely affected by agricultural discharges and to help determine the impacts of management activities. The monitoring program has used a combination of toxicity tests and pesticide analyses, along with close coordination among districts and growers to not only identify problem areas but also to determine the magnitude and cause of the problems.

The Westside Coalition's monitoring program includes 26 monitoring sites on the Westside of the San Joaquin Valley (see **Table 2** and **Figure 1**). These sites are representative of the various regions within the Coalition and include agricultural discharge sites, storm drainage sites, and irrigation source water sites. A summary of this data is presented in **Appendix A**, and the laboratory data reports are provided in **Appendix C**.

All of the analyzed parameters were reviewed regularly to evaluate the overall health of the water bodies within the Coalition area. This reporting period covered the 2010 irrigation season months, during which there was significant agricultural activity, including cultivating, irrigating, and pest control activities. **Attachment 2** summarizes all available data for each measurement of significant aquatic toxicity.

Ceriodaphnia dubia. Toxicity to *Ceriodaphnia dubia* was measured three times. **Table 10** summarizes the measured toxicity to *Ceriodaphnia dubia* during this reporting period. See **Attachment 2** for a more detailed summary.

Table 10: Summary to *Ceriodaphnia dubia* Toxicity

Event	Monitoring Site	% Survival	Apparent Cause
Event 65	Del Puerto Cr. (Hwy 33)	40	Unknown
Event 67	Marshall Road Drain	0	Chlorpyrifos
Event 70	Turner Slough	75	Unknown

TIEs were performed on the Del Puerto Creek and Marshall Road Drain samples. The toxicity was not persistent in the Del Puerto Creek TIE and the results could not be interpreted. No pesticides were detected in the sample and it is unclear what caused the reduction in survival. The Marshall Road Drain TIE indicated pesticides as the likely cause and chlorpyrifos was detected (0.53 µg/L) in the sample at a level that would be expected to reduce survival. The reduction in survival was relatively minor for the Turner Slough sample. No follow up was required and no pesticides were detected.

Selenastrum capricornutum (algae). Toxicity to algae was observed during Events 67 and 68 at Westley Wasteway. The reduced growth during Event 68 was sufficient to trigger a TIE, which was complicated by the presence of a foreign algal species. However the TIE treatments implied that a particulate associated, non-polar organic material(s) may have contributed to the toxicity. Elevated levels of diuron were detected in both samples and are suspected to have contributed to the toxicity.

Pimephales Promelas (fathead minnow). One measurements of fathead minnow toxicity was observed during Event 70 in the field duplicate sample for Los Banos Creek at China Camp Road (87.5% survival). The event sample for the same site measured 92.5% survival and was not significantly toxic. The water chemistry results did not indicate a potential cause for the toxicity.

Sediment Toxicity (*Hyalella azteca*). Sediment samples were collected during Event 65 (March) and tested for toxicity to *Hyalella azteca*. Eleven samples were collected (including one duplicate), and significant toxicity was measured at three sites (Hospital Creek – 77.5% survival, Ingram Creek – 35% survival, and Del Puerto Creek near Cox Road – 77.5% survival). Samples from all three sites were tested for selected pesticides including chlorpyrifos and pyrethroids. **Table 11** summarizes the detected pesticide data at those four sites. See **Appendix C** for the full laboratory report. **Table 12** shows the sediment toxicity results since the beginning of the monitoring program.

Table 11: Detected Pesticides in Sediment Samples (March 2010)

	Hospital Creek	Ingram Creek	Del Puerto Creek nr. Cox Rd.
Sediment Toxicity (% survival)	77.5	35	77.5
Bifenthrin (µg/kg)	11	1	2.2
Chlorpyrifos (µg/kg)	8.9	23	0.34
Cypermethrin (µg/kg)	ND	0.49	ND
Es/Fenvalerate (µg/kg)	0.83	0.91	0.71
Lambda-Cyhalothrin (µg/kg)	1.4	3.4	7.5
Permethrin (µg/kg)	ND	0.7	ND
Tetramethrin (µg/kg)	15	ND	ND
TOC (mg/kg)	1500	9750	8550

Table 12: Sediment Toxicity Results

Site	March 10 % Survival	March 10 Toxicity (Y/N)	Sept 09 % Survival	Sept 09 Toxicity (Y/N)	Mar 09 % Survival	Mar 09 Toxicity (Y/N)	Sept 08 % Survival	Sept 08 Toxicity (Y/N)
Blewett Drain (Vernalis at hwy 132)					18.8	**Y**	16.2	**Y**
Hospital Creek	77.5	**Y**	10	**Y**	0	**Y**	25	**Y**
Ingram Creek	35	**Y**	0	**Y**	18.8	**Y**	0	**Y**
Westley Wasteway	N/A	N/A	92.5	N	82.5	**Y**	1.25	**Y**
Del Puerto Creek (Cox Rd)	77.5	**Y**	13.8	**Y**	97.5	N	62.5	**Y**
Del Puerto Creek (Hwy 33)	92.5	N	N/A	N/A	97.5	N	N/A	N/A
Orestimba Creek at River Rd.	96.2	N	87.5	N	91.2	**Y**	80	N
Orestimba Creek at Hwy 33	90	N	80	N	88.8	**Y**	92.5	N
Ramona Lake at Fig Ave.	93.8	N	92.5	N	97.5	N	98.8	N
Newman Wasteway	93.8	N	98.8	N	98.8	N	82.5	**Y**
Poso Slough					N/A	N/A	72.5	**Y**
Turner Slough								
SJR at Lander								
Salt Slough at Lander								
Salt Slough at Sand Dam								
Los Banos Creek at Hwy 140								
Los Banos Creek at China Camp Rd.	95	N	96.2	N	97.5	N	87.5	**Y**
Los Banos Creek at Sunset Ave.	96.2	N						
Mud Slough								

Site	Mar 08 % Survival	Mar 08 Toxicity (Y/N)	Sept 07 % Survival	Sept 07 Toxicity (Y/N)	Mar 07 % Survival	Mar 07 Toxicity (Y/N)	Sep 06 % Survival	Sep 06 Toxicity (Y/N)
Blewett Drain (Vernalis at hwy 132)								
Hospital Creek	80	**Y**	16.2	**Y**	0	**Y**	**1.25**	**Y**
Ingram Creek	2.5	**Y**	0	**Y**	0	**Y**	**0**	**Y**
Westley Wasteway	65	**Y**	0	**Y**	0	**Y**	**1.25**	**Y**
Del Puerto Creek (Cox Rd)	N/A	N/A	93.8	N	81.2	**Y**	**55**	**Y**
Del Puerto Creek (Hwy 33)	N/A	N/A	58.8	**Y**	91.2	**Y**	**1.25**	**Y**
Orestimba Creek at River Rd.	95	N	98.8	N	90	N	96.25	N
Orestimba Creek at Hwy 33	90	N	95	N	13.8	**Y**	**6.25**	**Y**
Ramona Lake at Fig Ave.	68.8	**Y**	91.2	**Y**	N/A	N/A	N/A	N/A
Newman Wasteway	97.5	N	51.2	**Y**	93.8	N	98.75	N
Poso Slough	98.8	N						
Turner Slough			92.5	N	96.2	N	98.75	N
SJR at Lander			95	N	90	**Y**	95	N
Salt Slough at Lander			86.2	N	96.2	N	97.5	N
Salt Slough at Sand Dam			92.5	N	96.2	N	98.75	N
Los Banos Creek at Hwy 140			87.5	N	96.2	N	98.75	N
Los Banos Creek at China Camp Rd.	92.5	N	13.8	**Y**	98.8	N	100	N
Mud Slough			90	N	96.2	N	100	N

Site	Mar 06 % Survival	Mar 06 Toxicity (Y/N)	Oct 05 % Survival	Oct 05 Toxicity (Y/N)	Mar 05 % Survival	Mar 05 Toxicity (Y/N)	Sep 04 % Survival	Sep 04 Toxicity (Y/N)
Blewett Drain (Vernalis at hwy 132)								
Hospital Creek	**82.5**	**Y**	**0**	**Y**	**16.2**	**Y**	85	N
Ingram Creek	**23.8**	**Y**	**0**	**Y**	**32.5**	**Y**	**0**	**Y**
Westley Wasteway	**0**	**Y**	**0**	**Y**	**0**	**Y**	95.7	N
Del Puerto Creek (Cox Rd)	**0**	**Y**	**1.3**	**Y**	N/A	N/A	93.75	N
Del Puerto Creek (Hwy 33)	**68.8**	**Y**	**0**	**Y**	**0**	**Y**	N/A	N/A
Orestimba Creek at River Rd.	97.5	N	93.8	N	**51.2**	**Y**	95	N
Orestimba Creek at Hwy 33	66.3	N	**32.5**	**Y**	N/A	N/A	**52.5**	**Y**
Ramona Lake at Fig Ave.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Newman Wasteway	90	N	**76.3**	**Y**	**72.5**	**Y**	90	N
Poso Slough								
Turner Slough	91.3	N	95	N	85	N	93.75	N
SJR at Lander	N/A	N/A	97.5	N	91.2	N	88.75	N
Salt Slough at Lander	100	N	98.8	N	**62.5**	**Y**	92.5	N
Salt Slough at Sand Dam	95	N	91.3	N	87.5	N	95	N
Los Banos Creek at Hwy 140	95	N	97.5	N	**56.2**	**Y**	93.75	N
Los Banos Creek at China Camp Rd.	93.8	N	**91.3**	**Y**	**58.8**	**Y**	95	N
Mud Slough	98.8	N	97.5	N	**76.2**	**Y**	92.8	N

N/A indicates no sample taken or criteria not applicable. Shaded cells indicate that the site is no longer monitored for sediment toxicity.

The detected pesticides in these sediment samples span a variety of insecticides. These levels are likely sufficient to explain toxicity. Details of the sediment pesticide analyses are in **Attachment 4.**

Pesticide Analyses.
A total of 17 different pesticides were detected in water samples during the 2010 irrigation season for a total of 150 detections. Fifty two of these detections (35%) were below the reporting limit and 45 were legacy pesticides that are no longer in use (DDT, DDE, alpha-chlordane, and dieldrin).

- Chlordane-alpha (1 detections): Chlordane is an organochlorine insecticide that was used on a variety of crops including fruits, vegetables, and tree crops. It was banned for agricultural purposes in the United States in 1983.
- Chlorpyrifos (27 detections): Chlorpyrifos is a common organophosphate pesticide used to control a wide range of insects in orchards, pasture, and field crops. It can be used as a dormant spray for fruit and nut trees. Chlorpyrifos use during this reporting season occurred largely on field and forage crops (corn, cotton, alfalfa) in the fall and as dormant sprays on fruit and nut trees in the mid to late winter.
- Cyanazine (1 detection): Cyanazine is a triazine herbicide used to control broadleaf weeds and grasses. It is often used on corn, cotton and grains.
- DDT/DDD/DDE (6 DDT detections, 33 DDE detections, and 1 DDD detection): DDT is an organochlorine pesticide that was banned for agricultural use in 1972. It is a legacy pesticide that is still detected in the watershed at relatively low levels. DDE and DDD have no commercial value but are compounds normally associated with the degradation of DDT.
- Diazinon (5 detections): Diazinon is an organophosphate pesticide used to control a wide range of insects and is frequently applied to nut trees, melons, and tomatoes, and is often used as a dormant spray for trees.
- Dicofol (1 detecion): Dicofol is an orgaochlorine insecticide that is registered for use on a variety of field crops such as cotton, tomatoes, beans, and melons.
- Dieldrin (4 detections): Dieldrin is an orgaonchlorine insecticide that was used on a variety of field and orchard crops including cotton, corn, and citrus. Most uses of Dieldrin were banned in 1987.
- Dimethoate (8 detections): Dimethoate is an organophosphate pesticide used to control a wide range of insects. It is used on a variety of field crops including alfalfa, beans, tomatoes, and cotton.
- Diuron (35 detections): Diuron is a substitute urea herbicide used to control weeds in a variety of field crops including cotton, alfalfa, and wheat. It is also effective in controlling algae.
- Ethyl Parathion (1 detection): Ethyl parathion is an organophosphate insecticide used on a variety of non-vegetable crops such as alfalfa, barley, corn, and wheat. Ethyl parathion was banned for agricultural use in 2003.
- Malathion (7 detections): Malathion is an organophosphate insecticide used on a variety of crops including alfalfa, walnuts, lettuce, grapes, and cotton.
- Methoxychlor (1 detection): Methoxychlor is an organochlorine insecticide that was used to control various nuisance pests (such as cockroaches and mosquitoes) and protect

vegetables, fruits, ornamentals, and stored grain. Methoxychlor was banned by the U.S. EPA in 2003.

- Prowl (14 detections): Prowl is a herbicide used to control broadleaf and grassy weeds and is approved for a variety of crops including cotton, field corn, beans, rice, and vineyards.
- Simazine (1 detection): Simazine is a triazine herbicide used to control broadleaf weeds and annual grasses in a variety of field crops.
- Trifluran (4 detections): Trifluralin is a pre-emergent herbicide used to control broadleaf and grassy weeds and is approved for a variety of crops including fruit and nut trees, cotton, beans, and tomatoes.

Exceedances of Recommended Water Quality Values.
Water chemistry analyses were compared to recommended water quality values[2] (RWQV). **Attachment 5** tabulates all of the RWQV exceedances for the reporting period by site.

- **Field, General Physical and Drinking Water Quality Exceedances.** Comparisons were made to several RWQVs. **Attachment 5** tabulates the results for these constituents and the comparison to the RWQVs. The Westside Coalition performed analyses or observed more than 3,200 field and chemistry (non-pesticide) parameters during the reporting period, during which, 212 (7%) results were greater than the RWQVs. Electrical conductivity and total dissolved solids (TDS) accounted for 66 and 63 of these exceedances (respectively, approximately 28% of the exceedances). E. coli results accounted for 36 of these exceedances, 20 for dissolved oxygen, and 15 for pH and 10 for boron. The RWQV for cadmium, copper, lead, nickel, and zinc are dependant on site water hardness and is a calculated value. During this reporting period there was one exceedance of the RWQV for copper at Hospital Creek (7.4 µg/L with a RWQV of 6 µg/L) during Event 67. The measured hardness at Hospital Creek during this event was 43 mg/L, which is the lowest hardness reading for Hospital Creek in this monitoring programs history (ignoring this reading, the hardness at Hospital Creek ranges from 110 mg/L to 400 mg/L). Potential causes for EC/TDS, E. coli, and DO exceedances are discussed below.
    - **EC/TDS.** Electrical Conductivity and TDS are measures of the amount of salts dissolved in the water column. There are a variety of sources of salts that may be contributing to these results including natural marine sediments, accretion of shallow/perched ground water, and the irrigation source water. Additionally, the many growers to rely on wells to supplement surface water supplies. Most of the groundwater wells within the Westside Coalition are more saline than the surface water sources.
    - **E. coli.** E. coli is a measurement of bacteria in the water column. The Westside Coalition has participated in a study to attempt to identify the source of these exceedances. The preliminary results were not conclusive, however human sources were identified as the possible cause for at least some of the exceedances. There is also some suspicion that E. coli colonies have become

[2] Water Quality Limits were provided by the Central Valley Regional Water Quality Control Board as part of the MRP Order. Water quality limits for cadmium, copper, lead, nickel and zinc are calculated from equations provided by the Central Valley Regional Water Quality Control Board.

self-sustaining within some watersheds. The Westside Coalition's Management Plan, approved November 18, 2008, discusses future activities related to the E. coli exceedances.

- **Dissolved Oxygen.** DO is measured through a field probe at the time of sample collection. By it's nature, DO is a highly variable and influenced by a variety of conditions including time of day, turbidity, biological growth and decay, and channel turbulence. The cause of the DO exceedances measured during this report period is not immediately clear, in many cases, a low DO measurement is accompanied with no flow – indicating that the water is stagnant. As part of the Management Plan, the Westside Coalition has reviewed DO exceedances from historic data.
- **Boron.** Boron is a metal element commonly found in soils on the Westside of the San Joaquin Valley. It is not applied by growers for any agricultural purpose but may be dissolved in tail water, storm runoff, subsurface flows, or groundwater supplies.
- **pH.** pH is measured through a field probe at the time of sample collection. It is a highly variable value and the cause of these exceedances is not immediately clear.

The number and type of field and general chemistry exceedances was not dramatically different than those of prior years.

- **Pesticide exceedances.** The Westside Coalition tested for almost 3,800 pesticides during the reporting period, 96% of which resulted in no detection. Of the detected pesticides (150), 75 were greater than established RWQVs. Of the 75 exceedances, 41 were caused by legacy pesticides (DDT, DDE, DDD, and chlordane), which are not currently in use. Of the remaining 34, 21 were caused by chlorpyrifos, 1 by dimethoate, 5 by diuron, and 1 by malathion. Pesticide use data from the county Agricultural Commissioners was only available for a portion of the non-irrigation season.

  Compared to the previous irrigation season, there were about the same number of detected pesticides during this reporting period. There were more chlorpyrifos exceedances this irrigation season than in 2009 (14 in 2009) but less than in 2008 (27 exceedances). A detailed evaluation of chlorpyrifos and diazinon detections during the 2010 irrigation season is included in **Attachment 7.** **Table 13** shows the top 10 detected pesticides since 2004.

Table 13: Top 10 Detected Pesticides

2004	2005	2006	2007	2008	2009	2010
Trifluralin	Chlorpyrifos	Dimethoate	Diuron	Diuron	Diuron	Diuron
Prowl	Dimethoate	Chlorpyrifos	DDE(p,p')*	Chlorpyrifos	Chlorpyrifos	DDE(p,p')*
Dimethoate	Trifluralin	Trifluralin	Dimethoate	DDE(p,p')*	DDE(p,p')*	Chlorpyrifos
Diazinon	Prowl	4,4'-DDE*	Chlorpyrifos	Prowl	Prowl	Prowl
Chlorpyrifos	Diazinon	Diazinon	DDT(p,p')*	Dimethoate	Dimethoate	Dimethoate
EPTC	EPTC	Prowl	Methomyl	Simazine	Simazine	DDT(p,p')*
Simazine	Malathion	Parathion, methyl	Simazine	DDT(p,p')*	Chlordane, gamma-*	Malathion
Parathion, methyl	Parathion, methyl	EPTC	Dicofol	Trifluralin	EPTC	Simazine
2,4-D	Ethoprop	Malathion	Cyanazine	Diazinon	Cyanazine	Diazinon
Demeton-S	Fensulfothion	Azinphosmethyl	Dieldrin*	Methomyl	Dieldrin*	Dieldrin*

* Indicates a pesticide that is no longer registered for use.

Table 13 reveals a few interesting points regarding detected pesticides.

1. DDT, or one of its breakdown products is within the top 5 most commonly detected pesticide materials from 2006 on.
2. Chlorpyrifos is within the top 5 for all years.
3. Organophosphates and herbicides make up the vast majority of the detected pesticide materials.
4. Dicofol is the only current use organochlorine that has been frequently detected since 2004.
5. Methomyl is the only carbomate insecticide detected within the top 10 pesticide materials.

The majority of pesticide detections occur in July and August, coinciding with the hottest part of the summer irrigation season and the peak in irrigation activities. During the 2010 irrigation season, July had the highest number of pesticide detections (40 detections), including 14 detections of chlorpyrifos, 12 of which exceeded the RWQV. No toxicity to *Ceriodaphnia dubia* was observed however, and it is speculated that, although elevated levels of chlorpyrifos were present in the water, the material was bound to suspended sediment or otherwise not available to the organisms.

SECTION 9: ACTIONS TAKEN TO ADDRESS WATER QUALITY IMPACTS – MANAGEMENT PLAN ACTIVITIES

In October 2008, the Westside Coalition submitted a Management Plan and Focused Watershed Plan (Focused Plan) which described the actions that would be taken to address the water quality issues identified by the monitoring program. The Management Plan described a general approach that covered all of the subwatersheds within the Westside Coalition, and the Focused Plan was targeted at the specific issues within Ingram and Hospital Creek. In January 2010, the Westside Coalition submitted a draft Focused Plan targeted towards addressing specific issues within the Westley Wasteway, Del Puerto Creek, and Orestimba Creek watershed (Focused Plan II) **Table 14** shows the implementation schedule listed in the Management Plan (see the Management Plan – General Approach, Table 4, October 23, 2008).

Table 14: Management Plan Implementation Schedule

Item	Action	Affecting	Estimated Start	Estimated Completion
1	Continue monitoring program	All Categories	On-going	On-going
2	Develop and implement Focused Plan	Site-specific	July 2008	2013
3	Compile MP inventory	All Categories	Jan. 2009	Nov. 2009
4	Develop subwatershed maps	All Categories	On-going	Jan. 2010
5	Determine regional pesticide application	Pesticides, aquatic toxicity	On-going	Annually updated
6	Continue participation in the Dissolved Oxygen study	Dissolved Oxygen	On-going	On-going
7	Analyze results of E. coli study and map/inventory potential sources	E. coli	Sept. 2007	Jan. 2010
8	Continue outreach and education efforts	All Categories	On-going	On-going
9	Analyze for correlation between low DO and other parameters	Dissolved Oxygen	Sept. 2008	June 2009
10	Continue participation in the Salinity TMDL Program	EC/TDS	On-going	On-going
11	Track changes in water quality	All Categories	On-going	On-going

1. Continue Monitoring Program.

This semi-annual monitoring report represents the 12th monitoring report submitted by the Westside Coalition since its inception in 2004. The monitoring program (as revised by the MRP Order) is designed to be a dynamic program that aggressively tracks known water quality issues and conducts broad assessment monitoring to identify new issues (see the MRP Order). The monitoring program is also designed to support the activities of the Management Plan and the Focused Watershed plans. The results of the monitoring program are reported twice annually (June and November).

2. Develop and Implement Focused Watershed Plan.

A Focused Plan for the Ingram and Hospital Creek watersheds was developed and submitted to the Regional Board on October 23, 2008. A draft Focused Plan for the Westley Wasteway, Del Puerto Creek, and Orestimba Creek was submitted in February 2010, and is in the process of being finalized. Since that time, the Westside Coalition has implemented a number of activities. A detailed update of the focused plan activities is included in **Attachment 6.**

3. Compile Management Practice Inventory.
A management plan survey for the Ingram and Hospital creek watersheds was completed as part of the Focused Plan (see above). A new survey for the Del Puerto Creek, Westley Wasteway, and Orestimba Creek watersheds is in progress (see **Attachment 6**).

4. Develop Subwatershed Maps.
The Westside Coalition submitted subwatershed maps for the major watersheds within its boundaries in 2008. These maps were based on known drainage patterns and available mapping information. As part of the focused plans, the Westside Coalition collected highly detailed drainage information on the Ingram and Hospital creek subwatersheds and is in the process of developing detailed maps for the Westley Wasteway, Del Puerto Creek, and Orestimba Creek subwatersheds will be developed. These maps include irrigation method information, drain locations, tailwater pond locations, and other useful information. **See Attachment 6**.

5. Determine Regional Pesticide Use.
Pesticide use report data is collected from the agricultural commissioners in the various counties occupied by the Westside Coalition. This pesticide use data is reviewed to develop the data presented in **Tables 6, 7,** and **8** of this report. Additionally, specific regional pesticide use data is periodically reviewed to attempt to compare with pesticide detections through the monitoring program.

6. Continue Participation in the Dissolved Oxygen Study.
On January 27, 2005 the Central Valley Regional Water Quality Control Board adopted Resolution R5-2005-0005 which included a TMDL directed to the point and non-point discharges that contribute to the dissolved oxygen impairment in the Stockton deepwater Ship Channel (DO TMDL). As part of the DO TMDL certain studies were required. The San Joaquin Valley Drainage Authority received funds from the State Water Resources Control Board to undertake these studies (Recipient Agreement ERP-02D-P63). These studies were completed in June of 2008. The project established a series of monitoring stations, developed a DO model, characterized the fate of algae and nutrients, developed linkages between flow, algae, nutrients and dissolved oxygen. Additional studies were proposed to connect the results of this effort to downstream impacts. This work is ongoing. The Westside Coalition has maintained the monitoring sites within boundaries of the Westside Coalition to maintain the data availability. The Westside Coalition also is prepared to continue to participate in the DO TMDL as further actions are developed.

7. Analyze results of E. coli study and map/inventory potential sources.
In 2007 the Westside Coalition, along with other coalitions, participated in a study to help determine the possible cause of various E. coli exceedances. Although the study was not completely conclusive, it indicated that the majority of E. coli exceedances were likely human in cause. As part of the focused plan, the management practice inventory surveys will collect information on manure usage. The Westside Coalition is also in the process of mapping rural residences within the subwatershed. It is assumed that rural residences will have septic systems that could potentially leach into creeks and drains.

Additionally, the Westside Coalition reviewed collected data on E. coli results for the period of 2008 through 2010 for all sites. **Figure 2** shows the percent of E. coli test results greater than 200 mpn for each site. **Figure 3** shows the percent of E. coli results greater than 200 mpn in each month.

Figure 2: Percent of E. Coli Results >200 MPN by site

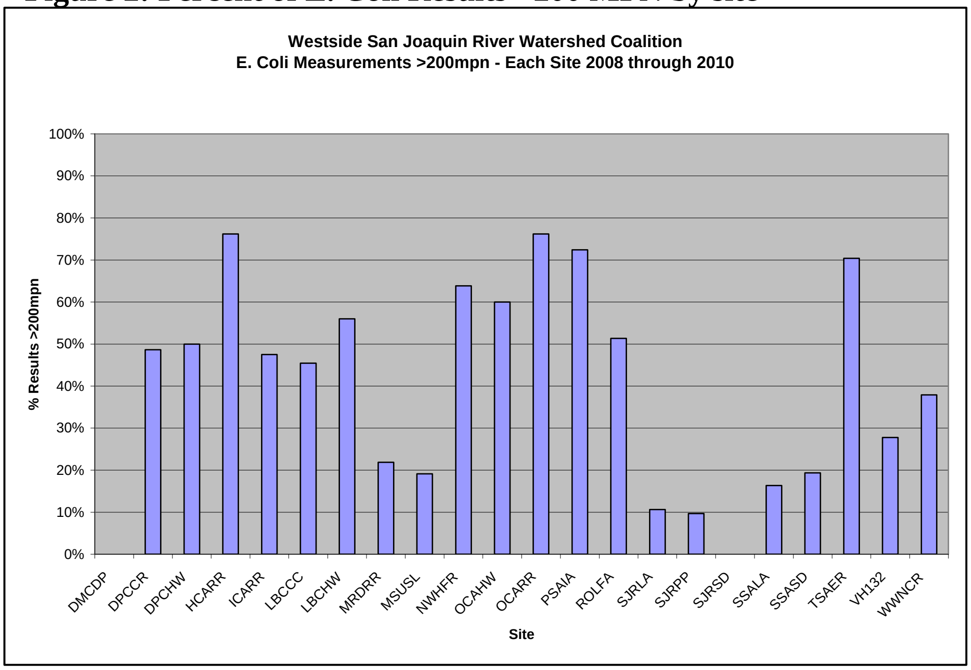
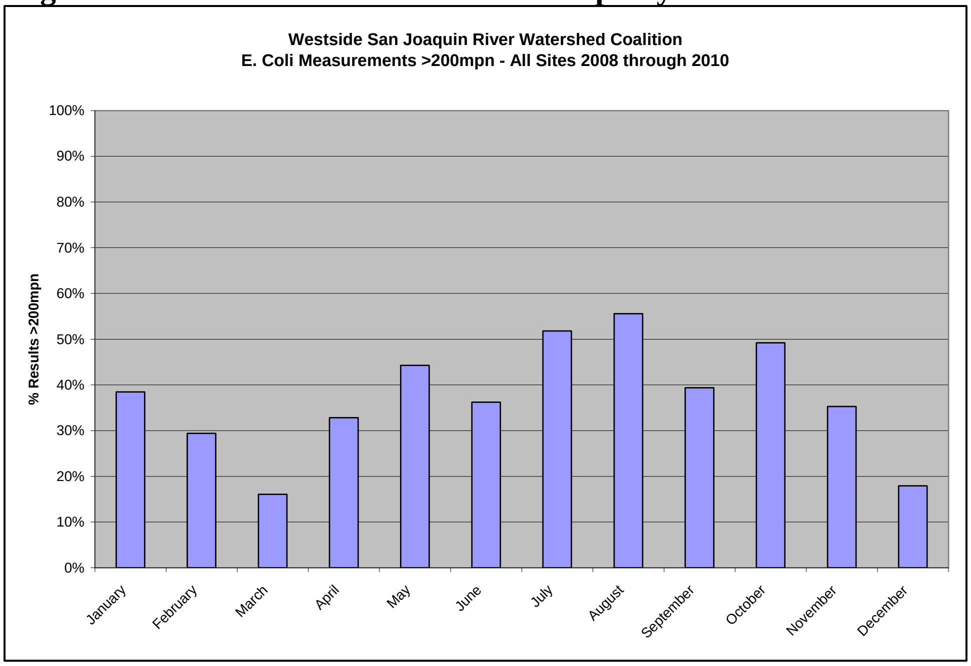


Figure 3: Percent of E. Coli Results >200mpn by Month.



The data in **Figures 2** and **3** provides general background information on the temporal and spatial presence of E. coli within the Westside Coalition, however it does not reveal much in terms of the source of these exceedances. The source of E. coli can be from run off containing manure, waste from animals (including wild and domestic animals), and discharges/seepage from residential septic systems.

8. Continue Reporting and Outreach.

Coalition outreach during this period consisted of member meetings, monthly updates to the Westside Coalition management committee and one on one meetings with coalition members. A Coalition update newsletter was also produced and distributed at the August grower meeting and through water district mailings that described exceedances in the northern region. Outreach was conducted per the tabulation in **Table 15**.

During this reporting period, one general Coalition member meeting was held in the region on August 19 at the Westley Fire Station. This event was held to update members on the water quality exceedances from the summer months in the northern Coalition region. Presentations included updates on water and sediment monitoring results in each of the watersheds with focus on the July results which showed numerous exceedances of chlorpyrifos. Also reviewed was management plans for priority watersheds (Ingram and Hospital Creeks). A presentation on management practices focused on the latest information on BMP studies conducted in the region as well as other BMPs applicable to manage sediment and pesticide runoff. Growers who had irrigation drainage were encouraged to adopt practices to protect surface water which include a number of options based on their crop and farming conditions. Those practices include irrigation drainage return systems, sediment ponds for containing irrigation drainage, managed vegetation in drainage ditches and use of PAM in irrigation water.

A Consultant (CURES) from the Westside Coalition meet during the summer months with numerous individual landowners with farming operations along Ingram, Hospital and Orestimba Creeks. In those meetings was discussed the pesticide and sediment problems identified in the waterways. Also potential mitigation practices that could be used to solve the problems including use of PAM in irrigation water, holding drainage water in sediment ponds or recirculating drainage water to other fields. Also discussed was potential funding sources available to assist in installing or maintaining the practices including funds provided by the Westside Coalition and AWEP funds from Natural Resources Conservation Service.

Table 15 lists the general grower and individual landowner outreach meetings held in the reporting period for Ingram, Hospital, Orestimba, Del Puerto Creeks watersheds and local stakeholder meetings where Coalition information/updates were provided by Westside Coalition Staff and CURES. Agendas and handouts for outreach meeting are included below. Copies of the presentations given at these meetings are also included in **Attachment 6**.

Table 15: Outreach Meetings

Date	Group	Location	Description	Approximate Attendance
Monthly	Meetings of Coalition Steering Committee	Los Banos	Review monitoring, budgeting and management plan implementation	20
3/2/2010	Individual Operator Tailgate Meeting	Westley	Discussed BMP options for orchards draining into Hospital Creek	2
3/2/2010	Individual Operator Tailgate Meeting	Westley	Discussed BMP options for orchards draining into Hospital Creek	2
3/2/2010	Individual Operator Tailgate Meeting	Westley	Discussed BMP options for orchards draining into Hospital Creek	2
3/2/2010	Cotton Project Meet	Dos Palos	Stakeholder outreach meeting	20
3/15/2010	SLCC Directors Retreat	Fish Camp	Presentation on Waiver status.	15
3/16/2010	Blewett Bd Meeting	Vernalis	Presentation on Waiver status.	5
3/23/2010	CCID Landowners Meeting	Firebaugh	Dos Palos Area Update	90
3/24/2010	CCID Landowners Meeting	Los Banos	Los Banos Area Update	175
3/25/2010	CCID Landowners Meeting	Gustine	Patterson Area Update	150
3/30/2010	SLWD Landowner Meeting	Los Banos	Landowner meeting for San Luis WD; discussed BMP for row and orchard crops; drift management	35
3/30/2010	PCA Meeting	Crows Landing	Discussed pesticide use of landowners along Orestimba Creek; BMP and funding options	

6/2/10	Individual Grower Meeting	Westley	Discussed BMP options for row crop fields draining into Hospital Creek	2
6/1//2010	Individual Grower Meeting	Crows Landing	Discussed BMP options for row crop, orchards draining into Orestimba Creek	1
8/3/2010	Individual Landowner Meeting	Crows Landing	Discussed BMP options for row crop fields draining into Orestimba Creek, San Joaquin River	3
8/3/2010	Individual Landowner Meeting	Westley	Discussed BMP options for row crop fields draining into Del Puerto, Ingram Creeks	5
8/3/2010	Individual Landowner Meeting	Patterson	Discussed BMP options for row crop fields draining into Ramona Lake/San Joaquin River	2
8/19/2010	Grower/PCA meeting; BMP tour	Westley	Landowner, crop advisor outreach meeting on July 2010 exceedances in norther WSJWQC region	40

In both general grower meetings and individual member meetings, landowners and operators with irrigation drainage are encouraged to adopt practices to protect surface water that include a number of options based on their crop and farming conditions. Those practices include irrigation drainage return systems, sediment ponds for containing irrigation drainage, managed vegetation in drainage ditches and use of PAM in irrigation water. The Coalition has collaborated with work in priority watersheds also continued in the reporting period with continuation of mapping parcels adjacent to Ingram, Hospital and Orestimba Creeks, identifying crops grown in the watersheds and scheduling individual meetings with growers who may have used pesticides associated with the exceedances in the waterways. A number of growers with parcels along Ingram and Hospital Creeks were contacted and scheduled for individual meetings that began in March 2010. In preparation for the meetings, pesticide use information from the Stanislaus County Agricultural Commissioners office was compiled and examined to see if use reports could be correlated to exceedances in the waterways. Due to the method of reporting pesticide applications based on Township, Section and Range (TSR) versus Assessor Parcels Numbers (APN) used to identify member parcels, exact correlations were not possible in many cases. However, the effort enables the Coalition to focus its resources on identifying the sources of agricultural discharge within the priority subwatersheds that could lead to water quality impairments (see **Attachment 6)**.

Grant Funding

The Westside Coalition continued to offer grant funding in 2010 to its members totaling $30,000 for construction of new tailwater silt ponds or to maintain existing ponds. The program funds 75% of the costs of any single project, up to a maximum of $6,000 per project. Fifteen projects were funded since the inception of the program.

USDA approved in August 2009 $2 million annually in grants over the next 5 years for projects intended to improve water quality in waterways in Stanislaus and Merced counties under the Agricultural Water Enhancement Program (AWEP), a program managed by the Natural Resource Conservation Service. The deadline for submitting applications was August 14 and Westside Coalition members were reportedly selected to receive funds (USDA does not release information on recipients of funds). The Coalition was a collaborator on the funding application to USDA developed by CURES, who is assisting with grower outreach in the Westside Coalition and other regions on AWEP funding availability over the next five years. High priority projects to be funded by AWEP include conversion to drip irrigation, adding irrigation drainage sediment basins and irrigation tailwater recirculation systems as well as other water quality related practices installed on fields currently draining into the waterways. Larger community (multi-farm/group project) systems can also be funded. The payment rate is approximately 50% of the statewide average cost for an installation. In the first round of funding, 22 projects ($2,028,592) were implemented in Stanislaus County. Growers who operate along any waterway in the Westside Coalition region were eligible for funding in this round and for future rounds of funding. One landowner along Hospital Creek was considered "high priority" during the application process and received funding under the program to install drip irrigation in fields previously with a furrow system and irrigation drainage. The conversion to drip irrigation eliminated the irrigation drainage from those fields.

9. Analyze for Correlation Between Low DO and Other Parameters.

The Westside Coalition has performed a preliminary review of the low DO measurements and other data. A summary of this review was included in the November 2009 Semi-Annual Monitoring Report.

10. Continue Participation in the Salinity TMDL Program.

The Westside Coalition is actively engaged in the Central Valley Salinity Alternatives for Long-term Sustainability (CVSALTS) process and is an active member of the Central Valley Salinity Coalition that has been organized to facilitate the funding of the CVSALT effort. The Coalition's participation includes both monetary contributions and a substantial commitment of staff time.

Specific actions by the Westside Coalition to support the CVSALT efforts include: (1) Coalition representative's consistent participation in the CVSALT committees and sub-committees including serving as chair of the Economic and Social Impact Committee. (2) Consistent participation and economic contributions to the Central Valley Salinity Coalition, including representative serving as president of the CV Salinity Coalition. In addition the San Joaquin Valley Drainage Authority is providing contracting and contract administration services for the CVSALT effort. The Westside Coalition has committed to substantial resources to help ensure that the CVSALT effort results in an effective and efficient salinity management program for the Central Valley.

11. Track Changes in Water Quality.

Water quality changes are tracked through the Westside Coalition's monitoring program (see the MRP Order). Water quality data is reported and summarized twice annually.

Other Activities.

- **Regional Tailwater Return Systems:** As was reported in prior monitoring reports, a number of regional tailwater ponds and recirculation systems have been constructed recently in the Patterson Subarea of the Westside Coalition (most recently the Northside

Recovery System and the Westley Tailwater Pond). These systems have shown significant impact in improving water quality in the receiving waterbody, but also increased water management flexibility. Two additional tailwater return system projects have been identified in the Ingram and Hospital Creek watershed areas, and potential funding programs for these are being sought.

- **Conversion to high efficiency irrigation systems:** Several of the districts within the Westside Coalition have implemented grant and loan programs to assist growers in upgrading their irrigation systems. During the 2009 irrigation season more than 2,500 acres of high efficiency irrigation systems came on line.

  High efficiency irrigation systems (including surface and subsurface drip systems and micro-sprinkler systems) are designed to apply a specific volume of water directly to each individual plant. Because of the relatively low rate of water application (compared to furrow irrigation methods) most of the water percolates directly into the root zone and tailwater (surface runoff) is virtually eliminated. Additionally, many pesticides and fertilizers can be applied directly through the irrigation system without aerial or in-field spraying. The photos below show historic and current views of the agricultural fields adjacent to the Hospital and Ingram Creek monitoring sites. These systems are likely to dramatically reduce the discharge of contaminants. **Attachment 6** includes examples of financial assistance programs from Central California Irrigation District and San Luis Canal Company.

Hospital Creek looking downstream (circa 2002). Note alfalfa in the background.

Hospital Creek looking downstream (April 2010). Alfalfa has been replaced with almond orchards on drip.

Ingram Creek looking North (circa 2003). The field in the background is ready for field-crop planting (furrow irrigated).

