



December 10, 2013

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

Re: *Submittal of the revised 2013 Monitoring Plan Update and an addendum to the Monitoring Plan Update for Waste Discharge Requirements General Order R5-2012-0116 for Growers in the Eastern San Joaquin River Watershed*

Dear Ms. Creedon,

The East San Joaquin Water Quality Coalition (ESJWQC) is submitting a revised 2013 Monitoring Plan Update (MPU) per the Central Valley Regional Water Quality Control Board's (CVRWQB) tentative approval on October 8, 2013. The response letter from the CVRWQB included recommendations for the ESJWQC 2014 Water Year monitoring schedule. This submittal includes updates to the ESJWQC MPU, an addendum to the ESJWQC MPU that addresses the request for additional analysis/evaluation of past use and water quality data, and an updated Attachment A which is a Microsoft Excel file detailing the monitoring schedule for the 2014 Water Year. An update table (Table A) is included at the beginning of the ESJWQC MPU and details all updates made to the ESJWQC MPU since the original submission on August 1, 2013.

Listed below is a copy of the CVRWQCB recommendations from the response letter sent to the ESJWQC on October 9, 2013; the Coalition's response follows each recommendation in italics.

- I. Metals at Core sites:
 - a. Monitoring at Core sites that have not yet been fully characterized for a metal under a management plan should include at a minimum two storm and two high TSS irrigation ("2+2") events. Therefore, the proposed schedule for copper and lead should be modified to ensure that at each site at least two storm and two high TSS irrigation events are monitored (this may include months in addition to months when management plan monitoring is scheduled).
 - b. Monitoring of metals removed from a management plan can follow the "2+2" schedule.

Coalition's Response:

The Coalition updated the metals monitoring schedule in the Addendum to the 2013 MPU and within the Core Site Metals section of the revised ESWQC MPU (page 18).

- c. Figure 1 in the MPU should be edited to indicate that no evaluation of the Represented sites is required if there are no exceedances at the Core site.

Coalition's Response:



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Figure 1 in the ESJWQC MPU illustrates the monitoring strategy for Core sites only. The Represented Site Monitoring section details the criteria that initiates when a Represented site will be evaluated for possible monitoring including “an exceedance of an applied pesticide, metal or toxicity at the Core site” (page 46).

II. Management plan monitoring at represented sites:

- a. **Toxicity evaluations** - For management plans for toxicity and other constituents not applied by agriculture, documentation of information considered for evaluations to determine appropriate monitoring design should be included in future MPU reports. For example, a summary of past monitoring results with results of any Toxicity Identification Evaluations should be added. If applicable, PUR information should be considered in cases when toxicity was associated with a class of chemicals.
- b. **Prioritization of constituents** - The waste discharge requirements allow for utilizing the surface water quality prioritization process described in the Coalition’s approved management plan strategy. Under the previously approved strategy, only high-priority compounds are monitored as a part of the management plan monitoring. While this approach focuses efforts on issues that can be remedied, the management plan prioritization may have to be updated to allow sufficient monitoring to assess water quality and effectiveness of management practices with respect to all constituents under a management plan and, when warranted, for the completion of management plans for any constituents under a management plan. Discussions with the Coalition have been initiated at the quarterly management plan status update meetings to address the issue.

Coalition’s Response:

The Coalition will address this in future MPU reports.

III. Monitoring subwatersheds in a Zone due to water quality problems at the Core site:

- a. **Represented site evaluations** - No documentation and justification for the proposed monitoring has been provided for the Represented monitoring based on the identified water quality problems at the Core sites. There are multiple Represented sites that have never been monitored, and for which a monitoring schedule has been based on the management plans at the Core site in the corresponding Zone; evaluations of the potential for similar risks or threats to water quality associated with a Core site management plan parameter should have taken into account other evidence, such as pesticide use information, cropping pattern or other factors. In order to allow determination of whether the proposed represented monitoring in the 2014 water year is adequate, the Coalition should provide additional information on the evidence considered and rationale for the proposed schedule.

Coalition’s Response:

The Coalition addresses the above recommendations in the Addendum to the 2013 MPU as part of the revised ESJWQC MPU. The revised ESJWQC MPU includes updates to the Represented site monitoring schedule according to the additional evaluation of PUR data and monitoring history at each Represented site where monitoring will occur during the 2014 Water Year.

- b. **Prioritization of constituents** - Evaluations for represented monitoring based on the water quality



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problems identified at the Core sites include only high-priority constituents. In future MPU reports, when evaluating constituents under a management plan at Core sites to determine if monitoring may be required at a Represented site in the same Zone, all constituents should be considered and not limited to high priority management plan constituents. Discussions with the Coalition have been initiated at the quarterly management plan status update meetings to address the issue.

Coalition's Response:

The Coalition will address this comment in future MPU reports.

IV. Recommended changes to the proposed monitoring schedule for the 2014 water year based on the time when exceedances were observed in the past, or PUR information:

- a. Toxicity to water flea at Levee Drain @ Carpenter Rd should include monitoring in February and July based on exceedances in 2013.
- b. Toxicity to fathead minnow at Levee Drain @ Carpenter Rd should include monitoring in February based on an exceedance in 2013.
- c. January should be added to the schedule for monitoring diazinon at Miles Creek @ Reilly Rd to monitor water quality following applications in December which comprise almost two thirds of all applications in the last three years.

Coalition's Response:

The revised ESJWQC MPU includes the above updates to the MPM schedule (Table 17) and addresses the recommendations for Represented site monitoring in the Addendum.

V. Staff noted minor discrepancies in the MPU text, tables, and Attachment A. The issues below have been communicated informally, and the Coalition is aware of the needed:

- a. Results of the flow chart analysis (question 3 on p. 14 and 37) should be reconciled with the monitoring results in the corresponding tables (p. 16-17 and 40-41, respectively).
- b. The text of the MPU discusses the removal of monitoring copper at Highline Canal @ Hwy 99 from June through August, tables and attachment A should be reconciled with the schedule proposed in the narrative.
- c. Monitoring at Duck Slough @ Gurr Rd includes months of lead exceedances at a discontinued monitoring site Duck Slough @ Hwy 99 (p. 33). The text of the report does not include all required months; the correct months are included in Attachment A, and in Table A of this memorandum.
- d. Toxicity to algae at Hatch Drain @ Tuolumne Rd should include August instead of June (MPU Table 17).
- e. Monitoring proposed for lead at McCoy Lateral (MPU p. 52), while no monitoring is indicated in MPU tables and Attachment A.



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- f. Monitoring for toxicity to algae at Berenda Slough @ Avenue 18½ incorrectly lists May and June. The correct months for management plan monitoring should be May and July (MPU Table 17).
- g. Monitoring for lead at Black Rascal Creek @ Yosemite Rd incorrectly lists May and September. The correct months for management plan monitoring are April and September (MPU Table 17).

Coalition's Response:

The Coalition addressed each of the recommendations listed above (a-g) in the revised ESJWQC MPU (see Table A for where the updates occur) with the exception of comment d. Management Plan Monitoring at Hatch Drain @ Tuolumne Rd for algae toxicity does include August instead of June in the previous ESJWQC MPU revision submitted September 17, 2013. See Table A for each update made to the revised ESJWQC MPU.

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

Submitted respectfully,

PATTY NISSEN
Executive Director
East San Joaquin Water Quality Coalition

Enclosure:
ESJWQC Monitoring Plan Update
Addendum to the ESJWQC Monitoring Plan Update
Attachment A: Monitoring parameters per site table and monitoring schedule tables

Monitoring Plan Update



October 2013 – September 2014

August 1, 2013 (Revised December 10, 2013)

**Irrigated Lands Regulatory Program
Central Valley Regional Water Quality Control**

Table A. ESJWQC MPU amendments summary.

ESJWQC MPU submitted on August 1, 2013 and conditionally approved October 8, 2013 (amended on September 17, 2013 and December 10, 2013).

Item No.	Description of Update	Location, Page No.
Amended on September 17, 2013		Conditionally approved October 8, 2013
1	Core Site Monitoring	
	Figure 1: Core site monitoring flowchart updated to show Represented site evaluation can be triggered in Year 1 and Year 2 if an exceedance is observed at the Core site.	Figure 1; Page 8
	Revised Core site monitoring strategy for metals. Added Tables 3-14 and Figure 2.	Verbiage; Page 11-41 Figure 2; Page 13
2	Represented Site Monitoring	
	Updated Table 16 to be consistent with Monitoring determined by the Coalition: <ul style="list-style-type: none"> Added copper to Dry Creek @ Wellsford and Prairie Flower Drain @ Crows Landing Rd Core site monitoring. Added molybdenum and lead to the Core site management plan constituents header and Core site monitoring for molybdenum and lead for all Core sites and MPM at necessary sites. Added Hilmar Drain @ Central Ave Represented site monitoring for dimethoate. Added grey cells for all constituents; all constituents listed will be monitored during Core site monitoring. Added 'M' for diazinon and <i>S. capricornutum</i> at Miles Creek @ Reilly Rd. 	Table 16; Page 44-45
	Updated verbiage to justify no Represented site monitoring to be consistent with Table 16.	Verbiage; Page 45-52
	Updated Represented Sites by Zone table with correct station codes (Westport Drain and Unnamed Drain @ Hwy 140 were swapped).	Table 14; Page 42
3	Management Plan Monitoring	
	Updated Table 17 to be consistent with the Coalition's MPM strategy and added dimethoate MPM for Hatch Drain @ Tuolumne Rd and Hilmar Drain @ Central Ave.	Table 17; Page 19
Amended on December 10, 2013		Pending approval
1	Table of Contents	
	Updated page and table numbers.	Table of Contents
2	Core Site Monitoring	
	Updated information regarding past exceedances for the metals (Ni, Zn, Mo; changed 'yes' to 'no') due to information incorrectly recorded.	Table 3; Page 15 Table 14; Page 38
	Updated Core Site Table site coordinates based on most recent information.	Table 1; Page 8
	Updated verbiage for Duck Slough @ Gurr Rd metals monitoring to include September copper MPM; mistakenly left out in original submission.	Verbiage; Page 34

Item No.	Description of Update	Location, Page No.
	Updated copper Core site monitoring at Dry Creek @ Wellsford Rd to only include two storm and two irrigation events (See Addendum, submitted December 10, 2013).	Verbiage, Page 15
	Added 'Molybdenum' to header for Highline Canal @ Hwy 99 metals monitoring.	Verbiage; Page 24
	Replaced 'Highline Canal @ Hwy 99' with 'Merced River at Santa Fe'.	Verbiage; Page 29
3	Represented Site Monitoring	
	Updated Represented Site Table site coordinates based on most recent information.	Table 16; Page 43
	Updated Table 17 to be consistent with the Coalitions monitoring strategy: <ul style="list-style-type: none"> • Added 'M' for molybdenum MPM at Prairie Flower Drain @ Crows Landing Rd. • Removed 'M' for <i>C. dubia</i> at Hilmar Drain @ Central Ave; not in a management plan for <i>C. dubia</i>. Three years of monitoring without any toxicity; no monitoring needed. • Removed Represented monitoring for lead; lead is a low priority constituent. • Added 'M' for chlorpyrifos MPM at Howard Lateral @ Hwy 140; incorrectly left out. • Removed Represented site monitoring for chlorpyrifos at Mootz Drain downstream of Langworth Pond, for <i>C. dubia</i> and <i>S. capricornutum</i> at Mustang Creek @ East Ave and for chlorpyrifos and <i>C. dubia</i> at Unnamed Drain @ Hwy 140 due to further evaluation of monitoring as detailed in the Addendum. 	Table 17; Page 45 Verbiage; Page 48, 56
	Updated verbiage to clarify that no Represented site monitoring will occur for lead or molybdenum; only high priority Core management plan constituents were evaluated for monitoring.	Verbiage; Page 45, 53, 55
	Removed lead Represented site monitoring at McCoy Lateral @ Hwy 140; low priority management plan constituent at the Core site and therefore no Represented site monitoring is required for 2014.	Verbiage; Page 54
	Added verbiage to describe the further evaluation done by the Coalition for Represented site monitoring that is discussed in the Addendum, submitted with the revised 2013 MPU.	Verbiage, Page 46
4	Management Plan Monitoring	
	Removed June, July and August copper MPM from Highline Canal @ Hwy 99 to be consistent with the monitoring decision on page 24.	Table 17; Page 60
	Updated MPM for <i>S. capricornutum</i> toxicity from 'May and June' to 'May and July' at Berenda Slough @ Ave 18 1/2 to be consistent with the MPM monitoring strategy.	Table 17; Page 57 Verbiage; Page 67
	Added November and December copper MPM at Cottonwood Creek @ Rd 20 to the MPM schedule; it was previously omitted in the original submission.	Table 17; Page 58
	Added November molybdenum MPM at Prairie Flower Drain @ Crows Landing Rd to the MPM schedule; it was previously omitted in the original submission.	Table 17; Page 60
	Updated MPM for lead from 'May and June' to 'May and July' at Black Rascal Creek @ Yosemite Rd in the MPM schedule to be consistent with the MPM monitoring strategy.	Table 17; Page 57

Item No.	Description of Update	Location, Page No.
	Extended diazinon MPM in January at Miles Creek @ Reilly Rd based on review of PUR data.	Table 17; Page 58 Verbiage; Page 94
5	Overall	
	Capitalized all 'water year' phrases to be consistent throughout all reports.	Throughout
	Corrected spelling for site name Lateral 5 ½ @ South Blaker Rd.	Throughout
6	Submitted an Addendum to the Monitoring Plan Update	Addendum
	The Addendum is being submitted as part of the conditional approval of the ESJWQC MPU for the 2014 Water Year.	

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List of Acronyms and Terms

C	Core site
cfs	cubic feet per second
DO	Dissolved Oxygen
DWSC	Deep Water Ship Channel
ESJWQC	East San Joaquin Water Quality Coalition
ILRP	Irrigated Lands Regulatory Program
Order	Waste Discharge Requirements General Order R5-2012-0016 Growers within the Eastern San Joaquin River Watershed
MPM	Management Plan Monitoring
MRP	Monitoring and Reporting Program
MRPP	Monitoring and Reporting Program Plan
pH	Power of Hydrogen
PUR	Pesticide Use Report
Regional Board	Central Valley Regional Water Quality Control Board
R	Represented site
SC	Specific Conductivity
TDS	Total Dissolved Solids
TIE	Toxicity Identification Evaluation
TOC	Total Organic Carbon
TSS	Total Suspended Solids
TMDL	Total Maximum Daily Load
US EPA	United States Environmental Protection Agency
WQO	Water Quality Objective
WQTL	Water Quality Trigger Limit
WY	Water Year

SURFACE WATER MONITORING OVERVIEW

This Monitoring Plan Update report provides the monitoring schedule that will be performed and the rationale for that schedule for the 2014 Water Year. Monitoring will be performed by the East San Joaquin Water Quality Coalition (ESJWQC or the Coalition) as determined in the Waste Discharge Requirements General Order for Growers within the Eastern San Joaquin River Watershed, Order R5-2012-0116 (hereafter “Order”). The Coalition will perform four different types of monitoring during the 2014 Water Year:

- Core Site Monitoring,
- Represented Site Monitoring,
- Management Plan Monitoring,
- Special Project Monitoring.

As described in the Monitoring and Reporting Program (MRP), Attachment B to the Order, surface water monitoring at Core sites will occur once a month based on a Water Year (October 2013 through September 2014) and will include an assessment of field parameters, nutrients, pathogens, pesticides, metals and toxicity to water column and sediment species. Attachment A (Monitoring Parameters and Sites) is an excel workbook that includes a table of all monitoring parameters and sites scheduled for the 2014 Water Year. If an exceedance of a water quality trigger limit (WQTL) occurs at a Core site, the Coalition will evaluate the potential for similar risks or threats to water quality associated with that parameter at each of the Represented sites in that zone. Management Plan Monitoring (MPM) will occur based on the prioritization process described in the approved ESJWQC Management Plan and ensures that monitoring can identify constituent of concern discharged to the watershed. Special Project Monitoring includes monitoring six compliance locations within the San Joaquin River to ensure compliance with the Diazinon and Chlorpyrifos Total Maximum Daily Load (TMDL) requirements. These constituents are monitored once during the storm season and once a month in May through September.

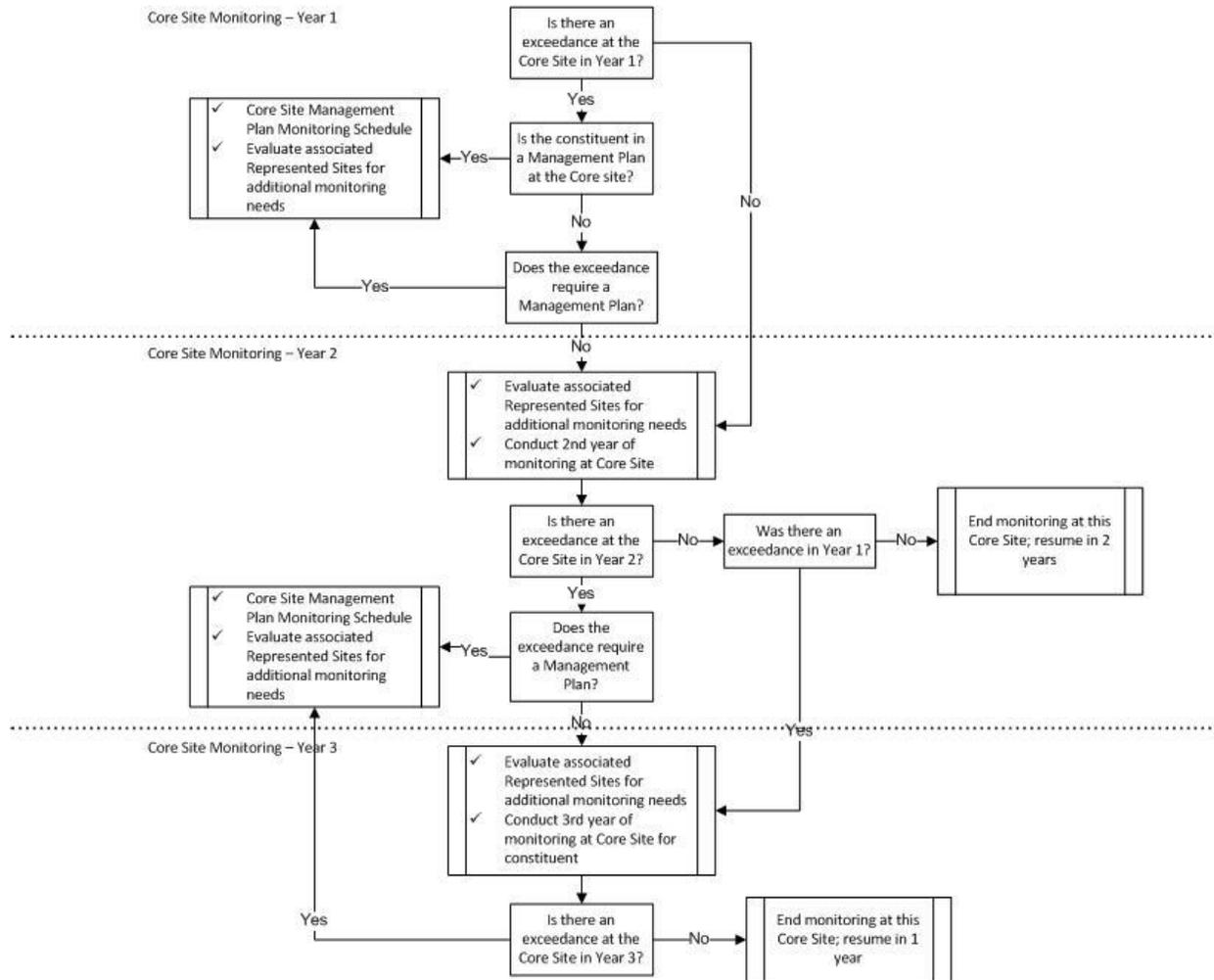
CORE SITE MONITORING

For the 2014 Water Year, the Coalition will monitor within each of the six zones in the ESJWQC boundary for 12 months (October 2013 through September 2014) at the designated Core sites (Attachment B of the Order, page 4). Table 1 includes a list of Core sites within each zone that are to be monitored during the 2014 Water Year. The Core site in each zone will be monitored for a minimum of two consecutive years before rotating to the second Core site in the zone. If the concentration of a constituent exceeds the WQTL at a Core site, the Core site will be monitored for an additional third consecutive year (Attachment B of the Order, page 3). If a Core site is currently in a management plan or if the concentration of a constituent and the number of exceedances requires the Core site to be placed in a management plan, the site will be evaluated for MPM. The flow chart in Figure 1 depicts the Core site monitoring strategy.

Table 1. ESJWQC Core sites by zone.

ZONE	SITE TYPE	SITE NAME	STATION CODE	LATITUDE	LONGITUDE
1	Core	Dry Creek @ Wellsford Rd	535XDCAWR	37.66000	-120.87526
2	Core	Prairie Flower Drain @ Crows Landing Rd	535XPFCL	37.44187	-121.00331
3	Core	Highline Canal @ Hwy 99	535XHCHNN	37.41254	-120.75941
4	Core	Merced River @ Santa Fe	535XMRSFD	37.42705	-120.67353
5	Core	Duck Slough @ Gurr Rd	535XDSAGR	37.21408	-120.56126
6	Core	Cottonwood Creek @ Rd 20	545XCCART	36.86860	-120.18180

Figure 1. ESJWQC flowchart for the Core site monitoring strategy.



The Coalition will monitor general water quality parameters, nutrients, bacteria, water column and sediment toxicity, pesticides and metals at each Core site as listed in Table 2, Attachment B of the Order (page 7). Table 2 lists all parameters to be monitored during the 2014 Water Year at Core sites.

Table 2. ESJWQC parameters to be monitored at the Core sites for the 2014 WY.

MEASURED PARAMETER	MONITORING FREQUENCY
Photo Monitoring	
Photograph documentation	With every monitoring event
WATER COLUMN SAMPLING	
Physical Parameters and General Chemistry	
Estimated flow (cfs, field measure)	October-September
pH (field measure)	October-September
Electrical Conductivity (at 25°C, field measure)	October-September
Dissolved Oxygen (DO, field measure)	October-September
Temperature (field measure)	October-September
Turbidity	October-September
Total Suspended Solids (TSS)	October-September
Hardness (as CaCO ₃)	October-September
Total Organic Carbon (TOC)	October-September
Bacteria	
<i>E. coli</i>	October-September
Water Column Toxicity Test	
Algae - <i>Selenastrum capricornutum</i>	October-September
Water Flea - <i>Ceriodaphnia dubia</i>	October-September
Fathead Minnow - <i>Pimephales promelas</i>	October-September
Toxicity Identification Evaluation (TIE) ¹	As needed based on section III.C.4 of Attachment B
Pesticides²	
Carbamates	
Aldicarb	October-September
Carbaryl	October-September
Carbofuran	October-September
Methiocarb	October-September
Methomyl	October-September
Oxamyl	October-September
Organochlorines	
Dichlorodiphenyldichloroethane (DDD)	One storm, one irrigation event per year
Dichlorodiphenyldichloroethylene (DDE)	One storm, one irrigation event per year
Dichlorodiphenyltrichloroethane (DDT)	One storm, one irrigation event per year
Dicofol	One storm, one irrigation event per year
Dieldrin	One storm, one irrigation event per year
Endrin	One storm, one irrigation event per year
Methoxychlor	One storm, one irrigation event per year
Group A	
Aldrin	One storm, one irrigation event per year
Chlordane	One storm, one irrigation event per year
Heptachlor	One storm, one irrigation event per year
Heptachlor Epoxide	One storm, one irrigation event per year
Hexachlorocyclohexane (gamma-HCH)	One storm, one irrigation event per year
Hexachlorocyclohexane (alpha-HCH)	One storm, one irrigation event per year
Hexachlorocyclohexane (beta-HCH)	One storm, one irrigation event per year
Hexachlorocyclohexane (delta-HCH)	One storm, one irrigation event per year
Endosulfan I	One storm, one irrigation event per year

MEASURED PARAMETER	MONITORING FREQUENCY
Endosulfan II	One storm, one irrigation event per year
Toxaphene	One storm, one irrigation event per year
Organophosphates	
Azinphos-methyl	October-September
Chlorpyrifos	October-September
Diazinon	October-September
Dichlorvos	October-September
Dimethoate	October-September
Demeton-s	October-September
Disulfoton (Disyton)	October-September
Malathion	October-September
Methamidophos	October-September
Methidathion	October-September
Parathion-methyl	October-September
Phorate	October-September
Phosmet	October-September
Herbicides	
Atrazine	October-September
Cyanazine	October-September
Diuron	October-September
Glyphosate	One storm, one irrigation event per year
Linuron	October-September
Paraquat	One storm, one irrigation event per year
Simazine	October-September
Trifluralin	October-September
Metals	
Arsenic (total)	See Core Site Metals section below
Boron (total)	See Core Site Metals section below
Cadmium (total and dissolved)	See Core Site Metals section below
Copper (total and dissolved)	See Core Site Metals section below
Lead (total and dissolved)	See Core Site Metals section below
Molybdenum (total)	See Core Site Metals section below
Nickel (total and dissolved)	See Core Site Metals section below
Selenium	See Core Site Metals section below
Zinc (total and dissolved)	See Core Site Metals section below
Nutrients	
Nitrate plus Nitrite as Nitrogen	October-September
Total Ammonia	October-September
Unionized Ammonia (calculated value)	October-September
Soluble Orthophosphate	October-September
SEDIMENT SAMPLING	
Sediment Toxicity	
<i>Hyalella azteca</i>	March, September
Sediment Pesticides	
Bifenthrin	As Needed ³
Cyfluthrin	As Needed ³
Cypermethrin	As Needed ³
Deltamethrin: Tralomethrin	As Needed ³
Esfenvalerate	As Needed ³
Lambda-Cyhalothrin	As Needed ³
Permethrin	As Needed ³
Fenpropathrin	As Needed ³

MEASURED PARAMETER	MONITORING FREQUENCY
Chlorpyrifos	As Needed ³
Piperonyl butoxide (PBO)	As Needed ³
Other Sediment Parameters	
Total Organic Carbon	March, September
Grain Size	March, September

¹ Specific TIE manipulations utilized in each test will be reported.

² Pesticides and monitoring frequency determined according to the process identified in section III.C.3 of the Order.

³ Pesticide analysis shall be performed on sediment samples measuring significant toxicity and < 80% organism survival compared to the control.

Core Site Pesticides

This will be the first year of Core site monitoring under the Order and therefore the pesticides scheduled for monitoring are in accordance with the ESJWQC 2008 Monitoring and Reporting Program Plan (2008 MRPP), approved on August 25th, 2008. The 2008 MRPP was amended on May 6th, 2011 to reduce monitoring for paraquat, glyphosate and all organochlorines (including Group A pesticides), to one storm and one irrigation event per year; the Coalition will continue to follow this monitoring strategy for the 2014 Water Year.

Core Site Metals

The metals listed in Table 2 of Attachment B of the Order for inclusion in the monitoring program were evaluated to determine the timing and frequency of monitoring using the flowchart in Figure 2. The flowchart evaluates each metal by evaluating past monitoring results and application history at each Core site.

The flow chart first evaluates whether the metal is a constituent responsible for a 303d listing of the Core site waterbody in the zone. If the metal is the cause of a 303d listing and there is an approved TMDL, then the Coalition will monitor based on the schedule outlined in the TMDL or determined by the Regional Water Board. There is a TMDL for selenium discharges on the west side of the San Joaquin River basin and a TMDL for boron for the San Joaquin River segment between the Merced and Tuolumne Rivers. The boron TMDL is being addressed through the Basin Plan amendment process for the Control of Salt and Boron Discharges into the San Joaquin River. There is currently no required TMDL monitoring at any of the Core sites for either selenium or boron.

If there is no approved TMDL for the 303d listed metal the Coalition reviews past monitoring data and determines if sufficient data exist to propose delisting of the water body. If there are not sufficient data, the Coalition will develop monitoring options as determined by Figure 2 for discussion with the Regional Water Board. None of the Core site waterbodies are listed for metals on the 2010 California 303d List of Water Quality Limited Segments.

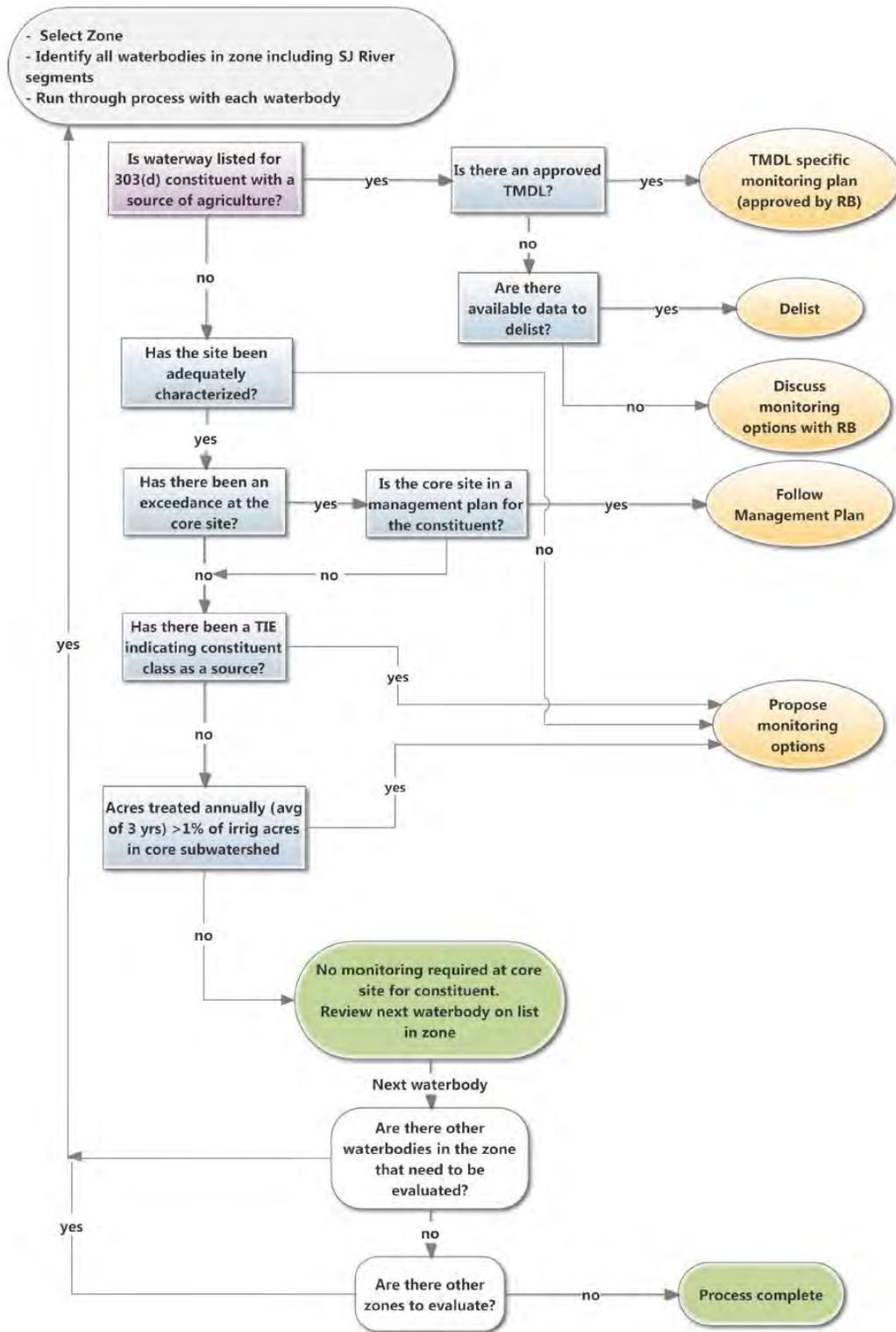
If a metal is not a cause of a 303d listing for the Core site waterbody, past monitoring results are reviewed to determine if the site has been adequately characterized, if there have been exceedances of a water quality trigger limit for the metal, or if toxicity test results indicate that the metal is the source of toxicity. These evaluations lead to one of the following decisions: 1) follow the monitoring as

described in the ESJWQC Management Plan (characterization adequate, two or more exceedances in a 3 year period), 2) develop a monitoring schedule based on past results and application data (characterization not adequate), or 3) no monitoring is necessary (characterization adequate, no exceedances).

All metals were monitored at the Core sites during various periods from 2006 through June 2013 except for molybdenum and dissolved metals. Molybdenum and the dissolved fractions for cadmium, copper, lead, nickel, and zinc were added to the ESJWQC MRP in October 2008. At that time, the Coalition's monitoring strategy included Core and Assessment Monitoring, as determined by the 2008 MRP. Assessment Monitoring included the analysis of samples for a large suite of constituents, including total and dissolved metals. Compared to Assessment Monitoring, Core Monitoring included analyses for a reduced number constituents (primarily physical parameters and nutrients) during Core Monitoring years. Core sites in each zone rotated into Assessment Monitoring every three years. Core sites were monitored for every metal during Assessment Monitoring in 2011 (with the exception of arsenic, cadmium, lead and molybdenum; see below). Metals were monitored at Core sites during Management Plan Monitoring if the metal was listed as a high priority constituent in a high priority subwatershed management plan.

In November 2010 the Coalition requested a reduction in the monitoring of metals that are not applied by agriculture (arsenic, cadmium, lead, and molybdenum) to four times a year; twice during two storm events and twice during two high flow irrigation events associated with movement of sediments from irrigated fields (high TSS). The Regional Water Board approved an amendment to the MRPP in May 2011 and the Coalition reduced monitoring after the August irrigation event in 2011; molybdenum was first monitored at the Core sites in 2011.

Figure 2. ESJWQC flowchart for the Core site metals monitoring strategy.



Dry Creek @ Wellsford Rd

Dry Creek @ Wellsford Rd is the Core site in Zone 1. The decision for monitoring for metals at Dry Creek @ Wellsford Rd during the 2014 Water Year is outlined in Table 3; the monitoring plan is based on results from 2006 to June, 2013. Metals monitoring results are listed in Table 4. Only concentrations of copper and lead exceeded their respective hardness-based WQTLs in samples collected from Dry Creek @ Wellsford (Table 4).

Table 3. Results of the flow chart analysis for Dry Creek @ Wellsford Rd outlined in Figure 2.

“X” indicates a monitoring decision.

FLOW CHART QUESTION	As, TOT	B, TOT	Cd, TOT	Cd, Dis	Cu, TOT	Cu, Dis	Pb, TOT	Pb, Dis	Mo, TOT	Ni, TOT	Ni, Dis	Se, TOT	Zn, TOT	Zn, Dis
1. Is site on 303d list for constituent?	No	No	No	No	No	No	No	No	No	No	No	No	No	No
2. Has the site been adequately characterized?	No	No	Yes	No	Yes	No	Yes	No	No	Yes	No	No	Yes	No
3. Has there been an exceedance?	No	No	No	No	Yes	No	Yes	No						
4. Is waterbody in a management plan for constituent?	No	No	No	No	No	No	No	No	No	No	No	No	No	No
5. Has there been a TIE indicating the constituent class as causal agent?	No	No	No	No	No	No	No	No	No	No	No	No	No	No
6. Acres treated > 1%?	No	No	No	No	Yes	Yes	No							
MONITORING DECISION														
1. TMDL-specific monitoring														
2. Delist from TMDL or discuss monitoring delist options														
3. Monitoring according to management plan														
4. Propose monitoring plan	X	X		X		X		X	X		X	X		X
5. No monitoring			X		X		X			X			X	

Monitoring Decision #4- Monitoring plan

Arsenic, Boron, Dissolved Copper, Dissolved Cadmium, Dissolved Lead, Molybdenum, Selenium, Dissolved Nickel, Dissolved Zinc

Copper was removed from the active Dry Creek @ Wellsford Rd management plan in 2012; no exceedances of the WQTL for copper have occurred since February 2008 (Table 4). In addition, there is a decreasing trend in copper detections since 2008. The Coalition will monitor for copper at Dry Creek @ Wellsford Rd during two storm and two irrigation events, as detailed in the Addendum to this report, submitted December 10, 2013.

The remaining metals, arsenic, boron, molybdenum, selenium, dissolved cadmium, dissolved lead, dissolved nickel, and dissolved zinc were monitored in 2008 and 2011. There were no exceedances of the WQTLs for these constituents in either year. Because it has been three years since the last monitoring for these constituents, the ESJWQC will monitor these metals in 2014. Monitoring frequency will be four times during the year as specified in the 2011 revisions to the MRPP.

