San Joaquin Valley Drainage Authority

Westside San Joaquin River Watershed Coalition Monitoring and Reporting Plan

Submitted to the California Regional Water Quality Control Board, Central Valley Region

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Section 1: Executive Summary.

This Monitoring Plan is being developed as a revision of the Westside San Joaquin River Watershed Coalition's (Westside Coalition) original monitoring plan, submitted April of 2004. This Monitoring Plan is crafted to continue to characterize the water quality of major drainages within the Westside Coalition and support the activities of the Management Plan (submitted November 1, 2007). The significant revisions to this Monitoring Plan are outlined below:

- The Monitoring Plan includes 26 monitoring sites, including two sites not previously monitored, four sites incorporated from the San Luis Water District Water Quality Coalition, and three source water sites (See Table 4).
- The Salado Creek near Olive Avenue monitoring site has been eliminated. This site carries significant urban storm drainage from the city of Patterson and does not characterize typical agricultural discharges. Additionally it is chronically difficult to access.
- Changes in the list of constituents to be monitored have been implemented to make efficient use of resources available. Constituents or species that were detected less than twice or did not measure significant toxicity more than once in the previous three years at a given site will not be monitored at that site during non-rain event monitoring (with some exceptions, see Sections 5 and 6). Rain Events will continue to monitor the full list of constituents at all sites.
- Every third year (starting March 2010), all sites will be tested for the full list of constituents to confirm that the reduction in monitoring is still appropriate.
- A new list of constituents to be monitored has been developed for source water monitoring sites, including organophosphate pesticides (see Section 6).
- This Monitoring Plan is scheduled to be implemented beginning with the March 2008 sampling event.

The Monitoring Plan remains a monthly program. All sites will be visited on a monthly basis and samples will be collected at accessible and flowing sites.

Section 2: Participants in Development of Watershed Program

The San Joaquin Valley Drainage Authority (Drainage Authority) is the umbrella organization for the Westside Coalition for purposes of complying with the Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands within the Central Valley Region (Resolution No.R5-2006-0053). A detailed map of this region is attached as Figure 1.

Section 3: Structure of Westside Coalition

The Drainage Authority is a joint powers agency organized pursuant to California Government Code Section 6500 *et seq.* The Westside Coalition is part of the Regional Water Quality Management Activity (RWQMA), a subgroup of the Drainage Authority. A Steering Committee, comprised of one representative per participating agency, provides budgeting and policy direction and makes recommendations for action to the Drainage Authority Board. All meetings of the Steering Committee are public meetings conducted under the Ralph M. Brown Act. The RWQMA has developed a cost sharing approach and initial budget for the Westside Coalition and has employed Joseph C. McGahan of Summers Engineering, Inc. as Watershed Coordinator.

The structure of the Drainage Authority allows the addition of new members and also provides that "participating parties" may enter into memoranda of understanding to participate in Drainage Authority activities. These MOU's can be used with parties that do not share the common powers of the Drainage Authority or that for some other reason do not wish to become Authority members.

Section 4: Funding Mechanism

The RWQMA has prepared budgets for the Westside Coalition to respond to the Waiver activities and has developed a budget for implementing the monitoring program. The estimated cost to implement this Monitoring Program and meet the reporting obligations for the first year of operation (March 1 2008 through February 28, 2009) is expected to be approximately $1 million. Our member agencies have committed to raise the required funds through their own budgets, which in turn are funded by collections from

all of the landowners/operators within their boundaries. They have also agreed to continue to provide in-kind services such as data collection on existing best management practices and to distribute information on any needed changes in those practices to improve water quality. An organization chart for the Westside Coalition is shown in Table 1. Individuals that are outside of organized member districts may join the Westside Coalition and are billed separately.

Table 1: Westside Coalition Organizational Chart

Description	Responsibilities	Membership/Person
Program Direction and Oversight:		
San Joaquin Valley Drainage Authority	JPA serves as umbrella organization; Board of Directors adopts budgets/takes actions re Westside Coalition as recommended by Steering Committee	
Regional Water Quality Management Steering Committee	Provide oversight and direction, develop funding mechanisms	Designated representatives from districts and individual members
Staffing:		
Watershed Coordinator	Responsible for overall management of program	Consultant employed by the RWQMSC
Field Coordinators	Perform field sampling, coordinate with individual farmers and growers. Responsible for field activities including monitoring, field QAPP, implementation and monitoring of BMP projects.	Employee of RWQMSC or member districts
Assistant Watershed Coordinator: Quality Control/Data Manager	Make sure all data is collected and analyzed in accordance with the Quality Assurance Project Plan, manage database of monitoring results	Consultant, or employee of member district
Field and lab monitoring	Collect field samples, perform analytical work	Personnel and laboratories as needed to implement program
Data Analysis	Review of data and recommendations of management practices for improvement	Technical committee, consultant, employee of district

FIGURE 1 NOT INCLUDED IN THIS DOCUMENT

Section 5: Review of Historic Data

This Monitoring Program is intended to be a revision of the monitoring program implemented by the Westside Coalition in July 2004. Three years of general chemistry data, pesticide data and toxicity data developed by the original monitoring program were reviewed to develop a revised program that made efficient use of available resources and met the requirements of the Irrigated Lands Program. Table 2 shows the number of toxicity measurements or pesticide detections by site for the period of July 2004 through August 2007. This data was evaluated to determine where problems existed (and did not exist) so that resources could be applied in the most efficient manner.

