San Joaquin Valley Drainage Authority

Westside San Joaquin River Watershed Coalition

Semi-Annual Monitoring Report

2009/2010 Non-Irrigation Season Report

Covering the period: September 2009 through February 2010

(Sampling Events 59 through 64, Rain Events 8, 9, and 10)

June 15, 2010

Prepared by:
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SAN JOAQUIN VALLEY DRAINAGE AUTHORITY

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June 11, 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 June 30, 2010 semi-annual monitoring report

Dear Pamela,

Attached is the June 30, 2010 semi-annual monitoring report as required under our Monitoring and Reporting Program Order No. R5-2008-0831. This report covers the non-irrigation season monitoring from September 2009 through February 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

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SECTION 1: EXECUTIVE SUMMARY

This report covers the 2009/2010 non-irrigation season sampling events beginning September 2009 through February 2010 (Event 59 through Event 64 and Rain Events 8, 9, and 10). 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 and are often dry during the non-irrigation season. A number of storms contributed significant precipitation within the Westside Coalition. Subsequently, rain event samples were collected on three separate occasions:

- Rain Event 8 – October 14th and 15th (Northerly region only)
- Rain Event 9 – December 8th and 9th (Southerly region only)
- Rain Event 10 – January 21st, 25th, and 26th (both regions)

See **Section 3** for a discussion of rainfall and sample collection during each event.

In accordance with the Westside Coalition's Monitoring and Reporting Plan (MRP – see MRP Order No. R5-2008-0831), select pesticides and toxicity analysis is performed only at four monitoring sites (San Joaquin River at Lander Avenue, Salt Slough at Lander Avenue, Mud Slough upstream of the San Luis Drain, and Los Banos Creek at Highway 140) during the non-irrigation season. The remaining sites are tested for core constituents only[1].

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 ten times, nine of which were for *Ceriodaphnia dubia* and one for algae. These are summarized in **Table 1** below.

Table 1: Summary of Toxicity.

Event	Site	Species
Rain Event 8 (October)	Hospital Creek	*Ceriodaphnia dubia*
Rain Event 8 (October)	Ramona Lake	*Ceriodaphnia dubia*
Rain Event 8 (October)	Delta-Mendota Canal at Del Puerto	*Ceriodaphnia dubia*
Event 61 (November)	Salt Sl. at Lander Ave (Field dup only)	*Ceriodaphnia dubia*
Event 63 (January)	Los Banos Creek at Hwy 140	*Ceriodaphnia dubia*
Event 63 (January)	Salt Sl. at Lander Ave (Field dup only)	*Ceriodaphnia dubia*
Rain Event 10 (January)	Poso Slough	Algae
Rain Event 10 (January)	San Joaquin River at Sack Dam	*Ceriodaphnia dubia*
Rain Event 10 (January)	Blewett Drain	*Ceriodaphnia dubia*
Rain Event 10 (January)	Hospital Creek	*Ceriodaphnia dubia*

During both Event 61 and Event 63, the Salt Slough field duplicate sample indicated toxicity while the event sample did not. In both cases, the calculated RPD exceeded 25% and the cause for this difference is not apparent. 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**.

[1] Rain event samples are tested for pesticides and aquatic toxicity. See MRP Order No. R5-2008-0831.

Sediment samples were collected at nine monitoring sites in September 2009 (Event 59) and tested for toxicity to *Hyalella azteca*. Significant sediment toxicity was observed at three sites (Hospital Creek, Ingram Creek and Del Puerto Creek near Cox Road). See **Sections 6** and **8** for a discussion of sediment toxicity.

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.

Table 2: September 2009 through February 2010 Sampling Events Summary

Map Designation	Monitoring Site	Event 59		Event 60 - Rain E. 8	Event 61	Event 62 - Rain E. 9	Event 63	Rain Event 10	Event 64
	Discharge Sites	Sept		Oct	Nov	Dec	Jan	Jan	Feb
1	Hospital Cr at River Road	NP	SS	S	NP	NP	NP	S	NP
2	Ingram Cr at River Road	S	SS	S	S	NF	NF	S	NF
3	Westley Wasteway near Cox Road	S	SS	NA	S	NF	NA	NA	NA
4	Del Puerto Cr near Cox Road	S	SS	S	NF	NF	NF	S	S
5	Del Puerto Cr at Hwy 33	NP	NF	NF	NP	NP	NP	S	NP
7	Ramona Lake near Fig Avenue	S	SS	S	NF	S	NF	S	S
8	Marshall Road Drain near River Road	S	NP	S	NF	NF	NF	S	NF
9	Orestimba Cr at River Road	S	SS	S	S	NF	NF	S	S
10	Orestimba Cr at Hwy 33	NP	SS	S	NP	NP	NP	S	NP
11	Newman Wasteway near Hills Ferry Road	S	SS	S	NA	S	S	S	S
13	San Joaquin River at Lander Avenue	S	NP	S	S	S	S	S	S
14	Mud Slough u/s San Luis Drain	S	NP	S	S	S	S	S	S
15	Salt Slough at Lander Avenue	S	NP	S	S	S	S	S	S
16	Salt Slough at Sand Dam	NP	NP	NP	NP	S	NP	S	NP
17	Los Banos Creek at Highway 140	S	NP	S	S	S	S	S	S
18	Los Banos Creek at China Camp Road	S	SS	S	S	S	S	S	S
19	Turner Slough near Edminster Road	S	NP	NA	NA	S	S	S	S
20	Blewett Drain near Highway 132	S	NP	NF	NF	NF	NF	S	S
21	Poso Slough at Indiana Avenue	S	NP	S	S	S	S	S	S
24	Los Banos Creek at Sunset Ave	NF	NP	NF	NF	NF	NF	NF	NF
25	Little Panoche Cr at Western Boundary	NF	NP	NF	NF	NF	NF	NF	NF
26	Little Panoche Cr at San Luis Canal	NF	NP	NF	NF	NF	NF	NF	NF
27	Russell Ave. Drain at San Luis Canal	NF	NP	NF	NF	NF	NF	NF	NF
	Source Water Sites								
12	San Joaquin River at Sack Dam	S	NP	S	S	NF	S	S	S
22	San Joaquin River at PID Pumps	S	NP	S	S	S	S	S	S
23	Delta Mendota Canal at Del Puerto WD	S	NP	S	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. None of the San Luis Water District sites discharged during this report period.

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							Pesticides				
		Irrigation (Mar-Aug)*	Non-Irrigation (Sep-Feb)*	Rain Event (2x per year)	Ceriodaphnia Toxicity	Fathead Toxicity	Algae Toxicity	Sediment Toxicity	OP	OC	Group A	Carb	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.

Higher than average rainfall occurred during the 2009/2010 non-irrigation season, resulting in three separate rain event sample collections. Despite the rainfall however, several sites were dry or had insufficient ponded water for sample collection during the reporting period. Note that sites are considered to have no flow if there is no measurable discharge past the site. Water samples are collected from "no flow" sites if there is sufficient ponded water to submerge the sample container. The four San Luis Water District Sites (Los Banos Creek at Sunset Ave., Little Panoche Creek at Western Boundary, Little Panoche Creek at San Luis Canal, and Russell Ave. Drain at San Luis Canal) were dry for the entire non-irrigation season and were not sampled.

Three CIMIS[2] stations are monitored by the Westside Coalition for rainfall: Patterson, Los Banos, and Panoche. Additionally, rainfall records from Central California Irrigation District (CCID) were compiled for the reporting period. **Table 5** summarizes the monthly rainfall measured at each station.

Table 5: CIMIS Measured Rainfall

Month	Patterson	Los Banos	CCID	Panoche
September	0.23	0.11	0.01	0.01
October	3.28	1.19	1.30	0.16
November	0.08	0.24	0.34	0.04
December	1.81	1.31*	1.68	0
January	4.08	1.53*	2.62	1.14
February	2.09	0.24*	2.06	2.00

* Missing significant data.

Data collected by the CIMIS stations is combined with weather forecast reports and visual inspection of the monitoring sites by the Field Sampling Crews to determine if a rain event sample collection is appropriate. A rain event sample collection is triggered if the Field Sampling Crew believes that the majority of flow at a majority of the stations within that region is comprised of rain runoff. Note also that soil saturation level, ground slope, and cover crop also impact rainfall runoff.

Event 59, September 14th and 15th, 2009.

Sediment samples were collected on September 14th at 9 monitoring sites (see **Sections 6** and **8**). Non-irrigation water samples were collected on September 15th. A total of 18 sites were sampled. The four wetland sites were tested for aquatic toxicity to *Ceriodaphnia dubia* (San Joaquin River at Lander Ave., Salt Slough at Lander Ave., Mud Slough, and Los Banos Creek at Highway 140) and algae (San Joaquin River at Lander Ave and Salt Slough at Lander Ave. only). No aquatic toxicity was measured in any of the samples. Sediment toxicity was measured at Hospital Creek, Ingram Creek, and Del Puerto Creek near Cox Road. Sediment samples from all three sites were tested for pesticides. See **Section 8**.

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

Event 60 (October 13th) and Rain Event 8 (October 14th and 15th).
Non-irrigation season water samples were collected on October 13th in the Southerly region. No aquatic toxicity was observed in any of the four wetland sites. The CIMIS station in Patterson measured almost 2.9 inches of rain fall on October 13th, resulting in sufficient runoff for a Rain Event collection in the Northerly region on October 14th and 15th. Significantly less rainfall fell in the southerly region (the Los Banos CIMIS station measured 1.13 inches on October 13th), which was likely absorbed into the soil and did not contribute to runoff. Insufficient flow was present at Blewett Drain and Del Puerto Creek at Highway 33, however all of the remaining sites in the Northerly region were sampled. Aquatic toxicity was observed for *Ceriodaphnia dubia* at Hospital Creek (0% survival), Ramona Lake (40% survival) and the Delta-Mendota Canal at Del Puerto (15% survival). TIEs were initiated for all three sites and a dilution series test was initiated on the Hospital Creek site. The dilution series test measured 16.4 toxic units for the Hospital Creek sample and the TIE indicated a pesticide was the likely cause (insecticides were detected in the sample). The TIE for Ramona Lake indicated that a particulate associated contaminate was the likely cause. The TIE for the Delta-Mendota Canal sample indicated that a particulate associated contaminate was the likely cause. No pesticides were detected in either the Ramona Lake or Delta-Mendota Canal samples.

Event 61, November 10, 2009.
Non-irrigation season water samples were collected in both the Northerly and Southerly regions of the Westside Coalition. There was no flow at Del Puerto Creek near Cox Road, Ramona Lake, Marshall Road Drain, or Blewett Drain. A locked gate prevented access to Newman Wasteway. Aquatic toxicity samples were collected at the four wetland sites. Statistically significant toxicity was measured in the Salt Slough field duplicate sample (65% survival) but not in the event sample (85% survival). No pesticides were detected at the site and the cause of the observed toxicity is not apparent.

Event 62 (December 8th, 2009) and Rain Event 9 (December 8th and 9th).
Non-irrigation season samples were collected in the Northerly region on December 8th. Insufficient flow was present at all of the Northerly sites except for Ramona Lake, San Joaquin River at PID pumps, and the Delta-Mendota Canal at Del Puerto Water District. Saturated soil conditions from storms in October and November allowed for a series of small storms in December to trigger a rain event samples collection in the Southerly region on December 8th and 9th. Aquatic toxicity, pesticide, and chemistry samples were collected at all of the Southerly region sites except the San Joaquin River at Sack Dam (no flow). No toxicity was observed in any of the samples.

Event 63, January 12, 2010.
Non-irrigation season samples were collected on January 12th in accordance with the Westside Coalition's Monitoring Program. In the Northerly region, only the source water sites were flowing (San Joaquin River at PID Pumps, and Delta-Mendota Canal at Del Puerto Water District). All other Northerly sites were either dry or contained insufficient water to collect a sample. All sites were sampled in the Southerly region. Significant toxicity to *Ceriodaphnia dubia* was observed at Los Banos Creek at Highway 140 (18.3% survival) and the filed duplicate sample at Salt Slough at Lander Ave. (65% survival). The event sample at Salt Slough did not

exhibit toxicity (100% survival). A TIE was performed on the Los Banos Creek sample, indicating that particulate associated contaminants were the likely cause and may have been a combination of metals and pesticides. No insecticides were detected at either site (diuron was detected at Los Banos Creek, but is not suspected of contributing to *Ceriodaphnia* toxicity). Metals were not tested at Los Banos Creek (per the Westside Coalition MRP).

Rain Event 10, January 21st, 25th, and 26th, 2010.

A long series of storms in mid-January triggered rain event sample collections in both the Northerly and Southerly regions. The Patterson CIMIS station measured rainfall over twelve days, totaling more than 4 inches in January. The Los Banos CIMIS station malfunctioned through a portion of January but measured 1.5 inches when it was operating. The CCID rain gage measured 2.62 inches for the month. Aquatic toxicity to algae was observed at Poso Slough (0 cell growth). A dilution series measured 5.14 toxic units and the TIE indicated that the probable cause was/were polarized materials. The levels of dissolved metals were below the expected effect concentrations and elevated levels of prowl (0.14 µg/L) and diuron (38 µg/L) were detected in the sample. Based on experience with other events, the Westside Coalition believes that diuron is the likely cause of toxicity. Aquatic toxicity to *Ceriodaphnia dubia* was observed at San Joaquin River at Sack Dam (50% survival), Blewett Drain (0% survival) and Hospital Creek (0% survival). TIEs were performed on all three sample sets and dilution series test were performed on the Blewett Drain and Hospital Creek. Both the Hospital Creek and Blewett Drain samples contained elevated levels of chlorpyrifos which likely cause the toxicity. Baseline toxicity was not persistent in the Hospital Creek dilution series or TIE test and no interpretation was possible. The Blewett Drain dilution series test measured 1.47 toxic units and the TIE indicated that pesticides were likely the cause of toxicity.

Because some of the creeks in the Coastal Range near Patterson were flowing, a sample was collected at Orestimba Creek upstream of the California Aqueduct (collected 1/26/10). This sample was tested for metals and general chemistry constituents in an attempt to characterize some of the water coming from the Coastal Range. This data is summarized below.

Analyte	Results	Units
Hardness as CaCO3	180	mg/L
Dissolved Solids	250	mg/L
Boron (Total/Dissolved)	170/170	µg/L
Arsenic (Total/Dissolved)	0.55/ 0.52	µg/L
Cadmium (Total/Dissolved)	ND/ND	µg/L
Copper (Total/Dissolved)	1.1/0.99	µg/L
Lead (Total/Dissolved)	ND/ND	µg/L
Nickel (Total/Dissolved)	2.1/1.6	µg/L
Selenium (Total/Dissolved)	0.31j /0.28j	µg/L
Zinc (Total/Dissolved)	ND/ND	µg/L
Turbidity	2.4	NTU
EC	410	µmhos/cm
Dissolved Organic Carbon	4.2	mg/L
Total Organic Carbon	4.2	mg/L
Nitrate + Nitrite as N	0.17	mg/L
Suspended Solids	3	mg/L

Event 64, February 9th, 2010.
Non-irrigation season samples were collected on February 9th in accordance with the Westside Coalition's Monitoring Program. In the Northerly region, Ingram Creek and Marshall Road Drain were dry and no access was available to Westley Wasteway. All of the Southerly Region sites were sampled in accordance with the Monitoring Program. No aquatic toxicity was observed in the samples from the four wetland sites.

Samples were also collected and tested for E. coli at Orestimba and Del Puerto Creeks west of I-5. These samples are not part of the Monitoring Program, but were collected to help characterize water from these creeks prior to an significant agricultural land use. No E. coli was measured in either sample.

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. Since inclusion within the Westside Coalition, this site has not had any observed flow and has not been sampled.
- 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.

FIGURE 1: WATERSHED MAP W/ MONITORING SITES.

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 6** shows the top ten crops within the Coalition area based on 2009 Agricultural Commissioner pesticide use data.

Table 6: Top 10 Crops Grown by County

Fresno	Merced	Stanislaus
Alfalfa	Tomatoes	Almonds
Tomatoes	Alfalfa	Tomatoes
Cotton	Cotton	Beans
Melons	Almonds	Walnuts
Almonds	Melons	Grapes
Grapes	Corn	Corn
Wheat/Barley	Wheat/Barley	Alfalfa
Corn	Rangeland/Uncultivated	Apricots
Asparagus	Beans	Rangeland/uncultivated
Walnuts	Walnuts	Olives

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 7** 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.

During the non-irrigation season, there is little agricultural activity or irrigation. Pesticide application is generally limited to orchard dormant spray (often occurring in January/February), road and berm weed spraying, and field and orchard weed spraying. Herbicides are typically the most commonly applied pesticide during the non-irrigation season. Absent irrigation, runoff caused by storm events is the primary mechanism that carries these materials off the fields and into the waterways.

Table 7: Stanislaus County 2009 Non-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		
	Herbicides	x	x		x		
	Organochlorine						
	Organophosphorus		x		x		
	Pyrethroid		x		x		
Orestimba Cr. Subwatershed	Carbamates						
	Herbicides	x	x		x		x
	Organochlorine						
	Organophosphorus		x		x		
	Pyrethroid		x				x
Westley Wasteway Subwatershed	Carbamates		x				
	Herbicides		x		x		
	Organochlorine						
	Organophosphorus		x				
	Pyrethroid		x				

Table 8 shows the 10 most commonly applied pesticides (by acreage) within the three counties occupied by the Westside Coalition.

Table 8: Most Commonly Applied Pesticides by County

Fresno County		Merced County		Stanislaus County	
Pesticide	**Class**	**Pesticide**	**Class**	**Pesticide**	**Class**
Glyphosate	Herbicide	Ethephon	Organophosphate	Glyphosate	Herbicide
Carbaryl	Carbamate	Oxyfluorfen	Herbicide	Oxyfluorfen	Herbicide
Chlorpyrifos	Organophosphate	Diuron	Herbicide	Pendimethalin	Herbicide
Chlorthal-Dimethyl	Herbicide	Thidiazuron	Herbicide	Dimethoate	Organophosphate
Clethodim	Herbicide	Glyphosate	Herbicide	Diuron	Herbicide
Diazinon	Organophosphate	Paraquat D.	Herbicide	Lambda-Cyhalothrin	Pyrethroid
Dimethoate	Organophosphate	Pendimethalin	Herbicide	Simazine	Herbicide
Bifethrin	Pyrethroid	Hexazinone	Herbicide	Norflurazon	Herbicide
Ethephon	Organophosphate	Cypermethrin	Pyrethroid	Paraquat D.	Herbicide
Thidiazuron	Herbicide	Prometryn	Herbicide	Ethephon	Organophosphate

This data was provided by the Agricultural Commissioner for each county. Available data spanned from September through December 2009, covering approximately 60% of the non-irrigation season. Data for the remainder of the non-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.** Eight 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 178 duplicate analyses were completed and compared to the event sample results. Twenty eight duplicate samples exceeded the 25% relative percent difference (RPD) established in the QAPP for:

Ammonia	Cadmium (Total)	Copper (Total and Dissolved)
E. coli	Hardness	Lead (Total)
Nickel (Total)	Nitrate+Nitrite as N	Orthophosphate
Selenium	TKN	Total Suspended Solids
Turbidity	Zinc (Total and Dissolved)	

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. Twenty one of the 28 results exceeding the RPD criteria occurred during rain events and are likely reflective of the heterogeneous nature of storm runoff. Furthermore, five 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.

Eight field blank sample sets were analyzed during the report period (178 results, total). Of these, 12 resulted in values greater than 20% of the event sample result, including:

Ammonia	Copper (total and dissolved)	Nickel (dissolved)
Nitrate+Nitrite as N	TKN	Turbidity
Zinc (total and dissolved)		

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

- **Pesticide Analyses.** Eight field duplicate and field blank samples sets were collected during the reporting period and analyzed for pesticides. There were no pesticide detections in any of the field blank samples. Calculated RPD for field duplicate results exceeded the 25% threshold for two analytes during the reporting period (DDE and EPTC in Rain Event 8). 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 field duplicate *Ceriodaphnia dubia* results exceeded the 25% RPD for criteria in the Event 61 (RPD = 27%) and Event 62 (RPD =42%). In both cases, the statistically significant toxicity was measured in the field duplicate sample but not in the event sample. No cause of toxicity was apparent in either sample.

- **Sediment Toxicity Analyses.** A field duplicate sample was collected for sediment toxicity during the September sampling event (Event 59). The measured RPD was 1.3%.

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%.
- Sample Analysis: Completeness for sample analysis during this reporting period is 100%.
- 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 2009/2010 non-irrigation season months and there was not significant agricultural activity during this period however, rain event samples were collected on three occasions. **Attachment 2** summarizes all available data for each measurement of significant aquatic toxicity.

Ceriodaphnia dubia. Toxicity to *Ceriodaphnia dubia* was measured nine times, six of which occurred during rain events. Table 9 summarizes the measured toxicity to *Ceriodaphnia dubia* during this reporting period. See **Attachment 2** for a more detailed summary.

Table 9: Summary to *Ceriodaphnia dubia* Toxicity.

Event	Monitoring Site	Apparent Cause
Rain Event 8	Hospital Creek	Chlorpyrifos
Rain Event 8	Ramona Lake	Unknown
Rain Event 8	Delta-Mendota Canal	Unknown
Event 61	Salt Slough at Lander Ave.	Unknown
Event 63	Los Banos Creek at Hwy 140	Unknown
Event 63	Salt Slough at Lander Ave.	Unknown
Rain Event 10	San Joaquin River at Sack Dam	Unknown
Rain Event 10	Hospital Creek	Chlorpyrifos
Rain Event 10	Blewett Drain	Chlorpyrifos

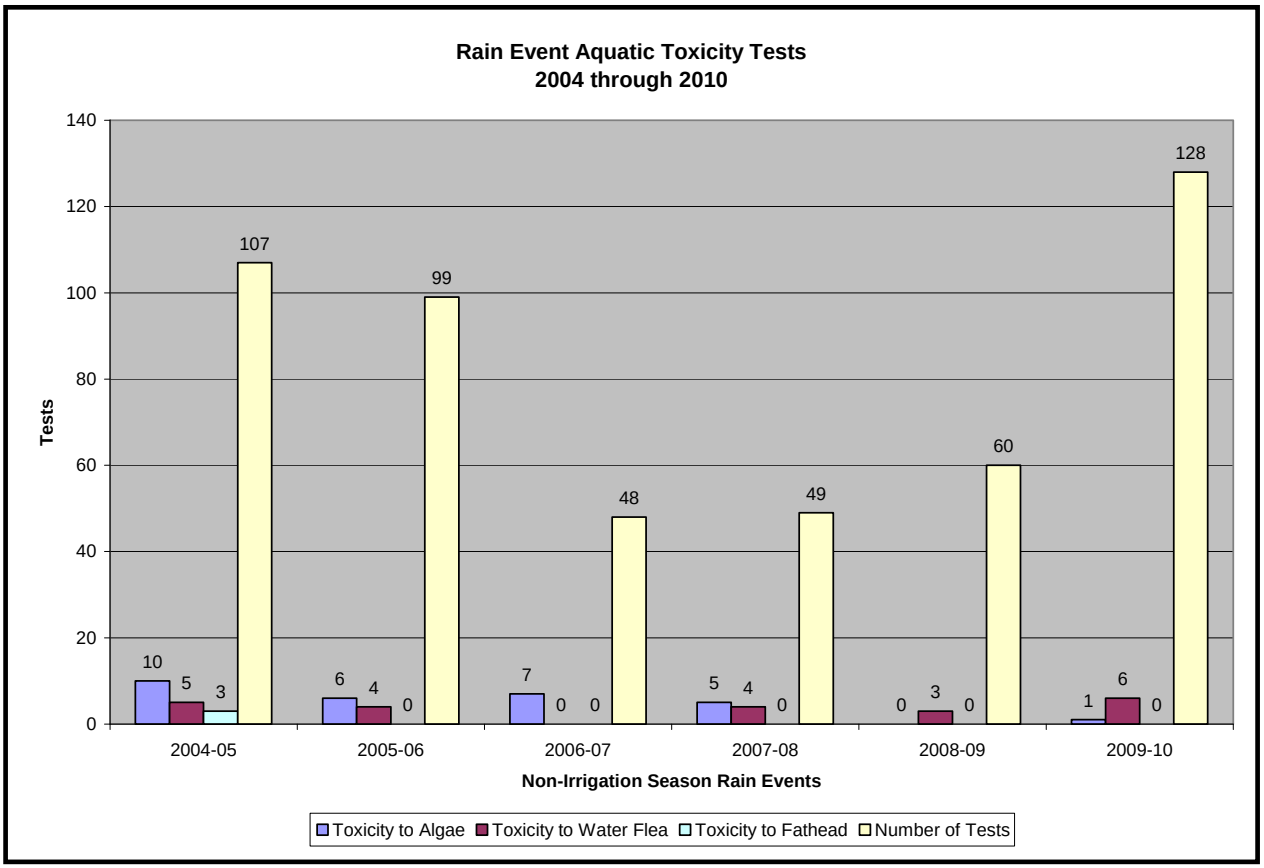
With the exception of Hospital Creek and Blewett Drain (which both have similar cropping patterns), none of the samples contained detected pesticides that could be linked to the toxicity. For Events 61 and 63, toxicity was measured in the field duplicate sample for Salt Slough, but not in the event sample, suggesting significant water quality variability.