Monitoring Decision #5 - No monitoring

Total Cadmium, Total Copper, Total Lead, Total Nickel, and Total Zinc

Monitoring of total cadmium, total copper, total lead, total nickel, and total zinc are no longer necessary because the Coalition is monitoring the dissolved phase of these metals (Table 4). There were no exceedances of any of the WQTLs for these constituents with the exception of one exceedance of the WQTL for lead (total) in February 2008. With only one exceedance, Dry Creek @ Wellsford is not in a management plan for lead. Lead is not applied by agriculture and based on water quality results lead is not being mobilized by agricultural practices. In addition, the dissolved fraction is the bioavailable fraction of these metals and is the fraction that will be monitored. Working through the flow chart in Figure 2 results in a decision of no monitoring (Monitoring Decision #5 of Table 3) for total cadmium, total copper, total lead, total nickel, and total zinc at Dry Creek @ Wellsford Rd.

Table 4. Dry Creek @ Wellsford Rd site subwatershed dissolved and total metals monitoring results (2006-2012).

Total Suspended Solids (TSS) results are included as a measurement of sediment mobilization. An exceedance of a WQTL is highlighted in blue. "NA" indicates that a constituent was not analyzed on that date.

YEAR	MONTH	DATE	As, Total (µg/L)	B, Total (µg/L)	Cd, Dissolved (µg/L)	Cd, Total (µg/L)	Cu, Dissolved (µg/L)	Cu, Total (µg/L)	Pb, Dissolved (µg/L)	Pb, Total (µg/L)	Mo, Total (µg/L)	Ni, Dissolved (µg/L)	Ni, Total (µg/L)	Se, Total (µg/L)	Zn, Dissolved (µg/L)	Zn, Total (µg/L)	TSS, Total (mg/L)
2006	May	5/18/2006	1.3	26	NA	<0.04	NA	5.1	NA	0.54	NA	NA	3.4	<0.7	NA	12	NA
2006	Jun	6/15/2006	0.8	14	NA	<0.02	NA	3.9	NA	0.64	NA	NA	2.3	<0.9	NA	11	NA
2006	Jul	7/13/2006	0.9	16	NA	<0.02	NA	3.1	NA	0.38	NA	NA	2	<0.9	NA	5	NA
2006	Aug	8/10/2006	1.1	16	NA	<0.02	NA	3.4	NA	0.48	NA	NA	2.4	<0.9	NA	6	NA
2006	Sep	9/14/2006	0.4	16	NA	<0.02	NA	3.5	NA	0.41	NA	NA	1.7	<0.9	NA	15	NA
2007	Feb	2/11/2007	1	20	NA	<0.02	NA	1.9	NA	0.19	NA	NA	1.7	<0.9	NA	7	NA
2007	Feb	2/28/2007	1.6	32	NA	0.03	NA	8.4	NA	2	NA	NA	4.1	<0.9	NA	14	NA
2007	Apr	4/17/2007	1.3	14	NA	<0.02	NA	5.1	NA	0.8	NA	NA	2.7	1	NA	7	NA
2007	May	5/15/2007	1.8	16	NA	<0.02	NA	6.1	NA	1	NA	NA	3.1	<0.9	NA	8	NA
2007	Jun	6/19/2007	2	22	NA	<0.04	NA	5.9	NA	0.93	NA	NA	3.7	NA	NA	7	NA
2007	Jul	7/17/2007	1.5	19	NA	<0.04	NA	3.9	NA	0.45	NA	NA	2.5	NA	NA	3	NA
2007	Aug	8/14/2007	1.4	24	NA	0.2	NA	5.3	NA	0.58	NA	NA	3.1	NA	NA	7	NA
2007	Sep	9/11/2007	1	21	NA	<0.04	NA	3.3	NA	0.34	NA	NA	2.5	NA	NA	6	NA
2008	Jan	1/24/2008	1.1	25	NA	<0.02	NA	12	NA	2.4	NA	NA	4.6	0.62	NA	18	NA
2008	Feb	2/26/2008	0.8	21	NA	0.05	NA	11	NA	1.8	NA	NA	4.1	0.46	NA	14	NA
2008	Apr	4/22/2008	1.1	21	NA	0.02	NA	4.7	NA	0.67	NA	NA	2.6	<0.22	NA	7	NA
2008	May	5/20/2008	1.5	20	NA	<0.06	NA	3.8	NA	0.83	NA	NA	2.4	0.96	NA	6	NA
2008	Jun	6/17/2008	1.2	19	NA	<0.06	NA	3.7	NA	0.69	NA	NA	2.5	0.7	NA	7	NA
2008	Jul	7/22/2008	1.3	20	NA	<0.06	NA	3.2	NA	0.42	NA	NA	2.1	0.23	NA	10	NA
2008	Aug	8/19/2008	1.2	18	NA	<0.06	NA	5.3	NA	0.6	NA	NA	2.4	<0.11	NA	7	NA
2008	Sep	9/23/2008	1	20	NA	<0.06	NA	2.3	NA	0.28	NA	NA	1.7	<0.11	NA	4	NA
2009	Dec	12/15/2009	NA	NA	NA	NA	NA	NA	<0.071	0.13	NA	NA	NA	NA	NA	NA	10
2010	Feb	2/23/2010	NA	NA	NA	NA	3.2	3.9	NA	NA	NA	NA	NA	NA	NA	NA	<2
2010	Apr	4/20/2010	NA	NA	NA	NA	2.8	4.3	NA	NA	NA	NA	NA	NA	NA	NA	13
2010	Jul	7/20/2010	NA	NA	NA	NA	NA	NA	0.15	0.52	NA	NA	NA	NA	NA	NA	18
2010	Aug	8/17/2010	NA	NA	NA	NA	NA	NA	0.11	0.46	NA	NA	NA	NA	NA	NA	7
2010	Sep	9/14/2010	NA	NA	NA	NA	NA	NA	0.14	0.51	NA	NA	NA	NA	NA	NA	8
2010	Oct	10/19/2010	NA	NA	NA	NA	NA	NA	0.18	0.48	NA	NA	NA	NA	NA	NA	2
2010	Nov	11/16/2010	NA	NA	NA	NA	NA	NA	0.13	0.27	NA	NA	NA	NA	NA	NA	9
2010	Dec	12/14/2010	NA	NA	NA	NA	NA	NA	<0.071	0.19	NA	NA	NA	NA	NA	NA	<2
2011	Jan	1/18/2011	0.6	25	<0.011	<0.011	1.5	2.4	<0.071	0.18	0.246	0.88	1.1	0.08	<0.7	1.2	<2
2011	Feb	2/17/2011	0.59	28	<0.011	<0.011	1.7	2.1	<0.071	0.08	0.43	0.95	1.1	<0.06	0.9	1.6	12
2011	Mar	3/15/2011	0.66	31	<0.011	<0.011	2	2.8	0.08	0.24	0.31	1.1	1.3	0.08	0.9	1.3	7
2011	Apr	4/19/2011	1	29	<0.04	<0.04	2.5	3.8	0.12	0.4	0.6	1.5	1.9	0.11	1.4	3.2	10
2011	May	5/10/2011	1	22	<0.04	<0.04	2	3.2	0.14	0.5	0.72	1.5	1.8	0.07	1.9	4.9	6
2011	Jun	6/14/2011	1.1	19	<0.04	<0.04	2.2	3.7	0.24	0.68	0.49	1.7	2.4	0.08	2.1	5.2	14

YEAR	MONTH	DATE	As, Total (µg/L)	B, Total (µg/L)	Cd, Dissolved (µg/L)	Cd, Total (µg/L)	Cu, Dissolved (µg/L)	Cu, Total (µg/L)	Pb, Dissolved (µg/L)	Pb, Total (µg/L)	Mo, Total (µg/L)	Ni, Dissolved (µg/L)	Ni, Total (µg/L)	Se, Total (µg/L)	Zn, Dissolved (µg/L)	Zn, Total (µg/L)	TSS, Total (mg/L)
2011	Jul	7/12/2011	1.2	27	<0.04	<0.04	2	3.5	0.21	0.69	0.73	1.8	2.8	0.07	0.9	3.9	14
2011	Aug	8/9/2011	1	21	<0.04	<0.04	1.9	3	0.15	0.45	0.79	1.6	2.2	0.08	1.5	3.5	12
2011	Sep	9/6/2011	NA	19	NA	NA	2.2	3	NA	NA	NA	1.5	1.9	<0.06	2.4	4	7
2011	Oct	10/11/2011	NA	15	NA	NA	2.1	3.3	NA	NA	NA	1.3	1.7	<0.06	1.3	3	5
2011	Nov	11/8/2011	NA	14	NA	NA	1.3	1.7	NA	NA	NA	0.64	0.8	<0.06	<0.8	1.9	2
2011	Dec	12/6/2011	NA	14	NA	NA	1.1	1.4	NA	NA	NA	0.73	0.8	<0.06	1	1.2	2
2012	Feb	2/7/2012	NA	NA	NA	NA	1.3	1.6	NA	NA	NA	NA	NA	NA	NA	NA	<2
Sample and Exceedance Summary																	
Samples collected in 2006			5	5	0	5	0	5	0	5	0	0	5	5	0	5	0
Samples collected in 2007			8	8	0	8	0	8	0	8	0	0	8	4	0	8	0
Samples collected in 2008			8	8	0	8	0	8	0	8	0	0	8	8	0	8	3
Samples collected in 2009			0	0	0	0	0	0	1	1	0	0	0	0	0	0	12
Samples collected in 2010			0	0	0	0	2	2	6	6	0	0	0	0	0	0	12
Samples collected in 2011			8	12	8	8	12	12	8	8	8	12	12	12	12	12	12
Samples collected in 2012			0	0	0	0	1	1	0	0	0	0	0	0	0	0	3
Total Samples Collected			29	33	8	29	15	36	15	36	8	12	33	29	12	33	42
Total Exceedances			0	0	0	0	0	3	0	1	0	0	0	0	0	0	0
% Exceedances			0%	0%	0%	0%	0%	8.3%	0%	2.7%	0%	0%	0%	0%	0%	0%	0%

Prairie Flower Drain @ Crows Landing Rd

Prairie Flower Drain @ Crows Landing Rd is the Core site in Zone 2. The decision for monitoring for metals at Prairie Flower Drain @ Crows Landing Rd during the 2014 Water Year is outlined in Table 5; the monitoring plan is based on results from 2006 to June, 2013. Metals monitoring results are listed in Table 6. Only concentrations of molybdenum and arsenic exceeded the WQTL in samples collected from Prairie Flower Drain @ Crows Landing Rd (Table 6).

Table 5. Results of the flow chart analysis for Prairie Flower Drain @ Crows Landing Rd outlined in Figure 2.

“X” indicates a monitoring decision.

FLOW CHART QUESTION	As, TOT	B, TOT	Cd TOT	Cd Dis	Cu, TOT	Cu, Dis	Pb, TOT	Pb, Dis	Mo, TOT	Ni, TOT	Ni, Dis	Se, TOT	Zn, TOT	Zn, Dis
1. Is site on 303d list for constituent?	No	No	No	No	No	No	No	No	No	No	No	No	No	No
2. Has the site been adequately characterized?	No	No	Yes	No	Yes	No	Yes	No	No	Yes	No	Yes	Yes	No
3. Has there been an exceedance?	Yes	No	No	No	No	No	No	No	Yes	No	No	No	No	No
4. Is waterbody in a management plan for constituent?	No	No	No	No	No	No	No	No	Yes	No	No	No	No	No
5. Has there been a TIE indicating the constituent class as causal agent?	No	No	No	No	No	No	No	No	No	No	No	No	No	No
6. Acres treated > 1%?	No	No	No	No	Yes	Yes	No	No	No	No	No	No	No	No
MONITORING DECISION														
1. TMDL-specific monitoring														
2. Delist from TMDL or discuss monitoring delist options														
3. Monitoring according to management plan									X ¹					
4. Propose monitoring plan	X	X		X		X		X	X		X	X		X
5. No monitoring			X		X		X			X			X	

¹Management plan places molybdenum as a Priority E constituent.

Monitoring Decision #3 - Monitoring according to a management plan

Molybdenum

Utilizing water quality data from 2011 and the flow chart in Figure 2, the monitoring decision for molybdenum is to monitor according to a management plan (Table 5). After the exceedances of the molybdenum WQTL in 2011, the Coalition developed a management plan for molybdenum in 2012. In that management plan, molybdenum was assigned a Priority E because molybdenum is not applied by agriculture. Although molybdenum is listed as a trace element in some fertilizer mixes, it is applied only in regions where the soils are low in molybdenum. Growers on the ESJWQC Board of Directors who farm indicate that because molybdenum is in sufficient concentration in soils across the Coalition region, and because of the expense of molybdenum, it is not added as a fertilizer amendment in the Coalition region. If molybdenum is added routinely as an amendment in fertilizers, it is likely that other monitoring locations would have experienced similar exceedances of the WQTL. The only location with molybdenum concentrations above the WQTL is Prairie Flower Drain (Table 7). Also, the dates of the exceedances make it unlikely that the exceedances are the result of fertilizer applications as the greatest concentrations of molybdenum were found in months with no fertilizer applications in the Prairie Flower Drain watershed. Fertilizers are applied the mid-spring and exceedances of the molybdenum WQTL

occurred in January, February, March, May and June. Three of the exceedances occurred prior to planting and fertilization. The Coalition believes that the exceedances of the WQTL in 2011 are not the result of fertilizer applications but the result of the drain intercepting shallow groundwater with a naturally elevated concentration of molybdenum.

Molybdenum is a Priority E constituent in the ESJWQC Management Plan and does not require monitoring. However, since two consecutive years of monitoring have not been conducted for molybdenum at Prairie Flower Drain @ Crows Landing Rd, the Coalition will monitor for molybdenum monthly during the 2014 and 2015 water years. After that time, the Coalition will review the results and discuss possible monitoring strategies with Regional Board staff. Once a month monitoring in the 2014 and 2015 water year monitoring in addition to the 2011 monitoring results should provide sufficient information to determine the frequency of any additional monitoring.

Monitoring Decision #4- Propose monitoring plan

Arsenic, Boron, Dissolved Cadmium, Dissolved Copper, Dissolved Lead, Dissolved Nickel, Selenium and Dissolved Zinc

Arsenic, boron, and selenium have been sampled periodically since the Coalition initiated monitoring at Prairie Flower Drain @ Crows Landing Rd in 2004. Monitoring for the dissolved fraction of cadmium, copper, lead, nickel, and zinc was initiated in 2008. Monitoring occurred in 2011 for metals and sampling for these metals was terminated in August 2011. There were no exceedances of any of the WQTLs for these metals. Because it has been three years since the last monitoring for these constituents, the ESJWQC will monitor these metals in 2014. Monitoring frequency will be four times during the year as specified in the 2011 revisions to the MRPP.

Monitoring Decision #5 - No monitoring

Total Cadmium, Copper, Lead, Nickel, and Zinc

Total cadmium, total copper, total lead, total nickel, and total zinc are no longer necessary because the Coalition is monitoring for the dissolved fraction of the same metals (Table 6). There have been no exceedances of any of the WQTLs for these constituents. In addition, the dissolved fraction is the bioavailable fraction of these metals and is the fraction that will be monitored. Working through the flow chart in Figure 2 results in a decision of no monitoring (Monitoring Decision #5 of Table 5) for total cadmium, lead, nickel, and zinc at Prairie Flower Drain @ Crows Landing Rd.

Table 6. Prairie Flower Drain @ Crows Landing Rd site subwatershed dissolved and total metals monitoring results (2006-2011).

Total Suspended Solids (TSS) results are included as a measurement of sediment mobilization. An exceedance of a WQTL is highlighted in blue. "NA" indicates that a constituent was not analyzed on that date.

YEAR	MONTH	DATE	AS, TOTAL (µG/L)	B, TOTAL (µG/L)	CD, DISSOLVED (µG/L)	CD, TOTAL (µG/L)	CU, DISSOLVED (µG/L)	CU, TOTAL (µG/L)	PB, DISSOLVED (µG/L)	PB, TOTAL (µG/L)	MO, TOTAL (µG/L)	NI, DISSOLVED (µG/L)	NI, TOTAL (µG/L)	SE, TOTAL (µG/L)	ZN, DISSOLVED (µG/L)	ZN, TOTAL (µG/L)	TSS, TOTAL (MG/L)
2006	May	5/18/2006	8.8	420	NA	0.07	NA	10	NA	0.64	NA	NA	9.3	3	NA	11	NA
2006	Jun	6/15/2006	7.6	300	NA	0.04	NA	7.9	NA	0.52	NA	NA	7.5	3	NA	13	NA
2006	Jul	7/13/2006	4.2	150	NA	0.05	NA	7.3	NA	0.68	NA	NA	4.3	2	NA	14	NA
2006	Aug	8/10/2006	7.7	320	NA	0.04	NA	8.4	NA	0.49	NA	NA	7.3	2	NA	12	NA
2006	Sep	9/14/2006	5.4	170	NA	0.04	NA	8.8	NA	0.78	NA	NA	5.9	<0.9	NA	25	NA
2007	Feb	2/11/2007	9.6	420	NA	0.07	NA	8.5	NA	0.17	NA	NA	7.7	2	NA	11	NA
2007	Mar	3/1/2007	8	400	NA	0.05	NA	9.1	NA	<0.1	NA	NA	8.3	3	NA	3	NA
2007	Apr	4/17/2007	8.8	430	NA	0.04	NA	8.1	NA	0.12	NA	NA	6.6	3	NA	4	NA
2007	May	5/15/2007	9.6	400	NA	<0.02	NA	9.4	NA	<0.1	NA	NA	6.3	4	NA	3	NA
2007	Jun	6/19/2007	12	330	NA	0.05	NA	11	NA	0.35	NA	NA	8.7	NA	NA	7	NA
2007	Jul	7/17/2007	5.7	200	NA	<0.04	NA	6.5	NA	0.21	NA	NA	4.9	NA	NA	15	NA
2007	Aug	8/14/2007	4.6	130	NA	0.08	NA	9.6	NA	1	NA	NA	7	NA	NA	21	NA
2007	Sep	9/11/2007	4.2	200	NA	0.09	NA	6.6	NA	0.13	NA	NA	3.1	NA	NA	9	NA
2008	Jan	1/24/2008	6.8	360	NA	<0.02	NA	9.2	NA	0.28	NA	NA	6	1.1	NA	20	NA
2008	Feb	2/26/2008	7.7	440	NA	<0.02	NA	9.1	NA	0.02	NA	NA	6.5	1.4	NA	4	NA
2008	Apr	4/22/2008	8.4	390	NA	<0.02	NA	11	NA	0.32	NA	NA	7.9	1.1	NA	7	NA
2008	May	5/20/2008	9.3	330	NA	<0.06	NA	9	NA	0.32	NA	NA	6.3	1.8	NA	10	NA
2008	Jun	6/17/2008	6.9	290	NA	0.06	NA	9.6	NA	0.67	NA	NA	6.8	1.4	NA	15	NA
2008	Jul	7/22/2008	4.6	160	NA	<0.06	NA	7.1	NA	0.23	NA	NA	4.5	0.18	NA	6	NA
2008	Aug	8/19/2008	4.4	170	NA	<0.06	NA	4.4	NA	0.13	NA	NA	2.8	0.22	NA	4	NA
2008	Sep	9/23/2008	10	360	NA	<0.06	NA	8.3	NA	0.28	NA	NA	7.3	1	NA	5	NA
2011	Jan	1/18/2011	7.9	447	0.05	0.06	6.4	8.1	<0.071	0.08	25	5.1	5.5	0.48	4	6.1	8
2011	Feb	2/17/2011	7.6	375	0.02	0.02	6	7.1	<0.071	<0.071	21	4.1	4.7	0.43	1	1.6	20
2011	Mar	3/15/2011	6.8	390	0.02	0.03	6.1	6.7	<0.071	<0.071	19	4.2	4.3	0.36	0.96	2	14
2011	Apr	4/19/2011	4.6	207	<0.04	0.06	6.6	10	0.08	0.22	8.2	3	3.4	0.38	6.8	13	40.5
2011	May	5/10/2011	5.3	231	<0.04	<0.04	5.3	6.6	<0.03	0.08	11	3.3	3.7	0.32	1.7	2.8	13
2011	Jun	6/14/2011	6	288	<0.04	<0.04	4.6	6.1	<0.03	0.22	13	3.2	4	0.32	0.7	3.5	29
2011	Jul	7/12/2011	5.2	234	0.04	0.06	5.9	8.2	0.05	0.28	9.8	3.5	4.6	0.43	2.4	5.5	13
2011	Aug	8/9/2011	4.2	179	<0.04	0.05	3.3	4.9	0.04	0.19	6.9	2.1	2.5	0.24	2.5	5.6	12
2011	Sep	9/6/2011	NA	96	NA	NA	2.4	3.6	NA	NA	NA	1.3	1.8	0.16	2.4	5.8	22
2011	Oct	10/11/2011	NA	381	NA	NA	4.3	5.9	NA	NA	NA	4.3	4.8	0.38	5.8	2.9	18
2011	Nov	11/8/2011	NA	347	NA	NA	5.6	6.5	NA	NA	NA	4.2	4.7	0.37	<0.7	1.7	8
2011	Dec	12/6/2011	NA	344	NA	NA	6.4	7.4	NA	NA	NA	4.3	5.1	0.38	1.2	2	14
Sample and Exceedance Summary																	
Samples collected in 2006			5	5	0	5	0	5	0	5	0	0	5	5	0	5	0
Samples collected in 2007			8	8	0	8	0	8	0	8	0	0	8	4	0	8	0

YEAR	MONTH	DATE	AS, TOTAL (µG/L)	B, TOTAL (µG/L)	CD, DISSOLVED (µG/L)	CD, TOTAL (µG/L)	CU, DISSOLVED (µG/L)	CU, TOTAL (µG/L)	PB, DISSOLVED (µG/L)	PB, TOTAL (µG/L)	MO, TOTAL (µG/L)	NI, DISSOLVED (µG/L)	NI, TOTAL (µG/L)	SE, TOTAL (µG/L)	ZN, DISSOLVED (µG/L)	ZN, TOTAL (µG/L)	TSS, TOTAL (MG/L)
Samples collected in 2008			8	8	0	8	0	8	0	8	0	0	8	8	0	8	3
Samples collected in 2011			8	12	8	8	12	12	8	8	8	12	12	12	12	12	13
Total Collected			29	33	8	29	12	33	8	29	8	12	33	29	12	33	16
Total Exceedances			1	0	0	0	0	0	0	0	5	0	0	0	0	0	0
% Exceedances			3.4%	0%	0%	0%	0%	0%	0%	0%	62.5%	0%	0%	0%	0%	0%	0%

Table 7. Molybdenum results of samples collected from locations within the ESJWQC.

Dry sites not included. Bold station names indicate sites that are within a zone that has had one or more exceedance of the molybdenum WQTL.

STATION NAME	MIN OF SAMPLE DATE	MAX OF SAMPLE DATE	JAN		FEB		MAR		APR		MAY		JUN		JUL		AUG		SEP		OCT		NOV		DEC		TOTAL COUNT OF RESULT	TOTAL AVG OF RESULT
			COUNT	AVG	COUNT	AVG	COUNT	AVG	COUNT	AVG	COUNT	AVG																
Berenda Slough along Ave 18 1/2	1/18/2011	8/16/2011	1	1.30	1	0.89	1	0.96	1	1.10	1	0.83	1	0.74	1	0.46	1	0.44									8	0.84
Burnett Lateral @ 28 Mile Rd	2/20/2013	2/20/2013			1	0.60																				1	0.60	
Cottonwood Creek @ Rd 20	1/18/2011	8/16/2011	1	1.80	1	1.90	1	1.50	1	1.40	1	1.40	1	1.30	1	1.30	1	1.30								8	1.49	
Deadman Creek @ Gurr Rd	10/21/2008	12/14/2010	1	4.00	1	4.90	1	2.70	1	2.10					1	1.70	1	0.91	1	1.60	2	3.02	2	4.30	3	4.33	14	3.25
Deadman Creek @ Hwy 59	1/18/2011	4/12/2012	1	2.60	1	4.80	1	2.40	2	3.50	1	2.50	1	2.50	1	1.70	1	2.30								9	2.87	
Dry Creek @ Rd 18	4/2/2013	4/2/2013																								1	1.70	
Dry Creek @ Wellsford Rd	1/18/2011	8/9/2011	1	0.25	1	0.43	1	0.31	1	0.60	1	0.72	1	0.49	1	0.73	1	0.79								8	0.54	
Duck Slough @ Gurr Rd	12/16/2008	8/16/2011	2	1.70	2	4.00	2	1.08	2	1.74	1	0.61	1	0.74	1	0.42	1	0.58							1	2.10	13	1.65
Highline Canal @ Hwy 99	3/15/2011	8/9/2011					1	0.33	1	0.28	1	0.29	1	0.24	1	0.25	1	0.25								6	0.27	
Highline Canal @ Lombardy Rd	1/18/2011	4/12/2012	1	1.50	1	1.60	1	0.31	2	0.27	1	0.29	1	0.24	1	0.23	1	0.26								9	0.55	
Howard Lateral @ Hwy 140	4/21/2009	10/19/2010							1	1.00					1	0.63	1	1.00	1	0.51	1	0.34				5	0.70	
Lateral 2 1/2 near Keyes Rd	10/21/2008	10/19/2010							1	0.44					1	0.55	1	0.33	1	0.91	2	0.83	1	2.50		7	0.91	
Lateral 3 along East Taylor Rd	3/15/2011	8/9/2011					1	0.33	1	0.35	1	0.26	1	0.58	1	0.29	1	0.26								6	0.35	
Levee Drain @ Carpenter Rd	4/12/2012	4/2/2013			1	9.50			2	6.40																3	7.43	
McCoy Lateral @ Hwy 140	1/18/2011	4/12/2012	1	0.49					2	0.92	1	0.41	1	0.41	1	0.63	1	0.41								7	0.60	
Merced River @ Santa Fe	10/21/2008	8/9/2011	2	0.49	2	0.50	2	0.54	2	0.53	1	0.40	1	0.32	1	0.32	1	0.39			1	0.35	1	0.38	1	0.38	15	0.44
Miles Creek @ Reilly Rd	2/20/2013	4/2/2013			1	1.50			1	0.95																2	1.23	
Mootz Drain @ Langworth Rd	11/11/2008	4/21/2009			1	1.80	1	2.70	1	1.10													1	0.93	1	0.65	5	1.44
Mootz Drain Downstream of Langworth Pond	12/15/2009	4/2/2013							1	0.80					1	0.79	1	0.74	1	0.64					2	1.70	6	1.06
Mustang Creek @ East Ave	2/7/2009	12/15/2009			1	3.10	1	2.90																	1	2.80	3	2.93
Prairie Flower Drain @ Crows Landing Rd	1/18/2011	8/9/2011	1	25.0	1	21.0	1	19.0	1	8.20	1	11.0	1	13.0	1	9.80	1	6.90								8	14.24	
Rodden Creek @ Rodden Rd	1/18/2011	4/12/2012	1	0.20	1	0.22	1	0.29	2	0.30	1	0.23	1	0.25	1	0.20	1	0.28								9	0.25	
Unnamed Drain @ Hwy 140	4/2/2013	4/2/2013							1	5.30																1	5.30	
GRAND TOTAL (COUNTS / AVERAGES)			13	3.19	17	3.60	16	2.31	28	1.88	12	1.58	12	1.73	16	1.25	16	1.07	4	0.92	6	1.40	5	2.48	9	2.48	154	2.05

Highline Canal @ Hwy 99

Highline Canal @ Hwy 99 is the Core site in Zone 3. The decision for monitoring for metals at Highline Canal @ Hwy 99 during the 2014 Water Year is outlined in Table 8; the monitoring plan is based on results from 2006 to June, 2013. Metals monitoring results are listed in Table 9. Only concentrations of copper and lead exceeded the WQTL in samples collected from Highline Canal @ Hwy 99 (Table 10).

Table 8. Results of the flow chart analysis for Highline Canal @ Hwy 99 outlined in Figure 2.

“X” indicates a monitoring decision.

FLOW CHART QUESTION	As, Tot	B, Tot	Cd Tot	Cd Dis	Cu, Tot	Cu, Dis	Pb, Tot	Pb, Dis	Mo, Tot	Ni, Tot	Ni, Dis	Se, Tot	Zn, Tot	Zn, Dis
1. Is site on 303d list for constituent?	No	No	No	No	No	No	No	No	No	No	No	No	No	No
2. Has the site been adequately characterized?	No	No	Yes	No	Yes	No	Yes	No	No	Yes	No	No	Yes	No
3. Has there been an exceedance?	No	No	No	No	Yes	Yes	Yes	No	No	No	No	No	No	No
4. Is waterbody in a management plan for constituent?	No	No	No	No	Yes	Yes	Yes ¹	Yes ¹	No	No	No	No	No	No
5. Has there been a TIE indicating the constituent class as causal agent?	No	No	No	No	Yes	Yes	Yes	No	No	No	No	No	No	No
6. Acres treated > 1%?	No	No	No	No	Yes	Yes	No	No	No	No	No	No	No	No
MONITORING DECISION														
1. TMDL-specific monitoring														
2. Delist from TMDL or discuss monitoring delist options														
3. Monitoring according to management plan						X		X ²						
4. Propose monitoring plan	X	X		X					X		X	X		X
5. No monitoring			X		X		X ²			X			X	

¹The management plan is for lead regardless of the fraction.

²Management plan places lead as a Priority E constituent.

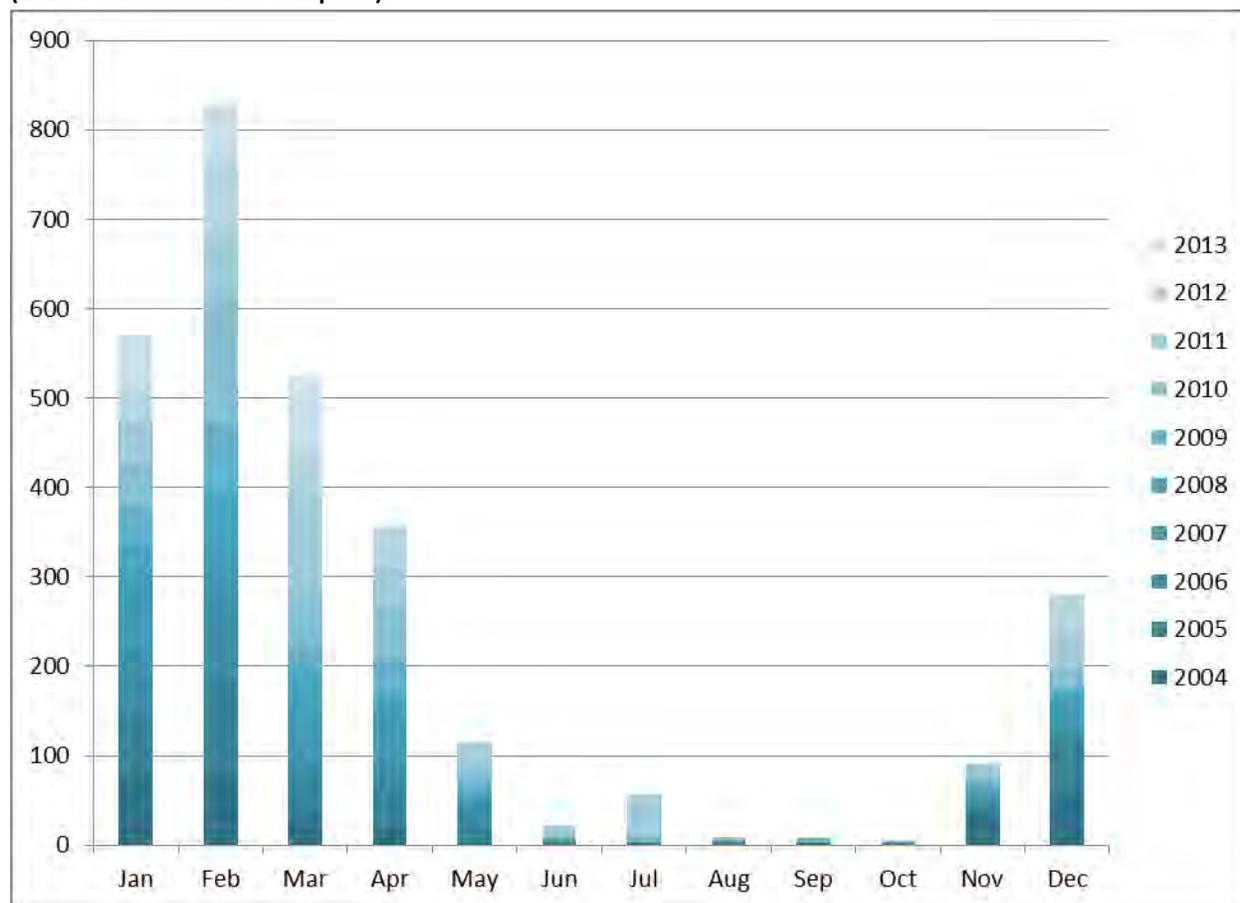
Monitoring Decision #3 - Monitoring according to a management plan

Copper

Copper was placed in the Highline Canal @ Hwy 99 site subwatershed management plan in 2008. From 2007 through 2008 all copper exceedances were based on total copper concentrations and the hardness based trigger limit. Since monitoring for the dissolved fraction, there have been two exceedances of copper (2012). Based on past monitoring exceedances, the Coalition has been conducting MPM at Highline Canal @ Hwy 99 for copper from January, February, April, June, July and August. A majority of copper applications occur between January and April (Figure 3). The least amount of copper is applied between May and November although there have been exceedances in June, July and August (Figure 3, Table 9). The exceedances that have occurred in June, July and August were in samples collected in 2007 that were analyzed for the total fraction only; the results range from 2.4 to 3.2 µg/L copper (Table 9). There have been no exceedances of copper in samples collected in June, July and August in 2008, 2010 and 2011; to date there have been no exceedances in June of 2013. To ensure that monitoring represents months of the highest likelihood of copper discharge into Highline Canal, the Coalition will remove monitoring in June, July and August from its MPM schedule and add in monitoring in the

months of March and December to capture the potential of copper movement from fields during storm events. For the 2014 Water Year, the Coalition will conduct MPM for dissolved copper from January through April and December.

Figure 3. Sum of pounds of copper (Al) applied in the Highline Canal @ Hwy 99 subwatershed from 2004 - 2013 (2013 PUR data are not complete).



Lead

Lead was placed in the Highline Canal @ Hwy 99 site subwatershed management plan in 2007. From 2006 through 2007 all lead exceedances were based on total lead concentrations and the hardness based trigger limit. Since monitoring for the dissolved fraction, there have been no exceedances of lead (Table 9). Based on past monitoring exceedances, the Coalition will continue to conduct MPM at Highline Canal @ Hwy 99 for dissolved lead in February and April through August.

Monitoring Decision #4- Propose monitoring plan

Arsenic, Boron, Dissolved Cadmium, Dissolved Nickel, Dissolved Zinc, Molybdenum and Selenium

Arsenic, boron, and selenium have been sampled periodically since the Coalition initiated monitoring at Highline Canal @ Highway 99 in 2006. Sampling for dissolved cadmium, dissolved nickel, and dissolved zinc was initiated in 2008. Monitoring occurred in 2011, 2012, and 2013 but few samples have been

collected. There were no exceedances of any of the WQTLs for these metals. Because there has been little monitoring for these constituents over the last three years, the ESJWQC will monitor these metals in 2014. Monitoring frequency will be four times during the year as specified in the 2011 revisions to the MRPP.

Monitoring Decision #5 - No monitoring

Total Cadmium, Copper, Lead, Nickel, and Zinc

Total cadmium, total copper, total lead, total nickel, and total zinc are no longer necessary because the Coalition is monitoring for the dissolved phase of the same metals (Table 9). There were no exceedances of any of the WQTLs for these constituents. In addition, the dissolved fraction is the bioavailable fraction of these metals and is the fraction that will be monitored. Working through the flow chart in Figure 2 results in a decision of no monitoring (Monitoring Decision #5 of Table 8) for total cadmium, lead, nickel, and zinc at Highline Canal @ Highway 99.

Table 9. Highline Canal @ Hwy 99 site subwatershed dissolved and total metals monitoring results (2006-2013).

Total Suspended Solids (TSS) results are included as a measurement of sediment mobilization. An exceedance of a WQTL is highlighted in blue. "NA" indicates that a constituent was not analyzed on that date.