Table 2: Count of toxicity measurements and detected pesticides, 2004 to 2007

Monitoring Site (2004-2007 Westside Coalition Monitoring Program)	Significant Toxicity Results						Pesticide Detections by Group							
	Fathead Minnow		Algae		Hyalella azteca		Organo-phosphate		Organo-chorline		Carbamate		Herbicides	
	Sig. Tox	No. of Tests	Sig. Tox	No. of Tests	Sig. Tox	No. of Tests	No. of Detect	No. of Tests	No. of Detect	No. of Tests	No. of Detect	No. of Tests	No. of Detect	No. of Tests
Hospital Cr at River Road	1	16	0	16	5	6	16	279	14	110	0	48	12	91
Ingram Cr at River Road	0	18	1	18	6	6	26	324	23	114	4	48	15	99
Westley Wasteway near Cox Road	0	17	2	17	5	6	11	311	11	103	0	42	16	92
Del Puerto Cr near Cox Road	1	19	0	19	4	5	19	331	8	110	1	48	11	100
Del Puerto Cr at Hwy 33	0	15	0	15	5	5	10	286	3	32	0	18	5	69
Ramona Lake near Fig Avenue	1	13	0	13	0	0	11	198	2	53	0	48	8	76
Marshall Road Drain near River Road	0	15	1	15	0	0	17	243	7	110	0	48	7	84
Orestimba Cr at River Road	0	19	0	19	1	6	23	345	16	110	1	48	18	103
Orestimba Cr at Hwy 33	0	19	2	19	5	5	25	345	22	110	0	48	15	103
Newman Wasteway near Hills Ferry Road	1	19	1	19	3	6	10	342	7	110	1	48	7	103
San Joaquin River at Sack Dam							1	44	0	0	0	0	1	8
San Joaquin River at Lander Avenue	0	36	2	36	1	6	4	661	1	194	1	78	12	189
Mud Slough u/s San Luis Drain	0	36	1	36	1	6	5	661	0	182	2	78	13	189
Salt Slough at Lander Avenue	0	36	5	36	1	6	12	661	6	182	5	78	20	200
Salt Slough at Sand Dam	0	20	2	20	0	6	15	364	5	110	3	48	21	108
Los Banos Creek at Highway 140	0	37	1	37	1	6	4	661	0	172	0	78	7	186
Los Banos Creek at China Camp Road	0	4	0	4	2	6	1	66	0	32	1	12	1	22
Turner Slough near Edminster Road	2	14	1	14	1	6	1	243	0	94	0	42	5	80

Values reflect non-rain event results only.
Shaded cells indicate less than 2 measurements of significant toxicity or pesticide detections out of a significant number of tests.

As is evident in Table 2, a number of sites monitored by the Westside Coalition did not measure significant problems in toxicity for fathead minnow, algae, or sediment and/or detected few or no pesticides in the organophosphate, organochlorine, carbamate, or herbicide groups (shaded gray). Toxicity tests for *Ceriodaphnia dubia* were not considered for reduction at any site and those results are not presented in Table 2.

In addition to data collected by the Westside Coalition, pesticide use reports from the Fresno, Merced, and Stanislaus county Ag Commissioners were reviewed to estimated

the overall use of the four pesticide categories within the Westside Coalition. Table 3 shows the total acres within the Westside Coalition treated in 2006 with pesticides belonging to these groups.

Table 3: 2006 Pesticide Use by Group (acres treated)

	2006 Acres Treated				
Pesticide Group	Stanislaus Co.	Merced Co.	Fresno Co.	Total	% of Total
Carbamate	16,800	26,800	36,800	80,400	7%
Herbicide	108,500	292,200	291,500	692,200	61%
Organochlorine	3,500	15,600	5,400	24,500	2%
Organophosporus	56,000	41,500	56,800	154,300	14%
Pyrethroid	74,800	58,800	52,200	185,800	16%

Source: County Ag Commissioner pesticide use data 2006.

As is apparent in Table 3, both the Organochlorine and Carbamate pesticides make up a relatively small portion of the total pesticide applications which may contribute to why they are rarely detected.

This monitoring program will discontinue specific testing at some sites in order to allocate those resources to areas that have defined water quality issues and allow for an expansion of the number of monitoring sites (see Section 6). Note that Table 2 does not include results from rain events. Because of the complicated and varying nature of rain events, no reduction in rain event monitoring was considered.

Section 6: Proposed Monitoring Program

A. Objectives

This MRP has been developed in conjunction with the Westside Coalition's Management Plan (submitted November 1, 2007). The objective of the monitoring program is to build on the past three years of water quality data collected through the first monitoring program of the Westside Coalition in characterizing the stream conditions as well as track water quality improvements as the management plan is implemented.

B. Monitoring Program Structure

The Monitoring Program is structured to provide representative data on all of the sub-watersheds within the Westside Coalition while maintaining a cost effective and flexible program. During the development of this plan, the previous three years of collected data were reviewed to determine where water quality issues existed and where resources should be expended. From this the Monitoring Program structure was developed.

The Monitoring Program is structured to account for the type of waterbody being monitored, amount of historical data, seasonal irrigation influence, and constituents to be analyzed.

1. Monitoring Site Groups. The monitoring sites have been designated either "Source Water Sites" or "Discharge Sites" according to what type of water is conveyed through the site. Sites that characterize water that is primarily used for irrigation carry the "Source Water" designation. Sites that convey agricultural drainage water are designated as "Discharge Sites". The site designation will determine which constituent analyses will be performed at a given site.

2. Monitoring Season. The constituents analyzed at a given site are controlled, to a degree, by the time of year (or season) during which the sample is collected. Table 4 shows the type of monitoring performed at each monitoring site during each monitoring season.
    - Irrigation Season. The majority of the land within the Westside Coalition is irrigated agriculture that is actively farmed only in the spring and summer. This is the time of year during which most of the pesticides and other constituents of concern are applied. Irrigation season sampling will occur at all discharge sites from March through August, which has typically been the irrigation season run for this region. The Westside Coalition may shift Irrigation Season sampling up or back one month to account of seasonal variations. The Regional Water Quality Control Board will be notified before this shift is enacted. Pesticide analyses and aquatic toxicity testing will be

performed during irrigation season sampling. There are four sites that can carry agricultural runoff during the summer months and wetland irrigation runoff during the winter months (Los Banos Creek at Highway 140, Salt Slough at Lander Ave., the San Joaquin River at Lander Avenue, and Mud Slough upstream of the San Luis Drain). These four sites have the potential to carry pesticides all year and will be tested for toxicity and pesticides in all months.

- Non-Irrigation Season. The Non-Irrigation season is the period outside of the irrigation season, typically September through February. Physical and general chemical water quality monitoring will continue during the non-irrigation season, however most sites will not be tested for toxicity or pesticides.
- Rain Events. The Westside Coalition will attempt to collect runoff caused by storm events twice each year. Storm event samples will be collected once enough rainfall has occurred to cause the majority of the flow at a monitoring site to consist of rain runoff and will be tested for toxicity and pesticides, along with other physical and chemical parameters. This will be determined by the field sampling crews on a site by site basis.

