Results of the 2006 TMDL Monitoring of Pesticides

In California's Central Valley Waterways

January - March 2006

Prepared by

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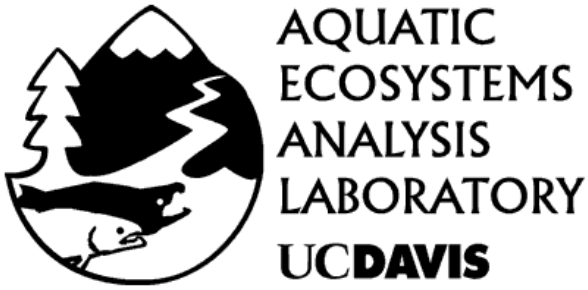

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Introduction

This report describes the pesticide monitoring results, including the levels of organophosphate pesticides and other selected pesticides in water bodies of the Sacramento River basin, the eastern Sacramento-San Joaquin Delta tributary area (Delta), and the San Joaquin River basin, at fifteen waterway locations (Figures 1, 2 and 3) associated with runoff events that occurred January to March 2006. The monitoring was conducted by the Aquatic Ecosystems Analysis Laboratory (AEAL) of the John Muir Institute of the Environment, University of California, Davis, as authorized under Contract No. 02-210-250 from the Regional Water Quality Control Board, Central Valley Region (Regional Water Board). For the purposes of this report a "storm event" is defined as the period of time encompassed by sample collection, and over which pesticide loads were assumed to have occurred.

Objective

The primary objective of this project was to monitor selected sites (Table 1) in the Sacramento River Basin, the eastern Sacramento-San Joaquin Delta tributary area (Delta), and the San Joaquin River Basin over two storm events during the winter of 2005-06 to further characterize and define the sources of diazinon, chlorpyrifos and other pesticides that may cause surface water contamination and toxic conditions to aquatic life. An additional objective was to identify other pesticides entering these water bodies. The results of this study will be used to support the Regional Water Board in development of pesticide Total Maximum Daily Loads (TMDLs) in Central Valley waterways and to characterize the presence/absence and sources of selected other pesticides that have been identified as potentially posing a high risk to surface waters. More information about objectives is provided in the Quality Assurance Project Plan (Calanchini, 2005).

Monitoring Overview

In the Sacramento Basin four sites were monitored once daily, for two consecutive days during two separate storm events and two sites were monitored once daily for eight consecutive days. In the San Joaquin Basin three sites were monitored

once daily for two consecutive days during two separate storm events, and two sites were monitored once daily for two consecutive days during one storm event. In the Delta four sites were monitored once daily, for two days each, during two separate storm events (Table 1).

The measured field parameters included pH, water temperature, and electrical conductivity (EC). All water samples were delivered to the California Department of Fish and Game (CDFG) laboratory in Rancho Cordova, California for chemical analysis using gas chromatography (GC) and mass spectrometry (MS).

Daily rainfall totals during the two storm events are shown in Figures 4 and 5.

The detection frequency (Figures 6, 7 and 8) and concentrations (Appendix tables 1-5) for 19 chemical compounds are presented in this report. Instantaneous loading rates of diazinon and chlorpyrifos are also presented for sites where discharge data was available (Appendix Table 6).

In this report the terms “Site Name” and “Site ID” are used interchangeably with the terms “Station Name” and “Station Code”, respectively.

Figure 1. Four TMDL monitoring sites in the Sacramento River Basin monitored for pesticides during the 2006 storm season

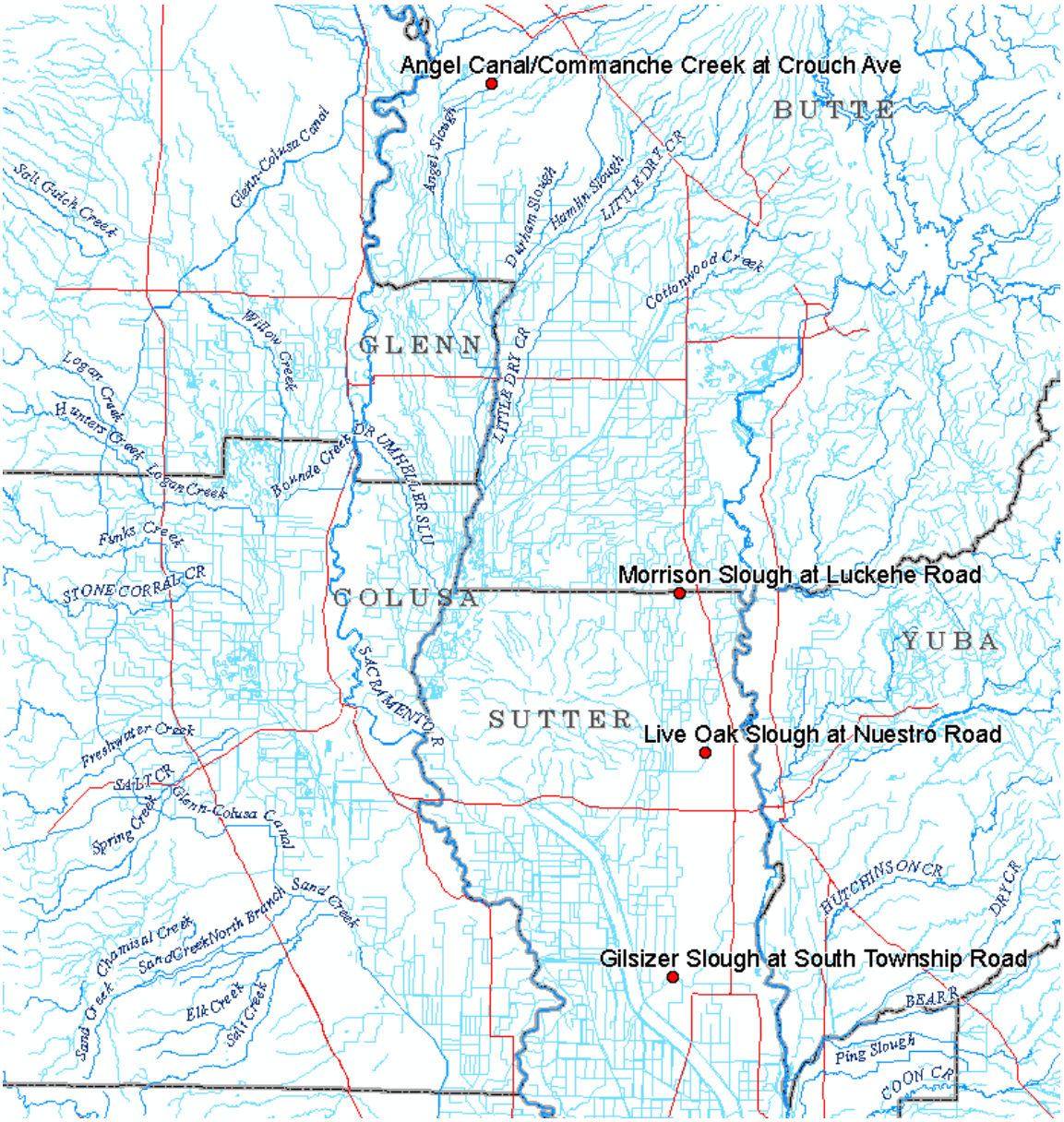


Figure 2. Six TMDL monitoring sites in the Sacramento River Basin and Delta monitored for pesticides during the 2006 storm season

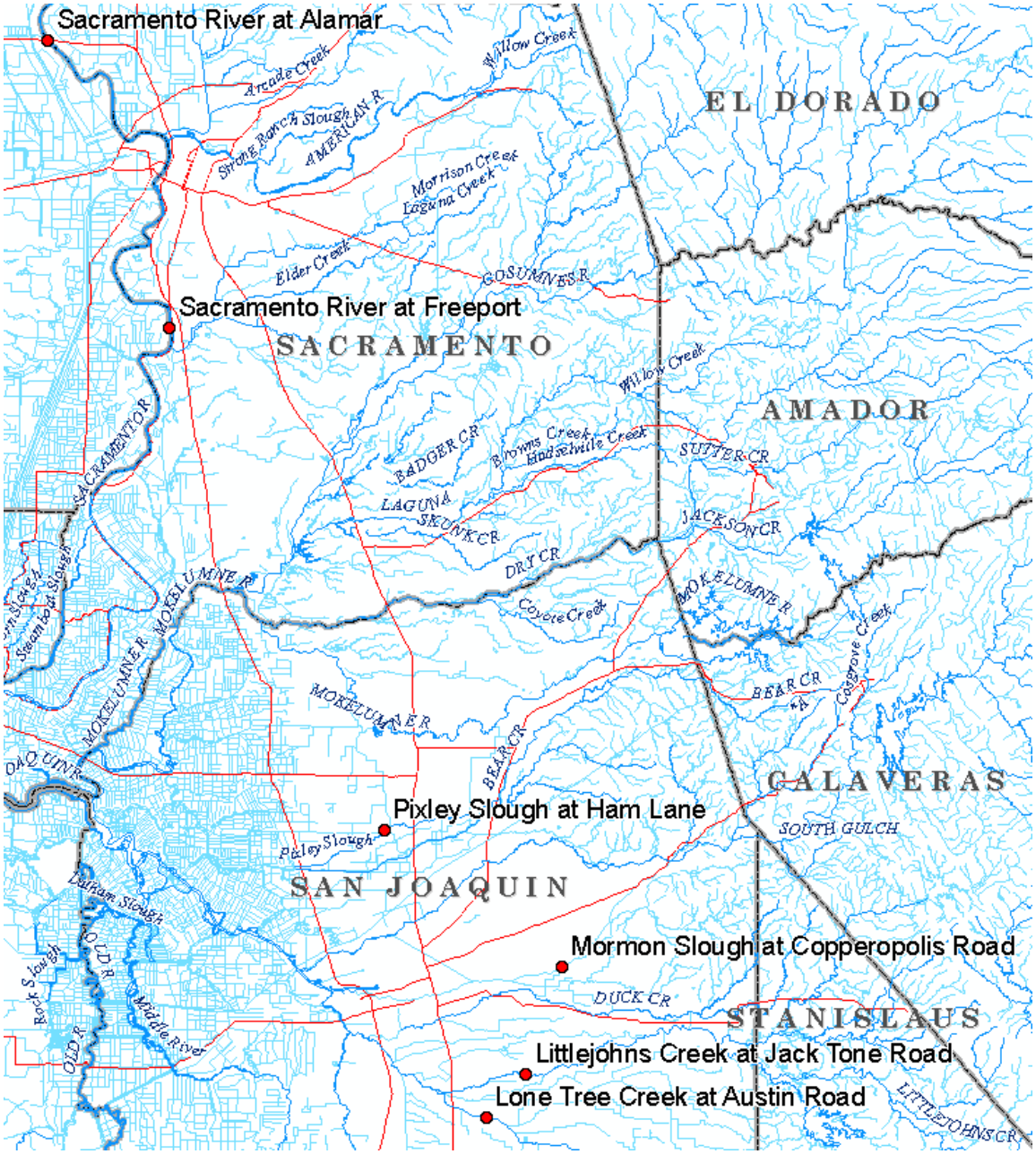


Figure 3. Five TMDL monitoring sites in the northern San Joaquin River Basin monitored for pesticides during the 2006 storm season

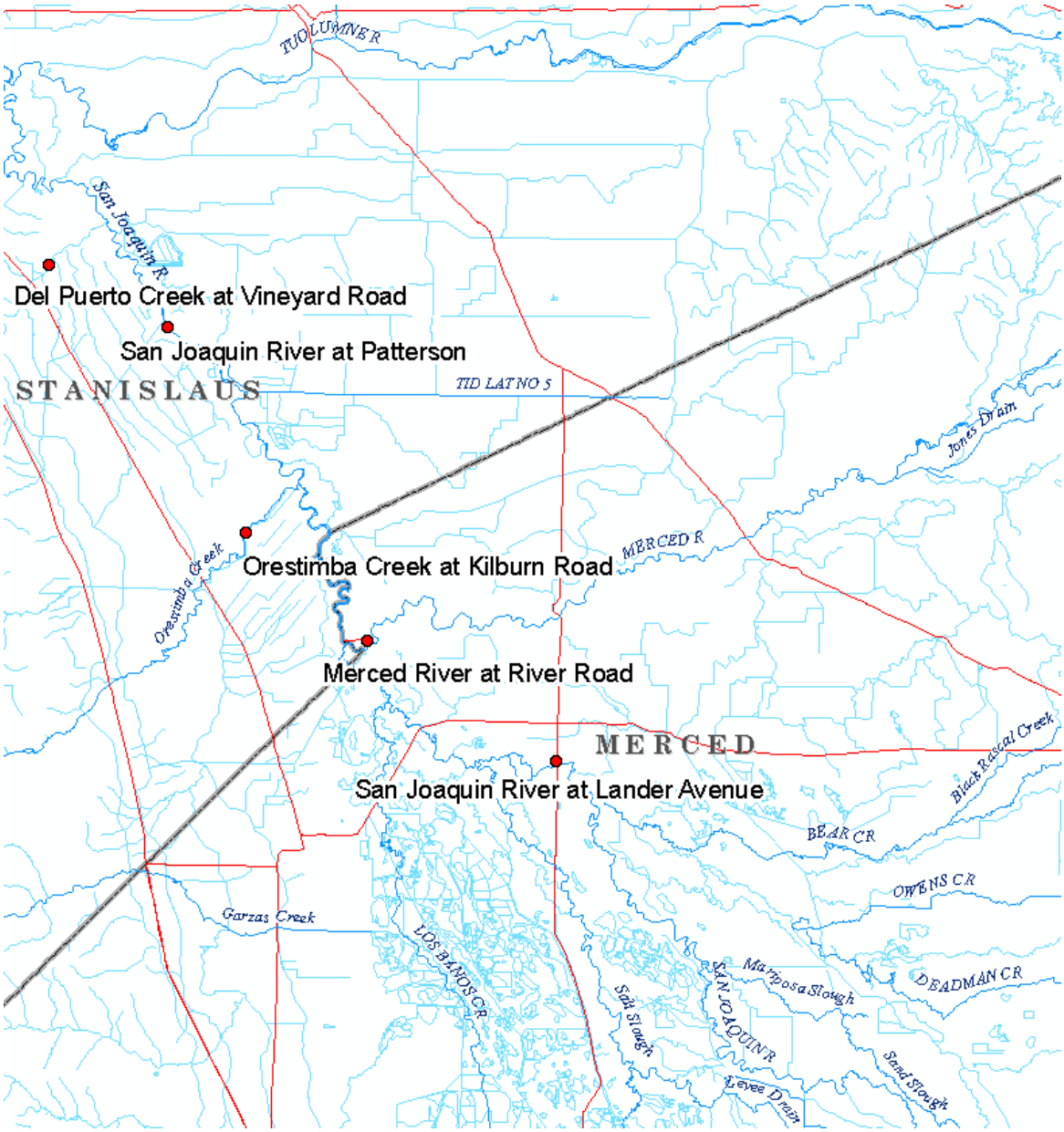


Table 1. Site IDs, site names, scheduled sampling frequency for each storm event, and actual storm event sampling dates.

Site ID	Sacramento Basin Site Names	Scheduled sampling frequency	Actual storm event sampling dates
520LSAC23	Gilsizer Slough at South Township Road	1 sample/day x 2 days, 2 storm events	Jan 14-15 & Feb 27-28, 2006
520LSAC24	Live Oak Slough at Nuestro Road	1 sample/day x 2 days, 2 storm events	Jan 14-15 & Feb 27-28, 2006
520LSAC25	Morrison Slough at Luckehe Road	1 sample/day x 2 days, 2 storm events	Jan 14-15 & Feb 27-28, 2006
520LSAC26	Angel Canal/Comanche Creek at Crouch Avenue	1 sample/day x 2 days, 2 storm events	Jan 14-15 & Feb 27-28, 2006
	Delta Site Names	**Scheduled sampling frequency**	**Actual storm event sampling dates**
531DEL501	Pixley Slough at Ham Lane	1 sample/day x 2 days, 2 storm events	Jan 14-15 & Feb 27-28, 2006
531DEL502	Mormon Slough at Copperopolis Road	1 sample/day x 2 days, 2 storm events	Jan 14-15 & Feb 27-28, 2006
531DEL503	Littlejohn Creek at Jack Tone Road	1 sample/day x 2 days, 2 storm events	Jan 14-15 & Feb 27-28, 2006
531SJC503	Lone Tree Creek at Austin Road	1 sample/day x 2 days, 2 storm events	Jan 14-15 & Feb 27-28, 2006
519LSAC55	Sacramento River at Alamar	1 sample/day x 8 days, 1 storm event	Jan 14, Feb 27 – Mar 6, 2006
519LSAC52	Sacramento River at Freeport	1 sample/day x 8 days, 1 storm event	Jan 14, Feb 27 – Mar 6, 2006
	San Joaquin River Basin Site Names	**Scheduled sampling frequency**	**Actual storm event sampling dates**
541MER522	San Joaquin River at Lander Avenue	1 sample/day x 2 days, 1 storm event	Feb 28 – Mar 1, 2006
541STC507	San Joaquin River at Patterson	1 sample/day x 2 days, 1 storm event	Jan 14-15, 2006
535MER546	Merced River at River Road	1 sample/day x 2 days, 2 storm events	Jan 14-15 & Feb 28-Mar 1, 2006
541STC516	Del Puerto Creek at Vineyard Road	1 sample/day x 2 days, 2 storm events	Feb 28 – Mar 1, 2006
541STC518	Orestimba Creek at Kilburn Road	1 sample/day x 2 days, 2 storm events	Jan 14-15 & Feb 28-Mar 1, 2006

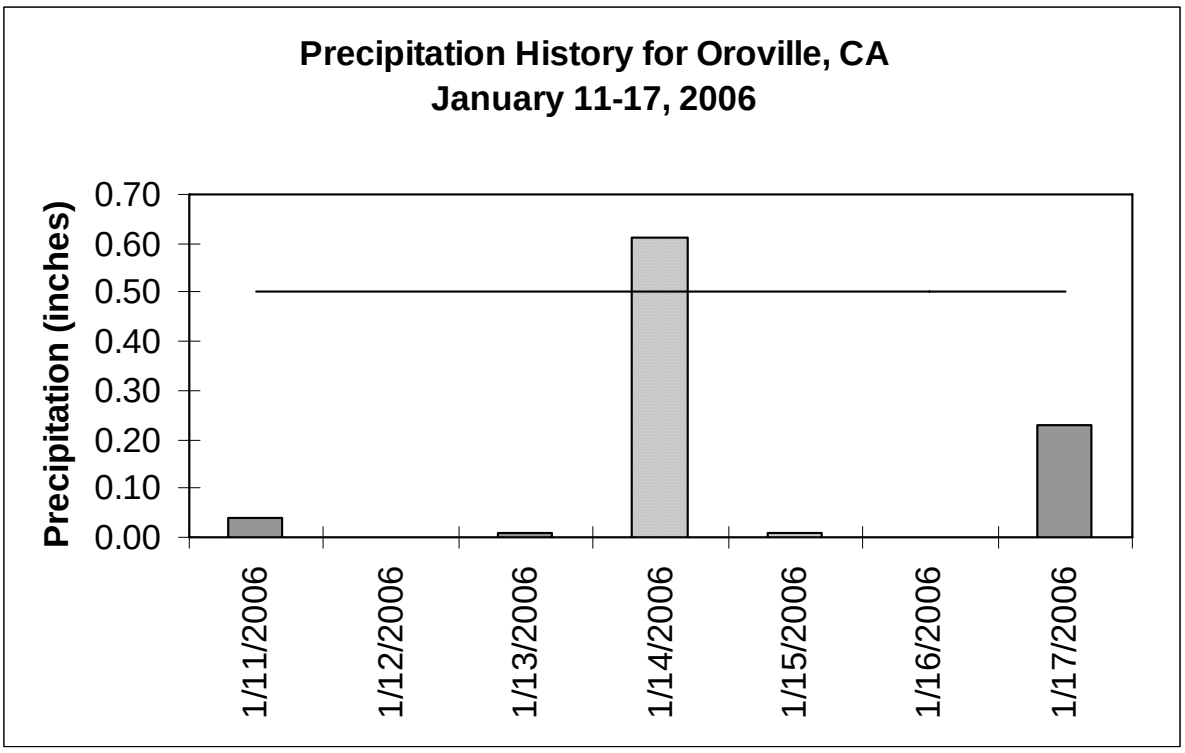
Precipitation During the Study

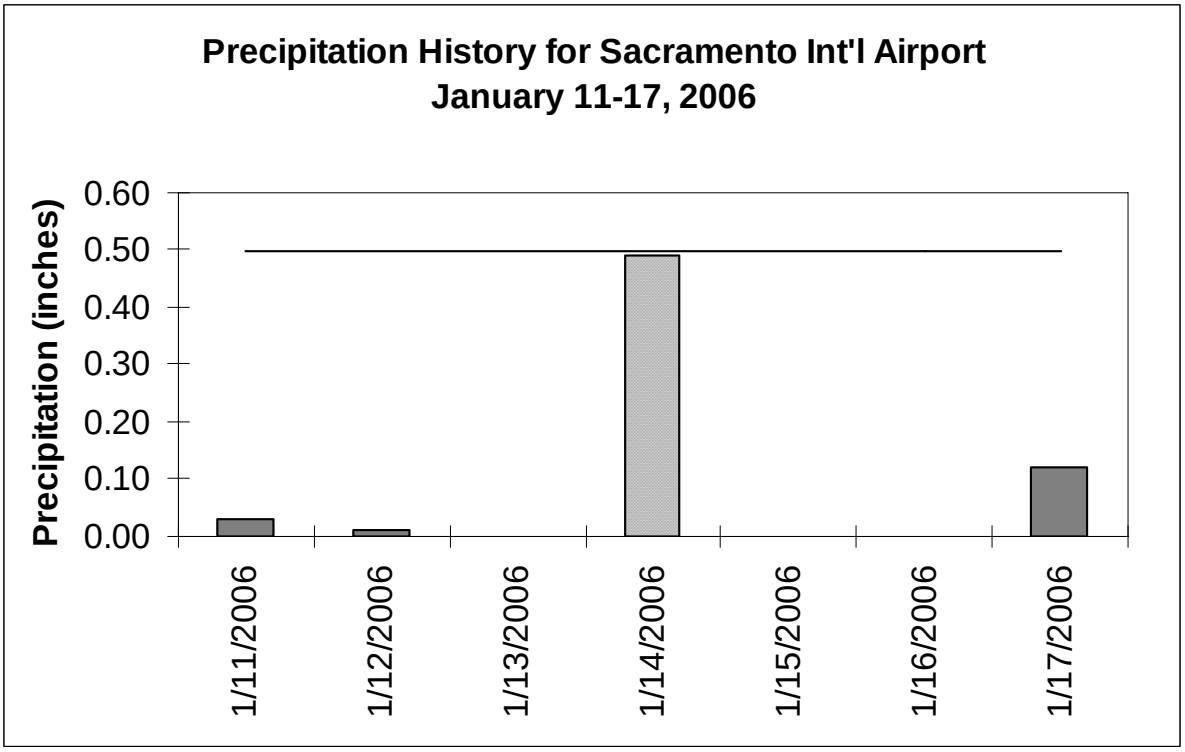
The following summary includes rain gage data obtained through the website www.weatherunderground.com.

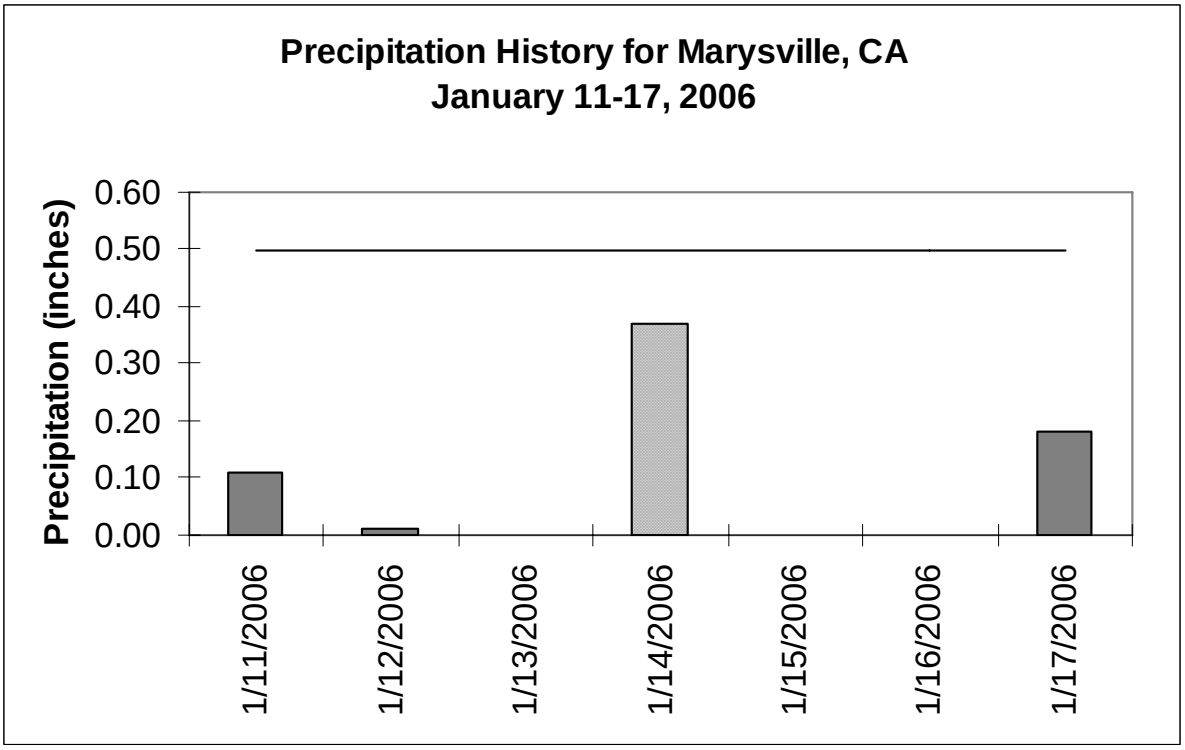
Two storm events were sampled in the Sacramento River Basin and Delta and in the San Joaquin River Basin. In the Sacramento basin, three weather-monitoring stations were used: Sacramento, representing precipitation in the Sacramento River basin, and Oroville and Marysville, representing precipitation in the Feather River basin. In the Delta basin Stockton was used as a weather-monitoring station. In the San Joaquin Valley, a weather monitoring station located in downtown Modesto was used to record rainfall. The first storm event sampled was preceded by several smaller storms occurring between January 4-13, and one large storm occurring January 1-3. The earlier, larger storm resulted in precipitation totals of 0.47 inches in Oroville and 0.69 inches in Sacramento on January 1 and 1.46 inches in Stockton and 1.70 inches in Modesto on January 2 (Figure 4), exceeding the sampling trigger. However, sampling did not commence because it was believed the soil was too saturated for dormant spray to have been applied due to consistent rainfall in late December. The trigger was reached again on January 14 with 0.61 inches of rain in Oroville but less than 0.50 inches in the Delta and San Joaquin regions. However, it was decided to begin sampling in all regions on January 14 due to saturated soils making runoff likely to occur.