YEAR	MONTH	DATE	AS, TOTAL (µG/L)	B, TOTAL (µG/L)	CD, DISSOLVED (µG/L)	CD, TOTAL (µG/L)	CU, DISSOLVED (µG/L)	CU, TOTAL (µG/L)	PB, DISSOLVED (µG/L)	PB, TOTAL (µG/L)	MO, TOTAL (µG/L)	NI, DISSOLVED (µG/L)	NI, TOTAL (µG/L)	SE, TOTAL (µG/L)	ZN, DISSOLVED (µG/L)	ZN, TOTAL (µG/L)	TSS, TOTAL (MG/L)
2006	May	5/17/2006	<0.2	6	NA	<0.04	NA	1.8	NA	0.42	NA	NA	1.2	<0.7	NA	3	NA
2006	Jun	6/14/2006	<0.3	6	NA	<0.02	NA	1.7	NA	0.38	NA	NA	1	<0.9	NA	8	NA
2006	Jul	7/12/2006	<0.3	6	NA	<0.02	NA	1.6	NA	0.48	NA	NA	1.2	<0.9	NA	11	NA
2006	Aug	8/9/2006	<0.3	4	NA	<0.02	NA	1.3	NA	0.39	NA	NA	0.9	<0.9	NA	6	NA
2006	Sep	9/13/2006	<0.3	7	NA	<0.02	NA	1.3	NA	0.24	NA	NA	0.8	<0.9	NA	19	NA
2007	Feb	2/11/2007	1.4	11	NA	<0.02	NA	3	NA	0.52	NA	NA	1.4	<0.9	NA	24	NA
2007	Feb	2/28/2007	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
2007	Apr	4/17/2007	0.9	5	NA	0.08	NA	11	NA	5.1	NA	NA	2.9	<0.9	NA	34	NA
2007	May	5/15/2007	0.4	9	NA	<0.02	NA	1.4	NA	0.3	NA	NA	1	<0.9	NA	2	NA
2007	Jun	6/19/2007	0.6	5	NA	<0.04	NA	2.4	NA	0.5	NA	NA	1.3	NA	NA	3	NA
2007	Jul	7/17/2007	0.8	5	NA	<0.04	NA	3.2	NA	1	NA	NA	2	NA	NA	6	NA
2007	Aug	8/14/2007	0.46	10	NA	<0.04	NA	1.9	NA	0.44	NA	NA	1	NA	NA	7	NA
2007	Sep	9/11/2007	0.5	7	NA	<0.04	NA	1.5	NA	0.48	NA	NA	0.6	NA	NA	3	NA
2008	Jan	1/24/2008	5.2	82	NA	0.2	NA	37	NA	3.4	NA	NA	11	0.74	NA	36	NA
2008	Feb	2/26/2008	8.6	110	NA	0.096	NA	81	NA	1.1	NA	NA	10	0.85	NA	31	NA
2008	Apr	4/22/2008	0.4	6	NA	<0.02	NA	1.8	NA	0.3	NA	NA	1.1	<0.22	NA	3	NA
2008	Apr	4/29/2008	NA	NA	NA	NA	NA	1.4	NA	NA	NA	NA	NA	NA	NA	NA	NA
2008	May	5/20/2008	0.49	6	NA	<0.06	NA	1.6	NA	0.48	NA	NA	1.1	0.8	NA	3	NA
2008	Jun	6/3/2008	NA	NA	NA	NA	NA	1.5	NA	NA	NA	NA	NA	NA	NA	NA	NA
2008	Jun	6/17/2008	0.45	6	NA	<0.06	NA	1.2	NA	0.28	NA	NA	0.8	0.7	NA	3	NA
2008	Jul	7/8/2008	NA	NA	NA	NA	NA	1.7	NA	NA	NA	NA	NA	NA	NA	NA	NA
2008	Jul	7/22/2008	0.4	5	NA	<0.06	NA	1.2	NA	0.4	NA	NA	0.8	<0.11	NA	6	NA
2008	Aug	8/5/2008	NA	NA	NA	NA	NA	1.6	NA	NA	NA	NA	NA	NA	NA	NA	NA
2008	Aug	8/19/2008	0.4	5	NA	<0.06	NA	1	NA	0.18	NA	NA	0.6	<0.11	NA	2	NA
2008	Sep	9/23/2008	0.3	5	NA	<0.06	NA	1.1	NA	0.22	NA	NA	0.7	<0.11	NA	3	NA
2008	Oct	10/21/2008	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
2008	Nov	11/11/2008	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
2008	Dec	12/16/2008	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
2009	Jan	1/20/2009	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
2009	Mar	3/17/2009	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
2009	Nov	11/17/2009	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
2010	Jan	1/19/2010	NA	NA	NA	NA	2.5	5.7	NA	NA	NA	NA	NA	NA	NA	NA	33
2010	Feb	2/23/2010	NA	NA	NA	NA	6.3	7.8	NA	NA	NA	NA	NA	NA	NA	NA	19
2010	Apr	4/20/2010	NA	NA	NA	NA	0.89	2.2	NA	NA	NA	NA	NA	NA	NA	NA	13
2010	Jun	6/15/2010	NA	NA	NA	NA	0.65	1.2	NA	NA	NA	NA	NA	NA	NA	NA	6
2010	Jul	7/20/2010	NA	NA	NA	NA	0.48	1.3	NA	NA	NA	NA	NA	NA	NA	NA	5

YEAR	MONTH	DATE	As, TOTAL (µG/L)	B, TOTAL (µG/L)	CD, DISSOLVED (µG/L)	CD, TOTAL (µG/L)	CU, DISSOLVED (µG/L)	CU, TOTAL (µG/L)	PB, DISSOLVED (µG/L)	PB, TOTAL (µG/L)	MO, TOTAL (µG/L)	NI, DISSOLVED (µG/L)	NI, TOTAL (µG/L)	SE, TOTAL (µG/L)	ZN, DISSOLVED (µG/L)	ZN, TOTAL (µG/L)	TSS, TOTAL (MG/L)
2010	Aug	8/17/2010	NA	NA	NA	NA	0.52	1.2	NA	NA	NA	NA	NA	NA	NA	NA	10
2010	Dec	12/14/2010	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
2011	Jan	1/18/2011	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
2011	Feb	2/17/2011	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
2011	Mar	3/15/2011	0.44	6.7	<0.011	<0.011	1.1	2.1	0.09	0.34	0.33	0.77	1.1	<0.06	1.1	2.3	<2
2011	Apr	4/19/2011	0.39	6.7	<0.04	<0.04	0.97	1.3	0.07	0.2	0.28	0.75	0.75	0.08	0.95	1.2	<2
2011	May	5/10/2011	0.36	6.7	<0.04	<0.04	0.3	0.89	0.04	0.28	0.29	0.46	0.79	<0.06	<0.7	1.2	3
2011	Jun	6/14/2011	0.35	5.3	<0.04	<0.04	0.58	1.1	0.07	0.22	0.24	0.44	0.62	<0.06	<0.7	1.3	3
2011	Jul	7/12/2011	0.36	6.7	<0.04	<0.04	0.53	1.4	0.16	0.53	0.25	0.4	1	<0.06	<0.7	1.8	15
2011	Aug	8/9/2011	0.32	6.7	<0.04	<0.04	0.3	0.82	0.04	0.39	0.246	0.4	0.76	<0.06	<0.7	1.3	14
2011	Sep	9/6/2011	NA	5.7	NA	NA	0.51	5.2	NA	NA	NA	0.5	3.8	<0.06	<0.7	13	168
2011	Oct	10/11/2011	NA	4.7	NA	NA	0.11	0.88	NA	NA	NA	0.32	0.56	<0.06	<0.7	1.1	<2
2011	Nov	11/8/2011	NA	4.9	NA	NA	1.4	2.2	NA	NA	NA	0.56	0.94	<0.06	<0.7	2.1	4
2011	Dec	12/6/2011	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
2012	Jan	1/10/2012	NA	NA	NA	NA	4.5	5.6	NA	NA	NA	NA	NA	NA	NA	NA	<2
2012	Feb	2/7/2012	NA	NA	NA	NA	3.8	4.7	0.14	0.33	NA	NA	NA	NA	NA	NA	2
2012	Mar	3/6/2012	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
2013	Jan	1/8/2013	NA	NA	NA	NA	11	19	NA	NA	NA	NA	NA	NA	NA	NA	NA
2013	Feb	2/12/2013	NA	NA	NA	NA	6.7	9.1	0.12	0.99	NA	NA	NA	NA	NA	NA	NA
2013	Apr	4/2/2013	NA	NA	NA	NA	1.2	2.5	0.08	0.59	NA	NA	NA	NA	NA	NA	NA
2013	May	5/14/2013	NA	NA	NA	NA	NA	NA	0.05	0.19	NA	NA	NA	NA	NA	NA	NA
2013	Jun	6/11/2013	NA	NA	NA	NA	0.54	1	0.04	0.18	NA	NA	NA	NA	NA	NA	NA
Sample and Exceedance Summary																	
Samples collected in 2006			5	5	0	5	0	5	0	5	0	0	5	5	0	5	0
Samples collected in 2007			7	7	0	7	0	7	0	7	0	0	7	3	0	7	0
Samples collected in 2008			8	8	0	8	0	12	0	8	0	0	8	8	0	8	0
Samples collected in 2010			0	0	0	0	6	6	0	0	0	0	0	0	0	0	11
Samples collected in 2011			6	9	6	6	9	9	6	6	6	9	9	9	9	9	9
Samples collected in 2012			0	0	0	0	2	2	1	1	0	0	0	0	0	0	2
Samples collected in 2013			0	0	0	0	4	4	4	4	0	0	0	0	0	0	0
Total Collected ¹			26	29	6	26	21	45	11	31	6	9	29	25	9	29	22
Total Exceedances			0	0	0	0	3	0	0	7	0	0	0	0	0	0	0
% Exceedances			0%	0%	0%	0%	14.3%	0%	0%	22.6%	0%	0%	0%	0%	0%	0%	0%

¹The total reflects the number of samples collected to be analyzed for metals; Highline Canal @ Hwy 99 was dry 12 times from 2006 through June 2013.

Merced River @ Santa Fe

Merced River @ Santa Fe is the Core site in Zone 4. The decision for monitoring for metals Merced River @ Santa Fe during the 2014 Water Year is outlined in Table 10; the monitoring plan is based on results from 2006 to June, 2013. Metals monitoring results are listed in Table 11. Only concentrations of copper and lead exceeded the WQTL in samples collected from Merced River @ Santa Fe (Table 11).

Table 10. Results of the flow chart analysis for Merced River @ Santa Fe outlined in Figure 2.

FLOW CHART QUESTION	As, Tot	B, Tot	Cd Tot	Cd Dis	Cu, Tot	Cu, Dis	Pb, Tot	Pb, Dis	Mo, Tot	Ni, Tot	Ni, Dis	Se, Tot	Zn, Tot	Zn, Dis
1. Is site on 303d list for constituent?	No	No	No	No	No	No	No	No	No	No	No	No	No	No
2. Has the site been adequately characterized?	No	No	Yes	No	Yes	No	Yes	No	No	Yes	No	No	Yes	No
3. Has there been an exceedance?	No	No	No	No	Yes	No	Yes	No	No	No	No	No	No	No
4. Is waterbody in a management plan for constituent?	No	No	No	No	No	No	Yes ¹	Yes ¹	No	No	No	No	No	No
5. Has there been a TIE indicating the constituent class as causal agent?	No	No	No	No	Yes	Yes	Yes	No	No	No	No	No	No	No
6. Acres treated > 1%?	No	No	No	No	Yes	Yes	No	No	No	No	No	No	No	No
MONITORING DECISION														
1. TMDL-specific monitoring														
2. Delist from TMDL or discuss monitoring delist options														
3. Monitoring according to management plan								X ²						
4. Propose monitoring plan	X	X		X		X			X		X	X		X
5. No monitoring			X		X		X ²			X			X	

¹The management plan is for lead regardless of the fraction.

²Management plan places lead as a Priority E constituent.

Monitoring Decision #3-Monitoring according to the management plan

Lead

Lead was placed in the Merced River @ Santa Fe site subwatershed management plan in 2009. The two lead exceedances occurred in February 2007 (0.82 µg/L) and January 2008 (5.6 µg/L) and were based on total lead concentrations using the hardness-based trigger limit. Since monitoring was initiated for the dissolved fraction in 2008, there have been no exceedances of the lead WQTL (Table 11). Based on past monitoring exceedances, the Coalition will continue to conduct MPM at Merced River @ Santa Fe for dissolved lead in January and February of 2014.

Monitoring Decision #4 – Propose monitoring plan

Arsenic, Boron, Dissolved Copper, Dissolved Cadmium, Dissolved Lead, Molybdenum, Selenium, Dissolved Nickel, Dissolved Zinc

The metals, arsenic, boron, molybdenum, selenium, cadmium, copper, lead, nickel, and zinc were monitored periodically through 2011. There were no exceedances of the WQTLs for these constituents during the entire period of monitoring. Because it has been three years since the last monitoring for these constituents, the ESJWQC will monitor these metals in 2014. Monitoring frequency will be four times during the year as specified in the 2011 revisions to the MRPP.

Monitoring Decision #5 - No monitoring

Total Cadmium, Total Copper, Total Lead, Total Nickel, and Total Zinc

Monitoring for total cadmium, total copper, total lead, total nickel, and total zinc are no longer necessary because the Coalition is monitoring for the dissolved phase of the same metals (Table 11). There were no exceedances of any of the WQTLs for these constituents. In addition, the dissolved fraction is the bioavailable fraction of these metals and is the fraction that will be monitored. Working through the flow chart in Figure 2 results in a decision of no monitoring (Monitoring Decision #5 of Table 10) for total cadmium, lead, nickel, and zinc at Merced River @ Santa Fe.

Table 11. Merced River @ Santa Fe site subwatershed dissolved and total metals monitoring results (2006-2011).

Total Suspended Solids (TSS) results are included as a measurement of sediment mobilization. An exceedance of a WQTL is highlighted in blue. "NA" indicates that a constituent was not analyzed on that date.

YEAR	MONTH	DATE	AS, TOTAL (µG/L)	B, TOTAL (µG/L)	CD, DISSOLVED (µG/L)	CD, TOTAL (µG/L)	CU, DISSOLVED (µG/L)	CU, TOTAL (µG/L)	PB, DISSOLVED (µG/L)	PB, TOTAL (µG/L)	MO, TOTAL (µG/L)	NI, DISSOLVED (µG/L)	NI, TOTAL (µG/L)	SE, TOTAL (µG/L)	ZN, DISSOLVED (µG/L)	ZN, TOTAL (µG/L)	TSS, TOTAL (MG/L)
2006	May	5/16/2006	0.5	4	NA	<0.02	NA	NA	NA	0.12	NA	NA	0.7	<0.9	NA	7	NA
2006	Jun	6/14/2006	<0.3	5	NA	<0.02	NA	0.9	NA	0.14	NA	NA	0.5	<0.9	NA	2	NA
2006	Jul	7/12/2006	0.6	5	NA	<0.02	NA	1.3	NA	0.19	NA	NA	0.6	<0.9	NA	3	NA
2006	Aug	8/9/2006	0.5	3	NA	<0.02	NA	0.8	NA	0.14	NA	NA	0.5	<0.9	NA	3	NA
2006	Sep	9/13/2006	<0.3	7	NA	<0.02	NA	1.4	NA	0.11	NA	NA	0.5	<0.9	NA	19	NA
2007	Feb	2/12/2007	1.1	9	NA	<0.02	NA	2.9	NA	0.82	NA	NA	1.7	<0.9	NA	14	NA
2007	Feb	2/28/2007	1.5	11	NA	<0.02	NA	3.4	NA	0.68	NA	NA	1.9	<0.9	NA	6	NA
2007	Apr	4/17/2007	1	5	NA	<0.02	NA	1.4	NA	0.12	NA	NA	0.47	<0.9	NA	2	NA
2007	May	5/15/2007	0.3	10	NA	<0.02	NA	0.9	NA	<0.1	NA	NA	0.4	<0.9	NA	<0.4	NA
2007	Jun	6/19/2007	1.1	5	NA	<0.04	NA	1.3	NA	0.1	NA	NA	0.4	NA	NA	2	NA
2007	Jul	7/17/2007	1.3	30	NA	<0.04	NA	1.4	NA	0.14	NA	NA	0.5	NA	NA	<0.7	NA
2007	Aug	8/14/2007	1	12	NA	<0.04	NA	1.5	NA	0.1	NA	NA	0.47	NA	NA	1	NA
2007	Sep	9/11/2007	0.6	8	NA	<0.04	NA	0.8	NA	0.07	NA	NA	0.4	NA	NA	<0.7	NA
2008	Jan	1/24/2008	1.7	17	NA	0.1	NA	22	NA	5.6	NA	NA	11	0.23	NA	38	NA
2008	Feb	2/26/2008	1	11	NA	0.03	NA	5.2	NA	1.2	NA	NA	3.2	0.65	NA	9	NA
2008	Apr	4/22/2008	0.8	7	NA	<0.02	NA	1.4	NA	0.15	NA	NA	0.6	<0.22	NA	2	NA
2008	May	5/20/2008	0.9	7	NA	<0.06	NA	0.8	NA	0.09	NA	NA	0.4	0.77	NA	1	NA
2008	Jun	6/17/2008	1	8	NA	<0.06	NA	1.1	NA	0.11	NA	NA	0.46	0.55	NA	4	NA
2008	Jul	7/22/2008	1.1	6	NA	<0.06	NA	0.8	NA	0.13	NA	NA	0.2	<0.11	NA	3	NA
2008	Aug	8/19/2008	0.9	6	NA	<0.06	NA	1.2	NA	0.13	NA	NA	0.5	0.12	NA	1	NA
2008	Sep	9/23/2008	0.6	5	NA	<0.06	NA	0.7	NA	0.09	NA	NA	0.3	<0.11	NA	1	NA
2008	Oct	10/21/2008	0.53	7	<0.011	<0.011	0.6	0.8	<0.071	<0.14	0.35	0.2	0.3	<0.06	<0.8	<0.8	<2
2008	Nov	11/11/2008	0.6	5	<0.011	<0.011	0.6	1.2	<0.071	0.3	0.38	0.3	0.6	<0.06	<0.8	2	<2
2008	Dec	12/16/2008	0.48	4	<0.011	<0.011	0.45	0.6	<0.071	<0.071	0.38	0.3	0.2	<0.06	<0.8	<0.8	<2
2009	Jan	1/20/2009	0.5	6	<0.011	<0.011	0.4	0.6	<0.071	<0.071	0.54	0.3	0.2	<0.06	<0.8	<0.8	<2
2009	Feb	2/7/2009	0.62	7	<0.011	<0.011	0.49	0.9	<0.071	0.11	0.59	0.4	0.46	<0.06	<0.8	1	<2
2009	Mar	3/17/2009	0.68	6.8	<0.011	<0.011	0.73	1	<0.071	0.1	0.67	0.43	0.42	0.14	1.2	0.9	<2
2009	Apr	4/21/2009	0.79	7.6	<0.011	<0.011	0.79	1.1	<0.071	0.1	0.68	0.51	0.44	0.09	<0.8	1.4	<2
2009	May	5/19/2009	NA	7.6	NA	NA	0.7	1	NA	NA	NA	0.53	0.42	0.09	<0.8	1.6	<2
2009	Jun	6/16/2009	NA	NA	NA	NA	0.58	0.9	NA	NA	NA	NA	NA	NA	NA	NA	<2
2009	Jul	7/21/2009	NA	NA	NA	NA	0.8	0.41	NA	NA	NA	NA	NA	NA	NA	NA	<1
2009	Aug	8/18/2009	NA	NA	NA	NA	0.76	1.1	NA	NA	NA	NA	NA	NA	NA	NA	<2
2009	Sep	9/22/2009	NA	NA	NA	NA	0.28	0.97	NA	NA	NA	NA	NA	NA	NA	NA	<2
2009	Oct	10/20/2009	NA	NA	NA	NA	0.61	0.82	NA	NA	NA	NA	NA	NA	NA	NA	<2
2009	Nov	11/17/2009	NA	NA	NA	NA	0.35	0.51	NA	NA	NA	NA	NA	NA	NA	NA	<2
2009	Dec	12/15/2009	NA	NA	NA	NA	0.54	0.6	NA	NA	NA	NA	NA	NA	NA	NA	<2

YEAR	MONTH	DATE	As, TOTAL (µG/L)	B, TOTAL (µG/L)	CD, DISSOLVED (µG/L)	CD, TOTAL (µG/L)	CU, DISSOLVED (µG/L)	CU, TOTAL (µG/L)	PB, DISSOLVED (µG/L)	PB, TOTAL (µG/L)	MO, TOTAL (µG/L)	NI, DISSOLVED (µG/L)	NI, TOTAL (µG/L)	SE, TOTAL (µG/L)	ZN, DISSOLVED (µG/L)	ZN, TOTAL (µG/L)	TSS, TOTAL (MG/L)
2010	Jan	1/19/2010	NA	NA	NA	NA	1.6	9.4	NA	NA	NA	NA	NA	NA	NA	NA	150
2010	Feb	2/23/2010	NA	NA	NA	NA	0.78	1	NA	NA	NA	NA	NA	NA	NA	NA	<2
2010	Mar	3/23/2010	NA	NA	NA	NA	0.95	1.2	NA	NA	NA	NA	NA	NA	NA	NA	<2
2010	Apr	4/20/2010	NA	NA	NA	NA	0.84	1.1	NA	NA	NA	NA	NA	NA	NA	NA	<2
2010	May	5/18/2010	NA	NA	NA	NA	0.72	1.3	NA	NA	NA	NA	NA	NA	NA	NA	2
2010	Jun	6/15/2010	NA	NA	NA	NA	0.64	1.6	NA	NA	NA	NA	NA	NA	NA	NA	<2
2010	Jul	7/20/2010	NA	NA	NA	NA	0.59	1.2	<0.071	0.14	NA	NA	NA	NA	NA	NA	<2
2010	Aug	8/17/2010	NA	NA	NA	NA	0.49	0.72	<0.071	0.074	NA	NA	NA	NA	NA	NA	<2
2010	Sep	9/14/2010	NA	NA	NA	NA	0.67	1.2	<0.071	0.13	NA	NA	NA	NA	NA	NA	2
2010	Oct	10/19/2010	NA	NA	NA	NA	0.498	0.62	<0.071	<0.071	NA	NA	NA	NA	NA	NA	<2
2010	Nov	11/16/2010	NA	NA	NA	NA	0.38	0.53	0.09	<0.071	NA	NA	NA	NA	NA	NA	<2
2010	Dec	12/14/2010	NA	NA	NA	NA	0.28	0.56	<0.071	<0.071	NA	NA	NA	NA	NA	NA	<2
2011	Jan	1/18/2011	0.75	6.8	<0.011	<0.011	0.54	1.1	<0.071	0.1	0.44	0.44	0.61	0.1	<0.8	<0.8	<2
2011	Feb	2/17/2011	0.45	4.9	<0.011	<0.011	0.56	0.63	<0.071	0.08	0.4	0.33	0.37	<0.06	<0.8	<0.8	6
2011	Mar	3/15/2011	0.57	4.7	<0.011	<0.011	0.52	0.88	<0.071	0.08	0.41	0.36	0.48	0.1	<0.8	<0.8	4
2011	Apr	4/19/2011	0.54	5.5	<0.04	<0.04	0.52	0.7	<0.03	0.07	0.37	0.38	0.38	0.13	<0.7	<0.7	<2
2011	May	5/10/2011	0.59	5.3	<0.04	<0.04	0.21	0.495	<0.03	0.08	0.4	0.33	0.44	0.1	<0.7	<0.7	4
2011	Jun	6/14/2011	0.66	4.7	<0.04	<0.04	0.48	1.1	0.03	0.18	0.32	0.27	0.54	0.06	<0.7	1	2
2011	Jul	7/12/2011	0.51	6.7	<0.04	<0.04	0.49	0.74	<0.03	0.08	0.32	0.27	0.37	0.07	<0.7	<0.7	2
2011	Aug	8/9/2011	0.75	5.8	<0.04	<0.04	0.37	0.76	0.04	0.14	0.39	0.31	0.48	<0.06	<0.7	<0.7	4
2011	Sep	9/6/2011	NA	5.1	NA	NA	0.46	0.94	NA	NA	NA	0.28	0.34	<0.06	<0.7	1.3	<2
2011	Oct	10/11/2011	NA	3.7	NA	NA	0.08	0.7	NA	NA	NA	0.2	0.37	<0.06	<0.7	0.8	<2
2011	Nov	11/8/2011	NA	3.3	NA	NA	0.19	0.28	NA	NA	NA	0.1	0.14	<0.06	<0.7	<0.7	<2
2011	Dec	12/6/2011	NA	4.3	NA	NA	0.38	0.65	NA	NA	NA	0.18	0.2	<0.06	<0.7	<0.7	2
Sample and Exceedance Summary																	
Samples collected in 2006	5	5	0	5	0	4	0	5	0	0	5	5	0	5	0	0	0
Samples collected in 2007	8	8	0	8	0	8	0	8	0	8	0	0	8	4	0	8	0
Samples collected in 2008	11	11	3	11	3	11	3	11	3	11	3	3	11	11	3	11	3
Samples collected in 2009	4	5	4	4	12	12	4	4	4	4	5	5	5	5	5	5	12
Samples collected in 2010	0	0	0	0	12	12	6	6	0	0	0	0	0	0	0	0	12
Samples collected in 2011	8	12	8	8	12	12	8	8	8	8	12	12	12	12	12	12	12
Total Collected	36	41	15	36	39	59	21	42	15	20	41	37	20	41	39	39	39
Total Exceedances	0	0	0	0	0	1	0	2	0	0	0	0	0	0	0	0	0
% Exceedances	0%	0%	0%	0%	0%	1.7%	0%	4.8%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Duck Slough @ Gurr Rd

Duck Slough @ Gurr Rd is the Core site in Zone 5. The decision for monitoring for metals at Duck Slough @ Gurr Rd during the 2014 Water Year is outlined in Table 12; the monitoring plan is based on results from 2006 to June, 2013. Metals monitoring results are listed in Table 13. Only concentrations of copper and lead exceeded the WQTL in samples collected from Duck Slough @ Gurr Rd (Table 13).

Table 12. Results of the flow chart analysis for Duck Slough at Gurr Rd outlined in Figure 2.

FLOW CHART QUESTION	As, TOT	B, TOT	Cd TOT	Cd Dis	Cu, TOT	Cu, Dis	Pb, TOT	Pb, Dis	Mo, TOT	Ni, TOT	Ni, Dis	Se, TOT	Zn, TOT	Zn, Dis
1. Is site on 303d list for constituent?	No	No	No	No	No	No	No	No	No	No	No	No	No	No
2. Has the site been adequately characterized?	No	No	Yes	No	Yes	No	Yes ¹	No ¹	No	Yes	No	No	Yes	No
3. Has there been an exceedance?	No	No	No	No	Yes	Yes	Yes	No	No	No	No	No	No	No
4. Is waterbody in a management plan for constituent?	No	No	No	No	Yes	Yes	Yes	Yes	No	No	No	No	No	No
5. Has there been a TIE indicating the constituent class as causal agent?	No	No	No	No	No	No	No	No	No	No	No	No	No	No
6. Acres treated > 1%?	No	No	No	No	No	No	No	No	No	No	No	No	No	No
MONITORING DECISION														
1. TMDL-specific monitoring														
2. Delist from TMDL or discuss monitoring delist options														
3. Monitoring according to management plan						X		X ²						
4. Propose monitoring plan	X	X		X					X		X	X		X
5. No monitoring			X		X		X ²			X			X	

¹The management plan is for lead regardless of the fraction.

²Management plan places lead as a Priority E constituent.

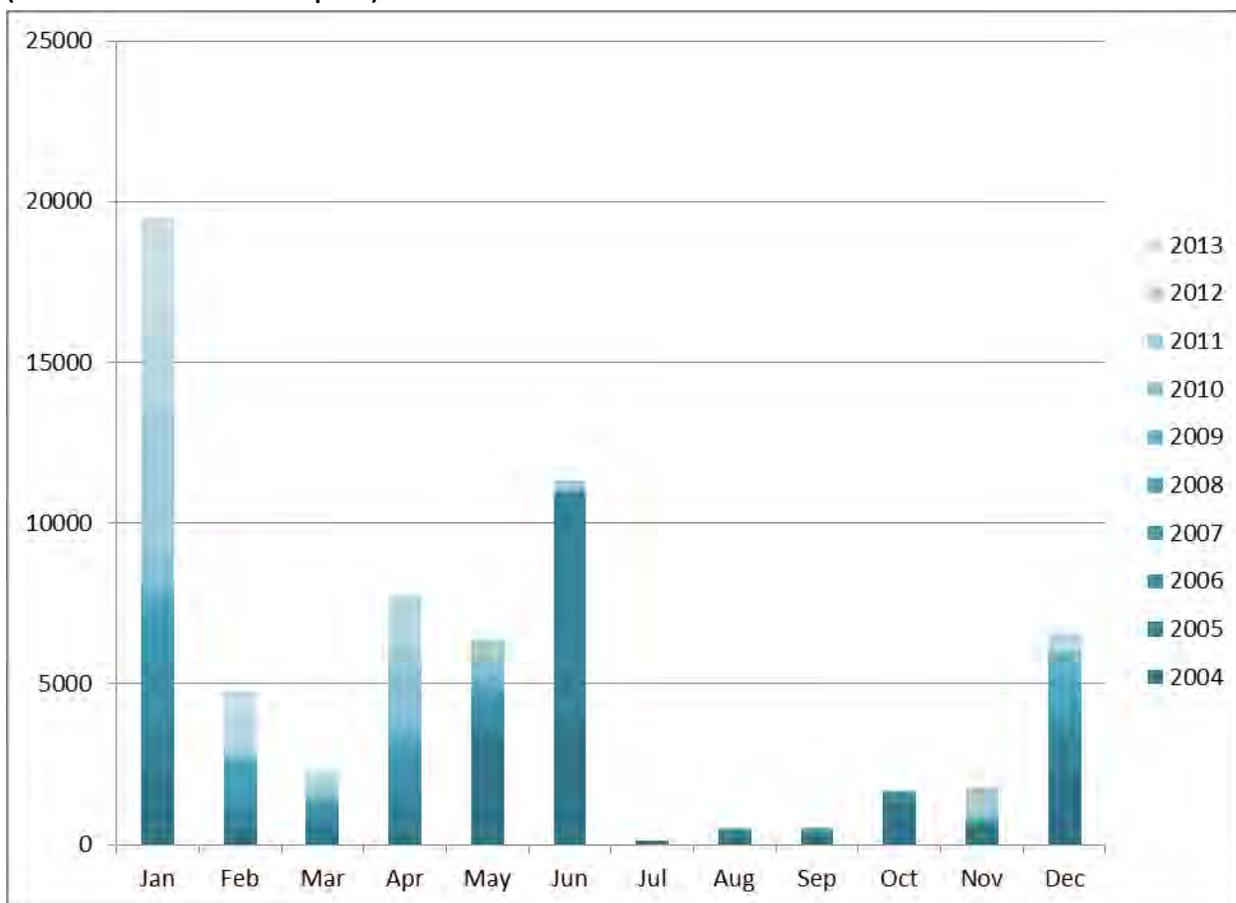
Monitoring Decision #3-Monitoring according to a management plan

Copper

Copper was placed in the Duck Slough @ Gurr Rd site subwatershed management plan in 2007. From 2006 through 2008 all copper exceedances were based on total copper concentrations and the hardness-based trigger limit. Since monitoring for the dissolved fraction was initiated in 2008, there has been one exceedance of copper (2009) (Table 13). Duck Slough @ Hwy 99 was a monitoring location upstream from Gurr Road that was in a copper management plan due to exceedances in February, April, June, August and September from 2006 through 2008. Duck Slough @ Hwy 99 was removed from the Coalition's monitoring plan in 2013 due to highway construction at the sampling location. Therefore, monitoring for management plan constituents from Duck Slough @ Hwy 99 will occur at the downstream Gurr Road location. The Coalition scheduled MPM at Duck Slough @ Gurr Rd in 2013 for copper in January, February, and from April through September; there have been no exceedances of the WQTL to date (up through June) for either the total or dissolved copper (Table 13). A majority of copper applications occur between January, May, June and December within the Duck Slough subwatershed,

however there were no June applications in 2007, 2008, 2009, 2010, 2012 or 2013 (Figure 4). Based on past exceedances that occurred in both the Duck Slough @ Gurr Rd and the Duck Slough @ Hwy 99 site subwatersheds, the Coalition will conduct MPM (once a month) for dissolved copper in January, February, April, May, June, July, August and September. In addition, December will be added in to fully characterize the site in the 2014 Water Year.

Figure 4. Sum of pounds of copper (Al) applied in the Duck Slough @ Gurr Rd subwatershed from 2004 - 2013 (2013 PUR data are not complete).



Lead

Lead was placed in the Duck Slough @ Gurr Rd site subwatershed management plan in 2008. From 2006 through 2007 all lead exceedances were based on total lead concentrations and the hardness-based trigger limit. Since monitoring for the dissolved fraction, there have been no exceedances of the WQTL for lead (Table 13). Based on past monitoring exceedances, the Coalition will continue to conduct MPM at Duck Slough @ Gurr Rd for dissolved lead in January, February and April through September.

Monitoring Decision #3 – Propose monitoring plan

Arsenic, Boron, Dissolved Copper, Dissolved Cadmium, Dissolved Lead, Molybdenum, Selenium, Dissolved Nickel, Dissolved Zinc

The metals, arsenic, boron, molybdenum, selenium, dissolved cadmium, dissolved nickel, and dissolved zinc were monitored up to 2011 and periodically thereafter although there were no exceedances of the WQTLs for these constituents since a single exceedance of the dissolved copper WQTL in 2009. Because it has been three years since the last monitoring for these constituents, the ESJWQC will monitor these metals in 2014. Monitoring frequency will be four times during the year as specified in the 2011 revisions to the MRPP.

Monitoring Decision #5 - No monitoring

Total Cadmium, Total Nickel, and Total Zinc

Monitoring total cadmium, total nickel, and total zinc are no longer necessary because of the monitoring of the dissolved phase of the same metals (Table 13). There were no exceedances of any of the WQTLs for these constituents. In addition, the dissolved fraction is the bioavailable fraction of these metals and is the fraction that will be monitored. Working through the flow chart in Figure 2 results in a decision of no monitoring (Monitoring Decision #5 of Table 12) for total cadmium, total nickel, and total zinc at Duck Slough @ Gurr Rd.

Table 13. Duck Slough @ Gurr Rd site subwatershed dissolved and total metals monitoring results (2006-2013).

Total Suspended Solids (TSS) results are included as a measurement of sediment mobilization. An exceedance of a WQTL is highlighted in blue. "NA" indicates that a constituent was not analyzed on that date.