Ingram Creek looking North (April 2010). An almond orchard with a drip system has replaced the field crop.

Monitoring Results:

Data gathered since the inception of the monitoring program has allowed the Westside Coalition to identify problem areas and issues. Details of sites exhibiting significant toxicity during this monitoring period are included in **Attachment 2** and all results that exceeded RWQVs are included in **Attachment 5**. This information, along with results from previous years will be used as talking points during upcoming grower meetings to outline the problem issues and sites. The Management Plan and Focused Watershed Plan also outline approaches that will be implemented to address the highlighted issues. A number of preliminary conclusions can be made from the data collected so far:

- **Sediment Toxicity:** Sediment toxicity tests were performed on 10 samples in March (Event 65). Significant toxicity was measured at three sites (Hospital Creek – 77.5% survival, Ingram Creek – 35% survival, and Del Puerto Creek near Cox Road – 77.5% survival). These samples were tested for a variety of pesticides as well as total organic carbon (TOC), (see **Table 11**). In all three cases it appears that a combination of pesticides (including chlorpyrifos and pyrethroids) are the probable cause of toxicity. The Westside Coalition believes the best way to reduce sediment toxicity will be through the management of sediment discharges at the farm level. Sedimentation ponds and tailwater return ponds, along with grower awareness of the issue will likely reduce the amount of sediment load leaving the farm and depositing in the waterways. The Coalition's Management Plan and Focused Watershed Plan include management

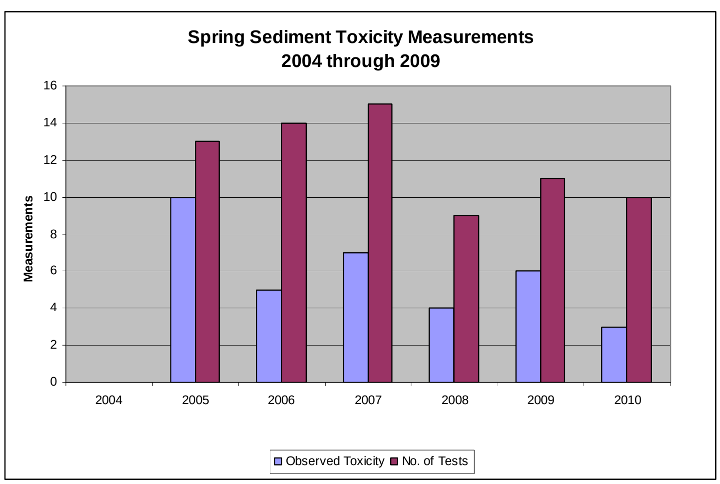


Figure 4: Fall Sediment Toxicity Tests

approaches to address sediment toxicity.

Figure 4 shows the number statistically significant observations during the spring sediment sampling (which typically occurs in March). The spring 2010 sediment results measured the least number of observed toxicity since the beginning of monitoring, and half of the number of results in 2010 that measured significant toxicity compared to the spring 2009 tests.

- **Aquatic Toxicity:** Aquatic toxicity samples were collected and tested for *Ceriodaphnia dubia*, fathead minnow, and algae in accordance with the Monitoring Order. A total of 160 aquatic toxicity tests were performed, including 18 field duplicates (100 for *Ceriodaphnia dubia*, 19 for fathead minnow, and 41 for algae). A total of six incidences of statistically significant toxicity were observed during four events – three for *Ceriodaphnia dubia*, one for fathead minnow, and two for algae. **Attachment 2** provides monitoring results for all of the sites that measured significant toxicity, including a discussion of the TIE and dilution series findings. Diuron was present in both of the results toxic to algae and likely contributed to the observed toxicity. The sample that measured toxicity to fathead minnow was observed in the field duplicate sample and was relatively small in magnitude (87.5% survival). The event sample did not measure any toxicity and none of the chemistry results indicated a probable cause. Of the three sites that measured toxicity to *Ceriodaphnia dubia*, only one also detected pesticides (Marshall Road Drain - chlorpyrifos, DDE, and diuron). No pesticides were detected in the other two samples and the cause of toxicity is not known. For comparison, during the 2009 irrigation season six samples also measured significant aquatic toxicity. However, all of these were to *Ceriodaphnia dubia* (five of which measured survival less than 50%). Five of the six 2009 toxic results could be tied to pesticides.

- **Pesticide Analyses:** During this reporting period, total of 17 different pesticides were detected in water samples during the 2010 irrigation season for a total of 150 detections. Seventy five exceeded the established RWQV. The more than half of these exceedances were caused by legacy pesticides like DDT or chlordane (45 exceedances, combined). Pesticide detections were linked to one instance of observed toxicity to *Ceriodaphnia dubia*, and two to algae (see **Attachment 2**). In the case of the algae toxicity, diuron is the suspected cause. For the *Ceriodaphnia dubia* toxicity, chlorpyrifos was present at a level that would be expected to reduce survival.

Chlorpyrifos and Diazinon TMDL Program. In addition to the its monthly monitoring program, the Westside Coalition also participates in the San Joaquin River Chlorpyrifos and Diazinon TMDL program. The Westside Coalition collected water samples for chlorpyrifos and diazinon analysis at the San Joaquin River at Sack Dam, Lander Avenue, and Las Palmas Avenue (near the PID pumps) in March and July to determine compliance with the TMDL program. In July, chlorpyrifos was detected at the Las Palmas Avenue (0.041 µg/L). A report discussing the Chlorpyrifos and

Diazinon TMDL monitoring results was submitted to the Central Valley Regional Water Quality Control Board on November 1st.

- **General Chemistry and Field Observations:** The monitoring results for field and general chemistry tests were generally similar to previous non-irrigation seasons. EC/TDS measured the largest number of exceedances for this reporting period (66 and 63 exceedances, respectively). Bacteria continues to be a leading source of exceedances (36 for E. Coli during this period). Other constituent exceedances include dissolved oxygen (20 exceedances), and boron (10 exceedances). Dissolved cadmium, copper, lead, nickel, and zinc results were compared to the calculated RWQV (based on site water hardness) and one copper exceedance was measured during this reporting period (Hospital Creek during the May sampling event). No toxicity was associated with that exceedance. With many of these constituents, the source of the exceedance is neither clear nor easily traceable, and often can be found in the source water itself (such as the San Joaquin River at Sack Dam or the Delta-Mendota Canal).

SECTION 10: COMMUNICATION REPORTS

Exceedance reports were submitted to the Central Valley Regional Water Quality Control Board in response to monitoring results for the reporting period. These reports are included in **Appendix B.**

Follow-up included reporting statistically significant toxic events and exceedences of water quality values to the overlying districts, PCA's and to individual Coalition participants. The districts would then communicate with the affected growers to notify them that there is a problem. Meetings are then to be organized at the Coalition level as required to inform landowners, operators, PCA's, chemical applicators and others on monitoring results and likely best management measures that could be undertaken to minimize these problems (see **Table 15**).

SECTION 11: CONCLUSIONS AND RECOMMENDATIONS

The Westside Coalition's monitoring program has identified constituents of concern (see **Attachments 2** and **5**). The Westside Coalition has submitted a Management Plan and Focused Watershed Plan to address the water quality concerns discovered by previous monitoring. Implementation of these plans has begun.

The Westside Coalition monitoring program has accumulated data from 70 regular monitoring events and 10 rain events. Data from this reporting period has verified previously identified water quality issues but has also showed some indications of an improving trend in water quality (see **Section 9**).

Attachment 1
Sampling Event Details

Event 65	Map	Caltest		APPL	PER				
March, 2010	Desig.	Gen Phy	Drnk Wtr	Pest	Sed Tox	CD Tox	PP Tox	SC Tox	Dup?
Hospital Cr at River Road	HCARR	No Flow			x				
Ingram Cr at River Road	ICARR	x	x	x	x	x			
Westley Wasteway near Cox Road	WWNCR	No Access							
Del Puerto Cr near Cox Road	DPCCR	x	x	x	x	x			
Del Puerto Cr at Hwy 33	DPCHW	No Flow			x				
Ramona Lake near Fig Avenue	ROLFA	x	x	x	x	x			
Marshall Road Drain near River Road	MRDRR	No Flow							
Orestimba Cr at River Road	OCARR	x	x	x	x	x			
Orestimba Cr at Hwy 33	OCAHW	x	x	x	x	x		x	
Newman Wasteway near Hills Ferry Road	NWHFR	x	x	x	x	x			x
San Joaquin River at Lander Avenue	SJRLA	x	x	x		x		x	
Mud Slough u/s San Luis Drain	MSUSL	x	x	x		x			
Salt Slough at Lander Avenue	SSALA	x	x	x		x		x	
Salt Slough at Sand Dam	SSASD	x	x	x		x		x	
Los Banos Creek at Highway 140	LBCHW	x	x	x		x			
Los Banos Creek at China Camp Road	LBCCC	x	x	x	x	x	x	x	x
Turner Slough near Edminster Road	TSAER	x	x	x		x	x		
Blewett Drain near Highway 132	VH132	No Flow							
Poso Slough at Indiana Avenue	PSAIA	x	x	x					
Los Banos Creek at Sunset Ave	LBCSA	x	x	x	x	x	x	x	
Little Panoche Cr at Western Boundary	LPCWB	No Flow							
Little Panoche Cr at San Luis Canal	LPCSL	No Flow							
Russell Ave. Drain at San Luis Canal	RADSL	No Flow							
San Joaquin River at Sack Dam	SJRSD	x	x	x					
San Joaquin River at PID Pumps	SJRPP	x	x	x					
Delta Mendota Canal at Del Puerto WD	DMCDP	x	x	x					

Event 66	Map	Caltest		APPL	PER				
April, 2010	Desig.	Gen Phy	Drnk Wtr	Pest	Sed Tox	CD Tox	PP Tox	SC Tox	Dup?
Hospital Cr at River Road	HCARR	x	x	x		x			
Ingram Cr at River Road	ICARR	x	x	x		x			
Westley Wasteway near Cox Road	WWNCR	No Access							
Del Puerto Cr near Cox Road	DPCCR	x	x	x		x			
Del Puerto Cr at Hwy 33	DPCHW	x	x	x		x			
Ramona Lake near Fig Avenue	ROLFA	x	x	x		x			
Marshall Road Drain near River Road	MRDRR	No Flow							
Orestimba Cr at River Road	OCARR	x	x	x		x			
Orestimba Cr at Hwy 33	OCAHW	x	x	x		x		x	
Newman Wasteway near Hills Ferry Road	NWHFR	x	x	x		x			
San Joaquin River at Lander Avenue	SJRLA	x	x	x		x		x	
Mud Slough u/s San Luis Drain	MSUSL	x	x	x		x			
Salt Slough at Lander Avenue	SSALA	x	x	x		x		x	x
Salt Slough at Sand Dam	SSASD	x	x	x		x		x	
Los Banos Creek at Highway 140	LBCHW	x	x	x		x			
Los Banos Creek at China Camp Road	LBCCC	x	x	x		x	x	x	
Turner Slough near Edminster Road	TSAER	x	x	x		x	x		
Blewett Drain near Highway 132	VH132	x	x	x					
Poso Slough at Indiana Avenue	PSAIA	x	x	x					
Los Banos Creek at Sunset Ave	LBCSA	No Flow							
Little Panoche Cr at Western Boundary	LPCWB	No Flow							
Little Panoche Cr at San Luis Canal	LPCSL	No Flow							
Russell Ave. Drain at San Luis Canal	RADSL	No Flow							
San Joaquin River at Sack Dam	SJRSD	x	x	x					
San Joaquin River at PID Pumps	SJRPP	x	x	x					
Delta Mendota Canal at Del Puerto WD	DMCDP	x	x	x					

Event 67	Map	Caltest		APPL	PER				
May, 2010	Desig.	Gen Phy	Drnk Wtr	Pest	Sed Tox	CD Tox	PP Tox	SC Tox	Dup?
Hospital Cr at River Road	HCARR	x	x	x		x			
Ingram Cr at River Road	ICARR	x	x	x		x			
Westley Wasteway near Cox Road	WWNCR	x	x	x		x		x	
Del Puerto Cr near Cox Road	DPCCR	x	x	x		x			
Del Puerto Cr at Hwy 33	DPCHW	No Flow							
Ramona Lake near Fig Avenue	ROLFA	x	x	x		x			
Marshall Road Drain near River Road	MRDRR	x	x	x		x			
Orestimba Cr at River Road	OCARR	x	x	x		x			
Orestimba Cr at Hwy 33	OCAHW	x	x	x		x		x	
Newman Wasteway near Hills Ferry Road	NWHFR	x	x	x		x			
San Joaquin River at Lander Avenue	SJRLA	x	x	x		x		x	
Mud Slough u/s San Luis Drain	MSUSL	x	x	x		x			
Salt Slough at Lander Avenue	SSALA	x	x	x		x		x	x
Salt Slough at Sand Dam	SSASD	x	x	x		x		x	
Los Banos Creek at Highway 140	LBCHW	x	x	x		x			
Los Banos Creek at China Camp Road	LBCCC	x	x	x		x	x	x	
Turner Slough near Edminster Road	TSAER	x	x	x		x	x		
Blewett Drain near Highway 132	VH132	x	x	x					
Poso Slough at Indiana Avenue	PSAIA	x	x	x					
Los Banos Creek at Sunset Ave	LBCSA	No Flow							
Little Panoche Cr at Western Boundary	LPCWB	No Flow							
Little Panoche Cr at San Luis Canal	LPCSL	No Flow							
Russell Ave. Drain at San Luis Canal	RADSL	No Flow							
San Joaquin River at Sack Dam	SJRSD	x	x	x					
San Joaquin River at PID Pumps	SJRPP	x	x	x					
Delta Mendota Canal at Del Puerto WD	DMCDP	x	x	x					

Event 68	Map	Caltest		APPL	PER				
June, 2010	Desig.	Gen Phy	Drnk Wtr	Pest	Sed Tox	CD Tox	PP Tox	SC Tox	Dup?
Hospital Cr at River Road	HCARR	x	x	x		x			
Ingram Cr at River Road	ICARR	x	x	x		x			
Westley Wasteway near Cox Road	WWNCR	x	x	x		x		x	
Del Puerto Cr near Cox Road	DPCCR	x	x	x		x			
Del Puerto Cr at Hwy 33	DPCHW	No Flow							
Ramona Lake near Fig Avenue	ROLFA	x	x	x		x			
Marshall Road Drain near River Road	MRDRR	x	x	x		x			
Orestimba Cr at River Road	OCARR	x	x	x		x			
Orestimba Cr at Hwy 33	OCAHW	x	x	x		x		x	
Newman Wasteway near Hills Ferry Road	NWHFR	x	x	x		x			
San Joaquin River at Lander Avenue	SJRLA	x	x	x		x		x	
Mud Slough u/s San Luis Drain	MSUSL	x	x	x		x			
Salt Slough at Lander Avenue	SSALA	x	x	x		x		x	x
Salt Slough at Sand Dam	SSASD	x	x	x		x		x	
Los Banos Creek at Highway 140	LBCHW	x	x	x		x			
Los Banos Creek at China Camp Road	LBCCC	x	x	x		x	x	x	
Turner Slough near Edminster Road	TSAER	x	x	x		x	x		
Blewett Drain near Highway 132	VH132	x	x	x					
Poso Slough at Indiana Avenue	PSAIA	x	x	x					
Los Banos Creek at Sunset Ave	LBCSA	No Flow							
Little Panoche Cr at Western Boundary	LPCWB	No Flow							
Little Panoche Cr at San Luis Canal	LPCSL	No Flow							
Russell Ave. Drain at San Luis Canal	RADSL	No Flow							
San Joaquin River at Sack Dam	SJRSD	x	x	x					
San Joaquin River at PID Pumps	SJRPP	x	x	x					
Delta Mendota Canal at Del Puerto WD	DMCDP	x	x	x					

Event 69 July, 2010	Map Desig.	Caltest Gen Phy	Caltest Drnk Wtr	APPL Pest	PER Sed Tox	PER CD Tox	PER PP Tox	PER SC Tox	Dup?
Hospital Cr at River Road	HCARR	x	x	x		x			
Ingram Cr at River Road	ICARR	x	x	x		x			
Westley Wasteway near Cox Road	WWNCR	x	x	x		x		x	
Del Puerto Cr near Cox Road	DPCCR	x	x	x		x			
Del Puerto Cr at Hwy 33	DPCHW	No Flow							
Ramona Lake near Fig Avenue	ROLFA	x	x	x		x			
Marshall Road Drain near River Road	MRDRR	x	x	x		x			
Orestimba Cr at River Road	OCARR	x	x	x		x			
Orestimba Cr at Hwy 33	OCAHW	x	x	x		x		x	
Newman Wasteway near Hills Ferry Road	NWHFR	x	x	x		x			
San Joaquin River at Lander Avenue	SJRLA	x	x	x		x		x	
Mud Slough u/s San Luis Drain	MSUSL	x	x	x		x			
Salt Slough at Lander Avenue	SSALA	x	x	x		x		x	x
Salt Slough at Sand Dam	SSASD	x	x	x		x		x	
Los Banos Creek at Highway 140	LBCHW	x	x	x		x			
Los Banos Creek at China Camp Road	LBCCC	x	x	x		x	x	x	
Turner Slough near Edminster Road	TSAER	x	x	x		x	x		
Blewett Drain near Highway 132	VH132	x	x	x					
Poso Slough at Indiana Avenue	PSAIA	x	x	x					
Los Banos Creek at Sunset Ave	LBCSA	No Flow							
Little Panoche Cr at Western Boundary	LPCWB	No Flow							
Little Panoche Cr at San Luis Canal	LPCSL	No Flow							
Russell Ave. Drain at San Luis Canal	RADSL	No Flow							
San Joaquin River at Sack Dam	SJRSD	x	x	x					
San Joaquin River at PID Pumps	SJRPP	x	x	x					
Delta Mendota Canal at Del Puerto WD	DMCDP	x	x	x					

Event 70 August, 2010	Map Desig.	Caltest Gen Phy	Caltest Drnk Wtr	APPL Pest	PER Sed Tox	PER CD Tox	PER PP Tox	PER SC Tox	Dup?
Hospital Cr at River Road	HCARR	x	x	x		x			
Ingram Cr at River Road	ICARR	x	x	x		x			
Westley Wasteway near Cox Road	WWNCR	x	x	x		x		x	
Del Puerto Cr near Cox Road	DPCCR	x	x	x		x			
Del Puerto Cr at Hwy 33	DPCHW	No Flow							
Ramona Lake near Fig Avenue	ROLFA	x	x	x		x			
Marshall Road Drain near River Road	MRDRR	x	x	x		x			
Orestimba Cr at River Road	OCARR	x	x	x		x			
Orestimba Cr at Hwy 33	OCAHW	x	x	x		x		x	
Newman Wasteway near Hills Ferry Road	NWHFR	x	x	x		x			
San Joaquin River at Lander Avenue	SJRLA	x	x	x		x		x	
Mud Slough u/s San Luis Drain	MSUSL	x	x	x		x			
Salt Slough at Lander Avenue	SSALA	x	x	x		x		x	x
Salt Slough at Sand Dam	SSASD	x	x	x		x		x	
Los Banos Creek at Highway 140	LBCHW	x	x	x		x			
Los Banos Creek at China Camp Road	LBCCC	x	x	x		x	x	x	
Turner Slough near Edminster Road	TSAER	x	x	x		x	x		
Blewett Drain near Highway 132	VH132	x	x	x					
Poso Slough at Indiana Avenue	PSAIA	x	x	x					
Los Banos Creek at Sunset Ave	LBCSA	No Flow							
Little Panoche Cr at Western Boundary	LPCWB	No Flow							
Little Panoche Cr at San Luis Canal	LPCSL	No Flow							
Russell Ave. Drain at San Luis Canal	RADSL	No Flow							
San Joaquin River at Sack Dam	SJRSD	x	x	x					
San Joaquin River at PID Pumps	SJRPP	x	x	x					
Delta Mendota Canal at Del Puerto WD	DMCDP	x	x	x					

Attachment 2
Significant Aquatic Toxicity Results

Westside San Joaquin River Watershed Coalition
Significant Aquatic Toxicity Results

Monitoring Site	Sample Date	Event	Reactive Species	Results	Control Results	Percent Difference	Units
Del Puerto Creek at Hwy 33	3/9/2010	65	Ceriodaphnia dubia	40	100	60%	%

Followup: Toxicity was not persistent in the TIE and interpretation was not possible.

Field Data

DO	7.65	mg/l
EC	560	µmhos/cm
Est Depth	0.5	ft
Flow	7.5	cfs
pH	8.4	
Staff Gage		ft
Temp	11.72	c

Water Chemistry

Hardness as CaCO3	450		mg/L
Arsenic	0.88		µg/L
Boron	540		µg/L
Cadmium	-0.011	ND	µg/L
Cadmium (dissolved)	-0.011	ND	µg/L
Copper	1.2		µg/L
Copper (dissolved)	0.7		µg/L
Lead	-0.071	ND	µg/L
Lead (dissolved)	-0.071	ND	µg/L
Nickel	1.7		µg/L
Nickel (dissolved)	1.3		µg/L
Selenium	0.6	DNQ	µg/L
Zinc	4.5		µg/L
Zinc (dissolved)	4		µg/L
HCH, alpha	-0.005	ND	µg/L
HCH, beta	-0.008	ND	µg/L
HCH, delta	-0.005	ND	µg/L
HCH, gamma	-0.005	ND	µg/L

Detected Pesticides

DNQ = Estimated value, below reporting limit.
Y = % Difference primary and confirmation column is >40%.
B = Constituent also detected in blank sample.

Monitoring Site	Sample Date	Event	Reactive Species	Results	Control Results	Percent Difference	Units
Marshall Road Drain near River Road	5/11/2010	67	Ceriodaphnia dubia	0	100	100%	%

Followup: Dilution series measured 1.46 toxic units. TIE suggested that a particulate-associated and metabolically active material(s) contributed to the toxicity.

Field Data

DO	8.57	mg/l
EC	594	µmhos/cm
Est Depth		ft
Flow	1.07	cfs
pH	7.82	
Staff Gage		ft
Temp	12.03	c

Water Chemistry

Bromide	0.024	DNQ	mg/L
Dissolved Organic Carbon	10		mg/L
E. coli	2400	>	MPN/100
Total Organic Carbon	12		mg/L
Dissolved Solids	470		mg/L
Hardness as CaCO3	200		mg/L
Suspended Solids	15		mg/L
Turbidity	9.5		NTU
Arsenic	2		µg/L
Boron	380		µg/L
Cadmium	0.04	DNQ	µg/L
Cadmium (dissolved)	0.02	DNQ	µg/L
Copper	5.2		µg/L
Copper (dissolved)	4.2		µg/L
Lead	0.79		µg/L
Lead (dissolved)	-0.071	ND	µg/L
Nickel	4.2		µg/L
Nickel (dissolved)	3.5		µg/L
Selenium	1.6		µg/L
Zinc	17		µg/L
Zinc (dissolved)	11		µg/L
Ammonia as N	0.99		mg/L
Nitrate + Nitrite as N	3		mg/L
Nitrogen, Total Kjeldahl	4		mg/L
OrthoPhosphate as P	0.093		mg/L
Phosphate as P	0.19		mg/L
HCH, alpha	-0.005	ND	µg/L
HCH, beta	-0.008	ND	µg/L
HCH, delta	-0.005	ND	µg/L
HCH, gamma	-0.005	ND	µg/L

Detected Pesticides

Chlorpyrifos	0.53
Prowl	1.1

DNQ = Estimated value, below reporting limit.
Y = % Difference primary and confirmation column is >40%.
B = Constituent also detected in blank sample.

Monitoring Site	Sample Date	Event	Reactive Species	Results	Control Results	Percent Difference	Units
Westley Wasteway near Cox Road	5/11/2010	67	Selenastrum capricornutum	1,503,000	1,958,000	23%	cells/ml

Followup: Toxicity did not trigger follow-up testing.

Field Data

DO	7.5	mg/l
EC	359	µmhos/cm
Est Depth	1.37	ft
Flow	5.9	cfs
pH	7.59	
Staff Gage	4.1	ft
Temp	13.64	c

Water Chemistry

Bromide	-0.01	ND	mg/L
Dissolved Organic Carbon	5.5		mg/L
E. coli	1300		MPN/100
Total Organic Carbon	6.2		mg/L
Dissolved Solids	300		mg/L
Hardness as CaCO3	130		mg/L
Suspended Solids	150		mg/L
Turbidity	62		NTU
Arsenic	3.2		µg/L
Boron	270		µg/L
Cadmium	0.03	DNQ	µg/L
Cadmium (dissolved)	-0.011	ND	µg/L
Copper	6.5		µg/L
Copper (dissolved)	1.8		µg/L
Lead	2.3		µg/L
Lead (dissolved)	-0.071	ND	µg/L
Nickel	9.8		µg/L
Nickel (dissolved)	2.3		µg/L
Selenium	0.6	DNQ	µg/L
Zinc	20		µg/L
Zinc (dissolved)	3.6		µg/L
Ammonia as N	0.14		mg/L
Nitrate + Nitrite as N	1.4		mg/L
Nitrogen, Total Kjeldahl	1		mg/L
OrthoPhosphate as P	0.22		mg/L
Phosphate as P	0.3		mg/L
HCH, alpha	-0.005	ND	µg/L
HCH, beta	-0.008	ND	µg/L
HCH, delta	-0.005	ND	µg/L
HCH, gamma	-0.005	ND	µg/L

Detected Pesticides

Chlorpyrifos	0.012	DNQ
DDE(p,p')	0.011	
Diuron	13	

DNQ = Estimated value, below reporting limit.
Y = % Difference primary and confirmation column is >40%.
B = Constituent also detected in blank sample.

Monitoring Site	Sample Date	Event	Reactive Species	Results	Control Results	Percent Difference	Units
Westley Wasteway near Cox Road	6/8/2010	68	Selenastrum capricornutum	764,000	1,675,000	54%	cells/ml

Followup: TIE treatment were contaminated with a foreign algal species. Results imply that a particulate-associated, non-polar organic may have contributed to toxicity.

Field Data

DO	5.9	mg/l
EC	573	µmhos/cm
Est Depth	1.3	ft
Flow	4.3	cfs
pH	7.79	
Staff Gage	4	ft
Temp	21.9	c

Water Chemistry

Bromide	0.18	DNQ	mg/L
Dissolved Organic Carbon	7.3		mg/L
E. coli	1200		MPN/100
Total Organic Carbon	7.8		mg/L
Dissolved Solids	410		mg/L
Hardness as CaCO3	160		mg/L
Suspended Solids	290		mg/L
Turbidity	170		NTU
Arsenic	6.2		µg/L
Boron	354		µg/L
Cadmium	0.09	DNQ	µg/L
Cadmium (dissolved)	-0.011	ND	µg/L
Copper	15		µg/L
Copper (dissolved)	3		µg/L
Lead	8.9		µg/L
Lead (dissolved)	-0.071	ND	µg/L
Nickel	22		µg/L
Nickel (dissolved)	3.7		µg/L
Selenium	0.91	DNQ	µg/L
Zinc	44		µg/L
Zinc (dissolved)	2.3		µg/L
Ammonia as N	0.45		mg/L
Nitrate + Nitrite as N	1.1		mg/L
Nitrogen, Total Kjeldahl	1.8		mg/L
OrthoPhosphate as P	0.28		mg/L
Phosphate as P	0.45		mg/L
HCH, alpha	-0.005	ND	µg/L
HCH, beta	-0.008	ND	µg/L
HCH, delta	-0.005	ND	µg/L
HCH, gamma	-0.005	ND	µg/L

Detected Pesticides

DDE(p,p')	0.027
DDT(p,p')	0.01
Diuron	11

DNQ = Estimated value, below reporting limit.
Y = % Difference primary and confirmation column is >40%.
B = Constituent also detected in blank sample.

Monitoring Site	Sample Date	Event	Reactive Species	Results	Control Results	Percent Difference	Units
Los Banos Creek at China Camp Road	8/10/2010	70	Pimephales promelas	88	100	13%	%

Followup: Event sample not toxic. Toxicity did not trigger follow up testing.

Field Data

DO	0.19	mg/l
EC	1871	µmhos/cm
Est Depth	3.27	ft
Flow	0	cfs
pH	7.64	
Staff Gage	2.37	ft
Temp	19.03	c

Water Chemistry

Bromide	0.027	DNQ	mg/L
Dissolved Organic Carbon	5.8		mg/L
E. coli	610		MPN/100
Total Organic Carbon	7.1		mg/L
Dissolved Solids	1100		mg/L
Hardness as CaCO3	420		mg/L
Suspended Solids	72		mg/L
Turbidity	11		NTU
Ammonia as N	1.5		mg/L
Nitrate + Nitrite as N	2.9		mg/L
Nitrogen, Total Kjeldahl	3.2		mg/L
OrthoPhosphate as P	0.28		mg/L
Phosphate as P	0.55		mg/L

Detected Pesticides

DNQ = Estimated value, below reporting limit.
Y = % Difference primary and confirmation column is >40%.
B = Constituent also detected in blank sample.

Monitoring Site	Sample Date	Event	Reactive Species	Results	Control Results	Percent Difference	Units
Turner Slough at Edminster Road	8/10/2010	70	Ceriodaphnia dubia	75	100	25%	%

Followup: Toxicity did not trigger follow up testing.

Field Data

DO	5	mg/l
EC	198	µmhos/cm
Est Depth	1.61	ft
Flow	0	cfs
pH	7.14	
Staff Gage		ft
Temp	22.29	c

Water Chemistry

Bromide	-0.01	ND	mg/L
Dissolved Organic Carbon	4.2		mg/L
E. coli	390		MPN/100
Total Organic Carbon	3.9		mg/L
Dissolved Solids	110		mg/L
Hardness as CaCO3	76		mg/L
Suspended Solids	100		mg/L
Turbidity	60		NTU
Ammonia as N	0.3		mg/L
Nitrate + Nitrite as N	0.28		mg/L
Nitrogen, Total Kjeldahl	0.98		mg/L
OrthoPhosphate as P	0.048		mg/L
Phosphate as P	0.15		mg/L

Detected Pesticides

DNQ = Estimated value, below reporting limit.
Y = % Difference primary and confirmation column is >40%.
B = Constituent also detected in blank sample.

Attachment 3
Field Quality Control Sample Results

Field Quality Control Samples

Field Blank

Analyte/Species	Type	Event	QC Code	FB	QC Code	Units	% Difference	
Sample Date:	**3/9/2010**	**Site:**	**Newman Wasteway near Hills Ferry Road**					
Ammonia as N	General Chemistry	0.088	DNQ	-0.06	ND	mg/L	NA	
Arsenic	General Chemistry	4		-0.008	ND	µg/L	NA	
Boron	General Chemistry	1100		2.7	DNQ	µg/L	0%	
Bromide	General Chemistry	0.011	DNQ	-0.01	ND	mg/L	NA	
Cadmium	General Chemistry	0.02	DNQ	-0.011	ND	µg/L	NA	
Cadmium (dissolved)	General Chemistry	-0.011	ND	-0.011	ND	µg/L	NA	
Copper	General Chemistry	6.1		0.26	DNQ	µg/L	4%	
Copper (dissolved)	General Chemistry	0.32	DNQ	0.33	DNQ	µg/L	103%	*
Dissolved Organic Carbon	General Chemistry	5		0.21	DNQ	mg/L	4%	
Dissolved Solids	General Chemistry	1100		-4	ND	mg/L	NA	
E. coli	General Chemistry	75		-1	ND	MPN/100 mL	NA	
Hardness as CaCO3	General Chemistry	530		-1.7	ND	mg/L	NA	
Lead	General Chemistry	2		-0.071	ND	µg/L	NA	
Lead (dissolved)	General Chemistry	-0.071	ND	-0.071	ND	µg/L	NA	
Nickel	General Chemistry	17		0.03	DNQ	µg/L	0%	
Nickel (dissolved)	General Chemistry	3.3		-0.01	ND	µg/L	NA	
Nitrate + Nitrite as N	General Chemistry	0.17		-0.02	ND	mg/L	NA	
Nitrogen, Total Kjeldahl	General Chemistry	0.66		-0.07	ND	mg/L	NA	
OrthoPhosphate as P	General Chemistry	0.34		-0.006	ND	mg/L	NA	
Phosphate as P	General Chemistry	0.77		-0.01	ND	mg/L	NA	
Selenium	General Chemistry	0.76	DNQ	-0.06	ND	µg/L	NA	
Suspended Solids	General Chemistry	59		-2	ND	mg/L	NA	
Total Organic Carbon	General Chemistry	5.2		0.27	DNQ	mg/L	5%	
Turbidity	General Chemistry	34		0.08		NTU	0%	
Zinc	General Chemistry	12		-0.8	ND	µg/L	NA	
Zinc (dissolved)	General Chemistry	-0.8	ND	-0.8	ND	µg/L	NA	
Aldrin	Pesticide	-0.009	ND	-0.009	ND	µg/L	NA	
Atrazine	Pesticide	-0.07	ND	-0.07	ND	µg/L	NA	
Azinphos methyl	Pesticide	-0.02	ND	-0.02	ND	µg/L	NA	
Chlordane, Alpha-	Pesticide	-0.007	ND	-0.007	ND	µg/L	NA	
Chlordane, gamma-	Pesticide	-0.006	ND	-0.006	ND	µg/L	NA	
Chlorpyrifos	Pesticide	-0.0026	ND	-0.0026	ND	µg/L	NA	
Cyanazine	Pesticide	-0.09	ND	-0.09	ND	µg/L	NA	
DDD(p,p')	Pesticide	-0.003	ND	-0.003	ND	µg/L	NA	
DDE(p,p')	Pesticide	-0.004	ND	-0.004	ND	µg/L	NA	
DDT(p,p')	Pesticide	-0.007	ND	-0.007	ND	µg/L	NA	
Demeton-s	Pesticide	-0.08	ND	-0.08	ND	µg/L	NA	
Diazinon	Pesticide	-0.004	ND	-0.004	ND	µg/L	NA	
Dichlorvos	Pesticide	-0.02	ND	-0.02	ND	µg/L	NA	
Dicofol	Pesticide	-0.01	ND	-0.01	ND	µg/L	NA	
Dieldrin	Pesticide	-0.005	ND	-0.005	ND	µg/L	NA	
Dimethoate	Pesticide	-0.080	ND	-0.080	ND	µg/L	NA	
Disulfoton	Pesticide	-0.020	ND	-0.020	ND	µg/L	NA	

Event = Event Sample Result FB = Field Blank Sample Result

Field Quality Control Samples

Field Blank

Analyte/Species	Type	Event	QC Code	FB	QC Code	Units	% Difference	
Diuron	Pesticide	1.1		-0.20	ND	µg/L	NA	
Endosulfan I	Pesticide	-0.005	ND	-0.005	ND	µg/L	NA	
Endosulfan II	Pesticide	-0.004	ND	-0.004	ND	µg/L	NA	
Endosulfan Sulfate	Pesticide	-0.005	ND	-0.005	ND	µg/L	NA	
Endrin	Pesticide	-0.007	ND	-0.007	ND	µg/L	NA	
EPTC	Pesticide	-0.03	ND	-0.03	ND	µg/L	NA	
HCH, alpha	Pesticide	-0.005	ND	-0.005	ND	µg/L	NA	
HCH, beta	Pesticide	-0.008	ND	-0.008	ND	µg/L	NA	
HCH, delta	Pesticide	-0.005	ND	-0.005	ND	µg/L	NA	
HCH, gamma	Pesticide	-0.005	ND	-0.005	ND	µg/L	NA	
Heptachlor	Pesticide	-0.008	ND	-0.008	ND	µg/L	NA	
Heptachlor epoxide	Pesticide	-0.007	ND	-0.007	ND	µg/L	NA	
Linuron	Pesticide	-0.20	ND	-0.20	ND	µg/L	NA	
Malathion	Pesticide	-0.050	ND	-0.050	ND	µg/L	NA	
Methamidophos	Pesticide	-0.08	ND	-0.08	ND	µg/L	NA	
Methidathion	Pesticide	-0.04	ND	-0.04	ND	µg/L	NA	
Methoxychlor	Pesticide	-0.008	ND	-0.008	ND	µg/L	NA	
Parathion, Ethyl	Pesticide	-0.02	ND	-0.02	ND	µg/L	NA	
Parathion, Methyl	Pesticide	-0.075	ND	-0.075	ND	µg/L	NA	
Phorate	Pesticide	-0.072	ND	-0.072	ND	µg/L	NA	
Phosmet	Pesticide	-0.06	ND	-0.06	ND	µg/L	NA	
Prowl	Pesticide	-0.04	ND	-0.04	ND	µg/L	NA	
Simazine	Pesticide	0.24	DNQ	-0.08	ND	µg/L	NA	
Toxaphene	Pesticide	-0.380	ND	-0.380	ND	µg/L	NA	
Trifluralin	Pesticide	-0.036	ND	-0.036	ND	µg/L	NA	
Sample Date:	**4/13/2010**	**Site: Salt Slough at Lander Ave**						
Ammonia as N	General Chemistry	0.3		0.066	DNQ	mg/L	22%	*
Arsenic	General Chemistry	4.5		-0.008	ND	µg/L	NA	
Boron	General Chemistry	680		1.3	DNQ	µg/L	0%	
Bromide	General Chemistry	0.38	DNQ	-0.01	ND	mg/L	NA	
Cadmium	General Chemistry	0.02	DNQ	-0.011	ND	µg/L	NA	
Cadmium (dissolved)	General Chemistry	0.01	DNQ	-0.011	ND	µg/L	NA	
Copper	General Chemistry	1.9		0.06	DNQ	µg/L	3%	
Copper (dissolved)	General Chemistry	1.1		0.27	DNQ	µg/L	25%	*
Dissolved Organic Carbon	General Chemistry	7.1		0.28	DNQ	mg/L	4%	
Dissolved Solids	General Chemistry	950		-4	ND	mg/L	NA	
E. coli	General Chemistry	68		-1	ND	MPN/100 mL	NA	
Hardness as CaCO3	General Chemistry	370		-1.7	ND	mg/L	NA	
Lead	General Chemistry	0.42		-0.071	ND	µg/L	NA	
Lead (dissolved)	General Chemistry	-0.071	ND	-0.071	ND	µg/L	NA	
Nickel	General Chemistry	3.5		0.02	DNQ	µg/L	1%	
Nickel (dissolved)	General Chemistry	2.2		0.04	DNQ	µg/L	2%	
Nitrate + Nitrite as N	General Chemistry	1.6		-0.02	ND	mg/L	NA	
Nitrogen, Total Kjeldahl	General Chemistry	0.51		-0.07	ND	mg/L	NA	