Selenastrum capricornutum (algae). Toxicity to algae was observed during Rain Event 10 at Poso Slough. Elevated levels of diuron were detected and are suspected to be the cause of toxicity.

Pimephales Promelas (fathead minnow). No measurements of fathead minnow toxicity were observed during this reporting period.

Review of Rain Event Aquatic Toxicity. This reporting period saw the collection of the tenth rain event since the inception of the program in 2004. Monitoring has been conducted through wet year types (2005 and 2006), dry/below normal years (2009 and 2010), and critical year types (2007 and 2008). **Figure 2** shows the number of tests and observations of significant toxicity to each species.

Figure 2



Since the start of the Westside Coalition's monitoring program, there has been a general declining trend in observed toxicity to all three species during rain events.

Sediment Toxicity (*Hyalella azteca*). Sediment samples were collected during Event 59 (September) and tested for toxicity to *Hyalella azteca*. Ten samples were collected (including one duplicate), and significant toxicity was measured at three sites (Hospital Creek – 10% survival, Ingram Creek – 0% survival, and Del Puerto Creek near Cox Road – 13.8% survival). Since all three sites measured survival less than 50%, samples from these sites were tested for selected pesticides including chlorpyrifos, legacy organochlorines and pyrethroids. **Table 10** summarizes the detected pesticide data at those four sites. See **Appendix C** for the full laboratory report. **Table 11** shows the sediment toxicity results since the beginning of the monitoring program.

Table 10: Detected Pesticides in Sediment Samples (March 2009).

	Hospital Creek	Hospital Creek	Del Puerto Creek nr. Cox Rd.
Sediment Toxicity (% survival)	10	0	13.8
DDT (mg/kg)	ND	0.015	ND
DDD (mg/kg)	0.0046	0.0098	0.0065
DDE (mg/kg)	0.03	0.096	0.045
Bifenthrin (µg/kg)	380	6.5	4.3
Chlorpyrifos (µg/kg)	6.4	1.7	0.78
Cypermethrin (µg/kg)	ND	0.27j	0.3j
Es/Fenvalerate (µg/kg)	0.35j	3.9	1.1
Lambda-Cyhalothrin (µg/kg)	1.3	62	11
Permethrin (µg/kg)	7.8	74	2
TOC (mg/kg)	3400	8600	7100

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

Table 11: Sediment Toxicity Results.

Site	Sept 09 % Survival	Sept 09 Toxicity (Y/N)	Mar 09 % Survival	Mar 09 Toxicity (Y/N)	Sept 08 % Survival	Sept 08 Toxicity (Y/N)	Mar 08 % Survival	Mar 08 Toxicity (Y/N)
Blewett Drain (Vernalis at hwy 132)			18.8	**Y**	16.2	**Y**		
Hospital Creek	10	**Y**	0	**Y**	25	**Y**	80	**Y**
Ingram Creek	0	**Y**	18.8	**Y**	0	**Y**	2.5	**Y**
Westley Wasteway	92.5	N	82.5	**Y**	1.25	**Y**	65	**Y**
Del Puerto Creek (Cox Rd)	13.8	**Y**	97.5	N	62.5	**Y**	N/A	N/A
Del Puerto Creek (Hwy 33)			97.5	N	N/A	N/A	N/A	N/A
Orestimba Creek at River Rd.	87.5	N	91.2	**Y**	80	N	95	N
Orestimba Creek at Hwy 33	80	N	88.8	**Y**	92.5	N	90	N
Ramona Lake at Fig Ave.	92.5	N	97.5	N	98.8	N	68.8	**Y**
Newman Wasteway	98.8	N	98.8	N	82.5	**Y**	97.5	N
Poso Slough			N/A	N/A	72.5	**Y**	98.8	N
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.	96.2	N	97.5	N	87.5	**Y**	92.5	N
Mud Slough								

Site	Sept 07 % Survival	Sept 07 Toxicity (Y/N)	Mar 07 % Survival	Mar 07 Toxicity (Y/N)	Sep 06 % Survival	Sep 06 Toxicity (Y/N)	Mar 06 % Survival	Mar 06 Toxicity (Y/N)
Blewett Drain (Vernalis at hwy 132)								
Hospital Creek	16.2	**Y**	0	**Y**	**1.25**	**Y**	**82.5**	**Y**
Ingram Creek	0	**Y**	0	**Y**	**0**	**Y**	**23.8**	**Y**
Westley Wasteway	0	**Y**	0	**Y**	**1.25**	**Y**	**0**	**Y**
Del Puerto Creek (Cox Rd)	93.8	N	81.2	**Y**	**55**	**Y**	**0**	**Y**
Del Puerto Creek (Hwy 33)	58.8	**Y**	91.2	**Y**	**1.25**	**Y**	**68.8**	**Y**
Orestimba Creek at River Rd.	98.8	N	90	N	96.25	N	97.5	N
Orestimba Creek at Hwy 33	95	N	13.8	**Y**	**6.25**	**Y**	66.3	N
Ramona Lake at Fig Ave.	91.2	**Y**	N/A	N/A	N/A	N/A	N/A	N/A
Newman Wasteway	51.2	**Y**	93.8	N	98.75	N	90	N
Poso Slough								
Turner Slough	92.5	N	96.2	N	98.75	N	91.3	N
SJR at Lander	95	N	90	**Y**	95	N	N/A	N/A
Salt Slough at Lander	86.2	N	96.2	N	97.5	N	100	N
Salt Slough at Sand Dam	92.5	N	96.2	N	98.75	N	95	N
Los Banos Creek at Hwy 140	87.5	N	96.2	N	98.75	N	95	N
Los Banos Creek at China Camp Rd.	13.8	**Y**	98.8	N	100	N	93.8	N
Mud Slough	90	N	96.2	N	100	N	98.8	N

Site	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	**0**	**Y**	**16.2**	**Y**	85	N
Ingram Creek	**0**	**Y**	**32.5**	**Y**	**0**	**Y**
Westley Wasteway	**0**	**Y**	**0**	**Y**	95.7	N
Del Puerto Creek (Cox Rd)	**1.3**	**Y**	N/A	N/A	93.75	N
Del Puerto Creek (Hwy 33)	**0**	**Y**	**0**	**Y**	N/A	N/A
Orestimba Creek at River Rd.	93.8	N	**51.2**	**Y**	95	N
Orestimba Creek at Hwy 33	**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
Newman Wasteway	**76.3**	**Y**	**72.5**	**Y**	90	N
Poso Slough						
Turner Slough	95	N	85	N	93.75	N
SJR at Lander	97.5	N	91.2	N	88.75	N
Salt Slough at Lander	98.8	N	**62.5**	**Y**	92.5	N
Salt Slough at Sand Dam	91.3	N	87.5	N	95	N
Los Banos Creek at Hwy 140	97.5	N	**56.2**	**Y**	93.75	N
Los Banos Creek at China Camp Rd.	**91.3**	**Y**	**58.8**	**Y**	95	N
Mud Slough	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.

A total of 17 different pesticides were detected in water samples during the 2009/2010 non-irrigation season for a total of 84 detections. Twenty four of these detections (29%) were below the reporting limit and 19 were legacy pesticides that are no longer in use (DDT, DDE, gamma-chlordane, and endrin).

- Carbaryl (1 detection): Carbaryl is a broad spectrum carbamate insecticide used on a variety of crops including fruit, citrus, nut trees, cotton, and lawn/turf.
- Chlordane-gamma (3 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 (8 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.
- DDT/DDD/DDE (3 DDT detections, 10 DDE detections): 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 (1 detection): 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.
- Dieldrin (2 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 (5 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 (22 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.
- Endrin (3 detection): Endrin is an organochlorine insecticide used on cotton, corn, sugar beats, and grain crops. It was banned from agricultural use in 1986.
- EPTC (2 detections): EPTC is a selective thiocarbamate herbicide used to control grassy and broadleaf weeds in a variety of field crops including beans and corn.
- Malathion (1 detection): Malathion is an organophosphate insecticide used on a variety of crops including alfalfa, walnuts, lettuce, grapes, and cotton.
- Methidathion (1 detection): Methidathion is an organophosphate pesticide used to control insects on alfalfa, fruit and nut trees, alfalfa, safflower, and vegetable crops.
- Methomyl (1 detection): Methomyl is a restricted used carbamate insecticide used on a variety of fruit, vegetable, alfalfa, and field crops.
- Prowl (11 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 (9 detections): Simazine is a triazine herbicide used to control broadleaf weeds and annual grasses in a variety of field crops.

Exceedences of Recommended Water Quality Values

Water chemistry analyses were compared to recommended water quality values[3] (RWQV). **Attachment 5** tabulates all of the RWQV exceedances for the reporting period by site.

- **Field, General Physical and Drinking Water Quality Exceedences.** 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 2,800 field and chemistry (non-pesticide) parameters during the reporting period, during which, 227 (8%) results were greater than the RWQVs. Electrical conductivity and total dissolved solids (TDS) accounted for 76 and 73 of these exceedances (respectively, approximately 70% of the exceedances). E. coli results accounted for 41 of these exceedances, 8 for dissolved oxygen, and 13 for pH and 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 were no exceedances of the RWQV for those constituents. 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 severe reduction in the federal water allocation may have caused growers to rely more heavily on wells for irrigation. Most of the groundwater wells within the Westside Coalition are more saline than the surface water supplies.
    - **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 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. 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 or subsurface flows.

[3] 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.

- **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 exceedences.** The Westside Coalition tested for almost than 2,800 pesticides during the reporting period, 97% of which resulted in no detection. Of the detected pesticides (84), 32 (1.1%) were greater than established RWQVs. Of the 32 exceedances, 17 were caused by legacy pesticides (DDT, DDE, endrin, and chlordane), which are not currently in use. Of the remaining 15, 7 were caused by chlorpyrifos, 1 by diazinon, 5 by diuron, 1 by Malathion, and 1 by methamidophos. Pesticide use data from the county Agricultural Commissioners was only available for a portion of the non-irrigation season.

  Compared to the previous non-irrigation season, there were more detected pesticides during this reporting period. This is likely caused by the increase in rainfall compared to the 2008/09 season. During the 2008/09 non-irrigation season, there was only one rain event sample collection and 49 sites were observed to have no flow, compared to three separate rain event collections during this period and 27 sites with no flow. Despite the additional pesticide analyses and resulting detections, both the 2008/09 and 2009/10 non-irrigation seasons measured the same number of exceedances for chlorpyrifos.

  In February, Dr. Lenwood Hall (University of Maryland) performed a preliminary review of chlorpyrifos and diazinon results collected by the Westside Coalition since the beginning of the monitoring program. At this stage, the review is mostly a big-picture, low detail review of the data, however his review found a general declining trend of both chlorpyrifos and diazinon throughout the Westside Coalition. A summary of this review is included in **Appendix E**.

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 11** shows the implementation schedule listed in the Management Plan (see the Management Plan – General Approach, Table 4, October 23, 2008).

Table 12: 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 11th 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. Since that time, the Westside Coalition has implemented a number of activities.

- Management practice inventory. A detailed survey of growers within the Ingram and Hospital creek watershed was conducted early in 2009 and completed in July with 100% participation. The surveys provided a detailed, parcel by parcel view of the grower practices within those watersheds. A summary of the surveys was included in the November 2009 Semi-Annual Monitoring Report. A new survey is being developed for the Focused Plan II watersheds, which will begin circulation in the summer. A draft of this survey is included in **Attachment 6.**
- Sedimentation/tailwater pond funding assistance program. The Westside Coalition has developed a funding assistance program to encourage growers within targeted areas (including the Hospital and Ingram creek watersheds) to construct new and maintain existing tailwater ponds. The program provides 75% of the cost to clean out an existing pond or construct a new pond (up to a maximum of $6,000). To date, this program has funded the clean or construction of fifteen ponds, serving 2620 acres. Approximately $12,000 have been spent (including grant and matching funds).

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 development.

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 Plan, the Westside Coalition collected highly detailed drainage information on the Ingram and Hospital creek subwatersheds (included in the November 2009 Semi-Annual Monitoring Report). As part of the Focused Plan II, detailed subwatershed maps for the Westley Wasteway, Del Puerto Creek, and Orestimba Creek subwatersheds will be developed.

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. However, the lag time between pesticide application and data availability limits the usefulness of this effort. A memo reviewing the procedure and limitations of county PUR data is included in **Attachment 6.**

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, surveys were circulated within the Hospital and Ingram creek watersheds in an attempt to map manure usage. Additional studies to determine the source of E. coli are being considered.

In January of 2010, the Westside Coalition mapped manure usage within the Ingram and Hospital creek subwatersheds. The map was generated using data from the 2008 management practice survey and the usage was mapped on a per-parcel basis. This map is included in **Attachment 6**. According to the available data, manure was applied to a measurable portion of the subwatersheds, but not a majority. Parcels were manure was applied tended to be near the middle of the subwatersheds, and their impact to the presence of E. coli at the monitoring sites is not clear.

8. Continue Reporting and Outreach.

Coalition outreach during this period consisted of member meetings and monthly updates to the Westside Coalition management committee. Outreach was conducted per the tabulation in **Table 13**.

In the reporting period, two general Coalition member meetings were organized in the region: on February 23 (Newman Civic Center) and 24 (Westley Fire Station). Both events were designated as coalition member Annual Meetings and were held in cities in the northern and central region of the Coalition area to accommodate members in each geographic area.

Presentations included updates on water and sediment monitoring results in each of the regions over the last two years. The requirements for management plans and priority watersheds (Ingram and Hospital Creeks) were also described. 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 investigate use of sediment ponds, recirculation systems, vegetative ditches or applications of PAM in irrigation water. Recent studies for several of the practices have provided more support for adopting their use on cropland in the Coalition region (see Appendix A below for details)

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)**.

In October 2009, Coalition staff met with the West Stanislaus Irrigation District (WSID) manager. WSID covers most of the Ingram and Hospital Creek watersheds (see **Figure 1)**. The entire reach of both waterways was traveled by vehicle with notations made on maps regarding crops, irrigation systems and potential drainage pathways. Information from the trip was used to

identify landowners for future individual member meetings. A similar effort was conducted in the Orestimba Creek watershed in January 2010.

Table 13 lists the general grower 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 in **Attachment 6**. Copies of the presentations given at these meetings are also included in **Attachment 6**.

Table 13: Outreach Meetings

Date	Group	Location	Description	Approximate Attendance
Monthly	Meetings of Coalition Steering Committee	Los Banos	Review monitoring, budgeting and management plan implementation	20
11/10/2009	Merced College PCA Class	Merced	Outreach to PCA's and interested parties on management requirements within the Westside Coalition	40
2/23/2010	Newman Annual Meeting	Newman	Oureach, mailed to each owner/operator in Stanislaus and San Joaquin Counites	28
2/24/2010	Westley Annual Meeting	Westley	Outreach, mailed to each owner/operator in Stanislaus and San Joaquin Counites	38
3/2/2010	Cotton Project Meet	Dos Palos	Stakeholder outreach meeting	20
3/2/2010	Individual Operator Tailgate Meetings (3 meeting)	Westley	Parry K. led,	3
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	BMP and Long term plan update.	50

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.

A summary of the recent studies verifying the effectiveness of practices that landowners are being encouraged to adopt is included in **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 that 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 September (Event 59). Significant toxicity was measured at three sites (Hospital Creek – 10% survival, Ingram Creek – 0% survival, and Del Puerto Creek near Cox Road – 13.8% survival). These samples were tested for a variety of pesticides as well as total organic carbon (TOC), see **Table 9**. 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 approaches to address sediment toxicity.

Figure 3 shows the number statistically significant observations during the fall sediment sampling. The fall 2009 sediment results measured the least number of observed toxicity since the beginning of monitoring, and less than half of the number of results in both 2008 and 2007 that measured significant toxicity.

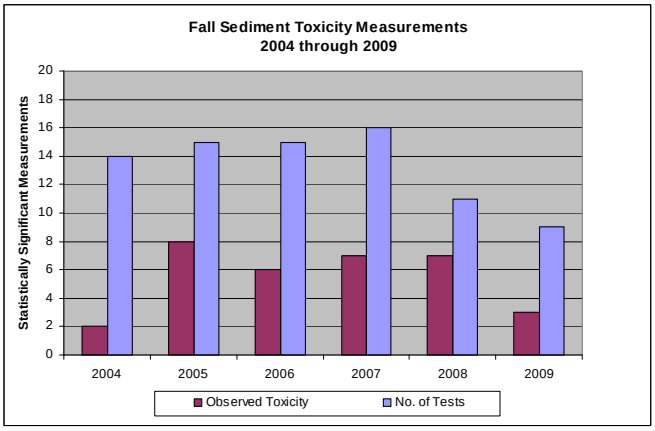


Figure 3: Fall Sediment Toxicity Tests

- **Aquatic Toxicity:** Aquatic toxicity samples were collected at the four wetland sites during non-rain events and tested for *Ceriodaphnia dubia* and algae (San Joaquin River and Salt Slough at Lander Ave only). During rain events, toxicity samples are collected at all discharging sites and tested for toxicity to all three species. A total of 68 tests (including field duplicates) were performed on *Ceriodaphnia dubia*, 42 on fathead minnow, and 59 on algae. During this reporting period, 9 samples indicated significant toxicity to *Ceriodaphnia dubia*. **Attachment 2** provides monitoring results for all of the sites that measured significant toxicity, including a discussion of the TIE and dilution series findings. Pesticides (including chlorpyrifos) were present in three of the samples at sufficient levels to explain the toxicity. However, no insecticides were present in the other samples and the cause of toxicity is not apparent. Additionally, during two events the field duplicate sample at Salt Slough (Lander Ave.) exhibited toxicity while the event sample did not. In both cases, the cause of toxicity was not discerned. One measurement of toxicity to algae was observed in Poso Slough (Rain Event 10). Elevated levels of diuron were detected in the sample and suspected of causing the toxicity. There were no measurements of toxicity to fathead minnow during the reporting period.

- **Pesticide Analyses:** During this reporting period, total of 17 different pesticides were detected in water samples during the 2009/10 non-irrigation season for a total of 84 detections. Thirty two exceeded the established RWQV. The more than half of these exceedances were caused by legacy pesticides like DDT or chlordane (17 exceedances, combined). Pesticide detections were linked to four instances of observed toxicity (three to *Ceriodaphnia dubia*, and one to algae, see **Attachment 2**).

In the case of the algae toxicity, diuron is the suspected cause. In all three of the *Ceriodaphnia dubia* toxicity measurements that could be linked to pesticides, chlorpyrifos was present, along with other pesticides.

- **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 (76 and 73 exceedances, respectively). Bacteria continues to be a leading source of exceedances (41 for E. Coli during this period). Other constituent exceedances include dissolved oxygen (8 exceedances), boron (13 exceedances), and arsenic (2 exceedances). Cadmium, copper, lead, nickel, and zinc results were compared to the calculated RWQV (based on site water hardness) and no exceedances were measured during this reporting period. 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).

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 13**).

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 58 regular monitoring events and 7 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 59	Map	Caltest		APPL	PER				
September, 2009	Desig.	Gen Phy	Drnk Wtr	Pest	Sed Tox	CD Tox	PP Tox	SC Tox	Dup?
Hospital Cr at River Road	HCARR				x				
Ingram Cr at River Road	ICARR	x	x		x				
Westley Wasteway near Cox Road	WWNCR	x	x		x				
Del Puerto Cr near Cox Road	DPCCR	x	x		x				
Del Puerto Cr at Hwy 33	DPCHW				Dry				
Ramona Lake near Fig Avenue	ROLFA	x	x		x				
Marshall Road Drain near River Road	MRDRR	x	x						
Orestimba Cr at River Road	OCARR	x	x		x				
Orestimba Cr at Hwy 33	OCAHW				x				
Newman Wasteway near Hills Ferry Road	NWHFR	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								
Los Banos Creek at Highway 140	LBCHW	x	x	x		x			
Los Banos Creek at China Camp Road	LBCCC	x	x		x				
Turner Slough near Edminster Road	TSAER	x	x						
Blewett Drain near Highway 132	VH132	x	x						
Poso Slough at Indiana Avenue	PSAIA	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 60 (Southerly Region)	Map	Caltest		APPL	PER				
October, 2009	Desig.	Gen Phy	Drnk Wtr	Pest	Sed Tox	CD Tox	PP Tox	SC Tox	Dup?
Hospital Cr at River Road	HCARR								
Ingram Cr at River Road	ICARR								
Westley Wasteway near Cox Road	WWNCR								
Del Puerto Cr near Cox Road	DPCCR								
Del Puerto Cr at Hwy 33	DPCHW								
Ramona Lake near Fig Avenue	ROLFA								
Marshall Road Drain near River Road	MRDRR								
Orestimba Cr at River Road	OCARR								
Orestimba Cr at Hwy 33	OCAHW								
Newman Wasteway near Hills Ferry Road	NWHFR	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								
Los Banos Creek at Highway 140	LBCHW	x	x	x		x			
Los Banos Creek at China Camp Road	LBCCC	x	x						
Turner Slough near Edminster Road	TSAER	No Access							
Blewett Drain near Highway 132	VH132								
Poso Slough at Indiana Avenue	PSAIA	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								
Delta Mendota Canal at Del Puerto WD	DMCDP								

Rain Event 8 (Northerly Region)	Map	Caltest		APPL	PER				
October, 2009	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	x	x	
Ingram Cr at River Road	ICARR	x	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	x	
Del Puerto Cr at Hwy 33	DPCHW	No Flow							
Ramona Lake near Fig Avenue	ROLFA	x	x	x		x	x	x	
Marshall Road Drain near River Road	MRDRR	x	x	x		x	x	x	
Orestimba Cr at River Road	OCARR	x	x	x		x	x	x	
Orestimba Cr at Hwy 33	OCAHW	x	x	x		x	x	x	
Newman Wasteway near Hills Ferry Road	NWHFR								
San Joaquin River at Lander Avenue	SJRLA								
Mud Slough u/s San Luis Drain	MSUSL								
Salt Slough at Lander Avenue	SSALA								
Salt Slough at Sand Dam	SSASD								
Los Banos Creek at Highway 140	LBCHW								
Los Banos Creek at China Camp Road	LBCCC								x
Turner Slough near Edminster Road	TSAER								
Blewett Drain near Highway 132	VH132	No Flow							
Poso Slough at Indiana Avenue	PSAIA								
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								
San Joaquin River at PID Pumps	SJRPP	x	x	x		x	x	x	
Delta Mendota Canal at Del Puerto WD	DMCDP	x	x	x		x	x	x	

Event 61	Map	Caltest		APPL	PER				
November, 2009	Desig.	Gen Phy	Drnk Wtr	Pest	Sed Tox	CD Tox	PP Tox	SC Tox	Dup?
Hospital Cr at River Road	HCARR								
Ingram Cr at River Road	ICARR	x	x						
Westley Wasteway near Cox Road	WWNCR	x	x						
Del Puerto Cr near Cox Road	DPCCR	No Flow							
Del Puerto Cr at Hwy 33	DPCHW								
Ramona Lake near Fig Avenue	ROLFA	No Flow							
Marshall Road Drain near River Road	MRDRR	No Flow							
Orestimba Cr at River Road	OCARR	x	x						
Orestimba Cr at Hwy 33	OCAHW								
Newman Wasteway near Hills Ferry Road	NWHFR	No Access							
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								
Los Banos Creek at Highway 140	LBCHW	x	x	x		x			
Los Banos Creek at China Camp Road	LBCCC	x	x						
Turner Slough near Edminster Road	TSAER	No Access							
Blewett Drain near Highway 132	VH132	No Flow							
Poso Slough at Indiana Avenue	PSAIA	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 62 (Northerly Region)	Map	Caltest		APPL	PER				
December, 2009	Desig.	Gen Phy	Drnk Wtr	Pest	Sed Tox	CD Tox	PP Tox	SC Tox	Dup?
Hospital Cr at River Road	HCARR	x	x						
Ingram Cr at River Road	ICARR	no flow							
Westley Wasteway near Cox Road	WWNCR	no flow							
Del Puerto Cr near Cox Road	DPCCR	no flow							
Del Puerto Cr at Hwy 33	DPCHW								
Ramona Lake near Fig Avenue	ROLFA	no flow							
Marshall Road Drain near River Road	MRDRR	no flow							
Orestimba Cr at River Road	OCARR	no flow							
Orestimba Cr at Hwy 33	OCAHW								
Newman Wasteway near Hills Ferry Road	NWHFR								
San Joaquin River at Lander Avenue	SJRLA								
Mud Slough u/s San Luis Drain	MSUSL								
Salt Slough at Lander Avenue	SSALA								
Salt Slough at Sand Dam	SSASD								
Los Banos Creek at Highway 140	LBCHW								
Los Banos Creek at China Camp Road	LBCCC								
Turner Slough near Edminster Road	TSAER								
Blewett Drain near Highway 132	VH132	no flow							
Poso Slough at Indiana Avenue	PSAIA								
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								
San Joaquin River at PID Pumps	SJRPP	x	x	x					
Delta Mendota Canal at Del Puerto WD	DMCDP	x	x	x					