YEAR	MONTH	DATE	AS, TOTAL (µG/L)	B, TOTAL (µG/L)	CD, DISSOLVED (µG/L)	CD, TOTAL (µG/L)	CU, DISSOLVED (µG/L)	CU, TOTAL (µG/L)	PB, DISSOLVED (µG/L)	PB TOTAL (µG/L)	MO, TOTAL (µG/L)	NI, DISSOLVED (µG/L)	NI, TOTAL (µG/L)	SE, TOTAL (µG/L)	ZN, DISSOLVED (µG/L)	ZN, TOTAL (µG/L)	TSS, TOTAL (MG/L)
2006	May	5/17/2006	2.8	13	NA	<0.04	NA	2.9	NA	0.24	NA	NA	3	<0.7	NA	3	NA
2006	Jun	6/14/2006	6.6	54	NA	0.04	NA	120	NA	0.71	NA	NA	8.4	<0.9	NA	7	NA
2006	Jul	7/12/2006	5.3	27	NA	0.06	NA	14	NA	2.7	NA	NA	17	<0.9	NA	21	NA
2006	Aug	8/8/2006	2.5	25	NA	<0.02	NA	3.8	NA	0.55	NA	NA	3.7	<0.9	NA	9	NA
2006	Sep	9/13/2006	1.7	12	NA	<0.02	NA	4.1	NA	0.84	NA	NA	4.9	<0.9	NA	8	NA
2007	Feb	2/12/2007	7.3	16	NA	0.2	NA	47	NA	13	NA	NA	54	<0.9	NA	83	NA
2007	Feb	2/28/2007	3.3	9	NA	0.04	NA	11	NA	2.4	NA	NA	13	1	NA	22	NA
2007	Apr	4/24/2007	4.5	19	NA	<0.02	NA	4.6	NA	0.4	NA	NA	5	0.9	NA	6	NA
2007	May	5/29/2007	1.9	19	NA	<0.04	NA	5.3	NA	1	NA	NA	3.5	<0.98	NA	13	NA
2007	Jun	6/19/2007	NA	NA	NA	NA	NA	5.4	NA	NA	NA	NA	NA	NA	NA	NA	NA
2007	Jun	6/26/2007	1.5	11	NA	<0.04	NA	4.6	NA	1	NA	NA	3.2	NA	NA	8	NA
2007	Jul	7/24/2007	1.7	12	NA	<0.04	NA	4	NA	0.84	NA	NA	2.4	NA	NA	7	NA
2007	Jul	7/31/2007	NA	NA	NA	NA	NA	8.6	NA	NA	NA	NA	NA	NA	NA	14	NA
2007	Aug	8/21/2007	1.9	19	NA	<0.04	NA	4.8	NA	1.1	NA	NA	3.6	NA	NA	9	NA
2007	Sep	9/18/2007	3.1	18	NA	<0.04	NA	5.5	NA	1.1	NA	NA	5.6	NA	NA	7	NA
2008	Jan	1/25/2008	2.6	14	NA	0.07	NA	13	NA	2.7	NA	NA	13	0.81	NA	19	NA
2008	Feb	2/25/2008	2.7	15	NA	0.1	NA	17	NA	3.7	NA	NA	17	0.43	NA	25	NA
2008	Apr	4/29/2008	2.3	18	NA	<0.06	NA	2.7	NA	0.38	NA	NA	2.1	0.38	NA	4	NA
2008	May	5/27/2008	3.4	37	NA	<0.06	NA	7.1	NA	0.95	NA	NA	5.4	1	NA	10	NA
2008	Jun	6/24/2008	1.2	11	NA	<0.06	NA	4	NA	0.95	NA	NA	3	0.62	NA	8	NA
2008	Jul	7/29/2008	2.8	28	NA	<0.06	NA	5.4	NA	1.1	NA	NA	4.8	0.36	NA	12	NA
2008	Aug	8/26/2008	1.9	16	NA	<0.06	NA	3.5	NA	1.1	NA	NA	2.4	0.39	NA	6	NA
2008	Sep	9/30/2008	2.3	16	NA	<0.06	NA	6.1	NA	1.5	NA	NA	4.7	0.21	NA	10	NA
2008	Oct	10/21/2008	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
2008	Nov	11/11/2008	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
2008	Dec	12/16/2008	3.8	37	<0.011	<0.011	0.3	1.2	<0.071	0.26	2.1	0.4	1.1	0.24	<0.8	3	<2
2009	Jan	1/20/2009	3.7	39	<0.011	<0.011	0.2	0.4	<0.071	<0.071	2.3	0.2	0.2	0.21	<0.8	<0.8	<2
2009	Feb	2/7/2009	6.8	130	0.07	0.08	7.6	11	0.15	0.71	6.8	4.2	7	0.42	22	28	34
2009	Mar	3/17/2009	3.4	15	<0.011	0.02	4.6	6.3	0.08	0.7	1.3	3	4.5	0.19	1.1	3.1	<2
2009	Apr	4/21/2009	4.9	48	0.03	0.03	2.6	3.3	0.08	0.23	2.8	1.5	1.9	0.19	5.2	7.2	<2
2009	May	5/19/2009	NA	47	NA	NA	7.3	15	NA	NA	NA	3.6	11	0.31	5.5	20	84
2010	Jan	1/19/2010	NA	NA	NA	NA	2	12	NA	NA	NA	NA	NA	NA	NA	NA	190
2010	Feb	2/23/2010	NA	NA	NA	NA	4.4	5.4	NA	NA	NA	NA	NA	NA	NA	NA	3
2010	Jun	6/15/2010	NA	NA	NA	NA	1.2	3.3	NA	NA	NA	NA	NA	NA	NA	NA	32
2010	Jul	7/20/2010	NA	NA	NA	NA	1	3.6	NA	NA	NA	NA	NA	NA	NA	NA	38
2010	Dec	12/14/2010	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry

YEAR	MONTH	DATE	AS, TOTAL (µG/L)	B, TOTAL (µG/L)	CD, DISSOLVED (µG/L)	CD, TOTAL (µG/L)	CU, DISSOLVED (µG/L)	CU, TOTAL (µG/L)	PB, DISSOLVED (µG/L)	PB TOTAL (µG/L)	MO, TOTAL (µG/L)	NI, DISSOLVED (µG/L)	NI, TOTAL (µG/L)	SE, TOTAL (µG/L)	ZN, DISSOLVED (µG/L)	ZN, TOTAL (µG/L)	TSS, TOTAL (MG/L)
2011	Jan	1/18/2011	2.1	11	<0.011	<0.011	1.1	2.2	<0.071	0.24	1.1	1.5	2.3	0.3	<0.8	1.5	13
2011	Feb	2/17/2011	2.1	13	<0.011	<0.011	1.4	1.6	<0.071	0.13	1.2	1.3	1.7	0.14	<0.8	1	5
2011	Mar	3/15/2011	2.1	10	<0.011	0.011	1.3	1.9	<0.071	0.21	0.86	1.3	1.7	0.14	<0.8	0.9	6
2011	Apr	4/19/2011	1.5	13	<0.04	<0.04	1.5	3.3	0.07	0.44	0.67	1	2.6	0.19	0.8	3.1	18
2011	May	5/17/2011	1.1	12	<0.04	<0.04	0.85	2.6	0.06	0.5	0.61	0.66	2.4	0.1	0.9	4.8	42
2011	Jun	6/21/2011	2.6	14	<0.04	<0.04	1.5	8.5	0.06	1.7	0.74	1.3	9.1	0.15	<0.7	13	93
2011	Jul	7/19/2011	0.81	8.6	<0.04	<0.04	0.89	3	0.06	0.71	0.42	0.63	2.1	0.07	<0.7	4.5	6
2011	Aug	8/16/2011	1.5	11	<0.04	<0.04	0.91	4	0.09	0.96	0.58	0.84	4.2	0.09	<0.7	5.6	42
2011	Sep	9/13/2011	NA	8.8	NA	NA	0.5	3.1	NA	NA	NA	0.58	3.1	NA	<0.7	5.2	44
2011	Oct	10/11/2011	NA	5.5	NA	NA	0.42	2.8	NA	NA	NA	0.44	2.6	<0.06	<0.7	4.4	34
2011	Nov	11/8/2011	NA	5.7	NA	NA	0.75	1.7	NA	NA	NA	0.58	1.8	<0.06	<0.7	2.1	5
2011	Dec	12/6/2011	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
2012	Jan	1/10/2012	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
2012	Feb	2/7/2012	NA	NA	NA	NA	7.5	11	NA	NA	NA	NA	NA	NA	NA	NA	54
2013	Jan	1/8/2013	NA	NA	NA	NA	3.1	6	0.17	1.1	NA	NA	NA	NA	NA	NA	NA
2013	Feb	2/12/2013	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
2013	Feb	2/20/2013	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
2013	Apr	4/2/2013	NA	NA	NA	NA	1.6	2.3	0.06	0.21	NA	NA	NA	NA	NA	NA	NA
2013	May	5/14/2013	NA	NA	NA	NA	1.3	2.8	0.06	0.46	NA	NA	NA	NA	NA	NA	NA
2013	Jun	6/11/2013	NA	NA	NA	NA	1.3	3.7	0.11	0.77	NA	NA	NA	NA	NA	NA	NA
Sample and Exceedance Summary																	
Samples collected in 2006	5	5	0	5	0	5	0	5	0	5	0	0	5	5	0	5	0
Samples collected in 2007	8	8	0	8	0	10	0	8	0	8	0	0	8	4	0	9	0
Samples collected in 2008	9	9	1	9	1	9	1	9	1	9	1	1	9	9	1	9	1
Samples collected in 2009	4	5	4	4	5	5	4	4	4	4	4	5	5	5	5	5	12
Samples collected in 2010	0	0	0	0	4	4	0	0	0	0	0	0	0	0	0	0	11
Samples collected in 2011	8	11	8	8	11	11	8	8	8	8	11	11	10	11	11	11	11
Samples collected in 2012	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	2
Samples collected in 2013	0	0	0	0	4	4	4	4	4	0	0	0	0	0	0	0	0
Total Collected¹	34	38	13	34	26	49	17	38	13	17	38	33	17	39	37	37	37
Total Exceedances	0	0	0	0	1	8	0	4	0	4	0	0	0	0	0	0	0
% Exceedances	0%	0%	0%	0%	3.8%	16.3%	0%	10.5%	0%	0%	0%	0%	0%	0%	0%	0%	0%

¹The total reflects the number of samples collected to be analyzed for metals; Duck Slough @ Gurr Rd was dry 7 times from 2006 through June 2013.

Cottonwood Creek @ Rd 20

Cottonwood Creek @ Rd 20 is the Core site in Zone 6. The decision for monitoring for metals at Cottonwood Creek @ Rd 20 during the 2014 Water Year is outlined in Table 14; the monitoring plan is based on results from 2006 to June, 2013. Metals monitoring results are listed in Table 15. Only concentrations of copper and lead exceeded the WQTL in samples collected from Cottonwood Creek @ Rd 20 (Table 15).

Table 14. Results of the flow chart analysis for Cottonwood Creek at Rd 20 outlined in Figure 2.

FLOW CHART QUESTION	As, TOT	B, TOT	Cd TOT	Cd Dis	Cu, TOT	Cu, Dis	Pb, TOT	Pb, Dis	Mo, TOT	Ni, TOT	Ni, Dis	Se, TOT	Zn, TOT	Zn, Dis
1. Is site on 303d list for constituent?	No	No	No	No	No	No	No	No	No	No	No	No	No	No
2. Has the site been adequately characterized?	No	No	Yes	No	Yes	No	Yes	No	No	Yes	No	No	Yes	No
3. Has there been an exceedance?	No	No	No	No	Yes	Yes	Yes	No	No	No	No	No	No	No
4. Is waterbody in a management plan for constituent?	No	No	No	No	Yes	Yes	Yes ¹	Yes ¹	Yes	No	No	No	No	No
5. Has there been a TIE indicating the constituent class as causal agent?	No	No	No	No	No	No	No	No	No	No	No	No	No	No
6. Acres treated > 1%?	No	No	No	No	Yes	Yes	No	No	No	No	No	No	No	No
MONITORING DECISION														
1. TMDL-specific monitoring														
2. Delist from TMDL or discuss monitoring delist options														
3. Monitoring according to management plan						X		X ²						
4. Propose monitoring plan	X	X		X		X			X		X	X		X
5. No monitoring			X		X		X ²			X			X	

¹The management plan is for lead regardless of the fraction.

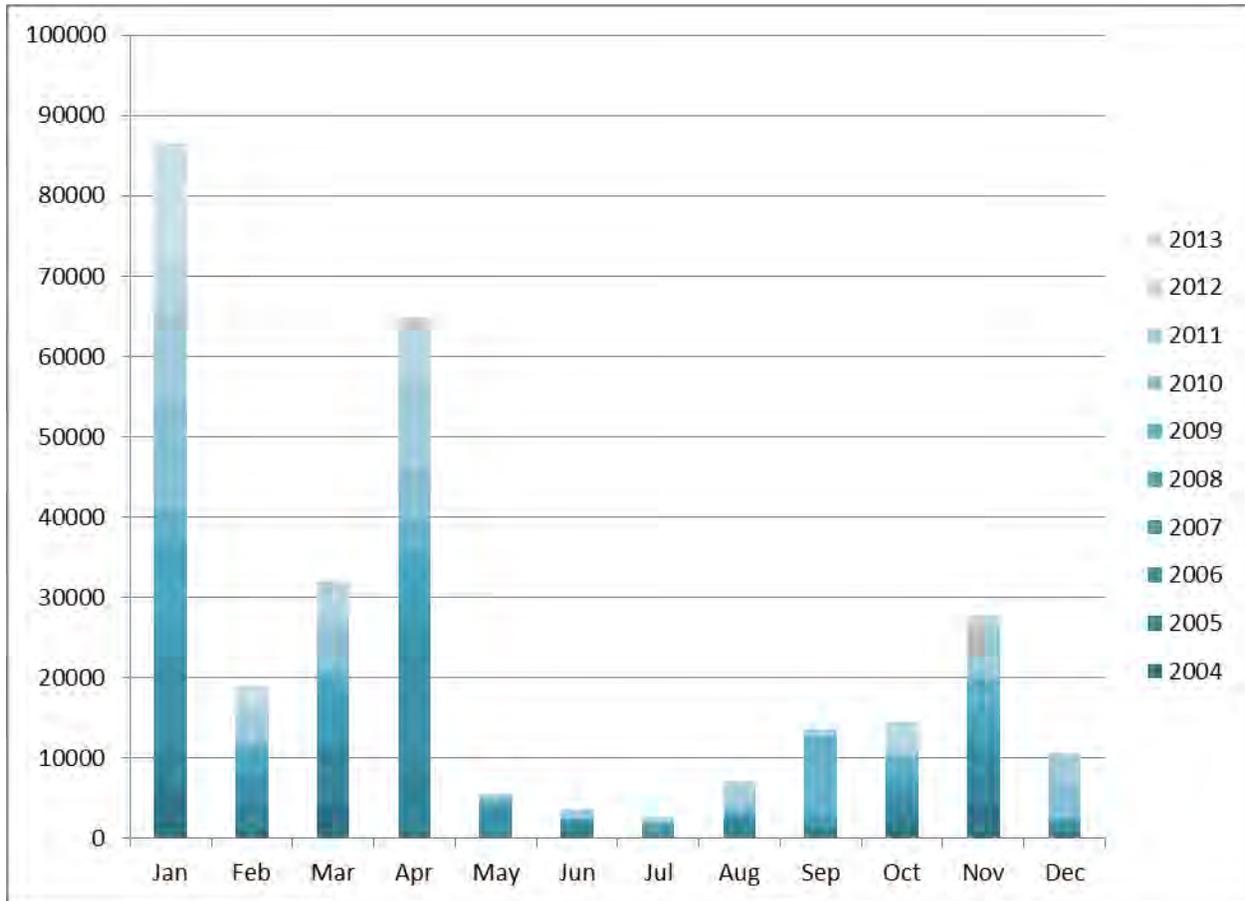
²Management plan places lead as a Priority E constituent.

Monitoring Decision #3-Monitoring according to a management plan

Copper

Copper was placed in the Cottonwood Creek @ Rd 20 site subwatershed management plan in 2007. Exceedances of the copper WQTL have occurred in most months of the year despite a change in use from January (greatest amount of applications) and July (least amount of applications) (Figure 5). Past exceedances have occurred in January, April and April through October (Table 15). Due to past exceedances and the amount of copper use within the subwatershed, the Coalition will monitor for dissolved copper once a month for all months in the 2014 Water Year.

Figure 5. Sum of pounds of copper (Al) applied in the Cottonwood Creek @ Hwy 20 subwatershed from 2004 - 2013 (2013 PUR data are not complete).



Lead

Lead was placed in the Cottonwood Creek @ Hwy 20 site subwatershed management plan in 2009. From 2006 through 2008 all lead exceedances were based on total lead concentrations and the hardness-based trigger limit (Table 15). Since monitoring for the dissolved fraction, there have been no exceedances of the WQTL for lead (Table 15). Based on past monitoring exceedances, the Coalition will continue to conduct MPM at Cottonwood Creek @ Hwy 20 for dissolved lead in January, February and June.

Monitoring Decision #4 – Propose monitoring plan

Arsenic, Boron, Dissolved Cadmium, Molybdenum, Dissolved Nickel, Selenium and Dissolved Zinc

The metals, arsenic, boron, molybdenum, selenium, dissolved cadmium, dissolved nickel, and dissolved zinc were monitored periodically up to 2013 and there were no exceedances of the WQTLs. Very little water has been present at the site since 2008 with the exception of 2011 when several samples were collected and analyzed for these metals. Because it has been three years since the last monitoring for these constituents, the ESJWQC will monitor these metals in 2014 if water is available to sample.

Monitoring frequency will be four times during the year as specified in the 2011 revisions to the MRPP. Because Cottonwood Creek does not receive a large amount of storm water drainage, it is possible that even during rainfall events no water will be present in this water body.

Monitoring Decision #5 - No monitoring

Total Cadmium, Total Nickel, and Total Zinc

Monitoring total cadmium, total nickel, and total zinc are no longer necessary because of the monitoring of the dissolved phase of the same metals (Table 15). There were no exceedances of any of the WQTLs for these constituents. In addition, the dissolved fraction is the bioavailable fraction of these metals and is the fraction that will be monitored. Working through the flow chart in Figure 2 results in a decision of no monitoring (Monitoring Decision #5 of Table 14) for total cadmium, total nickel, and total zinc at Cottonwood Creek @ Road 20.

Table 15. Cottonwood Creek at Rd 20 site subwatershed dissolved and total metals monitoring results (2006-2013).

Total Suspended Solids (TSS) results are included as a measurement of sediment mobilization. An exceedance of a WQTL is highlighted in blue. "NA" indicates that a constituent was not analyzed on that date.

YEAR	MONTH	DATE	As, TOTAL (µG/L)	B, TOTAL (µG/L)	CD, DISSOLVED (µG/L)	CD, TOTAL (µG/L)	CU, DISSOLVED (µG/L)	CU, TOTAL (µG/L)	PB, DISSOLVED (µG/L)	PB, TOTAL (µG/L)	Mo, TOTAL (µG/L)	Ni, DISSOLVED (µG/L)	Ni, TOTAL (µG/L)	SE, TOTAL (µG/L)	ZN, DISSOLVED (µG/L)	ZN, TOTAL (µG/L)	TSS, TOTAL (MG/L)
2006	May	5/16/2006	1.2	32	NA	<0.04	NA	4.4	NA	0.42	NA	NA	0.8	<0.7	NA	4	NA
2006	Jun	6/13/2006	0.7	11	NA	<0.02	NA	8	NA	0.73	NA	NA	1.1	<0.9	NA	7	NA
2006	Jul	7/11/2006	1.1	16	NA	<0.02	NA	5.3	NA	0.52	NA	NA	1.1	<0.9	NA	5	NA
2006	Aug	8/8/2006	1.3	15	NA	<0.02	NA	4.1	NA	0.41	NA	NA	1.2	<0.9	NA	4	NA
2006	Sep	9/12/2006	0.8	20	NA	<0.02	NA	5.5	NA	0.52	NA	NA	1.1	<0.9	NA	20	NA
2007	Apr	4/24/2007	0.9	25	NA	<0.02	NA	3.9	NA	0.22	NA	NA	0.8	<0.9	NA	3	NA
2007	May	5/29/2007	0.8	28	NA	<0.04	NA	6.7	NA	0.35	NA	NA	0.9	<0.98	NA	5	NA
2007	Jun	6/19/2007	NA	NA	NA	NA	NA	6.7	NA	NA	NA	NA	NA	NA	NA	NA	NA
2007	Jun	6/26/2007	0.9	26	NA	<0.04	NA	4.3	NA	0.3	NA	NA	0.8	NA	NA	3	NA
2007	Jul	7/24/2007	1.2	27	NA	<0.04	NA	5.4	NA	0.55	NA	NA	0.8	NA	NA	6	NA
2007	Aug	8/21/2007	1	28	NA	<0.04	NA	5.2	NA	0.37	NA	NA	0.8	NA	NA	5	NA
2007	Sep	9/18/2007	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
2007	Sep	9/25/2007	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
2008	Jan	1/25/2008	2.1	15	NA	<0.04	NA	24	NA	5.4	NA	NA	3.1	0.59	NA	30	NA
2008	Feb	2/25/2008	1.8	40	NA	0.02	NA	21	NA	1.9	NA	NA	3.1	0.41	NA	14	NA
2008	Mar	3/28/2008	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
2008	Apr	4/29/2008	2	32	NA	<0.06	NA	8	NA	0.82	NA	NA	1.7	0.3	NA	10	NA
2008	May	5/27/2008	1.1	36	NA	<0.06	NA	4.9	NA	0.24	NA	NA	0.8	0.83	NA	3	NA
2008	Jun	6/24/2008	1.4	34	NA	<0.06	NA	4.5	NA	0.59	NA	NA	1	0.73	NA	4	NA
2008	Jul	7/29/2008	1.1	34	NA	<0.06	NA	4.8	NA	1	NA	NA	1.3	<0.11	NA	6	NA
2008	Aug	8/26/2008	0.8	27	NA	<0.06	NA	4.4	NA	0.6	NA	NA	0.8	<0.11	NA	5	NA
2008	Sep	9/30/2008	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
2008	Oct	10/21/2008	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
2008	Nov	11/11/2008	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
2008	Dec	12/16/2008	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
2009	Jan	1/20/2009	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
2009	Mar	3/17/2009	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
2009	Apr	4/21/2009	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
2009	Jul	7/21/2009	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
2009	Sep	9/22/2009	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
2010	Feb	2/23/2010	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
2010	Mar	3/23/2010	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
2010	Apr	4/20/2010	NA	NA	NA	NA	3.1	4.2	NA	NA	NA	NA	NA	NA	NA	NA	5
2010	May	5/18/2010	NA	NA	NA	NA	3.6	5.1	NA	NA	NA	NA	NA	NA	NA	NA	2
2010	Jun	6/15/2010	NA	NA	NA	NA	3.2	10	NA	NA	NA	NA	NA	NA	NA	NA	60
2010	Jul	7/20/2010	NA	NA	NA	NA	2.8	5.6	NA	NA	NA	NA	NA	NA	NA	NA	9

YEAR	MONTH	DATE	AS, TOTAL (µG/L)	B, TOTAL (µG/L)	CD, DISSOLVED (µG/L)	CD, TOTAL (µG/L)	CU, DISSOLVED (µG/L)	CU, TOTAL (µG/L)	PB, DISSOLVED (µG/L)	PB, TOTAL (µG/L)	MO, TOTAL (µG/L)	NI, DISSOLVED (µG/L)	NI, TOTAL (µG/L)	SE, TOTAL (µG/L)	ZN, DISSOLVED (µG/L)	ZN, TOTAL (µG/L)	TSS, TOTAL (MG/L)
2010	Aug	8/17/2010	NA	NA	NA	NA	5.3	6.6	NA	NA	NA	NA	NA	NA	NA	NA	13
2010	Sep	9/14/2010	NA	NA	NA	NA	3.5	8.5	NA	NA	NA	NA	NA	NA	NA	NA	17
2010	Nov	11/16/2010	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
2010	Dec	12/14/2010	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
2011	Jan	1/18/2011	1.1	29	<0.011	0.012	2.4	4.4	0.08	0.43	1.8	0.7	1.1	0.1	1	3.4	7
2011	Feb	2/17/2011	0.7	31	<0.011	<0.011	2.3	3.8	<0.071	0.33	1.9	0.42	0.61	0.07	<0.8	2.9	19
2011	Mar	3/15/2011	0.78	23	<0.011	<0.011	2.7	3.9	<0.071	0.29	1.5	0.48	0.6	0.07	<0.8	2.1	6
2011	Apr	4/19/2011	1.5	27	<0.04	<0.04	4.6	7.3	0.13	0.47	1.4	0.72	1	0.08	1.2	2.5	19
2011	May	5/17/2011	1.1	20	<0.04	<0.04	3.8	5.9	0.11	0.35	1.4	0.4	0.68	0.07	0.7	2	10
2011	Jun	6/21/2011	1.1	18	<0.04	<0.04	3.7	5.9	0.12	0.41	1.3	0.4	0.65	0.07	0.97	2.8	22
2011	Jul	7/19/2011	1	19	<0.04	<0.04	4.3	6.2	0.11	0.3	1.3	0.32	0.46	0.06	<0.7	1.5	20
2011	Aug	8/16/2011	0.88	19	<0.04	<0.04	3.4	6.4	0.12	0.42	1.3	0.3	0.57	<0.06	<0.7	2.3	21
2011	Sep	9/13/2011	NA	17	NA	NA	5.8	9.8	NA	NA	NA	0.24	0.48	NA	<0.7	2.5	9
2011	Oct	10/11/2011	NA	22	NA	NA	4.1	14	NA	NA	NA	0.43	2.9	0.07	0.9	14	241.5
2011	Nov	11/8/2011	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
2011	Dec	12/6/2011	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
2012	Jan	1/10/2012	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
2012	Feb	2/7/2012	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
2012	Mar	3/6/2012	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
2013	Jan	1/8/2013	NA	NA	NA	NA	13	18	0.28	1.4	NA	NA	NA	NA	NA	NA	20
2013	Feb	2/12/2013	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
2013	Feb	2/20/2013	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
2013	Mar	3/12/2013	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
2013	Apr	4/2/2013	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
2013	May	5/14/2013	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
2013	Jun	6/11/2013	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
Sample and Exceedance Summary																	
Samples collected in 2006			5	5	0	5	0	5	0	5	0	0	5	5	0	5	0
Samples collected in 2007			5	5	0	5	0	6	0	5	0	0	5	2	0	5	0
Samples collected in 2008			7	7	0	7	0	7	0	7	0	0	7	7	0	7	0
Samples collected in 2009			0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
Samples collected in 2010			0	0	0	0	6	6	0	0	0	0	0	0	0	0	8
Samples collected in 2011			8	10	8	8	10	10	8	8	8	10	10	9	10	10	16
Samples collected in 2012			0	0	0	0	1	1	1	1	0	0	0	0	0	0	0
Samples collected in 2013			5	5	0	5	0	5	0	5	0	0	5	5	0	5	0
Total Collected¹			25	27	8	25	17	35	9	26	8	10	27	23	10	27	31
Total Exceedances			0	0	0	0	7	12	0	3	0	0	0	0	0	0	0
% Exceedances			0%	0%	0%	0%	41%	34%	0%	11.5%	0%	0%	0%	0%	0%	0%	0%

¹The total reflects the number of samples collected to be analyzed for metals; Cottonwood Creek @ Rd 20 was dry 28 times from 2006 through June 2013.

REPRESENTED SITE MONITORING

The Coalition will evaluate the potential risk for water quality impairments at Represented sites when an exceedance of a water quality trigger limit occurs at an associated Core site and monitor accordingly (Attachment B of the Order, page 4). Table 16 includes a list of the Represented sites in each zone. From this list, sites were identified for monitoring during the 2014 Water Year based on the following criteria:

1. An exceedance of an applied pesticide, metal or toxicity at the Core site,
2. The Core site is in a management plan for an applied pesticide, metal or toxicity and monitoring is necessary to characterize potential discharge.

Once Represented site monitoring is initiated, the Coalition will monitor at the Represented site during the time period of highest risk of exceedance of the water quality objective (WQO) for that parameter for a minimum of two years. The flowchart in Figure 6 depicts the Represented site monitoring strategy.

Table 16. ESJWQC Represented sites by zone.

ZONE	SITE TYPE	SITE NAME	STATION CODE	LATITUDE	LONGITUDE
1	Represented	Mootz Drain Downstream of Langworth Pond	535XMDDL	37.70539	-120.89569
1	Represented	Rodden Creek @ Rodden Rd	535XRCARD	37.79053	-120.80886
2	Represented	Hatch Drain @ Tuolumne Rd	535XHDATR	37.51498	-121.01229
2	Represented	Hilmar Drain @ Central Ave	535XHDACA	37.39058	-120.95820
2	Represented	Lateral 2 1/2 near Keyes Rd	535LTHNKR	37.54766	-121.08509
2	Represented	Lateral 5 1/2 @ South Blaker Rd	535LFHASB	37.45827	-120.96730
2	Represented	Lateral 6 and 7 @ Central Ave	535LSSACA	37.39779	-120.95960
2	Represented	Levee Drain @ Carpenter Rd	535XLDACR	37.48062	-121.03106
2	Represented	Lower Stevinson @ Faith Home Rd	535LSAFHR	37.37248	-120.92324
2	Represented	Unnamed Drain @ Hogin Rd	535XUDAHR	37.43120	-120.99475
2	Represented	Westport Drain @ Vivian Rd	535XWDAVR	37.53682	-121.04861
3	Represented	Highline Canal @ Lombardy Rd	535XHICALR	37.45547	-120.72181
3	Represented	Mustang Creek @ East Ave	535XMCAEA	37.49180	-120.68390
4	Represented	Bear Creek @ Kibby Rd	535XBCAKR	37.31230	-120.41535
4	Represented	Black Rascal Creek @ Yosemite Rd	535BRCAYR	37.33202	-120.39435
4	Represented	Canal Creek @ West Bellevue Rd	535CCAWBR	37.36090	-120.54940
4	Represented	Howard Lateral @ Hwy 140	535XHLAHO	37.30790	-120.78200
4	Represented	Livingston Drain @ Robin Ave	535XLDARA	37.31693	-120.74229
4	Represented	McCoy Lateral @ Hwy 140	535XMLAHO	37.30968	-120.78771
4	Represented	Unnamed Drain @ Hwy 140	535XUDAHO	37.31331	-120.89218
5	Represented	Deadman Creek @ Gurr Rd	535XDCAGR	37.19514	-120.56147
5	Represented	Deadman Creek @ Hwy 59	535DMCAHF	37.19755	-120.48763
5	Represented	Miles Creek @ Reilly Rd	535XMCARR	37.25830	-120.47524
6	Represented	Ash Slough @ Ave 21	545XASAAT	37.05448	-120.41575
6	Represented	Berenda Slough along Ave 18 1/2	545XBSAAE	37.01820	-120.32650
6	Represented	Dry Creek @ Rd 18	545XDCARE	36.98180	-120.22056

Figure 6. ESJWQC flowchart for the Represented site monitoring strategy.



Silva Drain @ Meadow Dr has been omitted from the Represented site list because the Coalition requested to remove it from the ESJWQC monitoring schedule on June 4th, 2013. The Coalition is awaiting approval from the Central Valley Regional Water Quality Control Board (Regional Board). If the site removal is not approved, the 2014 Water Year monitoring schedule will be updated to include Silva Drain @ Meadow Dr.

Table 16 of this document differs from Table 1 of Attachment B of the Order. Table 16 includes the Unnamed Drain @ Hwy 140 and Westport Drain @ Vivian Rd sites which are included in the ESJWQC monitoring schedule and will be evaluated as Represented sites.

For the 2014 Water Year, the Coalition reviewed high priority (e.g. applied pesticides, applied metals or toxicity) Core site management plans and Represented sites within the same zone to determine if additional monitoring at the Represented sites is necessary. Lead and molybdenum are low priority management plan constituents as detailed in the management plan strategy of the 2008 ESJWQC Management Plan. In some cases, the Coalition is conducting MPM for these constituents as described in the most recent ESJWQC Management Plan Update Report (Table 17). The Coalition will monitor at the Represented sites listed in Table 17.

Table 17. ESJWQC Represented site monitoring schedule for high priority management plan constituents.

Shaded cells indicate site and constituents to be monitored. "M" indicates Management Plan Monitoring.

ZONE	SITE TYPE	SITE NAME	CHLORPYRIFOS	COPPER	DIAZINON	DIMETHOATE	DIURON	LEAD	MOLYBDENUM	C. DUBIA	P. PROMELAS	S. CAPRICORNUTUM	H. AZTECA
1	Core	Dry Creek @ Wellsford Rd	M										M
1	Represented	Mootz Drain Downstream of Langworth											
1	Represented	Rodden Creek @ Rodden Rd											
2	Core	Prairie Flower Drain @ Crows Landing				M			M	M	M	M	M
2	Represented	Hatch Drain @ Tuolumne Rd										M	M
2	Represented	Hilmar Drain @ Central Ave		M			M					M	M
2	Represented	Lateral 2 1/2 near Keyes Rd	M										
2	Represented	Lateral 5 1/2 @ South Blaker Rd											
2	Represented	Lateral 6 and 7 @ Central Ave											
2	Represented	Levee Drain @ Carpenter Rd											
2	Represented	Lower Stevinson @ Faith Home Rd											
2	Represented	Unnamed Drain @ Hogin Rd											
2	Represented	Westport Drain @ Vivian Rd	M									M	
3	Core	Highline Canal @ Hwy 99		M				M		M		M	M
3	Represented	Highline Canal @ Lombardy Rd	M	M				M		M		M	M
3	Represented	Mustang Creek @ East Ave		M									
4	Core	Merced River @ Santa Fe	M					M		M			
4	Represented	Bear Creek @ Kibby Rd		M									
4	Represented	Black Rascal Creek @ Yosemite Rd	M					M		M			
4	Represented	Canal Creek @ West Bellevue Rd											
4	Represented	Howard Lateral @ Hwy 140	M										

ZONE	SITE TYPE	SITE NAME	CHLORPYRIFOS	COPPER	DIAZINON	DIMETHOATE	DIURON	LEAD	MOLYBDENUM	C. DUBIA	P. PROMELAS	S. CAPRICORNUTUM	H. AZTECA
4	Represented	Livingston Drain @ Robin Ave	M	M				M				M	
4	Represented	McCoy Lateral @ Hwy 140											
4	Represented	Unnamed Drain @ Hwy 140											
5	Core	Duck Slough @ Gurr Rd		M				M		M			M
5	Represented	Deadman Creek @ Gurr Rd	M							M	M	M	
5	Represented	Deadman Creek @ Hwy 59	M									M	
5	Represented	Miles Creek @ Reilly Rd	M	M	M			M		M		M	M
6	Core	Cottonwood Creek @ Rd 20	M	M				M					
6	Represented	Ash Slough @ Ave 21		M									
6	Represented	Berenda Slough along Ave 18 1/2	M	M								M	
6	Represented	Dry Creek @ Rd 18	M	M	M		M	M				M	M

M– Monitoring due to constituents in an active management plan.

The Coalition determined that some Represented sites do not need to be monitored for Core site management plan constituents because Core site water quality impairments are not present at the Represented sites. Each Core site is listed by zone below with that site’s management plan constituent followed by the Represented sites where these constituents are not being monitored with the rationale for no additional monitoring.

An addendum has been added to the end of the ESJWQC MPU and includes an additional evaluation of Represented site monitoring based on identified water quality problems at both the Core and Represented sites, including previous monitoring results, Toxic Identification Evaluations (TIE) and Pesticide Use Report (PUR) data. This addendum was added on December 10th, 2013 as part of the conditional approval of the monitoring schedule for the 2014 Water Year by the Regional Board.

Zone 1 - Dry Creek @ Wellsford Rd

Dry Creek @ Wellsford management plan high priority constituents to be monitored in the 2014 Water Year:

- chlorpyrifos
- *H. azteca* sediment toxicity

Rodden Creek @ Rodden Rd

Monitoring for chlorpyrifos and *H. azteca* toxicity at Rodden Creek @ Rodden Rd occurred during 2011 and 2012 Assessment Monitoring; all chlorpyrifos results were non detect and no toxicity occurred.

Zone 2 - Prairie Flower Drain @ Crows Landing Rd

Prairie Flower Drain @ Crows Landing Rd high priority management plan constituents to be monitored in the 2014 Water Year:

- dimethoate
- *C. dubia* water column toxicity
- *P. promelas* water column toxicity
- *S. capricornutum* water column toxicity
- *H. azteca* sediment toxicity

Hatch Drain @ Tuolumne Rd

Management Plan Monitoring is scheduled at Hatch Drain @ Tuolumne for *H. azteca* and *S. capricornutum* toxicity. Hatch Drain @ Tuolumne will also be monitored for dimethoate based on the evaluation discussed in the addendum to this report, submitted December 10th, 2013.

Ceriodaphnia dubia toxicity was monitored once a month at Hatch Drain @ Tuolumne Rd from May through September 2007 and January through October 2008; no toxicity occurred. Toxicity to *C. dubia* occurred at the Core site in Zone 2, Prairie Flower Drain @ Crows Landing Rd, once in March 2006, September 2007 and September 2011. Toxicity Identification Evaluations were run on the 2007 and 2011 samples due to 100% mortality. Based on the TIE results and water quality data, the 2007 toxicity was associated with chlorpyrifos (0.094 µg/L detected in samples collected one week earlier) and the 2011 toxicity was associated with dimethoate (10 µg/L in samples collected at the same time) and pyrethroids. Chlorpyrifos was monitored once a month at Hatch Drain @ Tuolumne Rd from May through September 2007 and January through September 2008; all results were non detect. Exceedances of the WQTL for chlorpyrifos occurred at the Core site four times from 2005 through 2008; in comparison, no exceedances of the WQTL for chlorpyrifos have occurred at Hatch Drain @ Tuolumne Rd.