Event = Event Sample Result FB = Field Blank Sample Result

Field Quality Control Samples

Field Blank

Analyte/Species	Type	Event	QC Code	FB	QC Code	Units	% Difference
OrthoPhosphate as P	General Chemistry	0.14		-0.006	ND	mg/L	NA
Phosphate as P	General Chemistry	0.43		-0.01	ND	mg/L	NA
Selenium	General Chemistry	0.41	DNQ	-0.06	ND	µg/L	NA
Suspended Solids	General Chemistry	64		-2	ND	mg/L	NA
Total Organic Carbon	General Chemistry	7.7		0.21	DNQ	mg/L	3%
Turbidity	General Chemistry	33		-0.02	ND	NTU	NA
Zinc	General Chemistry	3.7		-0.8	ND	µg/L	NA
Zinc (dissolved)	General Chemistry	-0.8	ND	-0.8	ND	µg/L	NA
Aldrin	Pesticide	-0.009	ND	-0.009	ND	µg/L	NA
Atrazine	Pesticide	-0.07	ND	-0.07	ND	µg/L	NA
Azinphos methyl	Pesticide	-0.02	ND	-0.02	ND	µg/L	NA
Chlordane, Alpha-	Pesticide	-0.007	ND	-0.007	ND	µg/L	NA
Chlordane, gamma-	Pesticide	-0.006	ND	-0.006	ND	µg/L	NA
Chlorpyrifos	Pesticide	-0.0026	ND	-0.0026	ND	µg/L	NA
Cyanazine	Pesticide	-0.09	ND	-0.09	ND	µg/L	NA
DDD(p,p')	Pesticide	-0.003	ND	-0.003	ND	µg/L	NA
DDE(p,p')	Pesticide	-0.004	ND	-0.004	ND	µg/L	NA
DDT(p,p')	Pesticide	-0.007	ND	-0.007	ND	µg/L	NA
Demeton-s	Pesticide	-0.08	ND	-0.08	ND	µg/L	NA
Diazinon	Pesticide	-0.004	ND	-0.004	ND	µg/L	NA
Dichlorvos	Pesticide	-0.02	ND	-0.02	ND	µg/L	NA
Dicofol	Pesticide	-0.01	ND	-0.01	ND	µg/L	NA
Dieldrin	Pesticide	-0.005	ND	-0.005	ND	µg/L	NA
Dimethoate	Pesticide	-0.080	ND	-0.080	ND	µg/L	NA
Disulfoton	Pesticide	-0.020	ND	-0.020	ND	µg/L	NA
Diuron	Pesticide	0.60		-0.20	ND	µg/L	NA
Endosulfan I	Pesticide	-0.005	ND	-0.005	ND	µg/L	NA
Endosulfan II	Pesticide	-0.004	ND	-0.004	ND	µg/L	NA
Endosulfan Sulfate	Pesticide	-0.005	ND	-0.005	ND	µg/L	NA
Endrin	Pesticide	-0.007	ND	-0.007	ND	µg/L	NA
EPTC	Pesticide	-0.03	ND	-0.03	ND	µg/L	NA
HCH, alpha	Pesticide	-0.005	ND	-0.005	ND	µg/L	NA
HCH, beta	Pesticide	-0.008	ND	-0.008	ND	µg/L	NA
HCH, delta	Pesticide	-0.005	ND	-0.005	ND	µg/L	NA
HCH, gamma	Pesticide	-0.005	ND	-0.005	ND	µg/L	NA
Heptachlor	Pesticide	-0.008	ND	-0.008	ND	µg/L	NA
Heptachlor epoxide	Pesticide	-0.007	ND	-0.007	ND	µg/L	NA
Linuron	Pesticide	-0.20	ND	-0.20	ND	µg/L	NA
Malathion	Pesticide	-0.050	ND	-0.050	ND	µg/L	NA
Methamidophos	Pesticide	-0.08	ND	-0.08	ND	µg/L	NA
Methidathion	Pesticide	-0.04	ND	-0.04	ND	µg/L	NA
Methoxychlor	Pesticide	-0.008	ND	-0.008	ND	µg/L	NA
Parathion, Ethyl	Pesticide	-0.02	ND	-0.02	ND	µg/L	NA
Parathion, Methyl	Pesticide	-0.075	ND	-0.075	ND	µg/L	NA
Phorate	Pesticide	-0.072	ND	-0.072	ND	µg/L	NA

Event = Event Sample Result FB = Field Blank Sample Result

Field Quality Control Samples

Field Blank

Analyte/Species	Type	Event	QC Code	FB	QC Code	Units	% Difference
Phosmet	Pesticide	-0.06	ND	-0.06	ND	µg/L	NA
Prowl	Pesticide	-0.04	ND	-0.04	ND	µg/L	NA
Simazine	Pesticide	-0.08	ND	-0.08	ND	µg/L	NA
Toxaphene	Pesticide	-0.38	ND	-0.38	ND	µg/L	NA
Trifluralin	Pesticide	-0.036	ND	-0.036	ND	µg/L	NA
Sample Date: 5/11/2010 Site: Salt Slough at Lander Ave							
Ammonia as N	General Chemistry	0.26		-0.04	ND	mg/L	NA
Arsenic	General Chemistry	5.3		-0.008	ND	µg/L	NA
Boron	General Chemistry	480		2.9	DNQ	µg/L	1%
Bromide	General Chemistry	0.065	DNQ	-0.01	ND	mg/L	NA
Cadmium	General Chemistry	0.02	DNQ	-0.011	ND	µg/L	NA
Cadmium (dissolved)	General Chemistry	-0.011	ND	-0.011	ND	µg/L	NA
Copper	General Chemistry	3.2		0.08	DNQ	µg/L	3%
Copper (dissolved)	General Chemistry	1		-0.06	ND	µg/L	NA
Dissolved Organic Carbon	General Chemistry	6.3		0.49	DNQ	mg/L	8%
Dissolved Solids	General Chemistry	650		-4	ND	mg/L	NA
E. coli	General Chemistry	160		-1	ND	MPN/100 mL	NA
Hardness as CaCO3	General Chemistry	260		-1.7	ND	mg/L	NA
Lead	General Chemistry	0.83		-0.071	ND	µg/L	NA
Lead (dissolved)	General Chemistry	-0.071	ND	-0.071	ND	µg/L	NA
Nickel	General Chemistry	4.7		0.05	DNQ	µg/L	1%
Nickel (dissolved)	General Chemistry	2		0.03	DNQ	µg/L	2%
Nitrate + Nitrite as N	General Chemistry	1.1		0.047	DNQ	mg/L	4%
Nitrogen, Total Kjeldahl	General Chemistry	1.2		-0.07	ND	mg/L	NA
OrthoPhosphate as P	General Chemistry	0.16		-0.006	ND	mg/L	NA
Phosphate as P	General Chemistry	0.33		0.01		mg/L	3%
Selenium	General Chemistry	0.35	DNQ	-0.06	ND	µg/L	NA
Suspended Solids	General Chemistry	42		-2	ND	mg/L	NA
Total Organic Carbon	General Chemistry	6.1		0.4	DNQ	mg/L	7%
Turbidity	General Chemistry	29		0.032	DNQ	NTU	0%
Zinc	General Chemistry	7.5		-0.8	ND	µg/L	NA
Zinc (dissolved)	General Chemistry	-0.8	ND	-0.8	ND	µg/L	NA
Aldrin	Pesticide	-0.009	ND	-0.009	ND	µg/L	NA
Atrazine	Pesticide	-0.07	ND	-0.07	ND	µg/L	NA
Azinphos methyl	Pesticide	-0.02	ND	-0.02	ND	µg/L	NA
Chlordane, Alpha-	Pesticide	-0.007	ND	-0.007	ND	µg/L	NA
Chlordane, gamma-	Pesticide	-0.006	ND	-0.006	ND	µg/L	NA
Chlorpyrifos	Pesticide	-0.0026	ND	-0.0026	ND	µg/L	NA
Cyanazine	Pesticide	-0.09	ND	-0.09	ND	µg/L	NA
DDD(p,p')	Pesticide	-0.003	ND	-0.003	ND	µg/L	NA
DDE(p,p')	Pesticide	-0.004	ND	-0.004	ND	µg/L	NA
DDT(p,p')	Pesticide	-0.007	ND	-0.007	ND	µg/L	NA
Demeton-s	Pesticide	-0.08	ND	-0.08	ND	µg/L	NA
Diazinon	Pesticide	-0.004	ND	-0.004	ND	µg/L	NA

Event = Event Sample Result FB = Field Blank Sample Result

Field Quality Control Samples

Field Blank

Analyte/Species	Type	Event	QC Code	FB	QC Code	Units	% Difference
Dichlorvos	Pesticide	-0.02	ND	-0.02	ND	µg/L	NA
Dicofol	Pesticide	-0.01	ND	-0.01	ND	µg/L	NA
Dieldrin	Pesticide	-0.005	ND	-0.005	ND	µg/L	NA
Dimethoate	Pesticide	-0.080	ND	-0.080	ND	µg/L	NA
Disulfoton	Pesticide	-0.020	ND	-0.020	ND	µg/L	NA
Diuron	Pesticide	0.68		-0.20	ND	µg/L	NA
Endosulfan I	Pesticide	-0.005	ND	-0.005	ND	µg/L	NA
Endosulfan II	Pesticide	-0.004	ND	-0.004	ND	µg/L	NA
Endosulfan Sulfate	Pesticide	-0.005	ND	-0.005	ND	µg/L	NA
Endrin	Pesticide	-0.007	ND	-0.007	ND	µg/L	NA
EPTC	Pesticide	-0.03	ND	-0.03	ND	µg/L	NA
HCH, alpha	Pesticide	-0.005	ND	-0.005	ND	µg/L	NA
HCH, beta	Pesticide	-0.008	ND	-0.008	ND	µg/L	NA
HCH, delta	Pesticide	-0.005	ND	-0.005	ND	µg/L	NA
HCH, gamma	Pesticide	-0.005	ND	-0.005	ND	µg/L	NA
Heptachlor	Pesticide	-0.008	ND	-0.008	ND	µg/L	NA
Heptachlor epoxide	Pesticide	-0.007	ND	-0.007	ND	µg/L	NA
Linuron	Pesticide	-0.20	ND	-0.20	ND	µg/L	NA
Malathion	Pesticide	-0.050	ND	-0.050	ND	µg/L	NA
Methamidophos	Pesticide	-0.08	ND	-0.08	ND	µg/L	NA
Methidathion	Pesticide	-0.04	ND	-0.04	ND	µg/L	NA
Methoxychlor	Pesticide	-0.008	ND	-0.008	ND	µg/L	NA
Parathion, Ethyl	Pesticide	-0.02	ND	-0.02	ND	µg/L	NA
Parathion, Methyl	Pesticide	-0.075	ND	-0.075	ND	µg/L	NA
Phorate	Pesticide	-0.072	ND	-0.072	ND	µg/L	NA
Phosmet	Pesticide	-0.06	ND	-0.06	ND	µg/L	NA
Prowl	Pesticide	-0.04	ND	-0.04	ND	µg/L	NA
Simazine	Pesticide	-0.08	ND	-0.08	ND	µg/L	NA
Toxaphene	Pesticide	-0.380	ND	-0.380	ND	µg/L	NA
Trifluralin	Pesticide	-0.036	ND	-0.036	ND	µg/L	NA
Sample Date:	**6/8/2010**	**Site: Salt Slough at Lander Ave**					
Ammonia as N	General Chemistry	0.15		-0.04	ND	mg/L	NA
Arsenic	General Chemistry	5.7		-0.008	ND	µg/L	NA
Boron	General Chemistry	452		1.2	DNQ	µg/L	0%
Bromide	General Chemistry	0.43	DNQ	-0.01	ND	mg/L	NA
Cadmium	General Chemistry	0.02	DNQ	-0.011	ND	µg/L	NA
Cadmium (dissolved)	General Chemistry	-0.011	ND	-0.011	ND	µg/L	NA
Copper	General Chemistry	3.6		0.19	DNQ	µg/L	5%
Copper (dissolved)	General Chemistry	1.5		0.21	DNQ	µg/L	14%
Dissolved Organic Carbon	General Chemistry	5.7		0.38	DNQ	mg/L	7%
Dissolved Solids	General Chemistry	670		-4	ND	mg/L	NA
E. coli	General Chemistry	130		-1	ND	MPN/100 mL	NA
Hardness as CaCO3	General Chemistry	250		4.7	DNQ	mg/L	2%
Lead	General Chemistry	0.97		-0.071	ND	µg/L	NA

Event = Event Sample Result FB = Field Blank Sample Result

Field Quality Control Samples

Field Blank

Analyte/Species	Type	Event	QC Code	FB	QC Code	Units	% Difference
Lead (dissolved)	General Chemistry	-0.071	ND	-0.071	ND	µg/L	NA
Nickel	General Chemistry	5.5		0.02	DNQ	µg/L	0%
Nickel (dissolved)	General Chemistry	2.1		0.02	DNQ	µg/L	1%
Nitrate + Nitrite as N	General Chemistry	2.1		-0.02	ND	mg/L	NA
Nitrogen, Total Kjeldahl	General Chemistry	0.99		0.86		mg/L	87% *
OrthoPhosphate as P	General Chemistry	0.15		-0.006	ND	mg/L	NA
Phosphate as P	General Chemistry	0.31		-0.01	ND	mg/L	NA
Selenium	General Chemistry	0.4	DNQ	-0.06	ND	µg/L	NA
Suspended Solids	General Chemistry	55		-2	ND	mg/L	NA
Total Organic Carbon	General Chemistry	5.7		0.26	DNQ	mg/L	5%
Turbidity	General Chemistry	37		-0.02	ND	NTU	NA
Zinc	General Chemistry	7.6		-0.8	ND	µg/L	NA
Zinc (dissolved)	General Chemistry	-0.8	ND	-0.8	ND	µg/L	NA
Aldrin	Pesticide	-0.009	ND	-0.009	ND	µg/L	NA
Atrazine	Pesticide	-0.07	ND	-0.07	ND	µg/L	NA
Azinphos methyl	Pesticide	-0.02	ND	-0.02	ND	µg/L	NA
Chlordane, Alpha-	Pesticide	-0.007	ND	-0.007	ND	µg/L	NA
Chlordane, gamma-	Pesticide	-0.006	ND	-0.006	ND	µg/L	NA
Chlorpyrifos	Pesticide	-0.0026	ND	-0.0026	ND	µg/L	NA
Cyanazine	Pesticide	-0.09	ND	-0.09	ND	µg/L	NA
DDD(p,p')	Pesticide	-0.003	ND	-0.003	ND	µg/L	NA
DDE(p,p')	Pesticide	-0.004	ND	-0.004	ND	µg/L	NA
DDT(p,p')	Pesticide	-0.007	ND	-0.007	ND	µg/L	NA
Demeton-s	Pesticide	-0.08	ND	-0.08	ND	µg/L	NA
Diazinon	Pesticide	-0.004	ND	-0.004	ND	µg/L	NA
Dichlorvos	Pesticide	-0.02	ND	-0.02	ND	µg/L	NA
Dicofol	Pesticide	-0.01	ND	-0.01	ND	µg/L	NA
Dieldrin	Pesticide	-0.005	ND	-0.005	ND	µg/L	NA
Dimethoate	Pesticide	-0.080	ND	-0.080	ND	µg/L	NA
Disulfoton	Pesticide	-0.020	ND	-0.020	ND	µg/L	NA
Diuron	Pesticide	0.31	DNQ	-0.20	ND	µg/L	NA
Endosulfan I	Pesticide	-0.005	ND	-0.005	ND	µg/L	NA
Endosulfan II	Pesticide	-0.004	ND	-0.004	ND	µg/L	NA
Endosulfan Sulfate	Pesticide	-0.005	ND	-0.005	ND	µg/L	NA
Endrin	Pesticide	-0.007	ND	-0.007	ND	µg/L	NA
EPTC	Pesticide	-0.03	ND	-0.03	ND	µg/L	NA
HCH, alpha	Pesticide	-0.005	ND	-0.005	ND	µg/L	NA
HCH, beta	Pesticide	-0.008	ND	-0.008	ND	µg/L	NA
HCH, delta	Pesticide	-0.005	ND	-0.005	ND	µg/L	NA
HCH, gamma	Pesticide	-0.005	ND	-0.005	ND	µg/L	NA
Heptachlor	Pesticide	-0.008	ND	-0.008	ND	µg/L	NA
Heptachlor epoxide	Pesticide	-0.007	ND	-0.007	ND	µg/L	NA
Linuron	Pesticide	-0.20	ND	-0.20	ND	µg/L	NA
Malathion	Pesticide	-0.050	ND	-0.050	ND	µg/L	NA
Methamidophos	Pesticide	-0.08	ND	-0.08	ND	µg/L	NA

Event = Event Sample Result FB = Field Blank Sample Result

Field Quality Control Samples
Field Blank

Analyte/Species	Type	Event	QC Code	FB	QC Code	Units	% Difference
Methidathion	Pesticide	-0.04	ND	-0.04	ND	µg/L	NA
Methoxychlor	Pesticide	-0.008	ND	-0.008	ND	µg/L	NA
Parathion, Ethyl	Pesticide	-0.02	ND	-0.02	ND	µg/L	NA
Parathion, Methyl	Pesticide	-0.075	ND	-0.075	ND	µg/L	NA
Phorate	Pesticide	-0.072	ND	-0.072	ND	µg/L	NA
Phosmet	Pesticide	-0.06	ND	-0.06	ND	µg/L	NA
Prowl	Pesticide	-0.04	ND	-0.04	ND	µg/L	NA
Simazine	Pesticide	-0.08	ND	-0.08	ND	µg/L	NA
Toxaphene	Pesticide	-0.380	ND	-0.380	ND	µg/L	NA
Trifluralin	Pesticide	-0.036	ND	-0.036	ND	µg/L	NA
Sample Date: 7/14/2010 Site: Salt Slough at Lander Ave							
Ammonia as N	General Chemistry	0.14		-0.04	ND	mg/L	NA
Arsenic	General Chemistry	6.8		0.02	DNQ	µg/L	0%
Boron	General Chemistry	421		2.5	DNQ	µg/L	1%
Bromide	General Chemistry	0.53	DNQ	-0.01	ND	mg/L	NA
Cadmium	General Chemistry	0.02	DNQ	-0.011	ND	µg/L	NA
Cadmium (dissolved)	General Chemistry	-0.011	ND	-0.011	ND	µg/L	NA
Copper	General Chemistry	4		0.21	DNQ	µg/L	5%
Copper (dissolved)	General Chemistry	1.1		-0.06	ND	µg/L	NA
Dissolved Organic Carbon	General Chemistry	5.9		0.28	DNQ	mg/L	5%
Dissolved Solids	General Chemistry	580		-4	ND	mg/L	NA
E. coli	General Chemistry	130		-1	ND	MPN/100 mL	NA
Hardness as CaCO3	General Chemistry	220		4.7	DNQ	mg/L	2%
Lead	General Chemistry	1		-0.071	ND	µg/L	NA
Lead (dissolved)	General Chemistry	-0.071	ND	-0.071	ND	µg/L	NA
Nickel	General Chemistry	5.6		0.02	DNQ	µg/L	0%
Nickel (dissolved)	General Chemistry	2.1		0.03	DNQ	µg/L	1%
Nitrate + Nitrite as N	General Chemistry	2.1		-0.02	ND	mg/L	NA
Nitrogen, Total Kjeldahl	General Chemistry	1.1		0.11		mg/L	10%
OrthoPhosphate as P	General Chemistry	0.21		-0.006	ND	mg/L	NA
Phosphate as P	General Chemistry	0.37		-0.01	ND	mg/L	NA
Selenium	General Chemistry	0.39	DNQ	-0.06	ND	µg/L	NA
Suspended Solids	General Chemistry	71		-2	ND	mg/L	NA
Total Organic Carbon	General Chemistry	5.6		0.19	DNQ	mg/L	3%
Turbidity	General Chemistry	42		-0.02	ND	NTU	NA
Zinc	General Chemistry	11		1.4		µg/L	13%
Zinc (dissolved)	General Chemistry	-0.8	ND	-0.8	ND	µg/L	NA
Aldrin	Pesticide	-0.009	ND	-0.009	ND	ug/L	NA
Atrazine	Pesticide	-0.07	ND	-0.07	ND	ug/L	NA
Azinphos methyl	Pesticide	-0.02	ND	-0.02	ND	ug/L	NA
Chlordane, Alpha-	Pesticide	-0.007	ND	-0.007	ND	ug/L	NA
Chlordane, gamma-	Pesticide	-0.006	ND	-0.006	ND	ug/L	NA
Chlorpyrifos	Pesticide	-0.0026	ND	-0.0026	ND	ug/L	NA
Cyanazine	Pesticide	-0.09	ND	-0.09	ND	ug/L	NA

Event = Event Sample Result FB = Field Blank Sample Result

Field Quality Control Samples

Field Blank

Analyte/Species	Type	Event	QC Code	FB	QC Code	Units	% Difference	
DDD(p,p')	Pesticide	-0.003	ND	-0.003	ND	ug/L	NA	
DDE(p,p')	Pesticide	-0.004	ND	-0.004	ND	ug/L	NA	
DDT(p,p')	Pesticide	-0.007	ND	-0.007	ND	ug/L	NA	
Demeton-s	Pesticide	-0.08	ND	-0.08	ND	ug/L	NA	
Diazinon	Pesticide	-0.004	ND	-0.004	ND	ug/L	NA	
Dichlorvos	Pesticide	-0.02	ND	-0.02	ND	ug/L	NA	
Dicofol	Pesticide	-0.01	ND	-0.01	ND	ug/L	NA	
Dieldrin	Pesticide	-0.005	ND	-0.005	ND	ug/L	NA	
Dimethoate	Pesticide	-0.080	ND	-0.080	ND	ug/L	NA	
Disulfoton	Pesticide	-0.020	ND	-0.020	ND	ug/L	NA	
Diuron	Pesticide	0.24	DNQ	-0.20	ND	ug/L	NA	
Endosulfan I	Pesticide	-0.005	ND	-0.005	ND	ug/L	NA	
Endosulfan II	Pesticide	-0.004	ND	-0.004	ND	ug/L	NA	
Endosulfan Sulfate	Pesticide	-0.005	ND	-0.005	ND	ug/L	NA	
Endrin	Pesticide	-0.007	ND	-0.007	ND	ug/L	NA	
EPTC	Pesticide	-0.03	ND	-0.03	ND	ug/L	NA	
HCH, alpha	Pesticide	-0.005	ND	-0.005	ND	ug/L	NA	
HCH, beta	Pesticide	-0.008	ND	-0.008	ND	ug/L	NA	
HCH, delta	Pesticide	-0.005	ND	-0.005	ND	ug/L	NA	
HCH, gamma	Pesticide	-0.005	ND	-0.005	ND	ug/L	NA	
Heptachlor	Pesticide	-0.008	ND	-0.008	ND	ug/L	NA	
Heptachlor epoxide	Pesticide	-0.007	ND	-0.007	ND	ug/L	NA	
Linuron	Pesticide	-0.20	ND	-0.20	ND	ug/L	NA	
Malathion	Pesticide	-0.050	ND	-0.050	ND	ug/L	NA	
Methamidophos	Pesticide	-0.2	ND	-0.2	ND	ug/L	NA	
Methidathion	Pesticide	-0.04	ND	-0.04	ND	ug/L	NA	
Methoxychlor	Pesticide	-0.008	ND	-0.008	ND	ug/L	NA	
Parathion, Ethyl	Pesticide	-0.02	ND	-0.02	ND	ug/L	NA	
Parathion, Methyl	Pesticide	-0.075	ND	-0.075	ND	ug/L	NA	
Phorate	Pesticide	-0.072	ND	-0.072	ND	ug/L	NA	
Phosmet	Pesticide	-0.06	ND	-0.06	ND	ug/L	NA	
Prowl	Pesticide	-0.04	ND	-0.04	ND	ug/L	NA	
Simazine	Pesticide	-0.08	ND	-0.08	ND	ug/L	NA	
Toxaphene	Pesticide	-0.380	ND	-0.380	ND	ug/L	NA	
Trifluralin	Pesticide	-0.036	ND	-0.036	ND	ug/L	NA	
Sample Date: 8/10/2010	**Site: Salt Slough at Lander Ave**							
Ammonia as N	General Chemistry	0.21		0.066	DNQ	mg/L	31%	*
Arsenic	General Chemistry	5.7		0.04	DNQ	µg/L	1%	
Boron	General Chemistry	314		2.8	DNQ	µg/L	1%	
Bromide	General Chemistry	0.64	DNQ	-0.01	ND	mg/L	NA	
Cadmium	General Chemistry	-0.011	ND	-0.011	ND	µg/L	NA	
Cadmium (dissolved)	General Chemistry	-0.011	ND	-0.011	ND	µg/L	NA	
Copper	General Chemistry	3.4		-0.06	ND	µg/L	NA	
Copper (dissolved)	General Chemistry	1.3		-0.06	ND	µg/L	NA	

Event = Event Sample Result FB = Field Blank Sample Result

Field Quality Control Samples

Field Blank

Analyte/Species	Type	Event	QC Code	FB	QC Code	Units	% Difference
Dissolved Organic Carbon	General Chemistry	5		0.37	DNQ	mg/L	7%
Dissolved Solids	General Chemistry	460		-4	ND	mg/L	NA
E. coli	General Chemistry	220		-1	ND	MPN/100 mL	NA
Hardness as CaCO3	General Chemistry	200		4.7	DNQ	mg/L	2%
Lead	General Chemistry	0.95		-0.071	ND	µg/L	NA
Lead (dissolved)	General Chemistry	-0.071	ND	-0.071	ND	µg/L	NA
Nickel	General Chemistry	5.1		-0.01	ND	µg/L	NA
Nickel (dissolved)	General Chemistry	1.6		-0.01	ND	µg/L	NA
Nitrate + Nitrite as N	General Chemistry	1.6		-0.02	ND	mg/L	NA
Nitrogen, Total Kjeldahl	General Chemistry	0.82		-0.07	ND	mg/L	NA
OrthoPhosphate as P	General Chemistry	0.2		-0.006	ND	mg/L	NA
Phosphate as P	General Chemistry	0.37		-0.01	ND	mg/L	NA
Selenium	General Chemistry	0.29	DNQ	-0.06	ND	µg/L	NA
Suspended Solids	General Chemistry	59		-2	ND	mg/L	NA
Total Organic Carbon	General Chemistry	5		0.28	DNQ	mg/L	6%
Turbidity	General Chemistry	37		-0.03	ND	NTU	NA
Zinc	General Chemistry	7.7		-0.8	ND	µg/L	NA
Zinc (dissolved)	General Chemistry	-0.8	ND	-0.8	ND	µg/L	NA
Aldrin	Pesticide	-0.009	ND	-0.009	ND	ug/L	NA
Atrazine	Pesticide	-0.07	ND	-0.07	ND	ug/L	NA
Azinphos methyl	Pesticide	-0.02	ND	-0.02	ND	ug/L	NA
Chlordane, Alpha-	Pesticide	-0.007	ND	-0.007	ND	ug/L	NA
Chlordane, gamma-	Pesticide	-0.006	ND	-0.006	ND	ug/L	NA
Chlorpyrifos	Pesticide	-0.0026	ND	-0.0026	ND	ug/L	NA
Cyanazine	Pesticide	-0.09	ND	-0.09	ND	ug/L	NA
DDD(p,p')	Pesticide	-0.003	ND	-0.003	ND	ug/L	NA
DDE(p,p')	Pesticide	-0.004	ND	-0.004	ND	ug/L	NA
DDT(p,p')	Pesticide	-0.007	ND	-0.007	ND	ug/L	NA
Demeton-s	Pesticide	-0.08	ND	-0.08	ND	ug/L	NA
Diazinon	Pesticide	0.0086	DNQ	-0.004	ND	ug/L	NA
Dichlorvos	Pesticide	-0.02	ND	-0.02	ND	ug/L	NA
Dicofol	Pesticide	-0.01	ND	-0.01	ND	ug/L	NA
Dieldrin	Pesticide	-0.005	ND	-0.005	ND	ug/L	NA
Dimethoate	Pesticide	-0.080	ND	-0.080	ND	ug/L	NA
Disulfoton	Pesticide	-0.020	ND	-0.020	ND	ug/L	NA
Diuron	Pesticide	-0.20	ND	-0.20	ND	ug/L	NA
Endosulfan I	Pesticide	-0.005	ND	-0.005	ND	ug/L	NA
Endosulfan II	Pesticide	-0.004	ND	-0.004	ND	ug/L	NA
Endosulfan Sulfate	Pesticide	-0.005	ND	-0.005	ND	ug/L	NA
Endrin	Pesticide	-0.007	ND	-0.007	ND	ug/L	NA
EPTC	Pesticide	-0.03	ND	-0.03	ND	ug/L	NA
HCH, alpha	Pesticide	-0.005	ND	-0.005	ND	ug/L	NA
HCH, beta	Pesticide	-0.008	ND	-0.008	ND	ug/L	NA
HCH, delta	Pesticide	-0.005	ND	-0.005	ND	ug/L	NA
HCH, gamma	Pesticide	-0.005	ND	-0.005	ND	ug/L	NA

Event = Event Sample Result FB = Field Blank Sample Result

Field Quality Control Samples
Field Blank

Analyte/Species	Type	Event	QC Code	FB	QC Code	Units	% Difference
Heptachlor	Pesticide	-0.008	ND	-0.008	ND	ug/L	NA
Heptachlor epoxide	Pesticide	-0.007	ND	-0.007	ND	ug/L	NA
Linuron	Pesticide	-0.20	ND	-0.20	ND	ug/L	NA
Malathion	Pesticide	-0.050	ND	-0.050	ND	ug/L	NA
Methamidophos	Pesticide	-0.08	ND	-0.08	ND	ug/L	NA
Methidathion	Pesticide	-0.04	ND	-0.04	ND	ug/L	NA
Methoxychlor	Pesticide	-0.008	ND	-0.008	ND	ug/L	NA
Parathion, Ethyl	Pesticide	-0.02	ND	-0.02	ND	ug/L	NA
Parathion, Methyl	Pesticide	-0.075	ND	-0.075	ND	ug/L	NA
Phorate	Pesticide	-0.072	ND	-0.072	ND	ug/L	NA
Phosmet	Pesticide	-0.06	ND	-0.06	ND	ug/L	NA
Prowl	Pesticide	-0.04	ND	-0.04	ND	ug/L	NA
Simazine	Pesticide	-0.08	ND	-0.08	ND	ug/L	NA
Toxaphene	Pesticide	-0.380	ND	-0.380	ND	ug/L	NA
Trifluralin	Pesticide	-0.036	ND	-0.036	ND	ug/L	NA

Event = Event Sample Result FB = Field Blank Sample Result

Field Quality Control Samples

Field Duplicate and RPD Calculation

Sample Date: 3/9/2010 Site: Newman Wasteway near Hills Ferry Road

Analyte/Species	Type	Event	QC Code	FD	QC Code	Units	RPD	
Ammonia as N	General Chemistry	0.088	DNQ	0.066	DNQ	mg/L	29%	*
Arsenic	General Chemistry	4		3.7		µg/L	8%	
Boron	General Chemistry	1100		1000		µg/L	10%	
Bromide	General Chemistry	0.011	DNQ	0.04	DNQ	mg/L	114%	*
Cadmium	General Chemistry	0.02	DNQ	0.02	DNQ	µg/L	0%	
Cadmium (dissolved)	General Chemistry	-0.011	ND	-0.011	ND	µg/L	NA	
Copper	General Chemistry	6.1		4.8		µg/L	24%	
Copper (dissolved)	General Chemistry	0.32	DNQ	0.33	DNQ	µg/L	3%	
Dissolved Organic Carbon	General Chemistry	5		5		mg/L	0%	
E. coli	General Chemistry	75		70		MPN/100 mL	7%	
Hardness as CaCO3	General Chemistry	530		520		mg/L	2%	
Lead	General Chemistry	2		1.5		µg/L	29%	*
Lead (dissolved)	General Chemistry	-0.071	ND	-0.071	ND	µg/L	NA	
Nickel	General Chemistry	17		13		µg/L	27%	*
Nickel (dissolved)	General Chemistry	3.3		3.4		µg/L	3%	
Nitrate + Nitrite as N	General Chemistry	0.17		0.25		mg/L	38%	*
Nitrogen, Total Kjeldahl	General Chemistry	0.66		0.64		mg/L	3%	
OrthoPhosphate as P	General Chemistry	0.34		0.34		mg/L	0%	
Phosphate as P	General Chemistry	0.77		0.74		mg/L	4%	
Selenium	General Chemistry	0.76	DNQ	0.73	DNQ	µg/L	4%	
Suspended Solids	General Chemistry	59		53		mg/L	11%	
Total Organic Carbon	General Chemistry	5.2		5.2		mg/L	0%	
Turbidity	General Chemistry	34		31		NTU	9%	
Zinc	General Chemistry	12		9.4		µg/L	24%	
Zinc (dissolved)	General Chemistry	-0.8	ND	-0.8	ND	µg/L	NA	
Aldrin	Pesticide	-0.009	ND	-0.009	ND	µg/L	NA	
Atrazine	Pesticide	-0.07	ND	-0.07	ND	µg/L	NA	
Chlorpyrifos	Pesticide	-0.0026	ND	-0.0026	ND	µg/L	NA	
Cyanazine	Pesticide	-0.09	ND	-0.09	ND	µg/L	NA	
DDD(p,p')	Pesticide	-0.003	ND	-0.003	ND	µg/L	NA	
DDE(p,p')	Pesticide	-0.004	ND	-0.004	ND	µg/L	NA	
DDT(p,p')	Pesticide	-0.007	ND	-0.007	ND	µg/L	NA	
Demeton-s	Pesticide	-0.08	ND	-0.08	ND	µg/L	NA	
Diazinon	Pesticide	-0.004	ND	-0.004	ND	µg/L	NA	
Dichlorvos	Pesticide	-0.02	ND	-0.02	ND	µg/L	NA	
Dicofol	Pesticide	-0.01	ND	-0.01	ND	µg/L	NA	
Dieldrin	Pesticide	-0.005	ND	-0.005	ND	µg/L	NA	
Dimethoate	Pesticide	-0.080	ND	-0.080	ND	µg/L	NA	
Disulfoton	Pesticide	-0.020	ND	-0.020	ND	µg/L	NA	
Diuron	Pesticide	1.1		1.0		µg/L	10%	
Endosulfan I	Pesticide	-0.005	ND	-0.005	ND	µg/L	NA	

Event = Event Sample Results FD = Field Duplicate Sample Results RPD = Relative percent difference

Field Quality Control Samples

Field Duplicate and RPD Calculation

Analyte/Species	Type	Event	QC Code	FD	QC Code	Units	RPD	
Endosulfan II	Pesticide	-0.004	ND	-0.004	ND	µg/L	NA	
Endosulfan Sulfate	Pesticide	-0.005	ND	-0.005	ND	µg/L	NA	
Endrin	Pesticide	-0.007	ND	-0.007	ND	µg/L	NA	
EPTC	Pesticide	-0.03	ND	-0.03	ND	µg/L	NA	
HCH, alpha	Pesticide	-0.005	ND	-0.005	ND	µg/L	NA	
HCH, beta	Pesticide	-0.008	ND	-0.008	ND	µg/L	NA	
HCH, delta	Pesticide	-0.005	ND	-0.005	ND	µg/L	NA	
HCH, gamma	Pesticide	-0.005	ND	-0.005	ND	µg/L	NA	
Heptachlor	Pesticide	-0.008	ND	-0.008	ND	µg/L	NA	
Heptachlor epoxide	Pesticide	-0.007	ND	-0.007	ND	µg/L	NA	
Linuron	Pesticide	-0.20	ND	-0.20	ND	µg/L	NA	
Malathion	Pesticide	-0.050	ND	-0.050	ND	µg/L	NA	
Methamidophos	Pesticide	-0.08	ND	-0.08	ND	µg/L	NA	
Methidathion	Pesticide	-0.04	ND	-0.04	ND	µg/L	NA	
Methoxychlor	Pesticide	-0.008	ND	-0.008	ND	µg/L	NA	
Parathion, Ethyl	Pesticide	-0.02	ND	-0.02	ND	µg/L	NA	
Parathion, Methyl	Pesticide	-0.075	ND	-0.075	ND	µg/L	NA	
Phorate	Pesticide	-0.072	ND	-0.072	ND	µg/L	NA	
Phosmet	Pesticide	-0.06	ND	-0.06	ND	µg/L	NA	
Prowl	Pesticide	-0.04	ND	-0.04	ND	µg/L	NA	
Simazine	Pesticide	0.24	DNQ	0.25	DNQ	µg/L	4%	
Toxaphene	Pesticide	-0.380	ND	-0.380	ND	µg/L	NA	
Trifluralin	Pesticide	-0.036	ND	-0.036	ND	µg/L	NA	

Sample Date: 4/13/2010 Site: Salt Slough at Lander Ave

Analyte/Species	Type	Event	QC Code	FD	QC Code	Units	RPD	
Ammonia as N	General Chemistry	0.3		0.16		mg/L	61%	*
Arsenic	General Chemistry	4.5		4.7		µg/L	4%	
Boron	General Chemistry	680		690		µg/L	1%	
Bromide	General Chemistry	0.38	DNQ	1.1		mg/L	97%	*
Cadmium	General Chemistry	0.02	DNQ	0.02	DNQ	µg/L	0%	
Cadmium (dissolved)	General Chemistry	0.01	DNQ	0.01	DNQ	µg/L	0%	
Copper	General Chemistry	1.9		2.1		µg/L	10%	
Copper (dissolved)	General Chemistry	1.1		1.1		µg/L	0%	
Dissolved Organic Carbon	General Chemistry	7.1		7		mg/L	1%	
E. coli	General Chemistry	68		84		MPN/100 mL	21%	
Hardness as CaCO3	General Chemistry	370		370		mg/L	0%	
Lead	General Chemistry	0.42		0.46		µg/L	9%	
Lead (dissolved)	General Chemistry	-0.071	ND	-0.071	ND	µg/L	NA	
Nickel	General Chemistry	3.5		3.8		µg/L	8%	
Nickel (dissolved)	General Chemistry	2.2		2.2		µg/L	0%	
Nitrate + Nitrite as N	General Chemistry	1.6		1.5		mg/L	6%	
Nitrogen, Total Kjeldahl	General Chemistry	0.51		1.1		mg/L	73%	*
OrthoPhosphate as P	General Chemistry	0.14		0.16		mg/L	13%	

Event = Event Sample Results FD = Field Duplicate Sample Results RPD = Relative percent difference