3. Constituents Categories. The analyzed constituents and tests performed are separated into four categories: Core, Assessment, Rain, and Source. The Core category will be tested during the Non-irrigation season and includes field measurements, general chemistry analyses, drinking water analyses, and nutrient analyses. The Assessment category includes all of the tests performed in the Core category as well as selected toxicity testing, pesticide analyses, and metal analyses. The pesticide and aquatic toxicity tests performed within the Assessment category are site specific (see Table 4). The rain category will be tested during rain events and includes all of the tests performed under the Core category, as well as aquatic toxicity testing for the three indicator species and pesticide analyses for the four pesticide categories for all discharge sites. The Source category applies only to the source water sites and will test for a variety

of field, general chemistry, drinking water, and metal constituents as well as for OP pesticides. Table 4 shows the analyses category for each monitoring site according to time of year. Table 5, 6, and 7, show the chemistry, pesticide, and toxicity tests (respectively) performed under each category.

Table 4: Monitoring Sites

Monitoring Site	Site Code	Season: Irrigation (Mar-Aug)*	Season: Non-Irrigation (Sep-Feb)*	Season: Rain Event (2x per year)	Site-Specific Assessment Group Tests: Ceriodaphnia Toxicity	Fathead Toxicity	Algae Toxicity	Sediment Toxicity	Pesticides: OP	OC	Group A	Carb	Herb
Discharge Sites													
Vernalis at Highway 132	VH132	Assmt	Core	Rain	x	x	x	x	x	x	x	x	x
Poso Slough at Indiana Avenue	PSAIA	Assmt	Core	Rain	x	x	x	x	x	x	x	x	x
Hospital Cr at River Road	HCARR	Assmt	Core	Rain	x			x	x	x			x
Ingram Cr at River Road	ICARR	Assmt	Core	Rain	x			x	x	x	x	x	x
Westley Wasteway near Cox Road	WWNCR	Assmt	Core	Rain	x		x	x	x	x	x		x
Del Puerto Cr near Cox Road	DPCCR	Assmt	Core	Rain	x			x	x	x	x		x
Del Puerto Cr at Hwy 33	DPCHW	Assmt	Core	Rain	x			x	x	x	x		x
Ramonal Lake near Fig Avenue	ROLFA	Assmt	Core	Rain	x			x	x	x			x
Marshall Road Drain near River Road	MRDRR	Assmt	Core	Rain	x				x	x	x		x
Orestimba Cr at River Road	OCARR	Assmt	Core	Rain	x			x	x	x	x		x
Orestimba Cr at Hwy 33	OCAHW	Assmt	Core	Rain	x		x	x	x	x	x		x
Newman Wasteway near Hills Ferry Road	NWHFR	Assmt	Core	Rain	x			x	x	x	x		x
San Joaquin River at Lander Avenue	SJRLA	Assmt	Assmt	Rain	x		x		x				x
Mud Slough u/s San Luis Drain	MSUSL	Assmt	Assmt	Rain	x				x	x	x	x	x
Salt Slough at Lander Avenue	SSALA	Assmt	Assmt	Rain	x		x		x	x	x	x	x
Salt Slough at Sand Dam	SSASD	Assmt	Core	Rain	x		x		x	x		x	x
Los Banos Creek at Highway 140	LBCHW	Assmt	Assmt	Rain	x				x				x
Los Banos Creek at China Camp Road	LBCCC	Assmt	Core	Rain	x	x	x	x	x				x
Turner Slough near Edminster Road	TSAER	Assmt	Core	Rain	x	x			x				x
Little Panoche Cr at Western Boundary	LPCWB	Assmt	Core	Rain	x	x	x	x	x	x		x	x
Little Panoche Cr at San Luis Canal	LPCSL	Assmt	Core	Rain	x	x	x	x	x	x		x	x
Russell Ave. Drain at San Luis Canal	RADSL	Assmt	Core	Rain	x	x	x	x	x	x		x	x
Los Banos Creek at Sunset Ave	LBCSA	Assmt	Core	Rain	x	x	x	x	x	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 5: Field Measurements, Drinking Water, General Physical, Metal, and Nutrient Chemical Analyses

	Material	Matrix	Assessment	Core	Rain Event	Source Water
Field Measurements	Flow (cfs)	Water	x	x	x	x
	Photo Documentation	Site	x	x	x	x
	Electrical Conductivity (µs/cm)	Water	x	x	x	x
	Temperature (ºc)	Water	x	x	x	x
	pH	Water	x	x	x	x
	Dissolved Oxygen (mg/L)	Water	x	x	x	x
Drinking Water	Bromide (Br)	Water	x	x	x	
	Dissolved Organic Carbon (DOC)	Water	x	x	x	
	E. Coli	Water	x	x	x	x
	Fecal coliform	Water	x	x	x	x
	Total Organic Carbon (TOC)	Water	x	x	x	
Gen Phys	Hardness (as CACO3)	Water	x	x	x	x
	Total Dissolved Solids (TDS)	Water	x	x	x	x
	Total Suspended (TSS)	Water	x	x	x	x
	Turbidity	Water	x	x	x	x
Metals	Arsenic	Water	x		x	
	Boron	Water	x		x	x
	Cadmium	Water	x		x	
	Copper	Water	x		x	x
	Lead	Water	x		x	
	Nickel	Water	x		x	x
	Selenium	Water	x		x	
	Zinc	Water	x		x	x
Nutrients	Ammonia (as N)	Water	x	x	x	
	Nitrogen, Nitrate-Nitrite	Water	x	x	x	
	Total Kjeldahl Nitrogen	Water	x	x	x	
	Total Phosphate as P	Water	x	x	x	
	Ortho Phosphate as P (Soluble)	Water	x	x	x	
Toxicity	Ceriodaphnia dubia	Water	x		x	
	Pimephales promelas	Water	Site-specific		x	
	Selenastrum capricornutum	Water	Site-specific		x	

Table 6: Pesticide Analyses (Note: Assessment test are site specific)