Toxicity to *P. promelas* was monitored once a month at Hatch Drain @ Tuolumne Rd from May through September 2007 and January through September 2008; no toxicity occurred. Toxicity to *P. promelas* has occurred at the Core site in Zone 2 in July 2007 and April 2011; however, this water quality impairment is specific to the Core site in Zone 2. Toxicity to *P. promelas* has been associated with high ammonia concentrations and there have been reported dairy wastewater discharges in the Prairie Flower Drain subwatershed. Hatch Drain @ Tuolumne Rd had only one exceedance of ammonia in 2007 and did not result in toxicity to *P. promelas*. In comparison, there were 11 exceedances at the Core site, from 2006 through 2013. The Coalition determined that *P. promelas* toxicity and ammonia do not need to be monitored at Hatch Drain @ Tuolumne based on the monitoring results from 2007 and 2008. The 2011 toxicity at the Core site was most likely due to a dairy discharge and therefore does not require additional monitoring at Hatch Drain. If toxicity continues to occur at the Core site, the Coalition will re-evaluate toxicity monitoring at Hatch Drain @ Tuolumne Rd.

Hilmar Drain @ Central Ave

Management Plan Monitoring is scheduled at Hilmar Drain @ Central Ave for *H. azteca*, and *S. capricornutum* toxicity during the 2014 Water Year (Table 17).

The Coalition monitored for dimethoate once a month in May through September 2006, February through September 2007 and January, February and April through September 2008. There were a total of 21 sampling events; 19 of the 21 samples were non detect for dimethoate and no exceedances of the WQTL for dimethoate (1.0 µg/L) occurred. Figure 7 illustrates pounds of dimethoate applied in site subwatersheds within Zone 2 relative to concentrations of dimethoate (non detects are indicated as a 0). The use in all Zone 2 subwatersheds indicates an increase in use around March and again between June and August. However, the only subwatershed in Zone 2 with exceedances of dimethoate is Prairie Flower Drain. Therefore, dimethoate exceedances at Prairie Flower Drain appear to be specific to that subwatershed. Since it has been over three years since Hilmar Drain has been monitored for dimethoate, the Coalition will monitor for dimethoate in the 2014 Water Year in March, July and August.

Toxicity to *C. dubia* was monitored 32 times from 2005 through 2008 at Hilmar Drain @ Central Ave; toxicity occurred once during the four years of monitoring in 2005. Therefore, the Coalition determined that monitoring for *C. dubia* toxicity at Hilmar Drain @ Central Ave is not necessary for the 2014 Water Year.

Pimephales promelas toxicity was monitored once in February, March and May through September in 2005, March and May through September in 2006, February through September in 2007 and January, February and April through September in 2008; no toxicity occurred. Toxicity to *P. promelas* has been associated with high ammonia concentrations. Only two exceedances of ammonia occurred at Hilmar Drain @ Central Ave, once in 2006 and once in 2007. Neither exceedances of the ammonia WQTL resulted in toxicity to *P. promelas*. The 2011 toxicity that occurred at Prairie Flower Drain was most likely due to dairy wastewater discharge based on reports from Regional Board staff and is not reflective of all conditions in Zone 2. Therefore, the Coalition determined that monitoring for *P. promelas* toxicity at Hilmar Drain @ Central Ave is not necessary for the 2014 Water Year.

Lateral 2 ½ near Keyes Rd

Represented site monitoring at Lateral 2 ½ near Keyes Rd is scheduled for *H. azteca* and *S. capricornutum* (Table 17). Lateral 2 ½ near Keyes Rd was monitored once a month for dimethoate from October through November 2008, monthly during Assessment Monitoring in 2009 and 2010,, April and July 2011, and April 2012; all results were non detect and no exceedances of the dimethoate WQTL occurred. Lateral 2 ½ near Keyes Rd was dry December 2008 through March 2009, November 2009 through February 2010, and November through December 2010. Figure 7 indicates a similar dimethoate use pattern in the Lateral 2 ½ near Keyes subwatershed as other sites in Zone 2. Based on past monitoring results during months of similar amounts of dimethoate applications, and the most recent monitoring occurring the year prior to the Prairie Flower Drain most recent dimethoate exceedance, the Coalition will not monitor for dimethoate at Lateral 2 ½ near Keyes Rd for the 2014 Water Year.

Monthly monitoring for *C. dubia* toxicity occurred from October through November 2008, April through October 2009 and March through October 2010; no toxicity occurred. Lateral 2 ½ near Keyes Rd was dry

December 2008 through March 2009, November 2009 through February 2010, and November through December 2010. Lateral 2 ½ near Keyes is in a management plan for chlorpyrifos (the likely source of *C. dubia* toxicity at the Core site in 2007) and none of the chlorpyrifos exceedances have been associated with toxicity to *C. dubia* (Figure 8). The Coalition determined that monitoring for *C. dubia* at Lateral 2 ½ near Keyes Rd is not necessary during the 2014 Water Year based on three years of monitoring with no toxicity to *C. dubia*. If toxicity to *C. dubia* continues to occur at the Core site, the Coalition will re-evaluate *C. dubia* toxicity monitoring at Lateral 2 ½ near Keyes Rd.

Monthly monitoring for *P. promelas* toxicity occurred in October through November 2008, April through October 2009 and March through October 2010; no toxicity occurred. Lateral 2 ½ near Keyes Rd was dry December 2008 through March 2009, November 2009 through February 2010, and November through December 2010. Toxicity to *P. promelas* has been associated with high ammonia concentrations. Only one exceedance of ammonia occurred at Lateral 2 ½ near Keyes Rd in 2008 and resulted in no toxicity to *P. promelas*. As mentioned above, the 2011 toxicity that occurred at Prairie Flower Drain was most likely due to dairy wastewater discharge based on reports from Regional Board staff and is not reflective of all conditions in Zone 2. Therefore, the Coalition determined that monitoring for *P. promelas* toxicity is not necessary at Lateral 2 ½ near Keyes Rd for the 2014 Water Year.

Westport Drain @ Vivian Rd

Management Plan Monitoring is scheduled at Westport Drain @ Vivian Rd for *S. capricornutum* toxicity. Westport Drain @ Vivian Rd will also be monitored for *H. azteca* sediment toxicity due to sediment toxicity at the Core site, Prairie Flower Drain @ Crows Landing Rd (Table 17).

Westport Drain @ Vivian Rd was monitored once a month for dimethoate from May through September 2007 and January through September 2008; all results were non detect (Figure 7). There have been no reported applications of dimethoate in 2011, 2012 or 2013 (Figure 7). Based on previous monitoring results and the lack of use within this site subwatershed, Westport Drain @ Vivian Rd will not be monitored for dimethoate in the 2014 Water Year.

Ceriodaphnia dubia was monitored monthly at Westport Drain @ Vivian Rd from May through September 2007 and January through September 2008; no toxicity occurred. Toxicity to *C. dubia* occurred at the Core site in Zone 2, Prairie Flower Drain @ Crows Landing Rd, once in March 2006, September 2007 and September 2011. As mentioned earlier, the likely source of the 2007 toxicity was chlorpyrifos for the 2011 toxicity a combination of dimethoate and pyrethroids. Two exceedances of the WQTL for chlorpyrifos occurred in samples from Westport Drain @ Vivian Rd, one in 2007 and 2008, resulting in a management plan (Figure 8). Management Plan Monitoring will occur at Westport Drain @ Vivian Rd for chlorpyrifos in the 2014 Water Year The Coalition determined that monitoring for *C. dubia* at Westport Drain @ Vivian Rd is not necessary during the 2014 Water Year based on two years of monitoring with no toxicity to *C. dubia* and no applications of dimethoate in 2011 (unlike Prairie Flower Drain). In addition, Westport Drain @ Vivian Rd will continue to be monitored for chlorpyrifos. If

toxicity to *C. dubia* continues to occur at the Core site, the Coalition will re-evaluate *C. dubia* toxicity monitoring at Westport Drain @ Vivian Rd.

Pimephales promelas toxicity was monitored monthly at Westport Drain @ Vivian Rd from May through September 2007 and January through September 2008; no toxicity occurred. Toxicity to *P. promelas* is associated with high ammonia concentrations; no exceedances of ammonia have occurred while monitoring at Westport Drain @ Vivian Rd. Therefore, the Coalition determined that monitoring for *P. promelas* toxicity at Westport Drain @ Vivian Rd is not necessary for the 2014 Water Year. If toxicity to *P. promelas* continues to occur at the Core site, the Coalition will re-evaluate *P. promelas* toxicity monitoring at Westport Drain @ Vivian Rd.

Figure 7. Prairie Flower Drain @ Crows Landing Rd dimethoate applications (sum of pounds applied, indicated by lines) and concentrations ($\mu\text{g}/\text{L}$, indicated by symbols) compared to Zone 2 Represented sites.

Asterisks indicate what month an exceedances of the WQTL for dimethoate occurred.

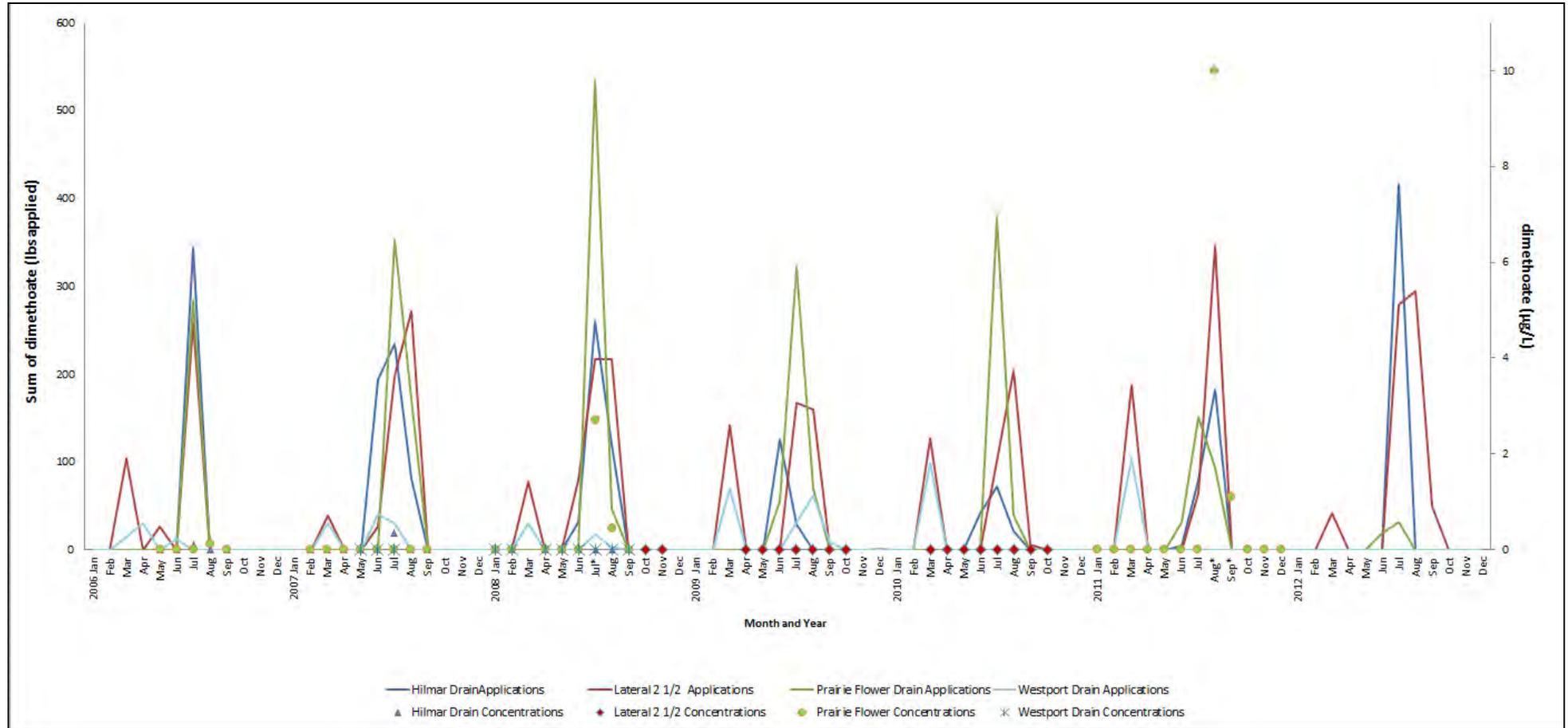
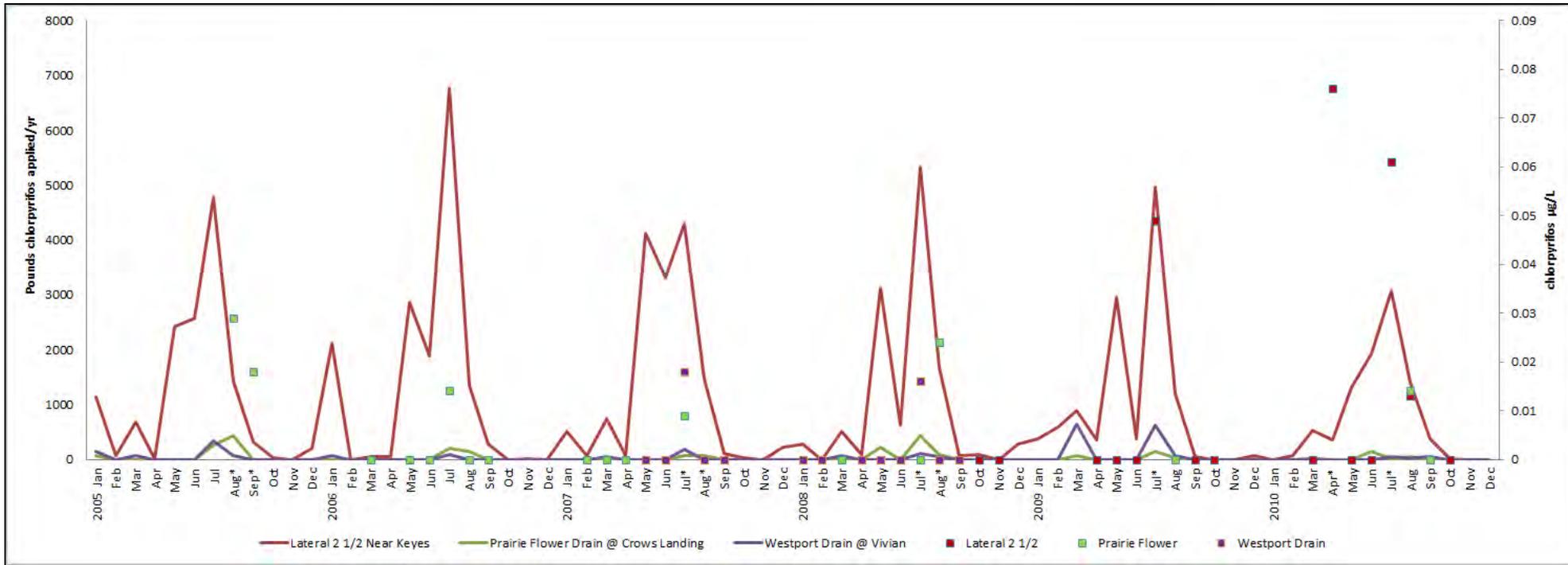


Figure 8. Prairie Flower Drain @ Crows Landing Rd chlorpyrifos applications (sum of pounds applied, indicated by lines) and concentrations ($\mu\text{g/L}$, indicated by symbols) compared to Zone 2 Represented sites.

Asterisks indicate what month an exceedances of the WQTL for chlorpyrifos occurred.



Zone 3 - Highline Canal @ Hwy 99

Highline Canal @ Hwy 99 Management Plan Monitoring high priority constituents to be monitored in the 2014 Water Year:

- copper
- *C. dubia* toxicity
- *S. capricornutum* toxicity
- *H. azteca* sediment toxicity

Highline Canal @ Lombardy Rd

Core management plan constituents will be addressed in the Highline Canal @ Lombardy Rd site subwatershed management plan during the 2014 Water Year (Table 17).

Mustang Creek @ East Ave

Management Plan Monitoring is scheduled at Mustang Creek @ East Ave for copper during the 2014 water year. The Coalition determined no Represented site monitoring is necessary based on the further evaluation detailed in the Addendum, submitted with this revision. Sediment toxicity to *H. azteca* will occur at Mustang Creek @ East Ave based the Core site MPM during the 2014 Water Year.

Zone 4 - Merced River @ Santa Fe

Merced River @ Santa Fe Management Plan Monitoring high priority constituents to be monitored in the 2014 Water Year:

- chlorpyrifos
- *C. dubia* toxicity

Bear Creek @ Kibby Rd

Bear Creek @ Kibby Rd site subwatershed was approved to remove chlorpyrifos and *C. dubia* toxicity from its active management plan in 2012. Monitoring occurred once a month in May through September in 2006, April through September in 2007, January, February and April through September in 2008; no exceedances occurred.

Howard Lateral @ Hwy 140

Howard Lateral @ Hwy 140 is a seventh priority site subwatershed and in a management plan for chlorpyrifos (Table 17). *Ceriodaphnia dubia* toxicity was monitored once a month at Howard Lateral @ Hwy 140 April through October 2009 and April through October 2010; no toxicity occurred.

Livingston Drain @ Robin Ave

Management Plan Monitoring is scheduled at Livingston Drain @ Robin Ave for chlorpyrifos during the 2014 Water Year (Table 17). *Ceriodaphnia dubia* toxicity was monitored once a month in May through September 2007 and January through September 2008; no toxicity occurred.

McCoy Lateral @ Hwy 140

The Coalition monitored once a month for chlorpyrifos and *C. dubia* toxicity in January and April through November in 2011, March through September and December in 2012; no exceedances of the WQTL or toxicity occurred.

Zone 5 - Duck Slough @ Gurr Rd

Duck Slough @ Gurr Rd management plan high priority constituents to be monitored in the 2014 Water Year:

- copper
- *C. dubia* toxicity
- *H. azteca* sediment toxicity

Deadman Creek @ Gurr Rd

Deadman Creek @ Gurr Rd is currently in a management plan for *C. dubia*; therefore MPM will occur for *C. dubia* in the 2014 Water Year (Table 17).

Copper was approved to be removed from the Deadman Creek @ Gurr Rd active management plan in 2012.

Sediment samples were collected and tested for *H. azteca* toxicity in August 2004, August 2006, March and August 2007 and 2008, April and August 2009, and March and September 2010; no toxicity occurred.

Deadman Creek @ Hwy 59

Copper was monitored monthly from April through September 2008, January through December 2011 and January through December 2012; no exceedances occurred.

Ceriodaphnia dubia toxicity was monitored in 2006 through 2008 and every month in 2011 and 2012; 43 samples were collected and tested and no toxicity occurred. Sediment toxicity to *H. azteca* was monitored in 2006, 2007, and 2008.

Sediment toxicity to *H. azteca* occurred once in 2008; however, the site was resampled the following week and toxicity was not persistent. Monitoring continued in 2011 and 2012 and no toxicity to *H. azteca* occurred.

Zone 6 - Cottonwood Creek @ Rd 20

Cottonwood Creek @ Rd 20 Management Plan Monitoring high priority constituents to be monitored in the 2014 Water Year:

- chlorpyrifos
- copper

Ash Slough @ Ave 21

Ash Slough @ Ave 21 is in a management plan for copper and therefore, MPM will occur in the 2014 Water Year for copper (Table 17). Chlorpyrifos were approved to be removed from the Ash Slough @ Ave 21 active management plan in 2012.

SPECIAL PROJECT MONITORING

In addition to Core and Represented site monitoring, the Coalition will conduct site specific monitoring to address parameters associated with a TMDL and MPM to address sites in a management plan.

Management Plan Monitoring

The Coalition will continue to conduct MPM based on the monitoring strategy outlined in the 2008 MRPP (pages 33-35) and the ESJWQC Management Plan, approved November 25th 2008 (amended on June, 21 2010). Management Plan Monitoring is conducted as part of the Coalition's management plan strategy to identify contaminant sources and evaluate effectiveness of newly implemented management practices. Table 18 is a schedule for monitoring management plan constituents during the 2014 Water Year at Core and Represented sites Management Plan Monitoring. Core site MPM will be conducted on a frequency according to Attachment B, section III.A.1 of the Order; all management plan constituents will be monitored on a monthly basis at the Core sites during the 2014 Water Year. Represented site MPM will be conducted on a frequency designed to be representative of discharge of the management plan constituent. Therefore, the following process was used to determine the frequency of MPM:

- determine months of past exceedances for high priority constituents (e.g. applied pesticides, metals, toxicity)
- determine months of high use and seasonal trends using PUR data and compare that with water quality data

For the 2014 Water Year, 6th priority site subwatersheds (Mustang Creek @ East Ave, Silva Drain @ Meadow Dr and Westport Drain @ Vivian Rd) will rotate into high priority status and the Coalition will conduct MPM for high priority management plan constituents (Table 18). Silva Drain @ Meadow Dr has not been included in the MPM schedule because it is unclear at this time whether or not this waterbody will be monitored for management plan constituents. The Coalition requested on June 4th, 2013 to remove it from the ESJWQC monitoring schedule and is working with Regional Board staff to determine if this waterbody discharges into the Merced River. The Coalition has included the next site in rotation for high priority monitoring, Ash Slough @ Ave 21, in place of Silva Drain MPM. If it is determined that MPM should be conducted in the 2014 Water Year for Silva Drain, the Coalition will submit an amendment to the 2013 Monitoring Plan Update.

Table 18. ESJWQC Management Plan Monitoring schedule (listed alphabetically by site).

Shaded cells indicate additional months of MPM based on PUR data. "X" indicates scheduled MPM.

SITE NAME	SITE TYPE	YEAR	MONTH	COPPER	LEAD	MOLYBDENUM	CHLORPYRIFOS	DIAZINON	DIMETHOATE	DIURON	C. DUBIA	P. PROMELAS	S. CAPRICORNUTUM	H. AZTECA
Ash Slough @ Ave 21	Represented	2014	January	X										
Ash Slough @ Ave 21	Represented	2014	February	X										
Ash Slough @ Ave 21	Represented	2014	April	X										
Ash Slough @ Ave 21	Represented	2014	May	X										
Ash Slough @ Ave 21	Represented	2014	June	X										
Ash Slough @ Ave 21	Represented	2014	July	X										
Ash Slough @ Ave 21	Represented	2014	August	X										
Ash Slough @ Ave 21	Represented	2014	September	X										
Bear Creek @ Kibby Rd	Represented	2014	January	X										
Bear Creek @ Kibby Rd	Represented	2014	February	X										
Bear Creek @ Kibby Rd	Represented	2014	March	X										
Bear Creek @ Kibby Rd	Represented	2014	April	X										
Bear Creek @ Kibby Rd	Represented	2014	August	X										
Berenda Slough along Ave 18 1/2	Represented	2013	October	X										
Berenda Slough along Ave 18 1/2	Represented	2013	November	X										
Berenda Slough along Ave 18 1/2	Represented	2013	December	X										
Berenda Slough along Ave 18 1/2	Represented	2014	January	X										
Berenda Slough along Ave 18 1/2	Represented	2014	February	X										
Berenda Slough along Ave 18 1/2	Represented	2014	March	X										
Berenda Slough along Ave 18 1/2	Represented	2014	April	X			X							
Berenda Slough along Ave 18 1/2	Represented	2014	May	X			X						X	
Berenda Slough along Ave 18 1/2	Represented	2014	June	X			X							
Berenda Slough along Ave 18 1/2	Represented	2014	July	X			X						X	
Berenda Slough along Ave 18 1/2	Represented	2014	August	X			X							
Berenda Slough along Ave 18 1/2	Represented	2014	September	X			X							
Black Rascal Creek @ Yosemite Rd	Represented	2014	April		X									
Black Rascal Creek @ Yosemite Rd	Represented	2014	May				X				X			
Black Rascal Creek @ Yosemite Rd	Represented	2014	July				X				X			

SITE NAME	SITE TYPE	YEAR	MONTH	COPPER	LEAD	MOLYBDENUM	CHLORPYRIFOS	DIAZINON	DIMETHOATE	DIURON	C. DUBIA	P. PROMELAS	S. CAPRICORNUTUM	H. AZTECA
Black Rascal Creek @ Yosemite Rd	Represented	2014	August				X				X			
Black Rascal Creek @ Yosemite Rd	Represented	2014	September		X		X							
Cottonwood Creek @ Rd 20	Core	2013	October	X										
Cottonwood Creek @ Rd 20	Core	2013	November	X										
Cottonwood Creek @ Rd 20	Core	2013	December	X										
Cottonwood Creek @ Rd 20	Core	2014	January	X	X		X							
Cottonwood Creek @ Rd 20	Core	2014	February	X	X		X							
Cottonwood Creek @ Rd 20	Core	2014	April	X										
Cottonwood Creek @ Rd 20	Core	2014	May	X										
Cottonwood Creek @ Rd 20	Core	2014	June	X	X									
Cottonwood Creek @ Rd 20	Core	2014	July	X										
Cottonwood Creek @ Rd 20	Core	2014	August	X										
Cottonwood Creek @ Rd 20	Core	2014	September	X										
Deadman Creek @ Gurr Rd	Represented	2013	November								X	X		
Deadman Creek @ Gurr Rd	Represented	2013	December									X		
Deadman Creek @ Gurr Rd	Represented	2014	January									X		
Deadman Creek @ Gurr Rd	Represented	2014	February								X	X	X	
Deadman Creek @ Gurr Rd	Represented	2014	March				X				X	X		
Deadman Creek @ Gurr Rd	Represented	2014	April				X							
Deadman Creek @ Gurr Rd	Represented	2014	May									X		
Deadman Creek @ Gurr Rd	Represented	2014	June									X		
Deadman Creek @ Gurr Rd	Represented	2014	July										X	
Deadman Creek @ Gurr Rd	Represented	2014	August				X							
Deadman Creek @ Gurr Rd	Represented	2014	September				X							
Deadman Creek @ Hwy 59	Represented	2014	January										X	
Deadman Creek @ Hwy 59	Represented	2014	March				X							
Deadman Creek @ Hwy 59	Represented	2014	April				X						X	
Deadman Creek @ Hwy 59	Represented	2014	August				X							
Deadman Creek @ Hwy 59	Represented	2014	September				X							
Dry Creek @ Rd 18	Represented	2013	October	X			X							

SITE NAME	SITE TYPE	YEAR	MONTH	COPPER	LEAD	MOLYBDENUM	CHLORPYRIFOS	DIAZINON	DIMETHOATE	DIURON	C. DUBIA	P. PROMELAS	S. CAPRICORNUTUM	H. AZTECA
Dry Creek @ Rd 18	Represented	2013	November	X			X							
Dry Creek @ Rd 18	Represented	2013	December	X			X							
Dry Creek @ Rd 18	Represented	2014	January	X				X		X			X	
Dry Creek @ Rd 18	Represented	2014	February	X			X	X		X			X	
Dry Creek @ Rd 18	Represented	2014	March							X				X
Dry Creek @ Rd 18	Represented	2014	April	X			X							
Dry Creek @ Rd 18	Represented	2014	May	X	X								X	
Dry Creek @ Rd 18	Represented	2014	June	X	X									
Dry Creek @ Rd 18	Represented	2014	July	X			X							
Dry Creek @ Rd 18	Represented	2014	August	X	X		X							
Dry Creek @ Rd 18	Represented	2014	September	X	X									X
Dry Creek @ Wellsford Rd	Core	2014	March											X
Dry Creek @ Wellsford Rd	Core	2014	July				X							
Dry Creek @ Wellsford Rd	Core	2014	August				X							
Dry Creek @ Wellsford Rd	Core	2014	September				X							X
Duck Slough @ Gurr Rd	Core	2013	December	X										
Duck Slough @ Gurr Rd	Core	2014	January	X	X									
Duck Slough @ Gurr Rd	Core	2014	February	X	X						X			
Duck Slough @ Gurr Rd	Core	2014	March								X			
Duck Slough @ Gurr Rd	Core	2014	April	X	X									
Duck Slough @ Gurr Rd	Core	2014	May	X	X									
Duck Slough @ Gurr Rd	Core	2014	June	X	X									
Duck Slough @ Gurr Rd	Core	2014	July	X	X									
Duck Slough @ Gurr Rd	Core	2014	August	X	X									
Duck Slough @ Gurr Rd	Core	2014	September	X	X									X
Hatch Drain @ Tuolumne Rd	Represented	2014	January										X	
Hatch Drain @ Tuolumne Rd	Represented	2014	February										X	
Hatch Drain @ Tuolumne Rd	Represented	2014	March											X
Hatch Drain @ Tuolumne Rd	Represented	2014	April										X	
Hatch Drain @ Tuolumne Rd	Represented	2014	May										X	

SITE NAME	SITE TYPE	YEAR	MONTH	COPPER	LEAD	MOLYBDENUM	CHLORPYRIFOS	DIAZINON	DIMETHOATE	DIURON	C. DUBIA	P. PROMELAS	S. CAPRICORNUTUM	H. AZTECA
Hatch Drain @ Tuolumne Rd	Represented	2014	July										X	
Hatch Drain @ Tuolumne Rd	Represented	2014	August										X	
Hatch Drain @ Tuolumne Rd	Represented	2014	September											X
Highline Canal @ Hwy 99	Core	2014	December	X										
Highline Canal @ Hwy 99	Core	2014	January	X										
Highline Canal @ Hwy 99	Core	2014	February	X	X								X	
Highline Canal @ Hwy 99	Core	2014	March	X							X		X	X
Highline Canal @ Hwy 99	Core	2014	April	X	X								X	
Highline Canal @ Hwy 99	Core	2014	May		X						X		X	
Highline Canal @ Hwy 99	Core	2014	June		X									
Highline Canal @ Hwy 99	Core	2014	July		X									
Highline Canal @ Hwy 99	Core	2014	August		X									
Highline Canal @ Hwy 99	Core	2014	September								X			X
Highline Canal @ Lombardy Rd	Represented	2014	January	X			X				X			
Highline Canal @ Lombardy Rd	Represented	2014	February	X	X						X		X	
Highline Canal @ Lombardy Rd	Represented	2014	March	X			X				X		X	X
Highline Canal @ Lombardy Rd	Represented	2014	April										X	
Highline Canal @ Lombardy Rd	Represented	2014	May	X	X								X	
Highline Canal @ Lombardy Rd	Represented	2014	June		X						X			
Highline Canal @ Lombardy Rd	Represented	2014	July				X							
Highline Canal @ Lombardy Rd	Represented	2014	August	X	X		X						X	
Highline Canal @ Lombardy Rd	Represented	2014	September		X						X		X	X
Hilmar Drain @ Central Ave	Represented	2013	December							X				
Hilmar Drain @ Central Ave	Represented	2014	January	X						X				
Hilmar Drain @ Central Ave	Represented	2014	February	X										
Hilmar Drain @ Central Ave	Represented	2014	March	X										X
Hilmar Drain @ Central Ave	Represented	2014	April							X			X	
Hilmar Drain @ Central Ave	Represented	2014	June							X				
Hilmar Drain @ Central Ave	Represented	2014	July	X									X	
Hilmar Drain @ Central Ave	Represented	2014	September										X	X

SITE NAME	SITE TYPE	YEAR	MONTH	COPPER	LEAD	MOLYBDENUM	CHLORPYRIFOS	DIAZINON	DIMETHOATE	DIURON	C. DUBIA	P. PROMELIAS	S. CAPRICORNUTUM	H. AZTECA
Howard Lateral @ Hwy 140	Represented	2014	June				X							
Lateral 2 1/2 near Keyes Rd	Represented	2014	April				X							
Lateral 2 1/2 near Keyes Rd	Represented	2014	May				X							
Lateral 2 1/2 near Keyes Rd	Represented	2014	June				X							
Lateral 2 1/2 near Keyes Rd	Represented	2014	July				X							
Lateral 2 1/2 near Keyes Rd	Represented	2014	August				X							
Livingston Drain @ Robin Ave	Represented	2013	December	X										
Livingston Drain @ Robin Ave	Represented	2014	January	X	X		X							
Livingston Drain @ Robin Ave	Represented	2014	February	X	X								X	
Livingston Drain @ Robin Ave	Represented	2014	April				X						X	
Livingston Drain @ Robin Ave	Represented	2014	May	X			X						X	
Livingston Drain @ Robin Ave	Represented	2014	June	X			X							
Livingston Drain @ Robin Ave	Represented	2014	July	X			X							
Livingston Drain @ Robin Ave	Represented	2014	August				X							
Livingston Drain @ Robin Ave	Represented	2014	September	X										
Merced River @ Santa Fe	Core	2013	November				X							
Merced River @ Santa Fe	Core	2014	January		X		X				X			
Merced River @ Santa Fe	Core	2014	February		X									
Merced River @ Santa Fe	Core	2014	March								X			
Merced River @ Santa Fe	Core	2014	July				X				X			
Merced River @ Santa Fe	Core	2014	August								X			
Miles Creek @ Reilly Rd	Represented	2014	January	X	X			X			X			
Miles Creek @ Reilly Rd	Represented	2014	February	X	X			X					X	
Miles Creek @ Reilly Rd	Represented	2014	March	X			X							
Miles Creek @ Reilly Rd	Represented	2014	April	X									X	
Miles Creek @ Reilly Rd	Represented	2014	May	X										
Miles Creek @ Reilly Rd	Represented	2014	June	X	X		X						X	
Miles Creek @ Reilly Rd	Represented	2014	July	X	X		X							
Miles Creek @ Reilly Rd	Represented	2014	August	X	X		X							
Miles Creek @ Reilly Rd	Represented	2014	September				X				X			X

SITE NAME	SITE TYPE	YEAR	MONTH	COPPER	LEAD	MOLYBDENUM	CHLORPYRIFOS	DIAZINON	DIMETHOATE	DIURON	C. DUBIA	P. PROMELIAS	S. CAPRICORNUTUM	H. AZTECA
Mustang Creek @ East Ave	Represented	2013	October	X										
Mustang Creek @ East Ave	Represented	2013	November	X										
Mustang Creek @ East Ave	Represented	2013	December	X										
Mustang Creek @ East Ave	Represented	2014	January	X										
Mustang Creek @ East Ave	Represented	2014	February	X										
Mustang Creek @ East Ave	Represented	2014	March	X										
Mustang Creek @ East Ave	Represented	2014	April	X										
Prairie Flower Drain @ Crows Landing Rd	Core	2013	October			X							X	
Prairie Flower Drain @ Crows Landing Rd	Core	2013	November			X								
Prairie Flower Drain @ Crows Landing Rd	Core	2013	December			X							X	
Prairie Flower Drain @ Crows Landing Rd	Core	2014	January			X							X	
Prairie Flower Drain @ Crows Landing Rd	Core	2014	February			X							X	
Prairie Flower Drain @ Crows Landing Rd	Core	2014	March			X					X			X
Prairie Flower Drain @ Crows Landing Rd	Core	2014	April			X						X	X	
Prairie Flower Drain @ Crows Landing Rd	Core	2014	May			X							X	
Prairie Flower Drain @ Crows Landing Rd	Core	2014	June			X								
Prairie Flower Drain @ Crows Landing Rd	Core	2014	July			X			X			X		
Prairie Flower Drain @ Crows Landing Rd	Core	2014	August			X			X		X			
Prairie Flower Drain @ Crows Landing Rd	Core	2014	September			X			X		X			X
Westport Drain @ Vivian Rd	Represented	2014	February										X	
Westport Drain @ Vivian Rd	Represented	2014	March				X							
Westport Drain @ Vivian Rd	Represented	2014	April										X	
Westport Drain @ Vivian Rd	Represented	2014	May										X	
Westport Drain @ Vivian Rd	Represented	2014	July				X							
Westport Drain @ Vivian Rd	Represented	2014	August				X							
Westport Drain @ Vivian Rd	Represented	2014	September				X							

Represented sites with a high priority management plan are listed alphabetically below. Each site subwatershed section includes a discussion of the high priority management plan constituents that will be monitored and the evaluation of monitoring frequency (past exceedances and PUR evaluations). Each site subwatershed section also includes MPM constituent specific charts of the pounds applied from 2004 – 2012 for each month. Below each chart of use, is a table noting the months of past sampling and exceedances by year. In the same figure is a sum of use from 2004 – 2012 and for the last three years (2010 – 2012). PUR data is preliminary from 2011 and 2012 and has been received directly from County Agricultural Commissioners. Water quality results were reviewed up through March 2013 where applicable. More recent data was not available at the time of this report. All of this information was utilized in determining the monitoring frequency.