Field Quality Control Samples

Field Duplicate and RPD Calculation

Analyte/Species	Type	Event	QC Code	FD	QC Code	Units	RPD	
Phosphate as P	General Chemistry	0.43		0.39		mg/L	10%	
Selenium	General Chemistry	0.41	DNQ	0.42	DNQ	µg/L	2%	
Suspended Solids	General Chemistry	64		37		mg/L	53%	*
Total Organic Carbon	General Chemistry	7.7		7.2		mg/L	7%	
Turbidity	General Chemistry	33		23		NTU	36%	*
Zinc	General Chemistry	3.7		3.4		µg/L	8%	
Zinc (dissolved)	General Chemistry	-0.8	ND	-0.8	ND	µg/L	NA	
Aldrin	Pesticide	-0.009	ND	-0.009	ND	µg/L	NA	
Atrazine	Pesticide	-0.07	ND	-0.07	ND	µg/L	NA	
Chlorpyrifos	Pesticide	-0.0026	ND	-0.0026	ND	µg/L	NA	
Cyanazine	Pesticide	-0.09	ND	-0.09	ND	µg/L	NA	
DDD(p,p')	Pesticide	-0.003	ND	-0.003	ND	µg/L	NA	
DDE(p,p')	Pesticide	-0.004	ND	-0.004	ND	µg/L	NA	
DDT(p,p')	Pesticide	-0.007	ND	-0.007	ND	µg/L	NA	
Demeton-s	Pesticide	-0.08	ND	-0.08	ND	µg/L	NA	
Diazinon	Pesticide	-0.004	ND	-0.004	ND	µg/L	NA	
Dichlorvos	Pesticide	-0.02	ND	-0.02	ND	µg/L	NA	
Dicofol	Pesticide	-0.01	ND	-0.01	ND	µg/L	NA	
Dieldrin	Pesticide	-0.005	ND	-0.005	ND	µg/L	NA	
Dimethoate	Pesticide	-0.080	ND	-0.080	ND	µg/L	NA	
Disulfoton	Pesticide	-0.020	ND	-0.020	ND	µg/L	NA	
Diuron	Pesticide	0.60		0.57		µg/L	5%	
Endosulfan I	Pesticide	-0.005	ND	-0.005	ND	µg/L	NA	
Endosulfan II	Pesticide	-0.004	ND	-0.004	ND	µg/L	NA	
Endosulfan Sulfate	Pesticide	-0.005	ND	-0.005	ND	µg/L	NA	
Endrin	Pesticide	-0.007	ND	-0.007	ND	µg/L	NA	
EPTC	Pesticide	-0.03	ND	-0.03	ND	µg/L	NA	
HCH, alpha	Pesticide	-0.005	ND	-0.005	ND	µg/L	NA	
HCH, beta	Pesticide	-0.008	ND	-0.008	ND	µg/L	NA	
HCH, delta	Pesticide	-0.005	ND	-0.005	ND	µg/L	NA	
HCH, gamma	Pesticide	-0.005	ND	-0.005	ND	µg/L	NA	
Heptachlor	Pesticide	-0.008	ND	-0.008	ND	µg/L	NA	
Heptachlor epoxide	Pesticide	-0.007	ND	-0.007	ND	µg/L	NA	
Linuron	Pesticide	-0.20	ND	-0.20	ND	µg/L	NA	
Malathion	Pesticide	-0.050	ND	-0.050	ND	µg/L	NA	
Methamidophos	Pesticide	-0.08	ND	-0.08	ND	µg/L	NA	
Methidathion	Pesticide	-0.04	ND	-0.04	ND	µg/L	NA	
Methoxychlor	Pesticide	-0.008	ND	-0.008	ND	µg/L	NA	
Parathion, Ethyl	Pesticide	-0.02	ND	-0.02	ND	µg/L	NA	
Parathion, Methyl	Pesticide	-0.075	ND	-0.075	ND	µg/L	NA	
Phorate	Pesticide	-0.072	ND	-0.072	ND	µg/L	NA	
Phosmet	Pesticide	-0.06	ND	-0.06	ND	µg/L	NA	
Prowl	Pesticide	-0.04	ND	-0.04	ND	µg/L	NA	

Event = Event Sample Results FD = Field Duplicate Sample Results RPD = Relative percent difference

Field Quality Control Samples

Field Duplicate and RPD Calculation

Analyte/Species	Type	Event	QC Code	FD	QC Code	Units	RPD	
Simazine	Pesticide	-0.08	ND	-0.08	ND	µg/L	NA	
Toxaphene	Pesticide	-0.38	ND	-0.38	ND	µg/L	NA	
Trifluralin	Pesticide	-0.036	ND	-0.036	ND	µg/L	NA	

Sample Date: 5/11/2010 Site: Salt Slough at Lander Ave

Analyte/Species	Type	Event	QC Code	FD	QC Code	Units	RPD	
Ammonia as N	General Chemistry	0.26		0.25		mg/L	4%	
Arsenic	General Chemistry	5.3		5.2		µg/L	2%	
Boron	General Chemistry	480		470		µg/L	2%	
Bromide	General Chemistry	0.065	DNQ	0.5	DNQ	mg/L	154%	*
Cadmium	General Chemistry	0.02	DNQ	0.02	DNQ	µg/L	0%	
Cadmium (dissolved)	General Chemistry	-0.011	ND	-0.011	ND	µg/L	NA	
Copper	General Chemistry	3.2		2.9		µg/L	10%	
Copper (dissolved)	General Chemistry	1		1		µg/L	0%	
Dissolved Organic Carbon	General Chemistry	6.3		6.7		mg/L	6%	
E. coli	General Chemistry	160		120		MPN/100 mL	29%	*
Hardness as CaCO3	General Chemistry	260		260		mg/L	0%	
Lead	General Chemistry	0.83		0.87		µg/L	5%	
Lead (dissolved)	General Chemistry	-0.071	ND	-0.071	ND	µg/L	NA	
Nickel	General Chemistry	4.7		4.8		µg/L	2%	
Nickel (dissolved)	General Chemistry	2		2		µg/L	0%	
Nitrate + Nitrite as N	General Chemistry	1.1		1.1		mg/L	0%	
Nitrogen, Total Kjeldahl	General Chemistry	1.2		1.2		mg/L	0%	
OrthoPhosphate as P	General Chemistry	0.16		0.16		mg/L	0%	
Phosphate as P	General Chemistry	0.33		0.32		mg/L	3%	
Selenium	General Chemistry	0.35	DNQ	0.35	DNQ	µg/L	0%	
Suspended Solids	General Chemistry	42		41		mg/L	2%	
Total Organic Carbon	General Chemistry	6.1		6.4		mg/L	5%	
Turbidity	General Chemistry	29		12		NTU	83%	*
Zinc	General Chemistry	7.5		7.3		µg/L	3%	
Zinc (dissolved)	General Chemistry	-0.8	ND	-0.8	ND	µg/L	NA	
Aldrin	Pesticide	-0.009	ND	-0.009	ND	µg/L	NA	
Atrazine	Pesticide	-0.07	ND	-0.07	ND	µg/L	NA	
Chlorpyrifos	Pesticide	-0.0026	ND	-0.0026	ND	µg/L	NA	
Cyanazine	Pesticide	-0.09	ND	-0.09	ND	µg/L	NA	
DDD(p,p')	Pesticide	-0.003	ND	-0.003	ND	µg/L	NA	
DDE(p,p')	Pesticide	-0.004	ND	-0.004	ND	µg/L	NA	
DDT(p,p')	Pesticide	-0.007	ND	-0.007	ND	µg/L	NA	
Demeton-s	Pesticide	-0.08	ND	-0.08	ND	µg/L	NA	
Diazinon	Pesticide	-0.004	ND	-0.004	ND	µg/L	NA	
Dichlorvos	Pesticide	-0.02	ND	-0.02	ND	µg/L	NA	
Dicofol	Pesticide	-0.01	ND	-0.01	ND	µg/L	NA	
Dieldrin	Pesticide	-0.005	ND	-0.005	ND	µg/L	NA	
Dimethoate	Pesticide	-0.080	ND	-0.080	ND	µg/L	NA	

Event = Event Sample Results FD = Field Duplicate Sample Results RPD = Relative percent difference

Field Quality Control Samples
Field Duplicate and RPD Calculation

Analyte/Species	Type	Event	QC Code	FD	QC Code	Units	RPD	
Disulfoton	Pesticide	-0.020	ND	-0.020	ND	µg/L	NA	
Diuron	Pesticide	0.68		0.69		µg/L	1%	
Endosulfan I	Pesticide	-0.005	ND	-0.005	ND	µg/L	NA	
Endosulfan II	Pesticide	-0.004	ND	-0.004	ND	µg/L	NA	
Endosulfan Sulfate	Pesticide	-0.005	ND	-0.005	ND	µg/L	NA	
Endrin	Pesticide	-0.007	ND	-0.007	ND	µg/L	NA	
EPTC	Pesticide	-0.03	ND	-0.03	ND	µg/L	NA	
HCH, alpha	Pesticide	-0.005	ND	-0.005	ND	µg/L	NA	
HCH, beta	Pesticide	-0.008	ND	-0.008	ND	µg/L	NA	
HCH, delta	Pesticide	-0.005	ND	-0.005	ND	µg/L	NA	
HCH, gamma	Pesticide	-0.005	ND	-0.005	ND	µg/L	NA	
Heptachlor	Pesticide	-0.008	ND	-0.008	ND	µg/L	NA	
Heptachlor epoxide	Pesticide	-0.007	ND	-0.007	ND	µg/L	NA	
Linuron	Pesticide	-0.20	ND	-0.20	ND	µg/L	NA	
Malathion	Pesticide	-0.050	ND	-0.050	ND	µg/L	NA	
Methamidophos	Pesticide	-0.08	ND	-0.08	ND	µg/L	NA	
Methidathion	Pesticide	-0.04	ND	-0.04	ND	µg/L	NA	
Methoxychlor	Pesticide	-0.008	ND	-0.008	ND	µg/L	NA	
Parathion, Ethyl	Pesticide	-0.02	ND	-0.02	ND	µg/L	NA	
Parathion, Methyl	Pesticide	-0.075	ND	-0.075	ND	µg/L	NA	
Phorate	Pesticide	-0.072	ND	-0.072	ND	µg/L	NA	
Phosmet	Pesticide	-0.06	ND	-0.06	ND	µg/L	NA	
Prowl	Pesticide	-0.04	ND	-0.04	ND	µg/L	NA	
Simazine	Pesticide	-0.08	ND	-0.08	ND	µg/L	NA	
Toxaphene	Pesticide	-0.380	ND	-0.380	ND	µg/L	NA	
Trifluralin	Pesticide	-0.036	ND	-0.036	ND	µg/L	NA	

Sample Date: 6/8/2010 Site: Salt Slough at Lander Ave

Analyte/Species	Type	Event	QC Code	FD	QC Code	Units	RPD	
Ammonia as N	General Chemistry	0.15		0.099	DNQ	mg/L	41%	*
Arsenic	General Chemistry	5.7		5.8		µg/L	2%	
Boron	General Chemistry	452		435		µg/L	4%	
Bromide	General Chemistry	0.43	DNQ	0.44	DNQ	mg/L	2%	
Cadmium	General Chemistry	0.02	DNQ	0.02	DNQ	µg/L	0%	
Cadmium (dissolved)	General Chemistry	-0.011	ND	-0.011	ND	µg/L	NA	
Copper	General Chemistry	3.6		3.5		µg/L	3%	
Copper (dissolved)	General Chemistry	1.5		1.4		µg/L	7%	
Dissolved Organic Carbon	General Chemistry	5.7		5.7		mg/L	0%	
E. coli	General Chemistry	130		70		MPN/100 mL	60%	*
Hardness as CaCO3	General Chemistry	250		150		mg/L	50%	*
Lead	General Chemistry	0.97		1		µg/L	3%	
Lead (dissolved)	General Chemistry	-0.071	ND	-0.071	ND	µg/L	NA	
Nickel	General Chemistry	5.5		5.5		µg/L	0%	
Nickel (dissolved)	General Chemistry	2.1		2		µg/L	5%	

Event = Event Sample Results   FD = Field Duplicate Sample Results   RPD = Relative percent difference

Field Quality Control Samples

Field Duplicate and RPD Calculation

Analyte/Species	Type	Event	QC Code	FD	QC Code	Units	RPD
Nitrate + Nitrite as N	General Chemistry	2.1		1.8		mg/L	15%
Nitrogen, Total Kjeldahl	General Chemistry	0.99		1.1		mg/L	11%
OrthoPhosphate as P	General Chemistry	0.15		0.15		mg/L	0%
Phosphate as P	General Chemistry	0.31		0.31		mg/L	0%
Selenium	General Chemistry	0.4	DNQ	0.42	DNQ	µg/L	5%
Suspended Solids	General Chemistry	55		56		mg/L	2%
Total Organic Carbon	General Chemistry	5.7		5.6		mg/L	2%
Turbidity	General Chemistry	37		36		NTU	3%
Zinc	General Chemistry	7.6		7.7		µg/L	1%
Zinc (dissolved)	General Chemistry	-0.8	ND	-0.8	ND	µg/L	NA
Aldrin	Pesticide	-0.009	ND	-0.009	ND	µg/L	NA
Atrazine	Pesticide	-0.07	ND	-0.07	ND	µg/L	NA
Chlorpyrifos	Pesticide	-0.0026	ND	-0.0026	ND	µg/L	NA
Cyanazine	Pesticide	-0.09	ND	-0.09	ND	µg/L	NA
DDD(p,p')	Pesticide	-0.003	ND	-0.003	ND	µg/L	NA
DDE(p,p')	Pesticide	-0.004	ND	-0.004	ND	µg/L	NA
DDT(p,p')	Pesticide	-0.007	ND	-0.007	ND	µg/L	NA
Demeton-s	Pesticide	-0.08	ND	-0.08	ND	µg/L	NA
Diazinon	Pesticide	-0.004	ND	-0.004	ND	µg/L	NA
Dichlorvos	Pesticide	-0.02	ND	-0.02	ND	µg/L	NA
Dicofol	Pesticide	-0.01	ND	-0.01	ND	µg/L	NA
Dieldrin	Pesticide	-0.005	ND	-0.005	ND	µg/L	NA
Dimethoate	Pesticide	-0.080	ND	-0.080	ND	µg/L	NA
Disulfoton	Pesticide	-0.020	ND	-0.020	ND	µg/L	NA
Diuron	Pesticide	0.31	DNQ	0.26	DNQ	µg/L	18%
Endosulfan I	Pesticide	-0.005	ND	-0.005	ND	µg/L	NA
Endosulfan II	Pesticide	-0.004	ND	-0.004	ND	µg/L	NA
Endosulfan Sulfate	Pesticide	-0.005	ND	-0.005	ND	µg/L	NA
Endrin	Pesticide	-0.007	ND	-0.007	ND	µg/L	NA
EPTC	Pesticide	-0.03	ND	-0.03	ND	µg/L	NA
HCH, alpha	Pesticide	-0.005	ND	-0.005	ND	µg/L	NA
HCH, beta	Pesticide	-0.008	ND	-0.008	ND	µg/L	NA
HCH, delta	Pesticide	-0.005	ND	-0.005	ND	µg/L	NA
HCH, gamma	Pesticide	-0.005	ND	-0.005	ND	µg/L	NA
Heptachlor	Pesticide	-0.008	ND	-0.008	ND	µg/L	NA
Heptachlor epoxide	Pesticide	-0.007	ND	-0.007	ND	µg/L	NA
Linuron	Pesticide	-0.20	ND	-0.20	ND	µg/L	NA
Malathion	Pesticide	-0.050	ND	-0.050	ND	µg/L	NA
Methamidophos	Pesticide	-0.08	ND	-0.08	ND	µg/L	NA
Methidathion	Pesticide	-0.04	ND	-0.04	ND	µg/L	NA
Methoxychlor	Pesticide	-0.008	ND	-0.008	ND	µg/L	NA
Parathion, Ethyl	Pesticide	-0.02	ND	-0.02	ND	µg/L	NA
Parathion, Methyl	Pesticide	-0.075	ND	-0.075	ND	µg/L	NA

Event = Event Sample Results   FD = Field Duplicate Sample Results   RPD = Relative percent difference

Field Quality Control Samples

Field Duplicate and RPD Calculation

Analyte/Species	Type	Event	QC Code	FD	QC Code	Units	RPD	
Phorate	Pesticide	-0.072	ND	-0.072	ND	µg/L	NA	
Phosmet	Pesticide	-0.06	ND	-0.06	ND	µg/L	NA	
Prowl	Pesticide	-0.04	ND	-0.04	ND	µg/L	NA	
Simazine	Pesticide	-0.08	ND	-0.08	ND	µg/L	NA	
Toxaphene	Pesticide	-0.380	ND	-0.380	ND	µg/L	NA	
Trifluralin	Pesticide	-0.036	ND	-0.036	ND	µg/L	NA	

Sample Date: 7/14/2010 Site: Salt Slough at Lander Ave

Analyte/Species	Type	Event	QC Code	FD	QC Code	Units	RPD	
Ammonia as N	General Chemistry	0.14		0.12		mg/L	15%	
Arsenic	General Chemistry	6.8		7		µg/L	3%	
Boron	General Chemistry	421		424		µg/L	1%	
Bromide	General Chemistry	0.53	DNQ	0.45	DNQ	mg/L	16%	
Cadmium	General Chemistry	0.02	DNQ	0.03	DNQ	µg/L	40%	*
Cadmium (dissolved)	General Chemistry	-0.011	ND	-0.011	ND	µg/L	NA	
Copper	General Chemistry	4		4.1		µg/L	2%	
Copper (dissolved)	General Chemistry	1.1		1.2		µg/L	9%	
Dissolved Organic Carbon	General Chemistry	5.9		6.2		mg/L	5%	
E. coli	General Chemistry	130		110		MPN/100 mL	17%	
Hardness as CaCO3	General Chemistry	220		240		mg/L	9%	
Lead	General Chemistry	1		1.1		µg/L	10%	
Lead (dissolved)	General Chemistry	-0.071	ND	-0.071	ND	µg/L	NA	
Nickel	General Chemistry	5.6		5.8		µg/L	4%	
Nickel (dissolved)	General Chemistry	2.1		2.1		µg/L	0%	
Nitrate + Nitrite as N	General Chemistry	2.1		2.3		mg/L	9%	
Nitrogen, Total Kjeldahl	General Chemistry	1.1		1.4		mg/L	24%	
OrthoPhosphate as P	General Chemistry	0.21		0.2		mg/L	5%	
Phosphate as P	General Chemistry	0.37		0.38		mg/L	3%	
Selenium	General Chemistry	0.39	DNQ	0.37	DNQ	µg/L	5%	
Suspended Solids	General Chemistry	71		72		mg/L	1%	
Total Organic Carbon	General Chemistry	5.6		5.6		mg/L	0%	
Turbidity	General Chemistry	42		44		NTU	5%	
Zinc	General Chemistry	11		9.2		µg/L	18%	
Zinc (dissolved)	General Chemistry	-0.8	ND	-0.8	ND	µg/L	NA	
Aldrin	Pesticide	-0.009	ND	-0.009	ND	ug/L	NA	
Atrazine	Pesticide	-0.07	ND	-0.07	ND	ug/L	NA	
Chlorpyrifos	Pesticide	-0.0026	ND	-0.0026	ND	ug/L	NA	
Cyanazine	Pesticide	-0.09	ND	-0.09	ND	ug/L	NA	
DDD(p,p')	Pesticide	-0.003	ND	-0.003	ND	ug/L	NA	
DDE(p,p')	Pesticide	-0.004	ND	-0.004	ND	ug/L	NA	
DDT(p,p')	Pesticide	-0.007	ND	-0.007	ND	ug/L	NA	
Demeton-s	Pesticide	-0.08	ND	-0.08	ND	ug/L	NA	
Diazinon	Pesticide	-0.004	ND	-0.004	ND	ug/L	NA	
Dichlorvos	Pesticide	-0.02	ND	-0.02	ND	ug/L	NA	

Event = Event Sample Results FD = Field Duplicate Sample Results RPD = Relative percent difference

Field Quality Control Samples

Field Duplicate and RPD Calculation

Analyte/Species	Type	Event	QC Code	FD	QC Code	Units	RPD	
Dicofol	Pesticide	-0.01	ND	-0.01	ND	ug/L	NA	
Dieldrin	Pesticide	-0.005	ND	-0.005	ND	ug/L	NA	
Dimethoate	Pesticide	-0.080	ND	-0.080	ND	ug/L	NA	
Disulfoton	Pesticide	-0.020	ND	-0.020	ND	ug/L	NA	
Diuron	Pesticide	0.24	DNQ	0.26	DNQ	ug/L	8%	
Endosulfan I	Pesticide	-0.005	ND	-0.005	ND	ug/L	NA	
Endosulfan II	Pesticide	-0.004	ND	-0.004	ND	ug/L	NA	
Endosulfan Sulfate	Pesticide	-0.005	ND	-0.005	ND	ug/L	NA	
Endrin	Pesticide	-0.007	ND	-0.007	ND	ug/L	NA	
EPTC	Pesticide	-0.03	ND	-0.03	ND	ug/L	NA	
HCH, alpha	Pesticide	-0.005	ND	-0.005	ND	ug/L	NA	
HCH, beta	Pesticide	-0.008	ND	-0.008	ND	ug/L	NA	
HCH, delta	Pesticide	-0.005	ND	-0.005	ND	ug/L	NA	
HCH, gamma	Pesticide	-0.005	ND	-0.005	ND	ug/L	NA	
Heptachlor	Pesticide	-0.008	ND	-0.008	ND	ug/L	NA	
Heptachlor epoxide	Pesticide	-0.007	ND	-0.007	ND	ug/L	NA	
Linuron	Pesticide	-0.20	ND	-0.20	ND	ug/L	NA	
Malathion	Pesticide	-0.050	ND	-0.050	ND	ug/L	NA	
Methamidophos	Pesticide	-0.2	ND	-0.2	ND	ug/L	NA	
Methidathion	Pesticide	-0.04	ND	-0.04	ND	ug/L	NA	
Methoxychlor	Pesticide	-0.008	ND	-0.008	ND	ug/L	NA	
Parathion, Ethyl	Pesticide	-0.02	ND	-0.02	ND	ug/L	NA	
Parathion, Methyl	Pesticide	-0.075	ND	-0.075	ND	ug/L	NA	
Phorate	Pesticide	-0.072	ND	-0.072	ND	ug/L	NA	
Phosmet	Pesticide	-0.06	ND	-0.06	ND	ug/L	NA	
Prowl	Pesticide	-0.04	ND	-0.04	ND	ug/L	NA	
Simazine	Pesticide	-0.08	ND	-0.08	ND	ug/L	NA	
Toxaphene	Pesticide	-0.380	ND	-0.380	ND	ug/L	NA	
Trifluralin	Pesticide	-0.036	ND	-0.036	ND	ug/L	NA	

Sample Date: 8/10/2010 Site: Los Banos Creek at China Camp Road

Analyte/Species	Type	Event	QC Code	FD	QC Code	Units	RPD	
Pimephales promelas	Aquatic Toxicity	92.5		87.5		%	6%	
Ammonia as N	General Chemistry	0.21		0.16		mg/L	27%	*
Arsenic	General Chemistry	5.7		5.7		µg/L	0%	
Boron	General Chemistry	314		325		µg/L	3%	
Bromide	General Chemistry	0.64	DNQ	0.38	DNQ	mg/L	51%	*
Cadmium	General Chemistry	-0.011	ND	-0.011	ND	µg/L	NA	
Cadmium (dissolved)	General Chemistry	-0.011	ND	-0.011	ND	µg/L	NA	
Copper	General Chemistry	3.4		3.2		µg/L	6%	
Copper (dissolved)	General Chemistry	1.3		1.2		µg/L	8%	
Dissolved Organic Carbon	General Chemistry	5		5		mg/L	0%	
E. coli	General Chemistry	220		180		MPN/100 mL	20%	
Hardness as CaCO3	General Chemistry	200		200		mg/L	0%	

Event = Event Sample Results FD = Field Duplicate Sample Results RPD = Relative percent difference

Field Quality Control Samples

Field Duplicate and RPD Calculation

Analyte/Species	Type	Event	QC Code	FD	QC Code	Units	RPD	
Lead	General Chemistry	0.95		0.9		µg/L	5%	
Lead (dissolved)	General Chemistry	-0.071	ND	-0.071	ND	µg/L	NA	
Nickel	General Chemistry	5.1		4.8		µg/L	6%	
Nickel (dissolved)	General Chemistry	1.6		1.7		µg/L	6%	
Nitrate + Nitrite as N	General Chemistry	1.6		1.5		mg/L	6%	
Nitrogen, Total Kjeldahl	General Chemistry	0.82		1.6		mg/L	64%	*
OrthoPhosphate as P	General Chemistry	0.2		0.21		mg/L	5%	
Phosphate as P	General Chemistry	0.37		0.36		mg/L	3%	
Selenium	General Chemistry	0.29	DNQ	0.3	DNQ	µg/L	3%	
Suspended Solids	General Chemistry	59		67		mg/L	13%	
Total Organic Carbon	General Chemistry	5		5.1		mg/L	2%	
Turbidity	General Chemistry	37		67		NTU	58%	*
Zinc	General Chemistry	7.7		7		µg/L	10%	
Zinc (dissolved)	General Chemistry	-0.8	ND	-0.8	ND	µg/L	NA	
Aldrin	Pesticide	-0.009	ND	-0.009	ND	ug/L	NA	
Atrazine	Pesticide	-0.07	ND	-0.07	ND	ug/L	NA	
Chlorpyrifos	Pesticide	-0.0026	ND	-0.0026	ND	ug/L	NA	
Cyanazine	Pesticide	-0.09	ND	-0.09	ND	ug/L	NA	
DDD(p,p')	Pesticide	-0.003	ND	-0.003	ND	ug/L	NA	
DDE(p,p')	Pesticide	-0.004	ND	-0.004	ND	ug/L	NA	
DDT(p,p')	Pesticide	-0.007	ND	-0.007	ND	ug/L	NA	
Demeton-s	Pesticide	-0.08	ND	-0.08	ND	ug/L	NA	
Diazinon	Pesticide	0.0086	DNQ	0.007	DNQ	ug/L	21%	
Dichlorvos	Pesticide	-0.02	ND	-0.02	ND	ug/L	NA	
Dicofol	Pesticide	-0.01	ND	-0.01	ND	ug/L	NA	
Dieldrin	Pesticide	-0.005	ND	-0.005	ND	ug/L	NA	
Dimethoate	Pesticide	-0.080	ND	-0.080	ND	ug/L	NA	
Disulfoton	Pesticide	-0.020	ND	-0.020	ND	ug/L	NA	
Diuron	Pesticide	-0.20	ND	-0.20	ND	ug/L	NA	
Endosulfan I	Pesticide	-0.005	ND	-0.005	ND	ug/L	NA	
Endosulfan II	Pesticide	-0.004	ND	-0.004	ND	ug/L	NA	
Endosulfan Sulfate	Pesticide	-0.005	ND	-0.005	ND	ug/L	NA	
Endrin	Pesticide	-0.007	ND	-0.007	ND	ug/L	NA	
EPTC	Pesticide	-0.03	ND	-0.03	ND	ug/L	NA	
HCH, alpha	Pesticide	-0.005	ND	-0.005	ND	ug/L	NA	
HCH, beta	Pesticide	-0.008	ND	-0.008	ND	ug/L	NA	
HCH, delta	Pesticide	-0.005	ND	-0.005	ND	ug/L	NA	
HCH, gamma	Pesticide	-0.005	ND	-0.005	ND	ug/L	NA	
Heptachlor	Pesticide	-0.008	ND	-0.008	ND	ug/L	NA	
Heptachlor epoxide	Pesticide	-0.007	ND	-0.007	ND	ug/L	NA	
Linuron	Pesticide	-0.20	ND	-0.20	ND	ug/L	NA	
Malathion	Pesticide	-0.050	ND	-0.050	ND	ug/L	NA	
Methamidophos	Pesticide	-0.08	ND	-0.08	ND	ug/L	NA	

Event = Event Sample Results FD = Field Duplicate Sample Results RPD = Relative percent difference

Field Quality Control Samples

Field Duplicate and RPD Calculation

Analyte/Species	Type	Event	QC Code	FD	QC Code	Units	RPD
Methidathion	Pesticide	-0.04	ND	-0.04	ND	ug/L	NA
Methoxychlor	Pesticide	-0.008	ND	-0.008	ND	ug/L	NA
Parathion, Ethyl	Pesticide	-0.02	ND	-0.02	ND	ug/L	NA
Parathion, Methyl	Pesticide	-0.075	ND	-0.075	ND	ug/L	NA
Phorate	Pesticide	-0.072	ND	-0.072	ND	ug/L	NA
Phosmet	Pesticide	-0.06	ND	-0.06	ND	ug/L	NA
Prowl	Pesticide	-0.04	ND	-0.04	ND	ug/L	NA
Simazine	Pesticide	-0.08	ND	-0.08	ND	ug/L	NA
Toxaphene	Pesticide	-0.380	ND	-0.380	ND	ug/L	NA
Trifluralin	Pesticide	-0.036	ND	-0.036	ND	ug/L	NA

Event = Event Sample Results FD = Field Duplicate Sample Results RPD = Relative percent difference

Attachment 4
Sediment Toxicity Follow-up Analyses

Sediment Toxictiy Follow-up Analysis

Del Puerto Creek near Cox Road

Toxicity Results Hyalella azteca 77.5 %

Sample Event: 65 3/9/2010

Pesticide	Results	Units
Allethrin	ND	µg/Kg
Bifenthrin	2.2	µg/Kg
Chlorpyrifos	0.34	µg/Kg
Cyfluthrin, total	ND	µg/Kg
Cyhalothrin, lambda, total	7.5	µg/Kg
Cypermethrin, total	ND	µg/Kg
Deltamethrin:Tralomethrin	ND	µg/Kg
Esfenvalerate/Fenvalerate, total	0.71	µg/Kg
Fenpropathrin	ND	µg/Kg
Permethrin, total	ND	µg/Kg
Tau-Fluvalinate	ND	µg/Kg
Tetramethrin	ND	µg/Kg

Sediment Toxictiy Follow-up Analysis

Hospital Creek at River Road **Toxicity Results** Hyalella azteca 77.5 %

Sample Event: 65 3/9/2010

Pesticide	Results	Units
Allethrin	ND	µg/Kg
Bifenthrin	11	µg/Kg
Chlorpyrifos	8.9	µg/Kg
Cyfluthrin, total	ND	µg/Kg
Cyhalothrin, lambda, total	1.4	µg/Kg
Cypermethrin, total	ND	µg/Kg
Deltamethrin:Tralomethrin	ND	µg/Kg
Esfenvalerate/Fenvalerate, total	0.83	µg/Kg
Fenpropathrin	ND	µg/Kg
Permethrin, total	ND	µg/Kg
Tau-Fluvalinate	ND	µg/Kg
Tetramethrin	15	µg/Kg

Sediment Toxictiy Follow-up Analysis

Ingram Creek at River Road **Toxicity Results** Hyalella azteca 35 %

Sample Event: 65 3/9/2010

Pesticide	Results	Units
Allethrin	ND	µg/Kg
Bifenthrin	1	µg/Kg
Chlorpyrifos	23	µg/Kg
Cyfluthrin, total	ND	µg/Kg
Cyhalothrin, lambda, total	3.4	µg/Kg
Cypermethrin, total	0.48	µg/Kg
Deltamethrin:Tralomethrin	ND	µg/Kg
Esfenvalerate/Fenvalerate, total	0.91	µg/Kg
Fenpropathrin	ND	µg/Kg
Permethrin, total	0.7	µg/Kg
Tau-Fluvalinate	ND	µg/Kg
Tetramethrin	ND	µg/Kg

Attachment 5
Exceedance of Recommended Water Quality Values

Westside San Joaquin River Watershed Coalition

Comparrison of Dissolved Metals Results to Calculated Water Quality Value - Events 65 through 70

Bold indicates exceedance of water quality criteria

Site Code	Sample Date	Hardness	Dissolved Metals Analysis					Dissolved Maximum Concentration Criteria				
		(mg/L)	Cadmium (µg/L)	Copper (µg/L)	Lead (µg/L)	Nickel (µg/L)	Zinc (µg/L)	Cadmium (µg/L)	Copper (µg/L)	Lead (µg/L)	Nickel (µg/L)	Zinc (µg/L)
LBCSA	3/3/10	240	-0.011	0.89	-0.071	1.8	2.7	11.0	31	165	982	246
DMCDP	3/9/10	150		4.9		2.4	18	6.6	20	100	660	165
OCAHW	3/9/10	250	-0.011	0.97	-0.071	1.9	2.3	11.5	32	172	1017	255
SJRSD	3/9/10	130		2		1.5	-0.8	5.7	17	86	585	146
SJRPP	3/9/10	290		1.9		2.2	2.9	13.5	37	201	1153	289
OCARR	3/9/10	250	-0.011	0.96	-0.071	1.6	1.9	11.5	32	172	1017	255
ROLFA	3/9/10	420	-0.011	1.3	-0.071	4	4.1	20.2	52	295	1577	395
DPCCR	3/9/10	440	-0.011	1.1	-0.071	1.4	3	21.3	54	310	1640	411
ICARR	3/9/10	610	0.01	0.91	-0.071	4.5	12	30.3	74	430	2162	542
NWHFR	3/9/10	530	-0.011	0.32	-0.071	3.3	-0.8	26.0	65	374	1920	481
DPCHW	3/9/10	450	-0.011	0.7	-0.071	1.3	4	21.8	55	317	1671	419
DMCDP	4/13/10	150		1.3		1.2	11	6.6	20	100	660	165
SJRPP	4/13/10	210		1.5		1.6	6.8	9.5	27	143	877	220
HCARR	4/13/10	200	-0.011	1.9	-0.071	1.7	4.1	9.1	26	136	842	211
DPCHW	4/13/10	400	-0.011	1.3	-0.071	1.5	8.4	19.2	50	281	1513	379
OCAHW	4/13/10	330	-0.011	0.91	-0.071	1.6	-0.8	15.6	41	230	1286	322
ROLFA	4/13/10	450	-0.011	1.1	-0.071	3.1	3.9	21.8	55	317	1671	419
DPCCR	4/13/10	390	-0.011	1.7	-0.071	2.1	3.5	18.7	48	274	1481	371
ICARR	4/13/10	520	0.05	2.9	2.4	5.8	27	25.5	64	367	1889	474
NWHFR	4/13/10	430	0.01	0.74	-0.071	3.1	1.1	20.7	53	302	1608	403
SSALA	4/13/10	370	0.01	1.1	-0.071	2.2	-0.8	17.6	46	259	1416	355
OCARR	4/13/10	330	0.06	3.6	0.1	2.3	14	15.6	41	230	1286	322
SJRSD	4/13/10	340		1.2		0.68	-0.8	16.1	43	238	1319	331
DPCCR	5/11/10	250	-0.011	1.7	-0.071	2	5.1	11.5	32	172	1017	255
SSALA	5/11/10	260	-0.011	1	-0.071	2	-0.8	12.0	33	180	1051	263
SJRSD	5/11/10	40		0.62		0.46	-0.8	1.6	6	24	216	54
NWHFR	5/11/10	320	-0.011	0.45	-0.071	2.8	-0.8	15.1	40	223	1253	314
OCAHW	5/11/10	180	0.01	1.8	-0.071	1.8	1.1	8.1	23	122	770	193
HCARR	5/11/10	43	-0.011	**7.4**	-0.071	2.2	7.9	1.7	6	25	229	57
DMCDP	5/11/10	74		0.87		0.84	8.3	3.1	10	46	363	91
SJRPP	5/11/10	130		0.92		0.99	3.5	5.7	17	86	585	146
OCARR	5/11/10	200	-0.011	1.6	-0.071	2.4	2	9.1	26	136	842	211
ROLFA	5/11/10	300	-0.011	1	-0.071	2.6	4.4	14.0	38	209	1186	297
WWNCR	5/11/10	130	-0.011	1.8	-0.071	2.3	3.6	5.7	17	86	585	146
ICARR	5/11/10	150	0.02	2.6	-0.071	1.9	4.5	6.6	20	100	660	165
MRDRR	5/11/10	200	0.02	4.2	-0.071	3.5	11	9.1	26	136	842	211

Westside San Joaquin River Watershed Coalition

Comparrison of Dissolved Metals Results to Calculated Water Quality Value - Events 65 through 70

Bold indicates exceedance of water quality criteria

Site Code	Sample Date	Hardness (mg/L)	Dissolved Metals Analysis: Cadmium (µg/L)	Copper (µg/L)	Lead (µg/L)	Nickel (µg/L)	Zinc (µg/L)	Dissolved Maximum Concentration Criteria: Cadmium (µg/L)	Copper (µg/L)	Lead (µg/L)	Nickel (µg/L)	Zinc (µg/L)
WWNCR	6/8/10	160	-0.011	3	-0.071	3.7	2.3	7.1	21	107	697	175
SJRPP	6/8/10	130		1.2		1	3.1	5.7	17	86	585	146
NWHFR	6/8/10	210	-0.011	0.79	-0.071	3.2	-0.8	9.5	27	143	877	220
OCAHW	6/8/10	230	-0.011	1.5	-0.071	1.9	2.8	10.5	29	158	947	237
ICARR	6/8/10	210	-0.011	1.8	-0.071	2	2.3	9.5	27	143	877	220
DMCDP	6/8/10	69		1.1		0.84	3.4	2.9	9	43	342	86
SJRSD	6/8/10	80		1.2		0.76	-0.8	3.4	11	51	388	97
SSALA	6/8/10	250	-0.011	1.5	-0.071	2.1	-0.8	11.5	32	172	1017	255
OCARR	6/8/10	250	0.02	3.2	-0.071	4.2	9.5	11.5	32	172	1017	255
MRDRR	6/8/10	180	0.01	2.1	-0.071	1.9	3.5	8.1	23	122	770	193
ROLFA	6/8/10	360	-0.011	1	-0.071	3.2	1	17.1	45	252	1384	347
DPCCR	6/8/10	260	-0.011	1.7	-0.071	2.7	3.8	12.0	33	180	1051	263
HCARR	6/8/10	160	0.01	4.8	-0.071	2.8	2.8	7.1	21	107	697	175
OCARR	7/14/10	300	0.01	1.7	-0.071	2.5	1.1	14.0	38	209	1186	297
HCARR	7/14/10	120	0.01	3.5	-0.071	2.2	1	5.2	16	79	546	137
SJRSD	7/14/10	88		0.9		0.74	-0.8	3.7	12	56	420	105
DMCDP	7/14/10	120		0.91		0.96	6.5	5.2	16	79	546	137
OCAHW	7/14/10	160	-0.011	1.4	-0.071	2	1	7.1	21	107	697	175
NWHFR	7/14/10	350	-0.011	0.51	-0.071	2.6	-0.8	16.6	44	245	1351	339
ROLFA	7/14/10	390	0.01	1.3	-0.071	3.8	1.8	18.7	48	274	1481	371
DPCCR	7/14/10	340	0.01	1.3	-0.071	2.8	4.1	16.1	43	238	1319	331
WWNCR	7/14/10	140	-0.011	1.8	-0.071	2.6	3.8	6.2	18	93	622	156
ICARR	7/14/10	240	0.02	1.7	-0.071	2.4	3.5	11.0	31	165	982	246
SSALA	7/14/10	220	-0.011	1.1	-0.071	2.1	-0.8	10.0	28	151	912	229
MRDRR	7/14/10	280	0.01	2.3	-0.071	2.5	1	13.0	35	194	1119	280
SJRPP	7/14/10	290		1.1		1.6	2.4	13.5	37	201	1153	289
ICARR	8/10/10	260	-0.011	1.6	-0.071	1.8	2.2	12.0	33	180	1051	263
HCARR	8/10/10	270	0.04	15	1.8	6.9	9.3	12.5	34	187	1085	272
DMCDP	8/10/10	84		0.76		0.64	3.2	3.5	11	53	404	101
SJRPP	8/10/10	250		1.2		1.5	2.3	11.5	32	172	1017	255
SJRSD	8/10/10	100		0.95		0.74	-0.8	4.3	13	65	468	117
OCARR	8/10/10	280	-0.011	1.1	-0.071	1.9	4	13.0	35	194	1119	280
MRDRR	8/10/10	250	-0.011	2.4	-0.071	2.4	1.2	11.5	32	172	1017	255
ROLFA	8/10/10	360	-0.011	1.2	-0.071	3.5	-0.8	17.1	45	252	1384	347
WWNCR	8/10/10	290	-0.011	1.9	-0.071	2.4	5.3	13.5	37	201	1153	289
SSALA	8/10/10	200	-0.011	1.3	-0.071	1.6	-0.8	9.1	26	136	842	211
NWHFR	8/10/10	360	-0.011	0.71	-0.071	2.7	-0.8	17.1	45	252	1384	347
OCAHW	8/10/10	180	-0.011	1.1	-0.071	1.5	1.8	8.1	23	122	770	193
DPCCR	8/10/10	330	-0.011	1.3	-0.071	1.6	1.7	15.6	41	230	1286	322

Notes: **Bold** values indicate exceedance of the Maximum Concentration Criteria
Negative values indicate non-detect

Westside San Joaquin River Watershed Coalition

Number of Water Quality Value Exceedances for the period of 3/1/2010 to 9/1/2010

Type	Constituent	# of Exceedances	# of Tests
Aquatic Toxicity	Ceriodaphnia dubia	3	94
Aquatic Toxicity	Pimephales promelas	1	14
Aquatic Toxicity	Selenastrum capricornutum	2	35
Field Data	DO	20	129
Field Data	EC	66	133
Field Data	Flow	18	97
Field Data	pH	15	133
General Chemistry	Ammonia as N	2	86
General Chemistry	Boron	10	76
General Chemistry	E. Coli	36	104
General Chemistry	Total Dissolved Solids	63	104
Pesticide	a-Chlordane	1	70
Pesticide	Chlorpyrifos	21	111
Pesticide	DDD(p,p')	1	70
Pesticide	DDE(p,p')	33	70
Pesticide	DDT(p,p')	6	70
Pesticide	Dimethoate	1	111
Pesticide	Diuron	5	94
Pesticide	Malathion	7	111
Sediment Toxicity	Hyalella azteca	3	10

Westside San Joaquin River Watershed Coalition

Number of Water Quality Value Exceedances for the period of 3/1/2010 to 9/1/2010

Blewett Drain at Highway 132

Type	Constituent	# of Exceedances	# of Tests
General Chemistry	E. Coli	2	5

Del Puerto Creek at Hwy 33

Type	Constituent	# of Exceedances	# of Tests
Aquatic Toxicity	Ceriodaphnia dubia	1	2
Field Data	DO	1	4
Field Data	EC	1	4
Field Data	Flow	1	3
Field Data	pH	1	4

Del Puerto Creek near Cox Road

Type	Constituent	# of Exceedances	# of Tests
Field Data	EC	2	6
Field Data	pH	1	6
General Chemistry	Ammonia as N	1	6
General Chemistry	E. Coli	5	6
General Chemistry	Total Dissolved Solids	6	6
Pesticide	Chlorpyrifos	2	6
Pesticide	DDE(p,p')	3	6
Pesticide	Malathion	1	6
Sediment Toxicity	Hyalella azteca	1	1

Delta Mendota Canal at DPWD

Type	Constituent	# of Exceedances	# of Tests
Pesticide	Chlorpyrifos	1	6

Hospital Creek at River Road

Type	Constituent	# of Exceedances	# of Tests
Field Data	EC	1	6
Field Data	Flow	1	6
Field Data	pH	1	6
Pesticide	Chlorpyrifos	2	5
Pesticide	DDE(p,p')	5	5
Pesticide	DDT(p,p')	1	5
Sediment Toxicity	Hyalella azteca	1	1

Ingram Creek at River Road

Type	Constituent	# of Exceedances	# of Tests
Field Data	DO	2	7
Field Data	EC	5	7

Westside San Joaquin River Watershed Coalition

Number of Water Quality Value Exceedances for the period of 3/1/2010 to 9/1/2010

Field Data	Flow	1	6
Field Data	pH	1	7
General Chemistry	Boron	2	6
General Chemistry	E. Coli	3	6
General Chemistry	Total Dissolved Solids	5	6
Pesticide	Chlorpyrifos	2	6
Pesticide	DDE(p,p')	6	6
Pesticide	DDT(p,p')	2	6
Pesticide	Dimethoate	1	6
Pesticide	Diuron	1	6
Sediment Toxicity	Hyalella azteca	1	1

Los Banos Creek at China Camp Road

Type	Constituent	# of Exceedances	# of Tests
Aquatic Toxicity	Pimephales promelas	1	7
Field Data	DO	2	7
Field Data	EC	7	7
Field Data	Flow	5	5
Field Data	pH	2	7
General Chemistry	E. Coli	2	6
General Chemistry	Total Dissolved Solids	5	6
Pesticide	Chlorpyrifos	1	6

Los Banos Creek at Hwy 140

Type	Constituent	# of Exceedances	# of Tests
Field Data	DO	1	6
Field Data	EC	6	6
Field Data	pH	2	6
General Chemistry	E. Coli	3	6
General Chemistry	Total Dissolved Solids	6	6
Pesticide	Diuron	1	6

Los Banos Creek at Sunset Ave.