	Material	Matrix	Assessment	Core	Rain Event	Source
OP Pesticides	Azinphosmethyl	Water	x	(no pesticides)	x	x
	Chlorpyrifos	Water	x		x	x
	Demeton-S	Water	x		x	x
	Diazinon	Water	x		x	x
	Dichlorovos	Water	x		x	x
	Dimethoate	Water	x		x	x
	Disulfoton	Water	x		x	x
	Malathion	Water	x		x	x
	Methidathion	Water	x		x	x
	Methamidophos	Water	x		x	x
	Parathion, ethyl	Water	x		x	x
	Parathion, methyl	Water	x		x	x
	Phorate	Water	x		x	x
	Phosmet	Water	x		x	x
	EPTC	Water	x		x	x
Herbicides	Atrizine	Water	x		x	
	Cyanazine	Water	x		x	
	Diuron	Water	x		x	
	Linuron	Water	x		x	
	Prowl	Water	x		x	x
	Simazine	Water	x		x	
	Trifluralin	Water	x		x	x
Addnl Group A OC Pesticides	Aldrin	Water	x		x	
	a-BHC	Water	x		x	
	b-BHC	Water	x		x	
	d-BHC	Water	x		x	
	g-BHC (Lindane)	Water	x		x	
	a-Chlordane	Water	x		x	
	g-Chlordane	Water	x		x	
	Endosulfan I	Water	x		x	
	Endosulfan II	Water	x		x	
	Endosulfan Sulfate	Water	x		x	
	Heptachlor	Water	x		x	
	Heptachlor epoxide	Water	x		x	
	Toxaphene	Water	x		x	

Table 6 (Continued)

	Material	Matrix	Assessment	Core	Rain Event	Source
OC Pest (Base)	Dicofol	Water	x		x	
	DDD(p,p')	Water	x		x	
	DDE(p,p')	Water	x		x	
	DDT(p,p')	Water	x		x	
	Dieldrin	Water	x		x	
	Endrin	Water	x		x	
	Methoxychlor	Water	x		x	
Carbamate Pest.	Aldicarb	Water	x		x	
	Carbaryl	Water	x		x	
	Carbofuran	Water	x		x	
	Methiocarb	Water	x		x	
	Methomyl	Water	x		x	
	Oxamyl	Water	x		x	

Table 7: Toxicity Analyses

	Species	Matrix	Assessment	Core	Rain Event	Source Water	Follow-up
Acute Screen	Ceriodaphnia dubia	Water	x		x		x
	Pimephales promelas	Water	variable		x		x
	Selenastrum capricornutum	Water	variable		x		x
TIE	Ceriodaphnia dubia	Water					x
	Pimephales promelas	Water					x
	Selenastrum capricornutum	Water					x
Dil Series	Ceriodaphnia dubia	Water					x
	Pimephales promelas	Water					x
	Selenastrum capricornutum	Water					x
Sed Tox	Hyalella azteca	Sediment	variable				
Pesticides in Sediment	Total Organic Carbon	Sediment					x
	Bifenthrin	Sediment					x
	Esfenvalerate/Fenvalerate	Sediment					x
	Lambda cyhalothrin	Sediment					x
	Permethrin	Sediment					x
	DDD(p,p')	Sediment					x
	DDE(p,p')	Sediment					x
	DDT(p,p')	Sediment					x

Follow-up is initiated based on the results of the acute screen samples as follows:

Aquatic Toxicity Tests:

For samples measuring a difference of >50% from control, a resample acute test will be initiated for the affected species.

For samples measuring a difference of >50% from control, a TIE will be initiated for the affected species.

For samples measureing 100% mortality in the 1st 24 hours, a dilution series will be initiated for the affected species.

Sediment Toxicity Tests

For sediment samples measuring significant toxicity and ≥50% from Control, the sediment pesticide Analysis will be performed. See Section 5.

5. Special Monitoring:
   - Bioassessments. Bioassessments (macroinvertebrate evaluations and physical habitat assessments) have been conducted annually in Del Puerto Creek, Orestimba Creek and Salt Slough since 2000. All three of these streams are listed as impaired water bodies on the 303d list due to diazinon and chlorpyrifos. This is likely the most extensive temporal bioassessment data base for any set of water bodies in the Central Valley. This work will be included in the Westside Coalition's monitoring program, to the extent that it can be funded. Historically this work has been performed by the University of Maryland and cost shared with other parties. The study will include 10 sites in Orestimba Creek and 5 sites in both Del Puerto Creek and Salt Slough. Both the macroinvertebrate and physical habitat data would be subjected to thorough statistical analysis and compared historically with data from previous years. All these data will be interpreted in the content of both regulatory and ecological implications. The Westside Coalition may discontinue bioassessments if funding becomes unavailable.
   - Sediment Toxicity Testing. The Westside Coalition will test chronic toxicity to *Hyalella azteca* (survival only) on sediment samples collected at the monitoring sites two times a year (typically March and September). Sediment samples will be collected at all stream locations (piped drains do not contain sediment and will not be sampled). Sediment samples that measure toxicity ≥50% difference from the control will also be tested for sediment pesticides as listed in Table 5 for the purpose of determining the probable cause of toxicity. A number of the monitoring sites within the Westside Coalition have shown chronic and severe sediment toxicity and are targeted by the Coalition's management plan for sediment management. Follow-up sediment pesticide analysis at these sites will be performed in accordance with the Management Plan and may not occur each time the follow-up trigger is reached. The Westside Coalition will review each set of sediment toxicity results for the

sites under the Management Plan with the Regional Board liaison and determine what follow-up is appropriate.

- Rain Events. The Westside Coalition will make every practical effort to collect samples associated with rain runoff twice a year at each site. A rain event sample will be collected when it is determined that the majority of flow in a given water body is from rain runoff, and this determination will be made by the field sampling crews in the field. Safe access will also be considered prior to sample collection: Sites where the sampling crew would be exposing themselves to potential injury or damage to private property (such as significant rutting of farm roads) may be skipped. In addition to the water quality results and field measurements, rainfall data from CIMIS stations 7 (Firebaugh/Telles), 92 (Kesterson), and 161 (Patterson) will be collected and report for the relevant time period before and during the Rain Event sample collection. Because of the varied nature of rainfall intensity, this data will not trigger a sample collection, but be used to help qualify the nature of the samples.
- Special Studies. The Westside Coalition recognizes that this monitoring program does not address every possible circumstance and that some data gaps exist. Within the limits of its resources, the Westside Coalition may develop and implement special studies to address issues of concern. These studies will be developed in coordination with the Management Plan and Regional Board Staff on a case-by-case basis.