Rain Event 9 (Southerly Region)	Map	Caltest		APPL	PER				
December, 2009	Desig.	Gen Phy	Drnk Wtr	Pest	Sed Tox	CD Tox	PP Tox	SC Tox	Dup?
Hospital Cr at River Road	HCARR								
Ingram Cr at River Road	ICARR								
Westley Wasteway near Cox Road	WWNCR								
Del Puerto Cr near Cox Road	DPCCR								
Del Puerto Cr at Hwy 33	DPCHW								
Ramona Lake near Fig Avenue	ROLFA								
Marshall Road Drain near River Road	MRDRR								
Orestimba Cr at River Road	OCARR								
Orestimba Cr at Hwy 33	OCAHW								
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	x	
Mud Slough u/s San Luis Drain	MSUSL	x	x	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	x	
Los Banos Creek at Highway 140	LBCHW	x	x	x		x	x	x	
Los Banos Creek at China Camp Road	LBCCC	x	x	x		x	x	x	x
Turner Slough near Edminster Road	TSAER	x	x	x		x	x	x	
Blewett Drain near Highway 132	VH132								
Poso Slough at Indiana Avenue	PSAIA	x	x	x		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	no flow							
San Joaquin River at PID Pumps	SJRPP								
Delta Mendota Canal at Del Puerto WD	DMCDP								

Event 63	Map	Caltest		APPL	PER				
January, 2010	Desig.	Gen Phy	Drnk Wtr	Pest	Sed Tox	CD Tox	PP Tox	SC Tox	Dup?
Hospital Cr at River Road	HCARR								
Ingram Cr at River Road	ICARR	no flow							
Westley Wasteway near Cox Road	WWNCR	No Access							
Del Puerto Cr near Cox Road	DPCCR	no flow							
Del Puerto Cr at Hwy 33	DPCHW								
Ramona Lake near Fig Avenue	ROLFA	no flow							
Marshall Road Drain near River Road	MRDRR	no flow							
Orestimba Cr at River Road	OCARR	no flow							
Orestimba Cr at Hwy 33	OCAHW								
Newman Wasteway near Hills Ferry Road	NWHFR	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								
Los Banos Creek at Highway 140	LBCHW	x	x	x		x			
Los Banos Creek at China Camp Road	LBCCC	x	x						
Turner Slough near Edminster Road	TSAER	x	x						
Blewett Drain near Highway 132	VH132	no flow							
Poso Slough at Indiana Avenue	PSAIA	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						
San Joaquin River at PID Pumps	SJRPP	x	x	x					
Delta Mendota Canal at Del Puerto WD	DMCDP	x	x	x					

Rain Event 10	Map			APPL	PER				
January, 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	x	x	
Ingram Cr at River Road	ICARR	x	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	x	
Del Puerto Cr at Hwy 33	DPCHW	x	x	x		x	x	x	
Ramona Lake near Fig Avenue	ROLFA	x	x	x		x	x	x	
Marshall Road Drain near River Road	MRDRR	x	x	x		x	x	x	
Orestimba Cr at River Road	OCARR	x	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	x	
Mud Slough u/s San Luis Drain	MSUSL	x	x	x		x	x	x	
Salt Slough at Lander Avenue	SSALA	x	x	x		x	x	x	x
Salt Slough at Sand Dam	SSASD	x	x	x		x	x	x	
Los Banos Creek at Highway 140	LBCHW	x	x	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	x	
Blewett Drain near Highway 132	VH132	x	x	x		x	x	x	
Poso Slough at Indiana Avenue	PSAIA	x	x	x		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		x	x	x	
San Joaquin River at PID Pumps	SJRPP	x	x	x		x	x	x	
Delta Mendota Canal at Del Puerto WD	DMCDP	x	x	x		x	x	x	

Event 64	Map	Caltest		APPL	PER				
February, 2010	Desig.	Gen Phy	Drnk Wtr	Pest	Sed Tox	CD Tox	PP Tox	SC Tox	Dup?
Hospital Cr at River Road	HCARR								
Ingram Cr at River Road	ICARR	**no flow**							
Westley Wasteway near Cox Road	WWNCR	**No Access**							
Del Puerto Cr near Cox Road	DPCCR	x	x						
Del Puerto Cr at Hwy 33	DPCHW								
Ramona Lake near Fig Avenue	ROLFA	x	x						
Marshall Road Drain near River Road	MRDRR	**no flow**							
Orestimba Cr at River Road	OCARR	x	x						
Orestimba Cr at Hwy 33	OCAHW								
Newman Wasteway near Hills Ferry Road	NWHFR	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								
Los Banos Creek at Highway 140	LBCHW	x	x	x		x			
Los Banos Creek at China Camp Road	LBCCC	x	x						
Turner Slough near Edminster Road	TSAER	x	x						
Blewett Drain near Highway 132	VH132	x	x						
Poso Slough at Indiana Avenue	PSAIA	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						
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
Hospital Creek at River Road	10/14/2009	R8	Ceriodaphnia dubia	0	100	100%	%

Followup: Dilution series measured 16.4 toxic units. TIE indicated a non-polar organic(s) likely the cause.

Field Data

DO	0	mg/l
EC	345	µmhos/cm
Est Depth	1.13	ft
Flow	1.31	cfs
pH	0	
Staff Gage	0.13	ft
Temp	61	c

Water Chemistry

Bromide	0.021	DNQ	mg/L
Dissolved Organic Carbon	27		mg/L
E. coli	2400	>	MPN/100
Total Organic Carbon	35		mg/L
Dissolved Solids	280		mg/L
Hardness as CaCO3	160		mg/L
Suspended Solids	970		mg/L
Turbidity	800		NTU
Arsenic	11		µg/L
Boron	620		µg/L
Cadmium	0.28		µg/L
Cadmium (dissolved)	0.07	DNQ	µg/L
Copper	55		µg/L
Copper (dissolved)	18		µg/L
Lead	13		µg/L
Lead (dissolved)	0.08	DNQ	µg/L
Nickel	74		µg/L
Nickel (dissolved)	6.5		µg/L
Selenium	0.41	DNQ	µg/L
Zinc	130		µg/L
Zinc (dissolved)	15		µg/L
Ammonia as N	0.31		mg/L
Nitrate + Nitrite as N	5.1		mg/L
Nitrogen, Total Kjeldahl	5.5		mg/L
OrthoPhosphate as P	0.97		mg/L
Phosphate as P	1.7		mg/L

Detected Pesticides

Chlordane, gamma-	0.015	
Chlorpyrifos	0.078	
DDE(p,p')	0.043	
DDT(p,p')	0.013	
Diuron	0.52	
Endrin	0.033	
Malathion	0.073	DNQ
Prowl	0.30	
Simazine	0.32	DNQ

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
Ramona Lake near Fig Avenue	10/14/2009	R8	Ceriodaphnia dubia	40	100	60%	%

Followup: TIE indicated that a particulate associated contaminant was likely the cause. No pesticides were detected.

Field Data

DO	8.09	mg/l
EC	1049	µmhos/cm
Est Depth		ft
Flow	8.1	cfs
pH	10.3	
Staff Gage		ft
Temp	22.68	c

Water Chemistry

Bromide	1.2		mg/L
Dissolved Organic Carbon	7.3		mg/L
E. coli	410		MPN/100
Total Organic Carbon	7.6		mg/L
Dissolved Solids	820		mg/L
Hardness as CaCO3	120		mg/L
Suspended Solids	86		mg/L
Turbidity	51		NTU
Arsenic	3.4		µg/L
Boron	690		µg/L
Cadmium	0.03	DNQ	µg/L
Cadmium (dissolved)	-0.011	ND	µg/L
Copper	3.8		µg/L
Copper (dissolved)	1.2		µg/L
Lead	1		µg/L
Lead (dissolved)	-0.071	ND	µg/L
Nickel	6.5		µg/L
Nickel (dissolved)	3		µg/L
Selenium	1		µg/L
Zinc	20		µg/L
Zinc (dissolved)	4.8		µg/L
Ammonia as N	0.19		mg/L
Nitrate + Nitrite as N	3.9		mg/L
Nitrogen, Total Kjeldahl	2.7		mg/L
OrthoPhosphate as P	-0.006	ND	mg/L
Phosphate as P	0.18		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
Delta Mendota Canal at DPWD	10/15/2009	R8	Ceriodaphnia dubia	15	100	85%	%

Followup: TIE indicated that a particulate associated contaminant and/or cationic metal was the likely cause. No pesticides were detected.

Field Data

DO	7.12	mg/l
EC	460	µmhos/cm
Est Depth		ft
Flow	4000	cfs
pH	9.33	
Staff Gage		ft
Temp	19.38	c

Water Chemistry

Dissolved Organic Carbon	3		mg/L
E. coli	44		MPN/100
Total Organic Carbon	3.1		mg/L
Dissolved Solids	310		mg/L
Hardness as CaCO3	140		mg/L
Turbidity	5.4		NTU
Arsenic	2.2		µg/L
Boron	190		µg/L
Cadmium	0.02	DNQ	µg/L
Cadmium (dissolved)	0.01	DNQ	µg/L
Copper	1.4		µg/L
Copper (dissolved)	0.42	DNQ	µg/L
Lead	0.25		µg/L
Nickel	1.6		µg/L
Nickel (dissolved)	0.94		µg/L
Selenium	0.15	DNQ	µg/L
Zinc	26		µg/L
Zinc (dissolved)	20		µg/L
Ammonia as N	-0.06	ND	mg/L
Nitrate + Nitrite as N	0.79		mg/L
Nitrogen, Total Kjeldahl	0.4		mg/L
OrthoPhosphate as P	0.072		mg/L
Phosphate as P	0.12		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
Salt Slough at Lander Ave	11/10/2009	61	Ceriodaphnia dubia	65	93	30%	%

Followup: Toxicity did not trigger followup. Field duplicate sample indicated toxicity, but event sample did not (85% survival). No detected pesticides.

Field Data

DO	8.37	mg/l
EC	1364	µmhos/cm
Est Depth	3.3	ft
Flow	154	cfs
pH	7.52	
Staff Gage	65.96	ft
Temp	13.01	c

Water Chemistry

Bromide	1.1		mg/L
Dissolved Organic Carbon	5.8		mg/L
E. coli	330		MPN/100
Total Organic Carbon	5.7		mg/L
Dissolved Solids	760		mg/L
Hardness as CaCO3	300		mg/L
Suspended Solids	32		mg/L
Turbidity	19		NTU
Boron	600		µg/L
Copper	2		µg/L
Copper (dissolved)	0.64		µg/L
Nickel	3.4		µg/L
Nickel (dissolved)	1.5		µg/L
Zinc	4.9		µg/L
Zinc (dissolved)	-0.8	ND	µg/L
Ammonia as N	0.24		mg/L
Nitrate + Nitrite as N	0.57		mg/L
Nitrogen, Total Kjeldahl	1		mg/L
OrthoPhosphate as P	0.043		mg/L
Phosphate as P	0.22		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
Los Banos Creek at Hwy 140	1/12/2010	63	Ceriodaphnia dubia	18	95	81%	%

Followup: TIE indicated a combination of metal(s), particulate associated contaminants, and/or metabolically activated substances were the cause. No insecticides were detected and dissolved metals did not exceed water quality values.

Field Data

DO	7.85	mg/l
EC	1516	µmhos/cm
Est Depth	3.25	ft
Flow	83.57	cfs
pH	7.54	
Staff Gage	1.5	ft
Temp	9.94	c

Water Chemistry

Bromide	0.91	DNQ	mg/L
Dissolved Organic Carbon	21		mg/L
E. coli	980		MPN/100
Total Organic Carbon	21		mg/L
Dissolved Solids	890		mg/L
Hardness as CaCO3	350		mg/L
Suspended Solids	13		mg/L
Turbidity	12		NTU
Ammonia as N	0.22		mg/L
Nitrate + Nitrite as N	0.36		mg/L
Nitrogen, Total Kjeldahl	1.6		mg/L
OrthoPhosphate as P	0.26		mg/L
Phosphate as P	0.4		mg/L

Detected Pesticides

Diuron	0.35	DNQ

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
Salt Slough at Lander Ave	1/12/2010	63	Ceriodaphnia dubia	65	95	32%	%

Followup: Toxicity did not trigger followup. Field duplicate sample indicated toxicity, but event sample did not (100% survival). No detected pesticides.

Field Data

DO	8.43	mg/l
EC	2140	µmhos/cm
Est Depth	2.33	ft
Flow	55.61	cfs
pH	7.69	
Staff Gage	64.95	ft
Temp	12.25	c

Water Chemistry

Bromide	1.9		mg/L
Dissolved Organic Carbon	4.9		mg/L
E. coli	40		MPN/100
Total Organic Carbon	5.7		mg/L
Dissolved Solids	1300		mg/L
Hardness as CaCO3	450		mg/L
Suspended Solids	64		mg/L
Turbidity	32		NTU
Boron	1100		µg/L
Copper	1.4		µg/L
Copper (dissolved)	-0.06	ND	µg/L
Nickel	3.7		µg/L
Nickel (dissolved)	1.6		µg/L
Zinc	5.5		µg/L
Zinc (dissolved)	-0.8	ND	µg/L
Ammonia as N	0.2		mg/L
Nitrate + Nitrite as N	0.28		mg/L
Nitrogen, Total Kjeldahl	1.2		mg/L
OrthoPhosphate as P	0.037		mg/L
Phosphate as P	0.27		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
Poso Slough at Indiana Ave	1/21/2010	R10	Selenastrum capricornutum	0	894,500	100%	cells/ml

Followup: Dilution series measured 5.14 toxic units. TIE indicated metal(s) were the likely cause.

Field Data

DO	11.85	mg/l
EC	1021	µmhos/cm
Est Depth	1	ft
Flow	7.95	cfs
pH	8.43	
Staff Gage	1	ft
Temp	10.55	c

Water Chemistry

Bromide	0.66	DNQ	mg/L
Dissolved Organic Carbon	3.9		mg/L
E. coli	120		MPN/100
Total Organic Carbon	3.6		mg/L
Dissolved Solids	620		mg/L
Hardness as CaCO3	280		mg/L
Suspended Solids	160		mg/L
Turbidity	120		NTU
Arsenic	3.4		µg/L
Boron	320		µg/L
Cadmium	0.05	DNQ	µg/L
Cadmium (dissolved)	-0.011	ND	µg/L
Copper	7.7		µg/L
Copper (dissolved)	0.97		µg/L
Lead	3		µg/L
Lead (dissolved)	-0.071	ND	µg/L
Nickel	12		µg/L
Nickel (dissolved)	1.9		µg/L
Selenium	0.62	DNQ	µg/L
Zinc	23		µg/L
Zinc (dissolved)	-0.8	ND	µg/L
Ammonia as N	0.2		mg/L
Nitrate + Nitrite as N	1.4		mg/L
Nitrogen, Total Kjeldahl	1.4		mg/L
OrthoPhosphate as P	0.049		mg/L
Phosphate as P	0.19		mg/L

Detected Pesticides

Diuron	38
Prowl	0.14

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
San Joaquin River at Sack Dam	1/21/2010	R10	Ceriodaphnia dubia	50	100	50%	%

Followup: Baseline toxicity was not present in the TIE - interpretation was not possible. No insecticides were detected.

Field Data

DO	11.32	mg/l
EC	837	µmhos/cm
Est Depth		ft
Flow		cfs
pH	8.42	
Staff Gage	1.02	ft
Temp	8.68	c

Water Chemistry

Bromide	0.73	DNQ	mg/L
Dissolved Organic Carbon	3		mg/L
E. coli	22		MPN/100
Total Organic Carbon	3.1		mg/L
Dissolved Solids	460		mg/L
Hardness as CaCO3	210		mg/L
Suspended Solids	-2	ND	mg/L
Turbidity	4.2		NTU
Arsenic	1.5		µg/L
Boron	380		µg/L
Cadmium	0.02	DNQ	µg/L
Cadmium (dissolved)	-0.011	ND	µg/L
Copper	1.2		µg/L
Copper (dissolved)	0.78		µg/L
Lead	0.15	DNQ	µg/L
Lead (dissolved)	-0.071	ND	µg/L
Nickel	1.5		µg/L
Nickel (dissolved)	1		µg/L
Selenium	0.85	DNQ	µg/L
Zinc	1	DNQ	µg/L
Zinc (dissolved)	-0.8	ND	µg/L
Ammonia as N	-0.06	ND	mg/L
Nitrate + Nitrite as N	1.6		mg/L
Nitrogen, Total Kjeldahl	0.46		mg/L
OrthoPhosphate as P	0.046		mg/L
Phosphate as P	0.068		mg/L

Detected Pesticides

Diuron	3.1

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
Blewett Drain at Highway 132	1/25/2010	R10	Ceriodaphnia dubia	0	100	100%	%

Followup: Dilution series measured 1.47 toxic units. The TIE indicatd a metabolically activated non-polar organic material was likely the cause.

Field Data

DO	6.1	mg/l
EC	161	µmhos/cm
Est Depth	1	ft
Flow	1	cfs
pH	7.78	
Staff Gage		ft
Temp	12.12	c

Water Chemistry

Bromide	-0.01	ND	mg/L
Dissolved Organic Carbon	6.4		mg/L
E. coli	550		MPN/100
Total Organic Carbon	5.6		mg/L
Dissolved Solids	260		mg/L
Hardness as CaCO3	100		mg/L
Suspended Solids	100		mg/L
Turbidity	240		NTU
Arsenic	4.4		µg/L
Boron	160		µg/L
Cadmium	0.07	DNQ	µg/L
Cadmium (dissolved)	-0.011	ND	µg/L
Copper	23		µg/L
Copper (dissolved)	5.9		µg/L
Lead	8.2		µg/L
Lead (dissolved)	0.11	DNQ	µg/L
Nickel	27		µg/L
Nickel (dissolved)	2.7		µg/L
Selenium	0.26	DNQ	µg/L
Zinc	57		µg/L
Zinc (dissolved)	3		µg/L
Ammonia as N	0.14		mg/L
Nitrate + Nitrite as N	5.1		mg/L
Nitrogen, Total Kjeldahl	1.5		mg/L
OrthoPhosphate as P	0.37		mg/L
Phosphate as P	-0.01	ND	mg/L

Detected Pesticides

Chlorpyrifos	0.35
DDE(p,p')	0.016
Diuron	0.49
Prowl	0.37
Simazine	2.2

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
Hospital Creek at River Road	1/25/2010	R10	Ceriodaphnia dubia	0	100	100%	%

Followup: Toxicity was not persistent in the dilution series. The TIE indicated that the likely cause of toxicity was a metobolically activitated and particulate associated material(s).

Field Data

DO	6.31	mg/l
EC	248	µmhos/cm
Est Depth		ft
Flow		cfs
pH	8	
Staff Gage		ft
Temp	11.19	c

Water Chemistry

Bromide	0.01	DNQ	mg/L
Dissolved Organic Carbon	11		mg/L
E. coli	730		MPN/100
Total Organic Carbon	11		mg/L
Dissolved Solids	300		mg/L
Hardness as CaCO3	150		mg/L
Suspended Solids	50		mg/L
Turbidity	180		NTU
Arsenic	4.1		µg/L
Boron	450		µg/L
Cadmium	0.06	DNQ	µg/L
Cadmium (dissolved)	0.02	DNQ	µg/L
Copper	15		µg/L
Copper (dissolved)	3.8		µg/L
Lead	4.2		µg/L
Lead (dissolved)	-0.071	ND	µg/L
Nickel	18		µg/L
Nickel (dissolved)	1.8		µg/L
Selenium	0.55	DNQ	µg/L
Zinc	31		µg/L
Zinc (dissolved)	3.1		µg/L
Ammonia as N	0.13		mg/L
Nitrate + Nitrite as N	1.2		mg/L
Nitrogen, Total Kjeldahl	1.3		mg/L
OrthoPhosphate as P	0.23		mg/L
Phosphate as P	0.35		mg/L

Detected Pesticides

Chlorpyrifos	0.22	
DDE(p,p')	0.014	
Diuron	5.1	
Endrin	0.009	DNQ
Prowl	0.22	
Simazine	0.16	DNQ

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: 9/15/2009 Site: Salt Slough at Lander Ave								
Ammonia as N	General Chemistry	0.088	DNQ	-0.06	ND	mg/L	NA	
Boron	General Chemistry	420		4.9	DNQ	µg/L	1%	
Bromide	General Chemistry	0.85	DNQ	-0.01	ND	mg/L	NA	
Copper	General Chemistry	2.2		0.18	DNQ	µg/L	8%	
Copper (dissolved)	General Chemistry	0.98		0.18	DNQ	µg/L	18%	
Dissolved Organic Carbon	General Chemistry	5		0.34	DNQ	mg/L	7%	
Dissolved Solids	General Chemistry	640		-4	ND	mg/L	NA	
E. coli	General Chemistry	110		-1	ND	MPN/100 mL	NA	
Hardness as CaCO3	General Chemistry	260		-1.7	ND	mg/L	NA	
Nickel	General Chemistry	3.5		-0.01	ND	µg/L	NA	
Nickel (dissolved)	General Chemistry	1.7		0.02	DNQ	µg/L	1%	
Nitrate + Nitrite as N	General Chemistry	0.43		0.022	DNQ	mg/L	5%	
Nitrogen, Total Kjeldahl	General Chemistry	0.63		0.099	DNQ	mg/L	16%	
OrthoPhosphate as P	General Chemistry	0.1		-0.006	ND	mg/L	NA	
Phosphate as P	General Chemistry	0.25		0.017		mg/L	7%	
Suspended Solids	General Chemistry	37		-2	ND	mg/L	NA	
Total Organic Carbon	General Chemistry	5.1		0.36	DNQ	mg/L	7%	
Turbidity	General Chemistry	20		0.15		NTU	1%	
Zinc	General Chemistry	3.5		27		µg/L	771%	*
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	0.045		-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	-0.20	ND	-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	

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	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: 10/13/2009 Site: Salt Slough at Lander Ave								
Ammonia as N	General Chemistry	0.12		-0.06	ND	mg/L	NA	
Boron	General Chemistry	500		0.6	DNQ	µg/L	0%	
Bromide	General Chemistry	1.2		-0.01	ND	mg/L	NA	
Copper	General Chemistry	1.9		0.1	DNQ	µg/L	5%	
Copper (dissolved)	General Chemistry	0.87		0.34	DNQ	µg/L	39%	*
Dissolved Organic Carbon	General Chemistry	5.7		0.23	DNQ	mg/L	4%	
Dissolved Solids	General Chemistry	690		-4	ND	mg/L	NA	
E. coli	General Chemistry	340		-1	ND	MPN/100 mL	NA	
Hardness as CaCO3	General Chemistry	280		-1.7	ND	mg/L	NA	
Nickel	General Chemistry	3.3		0.06	DNQ	µg/L	2%	
Nickel (dissolved)	General Chemistry	1.4		0.01	DNQ	µg/L	1%	
Nitrate + Nitrite as N	General Chemistry	0.35		-0.02	ND	mg/L	NA	
Nitrogen, Total Kjeldahl	General Chemistry	1		-0.07	ND	mg/L	NA	
OrthoPhosphate as P	General Chemistry	0.1		-0.006	ND	mg/L	NA	
Phosphate as P	General Chemistry	0.24		0.021		mg/L	9%	
Suspended Solids	General Chemistry	57		-2	ND	mg/L	NA	
Total Organic Carbon	General Chemistry	5.8		0.14	DNQ	mg/L	2%	
Turbidity	General Chemistry	19		-0.02	ND	NTU	NA	
Zinc	General Chemistry	5.1		-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	

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
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	-0.20	ND	-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
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: 10/14/2009 Site: Ingram Creek at River Road							
Ammonia as N	General Chemistry	0.89		-0.06	ND	mg/L	NA
Arsenic	General Chemistry	11		0.008	DNQ	µg/L	0%
Boron	General Chemistry	480		1.8	DNQ	µg/L	0%
Cadmium	General Chemistry	0.14		-0.011	ND	µg/L	NA
Copper	General Chemistry	30		0.44	DNQ	µg/L	1%
Dissolved Organic Carbon	General Chemistry	21		0.46	DNQ	mg/L	2%
E. coli	General Chemistry	2400	>	-1	ND	MPN/100 mL	NA
Hardness as CaCO3	General Chemistry	410		-1.7	ND	mg/L	NA
Lead	General Chemistry	3.2		-0.071	ND	µg/L	NA
Nickel	General Chemistry	25		0.32	DNQ	µg/L	1%
Nitrate + Nitrite as N	General Chemistry	14		0.1		mg/L	1%
Nitrogen, Total Kjeldahl	General Chemistry	4.1		0.12		mg/L	3%
Phosphate as P	General Chemistry	3.2		0.011		mg/L	0%