Type	Constituent	# of Exceedances	# of Tests
General Chemistry	Boron	1	1

Marshall Road Drain near River Road

Type	Constituent	# of Exceedances	# of Tests
Aquatic Toxicity	Ceriodaphnia dubia	1	4
Field Data	DO	1	4
Field Data	EC	2	4
Field Data	pH	1	4
General Chemistry	E. Coli	1	4
General Chemistry	Total Dissolved Solids	4	4

Westside San Joaquin River Watershed Coalition

Number of Water Quality Value Exceedances for the period of 3/1/2010 to 9/1/2010

Pesticide	Chlorpyrifos	3	4
Pesticide	DDE(p,p')	2	4
Pesticide	Malathion	1	4

Mud Slough Upstream of San Luis Drain

Type	Constituent	# of Exceedances	# of Tests
Field Data	EC	6	6
Field Data	pH	2	6
General Chemistry	E. Coli	2	6
General Chemistry	Total Dissolved Solids	6	6

Newman Wasteway near Hills Ferry Road

Type	Constituent	# of Exceedances	# of Tests
Field Data	DO	6	7
Field Data	EC	7	7
General Chemistry	Boron	2	6
General Chemistry	E. Coli	3	6
General Chemistry	Total Dissolved Solids	6	6
Pesticide	DDE(p,p')	1	6

Orestimba Creek at Hwy 33

Type	Constituent	# of Exceedances	# of Tests
Field Data	DO	1	7
Field Data	Flow	1	5
Pesticide	Chlorpyrifos	2	6
Pesticide	DDD(p,p')	1	6
Pesticide	DDE(p,p')	6	6
Pesticide	DDT(p,p')	2	6

Orestimba Creek at River Road

Type	Constituent	# of Exceedances	# of Tests
Field Data	DO	1	7
Field Data	EC	2	7
Field Data	Flow	1	6
General Chemistry	E. Coli	3	6
General Chemistry	Total Dissolved Solids	3	6
Pesticide	Chlorpyrifos	2	6
Pesticide	DDE(p,p')	5	6
Pesticide	Malathion	1	6

Poso Slough at Indiana Ave

Type	Constituent	# of Exceedances	# of Tests
Field Data	DO	1	6
Field Data	EC	4	6

Westside San Joaquin River Watershed Coalition

Number of Water Quality Value Exceedances for the period of 3/1/2010 to 9/1/2010

Field Data	pH	1	6
General Chemistry	Ammonia as N	1	6
General Chemistry	E. Coli	4	6
General Chemistry	Total Dissolved Solids	3	6

Ramona Lake near Fig Avenue

Type	Constituent	# of Exceedances	# of Tests
Field Data	DO	2	7
Field Data	EC	7	7
Field Data	Flow	4	4
Field Data	pH	2	7
General Chemistry	Boron	5	6
General Chemistry	Total Dissolved Solids	6	6
Pesticide	DDE(p,p')	1	6

Salt Slough at Lander Ave

Type	Constituent	# of Exceedances	# of Tests
Field Data	EC	6	6
General Chemistry	Total Dissolved Solids	6	6
Pesticide	Malathion	1	6

Salt Slough at Sand Dam

Type	Constituent	# of Exceedances	# of Tests
Field Data	DO	2	5
Field Data	EC	3	5
Pesticide	Chlorpyrifos	2	6
Pesticide	Diuron	1	6
Pesticide	Malathion	1	6

San Joaquin River at Lander Ave

Type	Constituent	# of Exceedances	# of Tests
Field Data	EC	1	6
General Chemistry	Total Dissolved Solids	1	6
Pesticide	Malathion	1	6

San Joaquin River at PID Pumps

Type	Constituent	# of Exceedances	# of Tests
Field Data	EC	4	6
Field Data	pH	1	6
General Chemistry	Total Dissolved Solids	4	6
Pesticide	Chlorpyrifos	2	6

Westside San Joaquin River Watershed Coalition

Number of Water Quality Value Exceedances for the period of 3/1/2010 to 9/1/2010

San Joaquin River at Sack Dam

Type	Constituent	# of Exceedances	# of Tests
Pesticide	Chlorpyrifos	1	5
Pesticide	Malathion	1	5

Turner Slough at Edminster Road

Type	Constituent	# of Exceedances	# of Tests
Aquatic Toxicity	Ceriodaphnia dubia	1	6
Field Data	EC	1	6
Field Data	Flow	3	6
General Chemistry	E. Coli	4	6
General Chemistry	Total Dissolved Solids	1	6

Westley Wasteway near Cox Road

Type	Constituent	# of Exceedances	# of Tests
Aquatic Toxicity	Selenastrum capricornutum	2	4
Field Data	EC	1	4
Field Data	Flow	1	4
General Chemistry	E. Coli	4	4
General Chemistry	Total Dissolved Solids	1	4
Pesticide	a-Chlordane	1	4
Pesticide	Chlorpyrifos	1	4
Pesticide	DDE(p,p')	4	4
Pesticide	DDT(p,p')	1	4
Pesticide	Diuron	2	4

Westside San Joaquin River Watershed Coalition

Water Quality Value Exceedances for the period of 3/1/2010 to 9/1/2010

Blewett Drain at Highway 132

Analyte/Species	Event	Sample Date	Result		Units	Significant Toxicity	WQV Max	WQV Min
E. Coli	67	5/11/2010	2400	>	MPN/100 mL		235	
E. Coli	69	7/14/2010	270		MPN/100 mL		235	

Del Puerto Creek at Hwy 33

Analyte/Species	Event	Sample Date	Result		Units	Significant Toxicity	WQV Max	WQV Min
Ceriodaphnia dubia	65	3/9/2010	40		%	yes		
pH	66	4/13/2010	8.62				8.5	6.5
DO	68	6/8/2010	4.88		mg/l			5
EC	68	6/8/2010	850		µmhos/cm		700	
Flow	68	6/8/2010	0		cfs			0.01

Del Puerto Creek near Cox Road

Analyte/Species	Event	Sample Date	Result		Units	Significant Toxicity	WQV Max	WQV Min
Hyalella azteca	65	3/8/2010	77.5		%	yes		
E. Coli	65	3/9/2010	370		MPN/100 mL		235	
Total Dissolved Solids	65	3/9/2010	520		mg/L		450	
E. Coli	66	4/13/2010	260		MPN/100 mL		235	
pH	66	4/13/2010	8.55				8.5	6.5
Total Dissolved Solids	66	4/13/2010	530		mg/L		450	
Chlorpyrifos	67	5/11/2010	0.018		µg/L		0.015	
E. Coli	67	5/11/2010	370		MPN/100 mL		235	
Total Dissolved Solids	67	5/11/2010	500		mg/L		450	
DDE(p,p')	68	6/8/2010	0.0073	DNQ	µg/L		0.00059	
Total Dissolved Solids	68	6/8/2010	600		mg/L		450	
Ammonia as N	69	7/14/2010	2		mg/L		1.5	
Chlorpyrifos	69	7/14/2010	0.063		ug/L		0.015	
DDE(p,p')	69	7/14/2010	0.011		ug/L		0.00059	
E. Coli	69	7/14/2010	370		MPN/100 mL		235	
EC	69	7/14/2010	993		µmhos/cm		700	
Total Dissolved Solids	69	7/14/2010	690		mg/L		450	
DDE(p,p')	70	8/10/2010	0.01		ug/L		0.00059	
E. Coli	70	8/10/2010	370		MPN/100 mL		235	
EC	70	8/10/2010	985		µmhos/cm		700	
Malathion	70	8/10/2010	0.55		ug/L		5E-07	
Total Dissolved Solids	70	8/10/2010	750		mg/L		450	

Delta Mendota Canal at DPWD

Analyte/Species	Event	Sample Date	Result		Units	Significant Toxicity	WQV Max	WQV Min
Chlorpyrifos	69	7/14/2010	0.017		ug/L		0.015	

WQV = Water Quality Value as established by the Central Valley Regional Water Quality Control Board

DNQ = Detected, Not Quantifiable

Westside San Joaquin River Watershed Coalition

Water Quality Value Exceedances for the period of 3/1/2010 to 9/1/2010

Hospital Creek at River Road

Analyte/Species	Event	Sample Date	Result		Units	Significant Toxicity	WQV Max	WQV Min
Hyalella azteca	65	3/8/2010	77.5		%	yes		
Flow	65	3/9/2010	0		cfs			0.01
pH	65	3/9/2010	0				8.5	6.5
DDE(p,p')	66	4/13/2010	0.0042	DNQ	µg/L		0.00059	
Chlorpyrifos	67	5/11/2010	0.045		µg/L		0.015	
DDE(p,p')	67	5/11/2010	0.011		µg/L		0.00059	
DDE(p,p')	68	6/8/2010	0.026		µg/L		0.00059	
DDT(p,p')	68	6/8/2010	0.0091	DNQ	µg/L		0.00059	
Chlorpyrifos	69	7/14/2010	0.24		ug/L		0.015	
DDE(p,p')	69	7/14/2010	0.02		ug/L		0.00059	
DDE(p,p')	70	8/10/2010	0.0083	DNQ	ug/L		0.00059	
EC	70	8/10/2010	890		µmhos/cm		700	

WQV = Water Quality Value as established by the Central Valley Regional Water Quality Control Board

DNQ = Detected, Not Quantifiable

Westside San Joaquin River Watershed Coalition

Water Quality Value Exceedances for the period of 3/1/2010 to 9/1/2010

Ingram Creek at River Road

Analyte/Species	Event	Sample Date	Result		Units	Significant Toxicity	WQV Max	WQV Min
DO	65	3/8/2010	4.8		mg/l			5
EC	65	3/8/2010	1388		µmhos/cm		700	
Hyalella azteca	65	3/8/2010	35		%	yes		
Boron	65	3/9/2010	1600		µg/L		700	
DDE(p,p')	65	3/9/2010	0.0072	DNQ	µg/L		0.00059	
DO	65	3/9/2010	3.32		mg/l			5
EC	65	3/9/2010	1292		µmhos/cm		700	
Flow	65	3/9/2010	0		cfs			0.01
Total Dissolved Solids	65	3/9/2010	1300		mg/L		450	
Boron	66	4/13/2010	1100		µg/L		700	
DDE(p,p')	66	4/13/2010	0.0078	DNQ	µg/L		0.00059	
Diuron	66	4/13/2010	2.9		µg/L		2	
EC	66	4/13/2010	1245		µmhos/cm		700	
Total Dissolved Solids	66	4/13/2010	1100		mg/L		450	
Chlorpyrifos	67	5/11/2010	0.022		µg/L		0.015	
DDE(p,p')	67	5/11/2010	0.038		µg/L		0.00059	
DDT(p,p')	67	5/11/2010	0.011		µg/L		0.00059	
E. Coli	67	5/11/2010	260		MPN/100 mL		235	
DDE(p,p')	68	6/8/2010	0.017		µg/L		0.00059	
EC	68	6/8/2010	766		µmhos/cm		700	
Total Dissolved Solids	68	6/8/2010	520		mg/L		450	
Chlorpyrifos	69	7/14/2010	0.24		ug/L		0.015	
DDE(p,p')	69	7/14/2010	0.018		ug/L		0.00059	
E. Coli	69	7/14/2010	2400		MPN/100 mL		235	
EC	69	7/14/2010	856		µmhos/cm		700	
Total Dissolved Solids	69	7/14/2010	560		mg/L		450	
DDE(p,p')	70	8/10/2010	0.028		ug/L		0.00059	
DDT(p,p')	70	8/10/2010	0.0092	DNQ	ug/L		0.00059	
Dimethoate	70	8/10/2010	1.7		ug/L		1	
E. Coli	70	8/10/2010	260		MPN/100 mL		235	
pH	70	8/10/2010	8.84				8.5	6.5
Total Dissolved Solids	70	8/10/2010	490		mg/L		450	

WQV = Water Quality Value as established by the Central Valley Regional Water Quality Control Board

DNQ = Detected, Not Quantifiable

Westside San Joaquin River Watershed Coalition

Water Quality Value Exceedances for the period of 3/1/2010 to 9/1/2010

Los Banos Creek at China Camp Road

Analyte/Species	Event	Sample Date	Result	Units	Significant Toxicity	WQV Max	WQV Min
EC	65	3/8/2010	723	µmhos/cm		700	
EC	65	3/9/2010	724	µmhos/cm		700	
EC	66	4/13/2010	1952	µmhos/cm		700	
Flow	66	4/13/2010	0	cfs			0.01
Total Dissolved Solids	66	4/13/2010	1200	mg/L		450	
EC	67	5/11/2010	1825	µmhos/cm		700	
Flow	67	5/11/2010	0	cfs			0.01
pH	67	5/11/2010	8.54			8.5	6.5
Total Dissolved Solids	67	5/11/2010	1100	mg/L		450	
E. Coli	68	6/8/2010	440	MPN/100 mL		235	
EC	68	6/8/2010	1996	µmhos/cm		700	
Flow	68	6/8/2010	0	cfs			0.01
pH	68	6/8/2010	8.67			8.5	6.5
Total Dissolved Solids	68	6/8/2010	1200	mg/L		450	
Chlorpyrifos	69	7/14/2010	0.031	ug/L		0.015	
DO	69	7/14/2010	1.16	mg/l			5
EC	69	7/14/2010	1867	µmhos/cm		700	
Flow	69	7/14/2010	0	cfs			0.01
Total Dissolved Solids	69	7/14/2010	1100	mg/L		450	
DO	70	8/10/2010	0.19	mg/l			5
E. Coli	70	8/10/2010	610	MPN/100 mL		235	
EC	70	8/10/2010	1871	µmhos/cm		700	
Flow	70	8/10/2010	0	cfs			0.01
Pimephales promelas	70	8/10/2010	87.5	%	yes		
Total Dissolved Solids	70	8/10/2010	1100	mg/L		450	

WQV = Water Quality Value as established by the Central Valley Regional Water Quality Control Board

DNQ = Detected, Not Quantifiable

Westside San Joaquin River Watershed Coalition

Water Quality Value Exceedances for the period of 3/1/2010 to 9/1/2010

Los Banos Creek at Hwy 140

Analyte/Species	Event	Sample Date	Result	Units	Significant Toxicity	WQV Max	WQV Min
EC	65	3/9/2010	2104	µmhos/cm		700	
Total Dissolved Solids	65	3/9/2010	1300	mg/L		450	
Diuron	66	4/13/2010	3.0	µg/L		2	
E. Coli	66	4/13/2010	490	MPN/100 mL		235	
EC	66	4/13/2010	2129	µmhos/cm		700	
Total Dissolved Solids	66	4/13/2010	1400	mg/L		450	
EC	67	5/11/2010	2878	µmhos/cm		700	
pH	67	5/11/2010	8.62			8.5	6.5
Total Dissolved Solids	67	5/11/2010	1800	mg/L		450	
EC	68	6/8/2010	1361	µmhos/cm		700	
Total Dissolved Solids	68	6/8/2010	810	mg/L		450	
E. Coli	69	7/14/2010	2000	MPN/100 mL		235	
EC	69	7/14/2010	1315	µmhos/cm		700	
pH	69	7/14/2010	8.56			8.5	6.5
Total Dissolved Solids	69	7/14/2010	760	mg/L		450	
DO	70	8/10/2010	4.88	mg/l			5
E. Coli	70	8/10/2010	610	MPN/100 mL		235	
EC	70	8/10/2010	1277	µmhos/cm		700	
Total Dissolved Solids	70	8/10/2010	780	mg/L		450	

Los Banos Creek at Sunset Ave.

Analyte/Species	Event	Sample Date	Result	Units	Significant Toxicity	WQV Max	WQV Min
Boron	65	3/3/2010	720	µg/L		700	

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DNQ = Detected, Not Quantifiable

Westside San Joaquin River Watershed Coalition

Water Quality Value Exceedances for the period of 3/1/2010 to 9/1/2010

Marshall Road Drain near River Road

Analyte/Species	Event	Sample Date	Result		Units	Significant Toxicity	WQV Max	WQV Min
Ceriodaphnia dubia	67	5/11/2010	0		%	yes		
Chlorpyrifos	67	5/11/2010	0.53		µg/L		0.015	
E. Coli	67	5/11/2010	2400	>	MPN/100 mL		235	
Total Dissolved Solids	67	5/11/2010	470		mg/L		450	
Chlorpyrifos	68	6/8/2010	0.054		µg/L		0.015	
DO	68	6/8/2010	4.91		mg/l			5
Total Dissolved Solids	68	6/8/2010	500		mg/L		450	
Chlorpyrifos	69	7/14/2010	0.078		ug/L		0.015	
DDE(p,p')	69	7/14/2010	0.011		ug/L		0.00059	
EC	69	7/14/2010	926		µmhos/cm		700	
Malathion	69	7/14/2010	0.061	DNQ	ug/L		5E-07	
pH	69	7/14/2010	9.96				8.5	6.5
Total Dissolved Solids	69	7/14/2010	580		mg/L		450	
DDE(p,p')	70	8/10/2010	0.0087	DNQ	ug/L		0.00059	
EC	70	8/10/2010	783		µmhos/cm		700	
Total Dissolved Solids	70	8/10/2010	540		mg/L		450	

Mud Slough Upstream of San Luis Drain

Analyte/Species	Event	Sample Date	Result		Units	Significant Toxicity	WQV Max	WQV Min
EC	65	3/9/2010	2501		µmhos/cm		700	
Total Dissolved Solids	65	3/9/2010	1600		mg/L		450	
EC	66	4/13/2010	2751		µmhos/cm		700	
Total Dissolved Solids	66	4/13/2010	1700		mg/L		450	
EC	67	5/11/2010	3096		µmhos/cm		700	
Total Dissolved Solids	67	5/11/2010	1900		mg/L		450	
E. Coli	68	6/8/2010	250		MPN/100 mL		235	
EC	68	6/8/2010	1722		µmhos/cm		700	
Total Dissolved Solids	68	6/8/2010	1100		mg/L		450	
E. Coli	69	7/14/2010	2400	>	MPN/100 mL		235	
EC	69	7/14/2010	1654		µmhos/cm		700	
pH	69	7/14/2010	8.64				8.5	6.5
Total Dissolved Solids	69	7/14/2010	980		mg/L		450	
EC	70	8/10/2010	1155		µmhos/cm		700	
pH	70	8/10/2010	9.03				8.5	6.5
Total Dissolved Solids	70	8/10/2010	700		mg/L		450	

WQV = Water Quality Value as established by the Central Valley Regional Water Quality Control Board

DNQ = Detected, Not Quantifiable

Westside San Joaquin River Watershed Coalition

Water Quality Value Exceedances for the period of 3/1/2010 to 9/1/2010

Newman Wasteway near Hills Ferry Road

Analyte/Species	Event	Sample Date	Result		Units	Significant Toxicity	WQV Max	WQV Min
DO	65	3/8/2010	2.89		mg/l			5
EC	65	3/8/2010	1799		µmhos/cm		700	
Boron	65	3/9/2010	1100		µg/L		700	
DO	65	3/9/2010	2.76		mg/l			5
EC	65	3/9/2010	1808		µmhos/cm		700	
Total Dissolved Solids	65	3/9/2010	1100		mg/L		450	
Boron	66	4/13/2010	880		µg/L		700	
DO	66	4/13/2010	4.94		mg/l			5
E. Coli	66	4/13/2010	250		MPN/100 mL		235	
EC	66	4/13/2010	1407		µmhos/cm		700	
Total Dissolved Solids	66	4/13/2010	860		mg/L		450	
DO	67	5/11/2010	3.16		mg/l			5
EC	67	5/11/2010	1084		µmhos/cm		700	
Total Dissolved Solids	67	5/11/2010	640		mg/L		450	
DDE(p,p')	68	6/8/2010	0.0058	DNQ	µg/L		0.00059	
EC	68	6/8/2010	1034		µmhos/cm		700	
Total Dissolved Solids	68	6/8/2010	620		mg/L		450	
DO	69	7/14/2010	2.82		mg/l			5
E. Coli	69	7/14/2010	2400	>	MPN/100 mL		235	
EC	69	7/14/2010	1013		µmhos/cm		700	
Total Dissolved Solids	69	7/14/2010	570		mg/L		450	
DO	70	8/10/2010	2.81		mg/l			5
E. Coli	70	8/10/2010	2400	>	MPN/100 mL		235	
EC	70	8/10/2010	1149		µmhos/cm		700	
Total Dissolved Solids	70	8/10/2010	650		mg/L		450	

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Westside San Joaquin River Watershed Coalition

Water Quality Value Exceedances for the period of 3/1/2010 to 9/1/2010

Orestimba Creek at Hwy 33

Analyte/Species	Event	Sample Date	Result		Units	Significant Toxicity	WQV Max	WQV Min
DDE(p,p')	65	3/9/2010	0.0066	DNQ	µg/L		0.00059	
DDE(p,p')	66	4/13/2010	0.012		µg/L		0.00059	
DDD(p,p')	67	5/11/2010	0.0036	DNQ	µg/L		0.00083	
DDE(p,p')	67	5/11/2010	0.022		µg/L		0.00059	
Chlorpyrifos	68	6/8/2010	0.079		µg/L		0.015	
DDE(p,p')	68	6/8/2010	0.012		µg/L		0.00059	
DO	68	6/8/2010	3.49		mg/l			5
Flow	68	6/8/2010	0		cfs			0.01
Chlorpyrifos	69	7/14/2010	0.032		ug/L		0.015	
DDE(p,p')	69	7/14/2010	0.022		ug/L		0.00059	
DDT(p,p')	69	7/14/2010	0.0091	DNQ	ug/L		0.00059	
DDE(p,p')	70	8/10/2010	0.023		ug/L		0.00059	
DDT(p,p')	70	8/10/2010	0.0085	DNQ	ug/L		0.00059	

Orestimba Creek at River Road

Analyte/Species	Event	Sample Date	Result		Units	Significant Toxicity	WQV Max	WQV Min
DO	65	3/8/2010	2.31		mg/l			5
DDE(p,p')	65	3/9/2010	0.0052	DNQ	µg/L		0.00059	
E. Coli	66	4/13/2010	650		MPN/100 mL		235	
DDE(p,p')	67	5/11/2010	0.026		µg/L		0.00059	
Chlorpyrifos	68	6/8/2010	0.20		µg/L		0.015	
DDE(p,p')	68	6/8/2010	0.015		µg/L		0.00059	
EC	68	6/8/2010	703		µmhos/cm		700	
Flow	68	6/8/2010	0		cfs			0.01
Total Dissolved Solids	68	6/8/2010	480		mg/L		450	
Chlorpyrifos	69	7/14/2010	0.06		ug/L		0.015	
DDE(p,p')	69	7/14/2010	0.0082	DNQ	ug/L		0.00059	
E. Coli	69	7/14/2010	440		MPN/100 mL		235	
EC	69	7/14/2010	781		µmhos/cm		700	
Malathion	69	7/14/2010	0.081	DNQ	ug/L		5E-07	
Total Dissolved Solids	69	7/14/2010	540		mg/L		450	
DDE(p,p')	70	8/10/2010	0.007	DNQ	ug/L		0.00059	
E. Coli	70	8/10/2010	390		MPN/100 mL		235	
Total Dissolved Solids	70	8/10/2010	470		mg/L		450	

WQV = Water Quality Value as established by the Central Valley Regional Water Quality Control Board

DNQ = Detected, Not Quantifiable

Westside San Joaquin River Watershed Coalition

Water Quality Value Exceedances for the period of 3/1/2010 to 9/1/2010

Poso Slough at Indiana Ave

Analyte/Species	Event	Sample Date	Result		Units	Significant Toxicity	WQV Max	WQV Min
EC	65	3/9/2010	1183		µmhos/cm		700	
Total Dissolved Solids	65	3/9/2010	690		mg/L		450	
EC	66	4/13/2010	822		µmhos/cm		700	
Total Dissolved Solids	66	4/13/2010	490		mg/L		450	
E. Coli	67	5/11/2010	2400	>	MPN/100 mL		235	
EC	67	5/11/2010	799		µmhos/cm		700	
pH	67	5/11/2010	9.37				8.5	6.5
Total Dissolved Solids	67	5/11/2010	460		mg/L		450	
E. Coli	68	6/8/2010	670		MPN/100 mL		235	
EC	68	6/8/2010	744		µmhos/cm		700	
Ammonia as N	69	7/14/2010	1.7		mg/L		1.5	
DO	69	7/14/2010	4.13		mg/l			5
E. Coli	69	7/14/2010	550		MPN/100 mL		235	
E. Coli	70	8/10/2010	330		MPN/100 mL		235	

WQV = Water Quality Value as established by the Central Valley Regional Water Quality Control Board

DNQ = Detected, Not Quantifiable

Westside San Joaquin River Watershed Coalition

Water Quality Value Exceedances for the period of 3/1/2010 to 9/1/2010

Ramona Lake near Fig Avenue

Analyte/Species	Event	Sample Date	Result		Units	Significant Toxicity	WQV Max	WQV Min
DO	65	3/8/2010	3.5		mg/l			5
EC	65	3/8/2010	1106		µmhos/cm		700	
Flow	65	3/8/2010	0		cfs			0.01
pH	65	3/8/2010	17.77				8.5	6.5
Boron	65	3/9/2010	750		µg/L		700	
EC	65	3/9/2010	1054		µmhos/cm		700	
Flow	65	3/9/2010	0		cfs			0.01
Total Dissolved Solids	65	3/9/2010	930		mg/L		450	
Boron	66	4/13/2010	850		µg/L		700	
EC	66	4/13/2010	1253		µmhos/cm		700	
Flow	66	4/13/2010	0		cfs			0.01
pH	66	4/13/2010	8.71				8.5	6.5
Total Dissolved Solids	66	4/13/2010	1000		mg/L		450	
EC	67	5/11/2010	880		µmhos/cm		700	
Total Dissolved Solids	67	5/11/2010	710		mg/L		450	
Boron	68	6/8/2010	746		µg/L		700	
DO	68	6/8/2010	4.29		mg/l			5
EC	68	6/8/2010	1274		µmhos/cm		700	
Flow	68	6/8/2010	0		cfs			0.01
Total Dissolved Solids	68	6/8/2010	850		mg/L		450	
Boron	69	7/14/2010	850		µg/L		700	
EC	69	7/14/2010	1464		µmhos/cm		700	
Total Dissolved Solids	69	7/14/2010	900		mg/L		450	
Boron	70	8/10/2010	984		µg/L		700	
DDE(p,p')	70	8/10/2010	0.0042	DNQ	ug/L		0.00059	
EC	70	8/10/2010	1489		µmhos/cm		700	
Total Dissolved Solids	70	8/10/2010	960		mg/L		450	

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DNQ = Detected, Not Quantifiable

Westside San Joaquin River Watershed Coalition

Water Quality Value Exceedances for the period of 3/1/2010 to 9/1/2010

Salt Slough at Lander Ave

Analyte/Species	Event	Sample Date	Result		Units	Significant Toxicity	WQV Max	WQV Min
EC	65	3/9/2010	1754		µmhos/cm		700	
Malathion	65	3/9/2010	0.056	DNQ	µg/L		5E-07	
Total Dissolved Solids	65	3/9/2010	1100		mg/L		450	
EC	66	4/13/2010	1564		µmhos/cm		700	
Total Dissolved Solids	66	4/13/2010	950		mg/L		450	
EC	67	5/11/2010	1127		µmhos/cm		700	
Total Dissolved Solids	67	5/11/2010	650		mg/L		450	
EC	68	6/8/2010	1180		µmhos/cm		700	
Total Dissolved Solids	68	6/8/2010	670		mg/L		450	
EC	69	7/14/2010	1032		µmhos/cm		700	
Total Dissolved Solids	69	7/14/2010	580		mg/L		450	
EC	70	8/10/2010	802		µmhos/cm		700	
Total Dissolved Solids	70	8/10/2010	460		mg/L		450	

Salt Slough at Sand Dam

Analyte/Species	Event	Sample Date	Result		Units	Significant Toxicity	WQV Max	WQV Min
Diuron	65	3/9/2010	2.2		µg/L		2	
EC	65	3/9/2010	1210		µmhos/cm		700	
Malathion	65	3/9/2010	0.20		µg/L		5E-07	
EC	66	4/13/2010	966		µmhos/cm		700	
EC	68	6/8/2010	1106		µmhos/cm		700	
Chlorpyrifos	69	7/14/2010	0.095		ug/L		0.015	
DO	69	7/14/2010	4.71		mg/l			5
Chlorpyrifos	70	8/10/2010	0.038		ug/L		0.015	
DO	70	8/10/2010	3.56		mg/l			5

San Joaquin River at Lander Ave

Analyte/Species	Event	Sample Date	Result		Units	Significant Toxicity	WQV Max	WQV Min
Malathion	65	3/9/2010	0.051	DNQ	µg/L		5E-07	
EC	70	8/10/2010	839		µmhos/cm		700	
Total Dissolved Solids	70	8/10/2010	460		mg/L		450	

WQV = Water Quality Value as established by the Central Valley Regional Water Quality Control Board

DNQ = Detected, Not Quantifiable

Westside San Joaquin River Watershed Coalition

Water Quality Value Exceedances for the period of 3/1/2010 to 9/1/2010

San Joaquin River at PID Pumps

Analyte/Species	Event	Sample Date	Result		Units	Significant Toxicity	WQV Max	WQV Min
EC	65	3/9/2010	801		µmhos/cm		700	
Total Dissolved Solids	65	3/9/2010	650		mg/L		450	
EC	66	4/13/2010	708		µmhos/cm		700	
pH	66	4/13/2010	2.68				8.5	6.5
Total Dissolved Solids	66	4/13/2010	520		mg/L		450	
Chlorpyrifos	67	5/11/2010	0.04		µg/L		0.015	
Chlorpyrifos	69	7/14/2010	0.019		ug/L		0.015	
EC	69	7/14/2010	1125		µmhos/cm		700	
Total Dissolved Solids	69	7/14/2010	710		mg/L		450	
EC	70	8/10/2010	978		µmhos/cm		700	
Total Dissolved Solids	70	8/10/2010	640		mg/L		450	

San Joaquin River at Sack Dam

Analyte/Species	Event	Sample Date	Result		Units	Significant Toxicity	WQV Max	WQV Min
Malathion	65	3/9/2010	0.077	DNQ	µg/L		5E-07	
Chlorpyrifos	69	7/14/2010	0.036		ug/L		0.015	

Turner Slough at Edminster Road

Analyte/Species	Event	Sample Date	Result		Units	Significant Toxicity	WQV Max	WQV Min
Flow	65	3/9/2010	0		cfs			0.01
E. Coli	67	5/11/2010	290		MPN/100 mL		235	
E. Coli	68	6/8/2010	1000		MPN/100 mL		235	
EC	68	6/8/2010	1901		µmhos/cm		700	
Flow	68	6/8/2010	0		cfs			0.01
Total Dissolved Solids	68	6/8/2010	1100		mg/L		450	
E. Coli	69	7/14/2010	2400	>	MPN/100 mL		235	
Ceriodaphnia dubia	70	8/10/2010	75		%	yes		
E. Coli	70	8/10/2010	390		MPN/100 mL		235	
Flow	70	8/10/2010	0		cfs			0.01

WQV = Water Quality Value as established by the Central Valley Regional Water Quality Control Board

DNQ = Detected, Not Quantifiable

Westside San Joaquin River Watershed Coalition

Water Quality Value Exceedances for the period of 3/1/2010 to 9/1/2010

Westley Wasteway near Cox Road

Analyte/Species	Event	Sample Date	Result		Units	Significant Toxicity	WQV Max	WQV Min
DDE(p,p')	67	5/11/2010	0.011		µg/L		0.00059	
Diuron	67	5/11/2010	13		µg/L		2	
E. Coli	67	5/11/2010	1300		MPN/100 mL		235	
Selenastrum capricornutum	67	5/11/2010	1503000		cells/ml	yes		
DDE(p,p')	68	6/8/2010	0.027		µg/L		0.00059	
DDT(p,p')	68	6/8/2010	0.01		µg/L		0.00059	
Diuron	68	6/8/2010	11		µg/L		2	
E. Coli	68	6/8/2010	1200		MPN/100 mL		235	
Selenastrum capricornutum	68	6/8/2010	764000		cells/ml	yes		
a-Chlordane	69	7/14/2010	0.0092	DNQ	ug/L		0.00057	
Chlorpyrifos	69	7/14/2010	0.13		ug/L		0.015	
DDE(p,p')	69	7/14/2010	0.014		ug/L		0.00059	
E. Coli	69	7/14/2010	310		MPN/100 mL		235	
DDE(p,p')	70	8/10/2010	0.0077	DNQ	ug/L		0.00059	
E. Coli	70	8/10/2010	400		MPN/100 mL		235	
EC	70	8/10/2010	801		µmhos/cm		700	
Flow	70	8/10/2010	0		cfs			0.01
Total Dissolved Solids	70	8/10/2010	590		mg/L		450	

WQV = Water Quality Value as established by the Central Valley Regional Water Quality Control Board

DNQ = Detected, Not Quantifiable

Attachment 6
Management Plan Activities

San Joaquin Valley Drainage Authority

Westside San Joaquin River Watershed Coalition

Hospital and Ingram Creek Focused Watershed Plan
Westley Wasteway, Del Puerto Creek, and Orestimba Creek Focused Watershed Plan

Status Report
November 30, 2010

Prepared by:
Summers Engineering, Inc.
Consulting Engineers
Hanford California

Introduction and Background

In October, 2008, the San Joaquin Valley Drainage Authority (SJVDA) submitted a Focused Watershed Management Plan (Focused Plan I) for Ingram and Hospital Creeks for the Westside San Joaquin River Watershed Coalition (Westside Coalition). In October, 2010 a draft Focused Watershed Plan (Focused Plan II) for Westley Wasteway, Del Puerto Creek, and Orestimba Creek was submitted. Both of these plans outline management practice performance goals and schedules.