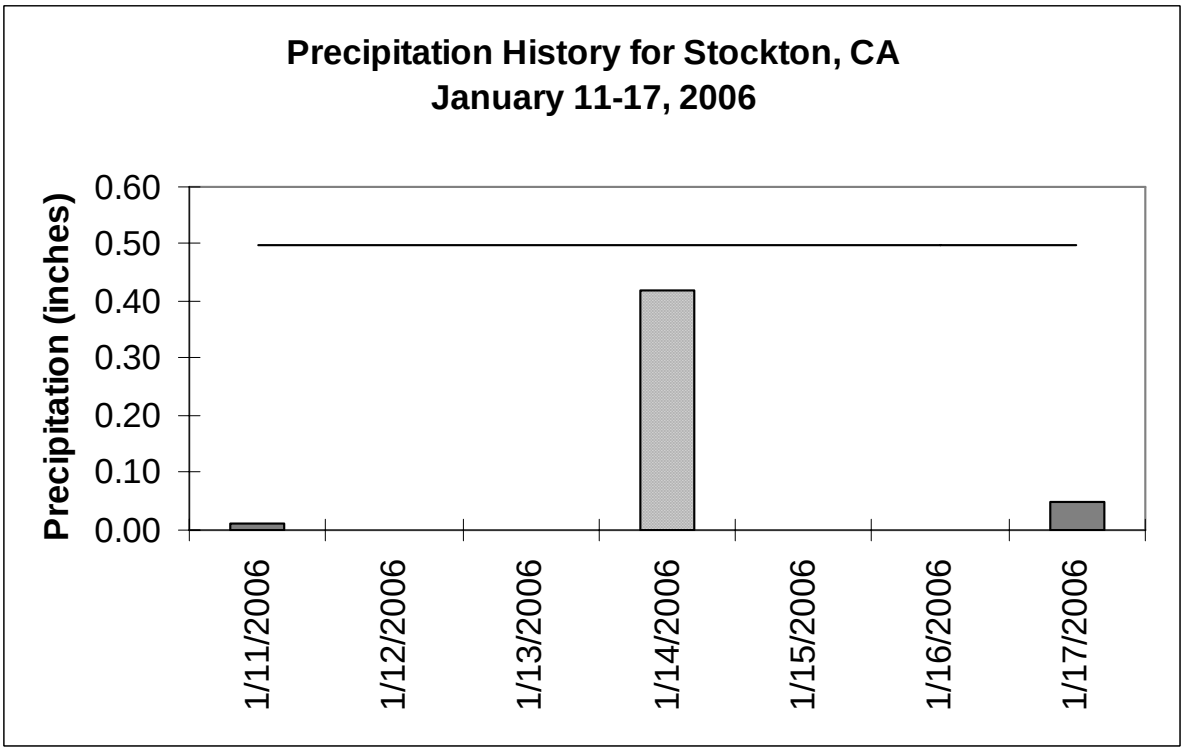
Figure 4. Rainfall graphs for the first storm event for Oroville, Sacramento International Airport, Marysville, Stockton and Modesto, CA.

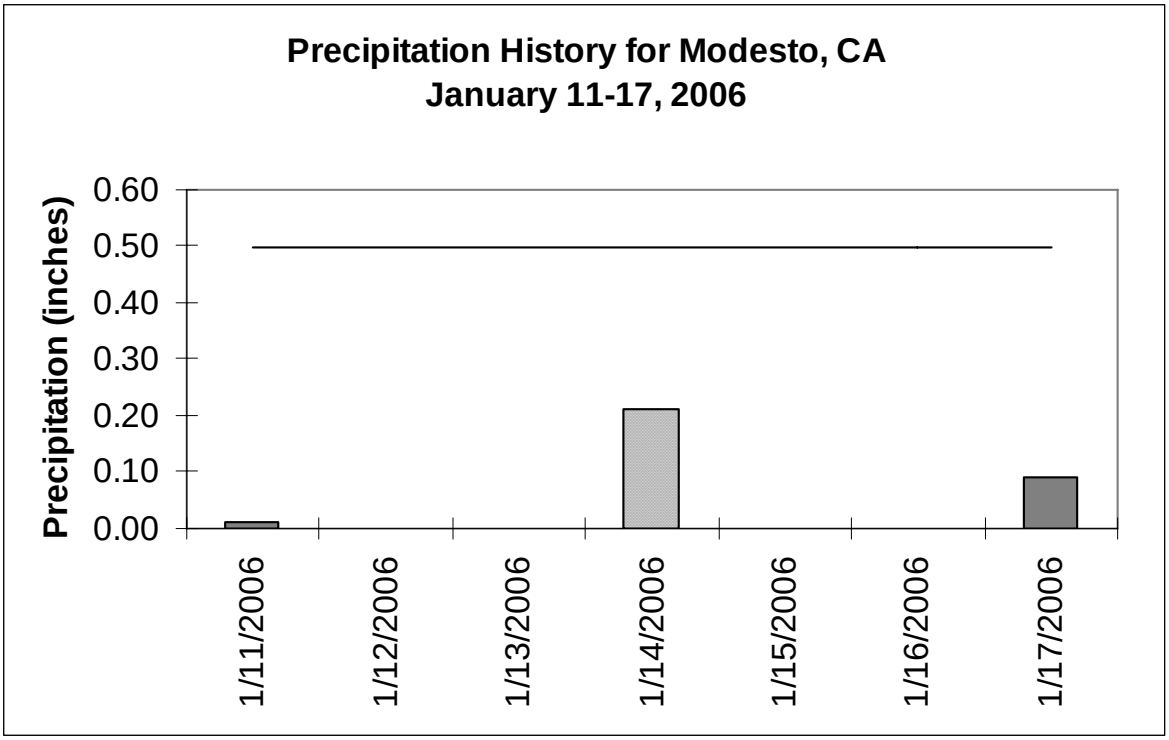
(light gray bars indicate actual sample collection dates)






Precipitation History for Marysville, CA
January 11-17, 2006
Precipitation (inches)
0.60
0.50
0.40
0.30
0.20
0.10
0.00
1/11/2006
1/12/2006
1/13/2006
1/14/2006
1/15/2006
1/16/2006
1/17/2006

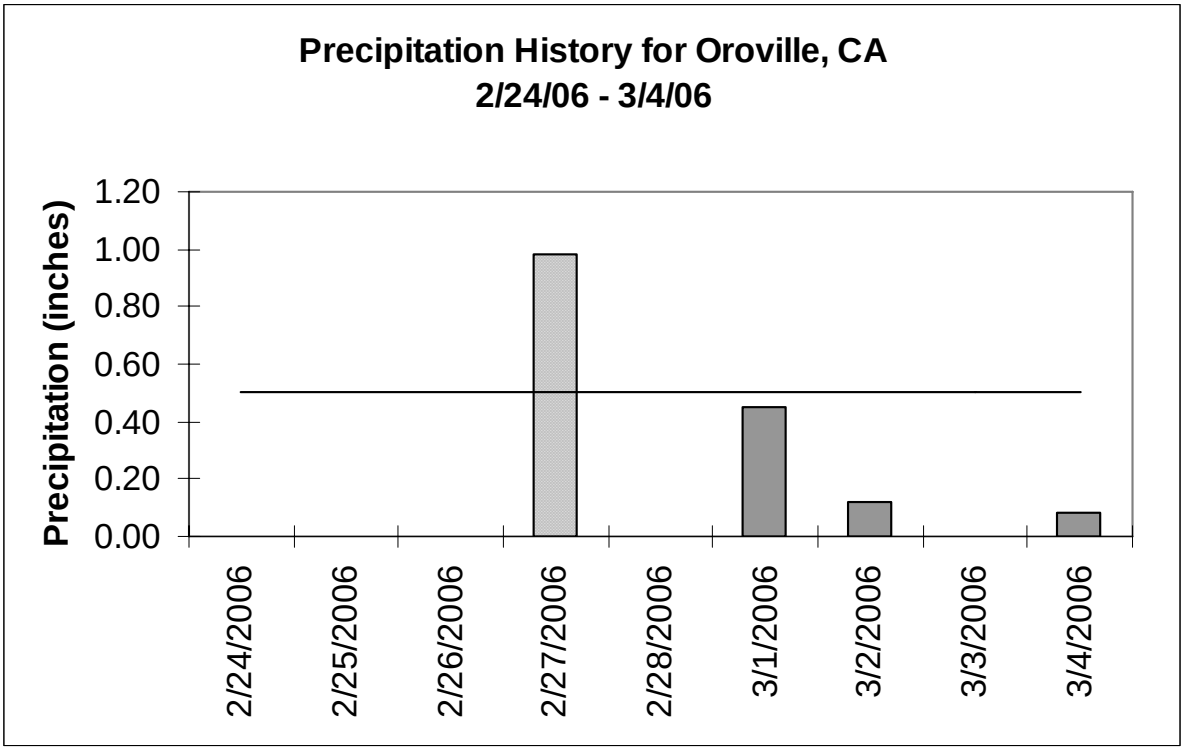

Precipitation History for Stockton, CA
January 11-17, 2006
Precipitation (inches)
0.60
0.50
0.40
0.30
0.20
0.10
0.00
1/11/2006
1/12/2006
1/13/2006
1/14/2006
1/15/2006
1/16/2006
1/17/2006

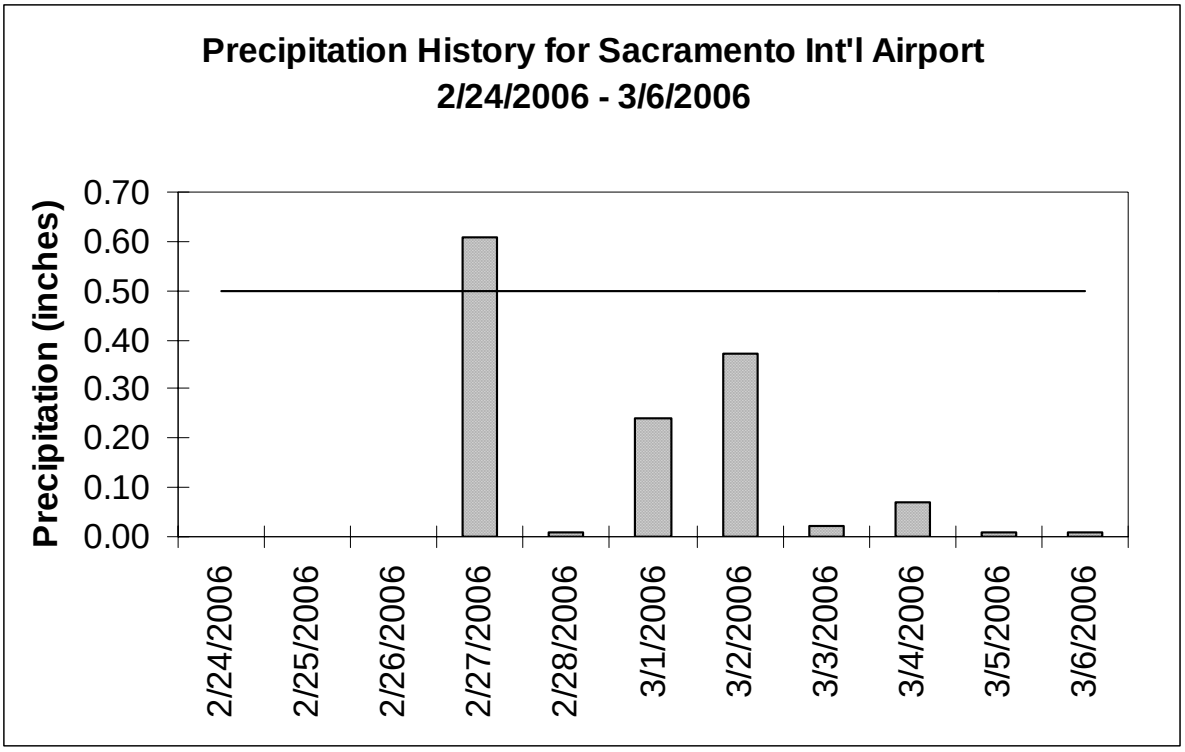


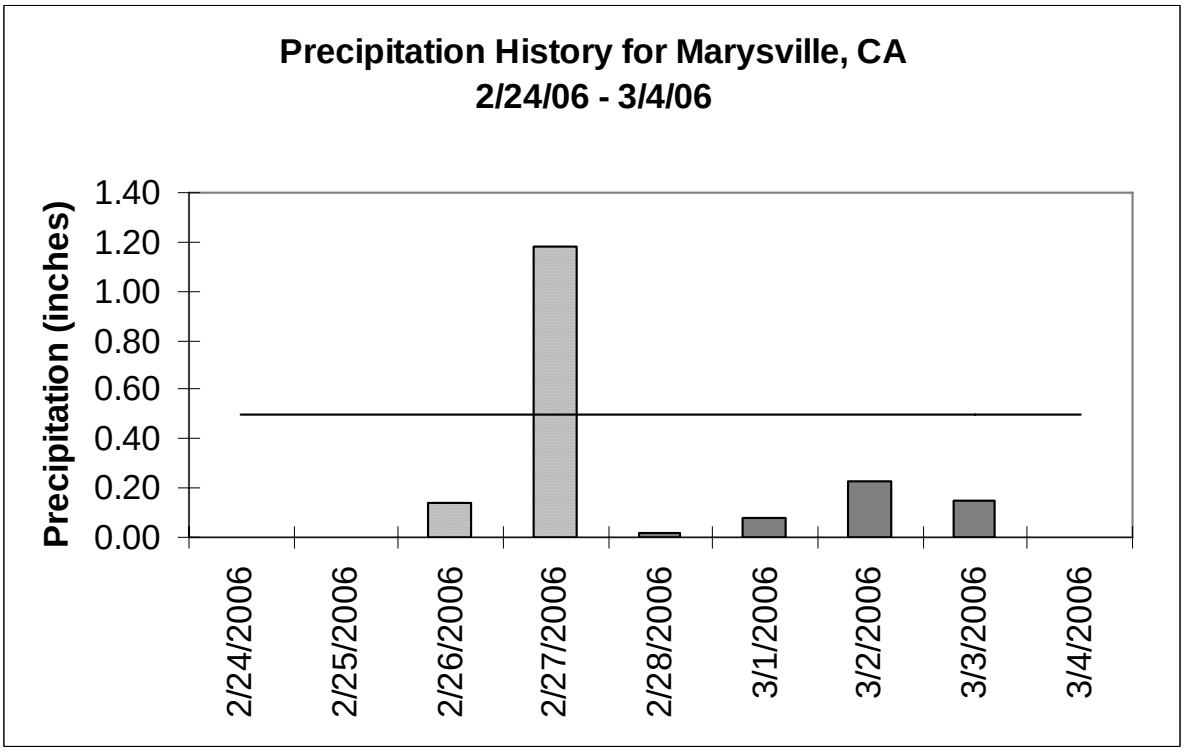
The second sampled storm event was preceded by a six week period of mostly dry weather. On February 27 there were 0.98", 1.18" and 0.61" of rainfall in Oroville, Marysville and Sacramento, respectively. Also on February 27 there were 0.59" and 0.48" of rainfall in Stockton and Modesto, respectively. On February 28 sampling began in all areas. There was a negligible amount of rainfall on February 28 however, runoff was observed and rainfall began again on March 1 in all areas and continued through the first week of March.

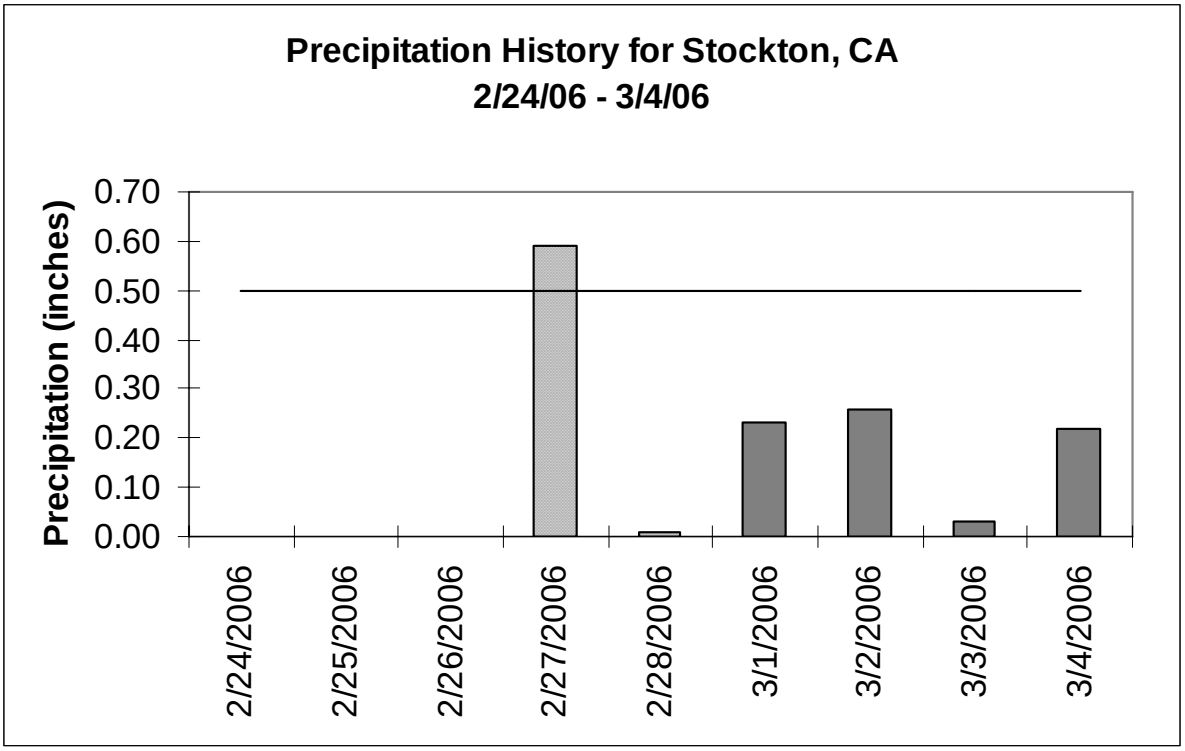
Figure 5. Rainfall graphs for the second storm event for Oroville, Sacramento International Airport, Marysville, Stockton and Modesto

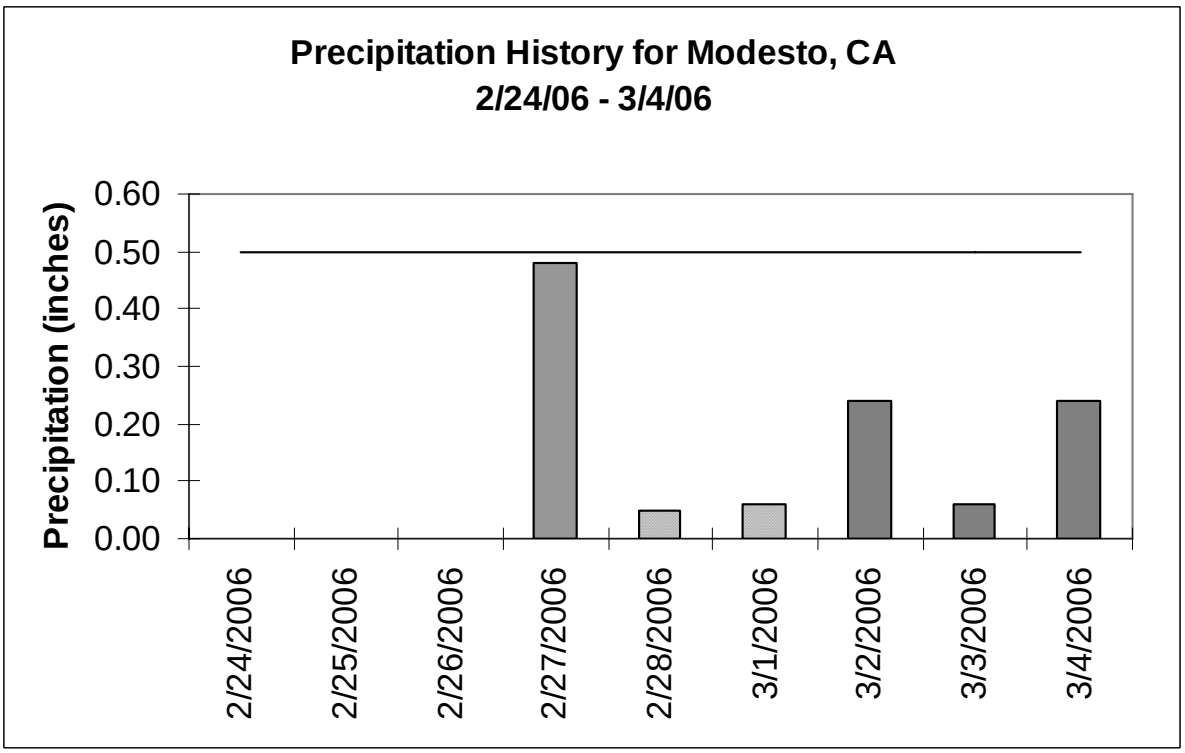
(light gray bars indicate actual sample collection dates)




Precipitation History for Sacramento Int'l Airport
2/24/2006 - 3/6/2006
Precipitation (inches)
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
2/24/2006
2/25/2006
2/26/2006
2/27/2006
2/28/2006
3/1/2006
3/2/2006
3/3/2006
3/4/2006
3/5/2006
3/6/2006


Precipitation History for Marysville, CA
2/24/06 - 3/4/06
Precipitation (inches)
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
2/24/2006
2/25/2006
2/26/2006
2/27/2006
2/28/2006
3/1/2006
3/2/2006
3/3/2006
3/4/2006





Sample Collection Methods

All sampling was conducted under the quality assurance project plan (QAPP) (Calanchini, 2005) using methods and quality control criteria comparable with the Surface

Water Ambient Monitoring Program (SWAMP). All samples were collected using either the grab or integrated grab techniques. The collection method used for each site is shown in Table 2.

Grab samples were collected by harnessing a 1-liter amber glass bottle into a pole sampler and dipping the bottle into the stream as close to the center of the channel as possible.

Integrated grab samples were collected by lowering a 3-liter PTFE (polytetrafluoroethylene) bottle, strapped in a weighted cage, from a bridge at three equally spaced verticals. At each vertical the bottle was filled approximately ¼ full. The composite sample was then thoroughly agitated and poured into a 1-liter amber glass sample bottle. The PTFE bottles were used at all sites to minimize loss of pesticide due to sorption to container walls.

Immediately after collection, sample bottles were placed on ice and delivered to the California Department of Fish and Game (CDFG) Water Pollution Control Laboratory in Rancho Cordova, CA. Samples were usually delivered on the same day and no later than 48 hours after collection.

Quality Control Samples

Quality control (QC) samples were collected at the rate of 15 QCs for every 100 environmental samples. Quality control samples included field duplicates, field blanks, equipment blanks, and matrix spikes.

Water collected for duplicate samples using the 3-liter Teflon bottle was split into two 1-liter bottles. For duplicate samples collected using a 1-liter bottle, two bottles were attached to the pole sampler and filled at the same time.

Field blanks were filled with organic-free (deionized) water obtained from the AEAL laboratory. When using the 3-liter bottle for sampling, the cleaned bottle was filled with organic-free water, which was then poured into a 1-liter bottle as a field blank. When using the 1-liter bottle, a cleaned bottle was filled with the organic-free water directly.

The equipment blanks were collected one time only for each piece of sampling equipment (e.g. pole sampler and 3-liter PTFE bottle). The equipment was cleaned according to the standard cleaning procedure, as described in the QAPP, and then rinsed with organic-free water. The rinse water was collected in a 1-liter for analysis.

The matrix spike samples were collected in the same manner as the duplicate samples. The spike mixture was added to the matrix spike samples in the CDFA lab. All field samples, including QC samples, were placed into a cooler with ice to maintain the temperature at approximately 4°C during handling and transport to the lab. In general, samples were delivered under chain-of-custody (COC) protocol (QAPP) to the lab on the sampling day. If the samples could not be transported to the lab on the sampling day they were stored in coolers with sufficient ice to maintain the sample preservation temperature and delivered to the lab on the following day.