C. Approach and methods

- Implementation: This monitoring program is scheduled to be implemented in the March 2008 monitoring event. Prior to that date, the existing Westside Coalition monitoring program (submitted April 2004) will remain in effect. Samples will be collected according to the monitoring schedule by staff of water and irrigation districts within the Westside Coalition, using the

methods described in the Field Sampling Manuel and the QAPP (a revised QAPP will be submitted early in 2008).

- Schedule: The Westside Coalition will strive to maintain a consistent schedule throughout the year but may alter it to address scheduling conflicts. Typically, water samples will be collected on the second Tuesday of each month during both the irrigation and non-irrigation seasons. Sediment samples will be collected on the second Monday of the month in which they are to be collected (1 day prior to the water sample collection). Bioassessments will typically be performed during the late spring. Rain event samples will be collected when the field sampling crews determine that the majority of flow at a given monitoring site is from rain runoff. The timing of rain event sample collection will vary throughout the Westside Coalition.
- Re-evaluation: The Westside Coalition implemented a monitoring program in July 2004, monitoring for general chemistry, toxicity and pesticides at 19 sites. A number of sites measured no significant toxicity and/or pesticide water quality concerns. The Westside Coalition, in coordination with Regional Water Quality Control Board staff, thoroughly reviewed this data and identified sites that did not require further toxicity or pesticide analyses (see Table 4). However, the Westside Coalition recognizes that the agricultural landscape is dynamic, and that changes in agricultural practices could introduce new water quality concerns. Every third year (beginning March 1, 2010), all discharge sites will be monitored for all three toxicity species and the four pesticide groups. The results of this testing, combined with the previous two years, will be evaluated to determine which additional analyses are required or can be eliminated.

Section 7: Data Review and Reporting

Data generated by the Monitoring Program will be reviewed on a continuous basis for exceedances of water quality values and other anomalies. Exceedance Reports will be submitted when water quality values are exceeded at the monitoring sites the next business day describing the exceedances, the follow-up monitoring, and analysis or other actions the Westside Coalition may take to address the exceedance. The determination of a water quality exceedance shall occur no later than 5 business days after receiving the laboratory analytical report. If the exceedance is addressed in the management plan, a communications and/or evaluation report will not be submitted. Semi-annual monitoring reports will be submitted to the Regional Water Quality Control Board twice a year (January and July). During the development of the semi-annual reports, changes to the Monitoring Program based on collected data, may be recommended. These changes will be discussed with the Regional Water Quality Control Board staff on an as-needed basis.

1. Contents of Reports. Semi-Annual Monitoring Reports will include the following components:
    - Signed Transmittal Letter.
    - Title Page and table of contents.
    - Executive Summary
    - Description of the Westside Coalition's geographical area and composition.
    - Monitoring Objectives.
    - Description of Monitoring Sites.
    - A map of the Westside Coalition, showing the Monitoring Site locations.
    - Tabulated results of all analyses organized by site and sampling date. The Tabulation will indicate the monitoring site, sample date, constituent, result, and detection limit.
    - Discussion of the sampling events and data for the sampling period, including a discussion of the data interpretation, exceedances of water quality values, and other issues of interest.

- A discussion of the field quality control sample results (field duplicate and field blank results).
- Copies of the field data sheets and laboratory data reports for the sampling period. Laboratory reports will include the related chain of custody sheet.
- A summary of the communication and exceedance reports submitted during the reporting period.
- A discussion and status report on relevant activities within the Westside Coalition including those related to the Management Plan.

An electronic database containing all of the water quality data received by the Westside Coalition will be maintained by the coalition. This database and updates to it will be submitted to the Regional Board upon their request.

APPENDIX 1

Monitoring Sites and Locations

Monitoring Site Descriptions.
Table 8 lists the monitoring sites and their coordinates.

Table 8: Monitoring Site Locations

NORTHERLY REGION SITES			
Site	Site Code	Latitude	Longitude
Hospital Cr at River Road	HCARR	37º 36.628' N	121º 13.847 W
Ingram Cr at River Road	ICARR	37º 36.013' N	121º 13.503' W
Westley Wasteway near Cox Road	WWNCR	37º 33.493' N	121º 09.823'W
Del Puerto Cr near Cox Road	DPCCR	37º 32.362 N	121º 07.323' W
Del Puerto Cr at Hwy 33	DPCHW	37º 30.843' N	121º 09.573' W
Ramonal Lake near Fig Avenue	ROLFA	37º 28.725' N	121º 04.103' W
Marshall Road Drain near River Road	MRDRR	37º 26.178' N	121º 02.17' W
Orestimba Cr at River Road	OCARR	37º 24.832' N	121º 00.893' W
Orestimba Cr at Hwy 33	OCAHW	37º 22.630' N	121º 03.513' W
Vernalis at Highway 132	VH132	37º 38.397' N	121º 13.797' W
San Joaquin River at PID Pumps	SJRPP	37º 29.833' N	121º 04.967' W
DMC at DPWD Turnout	DMCDP	37º 26.207' N	121º 08.001' W
SOUTHERLY REGION SITES			
Site	Site Code	Latitude	Longitude
Newman Wasteway near Hills Ferry Road	NWHFR	37º 19.222' N	120º 59.002' W
San Joaquin River at Sack Dam	SJRSD	36º 59.012' N	120º 30.030' W
San Joaquin River at Lander Avenue	SJRLA	37º 17.703' N	120º 51.083' W
Mud Slough u/s San Luis Drain	MSUSL	37º 15.698' N	120º 54.368' W
Salt Slough at Lander Avenue	SSALA	37º 14.878' N	120º 51.135' W
Salt Slough at Sand Dam	SSASD	37º 08.198' N	120º 45.717' W
Los Banos Creek at Highway 140	LBCHW	37º 16.572' N	120º 57.328' W
Los Banos Creek at China Camp Road	LBCCC	37º 06.868' N	120º 53.372' W
Turner Slough near Edminster Road	TSAER	37º 18.247' N	120º 54.050' W
Poso Slough at Indiana Avenue	PSAIA	37º 0.374' N	120º 35.973' W
SAN LUIS WATER DISTRICT SITES			
Site	Site Code	Latitude	Longitude
Los Banos Creek at Sunset Ave	LBCSA	37º 01' 38.9" N	120º 53' 23.4" W
Little Panoche Cr at Western Boundary	LPCWB	36º 47' 27.6" N	120º 45' 43.2" W
Little Panoche Cr at San Luis Canal	LPCSL	36º 49' 2.2" N	120º 43' 34.1" W
Russell Ave Drain at San Luis Canal	RADSL	36º 45' 5.1" N	120º 39' 27.9" W

- Vernalis at Highway 132 (VH132). This site is located at the northerly boundary of the Westside Coalition, and has not been regularly monitored. Regional Board staff have observed turbid water discharges at this site on a number of occasions.
- 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.
- 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.