The long term goals addressed in Section 5 of the Focused Plan I for Ingram and Hospital Creeks are as follows (in order of priority):

- Construct sediment basins to intercept direct tailwater discharges into Hospital and Ingram Creeks.
- Install high-efficiency irrigation systems such as sprinkler or drip irrigation, tailwater recirculation, gated pipes, shorter runs, etc., where warranted by the crops that are grown.
- Implement additional use of PAM to address sedimentation discharge.
- Reduce use of pesticides, or incorporate use of pesticides that are less likely to be transported to the waters of the State, or which breakdown quickly and are less likely to impact water quality.
- Calibrate ground spray rigs utilized on farmed acres to address possible overspray.
- Address potential aerial overspray by identifying the sensitive regions for all aerial applicators, or elimination of this as an acceptable application procedure for Ingram and Hospital Creeks.
- Increase size of vegetated buffer zones along the perimeters of Ingram and Hospital Creeks.

For the Focused Plan II for Westley Wasteway, and Del Puerto and Orestimba Creeks, the long term goals are listed as:

- Implement additional use of PAM to address sediment discharge
- Reduce use of pesticides, or incorporate use of pesticides that are less likely to be transported to the waters of the State, or which breakdown quickly and are less likely to impact water quality.
- Calibrate ground spray rigs utilized on farmed acres to address possible overspray.
- Address potential aerial overspray by identifying the sensitive regions for all aerial applicators, or elimination of this as an acceptable application procedure for Ingram and Hospital Creeks.
- Increase size of vegetated buffer zones along the perimeters of Westley Wasteway, Del Puerto Creek, and Orestimba Creek.
- Install high-efficiency irrigation systems such as sprinkler or drip irrigation, tailwater recirculation, gated pipes, shorter runs, etc., where warranted by the crops that are grown.

This report summarizes the status of each of these goals for both of the focused plans.

Sediment Basins.
Sediment and tailwater basins collect and detain surface irrigation runoff prior to discharge into regional drains and creeks. Detention time provided by these ponds allows suspended sediment to settle out of the water column, reducing the sediment load discharged as well as a portion of the hydrophobic pesticides (such as pyrethroids). Since 2008, the Westside Coalition has provided funding assistance to growers who want to install new sedimentation ponds or clean out existing ponds.

- Recent Activities:
  - Funding Assistance. Approximately $10,000 in grant funding has been provided by the Westside Coalition for the installation and cleanout of sedimentation ponds affecting approximately 2600 acres both within and outside of the focused plans' subwatersheds. Approximately 900 acres were affected by ponds within the Ingram Creek subwatershed, 960 in Orestimba, and 240 in Del Puerto.
  - Sedimentation Pond Mapping. The Westside Coalition is in the process of mapping the location of each sedimentation pond within the focused plans' subwatersheds. Once this mapping is complete, an evaluation of sedimentation pond implementation as a management practice will be possible. Subwatershed maps of the Hospital, Ingram, Del Puerto, and Orestimba creeks and Westley Wasteway showing the information gathered to date are included.

High-efficiency irrigation systems.
High-efficiency irrigation systems have evolved significantly in recent years and now can replace conventional surface irrigation methods on practically every crop. There are a several benefits to high-efficiency irrigation systems, however, in terms of drainage, the primary benefit is the virtual elimination of tailwater discharge. These advanced systems are designed to deliver water directly to each individual plant at a rate that is both uniform throughout the irrigated field and slow enough for soil to absorb, resulting in almost no surface runoff. Additionally, these systems allow for the direct application of fertilizer and other chemicals through the drip hoses (a process called fertigation). High-efficiency irrigation systems require a significant financial investment on the part of the grower (generally $1,000 to $2,000 per acre).

The acreage of high-efficiency irrigation systems has steadily increased within the Westside Coalition. The Coalition is in the process of mapping the fields with these systems within the focused plans' subwatersheds (see the attached maps).

PAM Usage.
PAM is a flocculating agent added to irrigation or drain water. When added to drain water with high suspended solids, PAM binds the suspended sediment materials together into larger particles which then settle out of the water column. When added to the irrigation water, PAM prevents the suspension of soil as the water travels down the furrow.

	
Tailwater with high suspended solids (no PAM useage)	Tailwater with PAM

In addition to the removal of suspended solids, PAM also helps to control the discharge of pyrethroids, which tend to adhere to the sediment particles which should result in a reduction of sediment toxicity within the subwatersheds.

PAM usage is difficult to track. Typically, PAM is added to irrigation or drain water on an "as needed" basis, which could be every third or fourth irrigation, depending on the soil, field slope, and crop. Additionally, PAM is not a material for which growers are required to report usage (as they must do for most pesticides), so there is no "clearinghouse" through which usage can be easily tracked. The only available mechanism for tracking PAM usage is through direct contact with the growers (surveys) or field reconnaissance surveys.

Based on the 2009 survey results, reported on October 5, 2009 and in the November 2009 Semi-annual Monitoring Report (SAMR), approximately 4400 acres of the Ingram Creek irrigated acreage utilized PAM in some form, out of 4600 acres that are furrow irrigated (96%). In Hospital Creek, approximately 490 acres used PAM out of 1680 acres that are furrow irrigated (29%). Surveys for the Focused Plan II subwatersheds are still being collected and data on PAM usage is not yet available.

In July, a reconnaissance survey of both Ingram and Hospital Creek was performed.

For Ingram Creek, each discharge upstream of Highway 33 was clear, indicating that the tailwater source was either from alfalfa (or a similar forage crop) or from a field where PAM was applied. Downstream of Highway 33, there were no discharges until the Gaffery Road Drain input, which discharged fairly turbid water. The Gaffery Road Drain is a piped drain that runs parallel and southerly of Gaffery Road. Along it's length, there were several drainage inputs, all of which were fairly clear (indicating usage of PAM), until the very beginning of the Drain, where two corn fields were draining extremely turbid water. There were two other active discharges into Ingram Creek downstream of the Gaffery Road Drain, both of which were turbid.

Hospital Creek is more difficult to review. Between Highway 33 and River Road, the Creek has been replaced with a buried pipe that may travel through fields and the alignment is not easily discerned. Because the Creek cannot be followed, direct discharges within this segment are difficult to spot. Although Hospital Creek had significant flow during the date of this survey, no discharges into the Creek were identified and it is not known to what degree PAM is utilized. As shown on the Hospital Creek subwatershed map, a significant acreage within the Hospital Creek subwatershed is planted with orchards on high-efficiency (drip) irrigation systems, where PAM usage is not an applicable practice.

Pesticide Use Activities.
Pesticide use activities vary depending on the crop planted, time of year, current and anticipated pest pressures, and available materials. Most growers utilize a pest control advisor (PCA) who is trained to identify insect, weed, and disease threats, and make recommendations on what material(s) should be applied and what cultural practices should be implemented. It should be noted that pesticides are applied in reaction to actual pest pressures and the material selected to target specific pests.

Pesticide Use Reports
The Westside Coalition gathers data from pesticide use reports (PUR) on a quarterly basis from the Agricultural Commissioner's office in Fresno, Merced, Madera, Stanislaus, and San Joaquin counties. This data is received as a text delimited file and imported into a relational database for analysis. As a tool for general review and trend tracking, the PUR data can provide useful insight. This data will indicate which pesticides are being applied and on what crops. When compared to previous PUR data, pesticide use trends can be evaluated for increase/decrease in use or time of year of application.

However, there are a number of issues with PUR data that make it insufficient for detailed analysis or forensic tracking.

- The PUR data is provided with Township, Range, Section (TRS) spatial references, which will identify a pesticide application to a one square mile region. Within the Westside Coalition subwatersheds any given section will have multiple fields and a variety of crops.
- The PUR data is usually not available until three or four months after a reported application. This time lag dramatically hinders the usefulness of PUR data for outreach purposes. It is simply not effective to discuss a pesticide exceedance with a grower four months after the event. Additionally, through the identification of the material (via analytical results), it is often possible to identify the crop or group of crops on which it was applied thus identifying the pool of growers who may have contributed to the exceedance. Because the Ingram and Hospital creek subwatersheds are fairly small, this is often sufficient for the necessary outreach efforts and additional evaluation of PUR data is not necessary.
- The PUR data is often incomplete. On a number of occasions, analysis of the PUR data revealed no reported application of a material, despite the detection of that material at the monitoring site (see Summers Engineering, Inc. Memo dated June 2, 2010). There could be a variety of reasons for this, including failure to or delay in reporting use by the grower or PCA, failure to enter the report on the part of the Agricultural Commissioner's

office, or incorrect/incomplete data on the report form. Regardless of the cause, this limitation of the PUR data renders it often unreliable for site-specific evaluation.

Calibrate Ground Spray Rigs to Address Overspray
In addition to stressing proper spray applications near waterways in group and individual grower meetings, the Westside Coalition has contracted with CURES to provide a trained sprayer calibration technician and a high-tech instrument for calibrating orchard sprayers for members operating near priority waterways. Members targeted for the calibrations are being identified using mapping of priority watersheds and identification of orchard crops adjacent to the waterways.

The calibration instrument is composed of two separate devices: one device connects to each spray nozzle to measure nozzle output; the other device is a 12 foot tall simulated tree that collects spray as the sprayer is operated and measures the spray deposition pattern.

The calibration instrument and technician will work to optimize sprayer efficiency with landowners and their sprayer operators who are located adjacent to priority watersheds. This will be accomplished through:

- Measuring the output of each nozzle and comparing the output to manufacturer's specifications;
- Identify and help the grower clean or replace worn or clogged nozzles as needed;
- Measure uniformity of discharge;
- Help customize the spray pattern based on the grower's tree shape and size;
- Identify problems, if they exist, with pump capacity;
- Provide growers with a computer printout indicating total output, individual nozzle output, uniformity across the spray boom and spray distribution on the tree canopy.

Materials published by CURES with information on appropriate management practices for addressing spray drift in orchards will also be made available to growers participating in the sprayer calibrations.

Address Potential Aerial Overspray and Identify Sensitive Regions
In May of 2009, the Westside Coalition circulated a subwatershed map of Ingram and Hospital Creeks along with a memo to aerial applicators, PCAs, and growers. The memo discussed the pesticide water quality issues for both creeks. Some feedback from aerial applicators was received in response to the memo. The feedback included some of the management practices both aerial and ground applicators should implement to reduce drift. Similar maps and information for Westley Wasteway, Del Puerto Creek, and Orestimba Creek will be circulated once they are complete.

Vegetated Buffer Zones along Creek Perimeters.
Vegetated buffer zones are intended to provide unfarmed space between the edge of a field and the creek. Conceptually, the buffer zone would reduce the amount of pesticides drifting into the creeks. The Westside Coalition is in the process of identifying buffer zones along the focused plans' targeted water ways.

Ingram Creek. Ingram Creek was driven from approximately 1 mile upstream of Highway 33 to the River Road monitoring site. Although a field road separated the farmed fields for the Creek for this entire length (approximately 20 feet), no vegetated buffers were encountered.

Hospital Creek. Hospital Creek transitions from an open channel into a buried pipe a Highway 33, and remains a buried pipe until River Road. For this portion of the creek, a vegetated buffer is not an applicable management practice. There were no vegetated buffers encountered upstream of Highway 33, however a significant buffer exists on the north side of Hospital Creek approximately 0.6 miles downstream of River Road.

Westley Wasteway. There is an un-farmed buffer zone approximately 75 feet wide on the north side of the Westley Wasteway for its entire length and is covered by native vegetation. This zone is created by a high-voltage transmission line the parallels the alignment. The south side of the wasteway is border by an un-farmed zone that ranges from 50 feet to 150 feet.

Del Puerto Creek. An aerial reconnaissance of Del Puerto Creek (via Google Earth) indicates that the creek has several segments bounded by vegetated buffers. The Westside Coalition is in the process of mapping these buffers and will provided updated maps when they are available.

Orestimba Creek. An aerial reconnaissance of Orestimba Creek (via Google Earth) indicates that the creek has several segments bounded by vegetated buffers. The Westside Coalition is in the process of mapping these buffers and will provided updated maps when they are available.

Management Practice Surveys.
Management practice surveys (surveys) were circulated throughout the Ingram and Hospital Creek subwatersheds (Focused Plan I Surveys) in 2009 and in the Focused Plan II subwatersheds during the summer of 2010. The Focused Plan I surveys were completed and submitted by 100% of the growers within these subwatersheds and the results were reported to the Regional Board on October 5, 2009 and in the November 2009 SAMR. The 2009 surveys provided a detailed snapshot of the activities growers were implementing at the time of the survey. The ability to correlate management practice changes to water quality changes will be dependant upon the specific management activities implemented and their breadth of implementation. For example, increases in the acreage of high efficiency irrigation systems would be expected to result in an overall decrease in runoff and increased use of PAM would be expected to result in an improvement in turbidity and reduction in sediment discharge, as well as possibly an improvement in sediment toxicity. It should be noted that a variety of management practices with overlapping impacts are likely to be implemented in any give subwatershed. This reality will complicate the evaluation of management practice implementation and make it virtually impossible to correlate any single practice with a given change in water quality. The Westside Coalition intends to correlate water quality improvements to implemented management practices as a group.

Surveys for the Focused Plan II subwatersheds were circulated in the fall of 2010. Approximately 351 surveys were mailed to APN owners within the Westley Wasteway, Del Puerto Creek and Orestimba Creek subwatersheds, covering lands within CCID, Del Puerto Water District, Oak Flats Water District, Patterson Irrigation District, West Stanislaus Irrigation

District as well as to some lands not with in a district. As of November 10, approximately 194 (55%) have been returned with information regarding the use and practices of these parcels.

The surveys returned provide information on approximately 15,000 acres. Of these acres, approximately 4700 acres (32%) utilize high-efficiency (buried drip and/or micro) irrigation systems. Approximately 1600 acres (11%) are listed as not irrigated, with the remaining acreage listed some other irrigation method (such as sprinklers, furrow, or flood).

A variety of pesticides are utilized with Lambda-Cyhalothrin being the most prominent (76 parcels) and Dimethoate (Cygon 400, Dimet) used on 36 parcels. Approximately 36% (5361 acres) of the land managers utilize PAM.

Sedimentation ponds are common on these parcels with approximately 6100 acres draining to the ponds. Of these ponds, some have return systems and some do not. However, most of the ponds are said to be cleaned out on a yearly basis. It has been shown that 52 parcels have tailwater leaving the property (27%) and 93 parcels (48%) have stormwater leaving the property. It should be noted that these findings are provisional and will be updated once 100% of the surveys have been returned.

Outreach and Grower Education.
The Westside Coalition organizes outreach meetings throughout the year to inform growers and PCA about the materials that have been detected at the monitoring sites and to suggest possible practices that may prevent future detections. Additionally, the exceedance reports that are submitted to the Central Valley Regional Water Quality Control Board are also sent to the Westside Coalition member districts. In 2010, there have been 19 outreach meetings to date, summarized in the table below.

Date	No. of Attendees	Type of Meeting	Meeting Summary.
1-13-10	10	West Stanislaus Resource Conservation District, Board of Directors	Update on coalition monitoring results/exceedances; review status of BMP grant funding
2-23-10	25	Grower/PCA meeting	Reviewed management plan watersheds monitoring results; BMPs to mitigate surface water impacts
2-24-10	35	Grower/PCA meeting	Reviewed management plan watersheds monitoring results; BMPs to mitigate surface water impacts
3-2-10	3	Individual farm visit	Discussed alternatives to Chlorpyrifos and the possibility of installing a sediment pond to control drainage.
3-2-10	20	Sustainable Cotton Project	Provided overview of IRLP program and pesticide issues.
3-12-10	1	Individual farm visit	Grower is installing gate on pipe draining to creek; adding sediment pond, recirculation; Discussed implementing drift mitigation practices on orchards
3-12-10	1	Individual farm visit	Discussed adding 3 fields to recirculation system; currently pursuing grants

Date	No. of Attendees	Type of Meeting	Meeting Summary.
3-12-10	2	Individual farm visit	Discussed implementing drift mitigation practices on orchards; switching to low risk insecticides; expanding recirculation system
3-15-10	15	SLCC Board Meeting Retreat	Presented status of IRLP.
3-16-10	5	Blewett MWC Board Meeting	Presented status of IRLP.
3-23-10	90	CCID Landowner Meeting	Dos Palos Subarea data update and IRLP status
3-24-10	175	CCID Landowner Meeting	Los Banos Subarea data update and IRLP status
3-25-10	150	CCID Landowner Meeting	Patterson Subarea data update and IRLP status
3-30-10	50	SLWD Landowner meeting	Management Practice options and Long Term Plan update.
6-2-10	1	Individual farm visit	Discussed cleaning out existing sediment ponds; considering modifying system to add recirculation; currently pursuing grants
6-11-10	1	Individual farm visit	Encouraged to clean out sediment pond; is considering adding recirculation to one field with irrigation drainage
7-14-10	12	West Stanislaus Resource Conservation District, Board of Directors	Update on coalition monitoring results/exceedances; review status of BMP grant funding
7-15-10	20	Sustainable Cotton Project meeting	Discussed chlorpyrifos and other WQ issues with local alfalfa growers.
8-3-10	1	West Stanislaus Resource Conservation District, Board of Directors	Discussed adding remaining fields to existing recirculation system, addition of PAM to tomato irrigations
8-3-10	4	West Stanislaus Resource Conservation District, Board of Directors	Discussed using PAM in fields with drainage; converting to drip irrigation; spray drift mitigation practices
8-3-10	7	Houk/Goubert Tailgate meeting	Discussed sediment and pesticide management practices.

The Coalition plans to build upon the baseline survey results by conducting individual meetings with growers reporting to have irrigation drainage. These meetings were initiated in March 2010 and are continuing. The individual contacts help to gain parcel-specific information in regards to agricultural discharges and management practices currently implemented on the properties adjacent to the priority watersheds. In the individual grower visits the Coalition offer resources (i.e. management practice handbooks, information to obtain NRCS-EQIP funds) to aid them in implementing additional management practices if it is determined that additional practices are needed. This determination is made after the discussion and a review of the property by a Coalition representative.

<u>Overview of decision tree for adopting management practices</u>

1. Management practice surveys mailed to landowners
2. Landowners reporting irrigation drainage are contacted for follow-up visits
3. Individual meeting held to discuss current/potential practices
4. Options reviewed with landowner
5. Landowner makes decision on implementing practice

Overview of Outreach Procedure resulting from Pesticide Exceedances.
Pesticide results are typically available to the Westside Coalition approximately 6 weeks after the sample collection. Upon receipt of this data, it is imported into the Coalition's database and reviewed for exceedances. When a pesticide detection is determined to have exceeded the recommended water quality value, the Westside Coalition begins a review procedure.

1. Determine the material, time of year, and subwatershed in which the material was applied.
2. Identify the crops that are registered for the subject material.
3. Review the subwatershed for the identified crops.

These steps can usually be performed within a week of the exceedance determination and will generally reduce the pool of growers who are likely to have contributed to the exceedance. With that information, the Coalition can target outreach efforts directly to those growers.

Grant Program Outreach.
Information on grant funding availability has been communicated to landowners and operators through direct mailings, grower group meetings and individual contacts with landowners. A letter was sent on April 10th to landowners with property along the Westside Coalitions priority watersheds (Ingram, Hospital, Orestimba and Del Puerto Creeks) regarding availability of AWEP funds for management practice installations. The letters were mailed or hand delivered by irrigation districts encompassing the four watersheds.

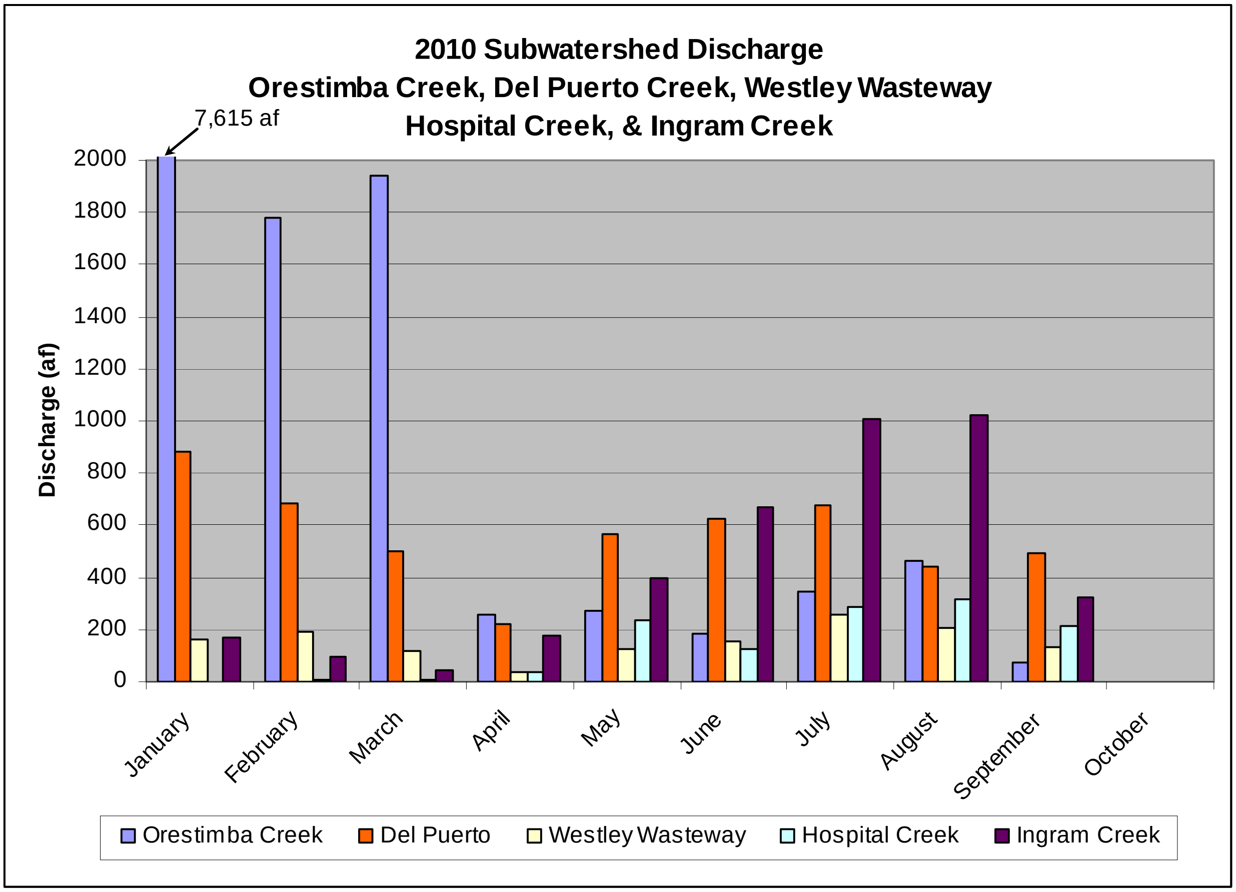
The AWEP funding originates with the USDA in a program with $2 million annually in grants over the next 3 years for projects intended to improve water quality in waterways in Stanislaus and Merced counties. AWEP is the Agricultural Water Enhancement Program (AWEP), a program of the Natural Resources Conservation Service. The deadline for submitting applications for this fiscal year was August 14 and several Westside Coalition members were selected to receive funds. Information on those installations will be reported in future updates as information becomes available.

In 2009, a landowner along Hospital Creek was considered "high priority" during the application process and received funding under the program to install drip irrigation in fields previously furrow irrigated and discharging irrigation drainage into the creek. This irrigation system was in operation in 2010 and its use resulted in less overall irrigation drainage into Hospital Creek. In addition to the grower mailings, information on AWEP funding was also provided at the February annual grower meetings and in individual meetings with landowners during 2010.

Surveillance Level Monitoring.
Surveillance level monitoring was carried out in the Ingram and Hospital Creek subwatersheds during the 2009 irrigation season. A summary of the surveillance level monitoring is attached.

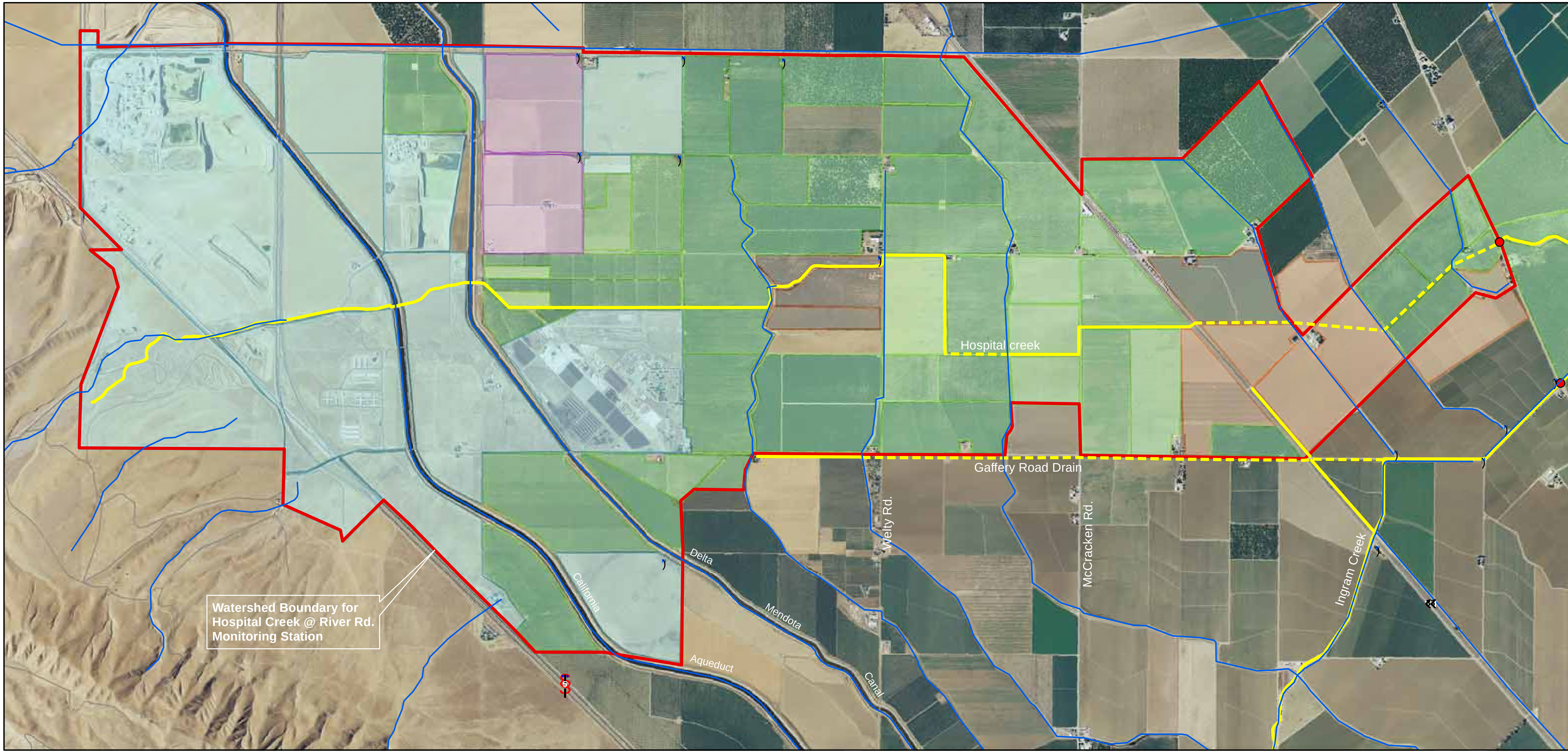
III. Discharge Summary.

The Westside Coalition maintains flow measurement stations at Hospital Creek, Ingram Creek, Westley Wasteway and Del Puerto Creek. USGS maintains a flow measurement station at Orestimba Creek at River Road. **Figure 1** show the monthly discharge (in acre feet) from these stations since January 2010.



Subwatershed Maps

Westside San Joaquin River Watershed Coalition



Hospital Creek Subwatershed
August 2010

Legend

- Open
- Pipe
- Monitoring Site
- Tailwater Pond
- Drip/Microsprinklers
- Furrow
- Furrow w/ Return
- Not Irrigated

Miles

0 0.25 0.5 1

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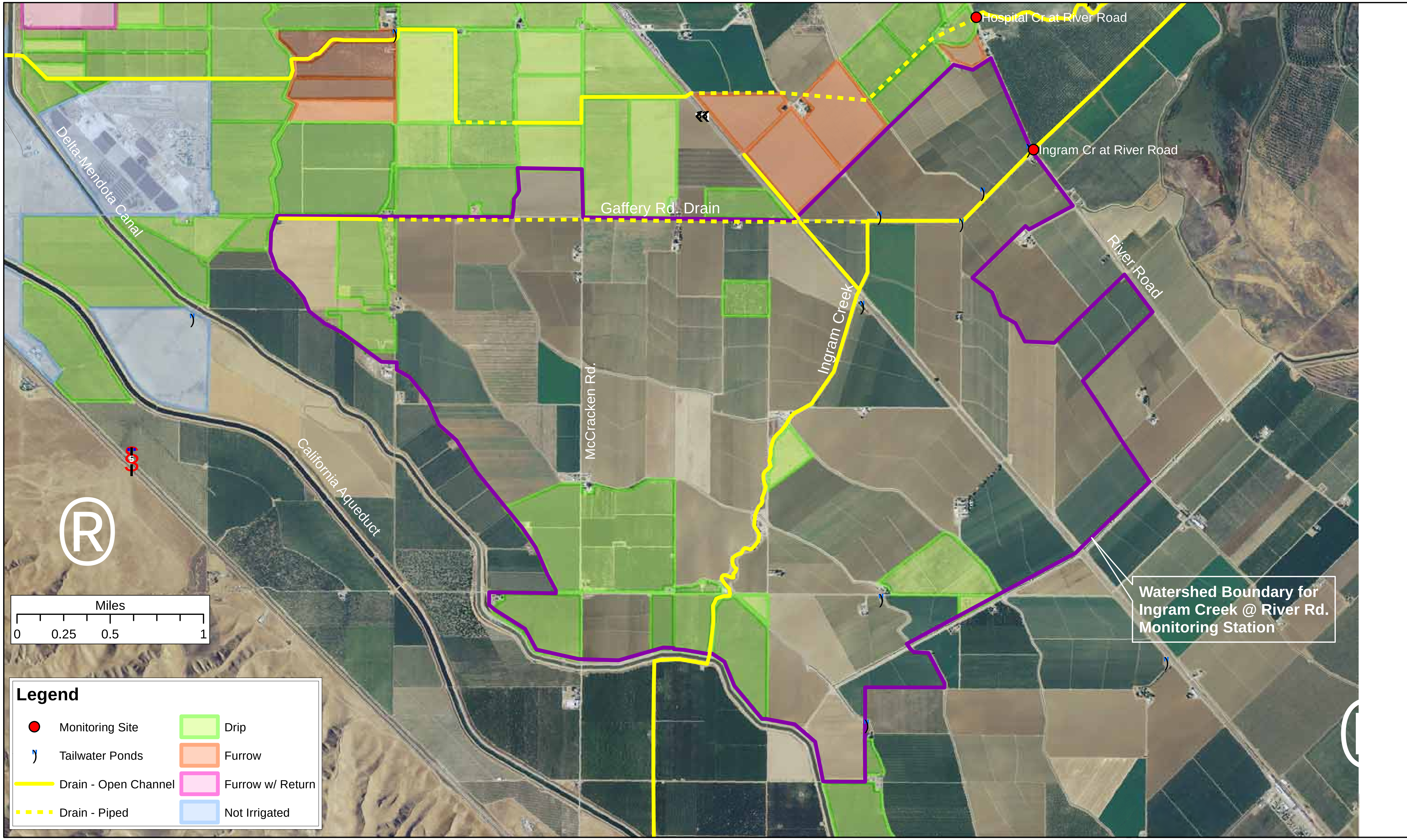
Consulting Engineers
Hanford California

Westside San Joaquin River Watershed Coalition



Ingram Creek Subwatershed Map
August 2010

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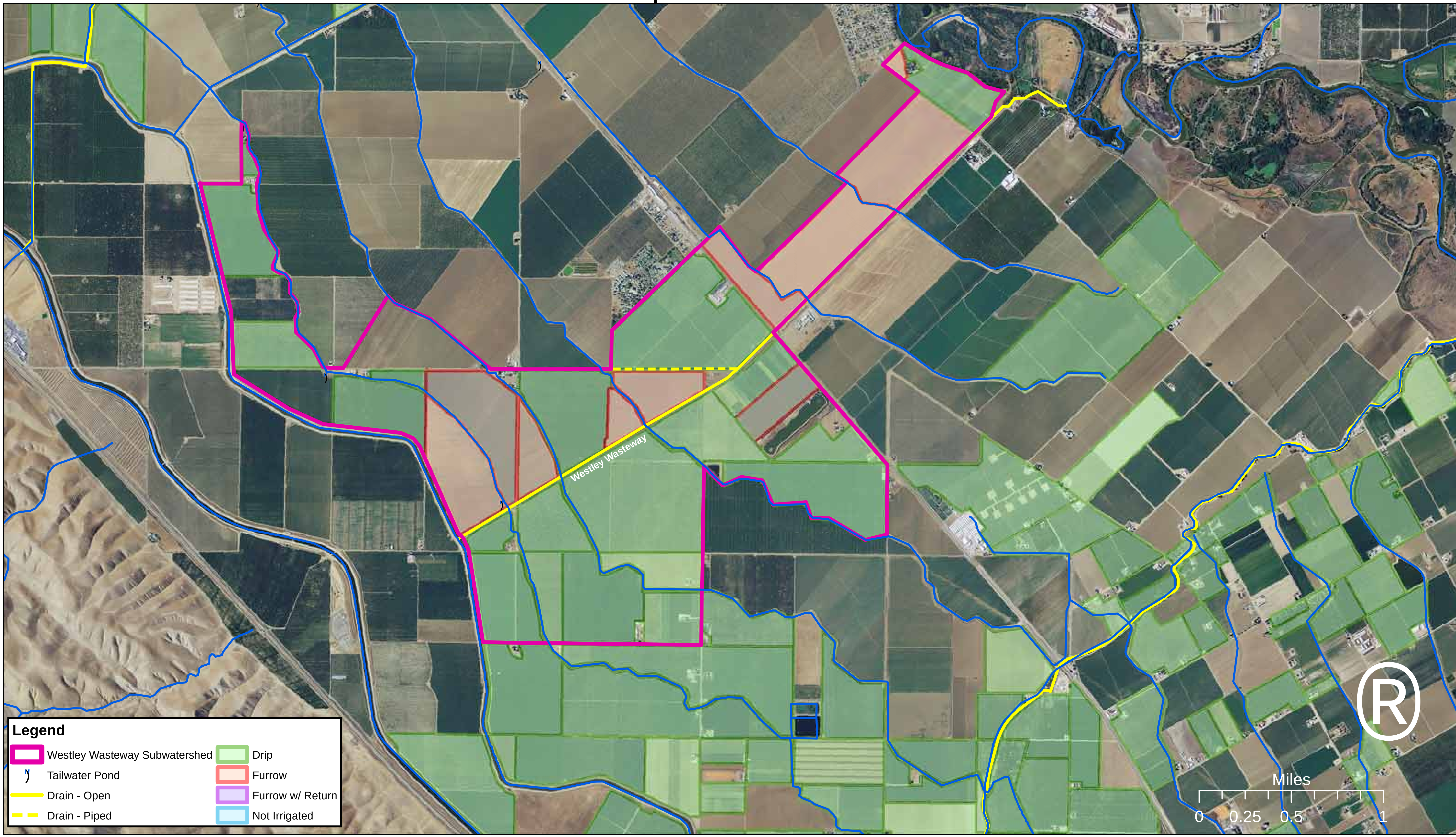
Westside San Joaquin River Watershed Coalition



Westley Wasteway Subwatershed
August 2010

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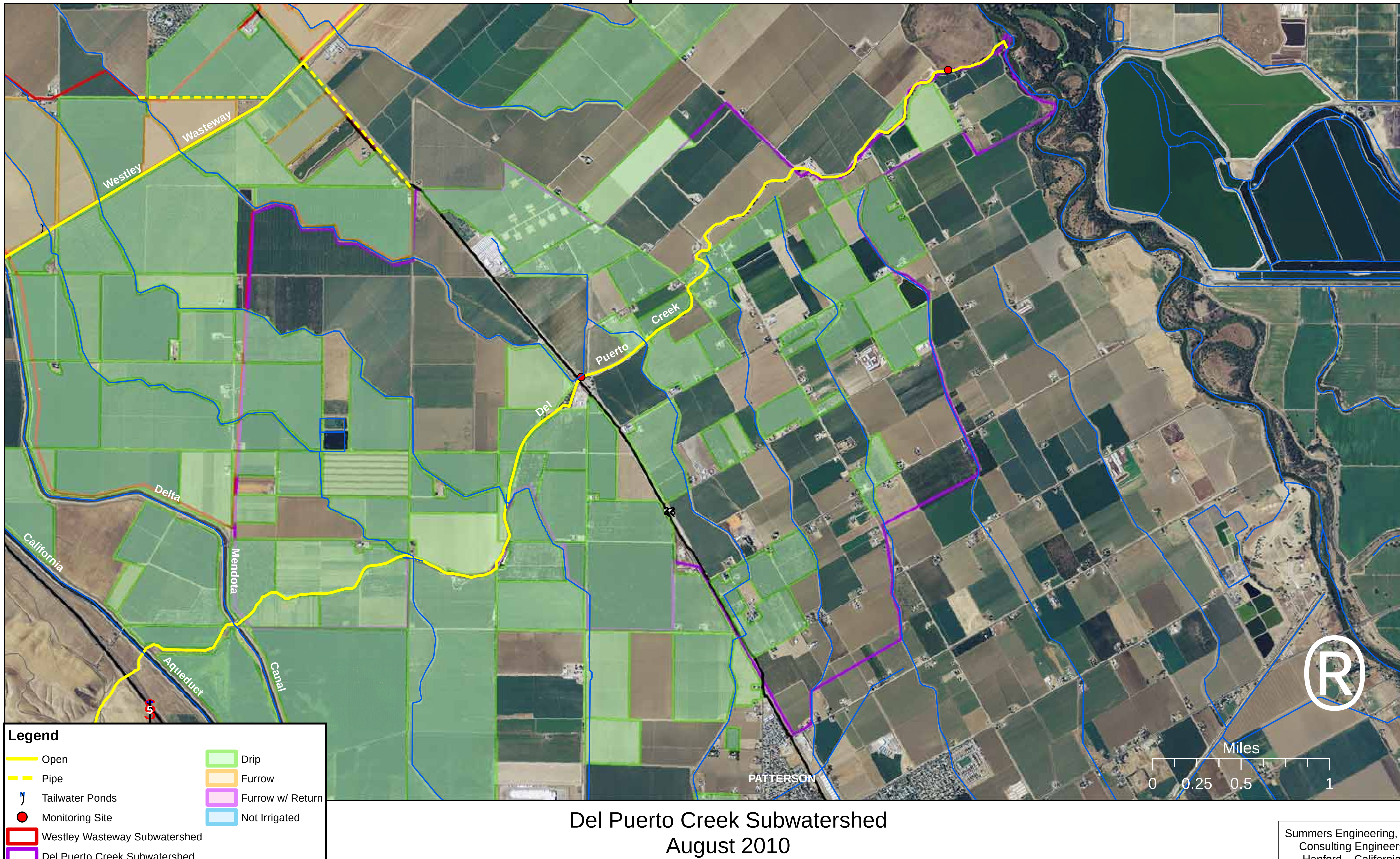
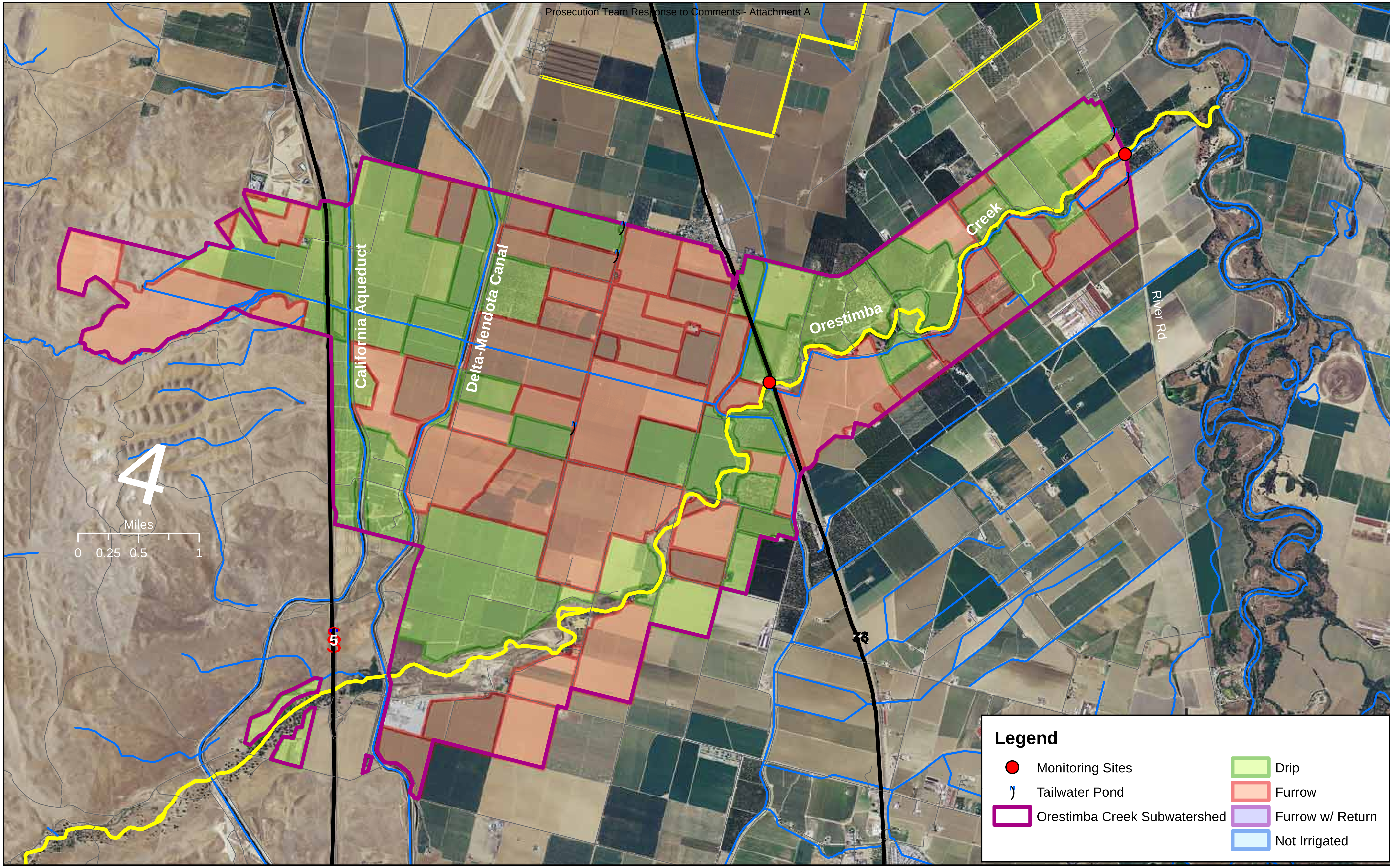
Westside San Joaquin River Watershed Coalition



Del Puerto Creek Subwatershed
August 2010

Summers Engineering, Inc.
Consulting Engineers
Hanford California



Prepared By:
Summers Engineering, Inc.
Consulting Engineers
Hanford California

Orestimba Creek Subwhatershed
August 2010

Summary of 2010 Surveillance Level Monitoring Results

SUMMERS ENGINEERING
887 N. Irwin St. – PO Box 1122
Hanford, CA 93232

MEMORANDUM

TO: The Files of the Westside Coalition

FROM: Chris Linneman

DATE: November 15, 2010

SUBJECT: 2010 Irrigation Season Surveillance Level Monitoring Program

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As part of the Westside San Joaquin River Watershed Coalition's (Westside Coalition) Focused Watershed Plan on Ingram and Hospital Creeks, the Westside Coalition implemented a surveillance level monitoring program (SLM Program) for a number of locations within those subwatersheds. The purpose of the SLM program is to provide qualitative data related to flow and turbidity and general farming practices within the subwatersheds.