Ash Slough @ Ave 21

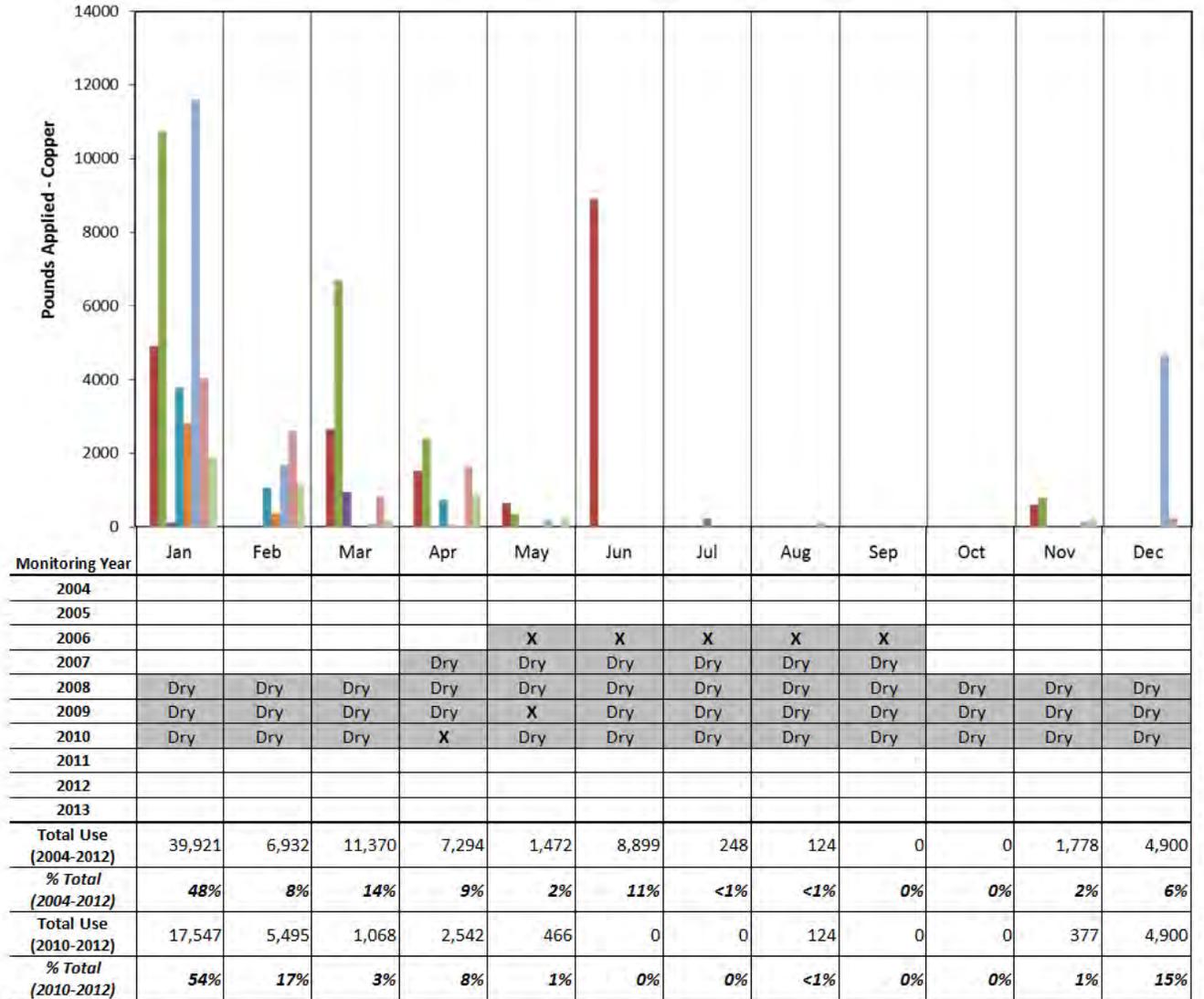
Ash Slough @ Ave 21 has been added as a sixth priority site subwatershed (2014-2016) in Zone 6. Ash Slough @ Ave 21 is currently in a management plan for copper (Table 18). Chlorpyrifos, lead and *E. coli* were removed in May 2012.

Copper

The Coalition will conduct MPM for copper at Ash Slough @ Ave 21 during past months of exceedances (April through September) for the 2014 Water Year (Figure 9). In addition, the Coalition will include MPM in January and February to characterize storm water runoff. The three years that this site was monitored in January through March it was dry, however the site has not been monitored since 2010 (Figure 9).

Figure 9. Ash Slough @ Ave 21 2004-2012 copper use and monitoring.

Shaded cells represent months of past monitoring. "X" depicts months in which exceedances occurred.



Bear Creek @ Kibby Rd

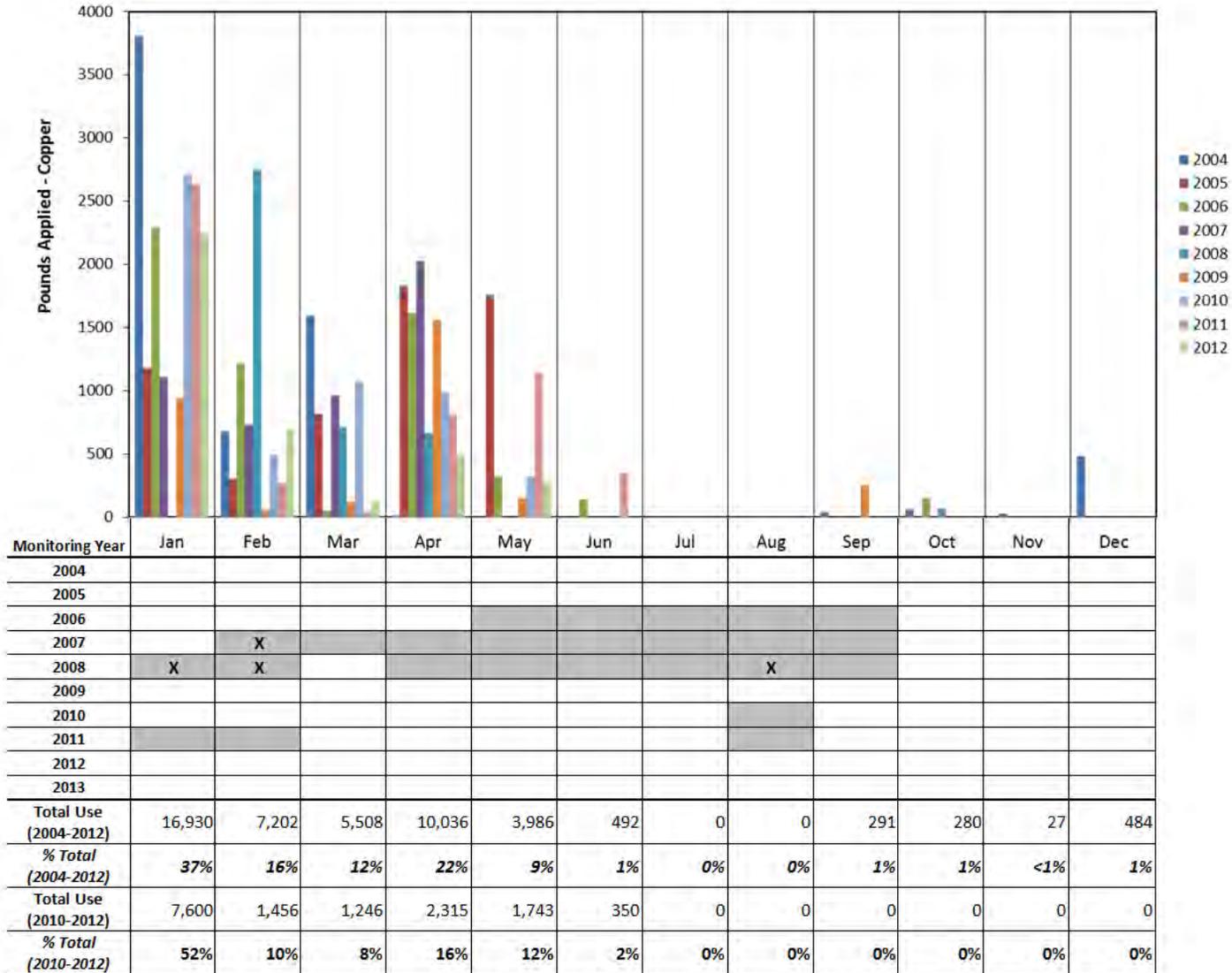
Bear Creek @ Kibby Rd is a second priority site subwatershed (2010-2012) in Zone 4. Bear Creek @ Kibby Rd is currently in a management plan for copper, *E. coli* and pH (Table 18). No MPM for pH and *E. coli* is scheduled. Chlorpyrifos, *C. dubia* toxicity and DO were removed May 2012. The Coalition does not conduct MPM for *E. coli* or pH.

Copper

Management Plan Monitoring for copper occurred in 2012, concluding two consecutive years of monitoring with no exceedances of the WQTL for copper. The Coalition requested the removal copper from the active management plan on November 7, 2012. The Coalition will continue to monitor for copper during in January, February and August (months of past exceedances). In addition, March and April will be monitored for copper to characterize storm water runoff. There has only been one year of monitoring during March (2007) and two years of monitoring during April (2007 and 2008; Figure 10). Due to the lack of past monitoring, similar patterns of use, and the potential for storm runoff, the Coalition is adding March and April to the 2014 MPM schedule.

Figure 10. Bear Creek @ Kibby Rd 2004-2012 copper use and monitoring.

Shaded cells represent months of past monitoring. "X" depicts months in which exceedances occurred.



Berenda Slough @ Avenue 18 1/2

Berenda Slough along Avenue 18 ½ is a third priority site subwatershed (2011-2013) in Zone 6. Berenda Slough along Avenue 18 ½ is currently in a management plan for chlorpyrifos, copper, *S. capricornutum* toxicity, *E. coli* and DO. Management Plan Monitoring is scheduled for the 2014 Water Year for chlorpyrifos, copper and *S. capricornutum* toxicity (Table 18).

Chlorpyrifos

The Coalition will conduct MPM for chlorpyrifos during the 2014 Water Year in April, July and September due to months of past exceedances (Figure 11). Chlorpyrifos has been analyzed in samples collected during irrigation months (May through September) over five years (2006 – 2008, 2011 and 2012). There has not been an exceedance of the chlorpyrifos WQTL in May, June or August. Due to the total use and the variability in use between years from 2004 - 2012, the Coalition will add May, June and August to its MPM schedule for the 2014 Water Year (Figure 11).

Copper

The Coalition will conduct MPM for copper October through February and April through September during the 2014 water year based on past exceedances (Figure 12). In 2011, there were copper exceedances in every month except March (11 exceedances of the copper WQTL). March is being added to the MPM schedule to ensure characterization of copper discharge in the watershed. Monitoring for copper will occur in all months during the 2014 Water Year (Figure 12).

***S. capricornutum* toxicity**

There are many potential sources for algae toxicity including a large suite of herbicides. The source of algae toxicity within Berenda Slough is unknown and therefore the Coalition will conduct MPM for *S. capricornutum* toxicity in May and July based on past exceedances (Table 18).

Figure 11. Berenda Slough@ Avenue 18 1/2 2004-2012 chlorpyrifos use and monitoring.

Shaded cells represent months of past monitoring. "X" depicts months in which exceedances occurred.

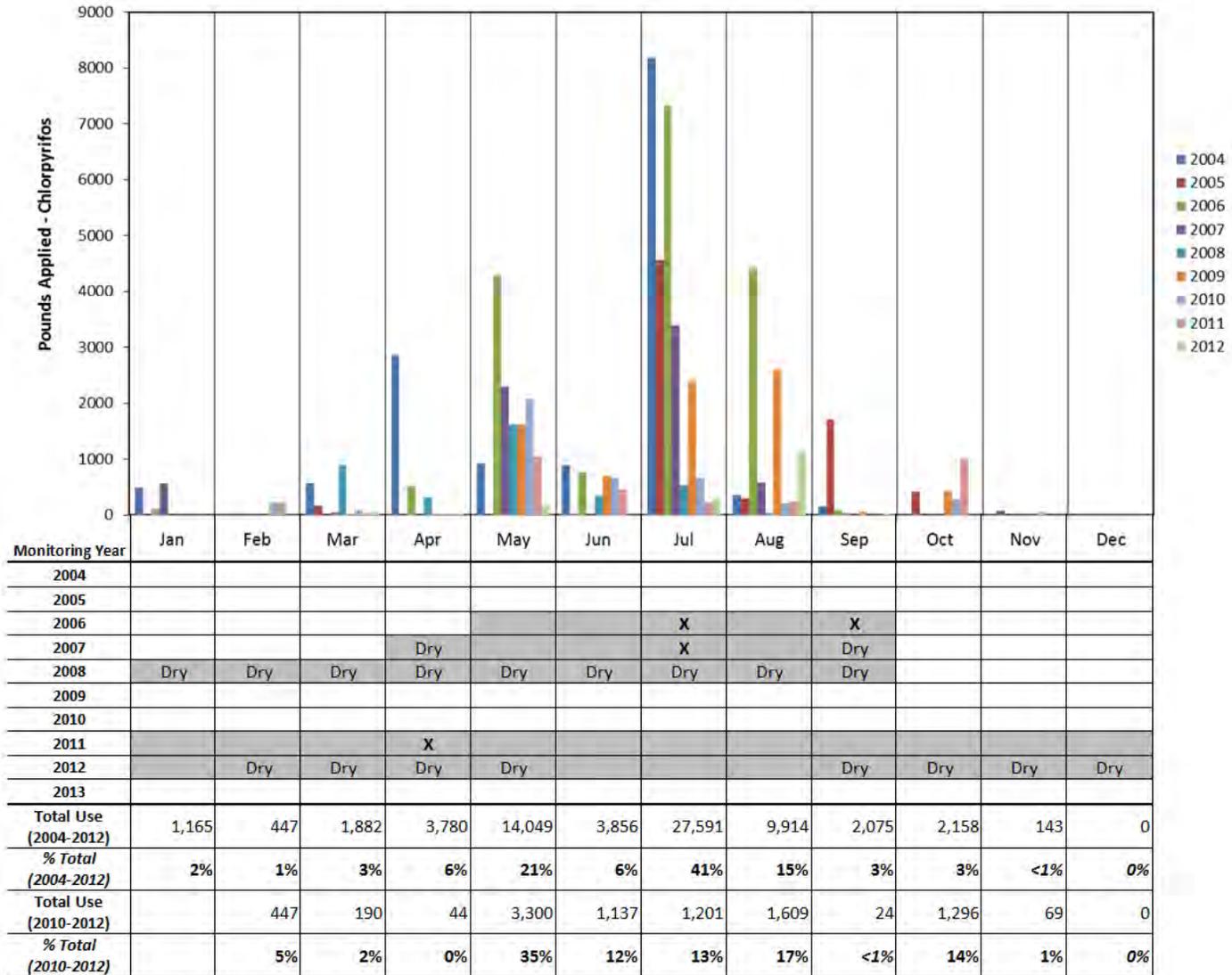
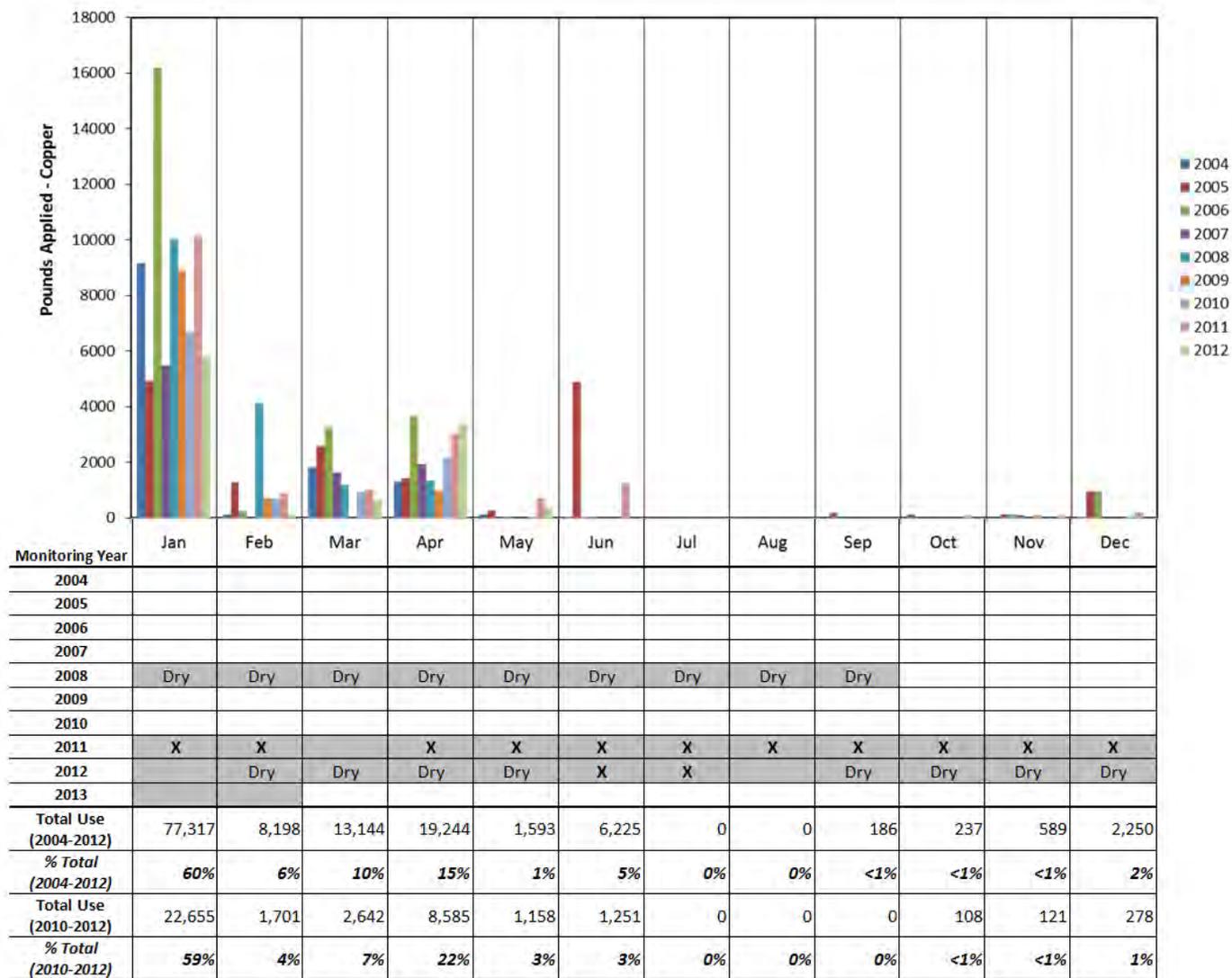


Figure 12. Berenda Slough @ Avenue 18 1/2 2004-2012 copper use and monitoring.

Shaded cells represent months of past monitoring. "X" depicts months in which exceedances occurred.



Black Rascal Creek @ Yosemite Rd

Black Rascal Creek @ Yosemite Rd is a fourth priority site subwatershed (2012-2014) in Zone 4. Black Rascal Creek @ Yosemite Rd is currently in a management plan for chlorpyrifos, *C. dubia* toxicity, DO, *E. coli*, lead and pH. Management Plan Monitoring is scheduled during the 2014 Water Year for chlorpyrifos, lead and toxicity to *C. dubia* (Table 18). Lead is not currently applied by agriculture and therefore cannot be associated with use. The MPM for lead at Black Rascal Creek @ Yosemite Rd will be conducted during months of past exceedances including April and September.

Chlorpyrifos

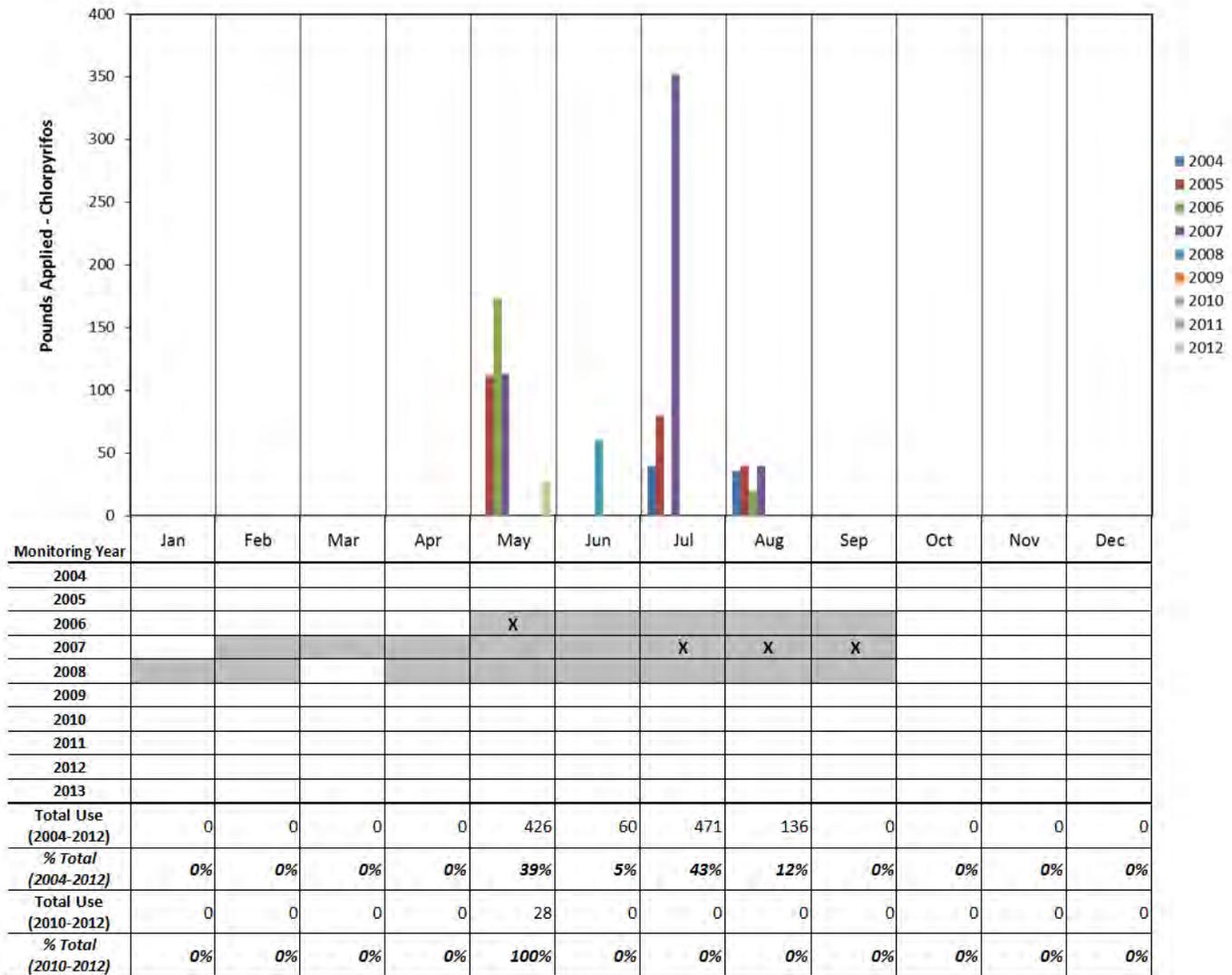
The Coalition will conduct MPM for chlorpyrifos at Black Rascal Creek @ Yosemite Rd during past months of exceedances (May and July through September) for the 2014 Water Year (Figure 13).

Based on past exceedances and current PUR data, the Coalition determined that MPM is not necessary in October through April or in June. No exceedances of the WQTL for chlorpyrifos occurred during winter months (January through March) and no applications of chlorpyrifos were reported during October through April, 2004 through 2012. From 2004 through 2012 there has been a single application of chlorpyrifos. No exceedances of the WQTL occurred during Normal Monitoring in 2006 through 2008 (Figure 13).

***C. dubia* toxicity**

Water column toxicity to *C. dubia* occurred in samples collected from Black Rascal Creek @ Yosemite Rd in the months of May, July and August. Chlorpyrifos was also detected at concentrations above the WQTL in those same samples and is a probable cause of the toxicity. The only month that there was not *C. dubia* toxicity and there was an exceedance of the chlorpyrifos WQTL was September, 2008. There were no applications of chlorpyrifos in September and it is believed that the chlorpyrifos exceedance was due to no flow and residual chlorpyrifos from the August applications. The Coalition has identified the source of the chlorpyrifos WQTL exceedance and the *C. dubia* toxicity and has determined that monitoring in May, July and August for *C. dubia* (months of chlorpyrifos applications and *C. dubia* toxicity) characterizes the constituent of concern.

Figure 13. Black Rascal Creek @ Yosemite Rd 2004-2012 chlorpyrifos use and monitoring.
 Shaded cells represent months of past monitoring. "X" depicts months in which exceedances occurred.



Deadman Creek @ Gurr Rd

Deadman Creek @ Gurr Rd is a fourth priority site subwatershed (2012-2014) in Zone 5. Deadman Creek @ Gurr Rd is currently in a management plan for chlorpyrifos, *C. dubia* toxicity, *P. promelas* toxicity, *S. capricornutum* toxicity, ammonium, arsenic, DO, *E. coli*, pH, Specific Conductivity (SC) and Total Dissolved Solids (TDS). Management Plan Monitoring is scheduled for the 2014 Water Year for chlorpyrifos, *C. dubia* toxicity, *P. promelas* toxicity and *S. capricornutum* toxicity (Table 18).

Chlorpyrifos

The Coalition will conduct MPM for chlorpyrifos at Deadman Creek @ Gurr Rd during months of past exceedances (March, April, August and September) for the 2014 Water Year (Figure 14).

Based on an evaluation of PUR data, the Coalition determined that MPM is not necessary in October through February and May through July. Applications of chlorpyrifos during October from 2010 through 2012 account for only 9% of total applications in the subwatershed and were the result of applications to drip irrigated vineyards. From 2004 to 2012, a single application of chlorpyrifos occurred during November months, very low use occurred during the January months and no applications occurred during the December or February months. In addition, the Coalition monitored for chlorpyrifos October through January from 2008 through 2010 and in February from 2007 through 2010; no exceedances of the WQTL for chlorpyrifos occurred (Figure 14).

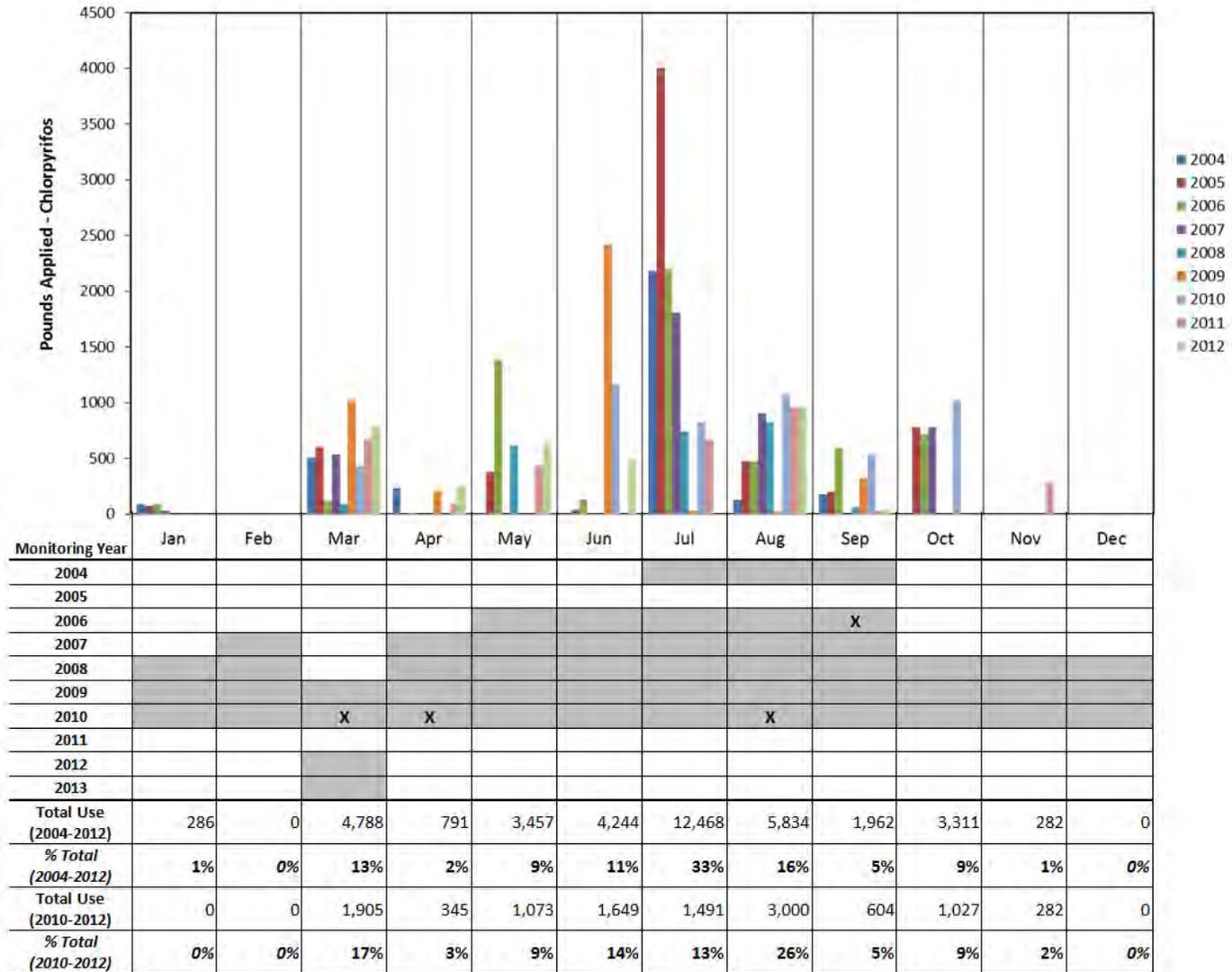
During May through July (2004-2012), applications of chlorpyrifos were consistent; applications of chlorpyrifos in May account for 9% of the total use in the subwatershed, applications in June account for 11% and July applications account for 33%. However, monitoring data from 2006 through 2007 resulted in no exceedances of the WQTL for chlorpyrifos from May through July; therefore, chlorpyrifos is not impairing the water quality at Deadman Creek @ Gurr Rd (Figure 14).

***C. dubia*, *S. capricornutum* and *P. promelas* toxicity**

Water column toxicity that has occurred at Deadman Creek @ Gurr Rd cannot be sourced to an applied constituent. Therefore, MPM for *C. dubia*, *S. capricornutum* and *P. promelas* will occur during months in which past exceedances have occurred (Table 18).

Figure 14. Deadman Creek @ Gurr Rd 2004-2012 chlorpyrifos use and monitoring.

Shaded cells represent months of past monitoring. "X" depicts months in which exceedances occurred.



Deadman Creek @ Hwy 59

Deadman Creek @ Hwy 59 is a forth priority site subwatershed (2012-2014) in Zone 5, upstream of Deadman Creek @ Gurr Rd. Deadman Creek @ Hwy 59 is currently in a management plan for chlorpyrifos, *S. capricornutum* toxicity, arsenic, DO, *E. coli* and pH. Management Plan Monitoring is scheduled for the 2014 Water Year for chlorpyrifos and *S. capricornutum* toxicity (Table 18).

Chlorpyrifos

The Coalition will conduct MPM for chlorpyrifos at Deadman Creek @ Hwy 59 during months of past exceedances (April, August and September) for the 2014 Water Year. In addition, March MPM will be added to evaluate if increased chlorpyrifos use in March is impairing the water quality at Deadman Creek @ Hwy 59 (Figure 15).

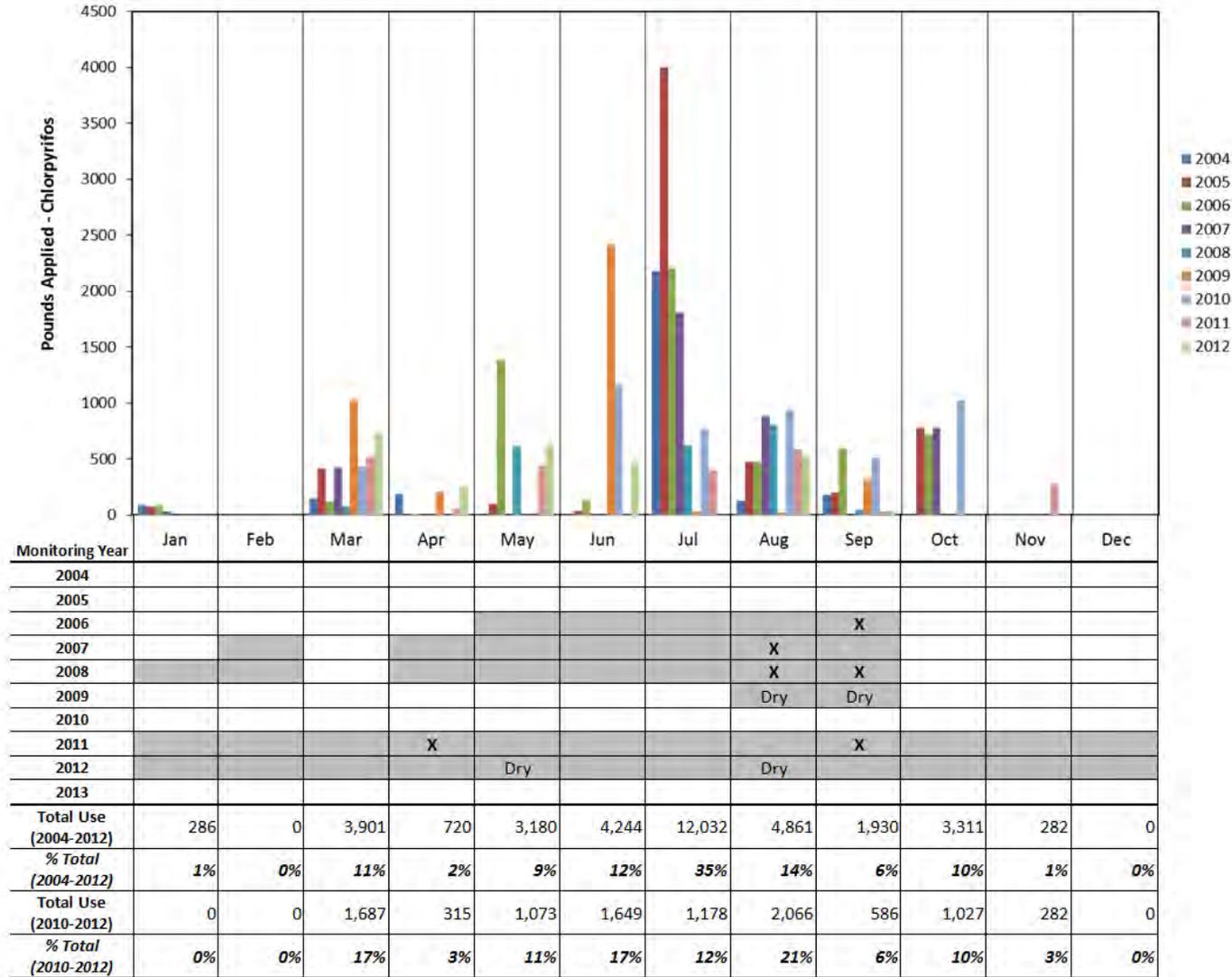
Based on past monitoring data and PUR data, MPM is not necessary from October through February and May through July. Over the past three years chlorpyrifos use has been low during the October, November and January months and no chlorpyrifos use was recorded in December and February (Figure 15).

***S. capricornutum* toxicity**

Algae toxicity first occurred in samples collected in January 2008 during a storm event. The herbicides simazine and diuron were also detected at levels above their respective WQTLs in the same samples and were a likely cause of the toxicity. During the first irrigation event of the same year (April 29, 2008), samples collected at Deadman Creek @ Hwy 59 were also toxic to *S. capricornutum* including resamples collected one week later to test for toxicity persistence. There was no exceedance of herbicide WQTLs in the April 2008 samples. Deadman Creek @ Hwy 59 was sampled for 12 months in 2011 and 2012 for herbicides and algae toxicity and there were no water quality impairments. The Coalition will continue to monitor for *S. capricornutum* in the 2014 Water Year during January and April to characterize agricultural discharge with the potential to result in algae toxicity.

Figure 15. Deadman Creek @ Hwy 59 2004-2012 chlorpyrifos use and monitoring.

Shaded cells represent months of past monitoring. "X" depicts months in which exceedances occurred.