Table 2. Sampling site IDs, site names, geographic coordinates, sampling methods, and sources of discharge data.
[Integrated= integrated grab sample with 3L PTFE bottle; Grab= individual bottle by pole. * Gage is operated by the California Department of Water Resources. Data is

Site ID	Sacramento Sampling Site Names	Latitude (NAD 27)	Longitude (NAD 27)	Sampling Method	Source of Discharge Data
520LSAC23	Gilsizer Slough at South Township Road	39.01602	-121.68873	Grab/Bank	None
520LSAC24	Live Oak Slough at Nuestro Road	39.18533	-121.66148	Grab/Bank	None
520LSAC25	Morrison Slough at Luckehe Road	39.30494	-121.68909	Grab/Bank	None
520LSAC26	Angel Canal/ Comanche Creek at Crouch Avenue	39.68604	-121.88068	Grab/Bank	None
	Delta Sampling Site Names			**Sampling Method**	**Source of Discharge Data**
531DEL501	Pixley Slough at Ham Lane	38.07474	-121.28630	Grab/Bank	None
531DEL502	Mormon Slough at Copperopolis Road	37.97166	-121.11253	Grab/Bank	None
531DEL503	Littlejohns Creek at Jack Tone Road	37.88962	-121.14605	Grab/Bank	None
531SJC503	Lone Tree Creek at Austin Road	37.85566	-121.18406	Grab/Bank	None
519LSAC55	Sacramento River at Alamar	38.67328	-121.62444	Grab/midstream	USGS gage: 11425500
519LSAC52	Sacramento River at Freeport	38.45573	-121.50106	Grab/midstream	USGS gage: 11447650
	San Joaquin River Basin Sampling Site Names			**Sampling Method**	**Source of Discharge Data**
541MER522	San Joaquin River at Lander Avenue	37.29548	-120.85024	Grab/Bank	*CDEC gage SJS
541STC507	San Joaquin River at Patterson	37.49407	-121.07885	Grab/Bank	*CDEC gage SJS
535MER546	Merced River at River Road	37.35044	-120.96097	Integrated (Bridge)	*CDEC gage: MST
541STC516	Del Puerto Creek At Vineyard Road	37.52155	-121.14773	Grab/Bank	USGS gage: 11274630
541STC518	Orestimba Creek at Kilburn Road	37.39935	-121.03194	Grab/Bank	USGS gage: 11274538

Laboratory Analysis Methods

Chemical analyses were performed by the California Department of Fish and Game's Fish and Wildlife Water Pollution Control Laboratory. Water samples were analyzed for organophosphates, carbamates, and herbicides using the following methods: Gas Chromatography – Flame Photometric Detector (GC-FPD), Liquid Chromatography – Mass Selective Detector (LC-MSD), and Gas Chromatography – Tandem Mass Spectrometry (GC-MSMS). Analytes, minimum detection limits and reporting limits for each analysis are shown in Table 3. A summary of each method is provided below.

Organophosphorus Pesticides in Water Analysis:

A measured volume of sample (1000 ml) was extracted with methylene chloride (DCM) using a separatory funnel. The DCM extract was dried with sodium sulfate, evaporated using Kuderna-Danish (K-D) and solvent exchanged into petroleum ether. The extract was concentrated with micro-snyder (micro K-D) apparatus to approximately 1 ml and adjusted to 2.0 ml with iso-octane. The extracts were analyzed by gas chromatography using conditions which permitted the separation and measurement of the target analytes in the extracts by flame photometric detection (FPD) and Thermionic Specific Detector (TSD) detection.

Carbamate Pesticides in Water Analysis:

A measured volume of sample (1000 ml) was extracted with methylene chloride (DCM) using a separatory funnel. The DCM extract was dried with sodium sulfate, concentrated and solvent exchanged by rotary evaporation and adjusted to 2.0 ml with acetonitrile. The extracts were analyzed by liquid chromatography using conditions which permitted the separation and measurement of the target analytes in the extracts by MSD detection.

Diquat and Paraquat in water Analysis

The analytical method is explained in the Appendix 1.

Selected Herbicides in water Analysis

A measured volume of sample (1000 ml) was extracted with methylene chloride (DCM) using a separatory funnel. The DCM extract is dried with sodium sulfate, evaporated using Kuderna-Danish (K-D) and solvent exchanged into petroleum ether. The extract is

concentrated with micro-snyder (micro K-D) apparatus to approximately 1 ml and adjusted to 2.0 ml with iso-octane. The extracts are analyzed by gas chromatography using conditions which permit the separation and measurement of the target analytes in the extracts by GC-MSMS.

Table 3. CDFG Laboratory minimum detection limits (MDL) and target reporting limits (RL) for select pesticides

Group	Analyte	Minimum Detection Limit (MDL), ppb	Target Reporting Limits (RL), ppb	Analytical Method
Organophosphates	Diazinon	0.003	0.005	GC-FPD
Organophosphates	Chlorpyrifos	0.003	0.005	GC-FPD
Organophosphates	Azinphos methyl	0.030	0.050	GC-FPD
Organophosphates	Malathion	0.020*	0.050	GC-FPD
Organophosphates	Methidathion	0.030	0.050	GC-FPD
Organophosphates	Methyl parathion	0.010	0.050	GC-FPD
Carbamates	Aldicarb	0.010	0.020	LC-MS
Carbamates	Carbofuran	0.010	0.020	LC-MS
Carbamates	Carbaryl	0.010	0.020	LC-MS
Carbamates	Methiocarb	0.050	0.100	LC-MS
Carbamates	Methomyl	0.010	0.020	LC-MS
Fungicides	Captan	0.050	0.100	LC-MS
Herbicides	Diuron	0.002	0.005	LC-MS
Herbicides	Linuron	0.002	0.005	LC-MS
Herbicides	Paraquat dichloride	0.020	0.050	LC-MS
Herbicides	Oxyfluorfen	0.020	0.050	GC-MSMS
Herbicides	Trifluralin	0.050	0.100	GC-MSMS
Herbicides	Propanil	0.050	0.100	GC-MSMS
Acaricides	Propargite	0.200	0.500	GC-MSMS

*MDL was 0.030 ppb for samples from first storm event. Increased resolution is due to new GC-FPD unit acquired between storm events.

Quality Assurance Objectives

The Quality Assurance (QA) objectives are listed in Table 4 below.

Table 4. Field and Laboratory Quality Assurance Objectives (QAO).
LCS=Lab Control Spike; MS=Matrix Spike; OP=Organophosphate; QC = Quality Control; RPD = Relative Percent Difference

Field QC	**Frequency/Number**	**Acceptance Limits**
Field Blanks	Approximately 4% / 7	Less than Reporting Limit
Cooler Temperature	Measured by analyzing lab at time of delivery	$\leq$ 4° C
Field Duplicate Pairs	Approximately 4% / 7*	RPD $\leq$ 25%
Field Matrix Spikes	Approximately 4% / 7*	70-125% recovery
Field Matrix Spike Duplicates	Approximately 4% / 7	70-125% recovery
Field Matrix Spike Duplicates	Approximately 4% / 7	RPD to MS $\leq$ 25%
Laboratory QC	**Frequency/Number**	**Acceptance Limits**
Method Blank (=Lab Blank)	5% / 13	All target analytes below reporting limit
Lab Control Spike	1 per batch / 18	70-125% recovery
Lab Control Spike Duplicate	1 every 2 batches / 9	70-125% recovery
Lab Control Spike Duplicate	1 every 2 batches / 9	RPD to LCS $\leq$ 25%
Surrogates	OP samples and QC / 68	70-125% recovery

* Two matrix spikes were collected in place of two field duplicates. See explanation in section titled *Matrix Spike and Matrix Spike Duplicate Samples.* The result was a total of 9 matrix spike samples and 5 field duplicate samples.

Analytical Results for Primary Samples[1]

A total of 158 primary samples and 29 quality control (QC) samples were collected and analyzed for one or more of four groups of pesticides (organophosphates, carbamates, herbicides, paraquat, the fungicide captan, and the acaricide propargite): 66 primary, 9 QC in the Sacramento basin; 44 primary, 8 QC in the Delta; 48 primary, 12 QC in the San Joaquin basin.

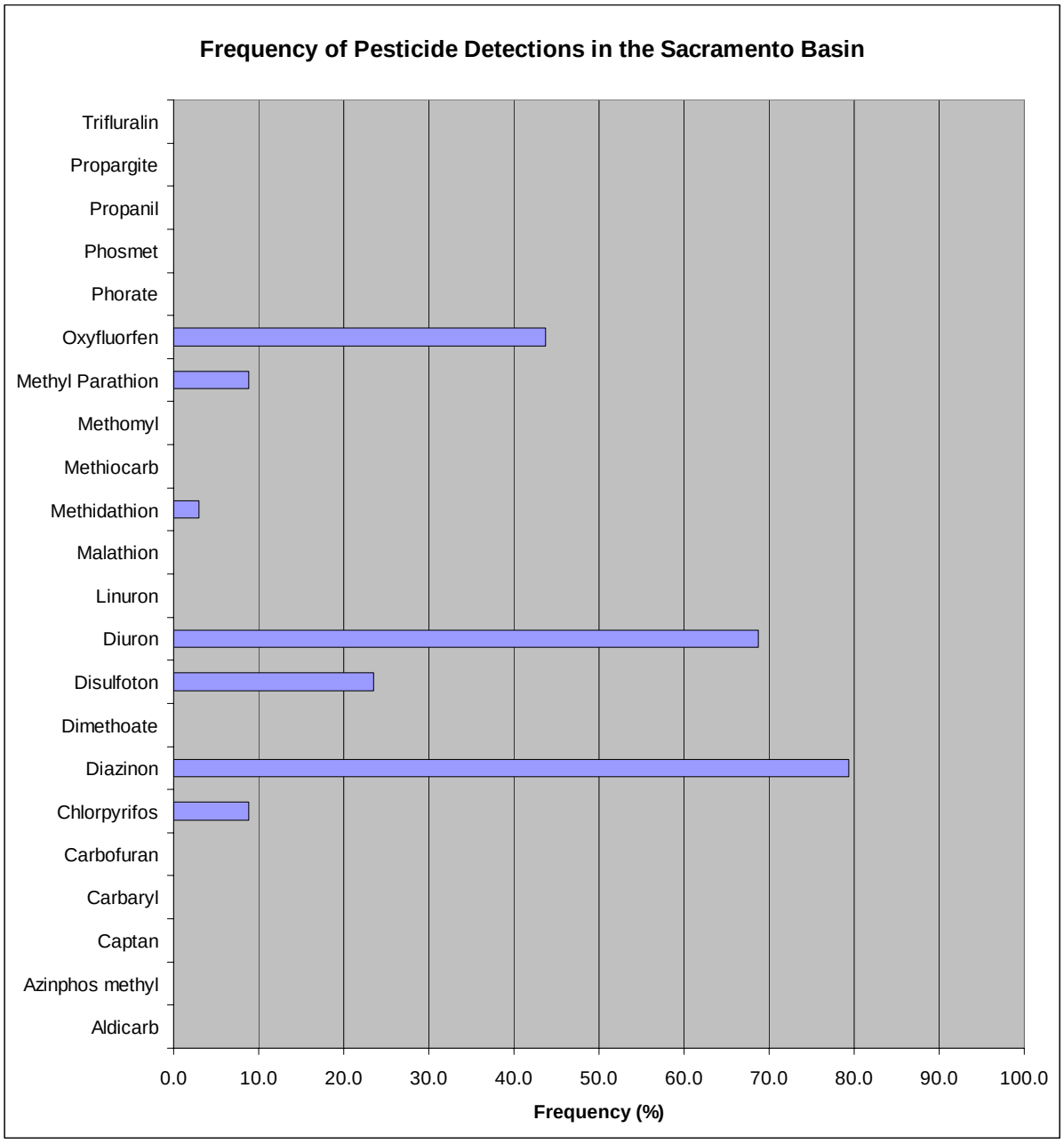
Sacramento

In the Sacramento basin diazinon and chlorpyrifos were detected in 79% and 9%, of samples analyzed for organophosphate pesticides (n=34), respectively. Concentrations ranged from below detection to 0.778 ppb of diazinon at Gilsizer Slough and 0.013 ppb chlorpyrifos at Live Oak Slough. The median detections of diazinon and chlorpyrifos in Sacramento samples were 0.044 ppb and 0.009 ppb, respectively. The median concentrations (includes non-detects) of diazinon and chlorpyrifos were 0.011 ppb and 0 ppb respectively (Appendix Table 1a).

The frequency of detections of other pesticides present were: diuron 11 of 16 samples, oxyfluorfen 7 of 16 samples, disulfoton 8 of 34 samples, methyl parathion 3 of 34 samples, and methidathion 1 of 34 samples (Figure 6). Note that detections shown in Figure 6 may or may not exceed water quality criteria and/or objectives.

[1] This section contains results of pesticide detections above the method detection limits that may or may not exceed water quality criteria and/or objectives.

Figure 6. Frequency of pesticide detections at sampling sites in the Sacramento River Basin, January-March 2006.



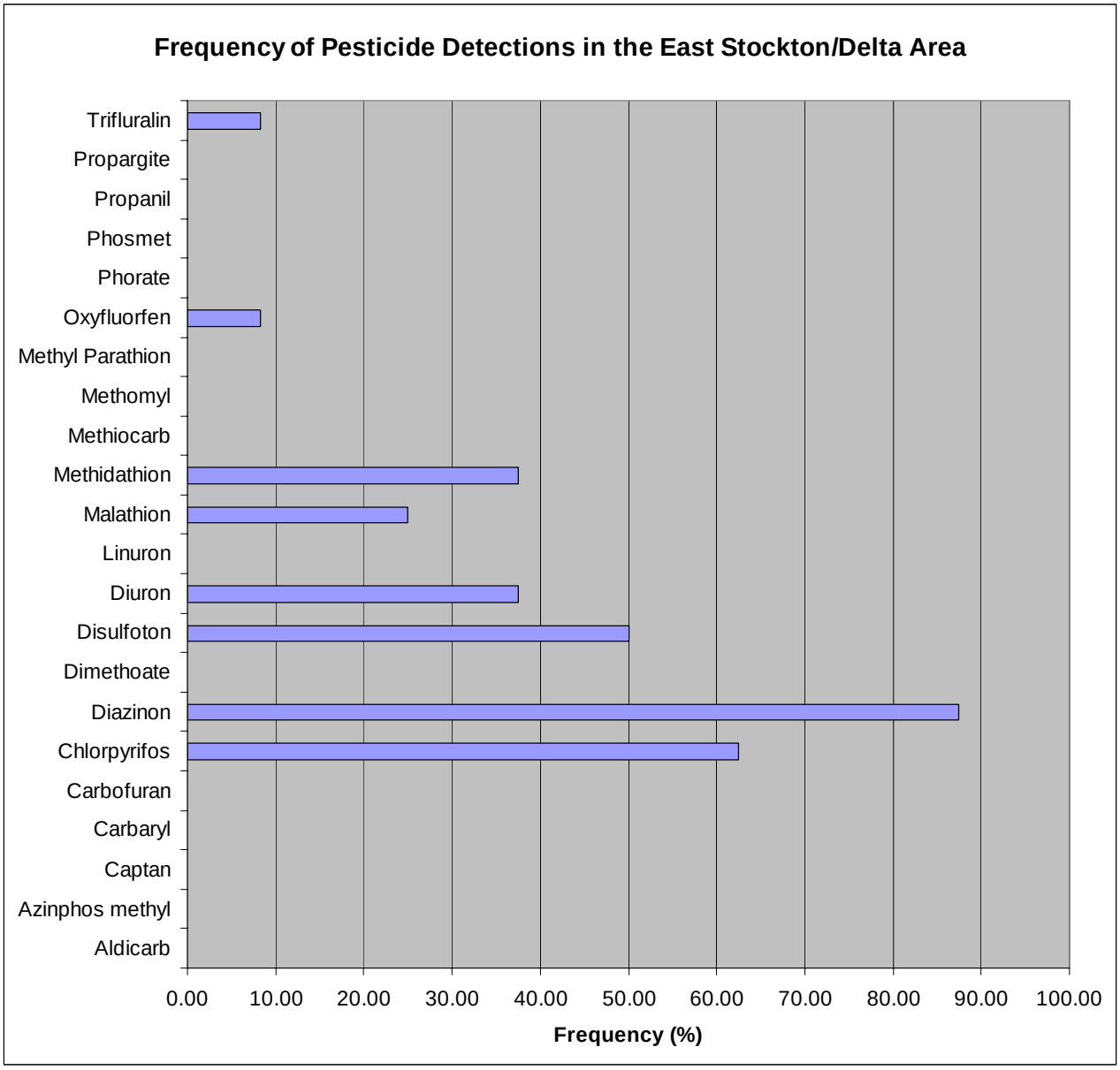
Delta

In the Delta diazinon and chlorpyrifos were detected in 88% and 63%, of samples analyzed for organophosphate pesticides (n=16), respectively. Concentrations ranged from below detection to 0.246 ppb of diazinon and 0.043 ppb chlorpyrifos, both in Lone Tree Creek at Austin Road. The median detections of diazinon and chlorpyrifos in Delta samples were 0.0487 ppb and 0.0106 ppb, respectively. The median concentrations (includes non-

detects) of diazinon and chlorpyrifos were 0.0435 ppb and 0.0095 ppb respectively (Appendix Table 1b).

The frequency of detections of other pesticides present were: disulfoton 8 of 16 samples, diuron 6 of 16 samples, methidathion 6 of 16 samples, malathion 4 of 16 samples, oxyfluorfen 1 of 12 samples, and trifluralin 6 of 16 samples (Figure 7). Note that detections shown in Figure 7 may or may not exceed water quality criteria and/or objectives.

Figure 7. Frequency of pesticide detections at sampling sites in the Sacramento/San Joaquin Delta Basin, January-March 2006.

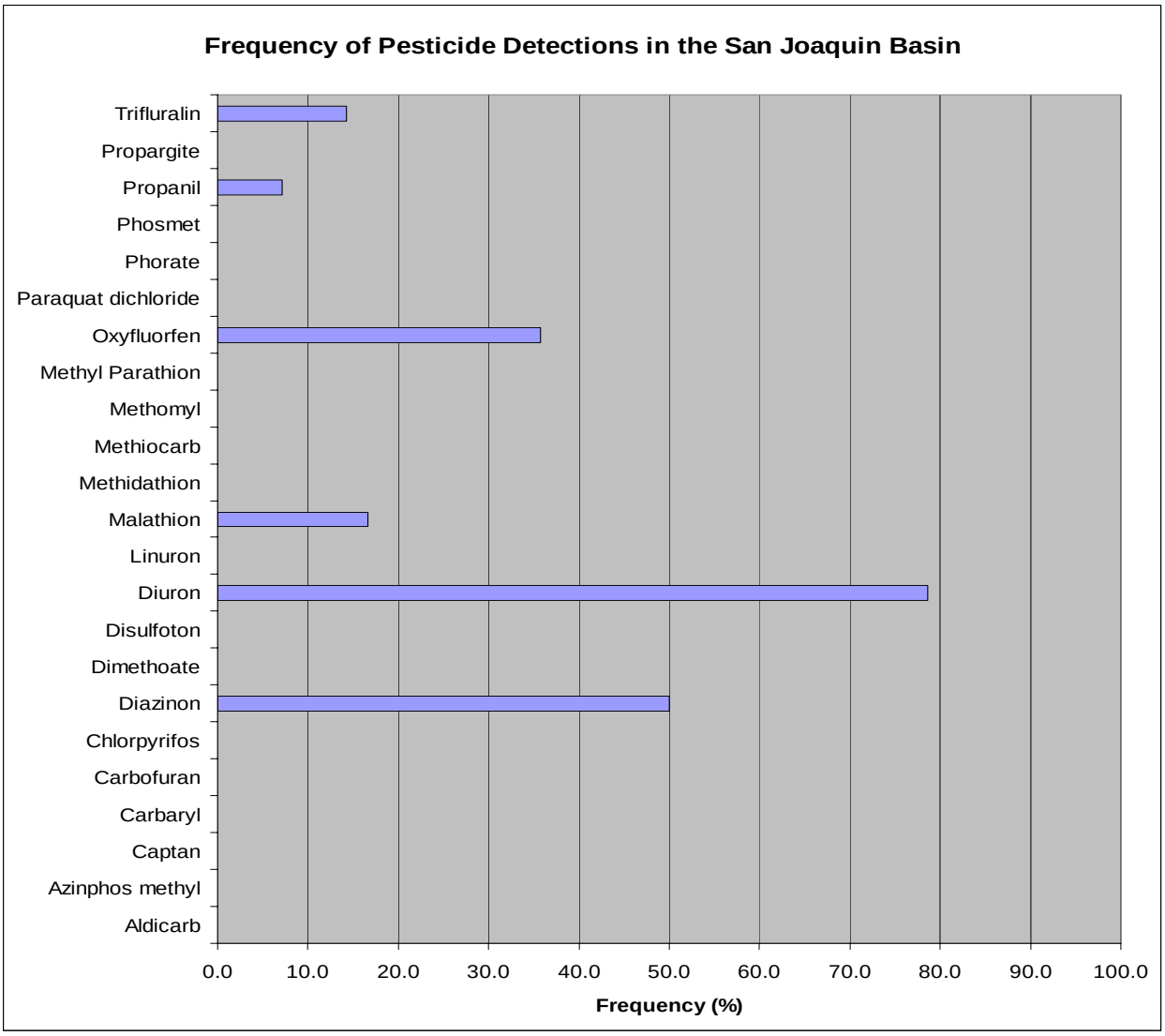


San Joaquin

In the San Joaquin basin diazinon was detected in 50% of the samples analyzed for organophosphate pesticides (n=6). There were no detections of chlorpyrifos (n=6). Concentrations ranged from below detection to 0.036 ppb of diazinon. There were no detections of chlorpyrifos. The median detection of diazinon in San Joaquin samples was 0.015 ppb. The median concentration (includes non-detects) of diazinon was 0.0045 ppb (Appendix Table 1c).

The frequency of detections of other pesticides present were: diuron 11 of 14 samples, oxyfluorfen 5 of 14 samples, malathion 1 of 6 samples, trifluralin 2 of 14 samples, and propanil 1 of 14 samples (Figure 8). Note that detections shown in Figure 8 may or may not exceed water quality criteria and/or objectives.

Figure 8. Frequency of pesticide detections at sampling sites in the San Joaquin River Basin, January-March 2006.



Analytical Results for Quality Control Samples[2]

Sample quality control was measured through collection of duplicates, environmental blanks, matrix spikes and matrix spike duplicates.

Matrix Spike and Matrix Spike Duplicate Samples

Seven sets of matrix spike and matrix spike duplicate samples were scheduled for the winter sampling. Due to an error by the sampling crew two samples in the Delta area that were scheduled as duplicate samples were instead labeled as matrix spikes and handled by the lab as such; no corresponding matrix spike duplicates were collected with those samples thus there were a total of nine matrix spikes and seven matrix spike duplicates for the winter sampling.

The relative percent differences (RPDs) between matrix spikes and matrix spike duplicates ranged from 3.7-38% and 2.1-15% for chlorpyrifos and diazinon, respectively (Appendix tables 7a,b,c,). The percent recovery of chlorpyrifos and diazinon in the matrix spike samples ranged from 100-126% and 98.1-194%, respectively (Tables 7a,b,c).

A matrix spike (MS) and matrix spike duplicate (MSD) of chlorpyrifos from Pixley Slough on January 14 had an RPD of 38%. The recoveries of spiked chlorpyrifos in those two samples were 86.2% and 126%. The 126% recovery was slightly outside of the quality control limits of 70-125% recovery. The RPDs for all other compounds in those samples were within the QC limits with the exception of methidathion where the RPD between the MS and MSD was 53%.

A matrix spike and matrix spike duplicate from Gilsizer Slough on January 14 had diazinon recoveries of 189% and 194%, respectively. Both recoveries were well above the QC limits of 70-125%. However, the RPD between these samples was only 2.1%.

Field Duplicate Samples

A high RPD can be an indicator of low precision in the analytical process. There were no measurable RPDs between environmental and duplicate sample concentrations of

[2] This section contains results of pesticide detections above the method detection limits that may or may not exceed water quality criteria and/or objectives.

chlorpyrifos because no chlorpyrifos was detected in any of the duplicates or corresponding environmental samples. Only one duplicate and corresponding environmental sample had detections of diazinon. The RPD between those concentrations of diazinon was 34.1%, exceeding the quality control limit of 25% (Appendix Table 7a).

A primary and a duplicate sample collected from Morrison Slough on February 27 had a RPD of 34.1% for diazinon which was above the QC limit of ≤ 25%. However, all of the recoveries and RPDs in the associated Lab Control Spike/Lab Control Spike Duplicate (LCS/LCSD) sets were within the quality control limits. One explanation for the high RPD in diazinon would be if the duplicate and primary samples had been collected sequentially rather than simultaneously. Because four bottles of water were collected from this site on February 27 (a primary and duplicate sample for organophosphates, one herbicide, and one carbamate sample) and the pole sampler only holds two bottles it is possible that the sampler collected each of the organophosphate samples independent of each other. No other compounds were detected in the primary or duplicate organophosphate samples so it was not possible to compare results other than diazinon.

Environmental Blanks

No analytes were detected in any of the environmental blanks. Appendix Tables 7a,b,c list the quality control results for chlorpyrifos and diazinon. Appendix Tables 8a,b,c contain a summary of quality control results for all the other organophosphate pesticides analyzed for. Appendix Tables 9a,b,c list the quality control results for carbamates, captan, diuron and linuron. Appendix Table 10 lists the quality control data for selected herbicides and the acaricide propargite in the San Joaquin Basin. Appendix Table 11 contains a summary of quality control data for paraquat in samples from the San Joaquin Basin.

Surrogates

Triphenyl phosphate was added as a surrogate to all of the primary organophosphate samples (n=60). The quality control limits for surrogate recovery are 70-130%. All 60 samples fell within the QC limits with recoveries ranging from 72.8-130%. No surrogates were added to carbamate, herbicide and paraquat samples.

Method Blanks

A total of 13 method blanks were run; one for every batch of 20 samples. There were no detections of any analytes above the practical quantitation limit (PQL) in any of the method blanks. Triphenyl phosphate was added as a surrogate to method blanks processed with batches of samples analyzed for organophosphate pesticides. Recoveries of the surrogate ranged from 99.3-108%; all within the QA/QC acceptable range of 70-125%.