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
Selenium	General Chemistry	1.1		-0.06	ND	µg/L	NA
Total Organic Carbon	General Chemistry	21		0.37	DNQ	mg/L	2%
Zinc	General Chemistry	54		1.9		µg/L	4%
Aldicarb	Pesticide	-0.20	ND	-0.20	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
Carbaryl	Pesticide	-0.050	ND	-0.050	ND	µg/L	NA
Carbofuran	Pesticide	-0.050	ND	-0.050	ND	µg/L	NA
Chlordane, Alpha-	Pesticide	-0.007	ND	-0.007	ND	µg/L	NA
Chlordane, gamma-	Pesticide	0.026		-0.006	ND	µg/L	NA
Chlorpyrifos	Pesticide	0.053		-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	0.035		-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	0.33		-0.080	ND	µg/L	NA
Disulfoton	Pesticide	-0.020	ND	-0.020	ND	µg/L	NA
Diuron	Pesticide	-0.20	ND	-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	0.15		-0.03	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
Methiocarb	Pesticide	-0.20	ND	-0.20	ND	µg/L	NA
Methomyl	Pesticide	-0.050	ND	-0.050	ND	µg/L	NA
Methoxychlor	Pesticide	-0.008	ND	-0.008	ND	µg/L	NA
Oxamyl	Pesticide	-0.20	ND	-0.20	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	0.30		-0.04	ND	µg/L	NA
Simazine	Pesticide	0.40	DNQ	-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	
Toxaphene	Pesticide	-0.380	ND	-0.380	ND	µg/L	NA	
Trifluralin	Pesticide	-0.036	ND	-0.036	ND	µg/L	NA	
Sample Date: 11/10/2009 Site: Salt Slough at Lander Ave								
Ammonia as N	General Chemistry	0.24		0.066	DNQ	mg/L	28%	*
Boron	General Chemistry	600		0.6	DNQ	µg/L	0%	
Bromide	General Chemistry	1.1		-0.01	ND	mg/L	NA	
Copper	General Chemistry	2		0.86		µg/L	43%	*
Copper (dissolved)	General Chemistry	0.64		-0.06	ND	µg/L	NA	
Dissolved Organic Carbon	General Chemistry	5.8		0.46	DNQ	mg/L	8%	
Dissolved Solids	General Chemistry	760		-4	ND	mg/L	NA	
E. coli	General Chemistry	330		-1	ND	MPN/100 mL	NA	
Hardness as CaCO3	General Chemistry	300		-1.7	ND	mg/L	NA	
Nickel	General Chemistry	3.4		0.07	DNQ	µg/L	2%	
Nickel (dissolved)	General Chemistry	1.5		0.04	DNQ	µg/L	3%	
Nitrate + Nitrite as N	General Chemistry	0.57		-0.02	ND	mg/L	NA	
Nitrogen, Total Kjeldahl	General Chemistry	1		0.37		mg/L	37%	*
OrthoPhosphate as P	General Chemistry	0.043		-0.006	ND	mg/L	NA	
Phosphate as P	General Chemistry	0.22		0.012		mg/L	5%	
Suspended Solids	General Chemistry	32		-2	ND	mg/L	NA	
Total Organic Carbon	General Chemistry	5.7		0.39	DNQ	mg/L	7%	
Turbidity	General Chemistry	19		-0.02	ND	NTU	NA	
Zinc	General Chemistry	4.9		0.9	DNQ	µg/L	18%	
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	-0.20	ND	-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	

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	
Endrin	Pesticide	-0.007	ND	-0.007	ND	µg/L	NA	
EPTC	Pesticide	-0.03	ND	-0.03	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:	**12/8/2009**	**Site:**	**Salt Slough at Lander Ave**					
Ammonia as N	General Chemistry	0.15		0.066	DNQ	mg/L	44%	*
Arsenic	General Chemistry	3.4		0.03	DNQ	µg/L	1%	
Boron	General Chemistry	880		5.7	DNQ	µg/L	1%	
Bromide	General Chemistry	1.6		-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	1.9		0.14	DNQ	µg/L	7%	
Copper (dissolved)	General Chemistry	0.09	DNQ	-0.06	ND	µg/L	NA	
Dissolved Organic Carbon	General Chemistry	5.4		0.13	DNQ	mg/L	2%	
Dissolved Solids	General Chemistry	1100		-4	ND	mg/L	NA	
E. coli	General Chemistry	38		-1	ND	MPN/100 mL	NA	
Hardness as CaCO3	General Chemistry	400		-1.7	ND	mg/L	NA	
Lead	General Chemistry	0.54		-0.071	ND	µg/L	NA	
Lead (dissolved)	General Chemistry	-0.071	ND	-0.071	ND	µg/L	NA	
Nickel	General Chemistry	3.7		0.02	DNQ	µg/L	1%	
Nickel (dissolved)	General Chemistry	1.5		0.03	DNQ	µg/L	2%	
Nitrate + Nitrite as N	General Chemistry	0.23		0.06		mg/L	26%	*
Nitrogen, Total Kjeldahl	General Chemistry	1.7		0.43		mg/L	25%	*
OrthoPhosphate as P	General Chemistry	0.13		0.014		mg/L	11%	
Phosphate as P	General Chemistry	0.3		0.01		mg/L	3%	
Selenium	General Chemistry	0.22	DNQ	-0.06	ND	µg/L	NA	
Suspended Solids	General Chemistry	63		-2	ND	mg/L	NA	
Total Organic Carbon	General Chemistry	5.5		0.29	DNQ	mg/L	5%	
Turbidity	General Chemistry	25		-0.02	ND	NTU	NA	
Zinc	General Chemistry	5.6		0.9	DNQ	µg/L	16%	
Zinc (dissolved)	General Chemistry	-0.8	ND	0.9	DNQ	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
Aldicarb	Pesticide	-0.20	ND	-0.20	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
Carbaryl	Pesticide	-0.050	ND	-0.050	ND	µg/L	NA
Carbofuran	Pesticide	-0.050	ND	-0.050	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	-0.20	ND	-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
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
Methiocarb	Pesticide	-0.20	ND	-0.20	ND	µg/L	NA
Methomyl	Pesticide	-0.050	ND	-0.050	ND	µg/L	NA
Methoxychlor	Pesticide	-0.008	ND	-0.008	ND	µg/L	NA
Oxamyl	Pesticide	-0.20	ND	-0.20	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

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	
Sample Date: 1/12/2010 Site: Salt Slough at Lander Ave								
Ammonia as N	General Chemistry	0.2		-0.06	ND	mg/L	NA	
Boron	General Chemistry	1100		2.3	DNQ	µg/L	0%	
Bromide	General Chemistry	1.9		-0.01	ND	mg/L	NA	
Copper	General Chemistry	1.4		-0.06	ND	µg/L	NA	
Copper (dissolved)	General Chemistry	-0.06	ND	-0.06	ND	µg/L	NA	
Dissolved Organic Carbon	General Chemistry	4.9		0.22	DNQ	mg/L	4%	
Dissolved Solids	General Chemistry	1300		-4	ND	mg/L	NA	
E. coli	General Chemistry	40		-1	ND	MPN/100 mL	NA	
Hardness as CaCO3	General Chemistry	450		-1.7	ND	mg/L	NA	
Nickel	General Chemistry	3.7		-0.01	ND	µg/L	NA	
Nickel (dissolved)	General Chemistry	1.6		1.7		µg/L	106%	*
Nitrate + Nitrite as N	General Chemistry	0.28		-0.02	ND	mg/L	NA	
Nitrogen, Total Kjeldahl	General Chemistry	1.2		-0.07	ND	mg/L	NA	
OrthoPhosphate as P	General Chemistry	0.037		-0.006	ND	mg/L	NA	
Phosphate as P	General Chemistry	0.27		-0.01	ND	mg/L	NA	
Suspended Solids	General Chemistry	64		-2	ND	mg/L	NA	
Total Organic Carbon	General Chemistry	5.7		0.23	DNQ	mg/L	4%	
Turbidity	General Chemistry	32		0.16		NTU	1%	
Zinc	General Chemistry	5.5		-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	
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	-0.20	ND	-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	

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	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:	**1/21/2010**	**Site:**	**Salt Slough at Lander Ave**					
Ammonia as N	General Chemistry	0.21		-0.06	ND	mg/L	NA	
Arsenic	General Chemistry	4		0.01	DNQ	µg/L	0%	
Boron	General Chemistry	950		1.1	DNQ	µg/L	0%	
Bromide	General Chemistry	0.9	DNQ	-0.01	ND	mg/L	NA	
Cadmium	General Chemistry	0.03	DNQ	-0.011	ND	µg/L	NA	
Cadmium (dissolved)	General Chemistry	0.01	DNQ	-0.011	ND	µg/L	NA	
Copper	General Chemistry	3.3		0.42	DNQ	µg/L	13%	
Copper (dissolved)	General Chemistry	0.77		0.22	DNQ	µg/L	29%	*
Dissolved Organic Carbon	General Chemistry	7.7		0.27	DNQ	mg/L	4%	
Dissolved Solids	General Chemistry	920		-4	ND	mg/L	NA	
E. coli	General Chemistry	460		-1	ND	MPN/100 mL	NA	
Hardness as CaCO3	General Chemistry	350		-1.7	ND	mg/L	NA	
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	5.8		0.03	DNQ	µg/L	1%	
Nickel (dissolved)	General Chemistry	2		0.03	DNQ	µg/L	2%	
Nitrate + Nitrite as N	General Chemistry	0.61		0.034	DNQ	mg/L	6%	
Nitrogen, Total Kjeldahl	General Chemistry	1.2		-0.07	ND	mg/L	NA	
OrthoPhosphate as P	General Chemistry	0.14		-0.006	ND	mg/L	NA	
Phosphate as P	General Chemistry	0.33		-0.01	ND	mg/L	NA	
Selenium	General Chemistry	0.59	DNQ	-0.06	ND	µg/L	NA	
Suspended Solids	General Chemistry	87		-2	ND	mg/L	NA	
Total Organic Carbon	General Chemistry	7.5		0.33	DNQ	mg/L	4%	
Turbidity	General Chemistry	44		-0.02	ND	NTU	NA	
Zinc	General Chemistry	8.8		2.6		µg/L	30%	*
Zinc (dissolved)	General Chemistry	-0.8	ND	-0.8	ND	µg/L	NA	
Aldicarb	Pesticide	-0.20	ND	-0.20	ND	µg/L	NA	
Aldrin	Pesticide	-0.009	ND	-0.009	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
Atrazine	Pesticide	-0.07	ND	-0.07	ND	µg/L	NA
Azinphos methyl	Pesticide	-0.02	ND	-0.02	ND	µg/L	NA
Carbaryl	Pesticide	-0.050	ND	-0.050	ND	µg/L	NA
Carbofuran	Pesticide	-0.050	ND	-0.050	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	0.93		-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
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
Methiocarb	Pesticide	-0.20	ND	-0.20	ND	µg/L	NA
Methomyl	Pesticide	-0.050	ND	-0.050	ND	µg/L	NA
Methoxychlor	Pesticide	-0.008	ND	-0.008	ND	µg/L	NA
Oxamyl	Pesticide	-0.20	ND	-0.20	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	-0.38	ND	-0.38	ND	µg/L	NA
Trifluralin	Pesticide	-0.036	ND	-0.036	ND	µg/L	NA
Sample Date:	**2/9/2010**	**Site:**	**Salt Slough at Lander Ave**				
Ammonia as N	General Chemistry	-0.06	ND	-0.06	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
Boron	General Chemistry	1000		1	DNQ	µg/L	0%
Bromide	General Chemistry	1.5		-0.01	ND	mg/L	NA
Copper	General Chemistry	2.9		0.33	DNQ	µg/L	11%
Copper (dissolved)	General Chemistry	0.78		0.14	DNQ	µg/L	18%
Dissolved Organic Carbon	General Chemistry	6.1		0.21	DNQ	mg/L	3%
Dissolved Solids	General Chemistry	1100		-4	ND	mg/L	NA
E. coli	General Chemistry	130		-1	ND	MPN/100 mL	NA
Hardness as CaCO3	General Chemistry	400		-1.7	ND	mg/L	NA
Nickel	General Chemistry	4.6		0.03	DNQ	µg/L	1%
Nickel (dissolved)	General Chemistry	1.8		0.05	DNQ	µg/L	3%
Nitrate + Nitrite as N	General Chemistry	0.66		-0.02	ND	mg/L	NA
Nitrogen, Total Kjeldahl	General Chemistry	1		-0.07	ND	mg/L	NA
OrthoPhosphate as P	General Chemistry	0.059		-0.006	ND	mg/L	NA
Phosphate as P	General Chemistry	0.28		-0.01	ND	mg/L	NA
Suspended Solids	General Chemistry	47		-2	ND	mg/L	NA
Total Organic Carbon	General Chemistry	6		0.21	DNQ	mg/L	4%
Turbidity	General Chemistry	26		0.1		NTU	0%
Zinc	General Chemistry	5.8		-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	1.7		-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
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

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
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

Event = Event Sample Result FB = Field Blank Sample Result

Field Quality Control Samples

Field Duplicate and RPD Calculation

Analyte/Species	Type	Event	QC Code	FD	QC Code	Units	RPD	
Sample Date: 9/15/2009	**Site: Salt Slough at Lander Ave**							
Ceriodaphnia dubia	Aquatic Toxicity	95		95		%	0%	
Selenastrum capricornutum	Aquatic Toxicity	4193000		3683000		cells/ml	13%	
Ammonia as N	General Chemistry	0.088	DNQ	0.099	DNQ	mg/L	12%	
Boron	General Chemistry	420		420		µg/L	0%	
Bromide	General Chemistry	0.85	DNQ	0.95	DNQ	mg/L	11%	
Copper	General Chemistry	2.2		2.1		µg/L	5%	
Copper (dissolved)	General Chemistry	0.98		1		µg/L	2%	
Dissolved Organic Carbon	General Chemistry	5		5.1		mg/L	2%	
Dissolved Solids	General Chemistry	640		640		mg/L	0%	
E. coli	General Chemistry	110		71		MPN/100 mL	43%	*
Hardness as CaCO3	General Chemistry	260		290		mg/L	11%	
Nickel	General Chemistry	3.5		3.2		µg/L	9%	
Nickel (dissolved)	General Chemistry	1.7		1.7		µg/L	0%	
Nitrate + Nitrite as N	General Chemistry	0.43		0.5		mg/L	15%	
Nitrogen, Total Kjeldahl	General Chemistry	0.63		0.78		mg/L	21%	
OrthoPhosphate as P	General Chemistry	0.1		0.1		mg/L	0%	
Phosphate as P	General Chemistry	0.25		0.25		mg/L	0%	
Suspended Solids	General Chemistry	37		38		mg/L	3%	
Total Organic Carbon	General Chemistry	5.1		4.8		mg/L	6%	
Turbidity	General Chemistry	20		19		NTU	5%	
Zinc	General Chemistry	3.5		3.3		µg/L	6%	
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	0.045		0.047		µg/L	4%	
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	-0.20	ND	-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	

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	
EPTC	Pesticide	-0.03	ND	-0.03	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: 10/13/2009 Site: Salt Slough at Lander Ave

Ceriodaphnia dubia	Aquatic Toxicity	75		95		%	24%	
Selenastrum capricornutum	Aquatic Toxicity	4975000		5038000		cells/ml	1%	
Ammonia as N	General Chemistry	0.12		0.29		mg/L	83%	*
Boron	General Chemistry	500		500		µg/L	0%	
Bromide	General Chemistry	1.2		1.1		mg/L	9%	
Copper	General Chemistry	1.9		2.1		µg/L	10%	
Copper (dissolved)	General Chemistry	0.87		0.83		µg/L	5%	
Dissolved Organic Carbon	General Chemistry	5.7		5.7		mg/L	0%	
Dissolved Solids	General Chemistry	690		680		mg/L	1%	
E. coli	General Chemistry	340		270		MPN/100 mL	23%	
Hardness as CaCO3	General Chemistry	280		260		mg/L	7%	
Nickel	General Chemistry	3.3		3.5		µg/L	6%	
Nickel (dissolved)	General Chemistry	1.4		1.4		µg/L	0%	
Nitrate + Nitrite as N	General Chemistry	0.35		0.29		mg/L	19%	
Nitrogen, Total Kjeldahl	General Chemistry	1		1		mg/L	0%	
OrthoPhosphate as P	General Chemistry	0.1		0.07		mg/L	35%	*
Phosphate as P	General Chemistry	0.24		0.25		mg/L	4%	
Suspended Solids	General Chemistry	57		41		mg/L	33%	*
Total Organic Carbon	General Chemistry	5.8		5.8		mg/L	0%	
Turbidity	General Chemistry	19		18		NTU	5%	
Zinc	General Chemistry	5.1		5.7		µg/L	11%	
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	

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
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	-0.20	ND	-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
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: 10/14/2009	**Site: Ingram Creek at River Road**						
Ceriodaphnia dubia	Aquatic Toxicity	95		95		%	0%
Pimephales promelas	Aquatic Toxicity	100		100		%	0%
Selenastrum capricornutum	Aquatic Toxicity	2853000		2620000		cells/ml	9%
Ammonia as N	General Chemistry	0.89		0.87		mg/L	2%
Arsenic	General Chemistry	11		11		µg/L	0%
Boron	General Chemistry	480		510		µg/L	6%
Bromide	General Chemistry	-0.01	ND	0.041	DNQ	mg/L	NA
Cadmium	General Chemistry	0.14		0.14		µg/L	0%
Cadmium (dissolved)	General Chemistry	0.1	DNQ	0.08	DNQ	µg/L	22%

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	
Copper	General Chemistry	30		31		µg/L	3%	
Copper (dissolved)	General Chemistry	18		19		µg/L	5%	
Dissolved Organic Carbon	General Chemistry	21		21		mg/L	0%	
Dissolved Solids	General Chemistry	730		750		mg/L	3%	
E. coli	General Chemistry	2400	>	-1	ND	MPN/100 mL	NA	
Hardness as CaCO3	General Chemistry	410		560		mg/L	31%	*
Lead	General Chemistry	3.2		3.7		µg/L	14%	
Lead (dissolved)	General Chemistry	0.16	DNQ	-0.071	ND	µg/L	NA	
Nickel	General Chemistry	25		28		µg/L	11%	
Nickel (dissolved)	General Chemistry	13		12		µg/L	8%	
Nitrate + Nitrite as N	General Chemistry	14		5		mg/L	95%	*
Nitrogen, Total Kjeldahl	General Chemistry	4.1		5.9		mg/L	36%	*
OrthoPhosphate as P	General Chemistry	3		3		mg/L	0%	
Phosphate as P	General Chemistry	3.2		3.2		mg/L	0%	
Selenium	General Chemistry	1.1		0.82	DNQ	µg/L	29%	*
Suspended Solids	General Chemistry	93		200		mg/L	73%	*
Total Organic Carbon	General Chemistry	21		19		mg/L	10%	
Turbidity	General Chemistry	130		150		NTU	14%	
Zinc	General Chemistry	54		68		µg/L	23%	
Zinc (dissolved)	General Chemistry	22		12		µg/L	59%	*
Aldicarb	Pesticide	-0.20	ND	-0.20	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	
Carbaryl	Pesticide	-0.050	ND	-0.050	ND	µg/L	NA	
Carbofuran	Pesticide	-0.050	ND	-0.050	ND	µg/L	NA	
Chlorpyrifos	Pesticide	0.053		0.06		µg/L	12%	
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	0.035		0.021		µg/L	50%	*
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	0.33		0.29		µg/L	13%	
Disulfoton	Pesticide	-0.020	ND	-0.020	ND	µg/L	NA	
Diuron	Pesticide	-0.20	ND	-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	0.15		0.11		µg/L	31%	*

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	
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	
Methiocarb	Pesticide	-0.20	ND	-0.20	ND	µg/L	NA	
Methomyl	Pesticide	-0.050	ND	-0.050	ND	µg/L	NA	
Methoxychlor	Pesticide	-0.008	ND	-0.008	ND	µg/L	NA	
Oxamyl	Pesticide	-0.20	ND	-0.20	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	0.30		0.31		µg/L	3%	
Simazine	Pesticide	0.40	DNQ	0.39	DNQ	µg/L	3%	
Toxaphene	Pesticide	-0.380	ND	-0.380	ND	µg/L	NA	
Trifluralin	Pesticide	-0.036	ND	-0.036	ND	µg/L	NA	

Sample Date: 11/10/2009 Site: Salt Slough at Lander Ave

Ceriodaphnia dubia	Aquatic Toxicity	85		65		%	27%	*
Selenastrum capricornutum	Aquatic Toxicity	4290000		4623000		cells/ml	7%	
Ammonia as N	General Chemistry	0.24		0.32		mg/L	29%	*
Boron	General Chemistry	600		680		µg/L	13%	
Bromide	General Chemistry	1.1		1.2		mg/L	9%	
Copper	General Chemistry	2		1.7		µg/L	16%	
Copper (dissolved)	General Chemistry	0.64		0.66		µg/L	3%	
Dissolved Organic Carbon	General Chemistry	5.8		6.1		mg/L	5%	
Dissolved Solids	General Chemistry	760		780		mg/L	3%	
E. coli	General Chemistry	330		280		MPN/100 mL	16%	
Hardness as CaCO3	General Chemistry	300		310		mg/L	3%	
Nickel	General Chemistry	3.4		3.1		µg/L	9%	
Nickel (dissolved)	General Chemistry	1.5		1.5		µg/L	0%	
Nitrate + Nitrite as N	General Chemistry	0.57		0.49		mg/L	15%	
Nitrogen, Total Kjeldahl	General Chemistry	1		1.3		mg/L	26%	*
OrthoPhosphate as P	General Chemistry	0.043		0.043		mg/L	0%	
Phosphate as P	General Chemistry	0.22		0.22		mg/L	0%	
Suspended Solids	General Chemistry	32		35		mg/L	9%	
Total Organic Carbon	General Chemistry	5.7		5.7		mg/L	0%	
Turbidity	General Chemistry	19		19		NTU	0%	
Zinc	General Chemistry	4.9		4.2		µg/L	15%	
Zinc (dissolved)	General Chemistry	-0.8	ND	-0.8	ND	µg/L	NA	
Aldrin	Pesticide	-0.009	ND	-0.009	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	
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	-0.20	ND	-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	
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: 12/8/2009	**Site: Salt Slough at Lander Ave**							
Ceriodaphnia dubia	Aquatic Toxicity	100		100		%	0%	
Pimephales promelas	Aquatic Toxicity	97.5		100		%	3%	
Selenastrum capricornutum	Aquatic Toxicity	3720000		4023000		cells/ml	8%	
Ammonia as N	General Chemistry	0.15		0.24		mg/L	46%	*
Arsenic	General Chemistry	3.4		3		µg/L	13%	
Boron	General Chemistry	880		920		µg/L	4%	
Bromide	General Chemistry	1.6		1.5		mg/L	6%	

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	
Cadmium	General Chemistry	0.02	DNQ	0.01	DNQ	µg/L	67%	*
Cadmium (dissolved)	General Chemistry	-0.011	ND	-0.011	ND	µg/L	NA	
Copper	General Chemistry	1.9		1.1		µg/L	53%	*
Copper (dissolved)	General Chemistry	0.09	DNQ	0.24	DNQ	µg/L	91%	*
Dissolved Organic Carbon	General Chemistry	5.4		5.4		mg/L	0%	
Dissolved Solids	General Chemistry	1100		1100		mg/L	0%	
E. coli	General Chemistry	38		26		MPN/100 mL	38%	*
Hardness as CaCO3	General Chemistry	400		400		mg/L	0%	
Lead	General Chemistry	0.54		0.29		µg/L	60%	*
Lead (dissolved)	General Chemistry	-0.071	ND	-0.071	ND	µg/L	NA	
Nickel	General Chemistry	3.7		2.6		µg/L	35%	*
Nickel (dissolved)	General Chemistry	1.5		1.6		µg/L	6%	
Nitrate + Nitrite as N	General Chemistry	0.23		0.18		mg/L	24%	
Nitrogen, Total Kjeldahl	General Chemistry	1.7		1		mg/L	52%	*
OrthoPhosphate as P	General Chemistry	0.13		0.041		mg/L	104%	*
Phosphate as P	General Chemistry	0.3		0.28		mg/L	7%	
Selenium	General Chemistry	0.22	DNQ	0.19	DNQ	µg/L	15%	
Suspended Solids	General Chemistry	63		28		mg/L	77%	*
Total Organic Carbon	General Chemistry	5.5		5.5		mg/L	0%	
Turbidity	General Chemistry	25		15		NTU	50%	*
Zinc	General Chemistry	5.6		2.7		µg/L	70%	*
Zinc (dissolved)	General Chemistry	-0.8	ND	-0.8	ND	µg/L	NA	
Aldicarb	Pesticide	-0.20	ND	-0.20	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	
Carbaryl	Pesticide	-0.050	ND	-0.050	ND	µg/L	NA	
Carbofuran	Pesticide	-0.050	ND	-0.050	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	-0.20	ND	-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	