The sites monitored through SLM Program during the 2010 irrigation season are:

- Hospital Creek at Highway 33 (HCAHW)
- Hospital Creek at River Road (HCARR)
- Ingram Creek at Highway 33 (ICAHW)
- Ingram Creek at River Road (ICARR)

For both Ingram and Hospital creeks, the site at highway 33 reflects the upslope/upstream water quality, and the River Road site reflects the downslope/ downstream water quality. The purpose of monitoring these two locations on each creek was to attempt to identify differences between the upper and middle portions of the subwatersheds. Differences in farming practices and cropping patterns could influence water quality within the subwatershed.

SLM Program Results.

Figures 1 and **2** compare turbidity readings for the Highway 33 and River Road sites on Ingram and Hospital Creeks (respectively). The figures show data through the 2010 irrigation season. Where no turbidity reading is shown, no flow was present at the site.
In the case of Ingram Creek, the Highway 33 site was frequently dry (4 out of 8 visits), compared to the River Road site where water was almost always present. Where data for both sites was present, turbidity at ICARR was usually more than at ICAHW. Flow was common in both of the Hospital Creek sites, and turbidity was almost universally higher at HCARR than at HCAHW. For both creeks, this implies that there is more agricultural activity downslope of Highway 33, which is expected.

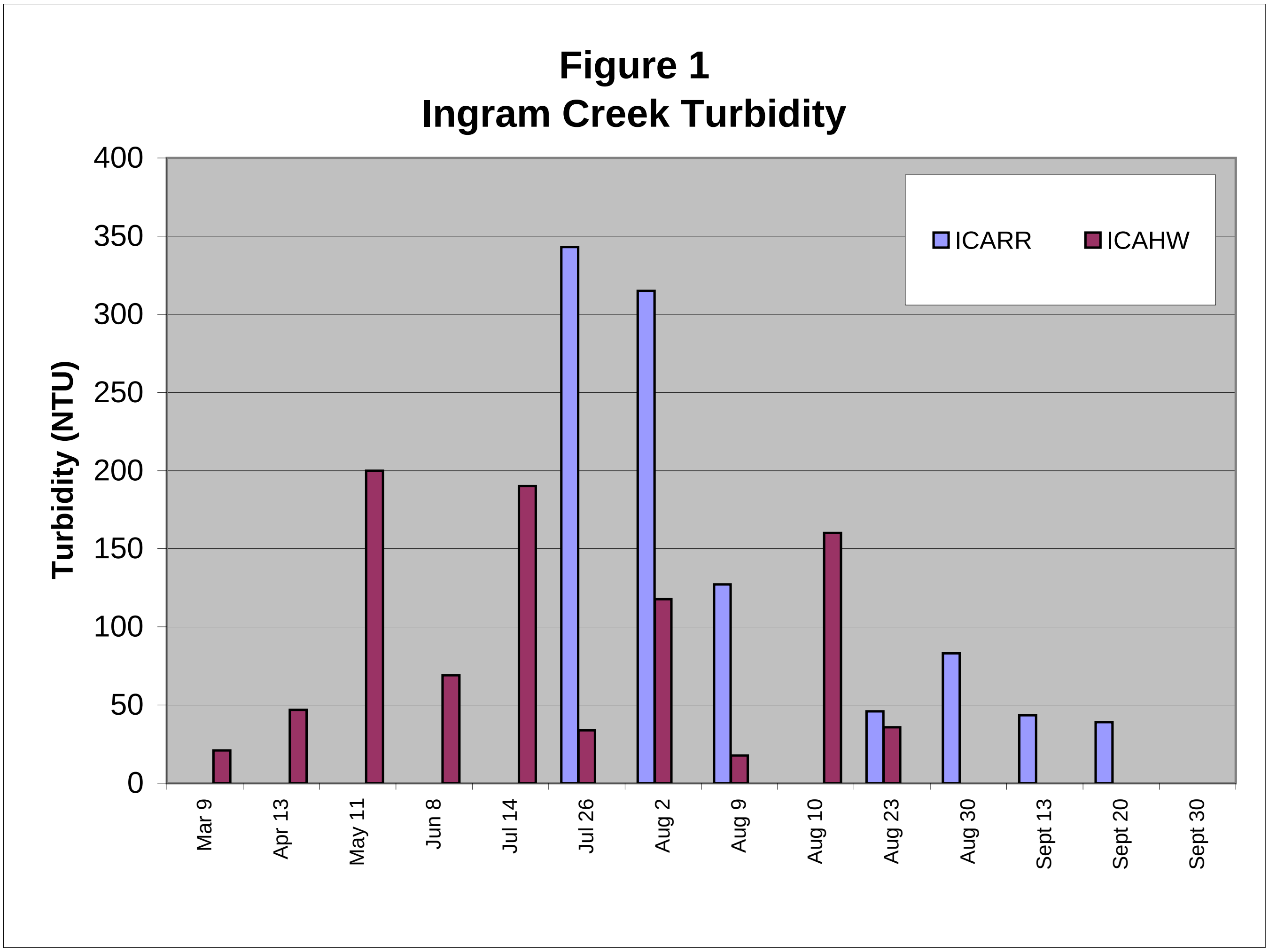


Figure 1
Ingram Creek Turbidity
Turbidity (NTU)
400
350
300
250
200
150
100
50
0
Mar 9
Apr 13
May 11
Jun 8
Jul 14
Jul 26
Aug 2
Aug 9
Aug 10
Aug 23
Aug 30
Sept 13
Sept 20
Sept 30
ICARR
ICAHW

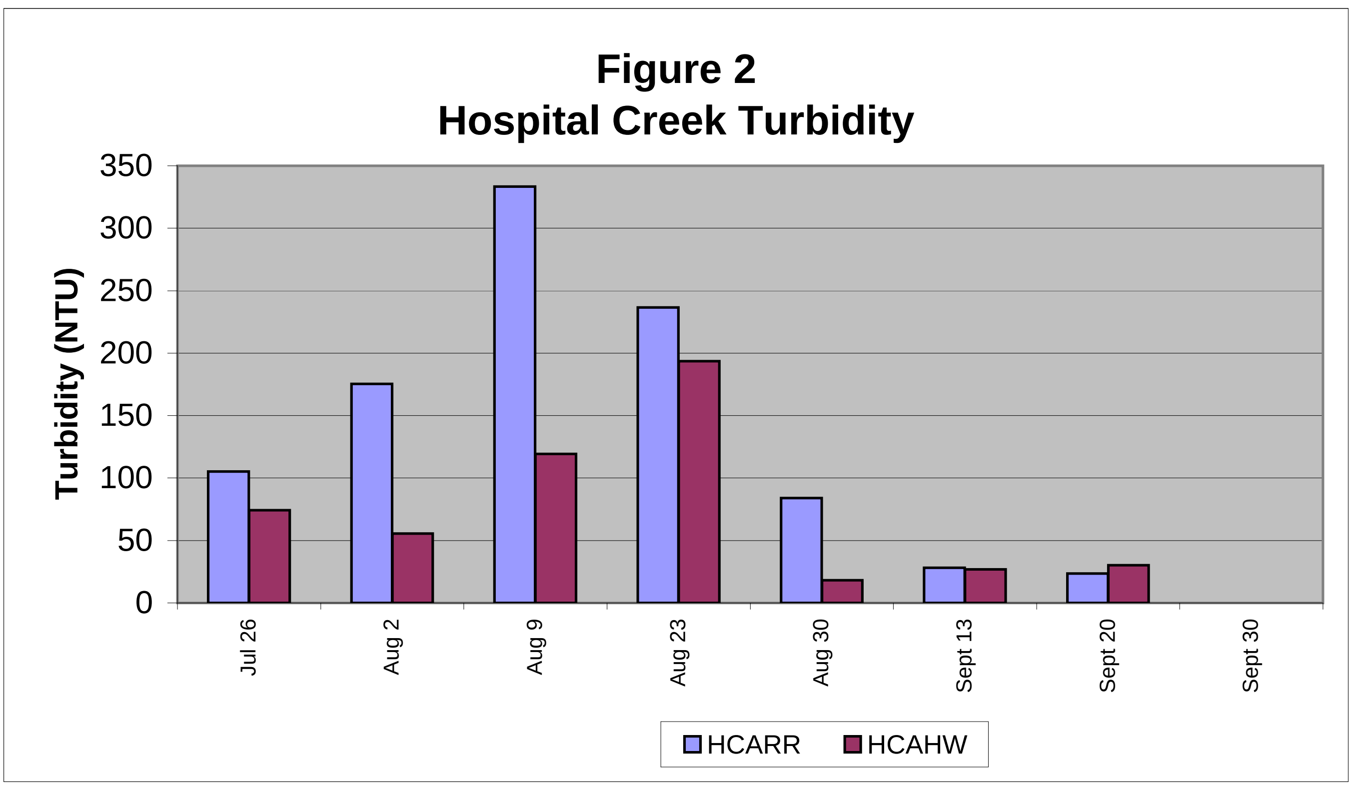


Figure 2
Hospital Creek Turbidity
Turbidity (NTU)
350
300
250
200
150
100
50
0
Jul 26
Aug 2
Aug 9
Aug 23
Aug 30
Sept 13
Sept 20
Sept 30
HCARR
HCAHW

Outreach Handouts

UPDATE

August 2010

Westside San Joaquin River Watershed Coalition

A Coalition of Westside water districts and the San Joaquin Valley Drainage Authority providing Irrigated Lands Regulatory Program coverage for farmers and landowners

July Sampling Finds Repeated Pesticide Exceedances

Water sampling in July 2010 found 12 waterways in western Stanislaus and Merced counties that were exceeding the state standard for chlorpyrifos (Lorsban, NuPhos, Govern, etc). July is typically a high use time to apply insecticides to treat for several pests in alfalfa and walnuts, particularly aphids, armyworms and codling moth. In past years, chlorpyrifos exceedances in early summer have been tracked back to either a treated field with irrigation drainage or where spray drift reached nearby waterways with sampling stations.

The timing isn't good for the chlorpyrifos exceedances for the Westside Coalition, particularly since the exceedances were recorded in waterways where Management Plans for chlorpyrifos have been adopted by the Regional Water Board for past exceedances. With the recurrence of chlorpyrifos exceedances, growers can expect more contacts from the Westside Coalition in its efforts to solve the water quality problems.

Grants Bringing Millions to Region for BMP Installations

Thanks to multiple funding sources, growers in the Westside Coalition can find potential financial assistance to help offset the cost of installing farm practices to protect surface water. Combinations of local, state and federal programs are available for eligible growers. The three programs are:

- USDA Agricultural Water Quality Enhancement Program. AWEP can fund approximately 50% of the statewide average cost for installation of practices such as holding ponds, recirculation systems, equipment for applying PAM and other practices. The program is administered through the Natural Resources Conservation Service and applies to Stanislaus, Merced and Madera counties. The next application period for the program, entering its third year, is expected in early winter 2010.
- The Westside San Joaquin River Watershed Coalition is offering its members a total of $30,000 for constructing new tailwater silt ponds or to clean out existing silt ponds. The program will fund 75% of the costs of any single project, up to a maximum of $6,000 per project. Applications for the funding are available from local water districts in the coalition region.
- Proposition 84 is an $8 million grant program funded by the State Water Resources Control Board. Administering the grant is the Coalition for Urban Rural Environmental Stewardship (CURES), which expects to complete its contract with the State Board to begin the program by late October. The application period should open in November or December. Practices funded (75% funding, 25% match) include the same as those supported by the AWEP and Westside Coalition grants.

Model Shows Practices Can Work

Computer models are commonly used to forecast weather and predict swings in the stock market. Now scientists are perfecting a model that can predict the quality of water flowing from a watershed should growers follow certain production practices. The model, called the Soil and Water Assessment Tool (SWAT), is being developed by UC Davis through a grant with the State Water Resources Control Board, and encompasses the northern San Joaquin River basin.

Using management practice information from two watersheds in the basin, Orestimba and Del Puerto Creeks, the model forecasts that significant improvements in water quality could be achieved throughout the basin. In particular, the model found that at the watershed level, sediment basins can reduce loads of sediment by 45%, chlorpyrifos levels by 30%, and diazinon by 2%. Vegetated ditches, when constructed per NRCS standards, are very effective in reducing sediment (90%), chlorpyrifos (64%) and diazinon (42%). The model predicts the greatest removal of sediment and pesticides with a combination of sediment basins and vegetated ditches. Other practices providing benefits include on site buffers such as filter strips, riparian buffers, constructed wetlands and ponds, cover crops, use of IPM and pesticide application technology (Smart Sprayer) and practices.

Groundwater Soon to be Part of Irrigated Lands Regulatory Program

The Regional Water Board released in late July a proposed program for regulating surface and ground water after the existing program expires in 2011. The Long Term Irrigated Lands Regulatory Program, as it is being called, will keep the existing coalition structure but again offers growers the option of receiving an individual discharge permit for either ground or surface water. Irrigated lands will be categorized into “tier 1” and “tier 2” (tier 2 being higher threat to water quality) based on their location, soil types and other variables.
A public workshop to seek comments on the draft regulations is scheduled for Modesto (Stanislaus Ag Center) on September 9, 2010, from 6 to 9 pm. Workshops are also scheduled for Chico, Rancho Cordova and Tulare.

Coalition Management

A Regional Water Quality Management Steering Committee (part of San Joaquin Valley Drainage Authority) oversees the Coalition activities.

Coalition Goals

- To operate an efficient, economical program that enables members to be in compliance with the Irrigated Lands Regulatory Program.
- File required reports with the Central Valley Regional Water Quality Control Board (Regional Board) to maintain regulatory coverage for Coalition members.
- Implement an economical and scientifically valid water monitoring program for area creeks and agricultural drains (as required by state law).
- Spread costs equitably among Coalition members.
- Communicate to landowners where water monitoring indicates problems and work to solve those problems.

Coalition Membership Responsibility

The individual farmers and landowners are ultimately responsible for the success of the Westside Coalition. Failure to meet deadlines, implement the proper monitoring programs or work to correct water quality problems would mean that individual land owners would be responsible for fulfilling those requirements. While San Joaquin Valley Drainage Authority representatives signed the notice of intent for the Coalition, it is the Coalition participants who are ultimately responsible for participating in Coalition activities, paying their fair share of all costs to carry out the Irrigated Lands Regulatory Program and participating in efforts to solve problems identified through water monitoring.

Coalition Member Districts

Your local water district was instrumental in forming the Westside Coalition. They are committed to assisting landowners and farmers in reaching its goals and include:

- Del Puerto Water District
- Patterson Irrigation District
- San Joaquin River Exchange Contractors Water Authority (including Central California Irrigation District, San Luis Canal Company, Firebaugh Canal Water District, and Columbia Canal Company)
- Tranquillity Irrigation District
- Fresno Slough Water District
- Twin Oaks Irrigation District
- West Stanislaus Irrigation District
- Oak Flat Water District
- Stevinson Water District
- White Lake Mutual Water Company
- Lone Tree Mutual Water Company
- Turner Island Water District
- San Luis Water District
- Grassland Water District and RCD

Watershed Coordinator

Joe McGahan, Summers Engineering
559-582-9237

Westside SJR Watershed Coalition
c/o San Joaquin Valley Drainage Authority
P. O. Box 2157, Los Banos, California 93635
209-826-9696

Westside San Joaquin River Watershed Coalition

Meeting Announcement

A Role for PCA / CCAs In Water Quality Protection?

Date: **Tuesday, November 9, 2010**
8:00 am - 12 pm + sponsored lunch

Location: Westley Fire Station, Westley, CA

8:00 am	**Welcome and Meeting Overview**	**Parry Klassen** CURES
8:15 am	**Regional Water Board Perspective**	**Terry Bechtel** *Central Valley Regional Water Quality Control Board*
8:45 am	**Priority Pesticides/nutrients and approaches for Watershed Coalitions**	**Parry Klassen** **Chris Linneman**
9:15 am	**Nitrates and Groundwater: Guiding your customers in the 21st century**	**Sebastian Braum** *Yara*
10:00 am	**Break**	
10:15 am	**What we know about OPs and water**	**Daniel Abruzzini** *Dow AgroSciences*
10:45 am	**Pesticide Pathways to Problems in Tree and Field Crops**	**Terry Prichard** **UC Cooperative Extension**
11:15 am	**What's new in county regulations**	**Gary Caseri** *Stanislaus County Ag Commissioner*
11:45	**CCA program**	**Allan Romander**
11:50 – 12	**Open Discussion and Questions**	**Parry Klassen**
12 pm	**Sponsored Lunch**	

2.5 hours Continuing Education credits: PCA and CCA

RSVP to 209-522-7278 (if you want lunch!)

Please RSVP by Nov. 5

Sponsored by

Certified Crop Advisor Assn.
Westside San Joaquin River Watershed Coalition
Coalition for Urban/Rural Environmental Stewardship (CURES)
Stanislaus County Agricultural Commissioner

You're Invited to Attend

Water Quality in Westside Streams and SJR River

Mid Summer Update

Westside San Joaquin River Water Quality Coalition

Date	Time	Location
Thursday, August 19, 2010	10:00am - 12:00pm plus lunch and BMP tour (1-2 pm)	Westley Fire Station Westley, CA

Meeting Agenda

10:00 am Welcome and introductions — Joe McGahan, *Watershed Coordinator*

Is water quality improving? Coalition update — **Joe McGahan**
- Management Plan Requirements
- Review of monitoring results

Best Management Practices for Westside ag — **Parry Klassen**, *Coalition for Urban Rural Environmental Stewardship (CURES*
- Grants for BMP installations
- New Pending Groundwater Regulations
- BMP modeling and water quality

Water Board Enforcement Strategy — **Terry Bechtel, Central Valley Water Board**

Update on Stanislaus County Pesticide Enforcement — **Gary Caseri**, Stanislaus Co. Agricultural Commissioner

Westside Resource Protection — **West Stanislaus Resource Conservation** District Board member

Next steps discussion:
Where do we go from here? — Farmers/PCA's/Applicators/Others

12:00 pm Lunch

1-2 pm: Demonstration/Tour of local irrigation drainage management systems/BMPs

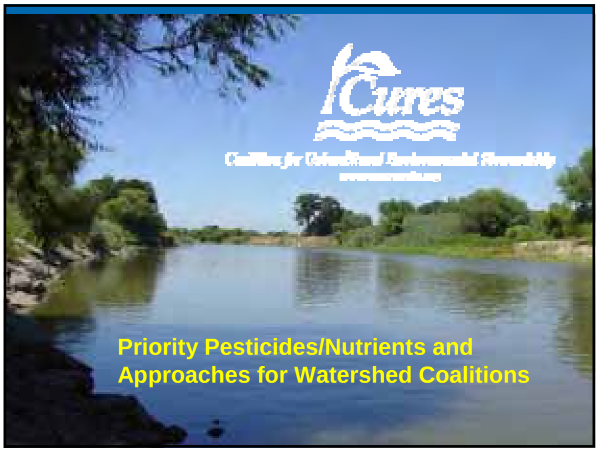
2.0 hours of CE credits, laws and regulations, have been applied for.

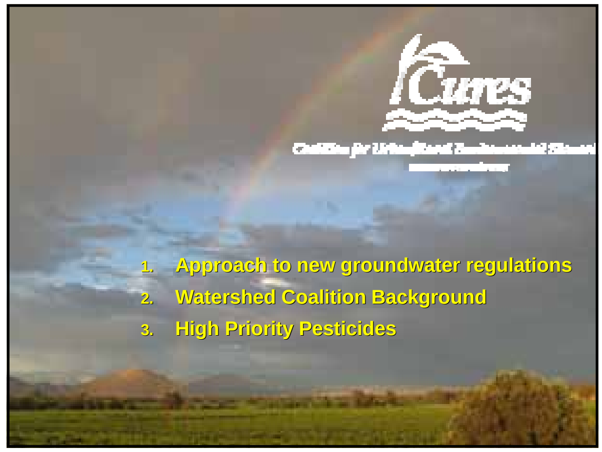
Sponsored by:

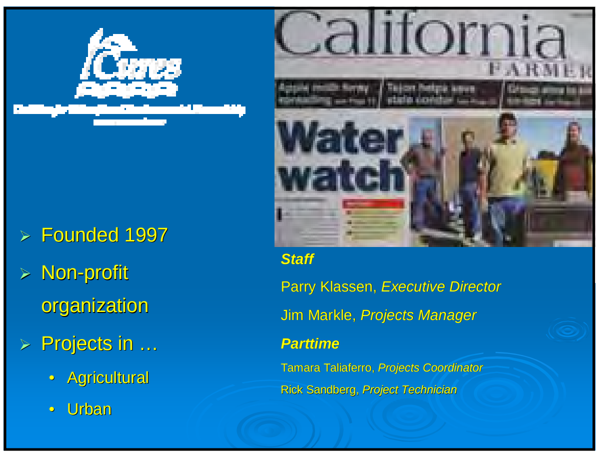
Del Puerto Water District
Central California Irrigation District
Patterson Irrigation District
Westside San Joaquin River Watershed Coalition
Coalition for Urban/Rural Environmental Stewardship (CURES)
Stanislaus County Agricultural Commissioner
West Stanislaus Resource Conservation District

Please RSVP by August 17
Del Puerto Water District: 209-892-4470

Outreach Meeting Presentations







"Long-Term Program"
Irrigated Lands Regulatory Program

Milestones
- Current program expires in 2011
- EIR for new program released July 30, 2010
- Public comment period ended Sept 27, 2010
- April 2011: Adoption by Water Board (?)

"Long-Term Program"
Irrigated Lands Regulatory Program

Key points
- Groundwater included
- Use existing coalition structure
- Current ILRP participants grandfathered into new program; no need to reapply

"Long-Term Program"
Irrigated Lands Regulatory Program

Key points

- Two tier priority discharge areas
  - Tier 2 (high priority) based on DPR pesticide groundwater protection areas
  - Existing surface waterways with Management Plan
- Regional surface/groundwater quality <u>management</u> plans vs. individual water quality management plans
- Regional groundwater "<u>monitoring</u>" programs

"Long-Term Program"
Irrigated Lands Regulatory Program

What are "discharges of waste from irrigated lands" to groundwater?

(waste defined as farm inputs + salt)

- Leaching of waste to groundwater (nitrates/pesticides moving past root zone)
- Backflow of waste into wells (during chemigation/fertigation)
- Waste discharged into unprotected wells

"Long-Term Program"
Irrigated Lands Regulatory Program

Program under "General Orders" or " Conditional Waivers of Waste Discharge Requirements"

- 8–12 tailored "orders" anticipated in Central Valley
- Developed for similar areas / watersheds / commodities
- Regulatory and monitoring requirements tailored to the conditions and waste discharge pathways
- Geographically based
- May be commodity-based requirements (i.e. rice)
- Tailor requirements to applicable waste discharge conditions

Tiered "Threat" to Water Quality

- Threat based on vulnerable hydrologic groundwater environment
  - Tier 1: Minimal
  - Tier 2: High potential threat to water quality.
- Less regulatory oversight for low threat operations
- Establish necessary requirements to protect water quality from higher-threat discharges.

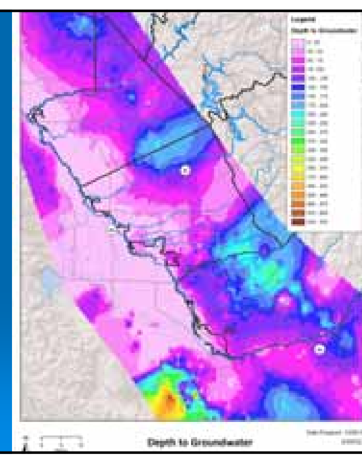
Applied separately to surface and groundwater depending on numerous factors

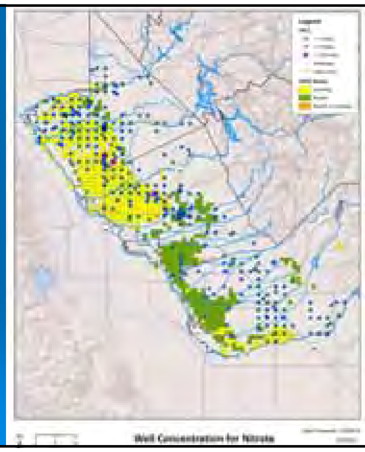
Watershed Coalition Responsibilities

<u>Groundwater Quality Management Plans</u>

- Identify groundwater quality management areas
- Summarize / assess water quality data for aquifers and parameters
- Identify irrigated agriculture source(s)—general practice(s) or specific location(s)—that may be cause of water quality problem

In lieu of conducting additional source analysis, MP can focus on ensuring that all growers are implementing practices that achieve Best Practical Treatment Controls for constituent(s) of concern





Watershed Coalition Responsibilities

<u>Groundwater Quality Management Plans</u>

- Identify practices to address the constituents of concern
- Identify practices growers will implement
  - estimate effectiveness or limitations on effectiveness of practices
- For pesticides, refer to DPR's requirements

Watershed Coalition Responsibilities

<u>Groundwater Quality Management Plans</u>

- Evaluate management practice effectiveness
  - Describe approach for determining effectiveness
    - Field studies of management practices at representative sites or;
    - Modeling or assessment to associate the degree of management practice implementation to changes in water quality

Watershed Coalition Responsibilities

<u>Groundwater Quality Management Plans</u>

- Grower outreach strategy
  - Inform growers of water quality issues; management practices needed
  - Measure effectiveness of outreach efforts
- Tracking of management practice implementation
  - How information will be collected from growers
  - Type of information being collected
  - How the information will be verified (may include field visits to subset of growers reporting data or other methods to confirm data validity)

Watershed Coalition Responsibilities

<u>Groundwater Quality Management Plans</u>

Monitoring Plan

- For determining whether GQMP is improving water quality
- Use other sites or a different depth to groundwater (e.g., monitor first encountered groundwater versus supply wells)
- Focused studies of selected agricultural management practices, constituents, or physical settings to inform refinement of GMA and constituent prioritization
- Or monitor practices that provide needed groundwater protection from degradation by constituents of concern

<u>Individual Farm</u> Water Quality Management Plans

Individual FWQMPs required if …

- WQ objectives are not met
- Improvements in water quality do not occur within the approved time schedule for implementation, or
- Where irrigated agricultural operations are not implementing requirements in SQMPs/GQMPs

Goal of FWQMPs …

- To minimize waste (e.g., nutrients, pesticides, sediment, pathogens) discharge to surface water and groundwater (to include wellhead protection practices)
- Plan kept on the site and submitted to Water Board on request

__Individual Farm__ Water Quality Management Plans include…

- Irrigated acres, crops, chemical/fertilizer application rates and practices;
- Maps of irrigated production areas, discharge points and water bodies;
- List of water quality management practices used to achieve farm management objectives and reduce or eliminate discharge of waste to ground and surface waters;
- Wellhead protection measures for pesticide and fertilizer use
- Identify potential conduits to groundwater aquifers
  - (e.g. active, inactive, or abandoned wells; dry wells, recharge basins, or ponds)
- ID steps taken, or to be taken, to ensure conduits do not carry contamination to groundwater.

"Optional" Certified Farm Water Quality Management Plan

- Applies to individual farm
- For operations with similar waste discharges
- Plans developed by commodity groups, other third parties
- Farms required to implement practices in certified plan
- Individual operations could develop/implement own certified FWQMP
- Certified FWQMP must address discharges to ground and surface water

Optional Certified Farm Water Quality Management Plan

- Farms w/certified plans considered lower priority because of on-farm verification (by an approved certifier) of practices implemented to control waste discharge to surface and groundwater
- The approved certifier(s) would be the lead entity for this option
- Certification includes Central Valley Water Board approved Certification Entity review and certification of the plan
- Certification Entity would conduct an initial certification inspection and a minimum annual inspection frequency of 5% of operations with approved plans
- Certification entities would report results to the Central Valley Water Board

Schedule of Implementation

Phase/Action	Completion Date from Adoption of Long-Term Program; March 2011 +	Responsible Party
Identification of geographic areas/commodities receiving orders[b] and responsible third-party groups	3 months	Central Valley Water Board/third parties
Board issuance of geographic / commodity specific orders	12 months	Central Valley Water Board
Enrollment of new participants / operations[c]	30 months	Operations/Central Valley Water Board
New program fully in effect	3 years	Central Valley Water Board / third parties / operations

How can PCAs / CCAs assist Coalitions?

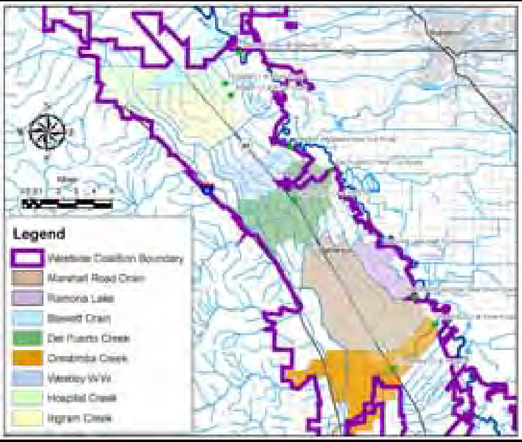
- Understand crop nutrient needs
- Become familiar with groundwater nitrate levels (irrigation supply water)
- Assist Coalitions in developing a workable plans

__We all want high quality groundwater!__

Westside San Joaquin River Watershed Coalition

About us:

- Formed by local irrigation/water districts to provide mechanism for farmers to comply with State law
- Performs monitoring, reporting and promotes best management practices



Waterway Monitoring Requirements

Monitoring and Reporting Program

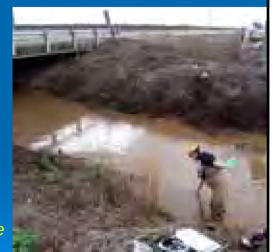
Water Column

- Pesticides
- Nutrients
- Sediment
- Salt / EC
- Boron
- Bacteria / e coli
- Ambients (temp, DO, etc)

Streambed Sediment

- Toxicity
- Pesticides (soon)

Any constituent that can affect the quality of waters of the State



Management Plan Requirements

If two or more exceedances, Watershed Coalition must…

- ID Sources
- Implement BMPs
  - Outreach meetings
  - Landowner mailings
  - On farm visits

Focused Watershed Plans

- **Ingram & Hospital Creeks – October 2008**
- **Del Puerto, Westley Wastewway, and Orestimba Creeks – February 2010**

Targeted Parameters:

- Water toxicity and pesticides
- Algae toxicity and pesticides
- Sediment toxicity and pesticides
- E. coli
- Salinity
- DO and pH

Summary of Management Plan Action Items

- Develop sub-watershed maps that identify regions draining into Coalition monitoring sites
- Circulate and compile management practice inventory (Grower Survey)
- Compile pesticide use reports
- Continue monitoring program

7-14-10 Sampling Results	
Site	**Chlorpyrifos (µg/L)**
Hospital Creek	0.24
Ingram Creek	0.24
Westley Wasteway	0.13
Del Puerto Cr. @ Cox Rd.	0.063
Marshall Road Drain	0.078
Orestimba Cr. @ River Rd.	0.06
Orestimba Creek @ Hwy 33	0.032
DMC at DPWD	0.017
SJR at PID Pumps	0.019

Coalition Actions

- **Identify those that discharge**
- **Identify what those entities apply in relation to OP, pyrethroid pesticides**
- **Talk to operators/owners on an individual basis**
- **Recommend management practices**
  - **Tailwater detention/return system**
  - **Use of PAM**
- **Monitor to determine effectiveness**

BMP's for Chlorpyrifos

- Hold tailwater for 2 days (label) or longer if possible
- Construct and use tailwater ponds (Coalition grant program)
- Limit spray drift and overspray

If field has …

-- Irrigation or storm drainage and/or

-- Spray drift can reach adjacent waterway

Then …

• High potential coalition monitoring will find farm inputs used on that field

It doesn't matter which product you apply: it can move off-site in drainage or drift!

(product substitution shifts the problem, doesn't solve it)

Tailwater Pond Assistance Program

- Construction of ponds, piping improvements, enlarging and cleaning
- 25% farmer match requirement
- Up to $6,000 per project ($1,500 farmer share)
- Applications being accepted

Central Valley Water Quality Coalitions

Yes: progress in improving surface water quality

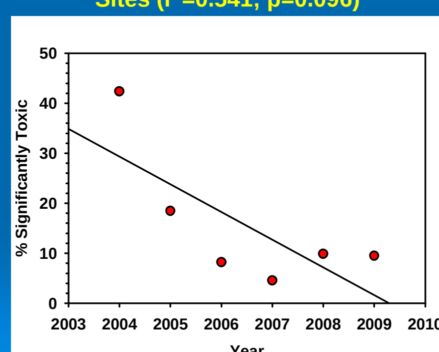
Overall Central Valley Waterways

- Fathead minnow toxicity rare
- Fewer water flea (c. dubia) toxicty hits

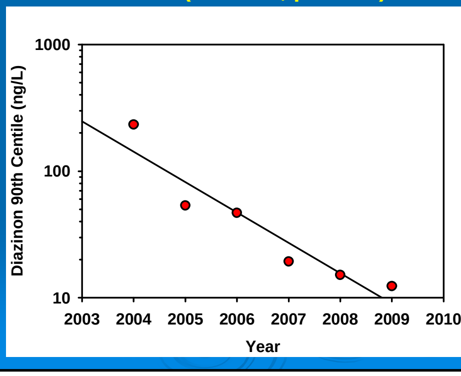
Westside San Joaquin River Watershed Coalition

- Downward trend in toxicity, pesticides

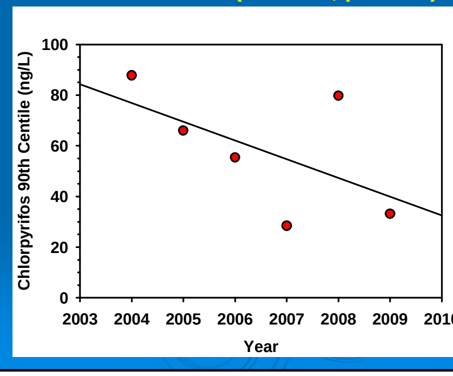
Westside Coalition C. dubia Toxicity Data – All Sites (r^2=0.541; p=0.096)



Westside Coalition Diazinon Data – All Sites/All Seasons (r^2=0.892; p=0.005)



Westside Coalition Chlorpyrifos Data – All Sites/All Seasons (r^2=0.327; p=0.236)



Yes: progress in improving surface water quality

East San Joaquin Water Quality Coalition

- 22 Management Plans
- 100+ members contacted/visits in 7 priority watersheds
- No pesticide exceedances in 6 watersheds;
  - In 2 creeks for second year in a row

What Can PCA's do to help Coalitions?