Lab Control Spikes

Organophosphate samples

Six lab control spikes (LCS) and three lab control spike duplicates (LCSD) were analyzed with batches of organophosphate samples. Triphenyl phosphate was added as a surrogate to the LCSs and LCSDs processed with batches of organophosphate samples. All surrogate recoveries were within the quality control limits of 80-125% recovery, ranging from 84.9-119%. Three of ten analytes had recoveries outside of the control limits of 80-125% recovery; all of the recoveries were low. Those analytes and the number of LCS/LCSDs they occurred in were: dimethoate (7), disulfoton (6), and phorate (4). Recoveries of all other analytes (n=7) were within the QC limits (Appendix tables 8a,b,c).

Carbamate samples

Five lab control spikes (LCS) and two lab control spike duplicates (LCSD) were analyzed with batches of carbamate samples. Two of eight analytes had recoveries outside of the control limits of 80-125%. Those analytes and the number of LCS/LCSDs they occurred in were: captan (4) and diuron (1). Recoveries of captan in each of the four LCSs were below the QC limit while recovery of diuron in the one LCS was above the QC limit. Recoveries of all other analytes (n=6) were within the QC limits. The relative percent differences (RPD) in recovery of Diuron between the two LCSDs and their associated LCSs were 36% and 41%; both above the QC limit of 25% (Appendix tables 9a,b,c).

Herbicide samples

Five lab control spikes (LCS) and three lab control spike duplicates (LCSD) were analyzed with batches of herbicide samples. Four of four analytes had recoveries outside of the control limits of 80-125%. Those analytes and the number of LCS/LCSDs they occurred

in were: oxyfluorfen (1), propanil (1), propargite (2), and trifluralin (1). Two RPDs for oxyfluorfen (27.61%, 61%) and one for propanil (56%) were above the QC limit of 25% (Table 10).

Paraquat samples

Two lab control spikes (LCS) and one lab control spike duplicate (LCSD) were analyzed with batches of paraquat samples. All recoveries and the RPD between the LCS and LCSD were within control limits (Appendix Table 11).

Instantaneous Loading Rates of Diazinon

Loading rates were only calculated when the pesticide concentration was above the limit of detection and a discharge estimate was available. For all samples where pesticide concentrations were below the limit of detection the loading rate was assumed to be zero.

In the Sacramento basin calculated loading rates for diazinon ranged from 373 grams active ingredient per day (grams a.i./d) in the Sacramento River at Alamar to 2,238 grams a.i./d in the Sacramento River at Freeport (Appendix Table 6a). There were no detectable concentrations of chlorpyrifos in streams where discharge data was available.

No discharge measurements were made at Delta sites therefore no loading rates were calculated.

In the San Joaquin basin calculated loading rates for diazinon ranged from 0.105 – 3.611 grams a.i./d in Orestimba Creek at Kilburn Road and Del Puerto Creek at Vineyard Avenue, respectively. (Appendix Table 6b).

Assessment of Data Quality

Of the 158 primary samples 22 carbamate samples had holding time violations and are flagged with an H. Those samples were extracted within seven days of collection as required by the Quality Assurance Project Plan (QAPP) however, due to a broken LCMS machine, they were analyzed approximately nine weeks after collection; the QAPP requires analysis to be performed within 21 days of extraction. There were two sets of LCS/LCSDs and two method blanks processed with the batch of H flagged carbamate samples. The recoveries and RPDs for aldicarb, carbaryl, carbofuran, linuron, methiocarb and methomyl were all within QC limits indicating that the results are most likely reliable and any loss of

analyte between extraction and analysis was minimal. However, the recoveries for captan were low, ranging from 38.5 - 51.4%. The relative percent differences (RPDs) in recoveries of captan were 2.2% and 17% for the two LCS/LCSDs, falling within the QC limit of ≤ 25%. This indicates that the analysis was performed accurately but there was either a loss of captan or a matrix interference was present for that analyte. Although there were no detections of captan in any of the 22 samples it is possible that some was present but was lost between the extraction and analysis due to chemical instability, or that low levels of captan could not be detected due to matrix interference. Recoveries of diuron in the same LCS/LCSDs ranged from 71.2% to 127% which was just outside the QC limit of 125%. Although three of the four recoveries of Diuron in the LCS/LCSD pairs were within the control limits the RPDs between the LCS/LCSD pairs were 36% and 41%; both above the QC limit of ≤ 25%. The high RPDs indicate a lack of precision during the extraction of diuron from sample water. With the exceptions of Captan and Diuron the data from the 22 carbamate, samples should be considered useable.

Recoveries of the compounds dimethoate, disulfoton, phorate and captan were chronically low in LCS samples. Because of the difficulty in recovering these compounds from water any detection of them in environmental samples should be considered as biased low. In addition it should be noted that these compounds may have been present at low levels in samples where they were not detected.

Even with the exceptions of the hold time violations and exceedances of the RPD between environmental and duplicate samples no data have been flagged with an R and therefore all data should be considered useable.

Sources Cited

Calanchini, H.J., 2005. Sacramento, Delta and San Joaquin River Basins Organophosphorus Pesticides TMDL Monitoring Quality Assurance Project Plan, revision 1.0. Submitted to the Central Valley Regional Water Quality Control Board, February 2005. http://www.waterboards.ca.gov/centralvalley/available_documents/waterqualitystudies/Sac-Delta_TMDL_QAPP.pdf

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Appendices

Table 1a. Chlorpyrifos and diazinon concentrations in samples from the Sacramento River Basin.

(All concentrations are in parts per billion (ppb); GN=surrogate recovery was outside of control limits; FDP=field duplicate relative percent difference was above quality control limit)

Station Name	Sample Date	Sample Time	Chlorpyrifos	Diazinon	% Recovery triphenyl phosphate (Surrogate)
Angel Canal/Commanche Creek at Crouch Avenue	01/14/06	13:40	0.006	0.36	103
Gilsizer Slough at South Township Road	01/14/06	8:30	<0.003	0.398	99.9
Live Oak Slough at Nuestro Road	01/14/06	11:40	0.013	0.426	106
Morrison Slough at Luckehe Road	01/14/06	12:30	<0.003	0.184	93.7
Sacramento River at Alamar	01/14/06	8:40	<0.003	0.009	102
Sacramento River at Freeport	01/14/06	9:40	<0.003	0.008	98.6
Angel Canal/Commanche Creek at Crouch Avenue	01/15/06	12:20	<0.003	0.052	101
Gilsizer Slough at South Township Road	01/15/06	8:20	<0.003	0.778	107
Live Oak Slough at Nuestro Road	01/15/06	10:40	<0.003	0.738	92.4
Morrison Slough at Luckehe Road	01/15/06	11:20	<0.003	0.117	97.4
Angel Canal/Commanche Creek at Crouch Avenue	02/27/06	13:40	<0.003	0.044	85
Gilsizer Slough at South Township Road	02/27/06	9:20	<0.003	0.028	106
Live Oak Slough at Nuestro Road	02/27/06	12:00	<0.003	0.101	75.5
Morrison Slough at Luckehe Road	02/27/06	12:40	<0.003	0.163 (FDP)	72.8
Sacramento River at Alamar	02/27/06	13:50	<0.003	0.006	110
Sacramento River at Freeport	02/27/06	15:00	<0.003	0.006	95.5
Angel Canal/Commanche Creek at Crouch Avenue	02/28/06	13:20	<0.003 (GN)	0.028 (GN)	130 (GN)
Gilsizer Slough at South Township Road	02/28/06	9:00	0.009	0.08	114
Live Oak Slough at Nuestro Road	02/28/06	11:50	<0.003	0.73	105
Morrison Slough at Luckehe Road	02/28/06	12:20	<0.003	0.294	108
Sacramento River at Alamar	02/28/06	13:20	<0.003	0.006	122
Sacramento River at Freeport	02/28/06	14:00	<0.003	0.006	103
Sacramento River at Alamar	03/01/06	13:50	<0.003	<0.003	108

Table 1a. Chlorpyrifos and diazinon concentrations in samples from the Sacramento River Basin *(continued)*

Station Name	Sample Date	Sample Time	Chlorpyrifos	Diazinon	% Recovery triphenyl phosphate (Surrogate)
Sacramento River at Freeport	03/01/06	14:40	<0.003	<0.003	91.9
Sacramento River at Alamar	03/02/06	13:50	<0.003	0.006	101
Sacramento River at Freeport	03/02/06	15:50	<0.003	0.013	107
Sacramento River at Alamar	03/03/06	10:50	<0.003	<0.003	115
Sacramento River at Freeport	03/03/06	11:40	<0.003	0.006	110
Sacramento River at Alamar	03/04/06	12:00	<0.003	<0.003	104
Sacramento River at Freeport	03/04/06	12:30	<0.003	<0.003	78.3
Sacramento River at Alamar	03/05/06	10:20	<0.003	0.008	104
Sacramento River at Freeport	03/05/06	11:00	<0.003	<0.003	110
Sacramento River at Alamar	03/06/06	10:10	<0.003	0.008	105
Sacramento River at Freeport	03/06/06	11:00	<0.003	<0.003	99.6

	Chlorpyrifos	Diazinon
Number of samples	34	34
Number of detections	3	27
Frequency of detections	8.8	79.4
Mean	0.009	0.170
Median	0.009	0.044
Minimum	0.006	0.006
Maximum	0.013	0.778
Standard Deviation	0.003	0.244

Table 1b. Chlorpyrifos and diazinon concentrations in samples from the Sacramento/ San Joaquin Delta Basin.
(All concentrations are in parts per billion (ppb))

Station Name	Sample Date	Sample Time	Chlorpyrifos	Diazinon	% Recovery triphenyl phosphate (Surrogate)
Littlejohn Creek at Jack Tone Road	01/14/06	12:00	<0.003	0.018	104
Lone Tree Creek at Austin Road	01/14/06	12:30	0.043	0.053	96.1
Mormon Slough at Copperopolis Road	01/14/06	11:30	<0.003	<0.003	105
Pixley Slough at Ham Lane	01/14/06	10:50	0.026	0.097	125
Littlejohn Creek at Jack Tone Road	01/15/06	10:50	0.010	0.044	96
Lone Tree Creek at Austin Road	01/15/06	11:20	0.031	0.246	82.5
Mormon Slough at Copperopolis Road	01/15/06	10:30	<0.003	0.011	95
Pixley Slough at Ham Lane	01/15/06	9:40	0.029	0.116	122
Littlejohn Creek at Jack Tone Road	02/28/06	16:10	0.008	0.043	108
Lone Tree Creek at Austin Road	02/28/06	16:40	0.011	0.072	116
Mormon Slough at Copperopolis Road	02/28/06	15:50	0.01	0.014	110
Pixley Slough at Ham Lane	02/28/06	15:10	0.01	0.13	118
Littlejohn Creek at Jack Tone Road	03/01/06	16:50	<0.003	0.008	105
Lone Tree Creek at Austin Road	03/01/06	17:10	0.009	0.039	88.8
Mormon Slough at Copperopolis Road	03/01/06	16:30	<0.003	<0.003	101
Pixley Slough at Ham Lane	03/01/06	16:00	<0.003	0.132	123

	Chlorpyrifos	Diazinon
Number of samples	16	16
Number of detections	10	14
Frequency of detections	62.5	87.5
Mean	0.019	0.073
Median	0.011	0.049
Minimum	0.008	0.008
Maximum	0.043	0.246
Standard Deviation	0.013	0.066

Table 1c. Chlorpyrifos and diazinon concentrations in samples from the San Joaquin River Basin.
(All concentrations are in parts per billion (ppb); NA=Not Applicable)

Station Name	Sample Date	Sample Time	Chlorpyrifos	Diazinon	% Recovery triphenyl phosphate (Surrogate)
Orestimba Creek @ Kilburn	01/14/06	11:10	<0.003	0.015	93.6
Orestimba Creek @ Kilburn	01/15/06	10:40	<0.003	0.009	98
Del Puerto Creek at Vineyard Avenue	02/28/06	9:30	<0.003	0.036	113
Orestimba Creek @ Kilburn	02/28/06	10:00	<0.003	<0.003	108
Del Puerto Creek at Vineyard Avenue	03/01/06	10:50	<0.003	<0.003	106
Orestimba Creek @ Kilburn	03/01/06	11:30	<0.003	<0.003	107

	Chlorpyrifos	Diazinon
Number of samples	6	6
Number of detections	0	3
Frequency of detections	0	50
Mean	NA	0.0
Median	NA	0.015
Minimum	0	0.009
Maximum	0	0.036
Standard Deviation	NA	0.014

Table 2a. Selected organophosphate pesticide concentrations in samples from the Sacramento River Basin.
(All concentrations are in parts per billion (ppb); GN=surrogate recovery was outside of control limits; NA=Not Applicable)

Station Name	Sample Date	Sample Time	Azinphos methyl	Dimeth-oate	Disulfoton	Malathion	Methid-athion	Methyl Parathion	Phorate	Phosmet	% Recovery triphenyl phosphate (Surrogate)
Angel Canal/Commanche Creek at Crouch Avenue	01/14/06	13:40	<0.03	<0.03	0.019	<0.03	<0.03	<0.01	<0.05	<0.05	103
Gilsizer Slough at South Township Road	01/14/06	8:30	<0.03	<0.03	<0.01	<0.03	<0.03	<0.01	<0.05	<0.05	99.9
Live Oak Slough at Nuestro Road	01/14/06	11:40	<0.03	<0.03	<0.01	<0.03	<0.03	0.091	<0.05	<0.05	106
Morrison Slough at Luckehe Road	01/14/06	12:30	<0.03	<0.03	<0.01	<0.03	<0.03	<0.01	<0.05	<0.05	93.7
Sacramento River at Alamar	01/14/06	8:40	<0.03	<0.03	<0.01	<0.03	<0.03	<0.01	<0.05	<0.05	102
Sacramento River at Freeport	01/14/06	9:40	<0.03	<0.03	<0.01	<0.03	<0.03	<0.01	<0.05	<0.05	98.6
Angel Canal/Commanche Creek at Crouch Avenue	01/15/06	12:20	<0.03	<0.03	<0.01	<0.03	<0.03	<0.01	<0.05	<0.05	101
Gilsizer Slough at South Township Road	01/15/06	8:20	<0.03	<0.03	0.056	<0.03	0.151	<0.01	<0.05	<0.05	107
Live Oak Slough at Nuestro Road	01/15/06	10:40	<0.03	<0.03	<0.01	<0.03	<0.03	<0.01	<0.05	<0.05	92.4
Morrison Slough at Luckehe Road	01/15/06	11:20	<0.03	<0.03	<0.01	<0.03	<0.03	<0.01	<0.05	<0.05	97.4
Angel Canal/Commanche Creek at Crouch Avenue	02/27/06	13:40	<0.03	<0.03	0.016	<0.02	<0.03	0.013	<0.05	<0.05	85
Gilsizer Slough at South Township Road	02/27/06	9:20	<0.03	<0.03	0.013	<0.02	<0.03	<0.01	<0.05	<0.05	106
Live Oak Slough at Nuestro Road	02/27/06	12:00	<0.03	<0.03	<0.01	<0.02	<0.03	0.02	<0.05	<0.05	75.5

Table 2a. Selected organophosphate pesticide concentrations in samples from the Sacramento River Basin *(continued)*.

Station Name	Sample Date	Sample Time	Azinphos methyl	Dimeth-oate	Disulfoton	Malathion	Methid-athion	Methyl Parathion	Phorate	Phosmet	% Recovery triphenyl phosphate (Surrogate)
Morrison Slough at Luckehe Road	02/27/06	12:40	<0.03	<0.03	<0.01	<0.02	<0.03	<0.01	<0.05	<0.05	72.8
Sacramento River at Alamar	02/27/06	13:50	<0.03	<0.03	<0.01	<0.02	<0.03	<0.01	<0.05	<0.05	110
Sacramento River at Freeport	02/27/06	15:00	<0.03	<0.03	<0.01	<0.02	<0.03	<0.01	<0.05	<0.05	95.5
Angel Canal/Commanche Creek at Crouch Avenue	02/28/06	13:20	<0.03 (GN)	<0.03 (GN)	0.024 (GN)	<0.02 (GN)	<0.03 (GN)	<0.01 (GN)	<0.05 (GN)	<0.05 (GN)	130 (GN)
Gilsizer Slough at South Township Road	02/28/06	9:00	<0.03	<0.03	0.046	<0.02	<0.03	<0.01	<0.05	<0.05	114
Live Oak Slough at Nuestro Road	02/28/06	11:50	<0.03	<0.03	0.02	<0.02	<0.03	<0.01	<0.05	<0.05	105
Morrison Slough at Luckehe Road	02/28/06	12:20	<0.03	<0.03	0.02	<0.02	<0.03	<0.01	<0.05	<0.05	108
Sacramento River at Alamar	02/28/06	13:20	<0.03	<0.03	<0.01	<0.02	<0.03	<0.01	<0.05	<0.05	122
Sacramento River at Freeport	02/28/06	14:00	<0.03	<0.03	<0.01	<0.02	<0.03	<0.01	<0.05	<0.05	103
Sacramento River at Alamar	03/01/06	13:50	<0.03	<0.03	<0.01	<0.02	<0.03	<0.01	<0.05	<0.05	108
Sacramento River at Freeport	03/01/06	14:40	<0.03	<0.03	<0.01	<0.02	<0.03	<0.01	<0.05	<0.05	91.9
Sacramento River at Alamar	03/02/06	13:50	<0.03	<0.03	<0.01	<0.02	<0.03	<0.01	<0.05	<0.05	101
Sacramento River at Freeport	03/02/06	15:50	<0.03	<0.03	<0.01	<0.02	<0.03	<0.01	<0.05	<0.05	107
Sacramento River at Alamar	03/03/06	10:50	<0.03	<0.03	<0.01	<0.02	<0.03	<0.01	<0.05	<0.05	115
Sacramento River at Freeport	03/03/06	11:40	<0.03	<0.03	<0.01	<0.02	<0.03	<0.01	<0.05	<0.05	110

Table 2a. Selected organophosphate pesticide concentrations in samples from the Sacramento River Basin *(continued)*.

Station Name	Sample Date	Sample Time	Azinphos methyl	Dimeth-oate	Disulfoton	Malathion	Methid-athion	Methyl Parathion	Phorate	Phosmet	% Recovery triphenyl phosphate (Surrogate)
Sacramento River at Alamar	03/04/06	12:00	<0.03	<0.03	<0.01	<0.02	<0.03	<0.01	<0.05	<0.05	104
Sacramento River at Freeport	03/04/06	12:30	<0.03	<0.03	<0.01	<0.02	<0.03	<0.01	<0.05	<0.05	78.3
Sacramento River at Alamar	03/05/06	10:20	<0.03	<0.03	<0.01	<0.02	<0.03	<0.01	<0.05	<0.05	104
Sacramento River at Freeport	03/05/06	11:00	<0.03	<0.03	<0.01	<0.02	<0.03	<0.01	<0.05	<0.05	110
Sacramento River at Alamar	03/06/06	10:10	<0.03	<0.03	<0.01	<0.02	<0.03	<0.01	<0.05	<0.05	105
Sacramento River at Freeport	03/06/06	11:00	<0.03	<0.03	<0.01	<0.02	<0.03	<0.01	<0.05	<0.05	99.6

	Azinphos methyl	Dimethoate	Disulfoton	Malathion	Methidathion	Methyl Parathion	Phorate	Phosmet	% Recovery triphenyl phosphate (Surrogate)
Number of samples	34	34	34	34	34	34	34	34	34
Number of detections	0	0	8	0	1	3	0	0	34
Frequency of detections (%)	0	0	23.5	0	2.9	8.8	0	0	100
Mean	NA	NA	0.027	NA	0.151	0.041	NA	NA	101.8
Median	NA	NA	0.02	NA	0.151	0.02	NA	NA	103.5
Minimum	0	0	0.013	0	0.151	0.013	0	0	72.8
Maximum	0	0	0.056	0	0.151	0.091	0	0	130
Standard Deviation	NA	NA	0.015	NA	NA	0.043	NA	NA	11.8

Table 2b. Selected organophosphate pesticide concentrations in samples analyzed from the Sacramento/San Joaquin Delta Basin.
(All concentrations are in parts per billion (ppb); NA=Not Applicable)

Station Name	Sample Date	Sample Time	Azinphos methyl	Dimethoate	Disulfoton	Malathion	Methidathion	Methyl Parathion	Phorate	Phosmet	% Recovery triphenyl phosphate (Surrogate)
Littlejohns Creek at Jack Tone Road	01/14/06	12:00	<0.03	<0.03	<0.01	<0.03	<0.03	<0.01	<0.05	<0.05	104
Lone Tree Creek at Austin Road	01/14/06	12:30	<0.03	<0.03	0.023	<0.03	0.155	<0.01	<0.05	<0.05	96.1
Mormon Slough at Copperopolis Road	01/14/06	11:30	<0.03	<0.03	<0.01	<0.03	<0.03	<0.01	<0.05	<0.05	105
Pixley Slough at Ham Lane	01/14/06	10:50	<0.03	<0.03	0.058	0.038	0.248	<0.01	<0.05	<0.05	125
Littlejohns Creek at Jack Tone Road	01/15/06	10:50	<0.03	<0.03	<0.01	<0.03	<0.03	<0.01	<0.05	<0.05	96
Lone Tree Creek at Austin Road	01/15/06	11:20	<0.03	<0.03	0.027	<0.03	0.137	<0.01	<0.05	<0.05	82.5
Mormon Slough at Copperopolis Road	01/15/06	10:30	<0.03	<0.03	<0.01	<0.03	<0.03	<0.01	<0.05	<0.05	95
Pixley Slough at Ham Lane	01/15/06	9:40	<0.03	<0.03	0.095	0.038	0.127	<0.01	<0.05	<0.05	122
Littlejohns Creek at Jack Tone Road	02/28/06	16:10	<0.03	<0.03	<0.01	<0.02	<0.03	<0.01	<0.05	<0.05	108
Lone Tree Creek at Austin Road	02/28/06	16:40	<0.03	<0.03	0.025	<0.02	<0.03	<0.01	<0.05	<0.05	116
Mormon Slough at Copperopolis Road	02/28/06	15:50	<0.03	<0.03	<0.01	<0.02	<0.03	<0.01	<0.05	<0.05	110
Pixley Slough at Ham Lane	02/28/06	15:10	<0.03	<0.03	0.044	0.052	0.043	<0.01	<0.05	<0.05	118
Littlejohns Creek at Jack Tone Road	03/01/06	16:50	<0.03	<0.03	<0.01	<0.02	<0.03	<0.01	<0.05	<0.05	105

Table 2b. Selected organophosphate pesticide concentrations in samples analyzed from the Sacramento/San Joaquin Delta Basin *(continued)*.

Station Name	Sample Date	Sample Time	Azinphos methyl	Dimethoate	Disulfoton	Malathion	Methidathion	Methyl Parathion	Phorate	Phosmet	% Recovery triphenyl phosphate (Surrogate)
Lone Tree Creek at Austin Road	03/01/06	17:10	<0.03	<0.03	0.014	<0.02	<0.03	<0.01	<0.05	<0.05	88.8
Mormon Slough at Copperopolis Road	03/01/06	16:30	<0.03	<0.03	<0.01	<0.02	<0.03	<0.01	<0.05	<0.05	101
Pixley Slough at Ham Lane	03/01/06	16:00	<0.03	<0.03	0.049	0.047	0.051	<0.01	<0.05	<0.05	123

	Azinphos methyl	Dimethoate	Disulfoton	Malathion	Methidathion	Methyl Parathion	Phorate	Phosmet	% Recovery triphenyl phosphate (Surrogate)
Number of samples	16	16	16	16	16	16	16	16	16
Number of detections	0	0	8	4	6	0	0	0	16
Frequency of detections (%)	0	0	50	25	37.5	0	0	0	100
Mean	NA	NA	0.042	0.044	0.127	NA	NA	NA	106.0
Median	NA	NA	0.036	0.043	0.132	NA	NA	NA	105
Minimum	0	0	0.014	0.038	0.043	0	0	0	82.5
Maximum	0	0	0.095	0.052	0.248	0	0	0	125
Standard Deviation	NA	NA	0.026	0.007	0.075	NA	NA	NA	12.6

Table 2c. Selected organophosphate pesticide concentrations in samples from the San Joaquin River Basin.
(All concentrations are in parts per billion (ppb); NA=Not Applicable)

Station Name	Sample Date	Sample Time	Azinphos methyl	Dimethoate	Disulfoton	Malathion	Methidathion	Methyl Parathion	Phorate	Phosmet	% Recovery triphenyl phosphate (Surrogate)
Orestimba Creek at Kilburn Rd	01/14/06	11:10	<0.03	<0.03	<0.01	<0.03	<0.03	<0.01	<0.05	<0.05	93.6
Orestimba Creek at Kilburn Rd	01/15/06	10:40	<0.03	<0.03	<0.01	0.029	<0.03	<0.01	<0.05	<0.05	98
Del Puerto Creek at Vineyard Ave	02/28/06	9:30	<0.03	<0.03	<0.01	<0.02	<0.03	<0.01	<0.05	<0.05	113
Orestimba Creek at Kilburn Rd	02/28/06	10:00	<0.03	<0.03	<0.01	<0.02	<0.03	<0.01	<0.05	<0.05	108
Del Puerto Creek at Vineyard Ave	03/01/06	10:50	<0.03	<0.03	<0.01	<0.02	<0.03	<0.01	<0.05	<0.05	106
Orestimba Creek at Kilburn Rd	03/01/06	11:30	<0.03	<0.03	<0.01	<0.02	<0.03	<0.01	<0.05	<0.05	107

	Azinphos methyl	Dimethoate	Disulfoton	Malathion	Methidathion	Methyl Parathion	Phorate	Phosmet	% Recovery triphenyl phosphate (Surrogate)
Number of samples	6	6	6	6	6	6	6	6	6
Number of detections	0	0	0	1	0	0	0	0	6
Frequency of detections (%)	0	0	0	16.7	0	0	0	0	100
Mean	NA	NA	NA	0.029	NA	NA	NA	NA	104.3
Median	NA	NA	NA	0.029	NA	NA	NA	NA	106.5
Minimum	0	0	0	0.029	0	0	0	0	93.6
Maximum	0	0	0	0.029	0	0	0	0	113
Standard Deviation	NA	NA	NA	NA	NA	NA	NA	NA	7.1

Table 3a. Concentrations of selected carbamate pesticides, the fungicide captan, and the herbicides diuron and linuron in samples from the Sacramento River Basin.