- 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.
- 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.
- 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.
- Ramona Lake near Fig Ave (ROLFA). This site monitors discharge from a small lake as it flows into the San Joaquin River. Agricultural and storm runoff form 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 form 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.
- 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.
- 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.

- 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.
- 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. 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 for (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, 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. 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.
- 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.
- 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 they may be diverted for irrigation. Because of this practice, a limited number of irrigation season samples have been collected. Some sediment toxicity and pesticides have been measured at this site.
- Turner Slough (Designation 19). 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.

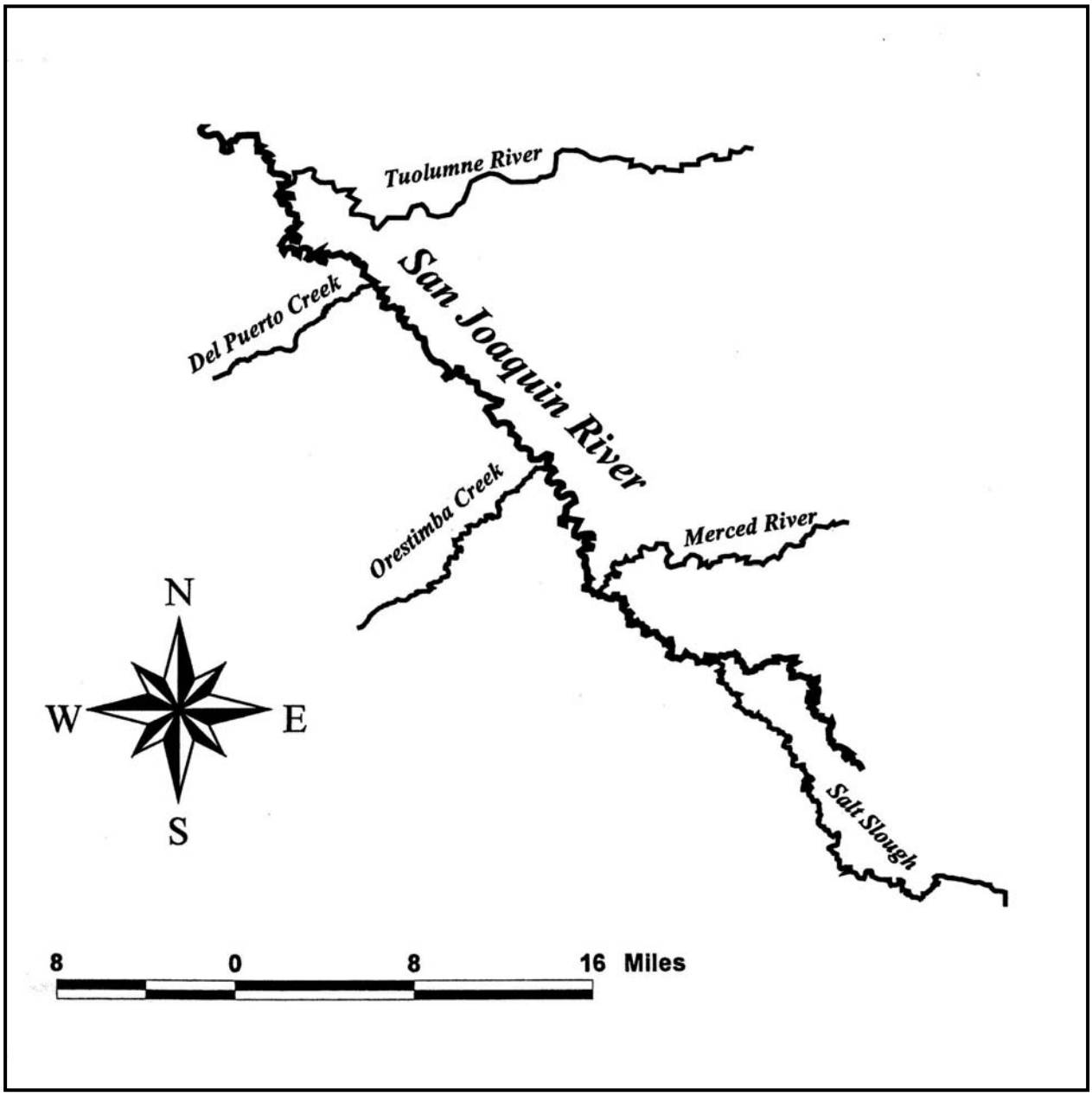
- Little Panoche Creek at Western Boundary (LPCWB) and at San Luis Canal (LPCSL). These two sites were incorporated from the San Luis Water District Water Quality Coalition. Because San Luis Water District has a strict no-discharge policy, these sites will typically measure only storm runoff or releases from the Little Panoche reservoir. These sites typically convey storm water and have not been extensively monitored.
- 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.
- 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.
- 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 will be monitored for source water constituents.
- Delta Mendota Canal at Del Puerto Water District (DMCDP). This site will monitor water quality in the Delta Mendota Canal at a Del Puerto Water District turnout. This will characterize the source water quality typical of the Delta Mendota Canal, and will be monitored for source water constituents.
- 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 will characterize the source water quality of the San Joaquin River in the Patterson Subarea. This site will be monitored for source water constituents.