- Be aware of fields near waterways
  - If there is irrigation drainage
  - If storm runoff is probable
  - If there is drift potential
- Suggest alterative, no risk products where appropriate

Pessl Instruments Orchard Sprayer Calibration Instrument

Vertical Test Stand (in background)

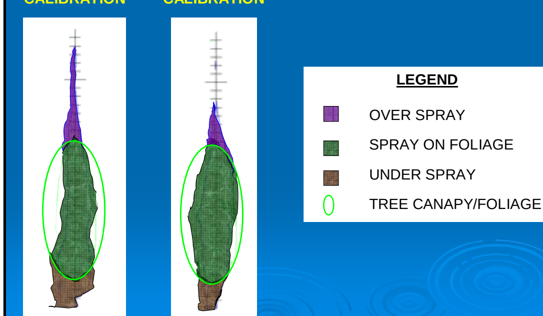
Upright panel is vertical test stand that simulates a tree profile. Sprayer is run at operating speed and nozzle discharge is collected by the panel for approx 5 seconds.

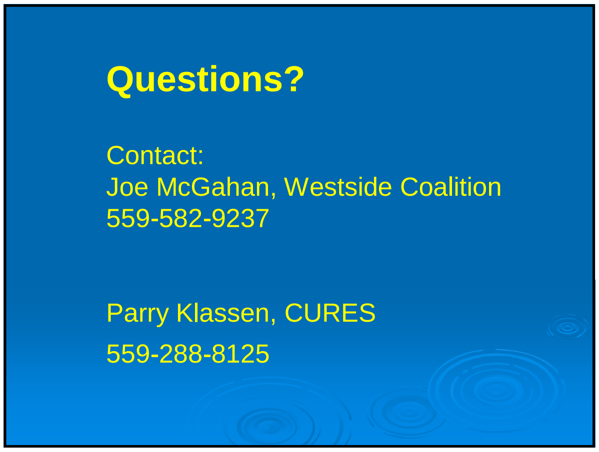
Electronic sensors measure volume collected in each grove which capture spray and funnel into individual beakers. Data is sent to a laptop.

VERTICAL DISTRIBUTION CALIBRATION

Computer printout of data collected from vertical test stand. Green circle shows profile of tree to be sprayed.

BEFORE CALIBRATION **AFTER CALIBRATION**




Questions?
Contact:
Joe McGahan, Westside Coalition
559-582-9237
Parry Klassen, CURES
559-288-8125

Best Management Practice Evaluation Summary

BMP Study Abstracts

In general grower meetings and individual member meetings, landowners and operators with irrigation drainage are encouraged to adopt practices to protect surface water that include a number of options based on their crop and farming conditions. Those practices include irrigation drainage return systems, sediment ponds for containing irrigation drainage, managed vegetation in drainage ditches and use of PAM in irrigation water. The Coalition has collaborated with CURES in conducting a number of studies in the Orestimba and Del Puerto Creeks that show potential water quality improvements in those waterways should these specific practices be used. The following summaries recent studies verifying the effectiveness of practices that landowners are being encouraged to adopt. A full report for each of these studies is available on request.

Modeling of BMP Practices (ongoing)

This project funded by the State Water Resources Control Board is an effort to develop predictive models that can be used by resource managers to optimize the use and placement of various Best Management Practices (BMPs) in the watershed. By gathering available data (including monitoring and pesticide use data, geographical information such as topography and soil types, land use, hydrology and BMP study details) and combining it with a surface water models, examinations can be made of trends in surface water contamination and how various BMP options might improve local surface water quality. The model used in this project is the Soil and Water Assessment Tool (SWAT) which is a public-domain, river basin scale model originally developed by the USDA in the early 1990s. The model has been calibrated (entering in existing data into the model to see if results are accurate (same trends) for our watershed and is currently being validated (collecting new data and see if model produces predicted results (same trends). In test runs of the model, data show a close correlation between predicted and observed OP pesticide residues levels (diazinon and chlorpyrifos) in surface water in the study area. The model has the potential for use in large scale predictions on the San Joaquin River watershed.

Sediment Ponds and Polyacrylamide (PAM) for mitigation of pyrethroid runoff from almonds (July, 2009)

A study conducted in July 2009, supports the Coalition's support for land downer’s use of sediment basins for irrigation drainage. In a study funded by the Almond Board of California, sediment basins were examined for effectiveness in reducing pyrethroid residues in tailwater. The study involved two trials conducted on a section of a large-scale commercial orchard in Merced County planted with nonpareil almonds. The first trial was conducted under typical flow conditions with no PAM added to the irrigation water. The second trial was conducted under slightly higher flow conditions with PAM added to the irrigation water at the beginning of the rows resulting in a five-fold reduction in total suspended solids (TSS) entering the sediment basin. In both trials, the total mass of the sediment leaving the sediment basin was reduced an additional 80%-84% at the discharge point of the basin. Although the use of PAM did not appear to significantly impact the total mass of pyrethroid (lambda-cyhalothrin) leaving the field in this study, the sediment basin reduced the total pyrethroid load by 38%-61%. These findings support that the adoption of classical sediment control practices such as sediment basins will reduce the amount of pyrethroid residues in irrigation tailwater released to streams.

Sediment Ponds and Polyacrylamide (PAM) for mitigation of pyrethroid runoff from tomatoes (May, 2008)

A second study examined the effectiveness of sediment basins for reducing pyrethroid residues in tailwater in processing tomatoes. The study also had two trials where the first had relatively high flow conditions with no PAM added so that the irrigation tail water was laden with total suspended solids (TSS). The second trial was conducted under relatively low flow conditions with PAM added to the top of the irrigation furrows so that the irrigation tailwater had considerably less TSS. In both trials the sediment basin reduced the peak pyrethroid (lambda-cyhalothrin) concentration in tailwater entering the sediment basin and flowing out of the sediment basin by about a factor of 10 and the total mass of pyrethroid leaving the sediment basin was reduced by 80 percent. These reductions in mass losses considered both the reductions during the time the basin was filling as well as the time when water was both entering and leaving the basin. These findings support that the adoption of sediment control practices such as sediment basins to reduce the amount of pyrethroid residues in irrigation tailwater.

Vegetated Ditch for mitigation of lambda-cyhalothrin runoff from irrigated alfalfa (December, 2007)

Recent studies on vegetated ditches, funded by the State Water Resources Control Board, included a trial in a 35-acre commercial alfalfa field near the cities of Crow's Landing and Patterson. The soil at the site is on the boundary of Stomar clay loam and Capay clay (USDA, 1997). The study evaluated the effects of two management practices on concentrations of a common pyrethroid, lambda cyhalothrin, in irrigation runoff in alfalfa. The management practices included (1) a standard irrigation return ditch dredged to remove vegetation just prior to irrigation event and (2) a specially constructed ditch with resident grasses to provide a dense cover of vegetation for the irrigation event.

Lambda-cyhalothrin concentrations in the irrigation runoff ranged from 0.018 µg/L to 0.077 µg/L. The concentrations of pesticide were lower in the vegetated ditch than at the inflow or the conventional ditch, with the mean concentrations for each irrigation event being lower than the inflow concentrations. On average, the median concentration reduction at the end of the vegetated ditch was about 25%. Suspended sediment concentrations were variable and ranged from 0.00095 g/L to 0.0417 g/L . The amount of suspended sediment was roughly the same for each sample site and the means for each irrigation event were not statistically different from each other. Lambda cyhalothrin concentrations in the sediment ranged from 1.38 ng/g dry weight to 59.3 ng/g dry weight. The median concentration of lambda cyhalothrin in the vegetated ditch sediment was approximately 8 times higher than in the conventional ditch sediment. The concentrations in the vegetated ditch sediment also increased as the water traveled further down the ditch. This indicates that the pesticide drops out of the water (with the sediment) in the vegetated ditch more readily than in the conventional ditch, hence the reason for low detections in the whole water samples.

Vegetated Ditch for mitigation of chlorpyrifos runoff from irrigated alfalfa (December, 2006)

This study involved installing a vegetated drainage ditch as a potential management practice for reducing off-site movement of chlorpyrifos to surface water from irrigated alfalfa. The study site was a 75-acre commercial alfalfa field near Crows Landing. Chlorpyrifos is commonly applied to alfalfa in the region several times during the irrigation season (April-October) to control several species of aphids including the green peach aphid (*Myzus persicae)* and worms such as the beet armyworm (*Spodoptera exigua*), western yellowstriped armyworm (*Spodoptera praefica*) and the alfalfa caterpillar (*Colias eurytheme*).

In December 2005, six months prior to the study date, the ditch was planted with several species of native and introduced perennial grasses. Half of the ditch was planted with *Dactylis glomerata* ‘Potomac’ (orchard grass) and *Agropyron trichophorum* ‘Luna’ (pubescent wheatgrass). The other half of the ditch was planted with a mix of *Leymus triticoides* ‘Yolo’

(Yolo creeping wildrye) *Elymus glaucus* (blue wildrye), and *Hordeum brachyantherum* (California meadow barley). The vegetated ditch was six feet wide and ran the entire bottom width of the field (1,300 feet). The vegetation was well established in the ditch and was mowed to just above the estimated high water mark prior to the irrigation season. Irrigation at the site began 48 hours after an aerial application of chlorpyrifos. Each sampling event represented the first flush of water leaving the field from each of five irrigation sets. For comparison, a conventional V-shaped ditch was installed parallel to the vegetated ditch. The design and dimensions (20 inches wide by 14 inches deep) represents what the grower traditionally uses to intercept runoff water from the site.

Chlorpyrifos concentrations in the irrigation runoff were variable and ranged from 0.22 μ/L to a maximum of 1.67 μ/L. In general, concentrations were lower in the vegetated ditch than at the inflow or in the conventional ditch. On average the median concentration reduction at the end of the vegetated ditch was about 38% as compared to approximately 1% in the conventional ditch. Concentrations were lower at the end of the vegetated ditch, indicating that the ditch was effective in reducing off-site movement of chlorpyrifos. A probability plot of the range of expected concentration decreases for the vegetated ditch shows the median reduction was approximately 38% with the 25th and 75th percentiles falling at 28% and 49%.

Use of Polyacrylamide (PAM)/calcium to mitigate chlorpyrifos runoff from row crops (July, 2006)

This study was performed in a field bordering the Orestimba Creek watershed. The field was prepared with rows pulled at 30-inch centers, typical for corn and other row crops common to the San Joaquin Valley. Chlorpyrifos was applied to the 350 foot rows at one pound active ingredient per acre. Furrow irrigations began August 14, 2006, 36 hours after the chlorpyrifos treatment. Of the 40 rows treated, 10 were sampled on each of four successive days – five control rows and 5 PAM/calcium treated rows. Irrigation tailwater was subsampled continuously (1 subsample volume per 100 total tailwater volume) at the bottom of each row. The first five gallons of subsampled tailwater was collected from each row. The results showed that PAM/calcium had no significant effect on offsite movement of chlorpyrifos in tailwater under these conditions. Waiting up to five days after application to irrigate had no significant effect on amounts of chlorpyrifos in tailwater under these conditions. Chlorpyrifos concentrations in tailwater, averaged over all four days, were: control; 5.04 ug/L and PAM-Ca treated; 4.94 ug/L. While this study showed that reductions in chlorpyrifos runoff were not significantly different when using PAM/calcium in irrigation water, it did produce visibly less sediment runoff from the trial plots. PAM causes soil particles to aggregate and thereby reduce soil particle movement off-site. Reduced movement of soil particles is quite evident *in vitro* and from observations of irrigation water *in situ*. For pesticides of low water solubility and with a correspondingly high propensity to bind to soil particles, one would expect to see a decrease in the amount of those pesticides moving off-site from fields treated with PAM due to the lack of sediment movement. However, for pesticides like chlorpyrifos (which is moderately water soluble and has only a moderate tendency to bind to soil) the presence or absence of PAM in irrigation water would not be expected to dramatically reduce chlorpyrifos offsite movement under typical conditions. Our experiment supports this conclusion, with no significant difference in the mass of chlorpyrifos detected in runoff water from PAM-treated rows or control (nonPAM-treated) rows.

Sediment Pond, Irrigation System, and Water Management System Improvement Funding Assistance Programs

Coalition for Urban/Rural Environmental Stewardship
www.curesworks.org

This information forwarded by:

SAN JOAQUIN VALLEY DRAINAGE AUTHORITY
P O Box 2157
Los Banos, CA 93635
209 826 9696 Phone
209 826 9698 Fax

Attention Landowners & Growers on:

- **Ingram Creek**
- **Hospital Creek**

USDA recently approved $2 million annually in grants over the next 5 years for projects intended to improve water quality in waterways in Stanislaus and Merced counties. Owning or operating a farm that impacts one of the waterways listed above results in a "high priority" application. CURES was able to secure this funding by working in conjunction with the Partnership for Agriculture and the Environment, a coalition of local interests including Westside San Joaquin River Watershed Coalition, Stanislaus and Merced County Farm Bureaus, Almond Board of California, Western United Dairymen, the Environmental Defense Fund and others (see list at www.curesworks.org/bmp/20090722Press.asp). CURES' application was accepted by USDA in a nationally competitive process.

Where does the money come from? The Agricultural Water Enhancement Program (AWEP) was part of the 2008 Farm Bill. Think of AWEP as an expanded Environmental Quality Incentive Program (EQIP). Funds are dispersed through the Natural Resource Conservation Service (NRCS) offices in Merced and Stanislaus Counties. CURES will assist with grower outreach on the AWEP funding availability.

What types of projects can be funded? High priority projects include irrigation drainage sediment basins and irrigation tailwater recirculation systems as well as other water quality related practices installed on fields currently draining into the waterways listed above. Larger community (multi-farm/group project) systems can also be funded.

What are the requirements for receiving funds? A payment will be made to successful applicants after completion of approved practices. The payment rate is approximately 50% of the statewide average cost for an installation. Please contact NRCS for actual rates. Other 2008 Farm Bill rules apply.

When can growers begin applying? Immediately! Applications will be accepted on an ongoing basis over the next 4 years. Those received by August 14 will be considered for funding during the first round. Application cutoff dates for subsequent rounds will be announced later.

If you have questions about the application process or have a project in mind, contact me at the number below or your local NRCS office in Merced or Modesto.

Parry Klassen
Executive Director
559-288-8125

NRCS Merced Service Center
2135 Wardrobe Avenue, Suite C
Merced, CA 95341
209-722-4119 x 3

NRCS Modesto Service Center
3800 Cornucopia Way, Suite E
Modesto, CA 95358
209-491-9320 x 3

Deadline

August 13, 2010

Conservation Program

Step-by-Step

Fill out application and submit with design and cost estimate by deadline

All projects will be reviewed by the Water Conservation Committee for preliminary approval

Once notified of approval, submit construction schedule to CCID

Any changes to submitted design MUST be provided to CCID *prior* to construction

Upon completion of engineering evaluation, notice to construct will be issued

Board of Directors will disperse funds to Landowner upon approval of final inspection

For Questions or More Information
Please contact:
Tracey Rosin
Conservation Coordinator
Phone: (209) 826-1421
Cell: (209) 777-8060
Fax: (209) 826-3184
trosin@ccidwater.org

Central California Irrigation District

2010 On-Farm Water Conservation Program

The Water Conservation Program deadline for funding requests is August 13, 2010. A project design and cost estimate must be submitted prior to the deadline date to be considered for preliminary approval. All applications will be processed and reviewed collectively in time for October construction. Water Conservation Program Guidelines are available on-line at www.ccidwater.org. Funding levels may be pro-rated based on the number of applications received.

DEADLINE AUGUST 13, 2010

GRANT PROGRAM

50% cost-share

for all Concrete Lining or Pipelining up to **$400/acre** benefited

25% cost-share

for irrigation enhancements up to **$400/acre** benefited such as:

Tailwater Return Systems, Micro-Sprinklers, Drip Systems, Dairy related projects, other irrigation efficiency improvements

LOAN PROGRAM

3% interest loans up to $1000/acre benefited for farmer's portion after cost-share grant.

One annual payment per year

5 year term for on-farm systems 10 year term for community ditches

Contact your local FSA office for additional funding options

Apply Today!

Call Alejandro at SLCC to get qualified and going

SAN LUIS CANAL COMPANY

Alejandro Paolini
Water Conservation Specialist
Office Phone: (209) 826-5112
(209) 387-4305
Cell: (209) 587-1241
Fax: (209) 387-4237
apaolini@slcc.net

2010 Water Conservation Program

New Funding Levels

Easy to Apply, No Deadline

ON-FARM PROJECTS

GRANT

50% cost-share for all for irrigation enhancements and on-farm ditch improvements up to **$250/acre** maximum.

Drip Systems, Tailwater Return Systems, Micro-Sprinklers, Laser Leveling, Dairy related projects, other irrigation efficiency improvements

LOAN

3% interest loans up to **$250/acre** maximum for farmer's portion after grant cost-share. 5 year term. One annual payment

Easement or Fee Title Ditches

GRANT

80% grant for ditch improvements up to **$400/acre** benefited.

LOAN

3% interest loans up to **$100/acre** maximum for farmer's portion after grant cost-share. 5 year term. One annual payment

Maximum Canal Company participation:

$500/acre benefited combining grant and loan portions

Westside San Joaquin River Watershed Coalition
Silt Pond Implementation Program
Application Guidelines

The Westside San Joaquin River Watershed Coalition (Coalition) has reserved at least $30,000 for the 2010 fiscal year March 2009 to February 2010) to provide funding to landowners and operators within the Coalition for the purposes of constructing a new tailwater silt pond or to clean out an existing silt pond.

Eligible projects:
Eligible projects include: construction of a new tailwater silt pond, improvement or upgrading of the inlet/outlet facilities on an existing silt pond, enlargement of an existing pond, and the cleanout of an existing silt pond. Certain conditions must be met under each of these conditions to be eligible for funding:

- **Construction of a new silt pond.** To be eligible for funding, a new silt pond must be located to receive tailwater flows that will be discharged into waterbodies within the Coalition area. The pond must be sized correctly and include enough water storage to provide adequate settling time for the suspended silt and enough silt storage to retain the amount of silt deposited over one full growing season and still operate correctly. A sizing template is available from the Coalition. The inlet and outlet plumbing must be located to prevent the short-circuiting of flows. The Coalition can provide guidance on these requirements upon request.
- **Upgrade of inlet/outlet facilities.** To be eligible for funding, the applicant must provide evidence the inlet and/or outlet plumbing on an existing pond are ineffective or inappropriate (a few photographs and short description will be sufficient in most cases). Examples of ineffective plumbing are: inlet and outlet too close together (causing flow short-circuiting), outlet pipe too low and lacking a flash-board riser, or outlet pipe too large.
- **Enlargement of an existing pond.** To be eligible for funding, the applicant must provide the approximate dimensions of the pond (length, width, and average depth), the acreage of the field(s) draining into the pond, appropriate photographs, and the proposed final dimensions. A sizing template is available from the Coalition.
- **Clean-out of existing pond.** To be eligible for funding, the applicant must provide photographs of the existing silt pond, approximate dimension, and the farmed acreage that drains into the pond. Note that ponds which are too small for the drained acreage will not be eligible for clean-out funding, but would be eligible for funding as an enlargement project. A sizing template is available from the Coalition.

In addition to these requirements, all projects must be constructed within 8 weeks after the funds have been awarded.

Eligible Costs: Costs that are eligible for reimbursement are:

- Construction costs such as excavation, placement of compacted embankment, and installation of pipe.
- Material costs limited to: pipe and fittings, flash-board risers, and water level control valves (such as canal gates).

Pump systems and electrical equipment are outside the scope of this program and are not eligible for funding.

Program Priorities:
This program has been developed to encourage the implementation of best management practices (BMPs) that address silt discharge and sediment toxicity as part of the Coalition's Management Plan and Focused Watershed Plan. The priority will be given to projects according to location as follows:

First Priority: Projects that impact discharges directly to Ingram Creek or Hospital Creek.
Second Priority: Second priority will be given to projects that are within or adjacent to the Ingram and/or Hospital Creek watersheds but do not discharge directly into those creeks.
Third Priority: Third priority will be given to projects that are within the following watersheds:

Del Puerto Creek (River Rd. & Hwy 33)	Marshall Road Drain at River Rd.	Newman Wasteway
Orestimba Creek at Hwy 33 & River Rd.	Salt Slough at Sand Dam	Turner Slough
Westley Wasteway		

Application Process:
Applications will be accepted and reviewed on a continuous basis until the program funding has been exhausted or the Coalition closes the program. Applications shall include the following:

1. Completed and signed Application Form.
2. A map indicating the location of the project. This can be an APN map or typical road map with the project site clearly marked.
3. A quote from a contractor that clearly indicates what work will be done and estimates the final cost of the project.
4. For clean-out or modifications to existing ponds, include photographs of the existing pond.

Submit applications to your member district or:
Westside San Joaquin River Watershed Coalition
c/o Summers Engineering
P. O. Box 1122
Hanford, CA 93232
Phone 559-582-9237
Fax 559-582-7632

Project Evaluation and Funding:
Applications will be reviewed by qualified reviewers appointed by the Coalition Steering Committee based on the requirements noted above. Applicants will be notified after that date of the Committee decision. The program will fund 75% of the costs of any single project, up to a maximum of $6,000 per project. There is no limit to the number of project applications an individual may submit, however any given project will only be considered once per funding cycle. The decision of the Coalition Steering Committee is final and not open to appeal. Any projects completed before approval will not be eligible for funding. A contractor performing the work must be a licensed contractor in the State of California.

v. 2009.2-Sept 2009

Westside San Joaquin River Watershed Coalition

Silt Pond Implementation Program

Application for Funding

Submit only one application per project

Applicant Information:

Applicant Name: ______________________ Cell Number: ______________________

Phone Number: ______________________ Fax: ______________________

Mailing Address: ______________________ Email: ______________________

____

Project Information:

Project Type (circle one):

New Pond Clean-out Enlarge Upgrade Plumbing

Project site APN: ______________________ District: ______________________

Project Location (attach a project location map): ______________________

Stream/creek the pond will drain into: ______________________

Acreage draining into the pond: ______________ Crop type(s): ______________________

Existing Pond Size (For Clean-out, Enlargement, or Upgrade projects only).

Length: ________ Width: ________ Depth: ________

Proposed Pond Size (For New Pond and Enlargement projects only).

Length: ________ Width: ________ Depth: ________

Estimated total cost (include quote from contractor): ______________

Estimated construction dates: Start: ________ Finish: ________

I certify that the above information is correct to the best of my knowledge.

Name: ______________________ Title: ______________________

Signature: ______________________ Date: ______________________

Submit Aplications to"
Westside San Joaquin River Watershed Coalition
c/o Summers Engineering
P. O Box 1122
887 N. Irwin St.
Hanford, CA 93232
Phone 559-582-9237
Fax 559-582-7632

version 2009.2

SAN JOAQUIN VALLEY DRAINAGE AUTHORITY
SEDIMENTATION POND FUNDING PROGRAM

This Agreement is made and entered into this ________ day of ___________________, 20___, by and between SAN JOAQUIN VALLEY DRAINAGE AUTHORITY, a political subdivision formed and existing under the California ____________________law, hereinafter called "Drainage Authority)," and

____,

____,

hereinafter called "Applicant."

RECITALS

A. Applicant applies to the Drainage Authority for a grant the proceeds of which are to implement best management practices for improvement of water quality related to the Westside San Joaquin River Watershed Coalition (Westside Coalition)'s Management Plan, approved by the Regional Water Quality Control Board; and,

B. The Drainage Authority has determined that the proposed improvements to the Applicants tail-water facilities is in the public interest because it assists in meeting requirements of the Management Plan to improve water quality; and

C. The Drainage Authority has allocated money to fund the grants in order to encourage the implementation of best management practices to promote improvement of water quality.

NOW, THEREFORE, in consideration of the Recitals set forth above, and the mutual promises and conditions set forth herein, the parties hereto agree as follows:

1. Grant Application. Applicant hereby applies to the Drainage Authority for a grant to fund the following improvement(s): _______________________________

____

____

2. Total Amount of Funding. The Drainage Authority hereby agrees to advance to Applicant the costs of the aforesaid improvements in the total amount of $________________.

3. Applicant hereby further agrees as follows:

a. Applicant certifies that all improvements for which this grant application is made are for the express purpose of improving Applicant's agricultural practices on property within the Drainage Authority's service area.

b. All improvements financed hereunder shall remain in place and operational for the purposes described above for a minimum of five years from the date of this Agreement.

4. Applicant agrees to indemnify, protect, hold harmless and defend the Drainage Authority, its officers, employees, agents, successors and assigns from and against any and all liability, including without limitation, all costs, expenses, attorney fees, and expert witness fees from any claim, action or proceeding brought against the Drainage Authority, its officers, employees, or agents, to attack, set aside, void, or annul, in whole or in part, the validity of or money due to the Drainage Authority pursuant to this Agreement.

5. Binding Agreement. This agreement shall be binding on the heirs, transferees, successors, assigns and personal representatives of Applicant.

IN WITNESS WHEREOF, the parties hereunto have set their hands the day and year hereinabove written.

APPLICANT

By: ____

By: ____

SAN JOAQUIN VALLEY DRAINAGE AUTHORITY

By: ____
President

By: ____
Secretary

Attachment 7
Application and Fate of Chlorpyrifos and Diazinon within the Westside Coalition – 2010

Application and Fate of Chlorpyrifos and Diazinon within the Westside Coalition – 2010

Chlorpyrifos and diazinon are organophosphate insecticides used to control a variety of pests on fruit and nut trees, alfalfa, and field crops. The Central Valley Regional Water Quality Control Board (Regional Board) has developed a TMDL for chlorpyrifos and diazinon and has required a surveillance and monitoring program on the San Joaquin River. The Westside Coalition is a participating agency in the TMDL program. The TMDL program identifies seven objectives:

1. Determine compliance with established water quality objectives (WQOs) and the loading capacity applicable to diazinon and chlorpyrifos in the San Joaquin River.
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.

The first TMDL annual monitoring report (TMDL AMR) was submitted to the Regional Board on November 1st, 2010, and addresses the water quality results from the monitoring program as well as the seven objectives. This report assess the tributaries to the San Joaquin River within the Westside Coalition in terms of the seven TMDL objectives.

Table 1 shows the reported uses of chlorpyrifos and diazinon within the Westside Coalition from January 1 through a portion of July 2010. The data was obtained from agricultural commissioner's pesticide use reports (PUR) and it is not complete for all counties.

Table 1: Chlorpyrifos and Diazinon Reported Use – January to July 2010

Chlorpyrifos Use (acres treated)					Diazinon Use (acres treated)			
Commodity	Fresno	Merced	Stanislaus		Commodity	Fresno	Merced	Stanislaus
Alfalfa	1612.8	2403	1462		Almonds	-	20	-
Asparagus	424	-	-		Cherries	-	195	305
Almonds	-	190	2846		Peaches	-	45	-
Walnuts	-	587	589		Walnuts	-	10	-
Apples	-	-	-					

The Westside Coalition's monitoring and reporting program (MRP) recorded 30 detections of chlorpyrifos and five detections of diazinon between January and August 2010. None of the diazinon detections exceeded 0.1 µg/L (the chronic 4-day average threshold), however 23 of the 30 chlorpyrifos detections exceeded the 0.015 µg/L chronic threshold.

Objectives 1 and 2: Summary of Detections and San Joaquin River Loading Capacity. Four of the five diazinon detections occurred in Event 70 (August), three of which were detected below the reporting limit and "j" flagged. **Table 2** summarizes the diazinon detections.

Table 2: Diazinon Detections - January through August 2010

Location	Sample Date	Concentration (µg/L)	Concentration Ratio
Marshall Road Drain	10-Aug-10	0.027	0.27
Newman Wasteway	13-Apr-10	0.048	0.48
Ramona Lake	10-Aug-10	0.016 (j)	0.16
San Joaquin River at PID Pumps	10-Aug-10	0.0087 (j)	0.09
Salt Slough at Lander Avenue	10-Aug-10	0.0086 (j)	0.09

(j) indicates that detected concentration is below the reporting limit
Bold indicates that the detected concentration has exceeded the loading capacity

Table 3 summarizes the chlorpyrifos detections. Table 3 also calculates the result loading capacity of each chlorpyrifos detection. It should be noted that the Delta Mendota Canal is not a tributary to the San Joaquin River and does not contribute to constituent loading of the river. Twenty three of the chlorpyrifos detections exceeded the chronic threshold and the associated chlorpyrifos loading capacity of the San Joaquin River. None of the diazinon detections exceeded the diazinon loading capacity of the San Joaquin River. None of the chlorpyrifos detections coincided with a diazinon detection and there were no synergistic affects. **Figure 1** shows the number of chlorpyrifos detections and load capacity exceedances by month for the January through August 2010 period.

Table 3: Chlorpyrifos Detections - January through August 2010

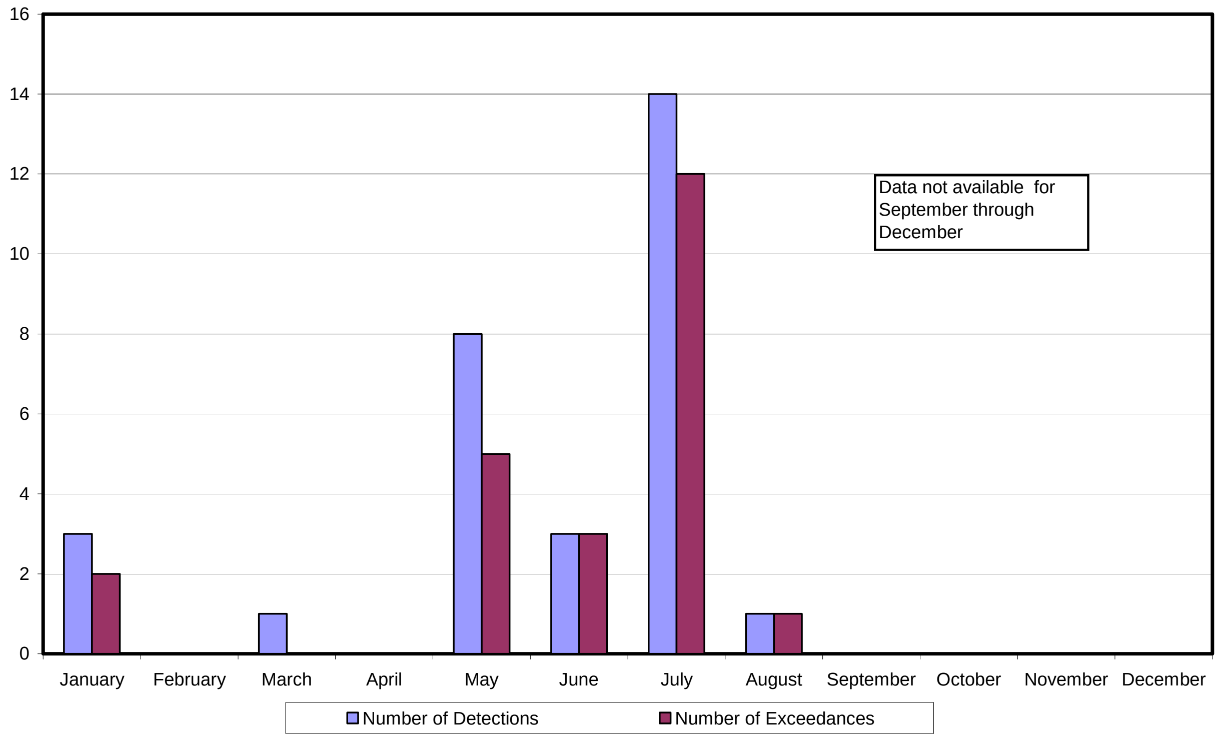
Location	Sample Date	Concentration (µg/L)	Concentration Ratio
Delta Mendota Canal at Del Puerto WD	14-Jul-10	0.017	**1.13**
Del Puerto Creek near Cox Road	11-May-10	0.018	**1.20**
Del Puerto Creek near Cox Road	14-Jul-10	0.063	**4.20**
Hospital Creek	25-Jan-10	0.22	**14.67**
Hospital Creek	11-May-10	0.045	**3.00**
Hospital Creek	14-Jul-10	0.24	**16.00**
Ingram Creek	25-Jan-10	0.011 (j)	0.73
Ingram Creek	11-May-10	0.022	**1.47**
Ingram Creek	14-Jul-10	0.24	**16.00**
Los Banos Creek near China Camp Road	14-Jul-10	0.031	**2.07**
Marshall Road Drain	11-May-10	0.53	**35.33**
Marshall Road Drain	08-Jun-10	0.054	**3.60**
Marshall Road Drain	14-Jul-10	0.078	**5.20**
Orestimba Creek at Highway 33	08-Jun-10	0.079	**5.27**
Orestimba Creek at Highway 33	14-Jul-10	0.032	**2.13**
Orestimba Creek at River Road	11-May-10	0.011 (j)	0.73
Orestimba Creek at River Road	08-Jun-10	0.20	**13.33**
Orestimba Creek at River Road	14-Jul-10	0.06	**4.00**

Table 3: Chlorpyrifos Detections - January through August 2010

Location	Sample Date	Concentration (µg/L)	Concentration Ratio
Ramona Lake	09-Mar-10	0.013 (j)	0.87
Ramona Lake	11-May-10	0.015	**1.00**
Ramona Lake	14-Jul-10	0.014 (j)	0.93
San Joaquin River at PID Pumps	11-May-10	0.04	**2.67**
San Joaquin River at PID Pumps	14-Jul-10	0.019	**1.27**
San Joaquin river at Sack Dam	14-Jul-10	0.036	**2.40**
Salt Slough at Sand Dam	14-Jul-10	0.095	**6.33**
Salt Slough at Sand Dam	10-Aug-10	0.038	**2.53**
Turner Slough	14-Jul-10	0.011 (j)	0.73
Belwett Drain	25-Jan-10	0.35	**23.33**
Westley Wasteway	11-May-10	0.012 (j)	0.80
Westley Wasteway	14-Jul-10	0.13	**8.67**

(j) indicates that detected concentration is below the reporting limit
Bold indicates that the detected concentration has exceeded the loading capacity

Figure 1: 2010 Chlorpyrifos Detections and Exceedances
January through August 2010



As indicated in Table 3, several of the tributaries within the Westside Coalition are not in compliance with the TMDL requirements.

Objective 3 and 4: Management Practices.

Pesticides are likely to enter the waterbodies through two mechanisms: surface run off (as either tailwater or storm runoff) and spray drift. Spray drift is likely to come from material applications adjacent to the waterbody or a discharging drain. Pesticides carried by tailwater however, could originate virtually anywhere within the subwatershed. To address pesticide exceedances (among other issues), the Westside Coalition submitted a management plan in 2008 and is in the process of implementing focused watershed plans in the Hospital Creek, Ingram Creek, Westley Wasteway, Del Puerto Creek, and Orestimba Creek subwatershed. Thus far, implemented management practices have focused on:

- Grower awareness through outreach and education.
- Tailwater discharge management through tailwater ponds and tailwater return systems.
- Tailwater reduction through the installation of high-efficiency irrigation systems.

A detailed review of management practice activities is presented in the Westside Coalitions 2010 Irrigation Season Semi-annual Report.

Despite the efforts of growers within the Westside Coalition to minimize the discharge of chlorpyrifos, it is evident that more work is required. A number of grower and PCA meetings have been scheduled to increase awareness regarding the chlorpyrifos detections and to help growers reduce or eliminate future detections.

Objective 5 and 6: Water Quality Impacts and Aquatic Toxicity.

The Westside Coalition MRP includes analysis for chemistry; OP, OC, carbamate, and herbicide pesticides; aquatic toxicity for *Ceriodaphnia dubia*, algae and fathead minnow; and sediment toxicity. Toxicity follow up analyses can include dilution series and toxicity identification evaluations (TIEs) for aquatic toxicity, and sediment pesticide analyses (including pyrethroids and chlorpyrifos) for sediment toxicity. As both chlorpyrifos and diazinon are insecticides, acute water quality impacts would be expected to occur to *Ceriodaphnia dubia* in the aquatic phase and to *Hyalella azteca* in the sediment phase. Chlorpyrifos is known to bind to sediment and is expected to have the potential to contribute to sediment toxicity.

During the Period from January through August, the Westside Coalition measured significant toxicity to *Ceriodaphnia dubia* seven times. Four of those occurred during January (Rain Event 10 and Event 63), with three others occurring during the irrigation season in March, May, and August. **Table 4** shows the sites and dates of measured toxicity to *Ceriodaphnia dubia* as well as the insecticides detected in the sample.

Table 4: Significant Toxicity Summary for *Ceriodaphnia Dubia*

Monitoring Site	Sample Date	% Survival	Detected Insecticides
Los Banos Creek at Hwy 140	1/12/10	18%	None
Salt Slough at Lander Ave.	1/12/10	65%	None
SJR at Sack Dam	1/21/10	50%	None
Blewett Drain	1/25/10	0%	Chlorpyrifos (0.35μg/L), DDE (0.016 μg/L)
Hospital Creek	1/25/10	0%	Chlorpyrifos (0.22μg/L), DDE (0.014 μg/L), Endrin (0.009j μg/L)
Del Puerto Creek at Hwy 33	3/9/10	40%	None
Marshall Road Drain	5/11/10	0%	Chlorpyrifos (0.53μg/L)
Turner Slough	8/10/10	75%	None

Chlorpyrifos was present in three of the seven samples which measured significant toxicity at levels that would be expected to reduce survival. DDE (Blewett Drain and Hospital Creek) and endrin (Hospital Creek) were also detected, however the concentrations of these materials was low and they are not likely to have contributed to the toxicity. Despite a wide spectrum of pesticide analysis, no pesticides were detected in the remaining four samples and the cause of toxicity was not apparent. From this data, it appears that, when the cause of toxicity is discernable, chlorpyrifos is likely contributing.

A review of **Figure 1** indicates that the majority of chlorpyrifos detections occurred during July. July is among the hottest months of the irrigation season and is the peak of irrigation and pest management activities. During this July, chlorpyrifos was detected in 14 samples, 12 of which were in excess of the recommended water quality value. However there was no observed toxicity to *Ceriodaphnia dubia*, implying that the chlorpyrifos discharges had no aquatic impact (at least in terms of acute toxicity). The cause for this absence of toxicity was not investigated, however it is speculated that the material became bound to suspended sediment and was not readily available to the aquatic organisms.

Objective 7: Effectiveness of Management Practices.
A detailed review of the Westside Coalition's management practices are included in the November 30th, 2010 semi-annual report. Despite the efforts of growers within the Westside Coalition to minimize the discharge of chlorpyrifos, it is evident that more work is required. A number of grower and PCA meetings have been scheduled to increase awareness regarding the chlorpyrifos detections and to help growers reduce or eliminate future detections.