(All concentrations are in parts per billion (ppb); H = A holding time violation has occurred; NA=Not Applicable)

Station Name	Sample Date	Sample Time	Aldicarb	Captan	Carbaryl	Carbofuran	Diuron	Linuron	Methiocarb	Methomyl
Angel Canal/Commanche Creek at Crouch Ave	01/14/06	13:40	<0.01 (H)	<0.05 (H)	<0.01 (H)	<0.01 (H)	0.360 (H)	<0.002 (H)	<0.05 (H)	<0.01 (H)
Gilsizer Slough at South Township Road	01/14/06	8:30	<0.01 (H)	<0.05 (H)	<0.01 (H)	<0.01 (H)	0.292 (H)	<0.002 (H)	<0.05 (H)	<0.01 (H)
Live Oak Slough at Nuestro Road	01/14/06	11:40	<0.01 (H)	<0.05 (H)	<0.01 (H)	<0.01 (H)	<0.002 (H)	<0.002 (H)	<0.05 (H)	<0.01 (H)
Morrison Slough at Luckehe Road	01/14/06	12:30	<0.01 (H)	<0.05 (H)	<0.01 (H)	<0.01 (H)	<0.002 (H)	<0.002 (H)	<0.05 (H)	<0.01 (H)
Angel Canal/Commanche Creek at Crouch Ave	01/15/06	12:20	<0.01 (H)	<0.05 (H)	<0.01 (H)	<0.01 (H)	<0.002 (H)	<0.002 (H)	<0.05 (H)	<0.01 (H)
Gilsizer Slough at South Township Road	01/15/06	8:20	<0.01 (H)	<0.05 (H)	<0.01 (H)	<0.01 (H)	0.66 (H)	<0.002 (H)	<0.05 (H)	<0.01 (H)
Live Oak Slough at Nuestro Road	01/15/06	10:40	<0.01 (H)	<0.05 (H)	<0.01 (H)	<0.01 (H)	<0.002 (H)	<0.002 (H)	<0.05 (H)	<0.01 (H)
Morrison Slough at Luckehe Road	01/15/06	11:20	<0.01 (H)	<0.05 (H)	<0.01 (H)	<0.01 (H)	0.151 (H)	<0.002 (H)	<0.05 (H)	<0.01 (H)
Angel Canal/Commanche Creek at Crouch Ave	02/27/06	13:40	<0.01	<0.05	<0.01	<0.01	2.40	<0.002	<0.05	<0.01
Gilsizer Slough at South Township Road	02/27/06	9:20	<0.01	<0.05	<0.01	<0.01	0.122	<0.002	<0.05	<0.01
Live Oak Slough at Nuestro Road	02/27/06	12:00	<0.01	<0.05	<0.01	<0.01	2.40	<0.002	<0.05	<0.01
Morrison Slough at Luckehe Road	02/27/06	12:40	<0.01	<0.05	<0.01	<0.01	<0.002	<0.002	<0.05	<0.01
Angel Canal/Commanche Creek at Crouch Ave	02/28/06	13:20	<0.01	<0.05	<0.01	<0.01	2.54	<0.002	<0.05	<0.01
Gilsizer Slough at South Township Road	02/28/06	9:00	<0.01	<0.05	<0.01	<0.01	2.70	<0.002	<0.05	<0.01

Table 3a. Concentrations of selected carbamate pesticides, the fungicide captan, and the herbicides diuron and linuron in samples from the Sacramento River Basin *(continued).*

Station Name	Sample Date	Sample Time	Aldicarb	Captan	Carbaryl	Carbofuran	Diuron	Linuron	Methiocarb	Methomyl
Live Oak Slough at Nuestro Road	02/28/06	11:50	<0.01	<0.05	<0.01	<0.01	0.041	<0.002	<0.05	<0.01
Morrison Slough at Luckehe Road	02/28/06	12:20	<0.01	<0.05	<0.01	<0.01	0.049	<0.002	<0.05	<0.01

	Aldicarb	Captan	Carbaryl	Carbofuran	Diuron	Linuron	Methiocarb	Methomyl
Number of samples	16	16	16	16	16	16	16	16
Number of detections	0	0	0	0	11	0	0	0
Frequency of detections (%)	0	0	0	0	68.8	0	0	0
Mean	NA	NA	NA	NA	1.065	NA	NA	NA
Median	NA	NA	NA	NA	0.36	NA	NA	NA
Minimum	0	0	0	0	0.0412	0	0	0
Maximum	0	0	0	0	2.7	0	0	0
Standard Deviation	NA	NA	NA	NA	1.161	NA	NA	NA

Table 3b. Concentrations of selected carbamate pesticides, the fungicide captan, and the herbicides diuron and linuron in samples from the Sacramento/San Joaquin Delta Basin.

(All concentrations are in parts per billion (ppb); H = A holding time violation has occurred; NA=Not Applicable)

Station Name	Sample Date	Sample Time	Aldicarb	Captan	Carbaryl	Carbofuran	Diuron	Linuron	Methiocarb	Methomyl
Littlejohns Creek at Jack Tone Road	01/14/06	12:00	<0.01 (H)	<0.05 (H)	<0.01 (H)	<0.01 (H)	<0.002 (H)	<0.002 (H)	<0.05 (H)	<0.01 (H)
Lone Tree Creek at Austin Road	01/14/06	12:30	<0.01 (H)	<0.05 (H)	<0.01 (H)	<0.01 (H)	5.00 (H)	<0.002 (H)	<0.05 (H)	<0.01 (H)
Mormon Slough at Copperopolis Road	01/14/06	11:30	<0.01 (H)	<0.05 (H)	<0.01 (H)	<0.01 (H)	<0.002 (H)	<0.002 (H)	<0.05 (H)	<0.01 (H)
Pixley Slough at Ham Lane	01/14/06	10:50	<0.01 (H)	<0.05 (H)	<0.01 (H)	<0.01 (H)	<0.002 (H)	<0.002 (H)	<0.05 (H)	<0.01 (H)
Littlejohns Creek at Jack Tone Road	01/15/06	10:50	<0.01 (H)	<0.05 (H)	<0.01 (H)	<0.01 (H)	<0.002 (H)	<0.002 (H)	<0.05 (H)	<0.01 (H)
Lone Tree Creek at Austin Road	01/15/06	11:20	<0.01 (H)	<0.05 (H)	<0.01 (H)	<0.01 (H)	9.75 (H)	<0.002 (H)	<0.05 (H)	<0.01 (H)
Mormon Slough at Copperopolis Road	01/15/06	10:30	<0.01 (H)	<0.05 (H)	<0.01 (H)	<0.01 (H)	<0.002 (H)	<0.002 (H)	<0.05 (H)	<0.01 (H)
Pixley Slough at Ham Lane	01/15/06	9:40	<0.01 (H)	<0.05 (H)	<0.01 (H)	<0.01 (H)	<0.002 (H)	<0.002 (H)	<0.05 (H)	<0.01 (H)
Littlejohns Creek at Jack Tone Road	02/28/06	16:10	<0.01	<0.05	<0.01	<0.01	<0.002	<0.002	<0.05	<0.01
Lone Tree Creek at Austin Road	02/28/06	16:40	<0.01	<0.05	<0.01	<0.01	0.700	<0.002	<0.05	<0.01
Mormon Slough at Copperopolis Road	02/28/06	15:50	<0.01	<0.05	<0.01	<0.01	<0.002	<0.002	<0.05	<0.01
Pixley Slough at Ham Lane	02/28/06	15:10	<0.01	<0.05	<0.01	<0.01	<0.002	<0.002	<0.05	<0.01
Littlejohns Creek at Jack Tone Road	03/01/06	16:50	<0.01	<0.05	<0.01	<0.01	4.600	<0.002	<0.05	<0.01
Lone Tree Creek at Austin Road	03/01/06	17:10	<0.01	<0.05	<0.01	<0.01	2.000	<0.002	<0.05	<0.01
Mormon Slough at Copperopolis Road	03/01/06	16:30	<0.01	<0.05	<0.01	<0.01	<0.002	<0.002	<0.05	<0.01
Pixley Slough at Ham Lane	03/01/06	16:00	<0.01	<0.05	<0.01	<0.01	0.228	<0.002	<0.05	<0.01

	Aldicarb	Captan	Carbaryl	Carbofuran	Diuron	Linuron	Methiocarb	Methomyl
Number of samples	16	16	16	16	16	16	16	16
Number of detections	0	0	0	0	6	0	0	0
Frequency of detections (%)	0	0	0	0	37.5	0	0	0
Mean	NA	NA	NA	NA	3.713	NA	NA	NA
Median	NA	NA	NA	NA	3.3	NA	NA	NA
Minimum	0	0	0	0	0.228	0	0	0
Maximum	0	0	0	0	9.75	0	0	0
Standard Deviation	NA	NA	NA	NA	3.55	NA	NA	NA

Table 3c. Concentrations of selected carbamate pesticides, the fungicide captan, and the herbicides diuron and linuron in samples from the San Joaquin River Basin.

(All concentrations are in parts per billion (ppb); H = A holding time violation has occurred; NA=Not Applicable)

Station Name	Sample Date	Sample Time	Aldicarb	Captan	Carbaryl	Carbofuran	Diuron	Linuron	Methiocarb	Methomyl
Merced River at River Road	01/14/06	11:40	<0.01 (H)	<0.05 (H)	<0.01 (H)	<0.01 (H)	<0.002 (H)	<0.002 (H)	<0.05 (H)	<0.01 (H)
Orestimba Creek at Kilburn Road	01/14/06	11:10	<0.01 (H)	<0.05 (H)	<0.01 (H)	<0.01 (H)	0.252 (H)	<0.002 (H)	<0.05 (H)	<0.01 (H)
San Joaquin River at Patterson	01/14/06	10:40	<0.01 (H)	<0.05 (H)	<0.01 (H)	<0.01 (H)	0.216 (H)	<0.002 (H)	<0.05 (H)	<0.01 (H)
Merced River at River Road	01/15/06	11:10	<0.01 (H)	<0.05 (H)	<0.01 (H)	<0.01 (H)	<0.002 (H)	<0.002 (H)	<0.05 (H)	<0.01 (H)
Orestimba Creek at Kilburn Road	01/15/06	10:40	<0.01 (H)	<0.05 (H)	<0.01 (H)	<0.01 (H)	0.38 (H)	<0.002 (H)	<0.05 (H)	<0.01 (H)
San Joaquin River at Patterson	01/15/06	10:20	<0.01 (H)	<0.05 (H)	<0.01 (H)	<0.01 (H)	0.700 (H)	<0.002 (H)	<0.05 (H)	<0.01 (H)
Del Puerto Creek at Vineyard Avenue	02/28/06	9:30	<0.01	<0.05	<0.01	<0.01	35.9	<0.002	<0.05	<0.01
Merced River at River Road	02/28/06	10:30	<0.01	<0.05	<0.01	<0.01	<0.002	<0.002	<0.05	<0.01
Orestimba Creek at Kilburn Road	02/28/06	10:00	<0.01	<0.05	<0.01	<0.01	2.4	<0.002	<0.05	<0.01
San Joaquin River at Lander Avenue	02/28/06	11:10	<0.01	<0.05	<0.01	<0.01	1.4	<0.002	<0.05	<0.01
Del Puerto Creek at Vineyard Avenue	03/01/06	10:50	<0.01	<0.05	<0.01	<0.01	0.9	<0.002	<0.05	<0.01
Merced River at River Road	03/01/06	12:10	<0.01	<0.05	<0.01	<0.01	0.07	<0.002	<0.05	<0.01
Orestimba Creek at Kilburn Road	03/01/06	11:30	<0.01	<0.05	<0.01	<0.01	2.2	<0.002	<0.05	<0.01
San Joaquin River at Lander Avenue	03/01/06	13:20	<0.01	<0.05	<0.01	<0.01	1.02	<0.002	<0.05	<0.01

	Aldicarb	Captan	Carbaryl	Carbofuran	Diuron	Linuron	Methiocarb	Methomyl
Number of samples	14	14	14	14	14	14	14	14
Number of detections	0	0	0	0	11	0	0	0
Frequency of detections (%)	0	0	0	0	78.6	0	0	0
Mean	NA	NA	NA	NA	4.131	NA	NA	NA
Median	NA	NA	NA	NA	0.9	NA	NA	NA
Minimum	0	0	0	0	0.07	0	0	0
Maximum	0	0	0	0	35.9	0	0	0
Standard Deviation	NA	NA	NA	NA	10.565	NA	NA	NA

Table 4a. Concentrations of selected herbicides and the acaricide propargite in samples from the Sacramento River Basin.
(All concentrations are in parts per billion (ppb); NA=Not Applicable)

Station Name	Sample Date	Sample Time	Oxyfluorfen	Propanil	Propargite	Trifluralin
Angel Canal/Commanche Creek at Crouch Ave	01/14/06	13:40	<0.02	<0.05	<0.2	<0.05
Gilsizer Slough at South Township Road	01/14/06	8:30	0.43	<0.05	<0.2	<0.05
Live Oak Slough at Nuestro Road	01/14/06	11:40	<0.02	<0.05	<0.2	<0.05
Morrison Slough at Luckehe Road	01/14/06	12:30	<0.02	<0.05	<0.2	<0.05
Angel Canal/Commanche Creek at Crouch Ave	01/15/06	12:20	<0.02	<0.05	<0.2	<0.05
Gilsizer Slough at South Township Road	01/15/06	8:20	<0.02	<0.05	<0.2	<0.05
Live Oak Slough at Nuestro Road	01/15/06	10:40	<0.02	<0.05	<0.2	<0.05
Morrison Slough at Luckehe Road	01/15/06	11:20	<0.02	<0.05	<0.2	<0.05
Angel Canal/Commanche Creek at Crouch Ave	02/27/06	13:40	0.409	<0.05	<0.2	<0.05
Gilsizer Slough at South Township Road	02/27/06	9:20	<0.02	<0.05	<0.2	<0.05
Live Oak Slough at Nuestro Road	02/27/06	12:00	0.38	<0.05	<0.2	<0.05
Morrison Slough at Luckehe Road	02/27/06	12:40	0.102	<0.05	<0.2	<0.05
Angel Canal/Commanche Creek at Crouch Ave	02/28/06	13:20	<0.02	<0.05	<0.2	<0.05
Gilsizer Slough at South Township Road	02/28/06	9:00	0.454	<0.05	<0.2	<0.05
Live Oak Slough at Nuestro Road	02/28/06	11:50	2.08	<0.05	<0.2	<0.05
Morrison Slough at Luckehe Road	02/28/06	12:20	0.181	<0.05	<0.2	<0.05

	Oxyfluorfen	Propanil	Propargite	Trifluralin
Number of samples	16	16	16	16
Number of detections	7	0	0	0
Frequency of detections (%)	43.8	0	0	0
Mean	0.577	NA	NA	NA
Median	0.409	NA	NA	NA
Minimum	0.102	0	0	0
Maximum	2.08	0	0	0
Standard Deviation	0.676	NA	NA	NA

Table 4b. Concentrations of selected herbicides and the acaricide propargite in samples from the Sacramento/San Joaquin Delta.
(All concentrations are in parts per billion (ppb); NA=Not Applicable)

Station Name	Sample Date	Sample Time	Oxyfluorfen	Propanil	Propargite	Trifluralin
Littlejohns Creek at Jack Tone Road	01/14/06	12:00	<0.02	<0.05	<0.2	<0.05
Lone Tree Creek at Austin Road	01/14/06	12:30	<0.02	<0.05	<0.2	<0.05
Mormon Slough at Copperopolis Road	01/14/06	11:30	<0.02	<0.05	<0.2	<0.05
Littlejohns Creek at Jack Tone Road	01/15/06	10:50	<0.02	<0.05	<0.2	<0.05
Lone Tree Creek at Austin Road	01/15/06	11:20	0.256	<0.05	<0.2	<0.05
Mormon Slough at Copperopolis Road	01/15/06	10:30	<0.02	<0.05	<0.2	<0.05
Littlejohns Creek at Jack Tone Road	02/28/06	16:10	<0.02	<0.05	<0.2	<0.05
Lone Tree Creek at Austin Road	02/28/06	16:40	<0.02	<0.05	<0.2	0.055
Mormon Slough at Copperopolis Road	02/28/06	15:50	<0.02	<0.05	<0.2	<0.05
Littlejohns Creek at Jack Tone Road	03/01/06	16:50	<0.02	<0.05	<0.2	<0.05
Lone Tree Creek at Austin Road	03/01/06	17:10	<0.02	<0.05	<0.2	<0.05
Mormon Slough at Copperopolis Road	03/01/06	16:30	<0.02	<0.05	<0.2	<0.05

	Oxyfluorfen	Propanil	Propargite	Trifluralin
Number of samples	12	12	12	12
Number of detections	1	0	0	1
Frequency of detections (%)	8.3	0	0	8.3
Mean	0.256	NA	NA	0.055
Median	0.256	NA	NA	0.055
Minimum	0.256	0	0	0.055
Maximum	0.256	0	0	0.055
Standard Deviation	NA	NA	NA	NA

Table 4c. Concentrations of selected herbicides and the acaricide propargite in samples from the San Joaquin River Basin.
(All concentrations are in parts per billion (ppb); NA=Not Applicable)

Station Name	Sample Date	Sample Time	Oxyfluorfen	Propanil	Propargite	Trifluralin
Merced River at River Road	01/14/06	11:40	<0.02	<0.05	<0.2	<0.05
Orestimba Creek at Kilburn Road	01/14/06	11:10	<0.02	<0.05	<0.2	<0.05
San Joaquin River at Patterson	01/14/06	10:40	<0.02	<0.05	<0.2	<0.05
Merced River at River Road	01/15/06	11:10	<0.02	<0.05	<0.2	<0.05
Orestimba Creek at Kilburn Road	01/15/06	10:40	<0.02	<0.05	<0.2	<0.05
San Joaquin River at Patterson	01/15/06	10:20	<0.02	<0.05	<0.2	<0.05
Del Puerto Creek at Vineyard Avenue	02/28/06	9:30	0.385	<0.05	<0.2	<0.05
Merced River at River Road	02/28/06	10:30	<0.02	<0.05	<0.2	<0.05
Orestimba Creek at Kilburn Road	02/28/06	10:00	0.027	<0.05	<0.2	0.069
San Joaquin River at Lander Avenue	02/28/06	11:10	0.043	<0.05	<0.2	<0.05
Del Puerto Creek at Vineyard Avenue	03/01/06	10:50	0.049	<0.05	<0.2	<0.05
Merced River at River Road	03/01/06	12:10	<0.02	<0.05	<0.2	<0.05
Orestimba Creek at Kilburn Road	03/01/06	11:30	<0.02	<0.05	<0.2	0.064
San Joaquin River at Lander Avenue	03/01/06	13:20	0.092	0.512	<0.2	<0.05

	Oxyfluorfen	Propanil	Propargite	Trifluralin
Number of samples	14	14	14	14
Number of detections	5	1	0	2
Frequency of detections (%)	35.7	7.1	0	14.3
Mean	0.119	0.512	NA	0.067
Median	0.049	0.512	NA	0.067
Minimum	0.027	0.512	0	0.064
Maximum	0.385	0.512	0	0.069
Standard Deviation	0.151	NA	NA	0.004

Table 5. Concentrations of paraquat in samples from the San Joaquin River Basin.
(All concentrations are in parts per billion (ppb); NA=Not Applicable)

Station Name	Sample Date	Sample Time	Paraquat dichloride
Merced River at River Road	01/14/06	11:40	<0.02
Orestimba Creek at Kilburn Road	01/14/06	11:10	<0.02
San Joaquin River at Patterson	01/14/06	10:40	<0.02
Merced River at River Road	01/15/06	11:10	<0.02
Orestimba Creek at Kilburn Road	01/15/06	10:40	<0.02
San Joaquin River at Patterson	01/15/06	10:20	<0.02
Del Puerto Creek at Vineyard Avenue	02/28/06	9:30	<0.02
Merced River at River Road	02/28/06	10:30	<0.02
Orestimba Creek at Kilburn Road	02/28/06	10:00	<0.02
San Joaquin River at Lander Avenue	02/28/06	11:10	<0.02
Del Puerto Creek at Vineyard Avenue	03/01/06	10:50	<0.02
Merced River at River Road	03/01/06	12:10	<0.02
Orestimba Creek at Kilburn Road	03/01/06	11:30	<0.02
San Joaquin River at Lander Avenue	03/01/06	13:20	<0.02

	Paraquat dichloride
Number of samples	14
Number of detections	0
Frequency of detections (%)	0
Mean	NA
Median	NA
Minimum	0
Maximum	0
Standard Deviation	NA

Table 6a. Instantaneous loading rates of diazinon in the Sacramento River Basin.
(All concentrations are in parts per billion (ppb); NA=Not Applicable)

Station Name	Sample Date	Sample Time	Collection Method	Discharge (cfs)	Diazinon (µg/L)	Diazinon Loading Rate (grams a.i./day)
Angel Canal/Commanche Creek at Crouch Ave	01/14/06	13:40	Grab		0.36	NA
Gilsizer Slough at South Township Road	01/14/06	8:30	Grab		0.398	NA
Live Oak Slough at Nuestro Road	01/14/06	11:40	Grab		0.426	NA
Morrison Slough at Luckehe Road	01/14/06	12:30	Grab		0.184	NA
Sacramento River at Alamar	01/14/06	8:40	Grab	56700	0.009	1240.13
Sacramento River at Freeport	01/14/06	9:40	Grab	69095	0.008	1271.19
Angel Canal/Commanche Creek at Crouch Ave	01/15/06	12:20	Grab		0.052	NA
Gilsizer Slough at South Township Road	01/15/06	8:20	Grab		0.778	NA
Live Oak Slough at Nuestro Road	01/15/06	10:40	Grab		0.738	NA
Morrison Slough at Luckehe Road	01/15/06	11:20	Grab		0.117	NA
Angel Canal/Commanche Creek at Crouch Ave	02/27/06	13:40	Grab		0.044	NA
Gilsizer Slough at South Township Road	02/27/06	9:20	Grab		0.028	NA
Live Oak Slough at Nuestro Road	02/27/06	12:00	Grab		0.101	NA
Morrison Slough at Luckehe Road	02/27/06	12:40	Grab		0.163	NA
Sacramento River at Alamar	02/27/06	13:50	Grab	25400	0.006	372.85
Sacramento River at Freeport	02/27/06	15:00	Integrated	33255	0.006	488.15
Angel Canal/Commanche Creek at Crouch Ave	02/28/06	13:20	Grab		0.028	NA
Gilsizer Slough at South Township Road	02/28/06	9:00	Grab		0.08	NA
Live Oak Slough at Nuestro Road	02/28/06	11:50	Grab		0.73	NA
Morrison Slough at Luckehe Road	02/28/06	12:20	Grab		0.294	NA
Sacramento River at Alamar	02/28/06	13:20	Grab	37500	0.006	550.46
Sacramento River at Freeport	02/28/06	14:00	Integrated	41676	0.006	611.76
Sacramento River at Alamar	03/01/06	13:50	Grab	51800	<0.003	NA
Sacramento River at Freeport	03/01/06	14:40	Integrated	59848	<0.003	NA
Sacramento River at Alamar	03/02/06	13:50	Grab	57700	0.006	846.98
Sacramento River at Freeport	03/02/06	15:50	Integrated	71479	0.0128	2238.38
Sacramento River at Alamar	03/03/06	10:50	Grab	58500	<0.003	NA
Sacramento River at Freeport	03/03/06	11:40	Integrated	69831	0.006	1025.05
Sacramento River at Alamar	03/04/06	12:00	Grab	58500	<0.003	NA
Sacramento River at Freeport	03/04/06	12:30	Integrated	70113	<0.003	NA
Sacramento River at Alamar	03/05/06	10:20	Grab	58000	0.008	1135.18
Sacramento River at Freeport	03/05/06	11:00	Integrated	67671	<0.003	NA
Sacramento River at Alamar	03/06/06	10:10	Grab	58000	0.008	1135.18
Sacramento River at Freeport	03/06/06	11:00	Integrated	70424	<0.003	NA

Table 6b. Instantaneous loading rates of diazinon in the San Joaquin River Basin.
(All concentrations are in parts per billion (ppb); NA=Not Applicable)

Station Name	Sample Date	Sample Time	Collection Method	Discharge (cfs)	Diazinon (µg/L)	Diazinon Loading Rate (grams a.i./day)
Orestimba Creek at Kilburn Road	01/14/06	11:10	Grab	6	0.015	0.22
Orestimba Creek at Kilburn Road	01/15/06	10:40	Grab	5	0.009	0.11
Del Puerto Creek at Vineyard Avenue	02/28/06	9:30	Grab	41	0.036	3.61
Orestimba Creek at Kilburn Road	02/28/06	10:00	Grab	21	<0.003	NA
Del Puerto Creek at Vineyard Avenue	03/01/06	10:50	Grab	25	<0.003	NA
Orestimba Creek at Kilburn Road	03/01/06	11:30	Grab	6	<0.003	NA

Table 7a. Summary of quality control data for chlorpyrifos and diazinon in samples from the Sacramento River Basin.