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	
Endrin	Pesticide	-0.007	ND	-0.007	ND	µg/L	NA	
EPTC	Pesticide	-0.03	ND	-0.03	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	
Methiocarb	Pesticide	-0.20	ND	-0.20	ND	µg/L	NA	
Methomyl	Pesticide	-0.050	ND	-0.050	ND	µg/L	NA	
Methoxychlor	Pesticide	-0.008	ND	-0.008	ND	µg/L	NA	
Oxamyl	Pesticide	-0.20	ND	-0.20	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: 1/12/2010	**Site: Salt Slough at Lander Ave**							
Ceriodaphnia dubia	Aquatic Toxicity	100		65		%	42%	*
Selenastrum capricornutum	Aquatic Toxicity	3713000		3755000		cells/ml	1%	
Ammonia as N	General Chemistry	0.2		0.16		mg/L	22%	
Boron	General Chemistry	1100		1000		µg/L	10%	
Bromide	General Chemistry	1.9		1.8		mg/L	5%	
Copper	General Chemistry	1.4		1.7		µg/L	19%	
Copper (dissolved)	General Chemistry	-0.06	ND	-0.06	ND	µg/L	NA	
Dissolved Organic Carbon	General Chemistry	4.9		4.8		mg/L	2%	
Dissolved Solids	General Chemistry	1300		1300		mg/L	0%	
E. coli	General Chemistry	40		49		MPN/100 mL	20%	
Hardness as CaCO3	General Chemistry	450		460		mg/L	2%	
Nickel	General Chemistry	3.7		3.6		µg/L	3%	
Nickel (dissolved)	General Chemistry	1.6		1.6		µg/L	0%	
Nitrate + Nitrite as N	General Chemistry	0.28		0.32		mg/L	13%	
Nitrogen, Total Kjeldahl	General Chemistry	1.2		1.1		mg/L	9%	
OrthoPhosphate as P	General Chemistry	0.037		0.036		mg/L	3%	
Phosphate as P	General Chemistry	0.27		0.27		mg/L	0%	
Suspended Solids	General Chemistry	64		62		mg/L	3%	
Total Organic Carbon	General Chemistry	5.7		4.9		mg/L	15%	
Turbidity	General Chemistry	32		41		NTU	25%	
Zinc	General Chemistry	5.5		4.9		µg/L	12%	

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	
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	-0.20	ND	-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	
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: 1/21/2010	**Site: Salt Slough at Lander Ave**							
Ceriodaphnia dubia	Aquatic Toxicity	100		100		%	0%	
Pimephales promelas	Aquatic Toxicity	97.5		100		%	3%	
Selenastrum capricornutum	Aquatic Toxicity	3920000		4123000		cells/ml	5%	
Ammonia as N	General Chemistry	0.21		0.077	DNQ	mg/L	93%	*
Arsenic	General Chemistry	4		3.9		µg/L	3%	

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	
Boron	General Chemistry	950		910		µg/L	4%	
Bromide	General Chemistry	0.9	DNQ	1		mg/L	11%	
Cadmium	General Chemistry	0.03	DNQ	0.02	DNQ	µg/L	40%	*
Cadmium (dissolved)	General Chemistry	0.01	DNQ	0.01	DNQ	µg/L	0%	
Copper	General Chemistry	3.3		3.3		µg/L	0%	
Copper (dissolved)	General Chemistry	0.77		0.81		µg/L	5%	
Dissolved Organic Carbon	General Chemistry	7.7		7.4		mg/L	4%	
Dissolved Solids	General Chemistry	920		920		mg/L	0%	
E. coli	General Chemistry	460		520		MPN/100 mL	12%	
Hardness as CaCO3	General Chemistry	350		360		mg/L	3%	
Lead	General Chemistry	0.95		0.99		µg/L	4%	
Lead (dissolved)	General Chemistry	-0.071	ND	-0.071	ND	µg/L	NA	
Nickel	General Chemistry	5.8		6.1		µg/L	5%	
Nickel (dissolved)	General Chemistry	2		1.9		µg/L	5%	
Nitrate + Nitrite as N	General Chemistry	0.61		0.71		mg/L	15%	
Nitrogen, Total Kjeldahl	General Chemistry	1.2		1.2		mg/L	0%	
OrthoPhosphate as P	General Chemistry	0.14		0.13		mg/L	7%	
Phosphate as P	General Chemistry	0.33		0.34		mg/L	3%	
Selenium	General Chemistry	0.59	DNQ	0.56	DNQ	µg/L	5%	
Suspended Solids	General Chemistry	87		93		mg/L	7%	
Total Organic Carbon	General Chemistry	7.5		7.4		mg/L	1%	
Turbidity	General Chemistry	44		400		NTU	160%	*
Zinc	General Chemistry	8.8		8		µg/L	10%	
Zinc (dissolved)	General Chemistry	-0.8	ND	-0.8	ND	µg/L	NA	
Aldicarb	Pesticide	-0.20	ND	-0.20	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	
Carbaryl	Pesticide	-0.050	ND	-0.050	ND	µg/L	NA	
Carbofuran	Pesticide	-0.050	ND	-0.050	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	0.93		0.93		µg/L	0%	
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	
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	
Methiocarb	Pesticide	-0.20	ND	-0.20	ND	µg/L	NA	
Methomyl	Pesticide	-0.050	ND	-0.050	ND	µg/L	NA	
Methoxychlor	Pesticide	-0.008	ND	-0.008	ND	µg/L	NA	
Oxamyl	Pesticide	-0.20	ND	-0.20	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	-0.38	ND	-0.38	ND	µg/L	NA	
Trifluralin	Pesticide	-0.036	ND	-0.036	ND	µg/L	NA	
Sample Date: 2/9/2010	**Site: Salt Slough at Lander Ave**							
Ceriodaphnia dubia	Aquatic Toxicity	100		95		%	5%	
Selenastrum capricornutum	Aquatic Toxicity	4838000		4710000		cells/ml	3%	
Ammonia as N	General Chemistry	-0.06	ND	0.14		mg/L	NA	
Boron	General Chemistry	1000		960		µg/L	4%	
Bromide	General Chemistry	1.5		1.4		mg/L	7%	
Copper	General Chemistry	2.9		2.6		µg/L	11%	
Copper (dissolved)	General Chemistry	0.78		0.74		µg/L	5%	
Dissolved Organic Carbon	General Chemistry	6.1		6		mg/L	2%	
Dissolved Solids	General Chemistry	1100		1100		mg/L	0%	
E. coli	General Chemistry	130		260		MPN/100 mL	67%	*
Hardness as CaCO3	General Chemistry	400		420		mg/L	5%	
Nickel	General Chemistry	4.6		4.7		µg/L	2%	
Nickel (dissolved)	General Chemistry	1.8		1.8		µg/L	0%	
Nitrate + Nitrite as N	General Chemistry	0.66		0.6		mg/L	10%	
Nitrogen, Total Kjeldahl	General Chemistry	1		0.99		mg/L	1%	
OrthoPhosphate as P	General Chemistry	0.059		0.062		mg/L	5%	
Phosphate as P	General Chemistry	0.28		0.27		mg/L	4%	
Suspended Solids	General Chemistry	47		48		mg/L	2%	
Total Organic Carbon	General Chemistry	6		6.2		mg/L	3%	

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
Turbidity	General Chemistry	26		26		NTU	0%
Zinc	General Chemistry	5.8		5.7		µg/L	2%
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	1.7		1.7		µg/L	0%
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
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

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 13.75 %

Sample Event: 59 9/14/2009

Pesticide	Results	Units
4,4'-DDD	0.0065	mg/kg
4,4'-DDE	0.045	mg/kg
4,4'-DDT	ND	mg/kg
Aldrin	ND	mg/kg
Allethrin	ND	ug/kg
alpha-BHC	ND	mg/kg
beta-BHC	ND	mg/kg
Bifenthrin (Biphenthrin)	4.3	ug/kg
Chlordane	ND	mg/kg
Chlorpyrifos (Dursban)	0.78	ug/kg
Cyfluthrin (Baythroid)	ND	ug/kg
Cypermethrin	0.3	ug/kg
delta-BHC	ND	mg/kg
Deltamethrin:Tralomethrin	ND	ug/kg
Dieldrin	ND	mg/kg
Endosulfan I	ND	mg/kg
Endosulfan II	ND	mg/kg
Endosulfan sulfate	ND	mg/kg
Endrin	ND	mg/kg
Endrin aldehyde	ND	mg/kg
Endrin ketone	ND	mg/kg
Esfenvalerate:Fenvalerate	1.1	ug/kg
Fenpropathrin (Danitol)	ND	ug/kg
gamma-BHC (Lindane)	ND	mg/kg
Heptachlor	ND	mg/kg
Heptachlor epoxide	ND	mg/kg
Kepone	ND	mg/kg
Lambda-Cyhalothrin	11	ug/kg
Methoxychlor	ND	mg/kg
Mirex	ND	mg/kg
Permethrin	2	ug/kg
Tau-Fluvalinate	ND	ug/kg
Tetramethrin	ND	ug/kg
Toxaphene	ND	mg/kg

Hospital Creek at River Road

Toxicity Results Hyalella azteca 10 %

Sample Event: 59 9/14/2009

Pesticide	Results	Units

4,4'-DDD	0.0046	mg/kg
4,4'-DDE	0.03	mg/kg
4,4'-DDT	ND	mg/kg
Aldrin	ND	mg/kg
Allethrin	ND	ug/kg
alpha-BHC	ND	mg/kg
beta-BHC	ND	mg/kg
Bifenthrin (Biphenthrin)	380	ug/kg
Chlordane	ND	mg/kg
Chlorpyrifos (Dursban)	6.4	ug/kg
Cyfluthrin (Baythroid)	ND	ug/kg
Cypermethrin	ND	ug/kg
delta-BHC	ND	mg/kg
Deltamethrin:Tralomethrin	ND	ug/kg
Dieldrin	ND	mg/kg
Endosulfan I	ND	mg/kg
Endosulfan II	ND	mg/kg
Endosulfan sulfate	ND	mg/kg
Endrin	ND	mg/kg
Endrin aldehyde	ND	mg/kg
Endrin ketone	ND	mg/kg
Esfenvalerate:Fenvalerate	0.35	ug/kg
Fenpropathrin (Danitol)	ND	ug/kg
gamma-BHC (Lindane)	ND	mg/kg
Heptachlor	ND	mg/kg
Heptachlor epoxide	ND	mg/kg
Kepone	ND	mg/kg
Lambda-Cyhalothrin	1.3	ug/kg
Methoxychlor	ND	mg/kg
Mirex	ND	mg/kg
Permethrin	7.8	ug/kg
Tau-Fluvalinate	ND	ug/kg
Tetramethrin	ND	ug/kg

Ingram Creek at River Road

Toxicity Results Hyalella azteca 0 %

Sample Event: 59 9/14/2009

Pesticide	Results	Units
4,4'-DDD	0.0098	mg/kg
4,4'-DDE	0.096	mg/kg
4,4'-DDT	0.015	mg/kg
Aldrin	ND	mg/kg

Sediment Toxictiy Follow-up Analysis

Allethrin	ND	ug/kg
alpha-BHC	ND	mg/kg
beta-BHC	ND	mg/kg
Bifenthrin (Biphenthrin)	6.5	ug/kg
Chlordane	ND	mg/kg
Chlorpyrifos (Dursban)	1.7	ug/kg
Cyfluthrin (Baythroid)	ND	ug/kg
Cypermethrin	0.27	ug/kg
delta-BHC	ND	mg/kg
Deltamethrin:Tralomethrin	ND	ug/kg
Dieldrin	ND	mg/kg
Endosulfan I	ND	mg/kg
Endosulfan II	ND	mg/kg
Endosulfan sulfate	ND	mg/kg
Endrin	ND	mg/kg
Endrin aldehyde	ND	mg/kg
Endrin ketone	ND	mg/kg
Esfenvalerate:Fenvalerate	3.9	ug/kg
Fenpropathrin (Danitol)	ND	ug/kg
gamma-BHC (Lindane)	ND	mg/kg
Heptachlor	ND	mg/kg
Heptachlor epoxide	ND	mg/kg
Kepone	ND	mg/kg
Lambda-Cyhalothrin	62	ug/kg
Methoxychlor	ND	mg/kg
Mirex	ND	mg/kg
Permethrin	74	ug/kg
Tau-Fluvalinate	ND	ug/kg
Tetramethrin	ND	ug/kg
Toxaphene	ND	mg/kg

Attachment 5
Exceedance of Recommended Water Quality Values

Westside San Joaquin River Watershed Coalition

Number of Water Quality Value Exceedances for the period of 9/1/2009 to 3/1/2010

Type	Constituent	# of Exceedances	# of Tests
Aquatic Toxicity	Ceriodaphnia dubia	7	59
Aquatic Toxicity	Selenastrum capricornutum	1	49
Field Data	DO	9	113
Field Data	EC	76	113
Field Data	Flow	30	99
Field Data	pH	13	104
General Chemistry	Arsenic	2	39
General Chemistry	Boron	13	59
General Chemistry	E. Coli	41	106
General Chemistry	Total Dissolved Solids	73	106
Pesticide	Chlorpyrifos	7	74
Pesticide	DDE(p,p')	10	50
Pesticide	DDT(p,p')	3	50
Pesticide	Diazinon	1	74
Pesticide	Diuron	5	58
Pesticide	Endrin	1	50
Pesticide	g-Chlordane	3	50
Pesticide	Malathion	1	74
Pesticide	Methamidophos	1	74
Sediment Toxicity	Hyalella azteca	3	9

Westside San Joaquin River Watershed Coalition

Number of Water Quality Value Exceedances for the period of 9/1/2009 to 3/1/2010

Blewett Drain at Highway 132

Type	Constituent	# of Exceedances	# of Tests
Aquatic Toxicity	Ceriodaphnia dubia	1	1
Field Data	EC	1	2
Field Data	Flow	2	4
Field Data	pH	1	2
General Chemistry	E. Coli	3	3
General Chemistry	Total Dissolved Solids	1	3
Pesticide	Chlorpyrifos	1	1
Pesticide	DDE(p,p')	1	1

Del Puerto Creek at Hwy 33

Type	Constituent	# of Exceedances	# of Tests
Field Data	pH	1	1
General Chemistry	Total Dissolved Solids	1	1

Del Puerto Creek near Cox Road

Type	Constituent	# of Exceedances	# of Tests
Field Data	EC	2	5
Field Data	pH	1	5
General Chemistry	E. Coli	1	4
General Chemistry	Total Dissolved Solids	2	4
Pesticide	Endrin	1	2
Sediment Toxicity	Hyalella azteca	1	1

Delta Mendota Canal at DPWD

Type	Constituent	# of Exceedances	# of Tests
Aquatic Toxicity	Ceriodaphnia dubia	1	2
Field Data	pH	2	7
General Chemistry	Total Dissolved Solids	1	7

Hospital Creek at River Road

Type	Constituent	# of Exceedances	# of Tests
Aquatic Toxicity	Ceriodaphnia dubia	2	2
Field Data	DO	1	3
Field Data	EC	1	3
Field Data	pH	1	3
General Chemistry	Arsenic	1	2
General Chemistry	E. Coli	2	2
Pesticide	Chlorpyrifos	2	2
Pesticide	DDE(p,p')	2	2
Pesticide	DDT(p,p')	1	2
Pesticide	Diuron	1	2

Pesticide	g-Chlordane	1	2
Pesticide	Malathion	1	2
Sediment Toxicity	Hyalella azteca	1	1

Ingram Creek at River Road

Type	Constituent	# of Exceedances	# of Tests
Field Data	EC	4	4
Field Data	Flow	1	4
General Chemistry	Arsenic	1	2
General Chemistry	Boron	1	2
General Chemistry	E. Coli	2	4
General Chemistry	Total Dissolved Solids	4	4
Pesticide	Chlorpyrifos	1	2
Pesticide	DDE(p,p')	2	2
Pesticide	g-Chlordane	1	2
Sediment Toxicity	Hyalella azteca	1	1

Los Banos Creek at China Camp Road

Type	Constituent	# of Exceedances	# of Tests
Field Data	DO	1	8
Field Data	EC	8	8
Field Data	Flow	5	7
Field Data	pH	1	7
General Chemistry	Boron	2	2
General Chemistry	E. Coli	2	7
General Chemistry	Total Dissolved Solids	5	7

Los Banos Creek at Hwy 140

Type	Constituent	# of Exceedances	# of Tests
Aquatic Toxicity	Ceriodaphnia dubia	1	7
Field Data	EC	7	7
Field Data	pH	1	6
General Chemistry	Boron	1	2
General Chemistry	E. Coli	4	7
General Chemistry	Total Dissolved Solids	6	7

Marshall Road Drain near River Road

Type	Constituent	# of Exceedances	# of Tests
Field Data	EC	1	3
Field Data	Flow	2	4
Field Data	pH	1	3
General Chemistry	E. Coli	1	3
General Chemistry	Total Dissolved Solids	3	3
Pesticide	Chlorpyrifos	1	2

Pesticide	DDE(p,p')	2	2
Pesticide	DDT(p,p')	2	2
Pesticide	Diuron	1	2
Pesticide	g-Chlordane	1	2

Mud Slough Upstream of San Luis Drain

Type	Constituent	# of Exceedances	# of Tests
Field Data	DO	1	7
Field Data	EC	7	7
General Chemistry	Boron	2	2
General Chemistry	E. Coli	1	7
General Chemistry	Total Dissolved Solids	7	7

Newman Wasteway near Hills Ferry Road

Type	Constituent	# of Exceedances	# of Tests
Field Data	DO	3	7
Field Data	EC	6	7
Field Data	Flow	4	6
General Chemistry	Boron	1	2
General Chemistry	E. Coli	4	6
General Chemistry	Total Dissolved Solids	6	6
Pesticide	DDE(p,p')	1	2

Orestimba Creek at Hwy 33

Type	Constituent	# of Exceedances	# of Tests
Field Data	Flow	1	3
Field Data	pH	1	3
General Chemistry	E. Coli	1	2
Pesticide	DDE(p,p')	1	2
Pesticide	Diazinon	1	2
Pesticide	Methamidophos	1	2

Orestimba Creek at River Road

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

Poso Slough at Indiana Ave

Type	Constituent	# of Exceedances	# of Tests
Aquatic Toxicity	Selenastrum capricornutum	1	2

Field Data	EC	6	7
Field Data	Flow	1	7
General Chemistry	E. Coli	4	7
General Chemistry	Total Dissolved Solids	4	7
Pesticide	Diuron	1	2

Ramona Lake near Fig Avenue

Type	Constituent	# of Exceedances	# of Tests
Aquatic Toxicity	Ceriodaphnia dubia	1	2
Field Data	EC	5	6
Field Data	Flow	3	6
Field Data	pH	1	6
General Chemistry	E. Coli	1	5
General Chemistry	Total Dissolved Solids	5	5

Salt Slough at Lander Ave

Type	Constituent	# of Exceedances	# of Tests
Field Data	EC	7	7
General Chemistry	Boron	4	7
General Chemistry	E. Coli	3	7
General Chemistry	Total Dissolved Solids	7	7
Pesticide	Chlorpyrifos	1	7

Salt Slough at Sand Dam

Type	Constituent	# of Exceedances	# of Tests
Field Data	EC	2	2
Field Data	Flow	1	1
Field Data	pH	1	1
General Chemistry	Total Dissolved Solids	2	2
Pesticide	Diuron	1	2

San Joaquin River at Lander Ave

Type	Constituent	# of Exceedances	# of Tests
Field Data	EC	4	7
General Chemistry	E. Coli	2	7
General Chemistry	Total Dissolved Solids	4	7

San Joaquin River at PID Pumps

Type	Constituent	# of Exceedances	# of Tests
Field Data	EC	5	7
Field Data	pH	1	7
General Chemistry	Boron	2	7
General Chemistry	E. Coli	3	7
General Chemistry	Total Dissolved Solids	7	7

Pesticide	Chlorpyrifos	1	7

San Joaquin River at Sack Dam

Type	Constituent	# of Exceedances	# of Tests
Aquatic Toxicity	Ceriodaphnia dubia	1	1
Field Data	EC	3	6
Field Data	Flow	4	4
General Chemistry	Total Dissolved Solids	2	6
Pesticide	Diuron	1	1

Turner Slough at Edminster Road

Type	Constituent	# of Exceedances	# of Tests
Field Data	DO	2	5
Field Data	EC	4	5
Field Data	Flow	2	3
General Chemistry	E. Coli	4	5
General Chemistry	Total Dissolved Solids	3	5

Westley Wasteway near Cox Road

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

Westside San Joaquin River Watershed Coalition

Water Quality Value Exceedances for the period of 9/1/2009 to 3/1/2010

Blewett Drain at Highway 132

Analyte/Species	Event	Sample Date	Result		Units	Significant Toxicity	WQV Max	WQV Min
E. Coli	59	9/15/2009	690		MPN/100 mL		235	
EC	59	9/15/2009	778		µmhos/cm		700	
Total Dissolved Solids	59	9/15/2009	530		mg/L		450	
Flow	61	11/10/2009	0		cfs			0.01
Flow	62/R9	12/8/2009	0		cfs			0.01
Ceriodaphnia dubia	R10	1/25/2010	0		%	yes		
Chlorpyrifos	R10	1/25/2010	0.35		µg/L		0.015	
DDE(p,p')	R10	1/25/2010	0.016		µg/L		0.00059	
E. Coli	R10	1/25/2010	550		MPN/100 mL		235	
E. Coli	64	2/9/2010	2400	>	MPN/100 mL		235	
pH	64	2/9/2010	6.41				8.5	6.5

Del Puerto Creek at Hwy 33

Analyte/Species	Event	Sample Date	Result	Units	Significant Toxicity	WQV Max	WQV Min
pH	R10	1/25/2010	8.56			8.5	6.5
Total Dissolved Solids	R10	1/25/2010	500	mg/L		450	

Del Puerto Creek near Cox Road

Analyte/Species	Event	Sample Date	Result	Units	Significant Toxicity	WQV Max	WQV Min
EC	59	9/14/2009	1010	µmhos/cm		700	
Hyalella azteca	59	9/14/2009	13.75	%	yes		
EC	59	9/15/2009	1159	µmhos/cm		700	
Total Dissolved Solids	59	9/15/2009	800	mg/L		450	
E. Coli	R8	10/15/2009	2400	MPN/100 mL		235	
Endrin	R8	10/15/2009	0.05	µg/L		0.036	
pH	R8	10/15/2009	8.56			8.5	6.5
Total Dissolved Solids	64	2/9/2010	590	mg/L		450	

Delta Mendota Canal at DPWD

Analyte/Species	Event	Sample Date	Result	Units	Significant Toxicity	WQV Max	WQV Min
Ceriodaphnia dubia	R8	10/15/2009	15	%	yes		
pH	R8	10/15/2009	9.33			8.5	6.5
pH	62/R9	12/8/2009	6.31			8.5	6.5
Total Dissolved Solids	63	1/12/2010	540	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 9/1/2009 to 3/1/2010

Hospital Creek at River Road

Analyte/Species	Event	Sample Date	Result		Units	Significant Toxicity	WQV Max	WQV Min
EC	59	9/14/2009	800		µmhos/cm		700	
Hyalella azteca	59	9/14/2009	10		%	yes		
Arsenic	R8	10/14/2009	11		µg/L		10	
Ceriodaphnia dubia	R8	10/14/2009	0		%	yes		
Chlorpyrifos	R8	10/14/2009	0.078		µg/L		0.015	
DDE(p,p')	R8	10/14/2009	0.043		µg/L		0.00059	
DDT(p,p')	R8	10/14/2009	0.013		µg/L		0.00059	
DO	R8	10/14/2009	0		mg/l			5
E. Coli	R8	10/14/2009	2400	>	MPN/100 mL		235	
g-Chlordane	R8	10/14/2009	0.015		µg/L		0.00057	
Malathion	R8	10/14/2009	0.073	DNQ	µg/L		5E-07	
pH	R8	10/14/2009	0				8.5	6.5
Ceriodaphnia dubia	R10	1/25/2010	0		%	yes		
Chlorpyrifos	R10	1/25/2010	0.22		µg/L		0.015	
DDE(p,p')	R10	1/25/2010	0.014		µg/L		0.00059	
Diuron	R10	1/25/2010	5.1		µg/L		2	
E. Coli	R10	1/25/2010	730		MPN/100 mL		235	