Dry Creek @ Rd 18

Dry Creek @ Rd 18 is a third priority site subwatershed (2011-2013) in Zone 6. Dry Creek @ Rd 18 is currently in a management plan for chlorpyrifos, copper, diazinon, diuron, *H. azteca* sediment toxicity, *S. capricornutum* toxicity, DO, *E. coli*, lead and pH. Management Plan Monitoring is scheduled for the 2014 Water Year for chlorpyrifos, copper, diazinon, diuron, *H. azteca* sediment toxicity and *S. capricornutum* toxicity (Table 18).

Chlorpyrifos

The Coalition will conduct MPM for chlorpyrifos at Dry Creek @ Rd 18 during months of past exceedances (February, April and July) for the 2014 Water Year. Management Plan Monitoring is being added for the month of August based on PUR data. The PUR data indicate an increasing trend in chlorpyrifos use during August in the past three years. No exceedances of the WQTL occurred from 2005 through 2008 (Figure 16). The 2014 Monitoring Update Report will evaluate monitoring quality results from 2013 (August monitoring) and determine if future monitoring in August is necessary to characterize chlorpyrifos discharge.

The Coalition will continue to monitor from October through December 2013 for chlorpyrifos at Dry Creek @ Rd 18 (previously scheduled under the 2013 monitoring schedule which is based on a calendar year). In 2014, the Coalition will review PUR data along with the water quality data collected in 2013 and conduct MPM during months when past exceedances occurred to characterize the potential for water quality impairments due to irrigation discharge (Figure 16).

Copper

The Coalition will conduct MPM for copper at Dry Creek @ Rd 18 during months of past exceedances (January, February and April through September) for the 2014 Water Year (Figure 17). The Coalition will continue to monitor from October through December 2013 since the Coalition has not previously monitored during those months and there are applications of copper. Next year, the Coalition will review the PUR data along with the water quality data collected in 2013 and conduct monitoring during months of past exceedances.

Diazinon

The Coalition will conduct MPM in February for diazinon for the 2014 Water Year at Dry Creek @ Rd 18 due to past exceedances. January MPM is being added due to high diazinon use; January months account for 40% of all diazinon use in the subwatershed from 2010 through 2012 (Figure 18). January and February MPM will allow the Coalition to better evaluate the potential for storm water runoff during winter months and determine if diazinon is impairing the water quality at Dry Creek @ Rd 18.

Diuron

The Coalition will conduct January and February diuron MPM for the 2014 Water Year at Dry Creek @ Rd 18 due to past exceedances. In addition, the Coalition will evaluate if high diuron use during winter

months is potentially affecting the water quality at Dry Creek @ Rd 18 by adding March MPM. Diuron applications in March months account for 35% of all use in the subwatershed from 2010 through 2012 (Figure 19).

***S. capricornutum* toxicity**

There have been five samples collected from Dry Creek @ Rd 18 that were toxic to algae. Of the samples that were toxicity to algae and were also analyzed for herbicides, one of the three samples contained a concentration of diuron above the WQTL. The Coalition will continue to conduct MPM during January, February and May which are the months in which past exceedances have occurred (Table 18).

***H. azteca* sediment toxicity**

Sediment toxicity monitoring is conducted twice a year – once during the storm season and once during the irrigation season. The Coalition will conduct MPM for *H. azteca* sediment toxicity in March and September.

Figure 16. Dry Creek @ Rd 18 2004-2012 chlorpyrifos use and monitoring.

Shaded cells represent months of past monitoring. "X" depicts months in which exceedances occurred.

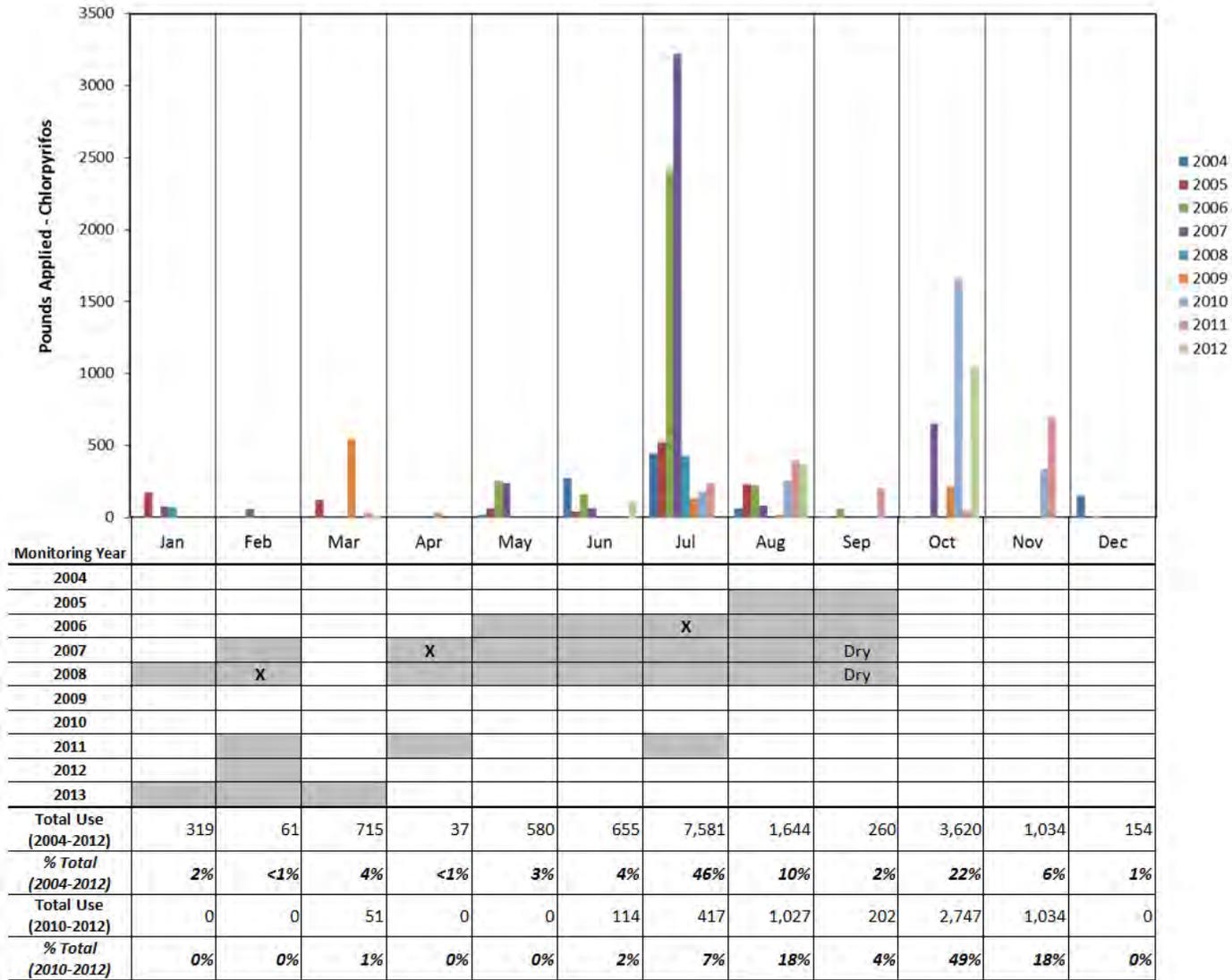


Figure 17. Dry Creek @ Rd 18 2004-2012 copper use and monitoring.

Shaded cells represent months of past monitoring. "X" depicts months in which exceedances occurred.

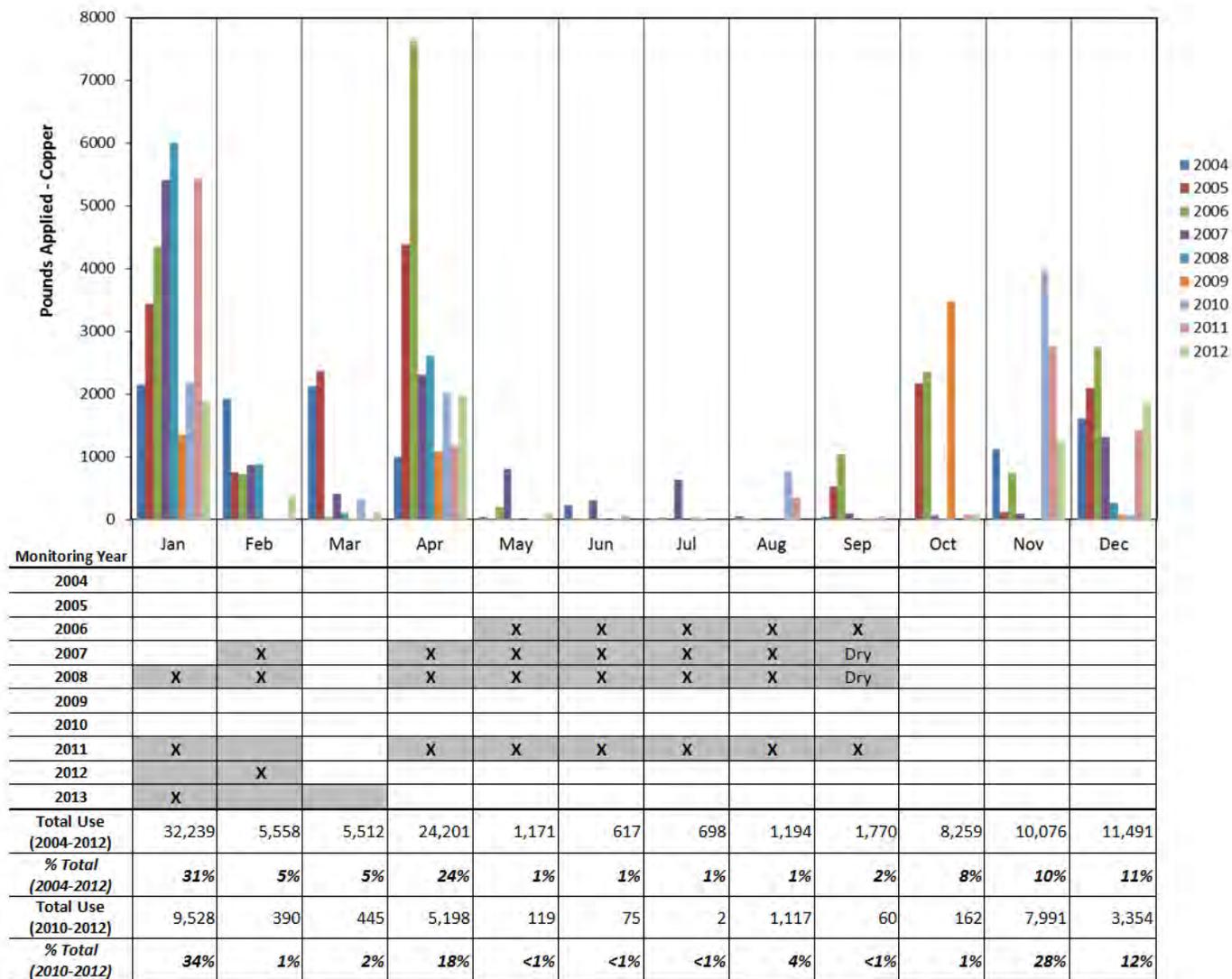


Figure 18. Dry Creek @ Rd 18 2004-2012 diazinon use and monitoring.

Shaded cells represent months of past monitoring. "X" depicts months in which exceedances occurred.

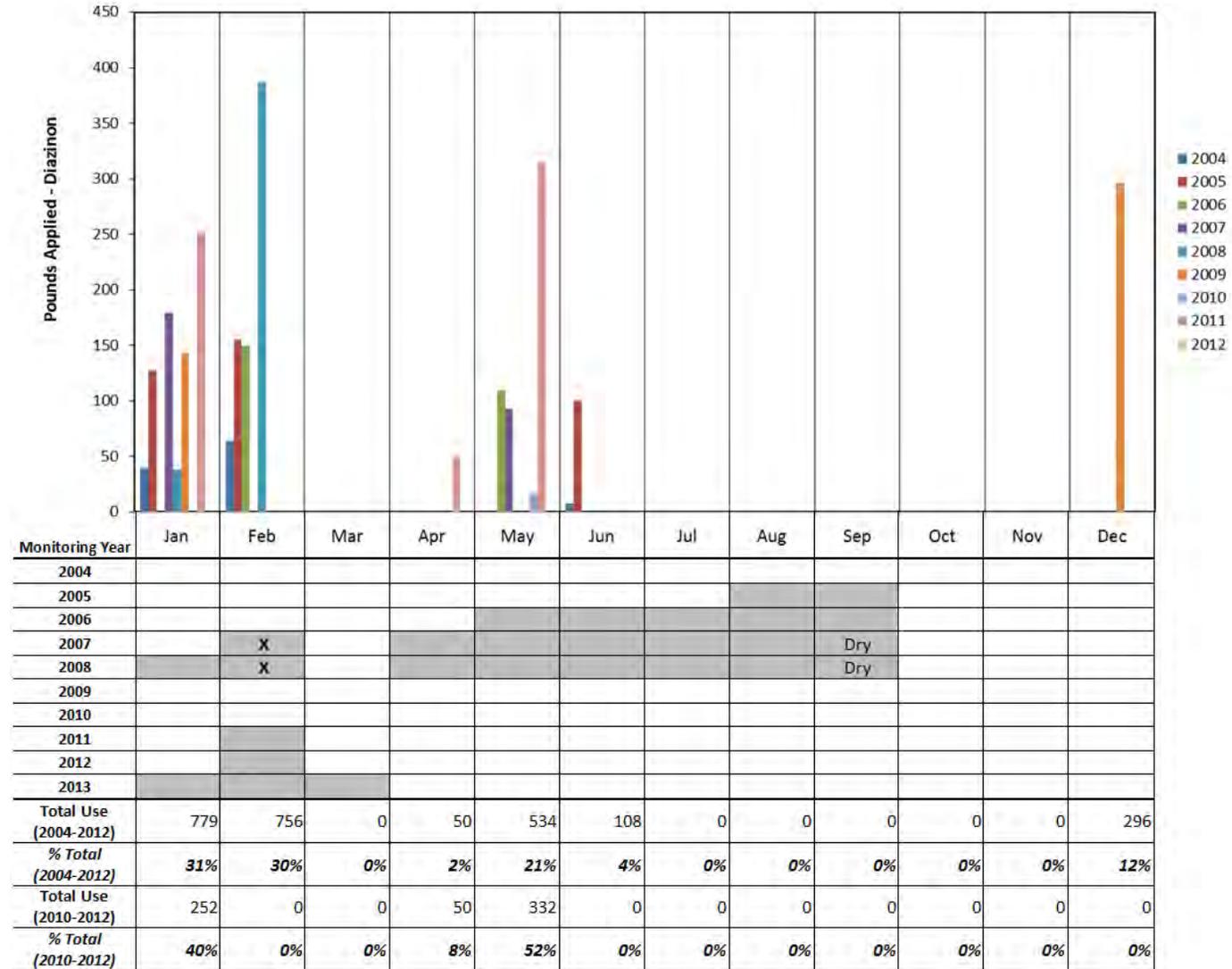
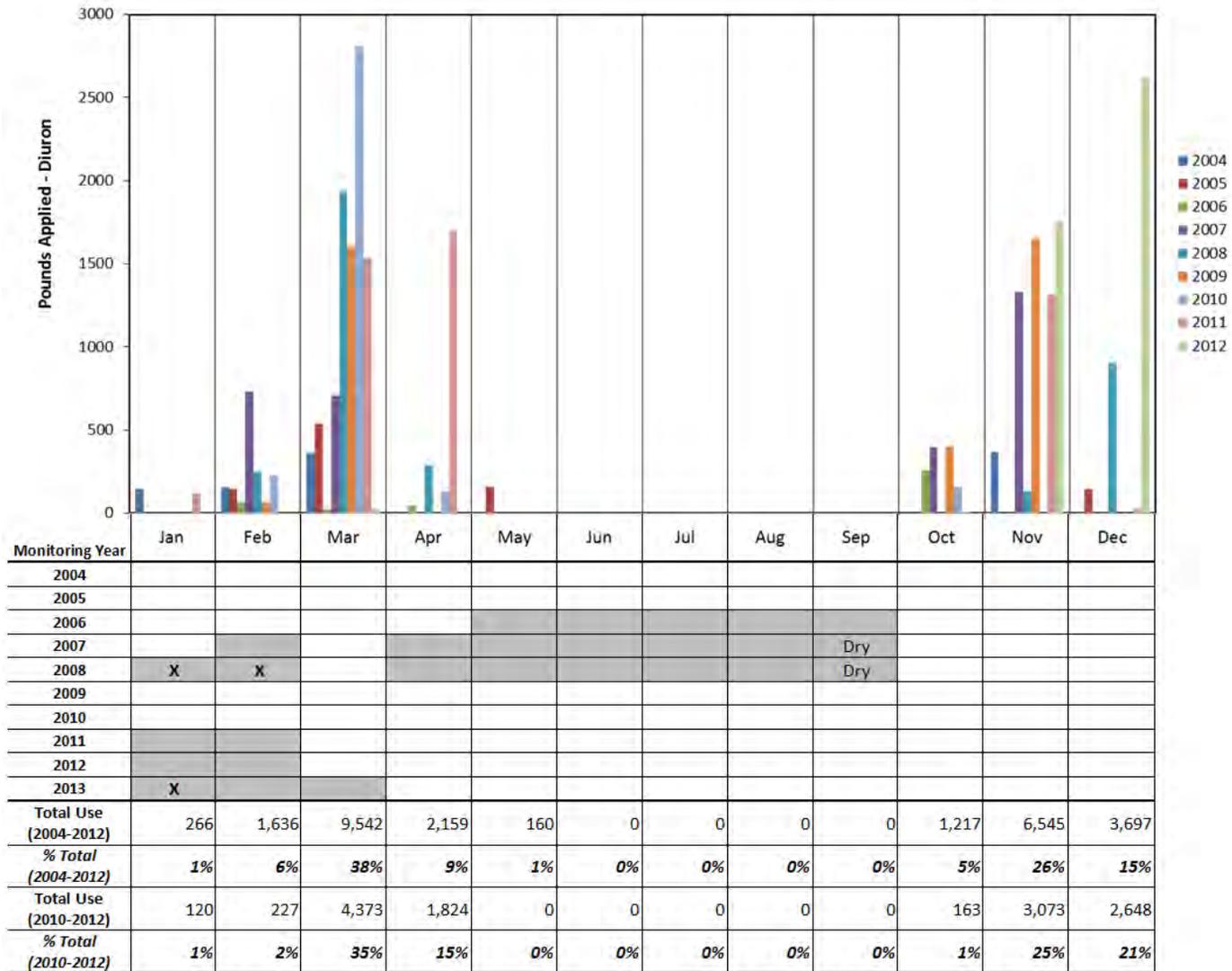


Figure 19. Dry Creek @ Rd 18 2004-2012 diuron use and monitoring.

Shaded cells represent months of past monitoring. "X" depicts months in which exceedances occurred.



Highline Canal @ Lombardy Rd

Highline Canal @ Lombardy Rd is a fifth priority site subwatershed (2013-2015) in Zone 3. Highline Canal @ Lombardy Rd is currently in a management plan for chlorpyrifos, copper, *C. dubia* toxicity, *H. azteca* sediment toxicity, *S. capricornutum* toxicity, *E. coli*, lead, pH and SC. Management Plan Monitoring is scheduled for the 2014 Water Year for chlorpyrifos, copper, *H. azteca* sediment toxicity and *C. dubia* and *S. capricornutum* toxicity (Table 18).

Chlorpyrifos

Management Plan Monitoring for chlorpyrifos will occur at Highline Canal @ Lombardy Rd in January, March, July and August based on previous exceedances; no additional months have been added. The Coalition reviewed PUR data and concluded that although chlorpyrifos was applied during October, November and December months, the applications only account for 13% of the use in the subwatershed from 2004 through 2012. Monthly monitoring in 2011 and 2012 included October through December months; no exceedances of the WQTL occurred. The Coalition has monitored six years during the months of February, April through June and September from 2006 through 2012 without any exceedances of the WQTL for chlorpyrifos; therefore, MPM will occur during months when past exceedances have occurred (Figure 20).

Copper

Management Plan Monitoring for copper will occur at Highline Canal @ Lombardy Rd in January through March, May and August 2014 based on previous exceedances.

April, November and December months are not included in the MPM schedule despite applications of products with copper (Figure 21). The Coalition monitored for three years in April and two years in November and December between 2008 and 2012 without any exceedances of the copper WQTL. Under the 2008 MRPP, the Coalition began analyzing separately for total and dissolved fractions of metals and believes this more accurate description of water quality may reduce the frequency of copper exceedances. Furthermore, since there are months of copper use and no exceedances of the WQTL and months of copper use and exceedances of the WQTL, the Coalition concluded there is no correlation between the amount of copper applications and exceedances of the hardness based WQTL for copper. For example, the two exceedance in August 2008 and 2009 occurred when no applications of copper were made, whereas April, November and December show consistent copper use but three years of monitoring resulted in no exceedances of the WQTL (Figure 21). Therefore, only months in which past exceedances of the copper WQTL have occurred will be monitored in the 2014 Water Year.

C. dubia toxicity

Management Plan Monitoring for *C. dubia* toxicity will occur in September, January – March, and June of the 2014 Water Year. Toxicity to *C. dubia* cannot always be associated with a specific applied pesticide. Only one of the six samples with toxicity was associated with an exceedance of the chlorpyrifos WQTL.

Therefore, MPM is scheduled in the 2014 Water Year for months in which past exceedances have occurred.

***S. capricornutum* toxicity**

Samples collected from Highline Canal @ Lombardy Rd have been toxic to *S. capricornutum* six times since 2005. Of those six samples, only one sample had an exceedance of an herbicide WQTL (diuron, sample collected in February 2007). Diuron is not in a management plan for this site since this was the only exceedance. The *S. capricornutum* toxicity sampling is scheduled to occur once in months where previous samples have been toxic including February, March, April, May, August and September.

***H. azteca* toxicity**

Sediment toxicity monitoring is conducted twice a year – once during the storm season and once during the irrigation season. The Coalition will conduct MPM for *H. azteca* sediment toxicity in March and September.

Figure 20. Highline Canal @ Lombardy 2004-2012 chlorpyrifos use and monitoring.

Shaded cells represent months of past monitoring. "X" depicts months in which exceedances occurred.

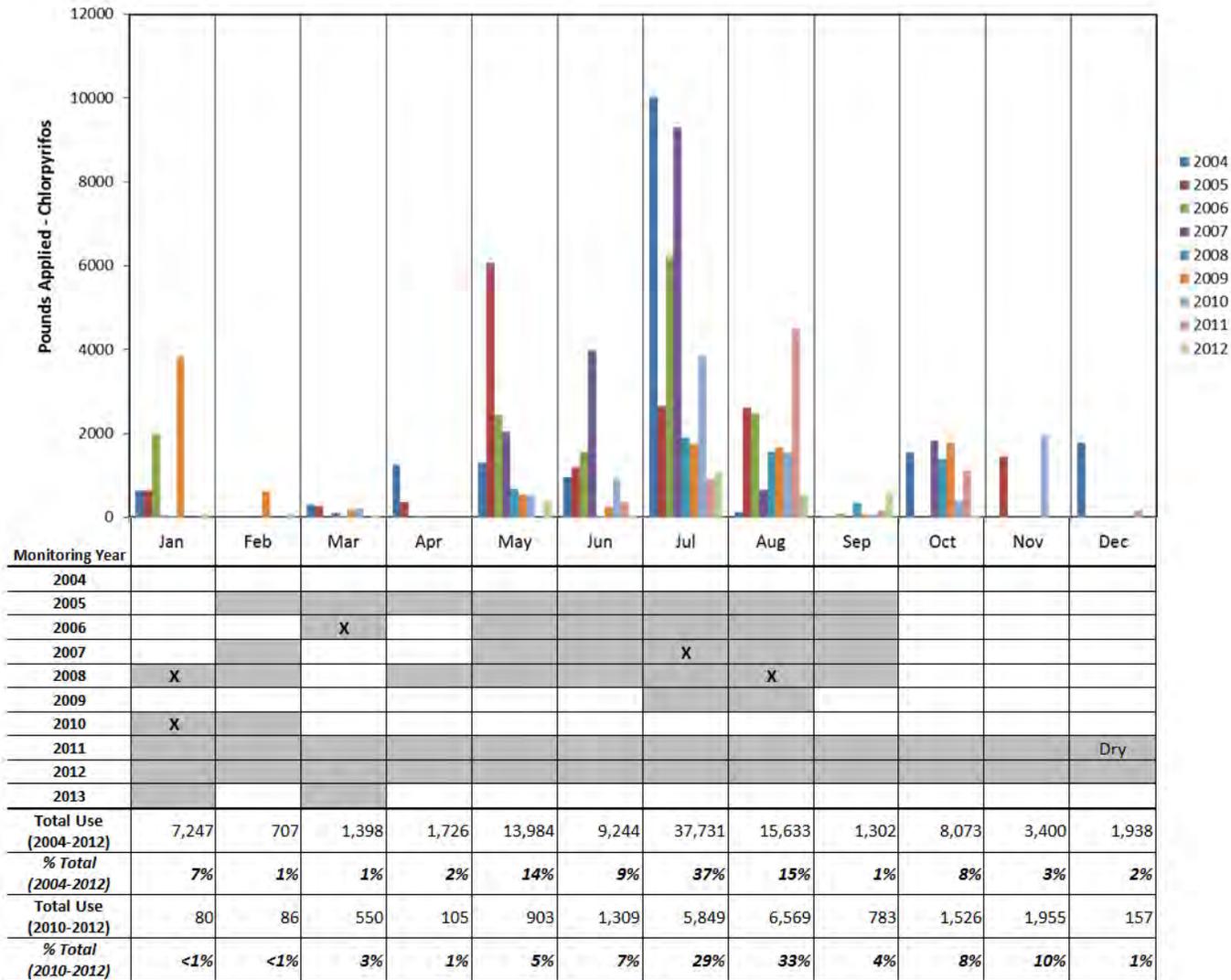
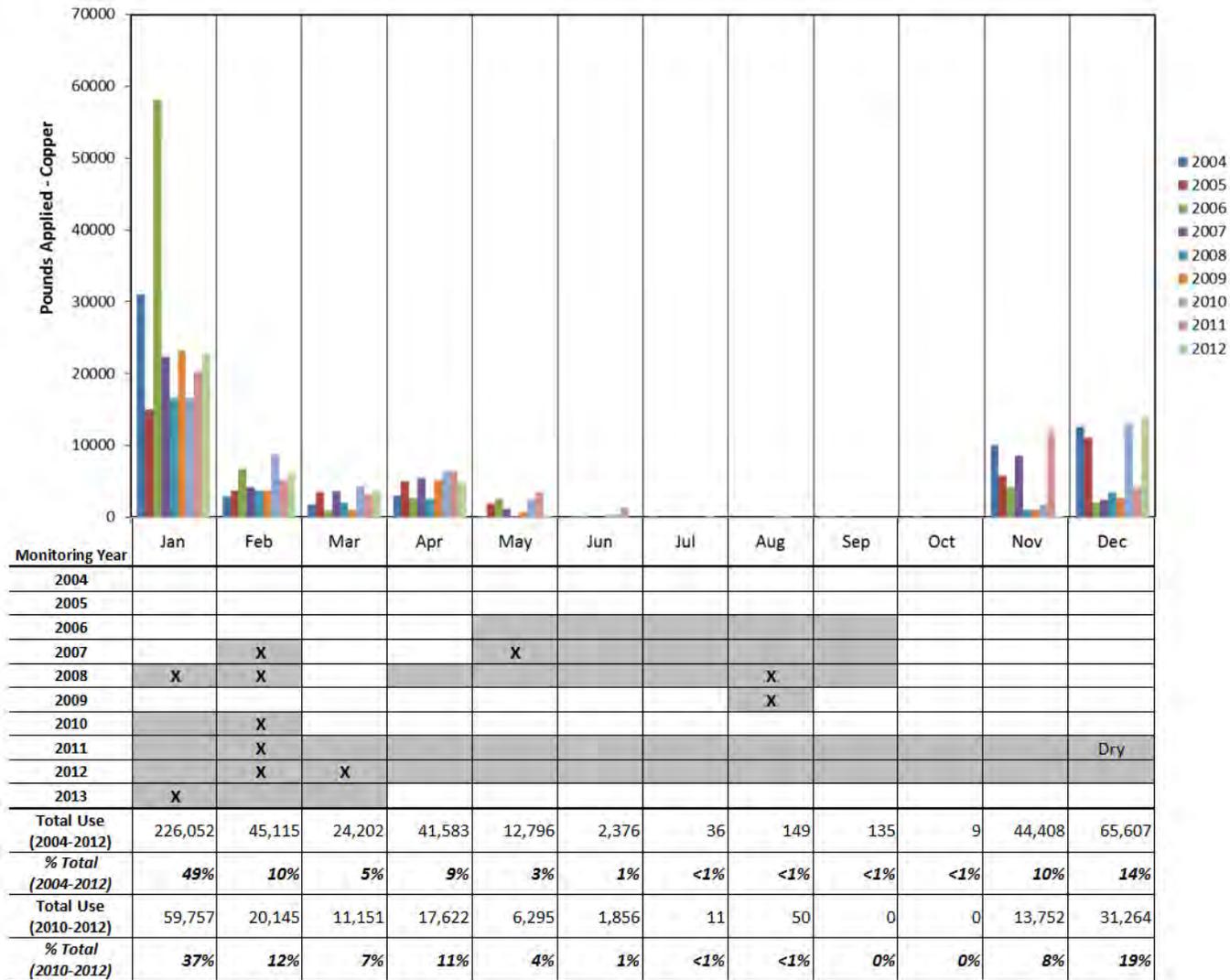


Figure 21. Highline Canal @ Lombardy 2004-2012 copper use and monitoring.

Shaded cells represent months of past monitoring. "X" depicts months in which exceedances occurred.



Hilmar Drain @ Central Ave

Hilmar Drain @ Central Ave is a fourth priority site subwatershed (2012-2014) in Zone 2. Hilmar Drain @ Central Ave is currently in a management plan for copper, diuron, nitrate, *H. azteca* sediment toxicity, *S. capricornutum* toxicity, ammonia, DO, *E. coli*, pH and SC. Management Plan Monitoring is scheduled for the 2014 Water Year for copper, diuron, *H. azteca* sediment toxicity and *S. capricornutum* toxicity (Table 18). These samples are collected once a month during times of past exceedances.

Copper

The Coalition will conduct MPM for copper during months of past exceedances (February and July) for the 2014 Water Year (Figure 22). Applications of copper occurred January through April from 2004 through 2012. The Coalition is extending MPM to include January and March to evaluate the potential for discharge during storm water runoff to impair water quality during times of high use.

Diuron

The Coalition will conduct MPM for diuron during months of past exceedances (April and June) for the 2014 Water Year (Figure 23). The Coalition reviewed PUR data from 2010-2012 and added December and January to the MPM schedule. December and January accounts for 96% of the pounds of diuron applied in the site subwatershed from 2004 through 2012.

***S. capricornutum* toxicity**

Samples collected in April, July and September have been toxic to algae. Toxic samples collected in April 2007 and 2008 also had detections of diuron above the WQTL. Management Plan Monitoring will continue in April for the 2014 Water Year and correspond to diuron analysis. In addition, samples will be tested for toxicity to *S. capricornutum* once in July and September.

***H. azteca* toxicity**

Sediment toxicity monitoring is conducted twice a year – once during the storm season and once during the irrigation season. The Coalition will conduct MPM for *H. azteca* sediment toxicity in March and September.

Figure 22. Hilmar Drain @ Central Ave 2004-2012 copper use and monitoring.

Shaded cells represent months of past monitoring. "X" depicts months in which exceedances occurred.

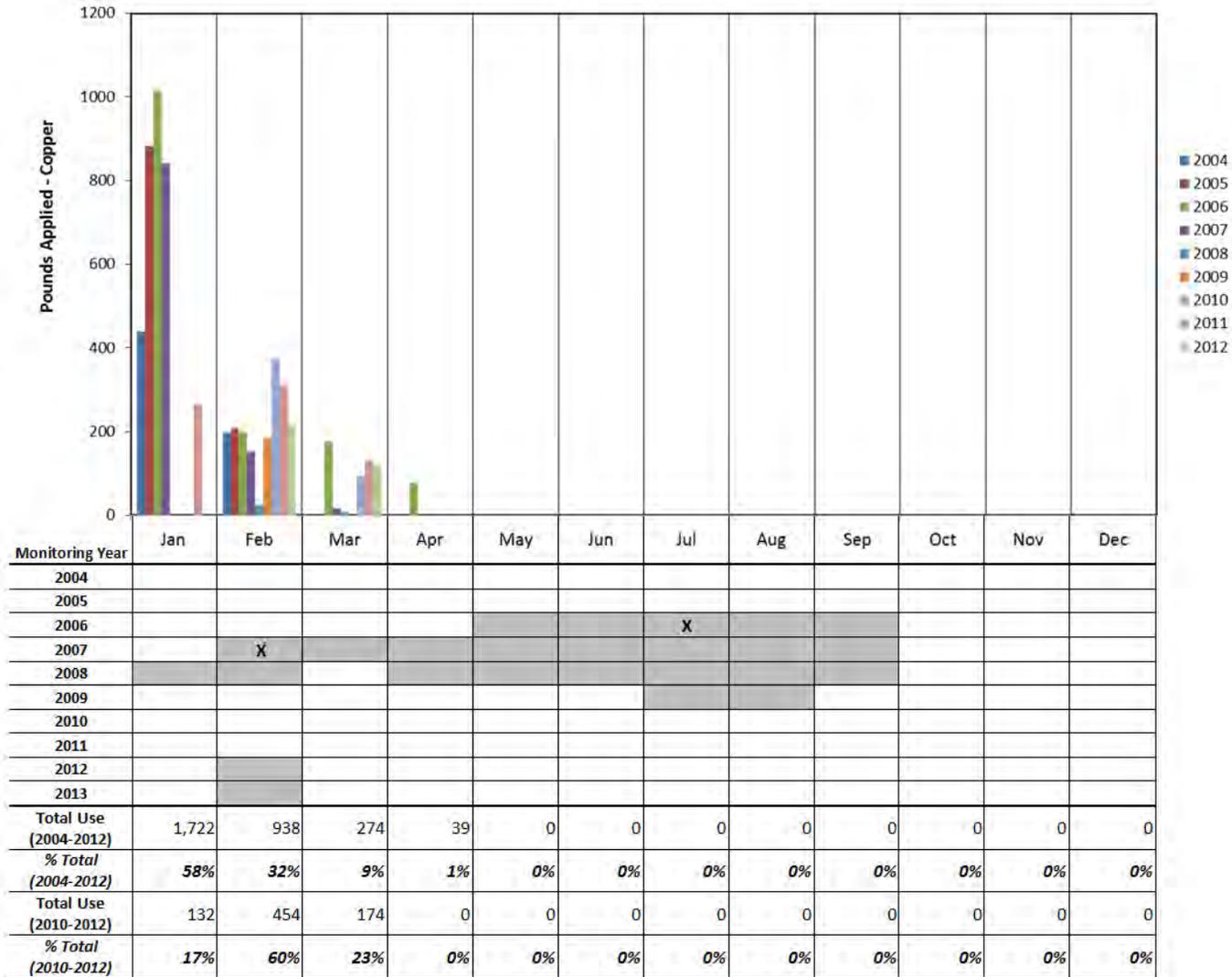
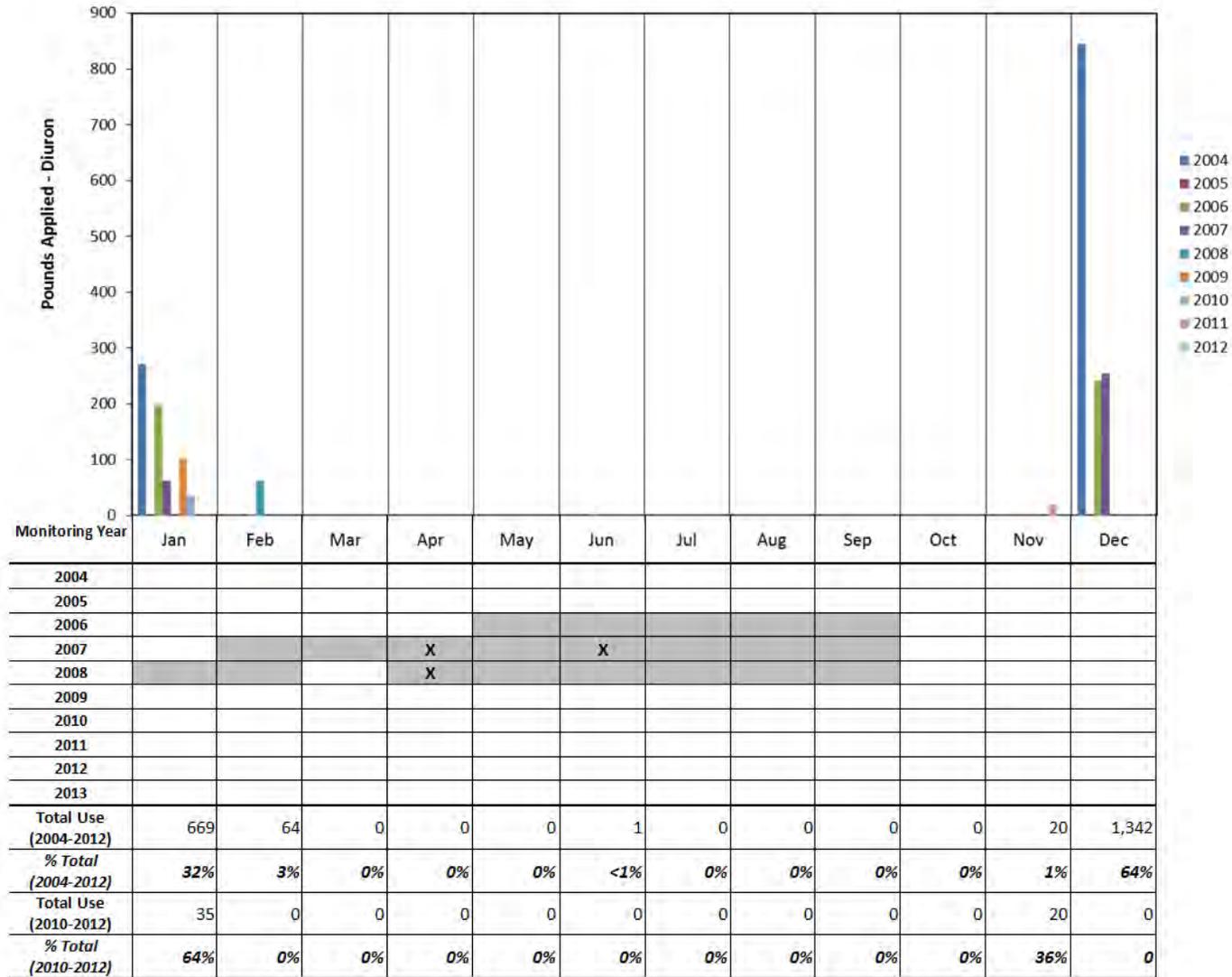


Figure 23. Hilmar Drain @ Central Ave 2004-2012 diuron use and monitoring.