(All concentrations are in parts per billion (ppb); FDP = field duplicate relative percent difference above quality control limit; GB = Matrix spike recovery not within control limits; LCS=Lab Control Spike; LCSD=Lab Control Spike Duplicate; MS=Matrix Spike; MSD=Matrix Spike Duplicate; NA=not applicable; PR=percent recovery; RPD=relative percent difference)

Station Name	Sample Date	Sample Time	Collection Method	Chlorpyrifos	Diazinon
Gilsizer Slough at South Township Road	01/14/06	8:30	Grab	<0.003	0.398
Gilsizer Slough at South Township Road	01/14/06	8:39	MS	0.193 PR 96.6	0.379 PR 189 (GB)
Gilsizer Slough at South Township Road	01/14/06	8:39	MSD	0.200 PR 100, RPD 3.7	0.387 PR 194, RPD 2.1 (GB)
Laboratory QA Samples	01/15/06	0:00	LabBlank	<0.003	<0.003
Laboratory QA Samples	01/16/06	0:00	LCS	0.189 PR 94.3	0.183 PR 91.4
Laboratory QA Samples	01/16/06	0:00	LCS	0.183 PR 91.4	0.173 PR 86.5
Laboratory QA Samples	01/17/06	0:00	LCS	0.190 PR 94.8	0.163 PR 81.6
Laboratory QA Samples	01/18/06	0:00	LabBlank	<0.003	<0.003
Morrison Slough at Luckehe Road	02/27/06	12:40	Grab	<0.003	0.163 (FDP)
Morrison Slough at Luckehe Road	02/27/06	12:43	FieldDup	<0.003 RPD NA	0.23 RPD 34.1 (FDP)
Sacramento River at Alamar	03/01/06	13:50	Grab	<0.003	<0.003
Sacramento River at Alamar	03/01/06	13:59	MS	0.198 PR 98.8	0.191 PR 95.7
Sacramento River at Freeport	03/04/06	12:30	Integrated	<0.003	<0.003
Sacramento River at Freeport	03/04/06	12:33	FieldDup	<0.003 RPD NA	<0.003 RPD NA
Laboratory QA Samples	03/08/06	0:00	LCS	0.175 PR 87.3	0.17 PR 84.8
Laboratory QA Samples	03/08/06	0:00	LCS	0.189 PR 94.4	0.189 PR 94.3
Laboratory QA Samples	03/08/06	0:00	LCSD	0.165 PR 82.5, RPD 5.9	0.157 PR 78.4, RPD 8.0
Laboratory QA Samples	03/08/06	0:00	LCSD	0.182 PR 91, RPD 3.8	0.166 PR 83.1, RPD 13
Laboratory QA Samples	03/08/06	0:00	LabBlank	<0.003	<0.003
Laboratory QA Samples	03/09/06	0:00	LCS	0.193 PR 96.3	0.181 PR 90.6
Laboratory QA Samples	03/09/06	0:00	LCSD	0.19 PR 95, RPD 1.6	0.188 PR 94.2, RPD 3.8

Table 7b. Summary of quality control data for chlorpyrifos and diazinon in samples from the Sacramento/San Joaquin Delta.

(All concentrations are in parts per billion (ppb); GB = Matrix spike recovery not within control limits; IL = RPD exceeds laboratory control limit; LCS=Lab Control Spike; LCSD=Lab Control Spike Duplicate; MS=Matrix Spike; MSD=Matrix Spike Duplicate; NA=not applicable; PR=percent recovery; RPD=relative percent difference)

Station Name	Sample Date	Sample Time	Collection Method	Chlorpyrifos	Diazinon
Pixley Slough at Ham Lane	01/14/06	10:50	Grab	0.026	0.097
Pixley Slough at Ham Lane	01/14/06	10:59	MS	0.172 PR 86.2 (IL)	0.228 PR 114
Pixley Slough at Ham Lane	01/14/06	10:59	MSD	0.252 PR 126, RPD 38 (GB,IL)	0.196 PR 98.1, RPD 15
Laboratory QA Samples	01/15/06	0:00	LabBlank	<0.003	<0.003
Laboratory QA Samples	01/16/06	0:00	LCS	0.189 PR 94.3	0.183 PR 91.4
Laboratory QA Samples	01/16/06	0:00	LCS	0.183 PR 91.4	0.173 PR 86.5
Laboratory QA Samples	01/17/06	0:00	LCS	0.190 PR 94.8	0.163 PR 81.6
Laboratory QA Samples	01/18/06	0:00	LabBlank	<0.003	<0.003
Mormon Slough at Copperopolis Road	02/28/06	15:50	Grab	0.010	0.014
Mormon Slough at Copperopolis Road	02/28/06	15:51	FieldBlank	<0.003	<0.003
Pixley Slough at Ham Lane	03/01/06	16:00	Grab	<0.003	0.132
Pixley Slough at Ham Lane	03/01/06	16:09	MS	0.187 PR 93.3	0.19 PR 94.9
Laboratory QA Samples	03/08/06	0:00	LCS	0.175 PR 87.3	0.17 PR 84.8
Laboratory QA Samples	03/08/06	0:00	LCSD	0.165 PR 82.5, RPD 5.9	0.157 PR 78.4, RPD 8.0
Laboratory QA Samples	03/08/06	0:00	LCS	0.189 PR 94.4	0.189 PR 94.3
Laboratory QA Samples	03/08/06	0:00	LCSD	0.182 PR 91, RPD 3.8	0.166 PR 83.1, RPD 13
Laboratory QA Samples	03/08/06	0:00	LabBlank	<0.003	<0.003
Laboratory QA Samples	03/09/06	0:00	LCS	0.193 PR 96.3	0.181 PR 90.6
Laboratory QA Samples	03/09/06	0:00	LCSD	0.19 PR 95, RPD 1.6	0.188 PR 94.2, RPD 3.8

Table 7c. Summary of quality control data for chlorpyrifos and diazinon in samples from the San Joaquin River Basin.

(All concentrations are in parts per billion (ppb); LCS=Lab Control Spike; LCSD=Lab Control Spike Duplicate; MS=Matrix Spike; MSD=Matrix Spike Duplicate; PR=percent recovery; RPD=relative percent difference)

Station Name	Sample Date	Sample Time	Collection Method	Chlorpyrifos	Diazinon
Orestimba Creek at Kilburn Road	01/15/06	10:40	Grab	<0.003	0.009
Orestimba Creek at Kilburn Road	01/15/06	10:49	MS	0.190 PR 95.0	0.187 PR 93.7
Orestimba Creek at Kilburn Road	01/15/06	10:49	MSD	0.208 PR 104, RPD 9.0	0.197 PR 98.3, RPD 4.7
Laboratory QA Samples	01/15/06	0:00	LabBlank	<0.003	<0.003
Laboratory QA Samples	01/16/06	0:00	LCS	0.189 PR 94.3	0.183 PR 91.4
Laboratory QA Samples	01/16/06	0:00	LCS	0.183 PR 91.4	0.173 PR 86.5
Laboratory QA Samples	01/17/06	0:00	LCS	0.190 PR 94.8	0.163 PR 81.6
Laboratory QA Samples	01/18/06	0:00	LabBlank	<0.003	<0.003
Orestimba Creek at Kilburn Road	03/01/06	11:30	Grab	<0.003	<0.003
Orestimba Creek at Kilburn Road	03/01/06	11:31	FieldBlank	<0.003	<0.003
Laboratory QA Samples	03/08/06	0:00	LCS	0.175 PR 87.3	0.17 PR 84.8
Laboratory QA Samples	03/08/06	0:00	LCSD	0.165 PR 82.5, RPD 5.9	0.157 PR 78.4, RPD 8.0
Laboratory QA Samples	03/08/06	0:00	LCS	0.189 PR 94.4	0.189 PR 94.3
Laboratory QA Samples	03/08/06	0:00	LCSD	0.182 PR 91, RPD 3.8	0.166 PR 83.1, RPD 13
Laboratory QA Samples	03/08/06	0:00	LabBlank	<0.003	<0.003
Laboratory QA Samples	03/09/06	0:00	LCS	0.193 PR 96.3	0.181 PR 90.6
Laboratory QA Samples	03/09/06	0:00	LCSD	0.19 PR 95, RPD 1.6	0.188 PR 94.2, RPD 3.8

Table 8a. Summary of quality control data for organophosphate pesticides in samples from the Sacramento River Basin.
(All concentrations are in parts per billion (ppb); GB = Matrix spike recovery not within control limits; EUM = LCS is outside the acceptance limits; LCS=Lab Control Spike; LCSD=Lab Control Spike Duplicate; MS=Matrix Spike; MSD=Matrix Spike Duplicate; NA=not applicable; PR=percent recovery; RPD=relative percent difference)

Station Name	Sample Date	Sample Time	Collection Method	Azinphos methyl	Dimethoate	Disulfoton
Gilsizer Slough at S.Township Rd	01/14/06	8:30	Grab	<0.03	<0.03	<0.01
Gilsizer Slough at S.Township Rd	01/14/06	8:39	MS	0.217 PR 109	0.133 PR 66.4 (GB)	0.188 PR 94.1
Gilsizer Slough at S.Township Rd	01/14/06	8:39	MSD	0.232 PR 116, RPD 6.6	0.143 PR 71.3, RPD 7.1	0.176 PR 87.9, RPD 6.9
Laboratory QA Samples	01/15/06	0:00	LabBlank	<0.03	<0.03	<0.01
Laboratory QA Samples	01/16/06	0:00	LCS	0.147 PR 73.6	0.150 PR 74.9	0.200 PR 100
Laboratory QA Samples	01/16/06	0:00	LCS	0.153 PR 76.5	0.159 PR 79.5	0.164 PR 82.0
Laboratory QA Samples	01/17/06	0:00	LCS	0.162 PR 80.8	0.063 PR 31.4 (EUM)	0.141 PR 70.6
Laboratory QA Samples	01/18/06	0:00	LabBlank	<0.03	<0.03	<0.01
Morrison Slough at Luckehe Rd	02/27/06	12:40	Grab	<0.03	<0.03	<0.01
Morrison Slough at Luckehe Rd	02/27/06	12:43	FieldDup	<0.03 RPD NA	<0.03 RPD NA	<0.01 RPD NA
Sacramento River at Alamar	03/01/06	13:50	Grab	<0.03	<0.03	<0.01
Sacramento River at Alamar	03/01/06	13:59	MS	0.206 PR 103	0.165 PR 82.7	0.095 PR 47.4 (GB)
Sacramento River at Freeport	03/04/06	12:30	Integrated	<0.03	<0.03	<0.01
Sacramento River at Freeport	03/04/06	12:33	FieldDup	<0.03 RPD NA	<0.03 RPD NA	<0.01 RPD NA
Laboratory QA Samples	03/08/06	0:00	LCS	0.144 PR 72	0.048 PR 24.2 (EUM)	0.078 PR 39.0 (EUM)
Laboratory QA Samples	03/08/06	0:00	LCS	0.17 PR 85.1	0.107 PR 53.6 (EUM)	0.07 PR 34.8 (EUM)
Laboratory QA Samples	03/08/06	0:00	LCSD	0.145 PR 72.7, RPD 0.69	0.054 PR 27.0, RPD 11 (EUM)	0.082 PR 40.6, RPD 3.9 (EUM)
Laboratory QA Samples	03/08/06	0:00	LCSD	0.19 PR 95.1, RPD 11	0.096 PR 47.9, RPD 11 (EUM)	0.073 PR 36.5, RPD 4.7 (EUM)
Laboratory QA Samples	03/08/06	0:00	LabBlank	<0.03	<0.03	<0.01
Laboratory QA Samples	03/09/06	0:00	LCS	0.178 PR 88.8	0.098 PR 48.8 (EUM)	0.067 PR 33.7 (EUM)
Laboratory QA Samples	03/09/06	0:00	LCSD	0.212 PR 106, RPD 17	0.078 PR 39.0, RPD 22 (EUM)	0.075 PR 37.3, RPD 10 (EUM)

Table 8a. Summary of quality control data for organophosphate pesticides in samples from the Sacramento River Basin (*continued)*

Station Name	Sample Date	Sample Time	Collection Method	Malathion	Methidathion	Parathion, Methyl
Gilsizer Slough at S.Township Rd	01/14/06	8:30	Grab	<0.03	<0.03	<0.01
Gilsizer Slough at S.Township Rd	01/14/06	8:39	MS	0.189 PR 94.7	0.217 PR 108	0.196 PR 98.0
Gilsizer Slough at S.Township Rd	01/14/06	8:39	MSD	0.196 PR 97.9, RPD 3.3	0.227 PR 114, RPD 4.9	0.210 PR 105, RPD 6.7
Laboratory QA Samples	01/15/06	0:00	LabBlank	<0.03	<0.03	<0.01
Laboratory QA Samples	01/16/06	0:00	LCS	0.185 PR 92.3	0.207 PR 103	0.191 PR 95.6
Laboratory QA Samples	01/16/06	0:00	LCS	0.185 PR 92.3	0.211 PR 105	0.188 PR 93.9
Laboratory QA Samples	01/17/06	0:00	LCS	0.166 PR 83.1	0.201 PR 101	0.195 PR 97.7
Laboratory QA Samples	01/18/06	0:00	LabBlank	<0.03	<0.03	<0.01
Morrison Slough at Luckehe Rd	02/27/06	12:40	Grab	<0.02	<0.03	<0.01
Morrison Slough at Luckehe Rd	02/27/06	12:43	FieldDup	<0.02 RPD NA	<0.03 RPD NA	<0.01 RPD NA
Sacramento River at Alamar	03/01/06	13:50	Grab	<0.02	<0.03	<0.01
Sacramento River at Alamar	03/01/06	13:59	MS	0.198 PR 99	0.194 PR 97	0.2 PR 100
Sacramento River at Freeport	03/04/06	12:30	Integrated	<0.02	<0.03	<0.01
Sacramento River at Freeport	03/04/06	12:33	FieldDup	<0.02 RPD NA	<0.03 RPD NA	<0.01 RPD NA
Laboratory QA Samples	03/08/06	0:00	LCS	0.177 PR 88.6	0.192 PR 95.9	0.168 PR 83.8
Laboratory QA Samples	03/08/06	0:00	LCS	0.2 PR 100	0.187 PR 93.6	0.196 PR 98.2
Laboratory QA Samples	03/08/06	0:00	LCSD	0.165 PR 82.7, RPD 7.0	0.175 PR 87.3, RPD 9.3	0.167 PR 83.6, RPD 0.6
Laboratory QA Samples	03/08/06	0:00	LCSD	0.189 PR 94.3, RPD 5.7	0.187 PR 93.4, RPD 0.0	0.174 PR 86.9, RPD 12
Laboratory QA Samples	03/08/06	0:00	LabBlank	<0.02	<0.03	<0.01
Laboratory QA Samples	03/09/06	0:00	LCS	0.2 PR 100	0.188 PR 94	0.176 PR 87.9
Laboratory QA Samples	03/09/06	0:00	LCSD	0.202 PR 101, RPD 1.0	0.19 PR 94.9, RPD 1.1	0.198 PR 99.1, RPD 12

Table 8a. Summary of quality control data for organophosphate pesticides in samples from the Sacramento River Basin (*continued)*

Station Name	Sample Date	Sample Time	Collection Method	Phorate	Phosmet	% Recovery triphenyl phosphate (Surrogate)
Gilsizer Slough at S.Township Rd	01/14/06	8:30	Grab	<0.05	<0.05	99.9
Gilsizer Slough at S.Township Rd	01/14/06	8:39	MS	0.290 PR 72.4	0.438 PR 109	101
Gilsizer Slough at S.Township Rd	01/14/06	8:39	MSD	0.299 PR 74.6, RPD 2.9	0.442 PR 111, RPD 1.0	101
Laboratory QA Samples	01/15/06	0:00	LabBlank	<0.05	<0.05	108
Laboratory QA Samples	01/16/06	0:00	LCS	0.264 PR 66.1 (EUM)	0.340 PR 85.1	89.5
Laboratory QA Samples	01/16/06	0:00	LCS	0.279 PR 69.9 (EUM)	0.362 PR 90.6	94
Laboratory QA Samples	01/17/06	0:00	LCS	0.280 PR 70.0	0.338 PR 84.5	84.9
Laboratory QA Samples	01/18/06	0:00	LabBlank	<0.05	<0.05	99.3
Morrison Slough at Luckehe Rd	02/27/06	12:40	Grab	<0.05	<0.05	72.8
Morrison Slough at Luckehe Rd	02/27/06	12:43	FieldDup	<0.05 RPD NA	<0.05 RPD NA	102
Sacramento River at Alamar	03/01/06	13:50	Grab	<0.05	<0.05	108
Sacramento River at Alamar	03/01/06	13:59	MS	0.315 PR 78.7	0.418 PR 105	109
Sacramento River at Freeport	03/04/06	12:30	Integrated	<0.05	<0.05	78.3
Sacramento River at Freeport	03/04/06	12:33	FieldDup	<0.05 RPD NA	<0.05 RPD NA	94.9
Laboratory QA Samples	03/08/06	0:00	LCS	0.276 PR 69.1 (EUM)	0.325 PR 81.3	96.3
Laboratory QA Samples	03/08/06	0:00	LCS	0.296 PR 74.1	0.427 PR 106.9	119
Laboratory QA Samples	03/08/06	0:00	LCSD	0.269 PR 67.1, RPD 2.8 (EUM)	0.342 PR 85.5, RPD 5.1	85.1
Laboratory QA Samples	03/08/06	0:00	LCSD	0.283 PR 70.8, RPD 4.5	0.371 PR 92.7, RPD 14.2	94
Laboratory QA Samples	03/08/06	0:00	LabBlank	<0.05	<0.05	103
Laboratory QA Samples	03/09/06	0:00	LCS	0.299 PR 74.8	0.381 PR 95.3	113
Laboratory QA Samples	03/09/06	0:00	LCSD	0.305 PR 76.3, RPD 2.0	0.372 PR 93.1, RPD 2.3	108

Table 8b. Summary of quality control data for organophosphate pesticides in samples from the Sacramento/San Joaquin Delta Basin.

(All concentrations are in parts per billion (ppb); GB = Matrix spike recovery not within control limits, EUM = LCS is outside the acceptance limits; LCS=Lab Control Spike; LCSD=Lab Control Spike Duplicate; MS=Matrix Spike; MSD=Matrix Spike Duplicate; PR=percent recovery; RPD=relative percent difference)

Station Name	Sample Date	Sample Time	Collection Method	Azinphos methyl	Dimethoate	Disulfoton
Pixley Slough at Ham Lane	01/14/06	10:50	Grab	<0.03	<0.03	0.057776
Pixley Slough at Ham Lane	01/14/06	10:59	MS	0.246 PR 123	0.166 PR 83.1	0.099 PR 49.6 (GB)
Pixley Slough at Ham Lane	01/14/06	10:59	MSD	0.252 PR 126, RPD 2.3 (GB)	0.179 PR 89.4, RPD 7.3	0.113 PR 56.6, RPD 13 (GB)
Laboratory QA Samples	01/15/06	0:00	LabBlank	<0.03	<0.03	<0.01
Laboratory QA Samples	01/16/06	0:00	LCS	0.147 PR 73.6	0.150 PR 74.9	0.200 PR 100
Laboratory QA Samples	01/16/06	0:00	LCS	0.153 PR 76.5	0.159 PR 79.5	0.164 PR 82.0
Laboratory QA Samples	01/17/06	0:00	LCS	0.162 PR 80.8	0.063 PR 31.4 (EUM)	0.141 PR 70.6
Laboratory QA Samples	01/18/06	0:00	LabBlank	<0.03	<0.03	<0.01
Mormon Slough at Copperopolis Rd	02/28/06	15:50	Grab	<0.03	<0.03	<0.01
Mormon Slough at Copperopolis Rd	02/28/06	15:51	FieldBlank	<0.03	<0.03	<0.01
Pixley Slough at Ham Lane	03/01/06	16:00	Grab	<0.03	<0.03	0.049
Pixley Slough at Ham Lane	03/01/06	16:09	MS	0.242 PR 121	0.23 PR 115	0.09 PR 44.8 (GB)
Laboratory QA Samples	03/08/06	0:00	LCS	0.144 PR 72	0.048 PR 24.2 (EUM)	0.078 PR 39.0 (EUM)
Laboratory QA Samples	03/08/06	0:00	LCSD	0.145 PR 72.7, RPD 0.69	0.054 PR 27.0, RPD 11 (EUM)	0.082 PR 40.6, RPD 3.9 (EUM)
Laboratory QA Samples	03/08/06	0:00	LCS	0.17 PR 85.1	0.107 PR 53.6 (EUM)	0.07 PR 34.8 (EUM)
Laboratory QA Samples	03/08/06	0:00	LCSD	0.19 PR 95.1, RPD 11	0.096 PR 47.9, RPD 11 (EUM)	0.073 PR 36.5, RPD 4.7 (EUM)
Laboratory QA Samples	03/08/06	0:00	LabBlank	<0.03	<0.03	<0.01
Laboratory QA Samples	03/09/06	0:00	LCS	0.178 PR 88.8	0.098 PR 48.8 (EUM)	0.067 PR 33.7 (EUM)
Laboratory QA Samples	03/09/06	0:00	LCSD	0.212 PR 106, RPD 17	0.078 PR 39.0, RPD 22 (EUM)	0.075 PR 37.3, RPD 10 (EUM)

Table 8b. Summary of quality control data for organophosphate pesticides in samples from the Sacramento/San Joaquin Delta Basin (*continued*)

Station Name	Sample Date	Sample Time	Collection Method	Malathion	Methidathion	Parathion, Methyl
Pixley Slough at Ham Lane	01/14/06	10:50	Grab	0.038	0.248	<0.01
Pixley Slough at Ham Lane	01/14/06	10:59	MS	0.207 PR 104	0.383 PR 191 (GB,IL)	0.187 PR 93.6
Pixley Slough at Ham Lane	01/14/06	10:59	MSD	0.245 PR 122, RPD 17	0.224 PR 112, RPD 53 (IL)	0.212 PR 106, RPD 13
Laboratory QA Samples	01/15/06	0:00	LabBlank	<0.03	<0.03	<0.01
Laboratory QA Samples	01/16/06	0:00	LCS	0.185 PR 92.3	0.207 PR 103	0.191 PR 95.6
Laboratory QA Samples	01/16/06	0:00	LCS	0.185 PR 92.3	0.211 PR 105	0.188 PR 93.9
Laboratory QA Samples	01/17/06	0:00	LCS	0.1665 PR 83.1	0.201 PR 101	0.195 PR 97.7
Laboratory QA Samples	01/18/06	0:00	LabBlank	<0.03	<0.03	<0.01
Mormon Slough at Copperopolis Rd	02/28/06	15:50	Grab	<0.02	<0.03	<0.01
Mormon Slough at Copperopolis Rd	02/28/06	15:51	FieldBlank	<0.02	<0.03	<0.01
Pixley Slough at Ham Lane	03/01/06	16:00	Grab	0.047	0.051	<0.01
Pixley Slough at Ham Lane	03/01/06	16:09	MS	0.201 PR 100	0.212 PR 106	0.235 PR 117
Laboratory QA Samples	03/08/06	0:00	LCS	0.177 PR 88.6	0.192 PR 95.9	0.168 PR 83.8
Laboratory QA Samples	03/08/06	0:00	LCSD	0.165 PR 82.7, RPD 7.0	0.175 PR 87.3, RPD 9.3	0.167 PR 83.6, RPD 0.6
Laboratory QA Samples	03/08/06	0:00	LCS	0.2 PR 100	0.187 PR 93.6	0.196 PR 98.2
Laboratory QA Samples	03/08/06	0:00	LCSD	0.189 PR 94.3, RPD 5.7	0.187 PR 93.4, RPD 0.0	0.174 PR 86.9, RPD 12
Laboratory QA Samples	03/08/06	0:00	LabBlank	<0.02	<0.03	<0.01
Laboratory QA Samples	03/09/06	0:00	LCS	0.2 PR 100	0.188 PR 94	0.176 PR 87.9
Laboratory QA Samples	03/09/06	0:00	LCSD	0.202 PR 101, RPD 1.0	0.19 PR 94.9, RPD 1.1	0.198 PR 99.1, RPD 12

Table 8b. Summary of quality control data for organophosphate pesticides in samples from the Sacramento/San Joaquin Delta Basin *(continued)*

Station Name	Sample Date	Sample Time	Collection Method	Phorate	Phosmet	% Recovery triphenyl phosphate (Surrogate)
Pixley Slough at Ham Lane	01/14/06	10:50	Grab	<0.05	<0.05	125
Pixley Slough at Ham Lane	01/14/06	10:59	MS	0.283 PR 70.7	0.453 PR 113	113
Pixley Slough at Ham Lane	01/14/06	10:59	MSD	0.248 PR 61.9, RPD 13 (GB)	0.497 PR 124, RPD 9.2	117
Laboratory QA Samples	01/15/06	0:00	LabBlank	<0.05	<0.05	108
Laboratory QA Samples	01/16/06	0:00	LCS	0.264 PR 66.1 (EUM)	0.340 PR 85.1	89.5
Laboratory QA Samples	01/16/06	0:00	LCS	0.279 PR 69.9 (EUM)	0.362 PR 90.6	94
Laboratory QA Samples	01/17/06	0:00	LCS	0.280 PR 70.0	0.338 PR 84.5	84.9
Laboratory QA Samples	01/18/06	0:00	LabBlank	<0.05	<0.05	99.3
Mormon Slough at Copperopolis Rd	02/28/06	15:50	Grab	<0.05	<0.05	110
Mormon Slough at Copperopolis Rd	02/28/06	15:51	FieldBlank	<0.05	<0.05	112
Pixley Slough at Ham Lane	03/01/06	16:00	Grab	<0.05	<0.05	123
Pixley Slough at Ham Lane	03/01/06	16:09	MS	0.327 PR 81.8	0.462 PR 116	125
Laboratory QA Samples	03/08/06	0:00	LCS	0.276 PR 69.1 (EUM)	0.325 PR 81.3	96.3
Laboratory QA Samples	03/08/06	0:00	LCSD	0.269 PR 67.1, RPD 2.8 (EUM)	0.342 PR 85.5, RPD 5.1	85.1
Laboratory QA Samples	03/08/06	0:00	LCS	0.296 PR 74.1	0.427 PR 106.9	119
Laboratory QA Samples	03/08/06	0:00	LCSD	0.283 PR 70.8, RPD 4.5	0.371 PR 92.7, RPD 14.2	94
Laboratory QA Samples	03/08/06	0:00	LabBlank	<0.05	<0.05	103
Laboratory QA Samples	03/09/06	0:00	LCS	0.299 PR 74.8	0.381 PR 95.3	113
Laboratory QA Samples	03/09/06	0:00	LCSD	0.305 PR 76.3, RPD 2.0	0.372 PR 93.1, RPD 2.3	108