Ingram Creek at River Road

Analyte/Species	Event	Sample Date	Result		Units	Significant Toxicity	WQV Max	WQV Min
Hyalella azteca	59	9/14/2009	0		%	yes		
E. Coli	59	9/15/2009	2400	>	MPN/100 mL		235	
EC	59	9/15/2009	1309		µmhos/cm		700	
Total Dissolved Solids	59	9/15/2009	1000		mg/L		450	
Arsenic	R8	10/14/2009	11		µg/L		10	
Chlorpyrifos	R8	10/14/2009	0.053		µg/L		0.015	
DDE(p,p')	R8	10/14/2009	0.035		µg/L		0.00059	
E. Coli	R8	10/14/2009	2400	>	MPN/100 mL		235	
EC	R8	10/14/2009	1055		µmhos/cm		700	
g-Chlordane	R8	10/14/2009	0.026		µg/L		0.00057	
Total Dissolved Solids	R8	10/14/2009	730		mg/L		450	
EC	61	11/10/2009	1119		µmhos/cm		700	
Flow	61	11/10/2009	0		cfs			0.01
Total Dissolved Solids	61	11/10/2009	1000		mg/L		450	
Boron	R10	1/25/2010	1700		µg/L		700	
DDE(p,p')	R10	1/25/2010	0.0062	DNQ	µg/L		0.00059	
EC	R10	1/25/2010	1101		µmhos/cm		700	
Total Dissolved Solids	R10	1/25/2010	1000		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 9/1/2009 to 3/1/2010

Los Banos Creek at China Camp Road

Analyte/Species	Event	Sample Date	Result	Units	Significant Toxicity	WQV Max	WQV Min
EC	59	9/14/2009	1737	µmhos/cm		700	
Flow	59	9/14/2009	0	cfs			0.01
DO	59	9/15/2009	3.02	mg/l			5
E. Coli	59	9/15/2009	290	MPN/100 mL		235	
EC	59	9/15/2009	1632	µmhos/cm		700	
Flow	59	9/15/2009	0	cfs			0.01
Total Dissolved Solids	59	9/15/2009	840	mg/L		450	
EC	60	10/13/2009	742	µmhos/cm		700	
Flow	60	10/13/2009	0	cfs			0.01
EC	61	11/10/2009	1371	µmhos/cm		700	
Flow	61	11/10/2009	0	cfs			0.01
Boron	62/R9	12/8/2009	1700	µg/L		700	
EC	62/R9	12/8/2009	1548	µmhos/cm		700	
Flow	62/R9	12/8/2009	0	cfs			0.01
Total Dissolved Solids	62/R9	12/8/2009	1200	mg/L		450	
EC	63	1/12/2010	1672	µmhos/cm		700	
Total Dissolved Solids	63	1/12/2010	810	mg/L		450	
Boron	R10	1/21/2010	1800	µg/L		700	
EC	R10	1/21/2010	2133	µmhos/cm		700	
pH	R10	1/21/2010	9.07			8.5	6.5
Total Dissolved Solids	R10	1/21/2010	1300	mg/L		450	
E. Coli	64	2/9/2010	2000	MPN/100 mL		235	
EC	64	2/9/2010	2081	µmhos/cm		700	
Total Dissolved Solids	64	2/9/2010	1300	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 9/1/2009 to 3/1/2010

Los Banos Creek at Hwy 140

Analyte/Species	Event	Sample Date	Result		Units	Significant Toxicity	WQV Max	WQV Min
E. Coli	59	9/15/2009	2400	>	MPN/100 mL		235	
EC	59	9/15/2009	1010		µmhos/cm		700	
Total Dissolved Solids	59	9/15/2009	490		mg/L		450	
E. Coli	60	10/13/2009	2400	>	MPN/100 mL		235	
EC	60	10/13/2009	846		µmhos/cm		700	
EC	61	11/10/2009	1371		µmhos/cm		700	
Total Dissolved Solids	61	11/10/2009	770		mg/L		450	
Boron	62/R9	12/8/2009	870		µg/L		700	
EC	62/R9	12/8/2009	1142		µmhos/cm		700	
Total Dissolved Solids	62/R9	12/8/2009	780		mg/L		450	
Ceriodaphnia dubia	63	1/12/2010	18.33		%	yes		
E. Coli	63	1/12/2010	980		MPN/100 mL		235	
EC	63	1/12/2010	1516		µmhos/cm		700	
Total Dissolved Solids	63	1/12/2010	890		mg/L		450	
E. Coli	R10	1/21/2010	2400	>	MPN/100 mL		235	
EC	R10	1/21/2010	969		µmhos/cm		700	
pH	R10	1/21/2010	8.57				8.5	6.5
Total Dissolved Solids	R10	1/21/2010	600		mg/L		450	
EC	64	2/9/2010	2113		µmhos/cm		700	
Total Dissolved Solids	64	2/9/2010	1300		mg/L		450	

Marshall Road Drain near River Road

Analyte/Species	Event	Sample Date	Result		Units	Significant Toxicity	WQV Max	WQV Min
EC	59	9/15/2009	904		µmhos/cm		700	
Total Dissolved Solids	59	9/15/2009	570		mg/L		450	
Chlorpyrifos	R8	10/14/2009	0.091		µg/L		0.015	
DDE(p,p')	R8	10/14/2009	0.047		µg/L		0.00059	
DDT(p,p')	R8	10/14/2009	0.047		µg/L		0.00059	
E. Coli	R8	10/14/2009	2400	>	MPN/100 mL		235	
g-Chlordane	R8	10/14/2009	0.031		µg/L		0.00057	
pH	R8	10/14/2009	9.89				8.5	6.5
Total Dissolved Solids	R8	10/14/2009	580		mg/L		450	
Flow	61	11/10/2009	0		cfs			0.01
DDE(p,p')	R10	1/25/2010	0.028		µg/L		0.00059	
DDT(p,p')	R10	1/25/2010	0.016		µg/L		0.00059	
Diuron	R10	1/25/2010	3.5		µg/L		2	
Total Dissolved Solids	R10	1/25/2010	470		mg/L		450	
Flow	64	2/9/2010	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 9/1/2009 to 3/1/2010

Mud Slough Upstream of San Luis Drain

Analyte/Species	Event	Sample Date	Result	Units	Significant Toxicity	WQV Max	WQV Min
EC	59	9/15/2009	1051	µmhos/cm		700	
Total Dissolved Solids	59	9/15/2009	530	mg/L		450	
E. Coli	60	10/13/2009	390	MPN/100 mL		235	
EC	60	10/13/2009	1057	µmhos/cm		700	
Total Dissolved Solids	60	10/13/2009	570	mg/L		450	
EC	61	11/10/2009	2024	µmhos/cm		700	
Total Dissolved Solids	61	11/10/2009	1100	mg/L		450	
Boron	62/R9	12/8/2009	1500	µg/L		700	
Total Dissolved Solids	62/R9	12/8/2009	1200	mg/L		450	
EC	62/R9	12/9/2009	1960	µmhos/cm		700	
EC	63	1/12/2010	2380	µmhos/cm		700	
Total Dissolved Solids	63	1/12/2010	1500	mg/L		450	
Boron	R10	1/21/2010	1300	µg/L		700	
EC	R10	1/21/2010	1961	µmhos/cm		700	
Total Dissolved Solids	R10	1/21/2010	1200	mg/L		450	
DO	64	2/9/2010	3.53	mg/l			5
EC	64	2/9/2010	1478	µmhos/cm		700	
Total Dissolved Solids	64	2/9/2010	1500	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 9/1/2009 to 3/1/2010

Newman Wasteway near Hills Ferry Road

Analyte/Species	Event	Sample Date	Result		Units	Significant Toxicity	WQV Max	WQV Min
DO	59	9/14/2009	1.76		mg/l			5
EC	59	9/14/2009	1250		µmhos/cm		700	
Flow	59	9/14/2009	0		cfs			0.01
DO	59	9/15/2009	2.39		mg/l			5
EC	59	9/15/2009	1543		µmhos/cm		700	
Flow	59	9/15/2009	0		cfs			0.01
Total Dissolved Solids	59	9/15/2009	760		mg/L		450	
E. Coli	60	10/13/2009	1100		MPN/100 mL		235	
EC	60	10/13/2009	1865		µmhos/cm		700	
Flow	60	10/13/2009	0		cfs			0.01
Total Dissolved Solids	60	10/13/2009	1100		mg/L		450	
Boron	62/R9	12/8/2009	900		µg/L		700	
Total Dissolved Solids	62/R9	12/8/2009	1100		mg/L		450	
EC	62/R9	12/9/2009	1270		µmhos/cm		700	
Flow	62/R9	12/9/2009	0		cfs			0.01
E. Coli	63	1/12/2010	2400	>	MPN/100 mL		235	
EC	63	1/12/2010	792		µmhos/cm		700	
Total Dissolved Solids	63	1/12/2010	600		mg/L		450	
DDE(p,p')	R10	1/21/2010	0.011		µg/L		0.00059	
E. Coli	R10	1/21/2010	2400	>	MPN/100 mL		235	
Total Dissolved Solids	R10	1/21/2010	630		mg/L		450	
DO	64	2/9/2010	3.53		mg/l			5
E. Coli	64	2/9/2010	650		MPN/100 mL		235	
EC	64	2/9/2010	1478		µmhos/cm		700	
Total Dissolved Solids	64	2/9/2010	910		mg/L		450	

Orestimba Creek at Hwy 33

Analyte/Species	Event	Sample Date	Result		Units	Significant Toxicity	WQV Max	WQV Min
Flow	59	9/14/2009	0		cfs			0.01
DDE(p,p')	R8	10/15/2009	0.0095	DNQ	µg/L		0.00059	
Diazinon	R8	10/15/2009	0.13		µg/L		0.1	
E. Coli	R8	10/15/2009	2400	>	MPN/100 mL		235	
Methamidophos	R8	10/15/2009	0.38		µg/L		0.35	
pH	R8	10/15/2009	8.8				8.5	6.5

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 9/1/2009 to 3/1/2010

Orestimba Creek at River Road

Analyte/Species	Event	Sample Date	Result		Units	Significant Toxicity	WQV Max	WQV Min
DO	59	9/14/2009	4.99		mg/l			5
EC	59	9/14/2009	789		µmhos/cm		700	
Flow	59	9/14/2009	0		cfs			0.01
EC	59	9/15/2009	828		µmhos/cm		700	
Flow	59	9/15/2009	0		cfs			0.01
Total Dissolved Solids	59	9/15/2009	550		mg/L		450	
DDE(p,p')	R8	10/15/2009	0.0082	DNQ	µg/L		0.00059	
E. Coli	R8	10/15/2009	2000		MPN/100 mL		235	
Flow	R8	10/15/2009	0		cfs			0.01
E. Coli	61	11/10/2009	250		MPN/100 mL		235	
Flow	62/R9	12/8/2009	0		cfs			0.01

Poso Slough at Indiana Ave

Analyte/Species	Event	Sample Date	Result		Units	Significant Toxicity	WQV Max	WQV Min
E. Coli	59	9/15/2009	2400	>	MPN/100 mL		235	
EC	59	9/15/2009	898		µmhos/cm		700	
E. Coli	60	10/13/2009	490		MPN/100 mL		235	
EC	60	10/13/2009	872		µmhos/cm		700	
E. Coli	62/R9	12/8/2009	290		MPN/100 mL		235	
Total Dissolved Solids	62/R9	12/8/2009	760		mg/L		450	
EC	62/R9	12/9/2009	1168		µmhos/cm		700	
Flow	62/R9	12/9/2009	0		cfs			0.01
EC	63	1/12/2010	970		µmhos/cm		700	
Total Dissolved Solids	63	1/12/2010	560		mg/L		450	
Diuron	R10	1/21/2010	38		µg/L		2	
EC	R10	1/21/2010	1021		µmhos/cm		700	
Selenastrum capricornutum	R10	1/21/2010	0		cells/ml	yes		
Total Dissolved Solids	R10	1/21/2010	620		mg/L		450	
E. Coli	64	2/9/2010	550		MPN/100 mL		235	
EC	64	2/9/2010	976		µmhos/cm		700	
Total Dissolved Solids	64	2/9/2010	560		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 9/1/2009 to 3/1/2010

Ramona Lake near Fig Avenue

Analyte/Species	Event	Sample Date	Result	Units	Significant Toxicity	WQV Max	WQV Min
EC	59	9/14/2009	1610	µmhos/cm		700	
EC	59	9/15/2009	1524	µmhos/cm		700	
Total Dissolved Solids	59	9/15/2009	1000	mg/L		450	
Ceriodaphnia dubia	R8	10/14/2009	40	%	yes		
E. Coli	R8	10/14/2009	410	MPN/100 mL		235	
EC	R8	10/14/2009	1049	µmhos/cm		700	
pH	R8	10/14/2009	10.3			8.5	6.5
Total Dissolved Solids	R8	10/14/2009	820	mg/L		450	
EC	62/R9	12/8/2009	859	µmhos/cm		700	
Flow	62/R9	12/8/2009	0	cfs			0.01
Total Dissolved Solids	62/R9	12/8/2009	930	mg/L		450	
Flow	R10	1/25/2010	0	cfs			0.01
Total Dissolved Solids	R10	1/25/2010	610	mg/L		450	
EC	64	2/9/2010	974	µmhos/cm		700	
Flow	64	2/9/2010	0	cfs			0.01
Total Dissolved Solids	64	2/9/2010	860	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 9/1/2009 to 3/1/2010

Salt Slough at Lander Ave

Analyte/Species	Event	Sample Date	Result	Units	Significant Toxicity	WQV Max	WQV Min
Chlorpyrifos	59	9/15/2009	0.045	µg/L		0.015	
EC	59	9/15/2009	1339	µmhos/cm		700	
Total Dissolved Solids	59	9/15/2009	640	mg/L		450	
E. Coli	60	10/13/2009	340	MPN/100 mL		235	
EC	60	10/13/2009	1256	µmhos/cm		700	
Total Dissolved Solids	60	10/13/2009	690	mg/L		450	
E. Coli	61	11/10/2009	330	MPN/100 mL		235	
EC	61	11/10/2009	1364	µmhos/cm		700	
Total Dissolved Solids	61	11/10/2009	760	mg/L		450	
Boron	62/R9	12/8/2009	880	µg/L		700	
EC	62/R9	12/8/2009	1653	µmhos/cm		700	
Total Dissolved Solids	62/R9	12/8/2009	1100	mg/L		450	
Boron	63	1/12/2010	1100	µg/L		700	
EC	63	1/12/2010	2140	µmhos/cm		700	
Total Dissolved Solids	63	1/12/2010	1300	mg/L		450	
Boron	R10	1/21/2010	950	µg/L		700	
E. Coli	R10	1/21/2010	460	MPN/100 mL		235	
EC	R10	1/21/2010	1491	µmhos/cm		700	
Total Dissolved Solids	R10	1/21/2010	920	mg/L		450	
Boron	64	2/9/2010	1000	µg/L		700	
EC	64	2/9/2010	1786	µmhos/cm		700	
Total Dissolved Solids	64	2/9/2010	1100	mg/L		450	

Salt Slough at Sand Dam

Analyte/Species	Event	Sample Date	Result	Units	Significant Toxicity	WQV Max	WQV Min
Total Dissolved Solids	62/R9	12/8/2009	570	mg/L		450	
EC	62/R9	12/9/2009	806	µmhos/cm		700	
Flow	62/R9	12/9/2009	0	cfs			0.01
Diuron	R10	1/21/2010	4.6	µg/L		2	
EC	R10	1/21/2010	929	µmhos/cm		700	
pH	R10	1/21/2010	8.54			8.5	6.5
Total Dissolved Solids	R10	1/21/2010	540	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 9/1/2009 to 3/1/2010

San Joaquin River at Lander Ave

Analyte/Species	Event	Sample Date	Result		Units	Significant Toxicity	WQV Max	WQV Min
EC	59	9/15/2009	2279		µmhos/cm		700	
Total Dissolved Solids	59	9/15/2009	1100		mg/L		450	
EC	60	10/13/2009	2305		µmhos/cm		700	
Total Dissolved Solids	60	10/13/2009	1200		mg/L		450	
EC	62/R9	12/8/2009	825		µmhos/cm		700	
Total Dissolved Solids	62/R9	12/8/2009	510		mg/L		450	
EC	63	1/12/2010	1421		µmhos/cm		700	
Total Dissolved Solids	63	1/12/2010	770		mg/L		450	
E. Coli	R10	1/21/2010	2400	>	MPN/100 mL		235	
E. Coli	64	2/9/2010	2400	>	MPN/100 mL		235	

San Joaquin River at PID Pumps

Analyte/Species	Event	Sample Date	Result		Units	Significant Toxicity	WQV Max	WQV Min
E. Coli	59	9/15/2009	580		MPN/100 mL		235	
EC	59	9/15/2009	1140		µmhos/cm		700	
Total Dissolved Solids	59	9/15/2009	780		mg/L		450	
Chlorpyrifos	R8	10/14/2009	0.023		µg/L		0.015	
E. Coli	R8	10/14/2009	2400	>	MPN/100 mL		235	
EC	R8	10/14/2009	755		µmhos/cm		700	
pH	R8	10/14/2009	9.8				8.5	6.5
Total Dissolved Solids	R8	10/14/2009	540		mg/L		450	
EC	61	11/10/2009	852		µmhos/cm		700	
Total Dissolved Solids	61	11/10/2009	690		mg/L		450	
Boron	62/R9	12/8/2009	750		µg/L		700	
Total Dissolved Solids	62/R9	12/8/2009	810		mg/L		450	
Boron	63	1/12/2010	1000		µg/L		700	
EC	63	1/12/2010	1108		µmhos/cm		700	
Total Dissolved Solids	63	1/12/2010	990		mg/L		450	
E. Coli	R10	1/26/2010	390		MPN/100 mL		235	
Total Dissolved Solids	R10	1/26/2010	490		mg/L		450	
EC	64	2/9/2010	909		µmhos/cm		700	
Total Dissolved Solids	64	2/9/2010	770		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 9/1/2009 to 3/1/2010

San Joaquin River at Sack Dam

Analyte/Species	Event	Sample Date	Result		Units	Significant Toxicity	WQV Max	WQV Min
Flow	59	9/15/2009	0		cfs			0.01
Flow	60	10/13/2009	0		cfs			0.01
Flow	61	11/10/2009	0		cfs			0.01
EC	63	1/12/2010	812		µmhos/cm		700	
Total Dissolved Solids	63	1/12/2010	460		mg/L		450	
Ceriodaphnia dubia	R10	1/21/2010	50		%	yes		
Diuron	R10	1/21/2010	3.1		µg/L		2	
EC	R10	1/21/2010	837		µmhos/cm		700	
Total Dissolved Solids	R10	1/21/2010	460		mg/L		450	
EC	64	2/9/2010	704		µmhos/cm		700	
Flow	64	2/9/2010	0		cfs			0.01

Turner Slough at Edminster Road

Analyte/Species	Event	Sample Date	Result		Units	Significant Toxicity	WQV Max	WQV Min
DO	59	9/15/2009	2.16		mg/l			5
EC	59	9/15/2009	2504		µmhos/cm		700	
Flow	59	9/15/2009	0		cfs			0.01
Total Dissolved Solids	59	9/15/2009	1300		mg/L		450	
E. Coli	62/R9	12/8/2009	400		MPN/100 mL		235	
Total Dissolved Solids	62/R9	12/8/2009	1300		mg/L		450	
DO	62/R9	12/9/2009	3.11		mg/l			5
EC	62/R9	12/9/2009	1816		µmhos/cm		700	
Flow	62/R9	12/9/2009	0		cfs			0.01
E. Coli	63	1/12/2010	250		MPN/100 mL		235	
EC	63	1/12/2010	2570		µmhos/cm		700	
Total Dissolved Solids	63	1/12/2010	1500		mg/L		450	
E. Coli	R10	1/21/2010	2400	>	MPN/100 mL		235	
EC	R10	1/21/2010	1021		µmhos/cm		700	
E. Coli	64	2/9/2010	330		MPN/100 mL		235	

Westley Wasteway near Cox Road

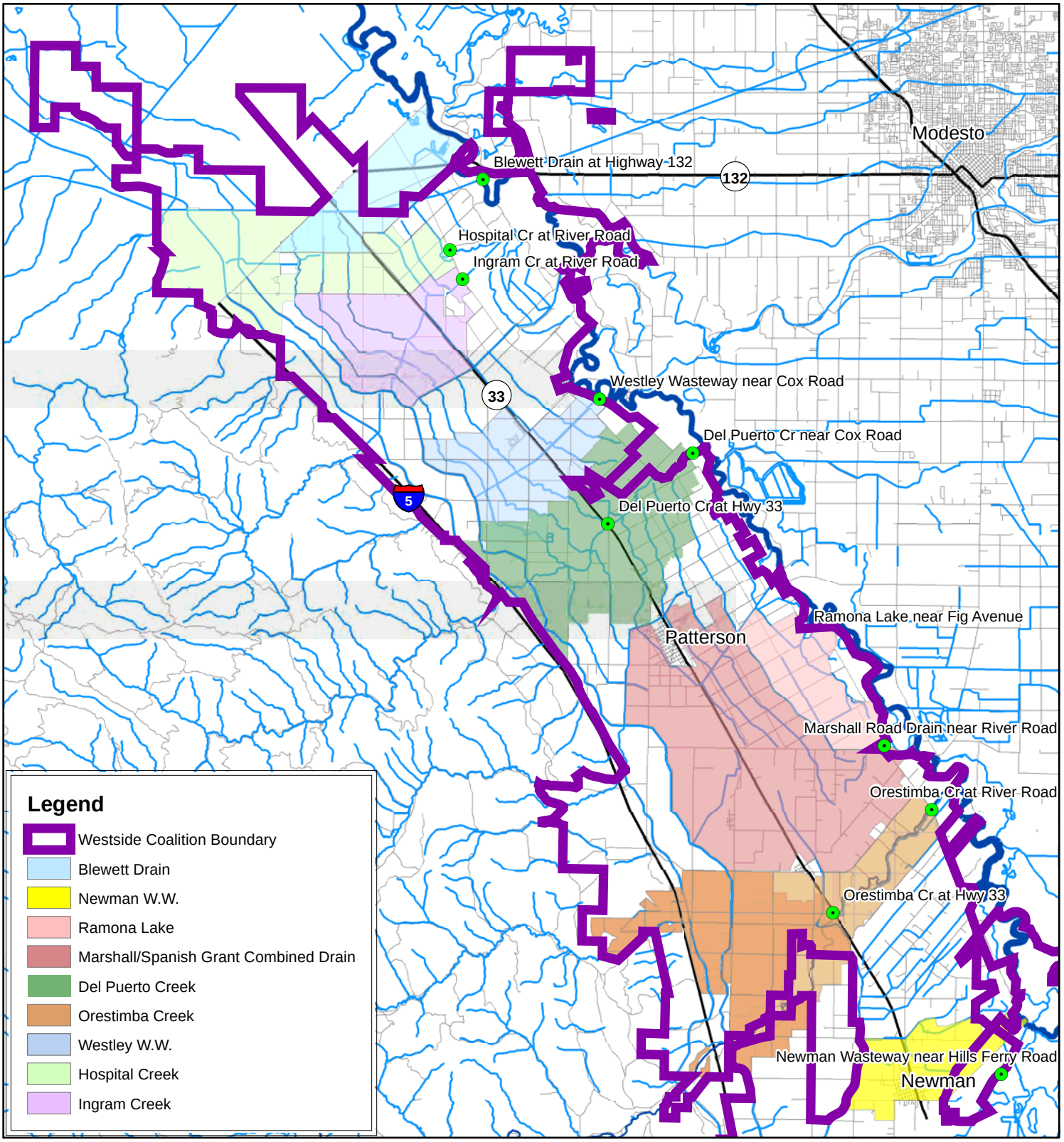
Analyte/Species	Event	Sample Date	Result		Units	Significant Toxicity	WQV Max	WQV Min
Total Dissolved Solids	59	9/15/2009	530		mg/L		450	
E. Coli	61	11/10/2009	290		MPN/100 mL		235	
EC	61	11/10/2009	730		µmhos/cm		700	
Total Dissolved Solids	61	11/10/2009	610		mg/L		450	

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

DNQ = Detected, Not Quantifiable

Attachment 6
Management Plan Activities

Subwatershed Maps



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Westside San Joaquin River Watershed Coalition

Sub-watersheds and Monitoring Sites within the Patterson Subarea

Subwatershed area provided by NRCS
Basemap provided by DWR

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

Westside San Joaquin River Watershed Coalition

Blewett Drain at Highway 132

Hospital Cr at River Road

Ingram Cr at River Road

132

33

5

Legend

- Blewitt
- Hospital
- Ingram
- Morris Drain
- Outside Boundary
- White Lake

Hospital and Ingram Creek Watershed Map
Showing Adjacent Sub-watersheds

Prepared by:
Summers Engineering, Inc
Consulting Engineers
Hanford California

Del Puerto Creek, Westley Wasteway and Orestimba Creek
Draft Management Practice Inventory Survey

Westside San Joaquin River Watershed Coalition

Management Practice Survey

Please use 1 page per Parcel

Parcel Number (APN): _____ **Acreage:** _____

Owner/Operator Information

Company Name: _____ Contact Name: _____

Phone Number: _____ Fax: _____

Mailing Address: _____ Email: _____

_____

Watershed/
Receiving Waterbody: _____ District: _____

Management Practices Information

Irrigation Practices:

Crop: _____ Acreage: _____ Irrig Method: _____

Crop: _____ Acreage: _____ Irrig Method: _____

Crop: _____ Acreage: _____ Irrig Method: _____

Please circle any of these materials that you expect to use in the next 12 months:

Dimethoate (Cygon 400, Dimet) Diuron (Direx, Karmex) Diazinon Malathion
Cholrpyrifos (Lorsban, Lock-on, NuPhos, Govern, Scout, Empire, Dursban) Deltamethrin (Decis)
Bifenthrin (Brigade, Capture, Leverage) Cyfluthrin (Baythroid) Cypermethrin (Ammo, Cymbush)
Lambda-cyhalothrin (Karate, Warrior or Warrior II w/ zeon) Permethrin (Ambush, Pounce)
Esfenvalerate (Asana XL) Fenvalerate (Pydrin)
Resmethrin (Crossfire)
Other: _____

_____

Do you have a
Sedimentation Pond? Yes No If Yes, How many acres does the pond drain: _____
Does the pond have a return system: Yes No
How frequently is the pond cleand out: _____

Does the property include a tile (subsurface) drainage system? Yes No
Does the property include a septic tank/system? Yes No
Do you use PAM: Yes No If Yes, How many acres: _____

Do you apply a dormant spray: Yes No If Yes, How many acres: _____
If Yes, do you apply a pesticide every year: _____
If Yes, do you apply a horticultural oil: _____

Do you apply a berm spray: Yes No If Yes, What material do you use: _____

Do you apply Manure? Yes No If Yes, How many acres: _____
If Yes, What kind: _____

What other practices do you implement to manage your tail water:

_____

_____

_____

_____

Does tailwater leave your porperty? Yes No

Does stormwater leave your property? Yes No

Completed by: _____

Questions: Contact Joe McGahan or Chris Linneman at 559-582-9237

version 2009.3

Evaluation of Pesticide Use Reports

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

MEMORANDUM

TO: Marc Commandatore, Central Valley Regional Water Quality Control Board

FROM: Chris Linneman

DATE: June 2, 2010

SUBJECT: Evaluation of Pesticide Use Reports for identification of material applications related to pesticide exceedances.