Monitoring Site Maps not included in this document

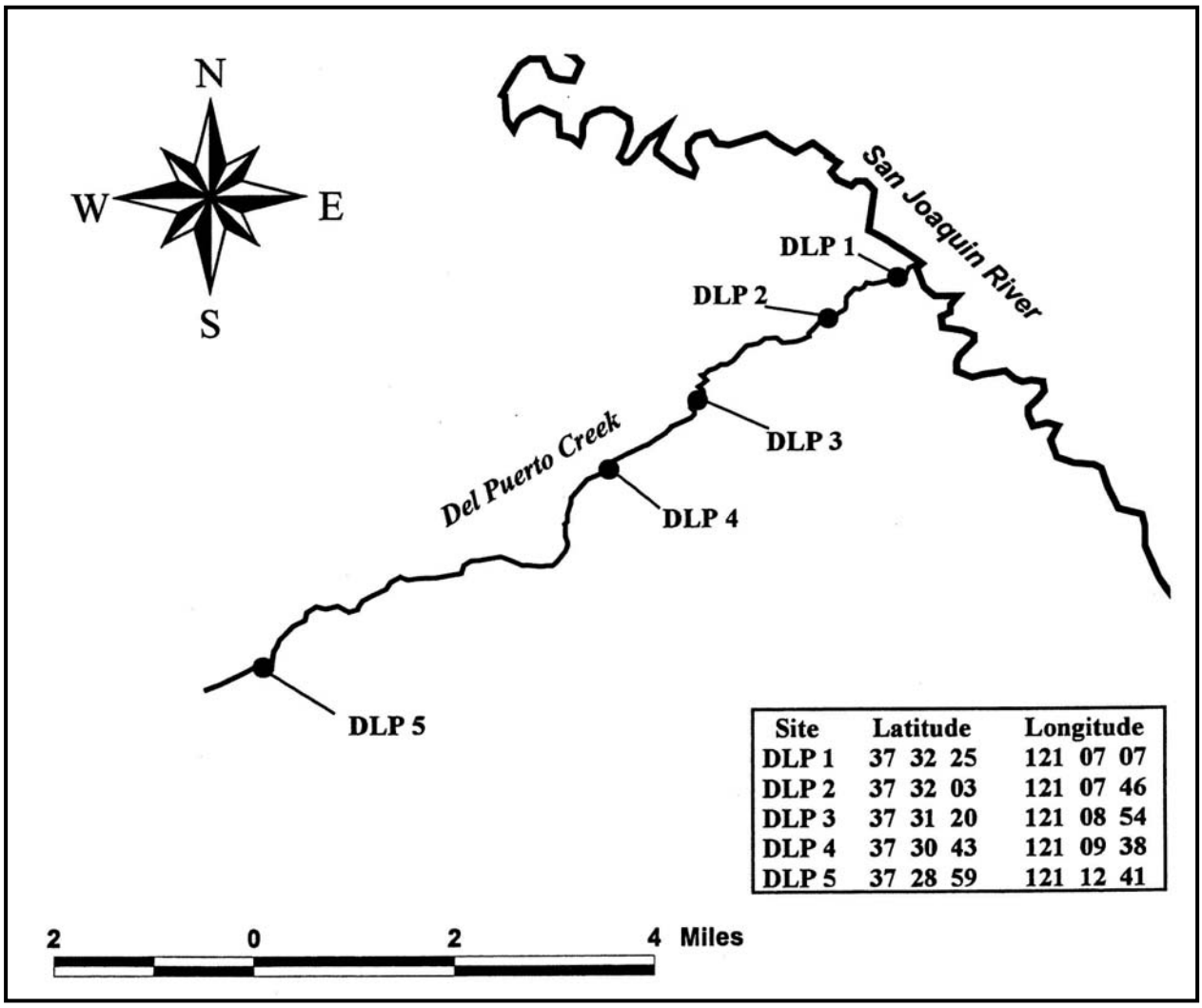
APPENDIX 2

Biological Assessment Site Locations[1]

[1] Hall, Lenwood W. Jr. and Killen, William D. April 2003 Draft, "Characterization of Benthic Communities and Physical Habitat in Agricultural Streams in California's San Joaquin Valley in 2002".