Table 8c. Summary of quality control data for organophosphate pesticides in samples from the San Joaquin River Basin.
(All concentrations are in parts per billion (ppb); GB = Matrix spike recovery not within control limits, EUM = LCS is outside the acceptance limits; LCS=Lab Control Spike; LCSD=Lab Control Spike Duplicate; MS=Matrix Spike; MSD=Matrix Spike Duplicate; PR=percent recovery; RPD=relative percent difference)

Station Name	Sample Date	Sample Time	Collection Method	Azinphos methyl	Dimethoate	Disulfoton
Orestimba Creek at Kilburn Rd	01/15/06	10:40	Grab	<0.03	<0.03	<0.01
Orestimba Creek at Kilburn Rd	01/15/06	10:49	MS	0.192 PR 96.1	0.130 PR 65.1 (GB)	0.181 PR 90.3
Orestimba Creek at Kilburn Rd	01/15/06	10:49	MSD	0.220 PR 110, RPD 13	0.134 PR 67.0, RPD 3.0 (GB)	0.185 PR 92.5, RPD 2.4
Laboratory QA Samples	01/15/06	0:00	LabBlank	<0.03	<0.03	<0.01
Laboratory QA Samples	01/16/06	0:00	LCS	0.147 PR 73.6	0.150 PR 74.9	0.200 PR 100
Laboratory QA Samples	01/16/06	0:00	LCS	0.153 PR 76.5	0.159 PR 79.5	0.164 PR 82.0
Laboratory QA Samples	01/17/06	0:00	LCS	0.162 PR 80.8	0.063 PR 31.4 (EUM)	0.141 PR 70.6
Laboratory QA Samples	01/18/06	0:00	LabBlank	<0.03	<0.03	<0.01
Orestimba Creek at Kilburn Rd	03/01/06	11:30	Grab	<0.03	<0.03	<0.01
Orestimba Creek at Kilburn Rd	03/01/06	11:31	FieldBlank	<0.03	<0.03	<0.01
Laboratory QA Samples	03/08/06	0:00	LCS	0.144 PR 72	0.048 PR 24.2 (EUM)	0.078 PR 39.0 (EUM)
Laboratory QA Samples	03/08/06	0:00	LCSD	0.145 PR 72.7, RPD 0.69	0.054 PR 27.0, RPD 11 (EUM)	0.082 PR 40.6, RPD 3.9 (EUM)
Laboratory QA Samples	03/08/06	0:00	LCS	0.17 PR 85.1	0.107 PR 53.6 (EUM)	0.07 PR 34.8 (EUM)
Laboratory QA Samples	03/08/06	0:00	LCSD	0.19 PR 95.1, RPD 11	0.096 PR 47.9, RPD 11 (EUM)	0.073 PR 36.5, RPD 4.7 (EUM)
Laboratory QA Samples	03/08/06	0:00	LabBlank	<0.03	<0.03	<0.01
Laboratory QA Samples	03/09/06	0:00	LCS	0.178 PR 88.8	0.098 PR 48.8 (EUM)	0.067 PR 33.7 (EUM)
Laboratory QA Samples	03/09/06	0:00	LCSD	0.212 PR 106, RPD 17	0.078 PR 39.0, RPD 22 (EUM)	0.075 PR 37.3, RPD 10 (EUM)

Table 8c. Summary of quality control data for organophosphate pesticides in samples from the San Joaquin River Basin *(continued).*

Station Name	Sample Date	Sample Time	Collection Method	Malathion	Methidathion	Parathion, Methyl
Orestimba Creek at Kilburn Rd	01/15/06	10:40	Grab	0.029	<0.03	<0.01
Orestimba Creek at Kilburn Rd	01/15/06	10:49	MS	0.196 PR 97.8	0.198 PR 98.8	0.188 PR 93.9
Orestimba Creek at Kilburn Rd	01/15/06	10:49	MSD	0.203 PR 102, RPD 3.9	0.248 PR 124, RPD 23	0.216 PR 108, RPD 14
Laboratory QA Samples	01/15/06	0:00	LabBlank	<0.03	<0.03	<0.01
Laboratory QA Samples	01/16/06	0:00	LCS	0.185 PR 92.3	0.207 PR 103	0.191 PR 95.6
Laboratory QA Samples	01/16/06	0:00	LCS	0.185 PR 92.3	0.211 PR 105	0.188 PR 93.9
Laboratory QA Samples	01/17/06	0:00	LCS	0.166 PR 83.1	0.201 PR 101	0.195 PR 97.7
Laboratory QA Samples	01/18/06	0:00	LabBlank	<0.03	<0.03	<0.01
Orestimba Creek at Kilburn Rd	03/01/06	11:30	Grab	<0.02	<0.03	<0.01
Orestimba Creek at Kilburn Rd	03/01/06	11:31	FieldBlank	<0.02	<0.03	<0.01
Laboratory QA Samples	03/08/06	0:00	LCS	0.177 PR 88.6	0.192 PR 95.9	0.168 PR 83.8
Laboratory QA Samples	03/08/06	0:00	LCSD	0.165 PR 82.7, RPD 7.0	0.175 PR 87.3, RPD 9.3	0.167 PR 83.6, RPD 0.6
Laboratory QA Samples	03/08/06	0:00	LCS	0.2 PR 100	0.187 PR 93.6	0.196 PR 98.2
Laboratory QA Samples	03/08/06	0:00	LCSD	0.189 PR 94.3, RPD 5.7	0.187 PR 93.4, RPD 0.0	0.174 PR 86.9, RPD 12
Laboratory QA Samples	03/08/06	0:00	LabBlank	<0.02	<0.03	<0.01
Laboratory QA Samples	03/09/06	0:00	LCS	0.2 PR 100	0.188 PR 94	0.176 PR 87.9
Laboratory QA Samples	03/09/06	0:00	LCSD	0.202 PR 101, RPD 1.0	0.19 PR 94.9, RPD 1.1	0.198 PR 99.1, RPD 12

Table 8c. Summary of quality control data for organophosphate pesticides in samples from the San Joaquin River Basin *(continued).*

Station Name	Sample Date	Sample Time	Collection Method	Phorate	Phosmet	% Recovery triphenyl phosphate (Surrogate)
Orestimba Creek at Kilburn Rd	01/15/06	10:40	Grab	<0.05	<0.05	98
Orestimba Creek at Kilburn Rd	01/15/06	10:49	MS	0.291 PR 72.8	0.358 PR 89.4	89.8
Orestimba Creek at Kilburn Rd	01/15/06	10:49	MSD	0.297 PR 74.2, RPD 2.0	0.462 PR 115, RPD 25	102
Laboratory QA Samples	01/15/06	0:00	LabBlank	<0.05	<0.05	108
Laboratory QA Samples	01/16/06	0:00	LCS	0.264 PR 66.1 (EUM)	0.340 PR 85.1	89.5
Laboratory QA Samples	01/16/06	0:00	LCS	0.279 PR 69.9 (EUM)	0.362 PR 90.6	94
Laboratory QA Samples	01/17/06	0:00	LCS	0.280 PR 70.0	0.338 PR 84.5	84.9
Laboratory QA Samples	01/18/06	0:00	LabBlank	<0.05	<0.05	99.3
Orestimba Creek at Kilburn Rd	03/01/06	11:30	Grab	<0.05	<0.05	107
Orestimba Creek at Kilburn Rd	03/01/06	11:31	FieldBlank	<0.05	<0.05	76.2
Laboratory QA Samples	03/08/06	0:00	LCS	0.276 PR 69.1 (EUM)	0.325 PR 81.3	96.3
Laboratory QA Samples	03/08/06	0:00	LCSD	0.269 PR 67.1, RPD 2.8 (EUM)	0.342 PR 85.5, RPD 5.1	85.1
Laboratory QA Samples	03/08/06	0:00	LCS	0.296 PR 74.1	0.427 PR 107	119
Laboratory QA Samples	03/08/06	0:00	LCSD	0.283 PR 70.8, RPD 4.5	0.371 PR 92.7, RPD 14.2	94
Laboratory QA Samples	03/08/06	0:00	LabBlank	<0.05	<0.05	103
Laboratory QA Samples	03/09/06	0:00	LCS	0.299 PR 74.8	0.381 PR 95.3	113
Laboratory QA Samples	03/09/06	0:00	LCSD	0.305 PR 76.3, RPD 2.0	0.372 PR 93.1, RPD 2.3	108

Table 9a. Summary of quality control data for selected carbamate pesticides, the fungicide captan, and the herbicides diuron and linuron in samples from the Sacramento River Basin.

(All concentrations are in parts per billion (ppb); BB = Sample > 4x spike concentration; EUM = LCS is outside the acceptance limits; GB = Matrix spike recovery not within control limits; H = A holding time violation has occurred; IL = RPD exceeds laboratory control limit; LCS=Lab Control Spike; LCSD=Lab Control Spike Duplicate; MS=Matrix Spike; MSD=Matrix Spike Duplicate; PR=percent recovery; RPD=relative percent difference)

Station Name	Sample Date	Sample Time	Collection Method	Aldicarb	Captan
Gilsizer Slough at S. Township Rd	01/15/06	8:20	Grab	<0.01 (H)	<0.05 (H)
Live Oak Slough at Nuestro Road	01/15/06	10:41	FieldBlank	<0.01 (H)	<0.05 (H)
Laboratory QA Samples	01/15/06	0:00	LabBlank	<0.01 (H)	<0.05 (H)
Laboratory QA Samples	01/20/06	0:00	LCS	0.228 PR 114 (H)	0.385 PR 38.5 (EUM,H)
Laboratory QA Samples	01/20/06	0:00	LCSD	0.196 PR 98.2, RPD 15 (H)	0.458 PR 45.8, RPD 17 (EUM,H)
Laboratory QA Samples	01/20/06	0:00	LCS	0.209 PR 105 (H)	0.514 PR 51.4 (EUM,H)
Laboratory QA Samples	01/20/06	0:00	LCSD	0.215 PR 108, RPD 2.9 (H)	0.502 PR 50.2, RPD 2.2 (EUM,H)
Laboratory QA Samples	01/20/06	0:00	LabBlank	<0.01 (H)	<0.05 (H)
Angel Canal/Commanche Cr. at Crouch Ave	02/28/06	13:20	Grab	<0.01	<0.05
Angel Canal/Commanche Cr. at Crouch Ave	02/28/06	13:29	MS	0.182 PR 90.9	0.377 PR 37.7 (GB)
Angel Canal/Commanche Cr. at Crouch Ave	02/28/06	13:29	MSD	0.155 PR 77.4, RPD 16	0.337 PR 33.7, RPD 11 (GB)
Laboratory QA Samples	03/08/06	0:00	LCS	0.153 PR 76.7	0.356 PR 35.6 (EUM)
Laboratory QA Samples	03/08/06	0:00	LCS	0.143 PR 71.6	0.309 PR 30.9 (EUM)
Laboratory QA Samples	03/08/06	0:00	LabBlank	<0.01	<0.05
Laboratory QA Samples	03/08/06	0:00	LabBlank	<0.01	<0.05
Laboratory QA Samples	03/09/06	0:00	LCS	0.154 PR 77.2	0.375 PR 37.5 (EUM)

Table 9a. Summary of quality control data for selected carbamate pesticides, the fungicide captan, and the herbicides diuron and linuron in samples from the Sacramento River Basin *(continued).*

Station Name	Sample Date	Sample Time	Collection Method	Carbaryl	Carbofuran
Gilsizer Slough at S. Township Rd	01/15/06	8:20	Grab	<0.01 (H)	<0.01 (H)
Live Oak Slough at Nuestro Road	01/15/06	10:41	FieldBlank	<0.01 (H)	<0.01 (H)
Laboratory QA Samples	01/15/06	0:00	LabBlank	<0.01 (H)	<0.01 (H)
Laboratory QA Samples	01/20/06	0:00	LCS	0.189 PR 94.3 (H)	0.216 PR 108 (H)
Laboratory QA Samples	01/20/06	0:00	LCSD	0.209 PR 104, RPD 10 (H)	0.236 PR 118, RPD 8.9 (H)
Laboratory QA Samples	01/20/06	0:00	LCS	0.220 PR 110 (H)	0.208 PR 104 (H)
Laboratory QA Samples	01/20/06	0:00	LCSD	0.234 PR 117, RPD 5.9 (H)	0.205 PR 103, RPD 1.5 (H)
Laboratory QA Samples	01/20/06	0:00	LabBlank	<0.01 (H)	<0.01 (H)
Angel Canal/Commanche Cr. at Crouch Ave	02/28/06	13:20	Grab	<0.01	<0.01
Angel Canal/Commanche Cr. at Crouch Ave	02/28/06	13:29	MS	0.165 PR 82.5	0.185 PR 92.5
Angel Canal/Commanche Cr. at Crouch Ave	02/28/06	13:29	MSD	0.177 PR 88.3, RPD 7.0	0.168 PR 84, RPD 9.6
Laboratory QA Samples	03/08/06	0:00	LCS	0.21 PR 105	0.164 PR 81.9
Laboratory QA Samples	03/08/06	0:00	LCS	0.138 PR 68.9 (EUM)	0.157 PR 78.5
Laboratory QA Samples	03/08/06	0:00	LabBlank	<0.01	<0.01
Laboratory QA Samples	03/08/06	0:00	LabBlank	<0.01	<0.01
Laboratory QA Samples	03/09/06	0:00	LCS	0.182 PR 90.9	0.172 PR 86

Table 9a. Summary of quality control data for selected carbamate pesticides, the fungicide captan, and the herbicides diuron and linuron in samples from the Sacramento River Basin *(continued).*

Station Name	Sample Date	Sample Time	Collection Method	Diuron	Linuron
Gilsizer Slough at S. Township Rd	01/15/06	8:20	Grab	0.66 (H)	<0.002 (H)
Live Oak Slough at Nuestro Road	01/15/06	10:41	FieldBlank	<0.002 (H)	<0.002 (H)
Laboratory QA Samples	01/15/06	0:00	LabBlank	<0.002 (H)	<0.002 (H)
Laboratory QA Samples	01/20/06	0:00	LCS	0.127 PR 127 (EUM,H,IL)	0.084 PR 84.0 (H)
Laboratory QA Samples	01/20/06	0:00	LCSD	0.084 PR 83.8, RPD 41 (H,IL)	0.081 PR 81.3, RPD 3.3 (H)
Laboratory QA Samples	01/20/06	0:00	LCS	0.071 PR 71.2 (H,IL)	0.078 PR 77.8 (H)
Laboratory QA Samples	01/20/06	0:00	LCSD	0.102 PR 102, RPD 36 (H,IL)	0.071 PR 70.8, RPD 9.4 (H)
Laboratory QA Samples	01/20/06	0:00	LabBlank	<0.002 (H)	<0.002 (H)
Angel Canal/Commanche Cr. at Crouch Ave	02/28/06	13:20	Grab	2.54	<0.002
Angel Canal/Commanche Cr. at Crouch Ave	02/28/06	13:29	MS	1.45 PR 1450 (BB,GB)	0.103 PR 103
Angel Canal/Commanche Cr. at Crouch Ave	02/28/06	13:29	MSD	1.25 PR 1250, RPD 14 (BB,GB)	0.086 PR 86.3, RPD 18
Laboratory QA Samples	03/08/06	0:00	LCS	0.105 PR 105	0.089 PR 88.7
Laboratory QA Samples	03/08/06	0:00	LCS	0.081 PR 80.6	0.113 PR 113
Laboratory QA Samples	03/08/06	0:00	LabBlank	<0.002	<0.002
Laboratory QA Samples	03/08/06	0:00	LabBlank	<0.002	<0.002
Laboratory QA Samples	03/09/06	0:00	LCS	0.094 PR 94	0.103 PR 103

Table 9a. Summary of quality control data for selected carbamate pesticides, the fungicide captan, and the herbicides diuron and linuron in samples from the Sacramento River Basin *(continued).*

StationName	Sample Date	Sample Time	Collection Method	Methiocarb	Methomyl
Gilsizer Slough at S. Township Rd	01/15/06	8:20	Grab	<0.05 (H)	<0.01 (H)
Live Oak Slough at Nuestro Road	01/15/06	10:41	FieldBlank	<0.05 (H)	<0.01 (H)
Laboratory QA Samples	01/15/06	0:00	LabBlank	<0.05 (H)	<0.01 (H)
Laboratory QA Samples	01/20/06	0:00	LCS	0.415 PR 104 (H)	0.211 PR 105 (H)
Laboratory QA Samples	01/20/06	0:00	LCSD	0.396 PR 99.0, RPD 4.7 (H)	0.165 PR 82.6, RPD 24 (H)
Laboratory QA Samples	01/20/06	0:00	LCS	0.301 PR 75.2 (H)	0.202 PR 101 (H)
Laboratory QA Samples	01/20/06	0:00	LCSD	0.322 PR 80.6, RPD 6.9 (H)	0.228 PR 114, RPD 12 (H)
Laboratory QA Samples	01/20/06	0:00	LabBlank	<0.05 (H)	<0.01 (H)
Angel Canal/Commanche Cr. at Crouch Ave	02/28/06	13:20	Grab	<0.05	<0.01
Angel Canal/Commanche Cr. at Crouch Ave	02/28/06	13:29	MS	0.337 PR 84.3	0.182 PR 90.9
Angel Canal/Commanche Cr. at Crouch Ave	02/28/06	13:29	MSD	0.306 PR 76.5, RPD 9.6	0.206 PR 103, RPD 12
Laboratory QA Samples	03/08/06	0:00	LCS	0.283 PR 70.9	0.201 PR 100
Laboratory QA Samples	03/08/06	0:00	LCS	0.315 PR 78.7	0.196 PR 98.2
Laboratory QA Samples	03/08/06	0:00	LabBlank	<0.05	<0.01
Laboratory QA Samples	03/08/06	0:00	LabBlank	<0.05	<0.01
Laboratory QA Samples	03/09/06	0:00	LCS	0.383 PR 95.6	0.165 PR 82.6

Table 9b. Summary of quality control data for selected carbamate pesticides, the fungicide captan, and the herbicides diuron and linuron in samples from the Sacramento/San Joaquin Delta Basin.

(All concentrations are in parts per billion (ppb); BB = Sample > 4x spike concentration; EUM = LCS is outside the acceptance limits; GB = Matrix spike recovery not within control limits; H = A holding time violation has occurred; IL = RPD exceeds laboratory control limit; LCS=Lab Control Spike; LCSD=Lab Control Spike Duplicate; MS=Matrix Spike; MSD=Matrix Spike Duplicate; PR=percent recovery; RPD=relative percent difference)

Station Name	Sample Date	Sample Time	Collection Method	Aldicarb	Captan
Mormon Slough at Copperopolis Rd	01/15/06	10:30	Grab	<0.01 (H)	<0.05 (H)
Mormon Slough at Copperopolis Rd	01/15/06	10:31	FieldBlank	<0.01 (H)	<0.05 (H)
Laboratory QA Samples	01/15/06	0:00	LabBlank	<0.01 (H)	<0.05 (H)
Laboratory QA Samples	01/20/06	0:00	LCS	0.228 PR 114 (H)	0.385 PR 38.5 (EUM,H)
Laboratory QA Samples	01/20/06	0:00	LCSD	0.196 PR 98.2, RPD 15 (H)	0.458 PR 45.8, RPD 17 (EUM,H)
Laboratory QA Samples	01/20/06	0:00	LCS	0.209 PR 105 (H)	0.514 PR 51.4 (EUM,H)
Laboratory QA Samples	01/20/06	0:00	LCSD	0.215 PR 108, RPD 2.9 (H)	0.502 PR 50.2, RPD 2.2 (EUM,H)
Laboratory QA Samples	01/20/06	0:00	LabBlank	<0.01 (H)	<0.05 (H)
Lone Tree Creek at Austin Road	02/28/06	16:40	Grab	<0.01	<0.05
Lone Tree Creek at Austin Road	02/28/06	16:49	MS	0.135 PR 67.4 (GB)	0.379 PR 37.9 (GB)
Lone Tree Creek at Austin Road	02/28/06	16:49	MSD	0.157 PR 78.4, RPD 15	0.427 PR 42.7, RPD 12 (GB)
Laboratory QA Samples	03/08/06	0:00	LCS	0.153 PR 76.7	0.356 PR 35.6 (EUM)
Laboratory QA Samples	03/08/06	0:00	LCS	0.143 PR 71.6	0.309 PR 30.9 (EUM)
Laboratory QA Samples	03/08/06	0:00	LabBlank	<0.01	<0.05
Laboratory QA Samples	03/08/06	0:00	LabBlank	<0.01	<0.05
Laboratory QA Samples	03/09/06	0:00	LCS	0.154 PR 77.2	0.375 PR 37.5 (EUM)

Table 9b. Summary of quality control data for selected carbamate pesticides, the fungicide captan, and the herbicides diuron and linuron in samples from the Sacramento/San Joaquin Delta Basin *(continued).*

Station Name	Sample Date	Sample Time	Collection Method	Carbaryl	Carbofuran
Mormon Slough at Copperopolis Rd	01/15/06	10:30	Grab	<0.01 (H)	<0.01 (H)
Mormon Slough at Copperopolis Rd	01/15/06	10:31	FieldBlank	<0.01 (H)	<0.01 (H)
Laboratory QA Samples	01/15/06	0:00	LabBlank	<0.01 (H)	<0.01 (H)
Laboratory QA Samples	01/20/06	0:00	LCS	0.189 PR 94.3 (H)	0.216 PR 108 (H)
Laboratory QA Samples	01/20/06	0:00	LCSD	0.209 PR 104, RPD 10 (H)	0.236 PR 118, RPD 8.9 (H)
Laboratory QA Samples	01/20/06	0:00	LCS	0.220 PR 110 (H)	0.208 PR 104 (H)
Laboratory QA Samples	01/20/06	0:00	LCSD	0.234 PR 117, RPD 5.9 (H)	0.205 PR 103, RPD 1.5 (H)
Laboratory QA Samples	01/20/06	0:00	LabBlank	<0.01 (H)	<0.01 (H)
Lone Tree Creek at Austin Road	02/28/06	16:40	Grab	<0.01	<0.01
Lone Tree Creek at Austin Road	02/28/06	16:49	MS	0.204 PR 102	0.218 PR 109
Lone Tree Creek at Austin Road	02/28/06	16:49	MSD	0.194 PR 96.8, RPD 5.0	0.21 PR 105, RPD 3.7
Laboratory QA Samples	03/08/06	0:00	LCS	0.21 PR 105	0.164 PR 81.9
Laboratory QA Samples	03/08/06	0:00	LCS	0.138 PR 68.9 (EUM)	0.157 PR 78.5
Laboratory QA Samples	03/08/06	0:00	LabBlank	<0.01	<0.01
Laboratory QA Samples	03/08/06	0:00	LabBlank	<0.01	<0.01
Laboratory QA Samples	03/09/06	0:00	LCS	0.182 PR 90.9	0.172 PR 86

Table 9b. Summary of quality control data for selected carbamate pesticides, the fungicide captan, and the herbicides diuron and linuron in samples from the Sacramento/San Joaquin Delta Basin *(continued).*

Station Name	Sample Date	Sample Time	Collection Method	Diuron	Linuron
Mormon Slough at Copperopolis Rd	01/15/06	10:30	Grab	<0.002 (H)	<0.002 (H)
Mormon Slough at Copperopolis Rd	01/15/06	10:31	FieldBlank	<0.002 (H)	<0.002 (H)
Laboratory QA Samples	01/15/06	0:00	LabBlank	<0.002 (H)	<0.002 (H)
Laboratory QA Samples	01/20/06	0:00	LCS	0.127 PR 127 (EUM,H,IL)	0.084 PR 84.0 (H)
Laboratory QA Samples	01/20/06	0:00	LCSD	0.084 PR 83.8, RPD 41 (H,IL)	0.081 PR 81.3, RPD 3.3 (H)
Laboratory QA Samples	01/20/06	0:00	LCS	0.07 PR 71.2 (H,IL)	0.078 PR 77.8 (H)
Laboratory QA Samples	01/20/06	0:00	LCSD	0.102 PR 102, RPD 36 (H,IL)	0.071 PR 70.8, RPD 9.4 (H)
Laboratory QA Samples	01/20/06	0:00	LabBlank	<0.002 (H)	<0.002 (H)
Lone Tree Creek at Austin Road	02/28/06	16:40	Grab	0.7	<0.002
Lone Tree Creek at Austin Road	02/28/06	16:49	MS	0.454 PR 454 (BB,GB)	0.106 PR 106
Lone Tree Creek at Austin Road	02/28/06	16:49	MSD	0.441 PR 441, RPD 2.9 (BB,GB)	0.089 PR 89.3, RPD 17
Laboratory QA Samples	03/08/06	0:00	LCS	0.105 PR 105	0.089 PR 88.7
Laboratory QA Samples	03/08/06	0:00	LCS	0.081 PR 80.6	0.113 PR 113
Laboratory QA Samples	03/08/06	0:00	LabBlank	<0.002	<0.002
Laboratory QA Samples	03/08/06	0:00	LabBlank	<0.002	<0.002
Laboratory QA Samples	03/09/06	0:00	LCS	0.094 PR 94	0.103 PR 103

Table 9b. Summary of quality control data for selected carbamate pesticides, the fungicide captan, and the herbicides diuron and linuron in samples from the Sacramento/San Joaquin Delta Basin *(continued).*

Station Name	Sample Date	Sample Time	Collection Method	Methiocarb	Methomyl
Mormon Slough at Copperopolis Rd	01/15/06	10:30	Grab	<0.05 (H)	<0.01 (H)
Mormon Slough at Copperopolis Rd	01/15/06	10:31	FieldBlank	<0.05 (H)	<0.01 (H)
Laboratory QA Samples	01/15/06	0:00	LabBlank	<0.05 (H)	<0.01 (H)
Laboratory QA Samples	01/20/06	0:00	LCS	0.415 PR 104 (H)	0.211 PR 105 (H)
Laboratory QA Samples	01/20/06	0:00	LCSD	0.396 PR 99.0, RPD 4.7 (H)	0.165 PR 82.6, RPD 24 (H)
Laboratory QA Samples	01/20/06	0:00	LCS	0.301 PR 75.2 (H)	0.202 PR 101 (H)
Laboratory QA Samples	01/20/06	0:00	LCSD	0.32 PR 80.6, RPD 6.9 (H)	0.228 PR 114, RPD 12 (H)
Laboratory QA Samples	01/20/06	0:00	LabBlank	<0.05 (H)	<0.01 (H)
Lone Tree Creek at Austin Road	02/28/06	16:40	Grab	<0.05	<0.01
Lone Tree Creek at Austin Road	02/28/06	16:49	MS	0.326 PR 81.5	0.197 PR 98.5
Lone Tree Creek at Austin Road	02/28/06	16:49	MSD	0.322 PR 80.4, RPD 1.2	0.203 PR 101, RPD 3.0
Laboratory QA Samples	03/08/06	0:00	LCS	0.283 PR 70.9	0.201 PR 100
Laboratory QA Samples	03/08/06	0:00	LCS	0.315 PR 78.7	0.196 PR 98.2
Laboratory QA Samples	03/08/06	0:00	LabBlank	<0.05	<0.01
Laboratory QA Samples	03/08/06	0:00	LabBlank	<0.05	<0.01
Laboratory QA Samples	03/09/06	0:00	LCS	0.383 PR 95.6	0.165 PR 82.6

Table 9c. Summary of quality control data for selected carbamate pesticides, the fungicide captan, and the herbicides diuron and linuron in samples from the San Joaquin River Basin.