The purpose of this memo is to evaluate the value of Pesticide Use Reports (PUR) provided by the Agricultural Commissioner's office.

Procedure
The Westside Coalition requests data from the Agricultural Commissioner's office approximately quarterly. The data requested includes the Westside Coalition area plus a 1 mile buffer zone around the Coalition's boundary. Once this data is requested, it takes approximately two weeks to receive. The data includes a variety of fields including pesticide, active ingredient (AI), date applied, amount applied and acres treated, commodity treated, and township/range/section (TRS) information. This data is imported into an access database, which allows for a variety of queries to be performed, according to a specific need.

Example of Use
For the sake of illustration, two examples of PUR uses are included.

Event 55 – May 12, 2009, Hospital and Ingram Creek
During Event 55, significant toxicity to *Ceriodaphnia dubia* was observed at both Ingram and Hospital Creeks. Chlorpyrifos was detected at both sites (Hospital Creek – 0.034 µg/L, Ingram Creek – 0.018 µg/L) and dicofol was detected at Hospital Creek (0.12 µg/L). DDE was also detected at both sites. The associated pages of Attachment 2 of the November 2009 SAMR are attached for reference.

The PUR database includes TRS information for the primary subwatersheds within the Westside Coalition. This TRS data is linked to the PUR data, which allows for queries within specific subwatersheds. The PUR database was queried for chlorpyrifos and dicofol applications from April 27th through May 12th in sections in both Stanislaus and San Joaquin Counties that fall within the Hospital and Ingram Creek subwatershed. The results of the queries in both counties indicated no reported use of either material. The queries also showed no results when the ranges were expanded to April 1st. The date range had to be expanded to September 1st, 2008 before any use of chlorpyrifos was reported and to August 1st for any reported use of dicofol. It seems unlikely that

applications of these materials in the fall of 2008 would be detectable in runoff in the spring of 2009.

Event 57 – July 14, 2009, Orestimba Creek at River Road

During Event 57, significant toxicity to *Ceriodaphnia dubia* was observed at Orestimba Creek at River Road. Chlorpyrifos was detected in the sample at 1.6 µg/L and DDE was detected at 0.009j µg/L. The PUR database was queried for chlorpyrifos use within the Orestimba Creek subwatershed for the period of July 1st through July 14th. The reported used for this time period are tabulated below:

Table 1: Reported Use of Chlorpyrifos within the Orestimba Creek Watershed – July 1st through July 14th, 2009.

Commodity	Date Applied	Application Method	Acres Treated	Township/Range/ Section
WALNUT	03-Jul-09	Ground	160	6S/8E/34
ALFALFA	04-Jul-09	Ground	25.5	7S/8E/01
WALNUT	05-Jul-09	Ground	75	6S/8E/33
WALNUT	05-Jul-09	Ground	80	6S/8E/28
ALMOND	08-Jul-09	Ground	135	6S/8E/32
ALMOND	08-Jul-09	Ground	195	6S/8E/32
WALNUT	03-Jul-09	Ground	160	6S/8E/34
ALFALFA	04-Jul-09	Ground	25.5	7S/8E/01
WALNUT	05-Jul-09	Ground	75	6S/8E/33
WALNUT	05-Jul-09	Ground	80	6S/8E/28
ALFALFA	**06-Jul-09**	**Ground**	**60**	**6S/9E/30**
ALFALFA	**06-Jul-09**	**Ground**	**100**	**6S/9E/19**
ALFALFA	**07-Jul-09**	**Aerial**	**80**	**6S/9E/30**
ALMOND	**07-Jul-09**	**Ground**	**11**	**6S/8E/25**
ALMOND	**07-Jul-09**	**Ground**	**30**	**6S/8E/25**
WALNUT	**07-Jul-09**	**Ground**	**100**	**6S/8E/25**
ALMOND	08-Jul-09	Ground	135	6S/8E/32
ALMOND	08-Jul-09	Ground	195	6S/8E/32
WALNUT	**10-Jul-09**	**Ground**	**40**	**6S/8E/25**
ALMOND	**11-Jul-09**	**Ground**	**70**	**6S/9E/18**
ALMOND	**13-Jul-09**	**Ground**	**140**	**6S/9E/18**

As is apparent from **Table 1**, there were a number of applications of chlorpyrifos within the Orestimba Creek subwatershed during the 2 weeks prior to sample collection, any of which could have contributed to the exceedance and subsequent toxicity. By linking the TRS data to a GIS map, we can map these sections to get an spatial idea of the applications. This is attached as **Figure 1**. Since chlorpyrifos was not detected at the Highway 33 site (OCAHW), it is likely that only the sections downstream of the OCAHW monitoring site contributed to the exceedance (indicated **bold** in **Table 1**). However, without more information, it is not possible determine which of these applications was specifically the cause.

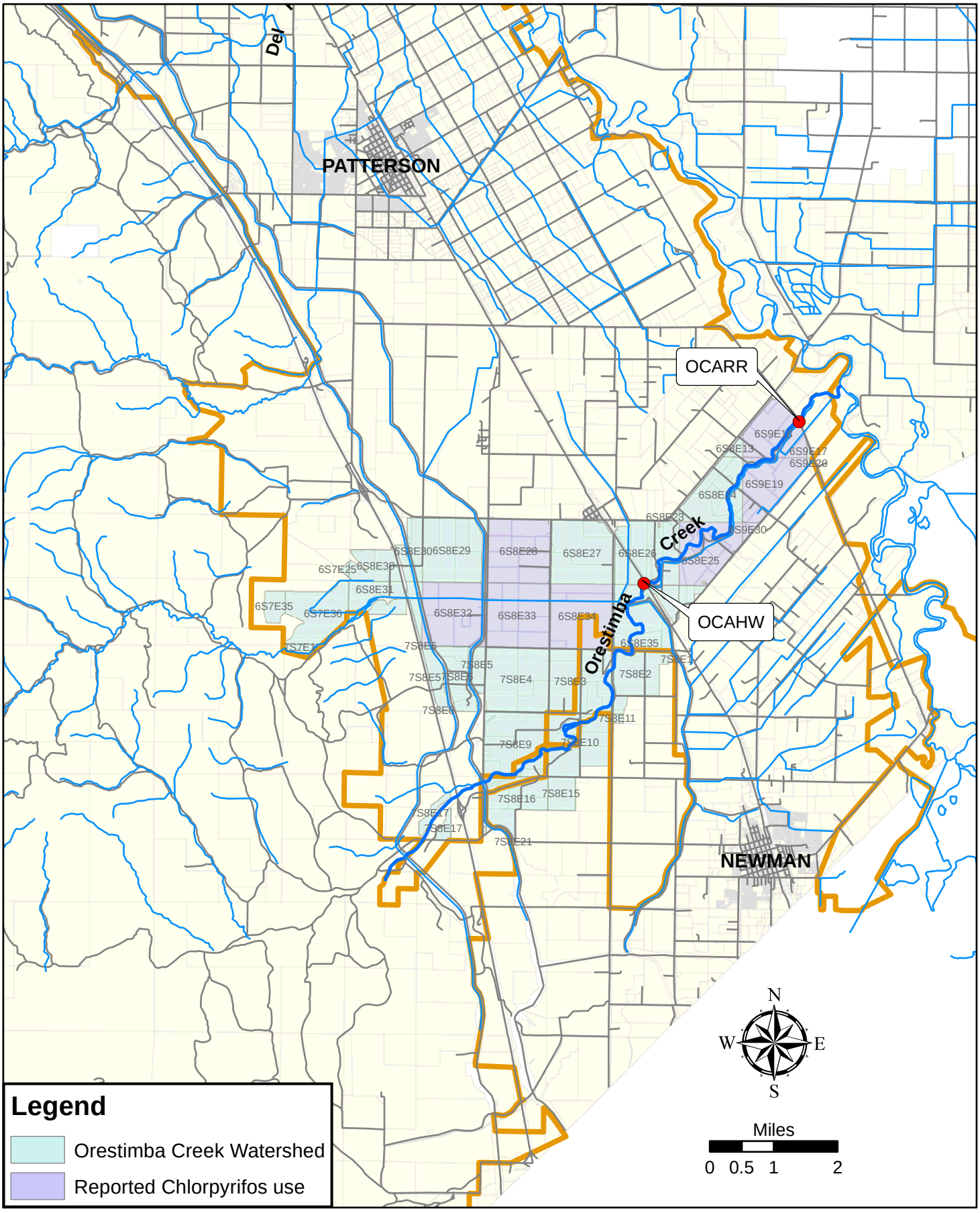
Data Limitations and Conclusions

There are a number of limitations with the PUR data that impact its usability. First off is the time delay. At best, there is about a 90 day delay between the time of application and the time that the report of use is entered into the Agricultural Commissioner's database. When coupled with the lag time from the request, the data is generally quite old by the time it is reviewable, which limits it usefulness for outreach purposes. Additionally, the data is often incomplete, as was evident in the Event 55 example.

Another limitation of the PUR data is its spatial resolution. PUR data is spatially reported to the public at section resolution (1 square mile). As is apparent from **Figure 1**, a single section can encompass several parcels, each potentially with several different crop types. Although individual maps generated with this data can prove useful, they are far from definitive. Their use should be limited to specific events where the layout and hydrology of the subwatershed is well understood, with the other limitations of PUR data kept in mind. Mapping each specific pesticide use within each subwatershed for every exceedance would be extremely time intensive and neither practical nor useful.

Through its monitoring program, the Westside Coalition collects samples for toxicity and pesticide analysis during the irrigation season. In most of the cases where toxicity is measured, the pesticide results point to the probable cause. Data from previous PUR reports can help identify regional trends in pesticide use for various crops at different times of the year. This information can be used to help identify which growers need to be contacted to review water quality exceedances as well as general use trends which can help predict which materials may contribute to future exceedances. To that end, the PUR data can be helpful.

Figure 1



Westside San Joaquin River Watershed Coalition
Orestimba Creek Subwatershed - Reports of Chlorpyrifos Usage
July 1 through July 14 2009

Westside San Joaquin River Watershed Coalition
Significant Aquatic Toxicity Results

Monitoring Site	Sample Date	Event	Reactive Species	Results	Control Results	Percent Difference	Units
Hospital Creek at River Road	5/12/2009	55	Ceriodaphnia dubia	45	95	53%	%

Followup: TIE suggests that a non-polar organic compound(s) and metal, or compound(s) with both non-polar organic and polar properties caused the toxicity.

Field Data

DO	7.63	mg/l
EC	349	µmhos/cm
Est Depth		ft
Flow	0.8	cfs
pH	6.69	
Staff Gage	0.2	ft
Temp	18.56	c

Water Chemistry

Hardness (as CACO3)	110		mg/L
Arsenic	2.3		ug/L
Boron	200		ug/L
Cadmium	0.03	DNQ	ug/L
Cadmium (dissolved)	0.01	DNQ	ug/L
Copper	6.6		ug/L
Copper (dissolved)	2.2		ug/L
Lead	2.7		ug/L
Nickel	9.8		ug/L
Nickel (dissolved)	1.7		ug/L
Zinc	13		ug/L
Zinc (dissolved)	1.4		ug/L

Detected Pesticides

Chlorpyrifos	0.034	
DDE(p,p')	0.0091	DNQ
Dicofol	0.12	

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
Ingram Creek at River Road	5/12/2009	55	Ceriodaphnia dubia	0	95	100%	%

Followup: 1.91 Toxic Units measured. TIE suggests that a non-polar organic compound(s) and metal, or compound(s) with both non-polar organic and polar properties caused the toxicity.

Field Data

DO	7.75	mg/l
EC	669	µmhos/cm
Est Depth		ft
Flow	11.5	cfs
pH	7.64	
Staff Gage	0.5	ft
Temp	18.26	c

Water Chemistry

Bromide	0.14	DNQ	mg/L
Dissolved Organic Carbon	3.1		mg/L
E. Coli	81		MPN/100m
Total Organic Carbon	3.6		mg/L
Hardness (as CACO3)	230		mg/L
Total Dissolved Solids	500		mg/L
Total Suspended Solids	300		mg/L
Turbidity	86		NTU
Arsenic	4.4		ug/L
Boron	520		ug/L
Cadmium	0.06	DNQ	ug/L
Cadmium (dissolved)	0.01	DNQ	ug/L
Copper	12		ug/L
Copper (dissolved)	1.6		ug/L
Lead	4.6		ug/L
Nickel	21		ug/L
Nickel (dissolved)	2		ug/L
Zinc	38		ug/L
Zinc (dissolved)	2.5		ug/L
Ammonia (as N)	0.099	DNQ	mg/L
Nitrogen, Nitrate-Nitrite	4.4		mg/L
Ortho Phosphate as P	0.12		mg/L
Total Kjeldahl Nitrogen	0.78		mg/L
Total Phosphorus as P	0.39		mg/L

Detected Pesticides

Chlorpyrifos	0.018
DDE(p,p')	0.022

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
Orestimba Creek at River Road	7/14/2009	57	Ceriodaphnia dubia	0	70	100%	%

Followup: 4.15 Toxic Units measured. The TIE suggests that a non-polar organic compound(s) caused the toxicity and that a metabolically activated compound(s) may have contributed.

Field Data

DO	6.01	mg/l
EC	940	µmhos/cm
Est Depth	1.5	ft
Flow	8.2	cfs
pH	8	
Staff Gage		ft
Temp	24.11	c

Water Chemistry

Bromide	0.62	DNQ	mg/L
Dissolved Organic Carbon	3.1		mg/L
E. coli	1200		MPN/100
Total Organic Carbon	3.1		mg/L
Total Dissolved Solids	680		mg/L
Total Suspended Solids	90		mg/L
Turbidity	67		NTU
Arsenic	3.9		µg/L
Boron	350		µg/L
Cadmium	0.03	DNQ	µg/L
Cadmium (dissolved)	0.01	DNQ	µg/L
Copper	5.6		µg/L
Copper (dissolved)	1.2		µg/L
Lead	1.6		µg/L
Lead (dissolved)	-0.071	ND	µg/L
Nickel	11		µg/L
Nickel (dissolved)	2.3		µg/L
Selenium	3.3		µg/L
Zinc	27		µg/L
Zinc (dissolved)	11		µg/L
Ammonia as N	-0.06	ND	mg/L
Nitrogen, Total Kjeldahl	0.75		mg/L
Phosphate as P	1.1		mg/L

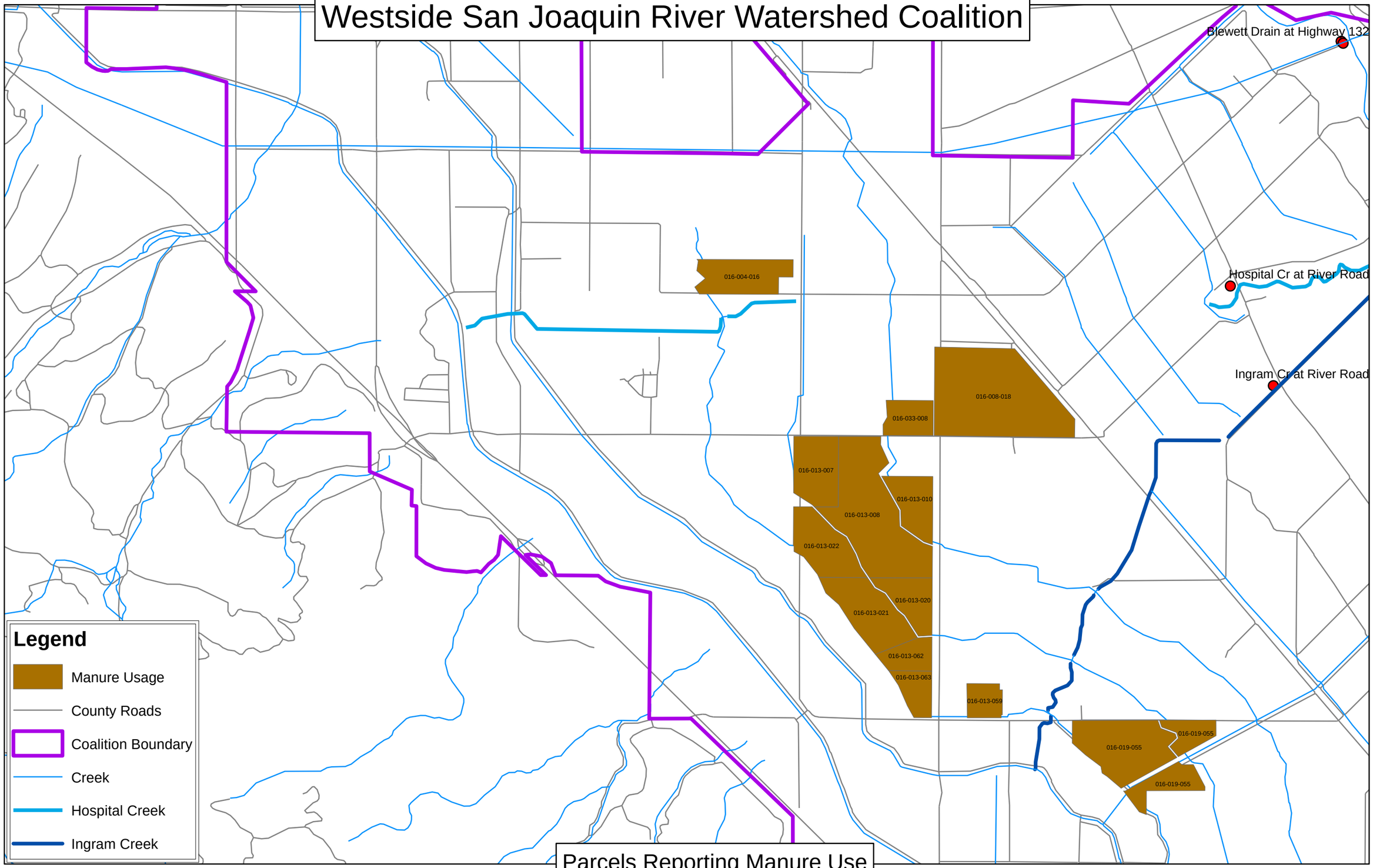
Detected Pesticides

Chlorpyrifos	1.6	
DDE(p,p')	0.009	DNQ

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

Manure Usage Map for Hospital and Ingram Creek Subwatersheds From 2008 Management Practice Surveys

Westside San Joaquin River Watershed Coalition



Parcels Reporting Manure Use
Irrigation Season 2008

Outreach Handouts

You're Invited to Attend the

Coalition Annual Meeting

Westside San Joaquin River Water Quality Coalition

Date	Time	Location
Tuesday, February 23, 2010	**10:00am - 12:00pm Plus lunch**	**Newman Memorial Building, 649 Orestimba Rd. Newman, CA 95350**

Meeting Agenda

10:00 am Welcome and introductions	Joe McGahan *Watershed Coordinator*
Review of Watershed Coalition activities • Management Plan Requirements • Review of monitoring results	Joe McGahan
Best Management Practices for Westside ag • Grants for BMP installations • New Pending Groundwater Regulations	Parry Klassen *Coalition for Urban Rural Environmental Stewardship (CURES)*
Water Board Comments	Marc Commandatore/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
Lunch	

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 February 19
Del Puerto Water District: 209-892-4470

You're Invited to Attend the

Coalition Annual Meeting

Westside San Joaquin River Water Quality Coalition

Date	Time	Location
Wednesday February 24, 2010	**10:00 am -12 pm Plus lunch**	**Westley Fire Station** **8598 Kern Street** **Westley, CA 95387**

Meeting Agenda

10:00 am Welcome and introductions	Joe McGahan *Watershed Coordinator*
Review of Watershed Coalition activities • Management Plan Requirements • Review of monitoring results	Joe McGahan
Best Management Practices for Westside ag • Grants for BMP installations • New Pending Groundwater Regulations	Parry Klassen *Coalition for Urban Rural Environmental Stewardship (CURES)*
Water Board Comments	Marc Commandatore/Terry Bechtel, Central Valley Water Board
Update on Stanislaus County Pesticide Enforcement	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
Lunch	

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

Sponsored by:

West Stanislaus Irrigation District
Del Puerto Water District
Blewett Mutual Water Company
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: February 19, 2010
West Stanislaus Irrigation District: 209-894-3091

Outreach Meeting Presentations

Westside San Joaquin River Watershed Coalition

Annual Meetings

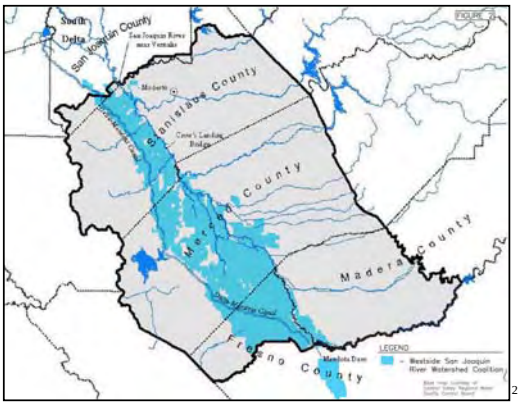
February 23 & 24, 2010

Joseph C. McGahan

Watershed Coordinator

1

Westside San Joaquin River Watershed Coalition



2

- **Westside Coalition formed by local irrigation and water districts to provide an mechanism for farmers to comply with State law.**
- **The dues for the Westside Coalition for FY 2011 year (March 1, 2010 through February 28, 2011) were set at $2.00 per acre.**
- **Every July a list is provided to the Regional Board of those that are enrolled in the Westside Coalition.**
- **The State follows up on parcels that have not enrolled in the Irrigated Lands Regulatory Program.**
- **The Coalition performs monitoring, reporting and implementation of best management practices.**

3

Blewett Drain at Highway 132

Type	Constituent	# of Exceedances	# of Tests
Field Data	EC	3	5
Field Data	Flow	1	6
Field Data	pH	1	5
General Chemistry	Total Dissolved Solids	3	4
Pesticide	DDE(p,p')	1	1
Sediment Toxicity	Hyalella azteca	1	1

- Not currently tested for aquatic toxicity or pesticides.
- March sediment toxicity about the same as previous test. (No Sept 09 Sediment testing)

4

Hospital Creek at River Road

Type	Constituent	# of Exceedances	# of Tests
Aquatic Toxicity	Ceriodaphnia dubia	1	4
Field Data	EC	3	4
Field Data	Flow	2	6
Pesticide	Chlorpyrifos	3	4
Pesticide	DDE(p,p')	4	5
Sediment Toxicity	Hyalella azteca	1	1

- Sediment toxicity still an issue.
- Chlorpyrifos detections 3 out of 4 tests.
- Aquatic toxicity linked to chlorpyrifos and dicofol.