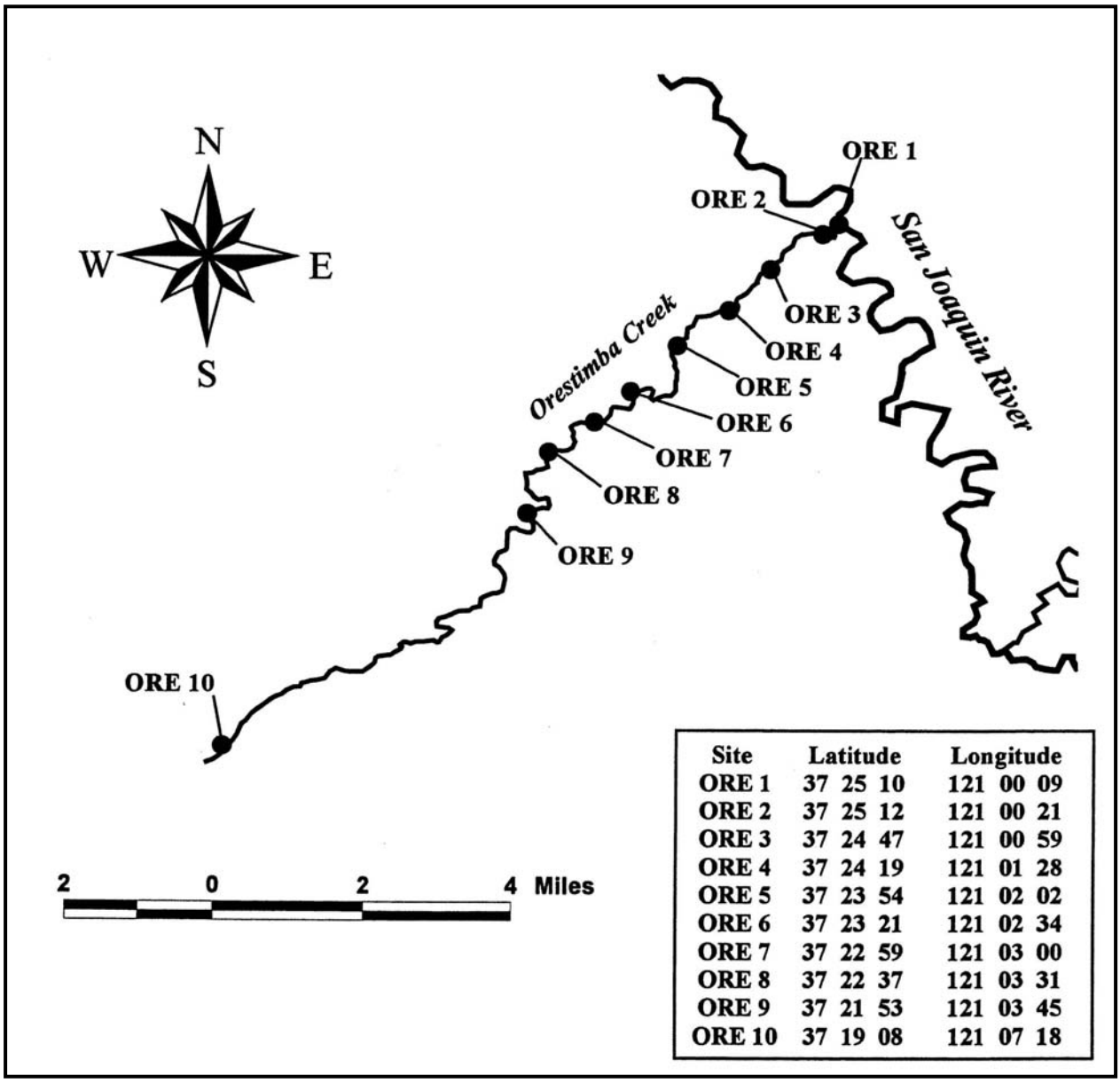


San Joaquin River Basin showing relative locations of Del Puerto Creek, Orestimba Creek and Salt Slough.



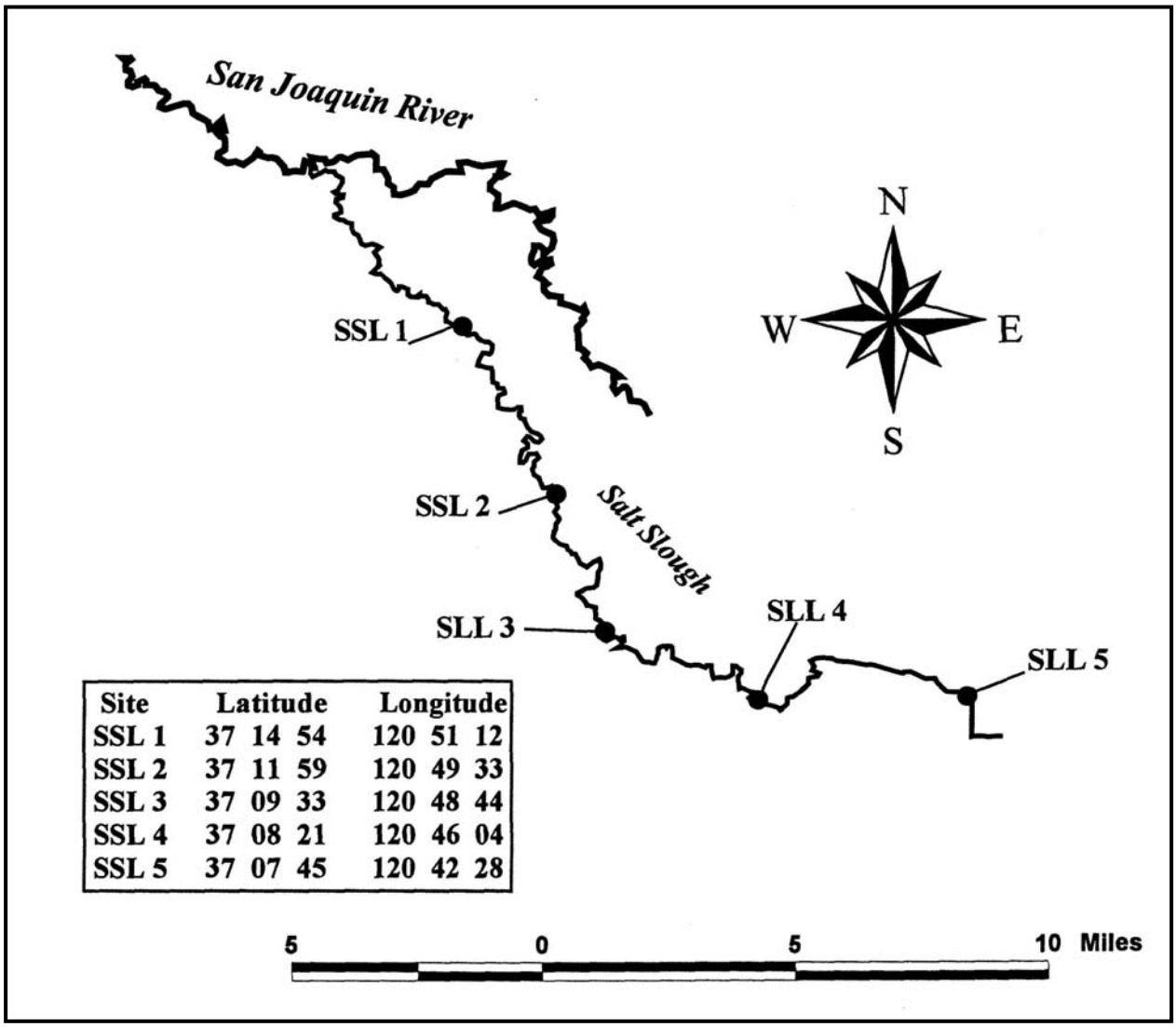
Site	Latitude	Longitude
DLP 1	37 32 25	121 07 07
DLP 2	37 32 03	121 07 46
DLP 3	37 31 20	121 08 54
DLP 4	37 30 43	121 09 38
DLP 5	37 28 59	121 12 41

Del Puerto Creek sample sites.



Site	Latitude	Longitude
ORE 1	37 25 10	121 00 09
ORE 2	37 25 12	121 00 21
ORE 3	37 24 47	121 00 59
ORE 4	37 24 19	121 01 28
ORE 5	37 23 54	121 02 02
ORE 6	37 23 21	121 02 34
ORE 7	37 22 59	121 03 00
ORE 8	37 22 37	121 03 31
ORE 9	37 21 53	121 03 45
ORE 10	37 19 08	121 07 18

Orestimba Creek sample sites



Site	Latitude	Longitude
SSL 1	37 14 54	120 51 12
SSL 2	37 11 59	120 49 33
SSL 3	37 09 33	120 48 44
SSL 4	37 08 21	120 46 04
SSL 5	37 07 45	120 42 28

Salt Slough sample sites.