(All concentrations are in parts per billion (ppb); BB = Sample > 4x spike concentration; EUM = LCS is outside the acceptance limits; GB = Matrix spike recovery not within control limits; LCS=Lab Control Spike; MS=Matrix Spike; MSD=Matrix Spike Duplicate; PR=percent recovery; RPD=relative percent difference)

Station Name	Sample Date	Sample Time	Collection Method	Aldicarb	Captan
San Joaquin River at Lander Ave	02/28/06	11:10	Grab	<0.01	<0.05
San Joaquin River at Lander Ave	02/28/06	11:19	MS	0.124 PR 62 (GB)	0.36 PR 36 (GB)
San Joaquin River at Lander Ave	02/28/06	11:19	MSD	0.143 PR 71.4, RPD 14	0.36 PR 36, RPD 0.0 (GB)
Orestimba Creek at Kilburn Road	03/01/06	11:30	Grab	<0.01	<0.05
Del Puerto Creek at Vineyard Ave	02/28/06	9:33	FieldDup	<0.01	<0.05
Laboratory QA Samples	03/08/06	0:00	LCS	0.153 PR 76.7	0.356 PR 35.6 (EUM)
Laboratory QA Samples	03/08/06	0:00	LCS	0.143 PR 71.6	0.309 PR 30.9 (EUM)
Laboratory QA Samples	03/08/06	0:00	LabBlank	<0.01	<0.05
Laboratory QA Samples	03/08/06	0:00	LabBlank	<0.01	<0.05
Laboratory QA Samples	03/09/06	0:00	LCS	0.154 PR 77.2	0.375 PR 37.5 (EUM)

Table 9c. Summary of quality control data for selected carbamate pesticides, the fungicide captan, and the herbicides diuron and linuron in samples from the San Joaquin River Basin *(continued)*.

Station Name	Sample Date	Sample Time	Collection Method	Carbaryl	Carbofuran
San Joaquin River at Lander Ave	02/28/06	11:10	Grab	<0.01	<0.01
San Joaquin River at Lander Ave	02/28/06	11:19	MS	0.197 PR 98.6	0.181 PR 90.7
San Joaquin River at Lander Ave	02/28/06	11:19	MSD	0.222 PR 111, RPD 12	0.211 PR 106, RPD 15
Orestimba Creek at Kilburn Road	03/01/06	11:30	Grab	<0.01	<0.01
Del Puerto Creek at Vineyard Ave	02/28/06	9:33	FieldDup	<0.01	<0.01
Laboratory QA Samples	03/08/06	0:00	LCS	0.21 PR 105	0.164 PR 81.9
Laboratory QA Samples	03/08/06	0:00	LCS	0.138 PR 68.9 (EUM)	0.157 PR 78.5
Laboratory QA Samples	03/08/06	0:00	LabBlank	<0.01	<0.01
Laboratory QA Samples	03/08/06	0:00	LabBlank	<0.01	<0.01
Laboratory QA Samples	03/09/06	0:00	LCS	0.182 PR 90.9	0.172 PR 86

Table 9c. Summary of quality control data for selected carbamate pesticides, the fungicide captan, and the herbicides diuron and linuron in samples from the San Joaquin River Basin *(continued)*.

Station Name	Sample Date	Sample Time	Collection Method	Diuron	Linuron
San Joaquin River at Lander Ave	02/28/06	11:10	Grab	1.4	<0.002
San Joaquin River at Lander Ave	02/28/06	11:19	MS	0.98 PR 980 (BB,GB)	0.088 PR 88.2
San Joaquin River at Lander Ave	02/28/06	11:19	MSD	0.776 PR 776, RPD 23 (BB,GB)	0.079 PR 79, RPD 11
Orestimba Creek at Kilburn Road	03/01/06	11:30	Grab	2.2	<0.002
Del Puerto Creek at Vineyard Ave	02/28/06	9:33	FieldDup	36	<0.002
Laboratory QA Samples	03/08/06	0:00	LCS	0.105 PR 105	0.089 PR 88.7
Laboratory QA Samples	03/08/06	0:00	LCS	0.081 PR 80.6	0.113 PR 113
Laboratory QA Samples	03/08/06	0:00	LabBlank	<0.002	<0.002
Laboratory QA Samples	03/08/06	0:00	LabBlank	<0.002	<0.002
Laboratory QA Samples	03/09/06	0:00	LCS	0.094 PR 94	0.103 PR 103

Table 9c. Summary of quality control data for selected carbamate pesticides, the fungicide captan, and the herbicides diuron and linuron in samples from the San Joaquin River Basin *(continued)*.

Station Name	Sample Date	Sample Time	Collection Method	Methiocarb	Methomyl
San Joaquin River at Lander Ave	02/28/06	11:10	Grab	<0.05	<0.01
San Joaquin River at Lander Ave	02/28/06	11:19	MS	0.431 PR 108	0.213 PR 107
San Joaquin River at Lander Ave	02/28/06	11:19	MSD	0.426 PR 106, RPD 1.2	0.183 PR 91.4, RPD 15
Orestimba Creek at Kilburn Road	03/01/06	11:30	Grab	<0.05	<0.01
Del Puerto Creek at Vineyard Ave	02/28/06	9:33	FieldDup	<0.05	<0.01
Laboratory QA Samples	03/08/06	0:00	LCS	0.283 PR 70.9	0.201 PR 100
Laboratory QA Samples	03/08/06	0:00	LCS	0.315 PR 78.7	0.196 PR 98.2
Laboratory QA Samples	03/08/06	0:00	LabBlank	<0.05	<0.01
Laboratory QA Samples	03/08/06	0:00	LabBlank	<0.05	<0.01
Laboratory QA Samples	03/09/06	0:00	LCS	0.383 PR 95.6	0.165 PR 82.6

Table 10. Summary of quality control data for selected herbicides and the acaricide propargite in samples from the San Joaquin River Basin.
(All concentrations are in parts per billion (ppb); EUM=LCS is outside the acceptance limits; LCS=Lab Control Spike; LCSD=Lab Control Spike Duplicate; NA=not applicable; PR=percent recovery; RPD=relative percent difference)

Station Name	Sample Date	Sample Time	Collection Method	Oxyfluorfen	Propanil
San Joaquin River at Patterson	01/14/06	10:40	Grab	<0.02	<0.05
San Joaquin River at Patterson	01/14/06	10:43	FieldDup	<0.02 RPD NA	<0.05 RPD NA
San Joaquin River at Patterson	01/15/06	10:20	Grab	<0.02	<0.05
San Joaquin River at Patterson	01/15/06	10:21	FieldBlank	<0.02	<0.05
Laboratory QA Samples	01/15/06	0:00	LabBlank	<0.02	<0.05
Laboratory QA Samples	01/18/06	0:00	LabBlank	<0.02	<0.05
Laboratory QA Samples	01/20/06	0:00	LCS	0.621 PR 124	1.357 PR 136 (EUM)
Laboratory QA Samples	01/20/06	0:00	LCSD	0.6 PR 120, RPD 3.4	1.124 PR 112, RPD 19
Laboratory QA Samples	01/20/06	0:00	LCS	0.378 PR 75.5	0.917 PR 91.7
Laboratory QA Samples	01/20/06	0:00	LCSD	0.404 PR 80.7, RPD 6.7	0.895 PR 89.5, RPD 2.5

Station Name	Sample Date	Sample Time	Collection Method	Propargite	Trifluralin
San Joaquin River at Patterson	01/14/06	10:40	Grab	<0.2	<0.05
San Joaquin River at Patterson	01/14/06	10:43	FieldDup	<0.2 RPD NA	<0.05 RPD NA
San Joaquin River at Patterson	01/15/06	10:20	Grab	<0.2	<0.05
San Joaquin River at Patterson	01/15/06	10:21	FieldBlank	<0.2	<0.05
Laboratory QA Samples	01/15/06	0:00	LabBlank	<0.2	<0.05
Laboratory QA Samples	01/18/06	0:00	LabBlank	<0.2	<0.05
Laboratory QA Samples	01/20/06	0:00	LCS	4.705 PR 94.1	1.327 PR 133 (EUM)
Laboratory QA Samples	01/20/06	0:00	LCSD	4.225 PR 84.5, RPD 11	1.235 PR 124, RPD 7.2
Laboratory QA Samples	01/20/06	0:00	LCS	5.05 PR 101	1.073 PR 107
Laboratory QA Samples	01/20/06	0:00	LCSD	4.805 PR 96.1, RPD 5.0	1.139 PR 114, RPD 6.0

Table 11. Summary of quality control data for the herbicide paraquat in samples from the San Joaquin River Basin.
(All concentrations are in parts per billion (ppb); NA=not applicable; PR=percent recovery; RPD=relative percent difference)

Station Name	Sample Date	Sample Time	Collection Method	Lab Replicate	Paraquat dichloride
Merced River @ River Road	01/14/06	11:40	Integrated	1.00	<0.02
Merced River @ River Road	01/14/06	11:49	MS	1.00	0.423 PR 84.5
Merced River @ River Road	01/14/06	11:49	MS	2.00	0.388 PR 77.6, RPD 8.5
Merced River @ River Road	01/14/06	11:40	Integrated	2.00	<0.02 RPD NA
Laboratory QA Samples	01/20/06	0:00	LCS	1.00	0.423 PR 84.5
Laboratory QA Samples	01/20/06	0:00	LabBlank	1.00	<0.02
Merced River @ River Road	02/28/06	10:30	Integrated	1.00	<0.02
Merced River @ River Road	02/28/06	10:31	FieldBlank	1.00	<0.02
Merced River @ River Road	02/28/06	10:31	FieldBlank	2.00	<0.02 RPD NA
SJR @ Lander Avenue	03/01/06	13:20	Grab	1.00	<0.02
SJR @ Lander Avenue	03/01/06	13:23	FieldDup	1.00	<0.02 RPD NA
Laboratory QA Samples	03/07/06	0:00	LCS	1.00	0.384 PR 76.8
Laboratory QA Samples	03/07/06	0:00	LCS	2.00	0.388 PR 77.6, RPD 1.0
Laboratory QA Samples	03/07/06	0:00	LabBlank	1.00	<0.02

Table 12a. Summary of water quality parameters measured in the Sacramento River Basin during the first sampled storm event.

Station Name	Station Code	Sample Date	Sample Time	Water Temp (°C)	pH	Specific Conductivity (µg/L)
Gilsizer Slough at South Township Road	520LSAC23	14/Jan/2006	08:30	11.9	7.54	674
Gilsizer Slough at South Township Road	520LSAC23	15/Jan/2006	08:20	10.4	7.53	654
Live Oak Slough at Nuestro Road	520LSAC24	15/Jan/2006	10:40	10.8	7.73	355
Live Oak Slough at Nuestro Road	520LSAC24	14/Jan/2006	11:40	12.9	7.83	351
Morrison Slough at Luckehe Road	520LSAC25	14/Jan/2006	12:30	14.2	7.46	548
Morrison Slough at Luckehe Road	520LSAC25	15/Jan/2006	11:20	13.0	7.41	551
Angel Canal/Comanche Creek at Crouch Avenue	520LSAC26	14/Jan/2006	13:40	9.7	7.42	86.7
Angel Canal/Comanche Creek at Crouch Avenue	520LSAC26	15/Jan/2006	12:20	8.4	7.54	90.4
Sacramento River at Freeport	519LSAC52	14/Jan/2006	9:40	9.4	7.27	132.2
Sacramento River at Alamar	519LSAC55	14/Jan/2006	8:40	9.4	7.35	138

Table 12b. Summary of water quality parameters measured in the Sacramento River Basin during the second sampled storm event.

Station Name	Station Code	Sample Date	Sample Time	Water Temp (°C)	pH	Specific Conductivity (µg/L)
Gilsizer Slough at South Township Road	520LSAC23	27/Feb/2006	09:20	12.1	8.39	936
Gilsizer Slough at South Township Road	520LSAC23	28/Feb/2006	09:00	11.8	7.36	150.2
Live Oak Slough at Nuestro Road	520LSAC24	27/Feb/2006	12:00	11.2	8.11	319
Live Oak Slough at Nuestro Road	520LSAC24	28/Feb/2006	11:50	12.1	7.46	238
Morrison Slough at Luckehe Road	520LSAC25	27/Feb/2006	12:40	12.5	7.77	544
Morrison Slough at Luckehe Road	520LSAC25	28/Feb/2006	12:20	12.8	7.31	336
Angel Canal/Comanche Creek at Crouch Avenue	520LSAC26	27/Feb/2006	13:40	11.6	7.78	59.8
Angel Canal/Comanche Creek at Crouch Avenue	520LSAC26	28/Feb/2006	13:20	11.8	7.48	88.3
Sacramento River at Freeport	519LSAC52	27/Feb/2006	15:00	11.2	8.44	133.1
Sacramento River at Freeport	519LSAC52	28/Feb/2006	14:00	11.5	7.93	136
Sacramento River at Freeport	519LSAC52	01/Mar/2006	14:40	11	8.14	106.3
Sacramento River at Freeport	519LSAC52	02/Mar/2006	15:50	10.7	7.59	124.4
Sacramento River at Freeport	519LSAC52	03/Mar/2006	11:40	9.5	7.38	115.1
Sacramento River at Freeport	519LSAC52	04/Mar/2006	12:30	10.2	7.1	137.8
Sacramento River at Freeport	519LSAC52	05/Mar/2006	11:00	9.5	7.34	125.5

Table 12b. Summary of water quality parameters measured in the Sacramento River Basin during the second sampled storm event *(continued)*

Station Name	Station Code	Sample Date	Sample Time	Water Temp (°C)	pH	Specific Conductivity (µg/L)
Sacramento River at Alamar	519LSAC55	27/Feb/2006	13:50	11.1	8.36	122.1
Sacramento River at Alamar	519LSAC55	28/Feb/2006	13:20	11.3	7.84	130.7
Sacramento River at Alamar	519LSAC55	01/Mar/2006	13:50	10.7	8.04	97.8
Sacramento River at Alamar	519LSAC55	02/Mar/2006	13:50	9.5	7.24	106.9
Sacramento River at Alamar	519LSAC55	03/Mar/2006	10:50	9.2	7.21	101.5
Sacramento River at Alamar	519LSAC55	04/Mar/2006	12:00	9.6	7.06	114.4
Sacramento River at Alamar	519LSAC55	05/Mar/2006	10:20	9.1	7.24	111.7
Sacramento River at Alamar	519LSAC55	06/Mar/2006	10:10	8.8	7.3	101.5

Table 13a. Summary of water quality parameters measured in the San Joaquin River Basin during the first sampled storm event.

Station Name	Station Code	Sample Date	Sample Time	Water Temp (°C)	pH	Specific Conductivity (µg/L)
Merced River at River Road	535MER546	14/Jan/2006	11:40	11.4	8.14	46.3
Merced River at River Road	535MER546	15/Jan/2006	11:10	11.3	7.53	46.5
San Joaquin River at Patterson	541STC507	14/Jan/2006	10:40	11.7	7.33	541
San Joaquin River at Patterson	541STC507	15/Jan/2006	10:20	11.6	7.14	535
Orestimba Creek at Kilburn Rd	541STC518	14/Jan/2006	11:10	11.4	7.77	476
Orestimba Creek at Kilburn Rd	541STC518	15/Jan/2006	10:40	8.9	7.39	448

Table 13b. Summary of water quality parameters measured in the San Joaquin River Basin during the second sampled storm event.

Station Name	Station Code	Sample Date	Sample Time	Water Temp (°C)	pH	Specific Conductivity (µg/L)
Merced River at River Road	535MER546	28/Feb/2006	10:30	16.5	7.35	88.4
Merced River at River Road	535MER546	01/Mar/2006	12:10	13.1	7.52	87.3
San Joaquin River at Lander Avenue	541MER522	28/Feb/2006	11:10	14.5	8.67	1082
San Joaquin River at Lander Avenue	541MER522	01/Mar/2006	13:20	14.1	8.94	851
Orestimba Creek at Kilburn Road	541STC518	28/Feb/2006	10:00	13.4	8.05	507
Orestimba Creek at Kilburn Road	541STC518	01/Mar/2006	11:30	11.9	8.04	554
Del Puerto Creek at Vineyard Road	541STC516	28/Feb/2006	09:30	11.8	8.53	955
Del Puerto Creek at Vineyard Road	541STC516	01/Mar/2006	10:50	9.8	8.64	822

Table 14a. Summary of water quality parameters measured in the Sacramento/San Joaquin Delta Basin during the first sampled storm event.

Station Name	Station Code	Sample Date	Sample Time	Water Temp (°C)	pH	Specific Conductivity (µg/L)
Pixley Slough at Ham Lane	531DEL501	14/Jan/2006	10:50	10.4	7.02	76.7
Pixley Slough at Ham Lane	531DEL501	15/Jan/2006	9:40	6.7	6.67	90
Mormon Slough at Copperopolis Road	531DEL502	14/Jan/2006	11:30	10.6	7.96	185
Mormon Slough at Copperopolis Road	531DEL502	15/Jan/2006	10:30	9.5	7.7	196
Littlejohn Creek at Jack Tone Road	531DEL503	14/Jan/2006	12:00	10.5	7.62	215
Littlejohn Creek at Jack Tone Road	531DEL503	15/Jan/2006	10:50	9.5	7.59	237
Lone Tree Creek at Austin Road	531SJC503	14/Jan/2006	12:30	11.1	7.97	476
Lone Tree Creek at Austin Road	531SJC503	15/Jan/2006	11:20	6.9	7.84	505

Table 14b. Summary of water quality parameter measured in the Sacramento/San Joaquin Delta Basin during the second sampled storm event

Station Name	Station Code	Sample Date	Sample Time	Water Temp (°C)	pH	Specific Conductivity (µg/L)
Pixley Slough at Ham Lane	531DEL501	28/Feb/2006	15:10	16.5	8.97	108.2
Pixley Slough at Ham Lane	531DEL501	01/Mar/2006	16:00	17.9	8.36	101.3
Mormon Slough at Copperopolis Road	531DEL502	28/Feb/2006	15:50	14.5	9.11	217
Mormon Slough at Copperopolis Road	531DEL502	01/Mar/2006	16:30	14.8	8.96	199
Littlejohn Creek at Jack Tone Road	531DEL503	28/Feb/2006	16:10	14.1	8.79	223
Littlejohn Creek at Jack Tone Road	531DEL503	01/Mar/2006	16:50	14	8.13	249
Lone Tree Creek at Austin Road	531SJC503	28/Feb/2006	16:40	16.4	9.16	549
Lone Tree Creek at Austin Road	531SJC503	01/Mar/2006	17:10	16.4	8.85	586

Appendix 1: California Department of Fish and Game analyzing method for Diquat and Paraquat in water by LC-MSD

Diquat and Paraquat in water (C_8 cartridge) by LC-MSD

1.0 Reagent and Buffer Solutions

a. Conditioning solution A: Dissolve 0.500 g of cetyl trimethyl ammonium bromide and 5 ml of concentrated ammonium hydroxide in 500 ml of deionized water and dilute to 1000 ml in volumetric flask.

b. Conditioning solution B: Dissolve 10.0 g of 1-hexanesul-fonic acid, sodium salt and 10 ml of concentrated ammonium hydroxide in 250 ml deionized water and dilute to 500 ml in volumetric flask.

c. Sodium hydroxide solution, 10% w/v: Dissolve 50 g of sodium hydroxide into 400 ml of deionized water and dilute to 500 ml in volumetric flask.

d. Hydrochloric acid, 10% v/v: Add 50 ml of concentrated hydrochloric acid to 400 ml of DI water and dilute to 500 ml in a volumetric flask.

e. Disk or cartridge eluting solution: Add 13.5 ml of orthophosphoric acid and 10.3 ml of diethylamine to 500 ml of deionized water and dilute to 1000 ml in volumetric flask.

f. Ion-pair concentrate: Dissolve 3.75 g of 1-hexanesul-fonic acid in 15 ml of the disk or cartridge eluting solution and dilute to 25 ml in volumetric flask with the disk eluting solution.

g. Buffer solution: Dissolve 3.5 ml of triethylamine and 1.0 g of 1-hexane-sulfonic acid sodium salt in 500 ml HPLC water. Adjust pH 2.5 with phosphoric acid (1.0-2.0 ml) and dilute to 1000 ml in volumetric flask. Filter first through 0.45 μm, then through 0.20 μm.

All chemical supply from Aldrich company.

2.0 Solid Phase Extraction

Before sample extraction, the C_8 extraction cartridges (Supelclean™ LC-8, 6 mL, 0.5g) must be conditioned by the following procedure.

a. Elute the following solutions through the cartridge in the stated order. Take special care not to let the column go dry. The flow rate through the cartridge should be approximately 10 ml/min.

Deionized water, 5 ml
Methanol, 5 ml
Deionized water, 5 ml
Conditioning solution A, 5 ml

Deionized water, 5 ml
Methanol, 10 ml
Deionized water, 5 ml
Conditioning solution B, 10 ml

b. Retain conditioning solution B in the C_8 cartridge to keep it activated.

c. Measure a 500 ml aliquot of the sample.

d. Filter samples through Whatman filter paper (filter # 4, 2 or 5) if necessary.

e. Immediately before extraction, adjust the pH of the sample to 10.5 ± 0.2 with 10% w/v NaOH (aq) or 10% v/v HCl (aq). It's about 23-25 drops of 10% NaOH for DI water pH 7.0

f. Filter sample through glass microfiber filter 1.2 µm.

g. Attach a 60 ml reservoir to the conditioned C_8 cartridge. Turn on the vacuum pump and adjust the flow rate to 3-6 ml/min. Filter the sample through the cartridge. DO NOT LET COLUMN GO DRY. Wash the column with 5 ml of HPLC grade methanol. Continue to draw the vacuum through the cartridge for one additional minute to dry the cartridge. Release the vacuum and discard the waste.

h. Align cartridges with 13 mm culture tubes in a dry vacuum box and add 4.5 ml of the eluting solution to the sample cartridge. Turn on the vacuum and adjust the flow rate to 1-2 ml/min.

i. Fortify the extract with 100 µL of the ion-pair concentrate. Adjust the volume to the mark with eluting solution, mix thoroughly, and seal tightly until analyzed.

j. Filter sample through 0.45 µm to the vial before analyzed.

3.0 LC-MS Conditions

Instrument: Agilent LC-MSD 1100 equipped with DAD, auto sampler, and data system.

Chromatographic Conditions

- Column: Waters Atlantis dC-18 column, 10cm x 2.1mm i.d. x 3µm
- Mobile phase A: 5mM tridecafluoroheptanoic acid (TDFHA)
- Mobile phase B: acetonitrile
- Pump parameters: isocratic A: 75% B: 25%
- Flow rate: 0.35 ml/min
- Run time: 17 minutes

- Column temperature: 36ºC
- Injection volume: 20 µL
- Diode array detector (DAD):

Signal, Bw (nm)		Reference, Bw (nm)		
308	4	400	8	Diquat
257	4	400	8	Paraquat

MS Conditions: API-ES in positive ion mode

- Drying gas flow: 12 L/min
- Drying gas temperature: 350ºC
- Nebulizer gas pressure: 40 psig
- Capillary voltage: 3000
- Fragmentor voltage: 90
- Selected ion monitoring (SIM): m/z 183.0 (Diquat), m/z 185.0 (Paraquat)
- Scan: m/z 150-250
- Threshold: 150 counts
- Gain: 2
- Step size: 0.1 amu
- Peak width: 0.1 min
- Time filter: On

	Method Detection Limit	Estimated Reporting Limit
Diquat	0.050 ug/L	0.050 ug/L
Paraquat	0.100 ug/L	0.100 ug/L