5

Ingram Creek at River Road

Type	Constituent	# of Exceedances	# of Tests
Aquatic Toxicity	Ceriodaphnia dubia	1	5
Field Data	DO	1	5
Field Data	EC	4	5
Field Data	Flow	1	6
Field Data	pH	1	5
General Chemistry	Arsenic	1	5
General Chemistry	Boron	3	5
General Chemistry	E. Coli	3	5
General Chemistry	Total Dissolved Solids	5	5
Pesticide	Chlorpyrifos	1	5
Pesticide	DDE(p,p')	5	6
Pesticide	Dimethoate	2	5
Sediment Toxicity	Hyalella azteca	1	1

- Sediment toxicity still and issue. (18% survival in March 09 vs. 0% March 08, and 0% survival in Sept 09).
- Aquatic toxicity linked to chlorpyrifos.

6

Westley Wasteway near Cox Road

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

- No aquatic toxicity or detections of current use pesticides (good news!)
- Good sediment toxicity results – survival >80% in March 09 and 92% in Sept. 09.

7

Del Puerto Creek near Cox Road

Type	Constituent	# of Exceedances	# of Tests
Field Data	EC	4	5
Field Data	Flow	2	6
Field Data	pH	1	5
General Chemistry	Boron	2	4
General Chemistry	E. Coli	1	4
General Chemistry	Total Dissolved Solids	4	4
Pesticide	DDE(p,p')	3	4
Pesticide	Methamidophos	1	4

- Low flow (no flow at Del Puerto/Highway 33 all summer).
- No measured aquatic toxicity.
- Few pesticide exceedances

8

Ramona Lake near Fig Avenue

Type	Constituent	# of Exceedances	# of Tests
Field Data	DO	3	5
Field Data	EC	5	5
Field Data	Flow	1	1
Field Data	pH	2	5
General Chemistry	Boron	5	5
General Chemistry	E. Coli	1	5
General Chemistry	Total Dissolved Solids	5	5
Pesticide	Diuron	1	5

- No measured aquatic toxicity & only 1 pesticide exceedance.
- Boron and EC/TDS are the primary issues – probably from subsurface discharges.

9

Marshall Road Drain near River Road

Type	Constituent	# of Exceedances	# of Tests
Aquatic Toxicity	Ceriodaphnia dubia	1	4
Field Data	DO	2	6
Field Data	EC	6	6
Field Data	Flow	1	1
Field Data	pH	1	6
General Chemistry	Boron	3	5
General Chemistry	Total Dissolved Solids	5	5
Pesticide	Chlorpyrifos	1	5
Pesticide	DDE(p,p')	2	5
Pesticide	g-Chlordane	2	5

- Aquatic toxicity linked to chlorpyrifos.
- EC/TDS continues to be a frequent exceedance.

10

Orestimba Creek

- Continues to show problems at both sites.
- Improvement in Water flea toxicity (only 2 hits).
- Reduction in the number of pesticide detections, including chlorpyrifos.
- Occasional (minor) sediment toxicity measured at both sites.

11

Orestimba Creek at Hwy 33

Type	Constituent	# of Exceedances	# of Tests
Field Data	DO	2	7
Field Data	EC	5	7
Field Data	pH	1	7
General Chemistry	Selenium	2	3
Pesticide	DDE(p,p')	4	6
Pesticide	g-Chlordane	1	6
Sediment Toxicity	Hyalella azteca	1	1

Orestimba Creek at River Road

Type	Constituent	# of Exceedances	# of Tests
Aquatic Toxicity	Ceriodaphnia dubia	2	5
Field Data	DO	1	6
Field Data	EC	4	6
General Chemistry	E. Coli	4	5
General Chemistry	Total Dissolved Solids	4	5
Pesticide	Chlorpyrifos	2	5
Pesticide	DDE(p,p')	4	5
Sediment Toxicity	Hyalella azteca	1	1

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Sediment Toxicity

Site	Sept 09 % Survival	Sept 09 Toxicity (Y/N)	Mar 09 % Survival	Mar 09 Toxicity (Y/N)	Sept 08 % Survival	Sept 08 Toxicity (Y/N)	Mar 08 % Survival	Mar 08 Toxicity (Y/N)
Blewett Drain (Vernalis at hwy 132)			18.8	**Y**	16.2	**Y**		
Hospital Creek	10	**Y**	0	**Y**	25	**Y**	80	**Y**
Ingram Creek	0	**Y**	18.8	**Y**	0	**Y**	2.5	**Y**
Westley Wasteway	92.5	N	82.5	**Y**	1.25	**Y**	65	**Y**
Del Puerto Creek (Cox Rd)	13.8	**Y**	97.5	N	62.5	**Y**	N/A	N/A
Del Puerto Creek (Hwy 33)			97.5	N	N/A	N/A	N/A	N/A
Orestimba Creek at River Rd.	87.5	N	91.2	**Y**	80	N	95	N
Orestimba Creek at Hwy 33	80	N	88.8	**Y**	92.5	N	90	N
Ramona Lake at Fig Ave.	92.5	N	97.5	N	98.8	N	68.8	**Y**
Newman Wasteway	98.8	N	98.8	N	82.5	**Y**	97.5	N
Poso Slough			N/A	N/A	72.5	**Y**	98.8	N
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.	96.2	N	97.5	N	87.5	**Y**	92.5	N
Mud Slough								

13

Summary of Management Plan Action Items

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

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Coalition Priorities

- Tier 1 – aquatic and sediment toxicity, pesticides and sediment discharge
- Tier 2 – E. coli
- Tier 3 – Salinity – participate in TMDL process
- Tier 4 – Dissolved oxygen and pH

15

Focused Water Quality Improvement Plan

Ingram & Hospital Creeks

Target Parameters:
Water toxicity and pesticides
Algae toxicity and pesticides
Sediment toxicity and pesticides
E. coli
Salinity
DO and pH

Del Puerto, Westley, and Orestimba Creeks

Target Parameters:
Water toxicity and Pesticides
Sediment toxicity and pesticides
E. Coli
Salinity
DO and pH

16

Actions (determine contributors, contact contributors, exchange information):

- **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.**

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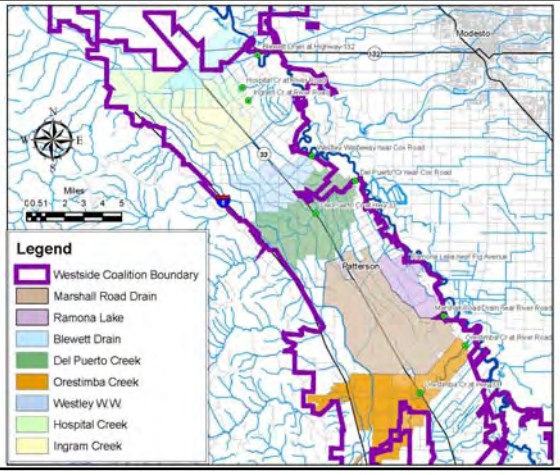
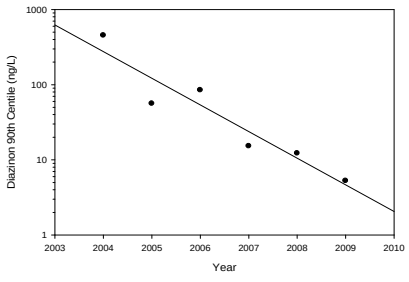


Tailwater Pond Assistance Program

•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

19

Regression analysis of diazinon from 2004 to 2009 for tributary sites during the irrigation season



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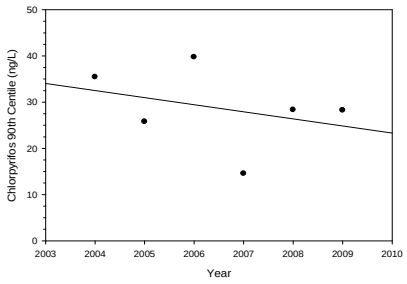
Regression analysis of chlorpyrifos from 2004 to 2009 for tributary sites during the irrigation season



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Questions?

Contact:
Joe McGahan
559-582-9237
jmcgahan@summerseng.com

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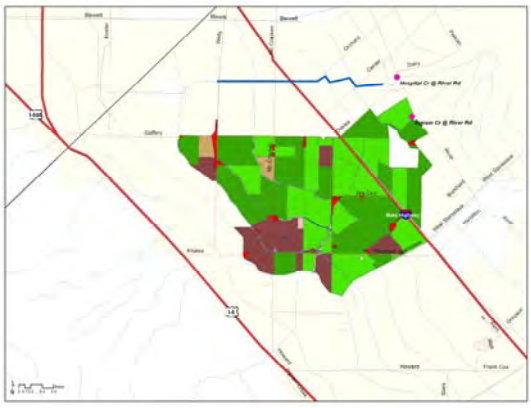
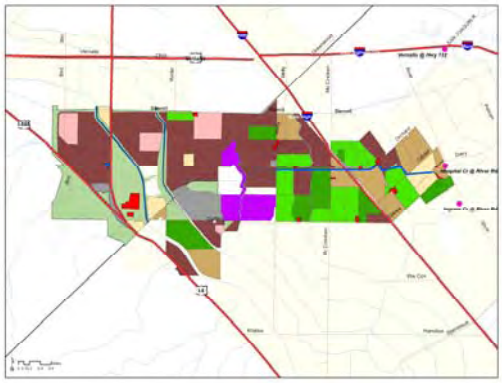
EXTRA SLIDES

23





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Polyacrylamide (PAM)

- Acts as a flocculent.
- Prevents sediment and associated pesticides (such as pyrethroids) from leaving the field.

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Tailwater Pond Design

Tailwater Sedimentation Pond Sizing Worksheet

Please Fill in the Information Below:

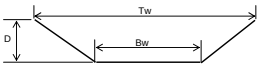
Notes			
1	Total size of the fields that will drain into the pond	205	(acres)
2	Typical annual applied water	4	(af/acre)
3	Typical turnout delivery	7	(cubic feet per second)
4	Typical number of irrigations per season	10	

Assumptions (typical values presented, adjust to fit field Conditions)

5	Tailwater Fraction	25%	(% of Applied Water)
6	Pond Hold Time	12	(hours)
7	Operating Depth (D)	5	(feet)
8	Length / Width	1	1 will provide a square pond

Pond Dimensions

Top Width (Tw)	**131**	**(feet)**
Bottom Width (Bw)	**116**	**(feet)**
Length (L)	**131**	**(feet)**
Depth (D)	**5**	**(feet)**
Total Volume	**1.8**	**(acre feet)**
Expected Annual Sediment Volume	**155**	**(cubic yards)**



- Calculation accounts for drain acreage, applied water rate, and amount of suspended solids

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Notes:

Cures

Coalition for Urban/Rural Environmental Stewardship

www.curesworks.org

BMPs for Irrigated Agriculture

Update on surface and ground water regulations

Parry Klassen

Cures

Coalition for Urban/Rural Environmental Stewardship

www.curesworks.org

- Founded 1997
- Non-profit organization: agricultural, urban projects
- Promote stewardship, Best Management Practices (BMPs)

Staff

Parry Klassen, Executive Director
Jim Markle, Projects Manager
Robert McMurry, Technician
Tamara Taliaferro, Projects Coordinator
Susan Stewart, Project Coordinator
www.curesworks.org

Irrigated Lands Regulatory Program

Management Plan Requirements

Watershed Coalition must…

- Identify Sources (uses/crops)
- Determine farming practices through field BMP surveys
- Encourage growers to implement BMPs
  - Outreach: Meetings
  - Landowner mailings
  - Personal visits

Coalition Members' Responsibilities under ILRP

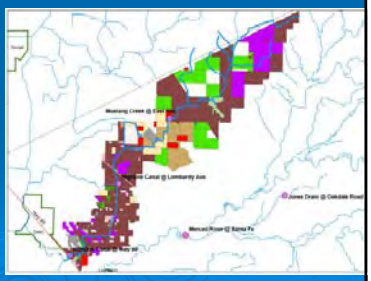
If a field has discharges…

Adopt management practices on farm

- Varies based on problem source
- Coalition to provide referenced BMP information
- Improvise based on variables on farm

Tactical Approach to Solve Problems

- Identify High Risk Fields Through GIS mapping
  - Mapping being performed upstream of each monitoring site
  - Fields bordering waterways
  - Fields that drain into waterways



If your 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*

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

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

Station Code	Sample Date	Chlorpy-rifos	Dimeth-oate	Bifen-thrin	Diuron	Meth-omyl	Sima-zine
Black Rascal Creek @ Yosemite Rd	24/July	3.7					
Deadman Creek @ Hwy 59	24/July			0.014 *	0.51		
Bear Creek @ Kibby Rd	24/July	0.049					
Deadman Creek @ Gurr Rd	24/July	0.005*					
** Dry Creek @ Wellsford Rd	17/July	0.021	0.66				
Duck Slough @ Gurr Rd	24/July	0.007*					
Duck Slough @ Hwy 99	24/July	0.011*					0.17*
Highline Canal @ Lombardy Ave	17/July	0.017*					
Highline Canal @ Hwy 99	17/July	0.015*					
Highline Canal @ Hwy 99	17/July	0.017*					
Hilmar Drain @ Central Ave	17/July	0.015*	0.35				
Jones Drain @ Oakdale Rd	17/July	0.055					
** Livingston Drain @ Robin Ave	17/July	0.011*					
Miles Creek @ Reilly Rd	24/July	0.01*				0.21	
Merced River @ Santa Fe	17/July	0.018*					
** Prairie Flower Drain @ Crows Landing Rd	17/July	0.009*					
** Silva Drain @ Meadow Dr	17/July	0.031					

Pesticide Application BMPs

Managing Drift from Ground / Aerial Applications

- Most drift comes from outside rows near sensitive areas

- **Watch wind speed direction**
- **Leave adequate buffer zone**
- **Use larger droplet nozzles where possible**

Aerial Application Drift Management:
Pilot needs to know drain / waterway locations

Application BMPs

- Managing Drift From Airblast Sprayers
  - Most drift comes from first and last passes through the orchard
- Don't spray outward on rows 1 and 2
- Spray outside - inward on perimeter rows, slow down to improve coverage.

Farm Drainage BMPs

Beneficial Management Practices

Which Approach is "Best?"

- *Dissolved Insecticides / Herbicides*
- *Attached to sediments*

Farm Drainage BMPs

Tailwater Return Systems

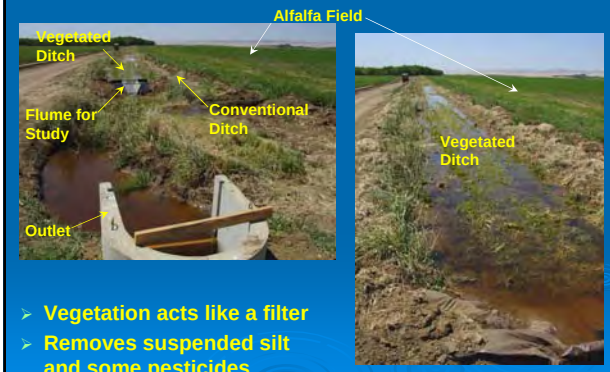
- Recirculate drain water back into irrigation system
- "Cadillac" system but costly

Farm Drainage BMPs

Sediment Basins

- Basins for water & sediment run-off
- Requires modification of drainage system to protect surface water

Vegetated Ditch



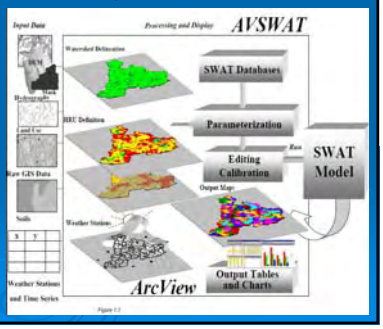
- **Vegetation acts like a filter**
- **Removes suspended silt and some pesticides**

Polyacrylamide (PAM)

- Acts as a flocculent
- Prevents sediment and pesticides (such as pyrethroids) from leaving the field

SOIL AND WATER ASSESSMENT TOOL (SWAT) MODEL

- Predict the impacts of land management practices on water, sediment and agricultural chemical yields at watershed scale
- Process driven simulation
- Watershed scale
  - Limitations
    - not all growers implement same BMPs
    - cannot model effects of activities on individual farms



What Does the Model Predict

When BMPs adopted on a watershed-wide level …

- Sediment basins* reduce loads of:
  - Sediment by 45%
  - Chlorpyrifos by 30%
  - Diazinon by 2%
- Vegetated ditches* reduce loads of:
  - Sediment by 90%
  - Chlorpyrifos by 64%
  - Diazinon by 42%
- * when constructed per NRCS standards

Grants for BMP Installations
Supported by USDA AWEP

Focus on waterways with Management Plans

Funding for:
- Tailwater Return Systems (local or regional)
- Sediment Ponds (local or regional)
- Equipment for applying PAM/Enzymes
- Other practices to protect water quality

50% match required

Funding available mid 2010

Contact Water District or NRCS for information

Grants for BMP Installations
Supported by Westside SJR Coalition

Eligible: Irrigated land on all Westside waterways

Funding for:
- Sediment Ponds
  - Maintenance - Clean-out
  - Construction

Funding available immediately

Contact Water District for information

Most common pesticide exceedance…

Chlorpyrifos (Lorsban, Lock-on, Govern)

Insecticide used in …
- Almonds (dormant, in-season)
- Alfalfa
- Field corn
- Walnuts

Chlorpyrifos Reevaluation Update

Dow AgroSciences; registrant for Lorsban

- Must show if label requirements/mitigation measures and are resulting in decreased surface water exceedances
- DAS to continue providing surface water monitoring results (from coalitions) to DPR

Chlorpyrifos Reevaluation Update

- DAS data shows no correlation between use and detections
  - High use no problem if doing everything right
    - Following buffers
    - BMPs
- Use a little and "screw up" will have surface water exceedances

2005 Chlorpyrifos (Lorsban) label changes

- Spray Drift Management
  - 25 ft setbacks aquatic areas for *ground* applications
  - 50 ft setbacks aquatic areas for *orchard airblast* applica.
  - 150 ft setbacks aquatic areas for *aerial applications*
- All Crops
  - Prohibition against flood irrigation within 48 hrs of applications

Synthetic Pyrethroids and sediment toxicity

Agricultural Products

- Common names
  - Bifenthrin
  - Cyfluthrin
  - Cyhalothrin
  - Cypermethrin
  - Deltamethrin
  - Fenpropathrin
  - Esfenvalerate
  - Permethrin
  - Tralomethrin
  - Zeta-cypermethrin
- Trade names
  - Capture; Brigade
  - Baythroid
  - Karate; Warrior
  - Ammo
  - Decis
  - Danitol
  - Asana
  - Pounce; Ambush
  - Scout
  - Fury

Sediment Toxicity *Is it pyrethroids?*

2004-2006 sampling by Watershed Coalitions

Northern San Joaquin Valley

(Stanislaus, Merced, Madera counties)

- Sediment toxicity: 36% out of 62 tests
- Water flea toxicity: 10% of 597 tests
- Algae toxicity: 8.5% of 529 tests
- Fathead minnow toxicity: 2.3% of 588 tests

Pyrethroid Profile

- Very hydrophobic
  - Adsorbs tightly to soil particles, organic material
  - Potential to be carried off in sediment water run-off
  - Relatively long half-life in sediment
- Some Concern of Risk to Non-Targets
  - Fish, Water Insects, Crayfish/Shrimp

Pyrethroid Insecticides

- Product into CA. DPR Reevaluation process August 2006
- Prompted by sediment toxicity in ag, urban waterways
- Registrant Requirements
  - Identify sources of pyrethroids, processes for reaching sediment
  - Develop mitigation strategy to reduce or eliminate detections in surface water
  - Potential label changes, loss of uses

State tightens pest control

Whole family of insecticides found to be deadly to aquatic life

By Matt Weiser,
McCLATCHY NEWS SERVICE

California next month will begin to regulate a broad

Pyrethroid Stewardship Focus

Irrigation runoff

- Minimize or eliminate sediment transport

Drift management

- Set back / buffer between sensitive areas and field

What are State Regulators Doing?

- Surfacewater (Rivers, Creeks, Canals, Drains)
  - Water Board: Irrigated Lands Regulatory Program
    - Watershed Coalitions
    - Individual permit
- Groundwater
  - Department of Pesticide Regulation
    - County Ag Commissioners/pesticide permits
  - (New!) Water Board
    - Coalitions?
    - Individual?

Water

What are they finding?

- **Rivers, creeks, sloughs, drains**
  - **Insecticides (bugs)**
    - Diazinon
    - Chlorpyrifos (Lorsban, NuPhos, etc)
    - Dimethoate
  - **Herbicides (weeds)**
    - Diuron (Karmex)
    - Simazine (Princep)
- **Groundwater**
  - Herbicides
  - Fertilizer (nitrates)

Irrigated Lands Regulatory Program

Central Valley Regional Water Quality Control Board

- Current surface water program expires in 2011
- **Next: "Long-Term Program"**
  - Groundwater to be included
  - Nutrients/salts focus
  - Environmental Justice (EJ), CA Rural League at the table
- Environmental Impact Report (EIR) process
  - 5 "Alternatives" in review
  - Spring 2010 we'll get first look at preferred alternative

"Long-Term Program"

Irrigated Lands Regulatory Program

Many Unanswered Questions

- Use existing coalition structure?
- Build on DPR pesticide groundwater regulations?
- Does groundwater "program" mean groundwater "monitoring"?

Farm Water Quality Management Plan

- Outlines practices needed or currently in use to achieve water quality protection.
- Developed with "technical service organizations"
  - Resource Conservation Districts, University of California Cooperative Extension (others?)

Individual Farm Water Quality Management Plans include…

- Irrigated acres, crops and chemical/fertilizer application rates and practices;
- Maps of irrigated production areas, discharge points and named 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.

Tiered "Threat" Alternatives for Groundwater (tier 1-3)

- Threat based on pesticide use, fertilizer use, and vulnerable hydrologic groundwater environment
  - Tier 1: Minimal
  - Tier 2: Low
  - Tier 3: High potential threat to water quality.
- Less regulatory oversight for low threat operations
- Establish necessary requirements to protect water quality from higher-threat discharges.
- Likely use DPR Groundwater Protection Areas as basis

Tiered "Threat" Alternatives for Groundwater (tier 1-3)

- Tier 3: high potential to affect surface water and/or groundwater quality
  - Low-threat fertilizer or pesticide use but are in a vulnerable hydrologic environment
  - High-threat fertilizer and/or pesticide use and not located in a vulnerable hydrologic environment,
- A field may move from Tier 3 to Tier 2 or vice versa depending upon changes in fertilizer or pesticide use or available information on groundwater vulnerability.

Nutrient Management Plan

Applies to Tier 3 fields

- Use commercial fertilizers or manure
- Based on fertilizer application rate or the section of land is defined as a vulnerable hydrologic environment in regard to nitrate:
- Plan must be "certified by a crop specialist"
- Certified Crop Specialist is certified in developing NMPs.

Who writes Nutrient Management Plan?
Certified Crop Specialist

- Professional soil scientists
- Professional agronomists
- Professional crop scientists
- Crop advisors certified by the American Society of Agronomy
- Technical Service Providers certified in nutrient management in California by the Natural Resources Conservation Service
- Other specialists approved by the Executive Officer

Nutrient Management Plan

- Includes rate, timing, and method of nutrient applications that do not exceed the crop's nutrient requirements considering the stage of plant growth;
- Covers all nutrient sources;
- Soil and climatic conditions;
- Crop water use requirements,
- Minimum leaching requirements to reduce deep percolation of irrigation water to groundwater.

Growers would be required to update and maintain the NMP at the facility and submit it to the Central Valley Water Board upon request.

California Department of Pesticide Regulations
New: Surface Water Regulation

- Patterned after "2006 Dormant Spray Regulations"
- Includes products found in coalition surface water monitoring
  - Insecticides
  - Herbicides
- Public draft released for comment by industry, other interests
- Possibly in place by 2011

California Department of Pesticide Regulations
Surface Water Regulation

- Creates list of +50 pesticides (a.i.) with "potential to contaminant surface water"
- Irrigation/storm water drainage
  - For 4 weeks after an application must hold water for 72 hours before releasing into "waterway or sensitive site."
- Includes urban applications by professionals
- Drift management component

Biggest Challenge in Water Quality?

- *Can we comply and not go broke?*
- **Coalitions / farmers need to prove there ability to make progress on WQ problems**

Respiratory Protection Program

1. **Provide Respirator**
2. **Voluntary Respirator Program**
3. **Perform Medical Evaluation**
4. **Conduct Fit Test**
5. **Storing, Cleaning and Disinfecting**
6. **Replacing Disposable Respirators and Filters**
7. **Hold Ongoing Training Sessions**
8. **Keep Records**
9. **Program Review and Evaluation**

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"Education For Environmental Responsibility"