Shaded cells represent months of past monitoring. "X" depicts months in which exceedances occurred.



Lateral 2 ½ near Keyes Rd

Lateral 2 ½ near Keyes Rd is a third priority site subwatershed (2011-2013) in Zone 2. Lateral 2 ½ near Keyes Rd is currently in a management plan for chlorpyrifos and pH.

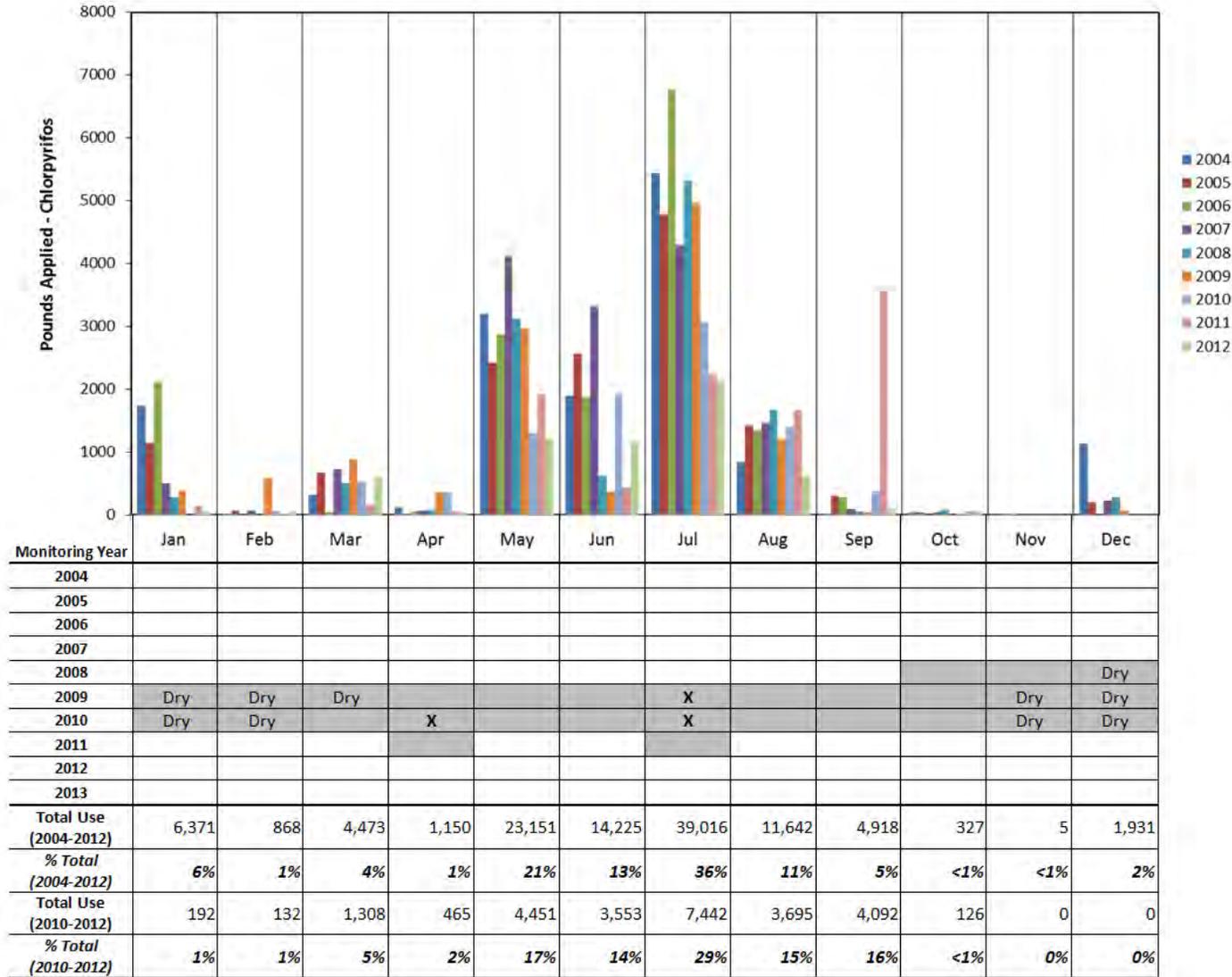
Chlorpyrifos

The Coalition will conduct MPM for chlorpyrifos during months of past exceedances (April and July) for the 2014 Water Year (Table 18). The Coalition is adding May, June and August to the MPM schedule in order to extend monitoring through the months of high applications of chlorpyrifos (Figure 24).

Although applications of chlorpyrifos were made from September through March from 2004-2012, the Coalition monitored from 2008 through 2010 from October through December and two years during September and January through March. No exceedances of the WQTL for chlorpyrifos occurred; therefore, the Coalition concluded that chlorpyrifos use during these months is not impairing the water quality at Lateral 2 ½ near Keyes Rd (Figure 24).

Figure 24. Lateral 2 ½ near Keyes Rd 2004-2012 chlorpyrifos use and monitoring.

Shaded cells represent months of past monitoring. "X" depicts months in which exceedances occurred.



Livingston Drain @ Robin Ave

Livingston Drain @ Robin Ave is a third priority site subwatershed (2011-2013) located in Zone 4. Livingston Drain @ Robin Ave is currently in a management plan for chlorpyrifos, copper, lead, and *S. capricornutum* toxicity, *E. coli* and pH; MPM is scheduled for lead, chlorpyrifos, copper and *S. capricornutum* during the 2014 Water Year. Lead is not currently applied by agriculture and therefore cannot be associated with use. The MPM for lead at Livingston Drain @ Robin Ave will be conducted during months of past exceedances including January and February.

Chlorpyrifos

During the 2014 Water Year, MPM for chlorpyrifos will occur at Livingston Drain @ Robin Ave in January and June through August due to past exceedances of the WQTL. The Coalition reviewed PUR data from 2010-2012 and is adding April and May to the MPM schedule. Applications of chlorpyrifos during April and May account for 38% of the total pounds applied during the past three years. Although March accounts for 38% of the use in the past three years, the Coalition will not extend MPM to this month. In the past three years, the only use of chlorpyrifos in March occurred in 2012 (Figure 25). Prior to 2012, use had declined to zero from 2004-2011. The Coalition will evaluate PUR data next year to assess whether or not there is an increasing trend in use of chlorpyrifos in March.

Copper

Management Plan Monitoring for copper will occur once a month at Livingston Drain @ Robin Ave in January-February, May-July, and September due to past exceedances. Based on a review of 2010-2012 PUR data, the Coalition is including December to the MPM schedule. Copper applications in December account for 14% of the pounds of copper applied during the past three years and monitoring has not occurred in December previously (Figure 26).

***S. capricornutum* toxicity**

There have been four samples collected from Livingston Drain @ Robin Ave that were toxic to algae (two were resamples). All four samples were collected within 30 days of each other in April and May 2008. There was no association of the toxicity in these samples with herbicide detections or exceedances. The Coalition will continue to conduct MPM during February, April and May which are the months in which past exceedances have occurred (Table 18).

Figure 25. Livingston Drain @ Robin Ave 2004-2012 chlorpyrifos use and monitoring.

Shaded cells represent months of past monitoring. "X" depicts months in which exceedances occurred.

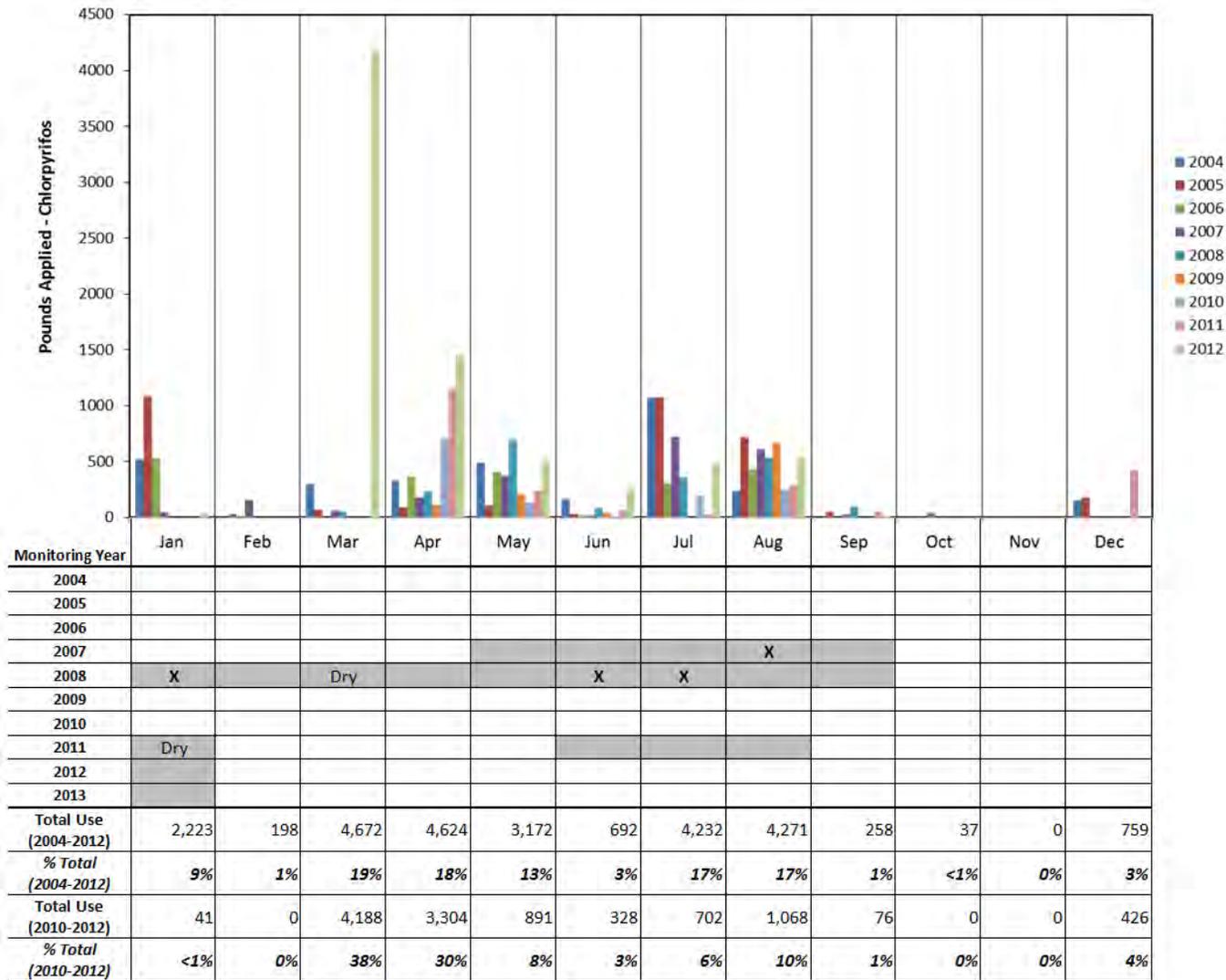
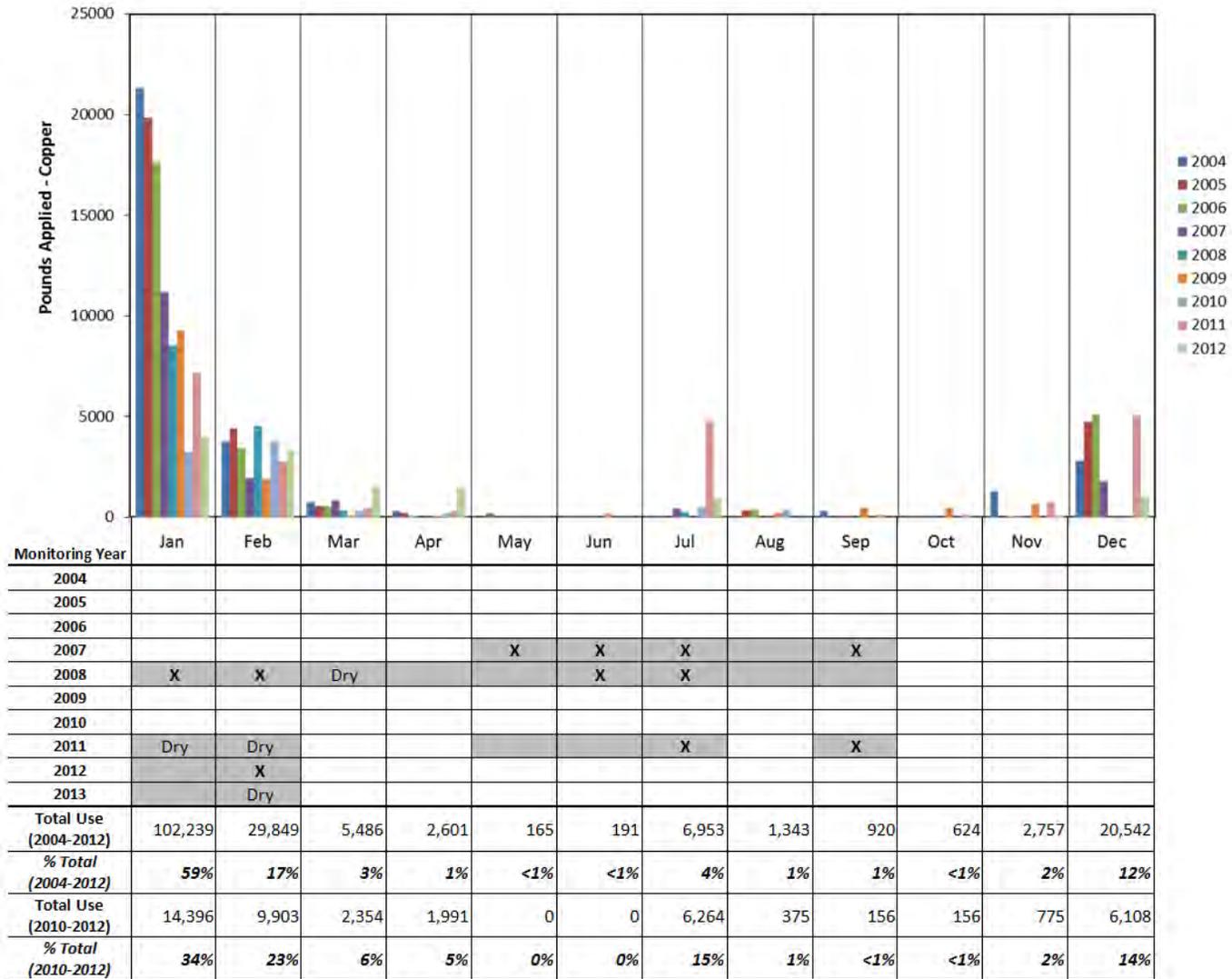


Figure 26. Livingston Drain @ Robin Ave 2004-2012 copper use and monitoring.

Shaded cells represent months of past monitoring. "X" depicts months in which exceedances occurred.



Miles Creek @ Reilly Rd

Miles Creek @ Reilly Rd is a fifth priority site subwatershed (2013-2015) located in Zone 5. Miles Creek @ Reilly Rd is currently in a management plan for copper, lead, chlorpyrifos, diazinon, water column toxicity to *C. dubia* and *S. capricornutum* and sediment toxicity to *H. azteca*. Management Plan Monitoring is scheduled for the 2014 Water Year for all of the listed constituents. Lead is not currently applied by agriculture and therefore cannot be associated with use. The MPM for lead at Miles Creek @ Reilly Rd will be conducted during months of past exceedances including January, February, June, July, and August.

Chlorpyrifos

Management Plan Monitoring for chlorpyrifos will occur in July, August and September due to past exceedances. The Coalition reviewed PUR data from 2010-2012 and is adding March and June to the MPM schedule. Chlorpyrifos use during these two months accounts for 44% of pounds applied over the last three years (Figure 27). Chlorpyrifos use during May has been high in the past; however, there have been no applications in the last three years.

Copper

Management Plan Monitoring for copper will occur January, February and May-August due to past exceedances. Based on a review of PUR data from 2010-2012 the Coalition is adding March and April to the MPM schedule (Figure 28). This allows the Coalition to evaluate water quality in eight consecutive months accounting for 84% of copper use in the past three years.

Diazinon

Management Plan Monitoring for diazinon will occur in January and February. Before 2013, this site was monitored in 2007 and 2008 with no exceedances of the diazinon WQTL. The first exceedance occurred in February 2013 which triggered a management plan for diazinon at Miles Creek @ Riley Rd. From 2010 – 2012, the only applications of diazinon have occurred in February and December; PUR data for 2013 are not currently available (Figure 29). The Coalition will evaluate PUR data again next year to determine if additional months need to be added to the MPM schedule.

***C. dubia* toxicity**

Toxicity to *C. dubia* occurred in September 2007 and again in January 2008. In September, samples with toxicity had a concentration of chlorpyrifos above the WQTL and in January there was a concentration of methidathion above the WQTL. Chlorpyrifos MPM will also occur in September; methidathion is no longer a registered active ingredient. Monitoring in September and January will characterize the potential of *C. dubia* toxicity due to agricultural discharge.

***S. capricornutum* toxicity**

Management Plan Monitoring will occur in February, April and June to test for algae toxicity based on exceedances that occurred in 2007, 2008 and 2013. Algae toxicity cannot be sourced to a specific

applied pesticide or metal and therefore the monitoring frequency has been determined by past exceedances.

***H. azteca* toxicity**

Sediment toxicity monitoring is conducted twice a year – once during the storm season and once during the irrigation season. The Coalition will conduct MPM for *H. azteca* sediment toxicity in September based on previous water quality results.

Figure 27. Miles Creek @ Reilly Rd 2004-2012 chlorpyrifos use and monitoring.

Shaded cells represent months of past monitoring. "X" depicts months in which exceedances occurred.

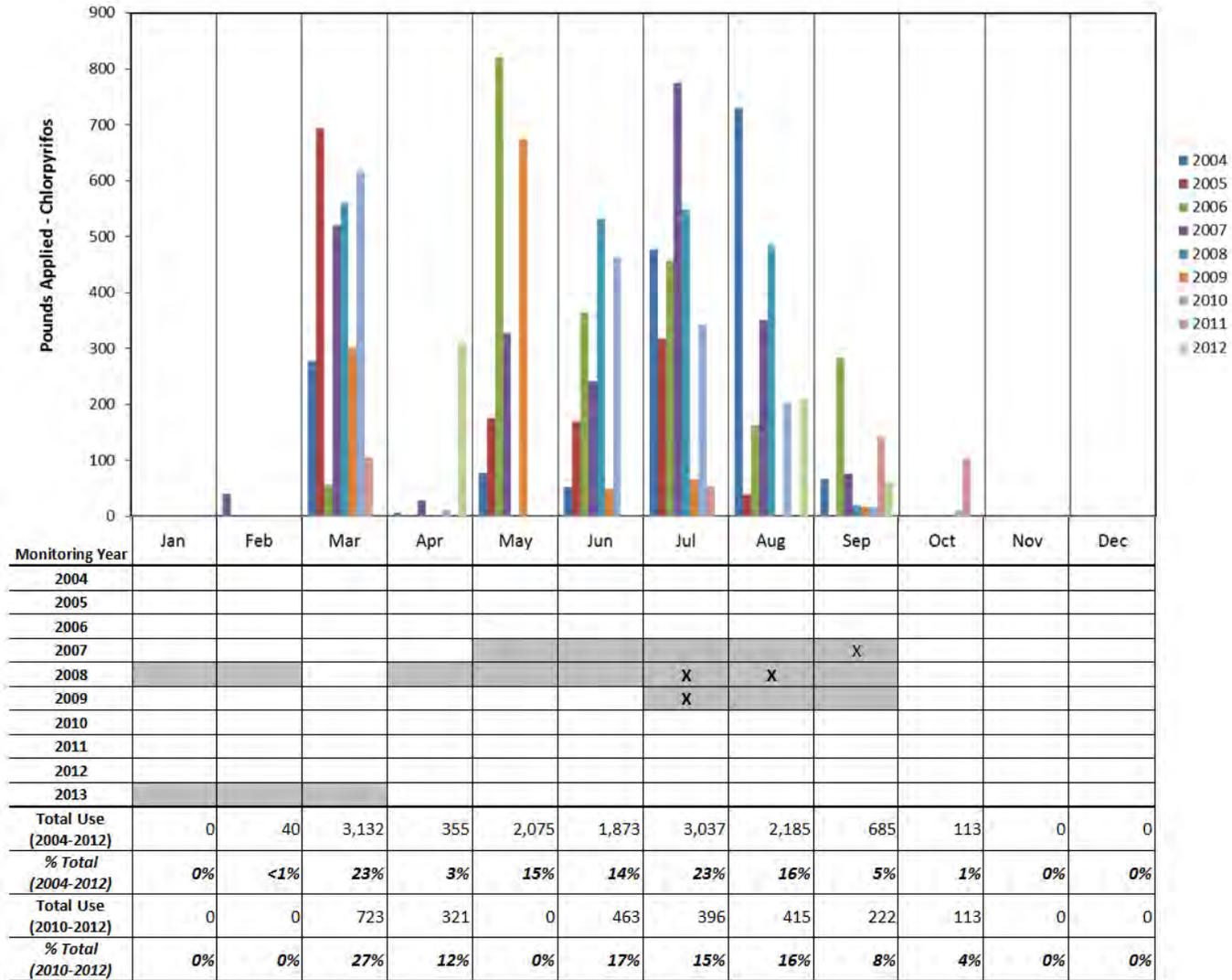


Figure 28. Miles Creek @ Reilly Rd 2004-2012 copper use and monitoring.

Shaded cells represent months of past monitoring. "X" depicts months in which exceedances occurred.

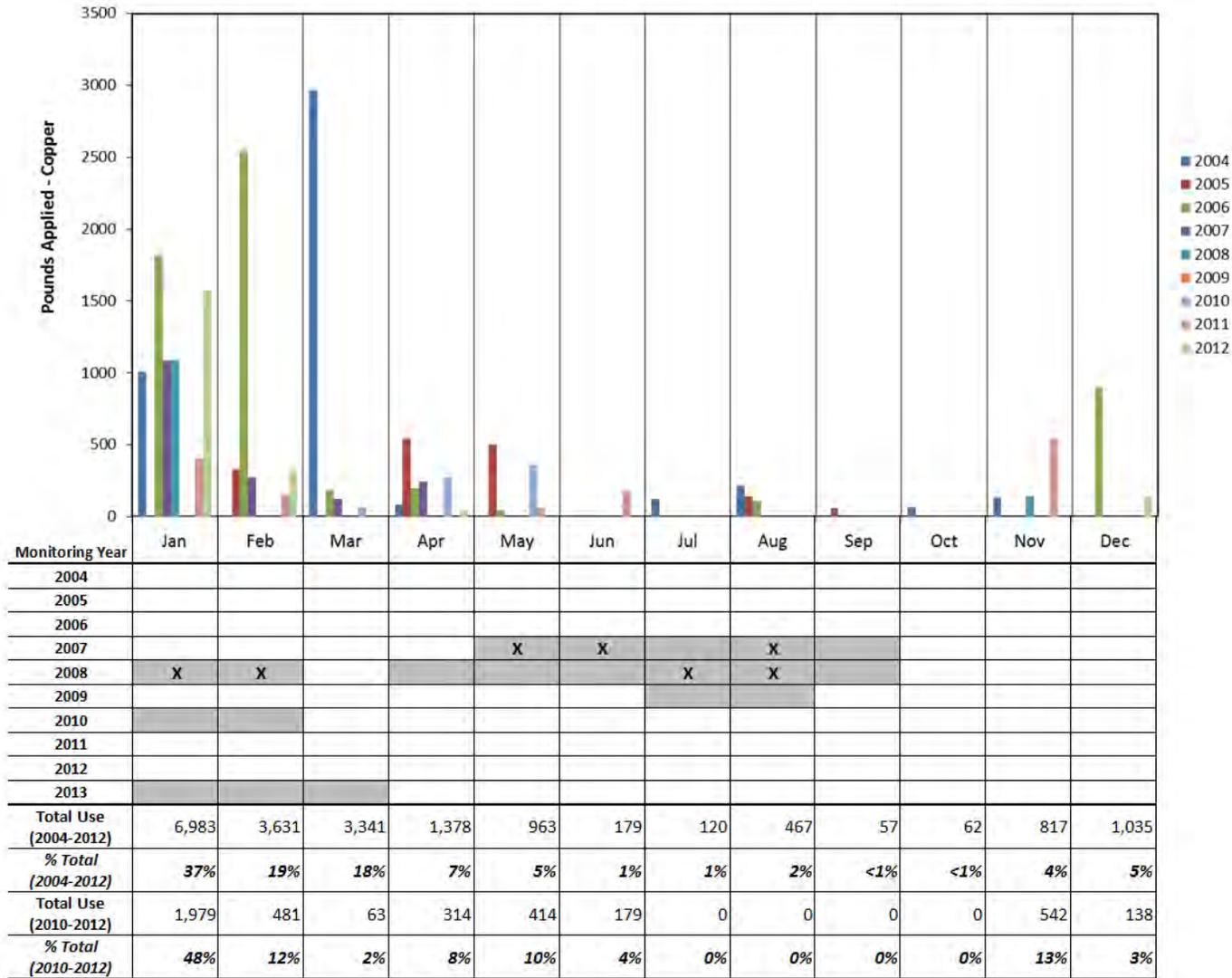
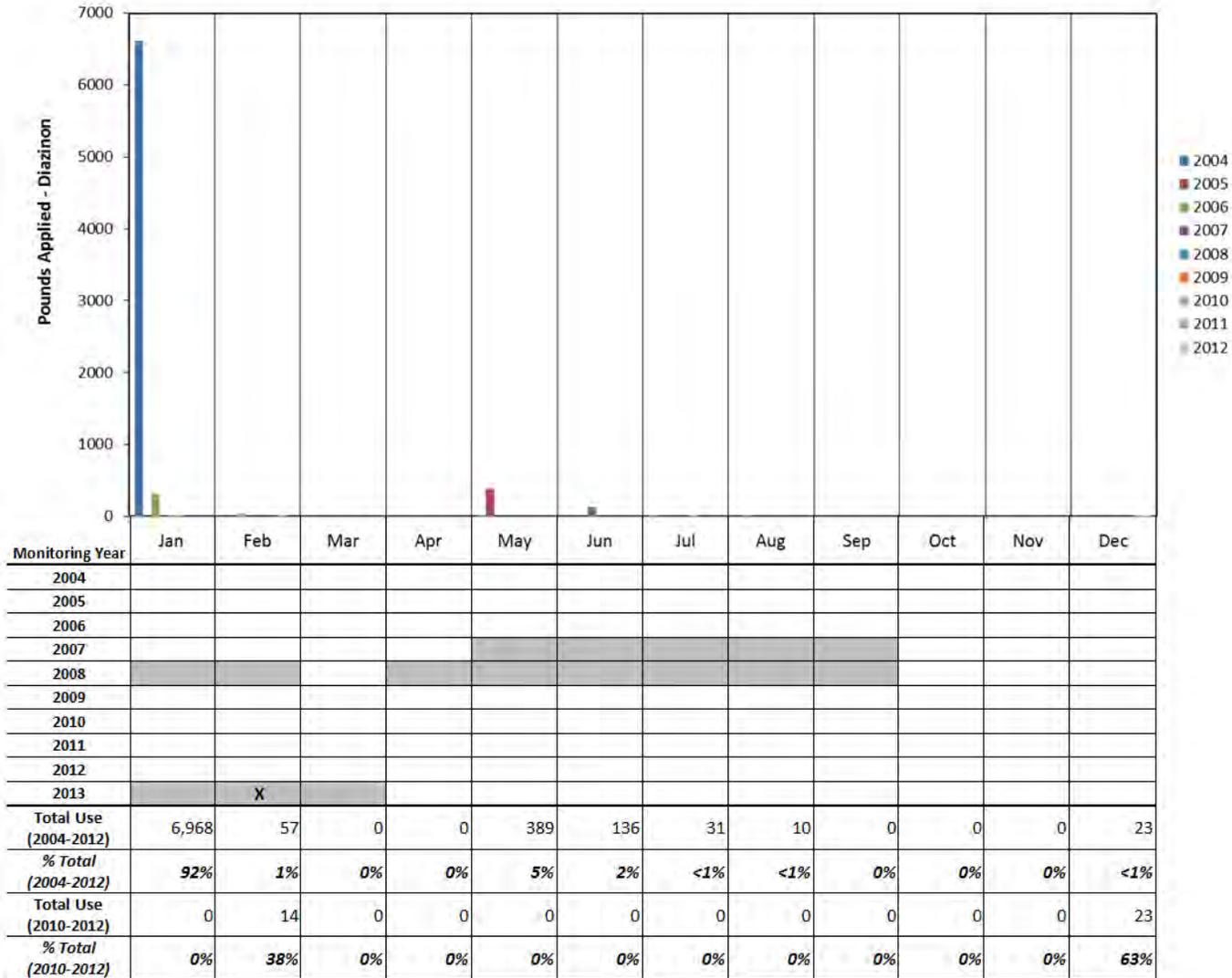


Figure 29. Miles Creek @ Reilly Rd 2004-2012 diazinon use and monitoring.

Shaded cells represent months of past monitoring. "X" depicts months in which exceedances occurred.



Mustang Creek @ East Ave

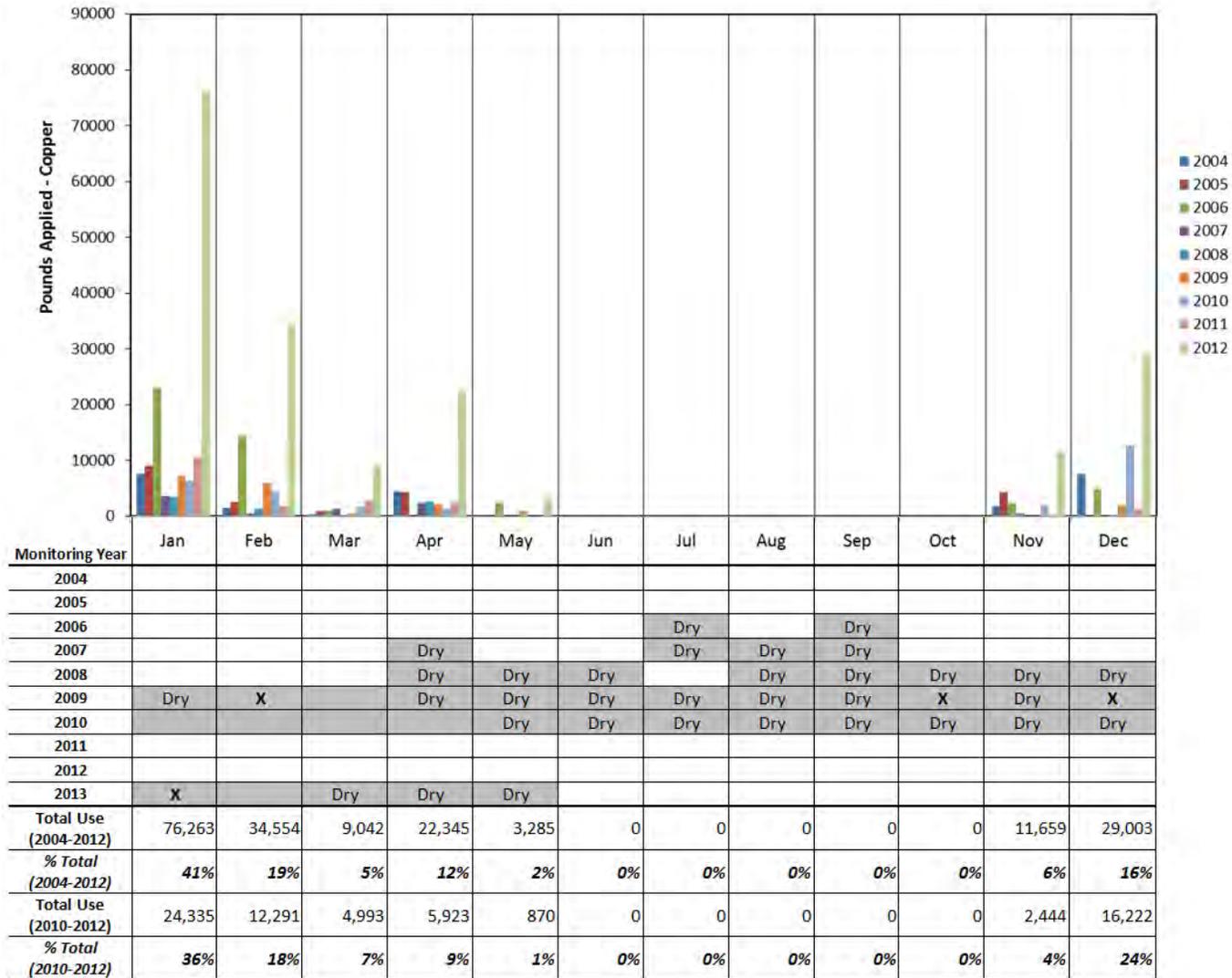
Mustang Creek @ East Ave is a sixth priority site subwatershed (2014-2016) located in Zone 5. Mustang Creek @ East Ave is currently in a management plan for copper and MPM is scheduled for the 2014 Water Year.

Copper

During the 2014 Water Year, MPM for copper will occur once a month in October and from December through February due to past exceedances. Based on a review of the most recent PUR data, applications from November through April accounts for 99% of the pounds of copper applied in the site subwatershed during the past three years (2010-2012; Figure 30). The Coalition is adding November, March, and April to the MPM schedule which will result in monitoring during the first seven months of the Water Year (October – April) and will allow the Coalition to evaluate water quality during the months of highest copper use.

Figure 30. Mustang Creek @ East Ave 2004-2012 copper use and monitoring.

Shaded cells represent months of past monitoring. "X" depicts months in which exceedances occurred.



Westport Drain @ Vivian Rd

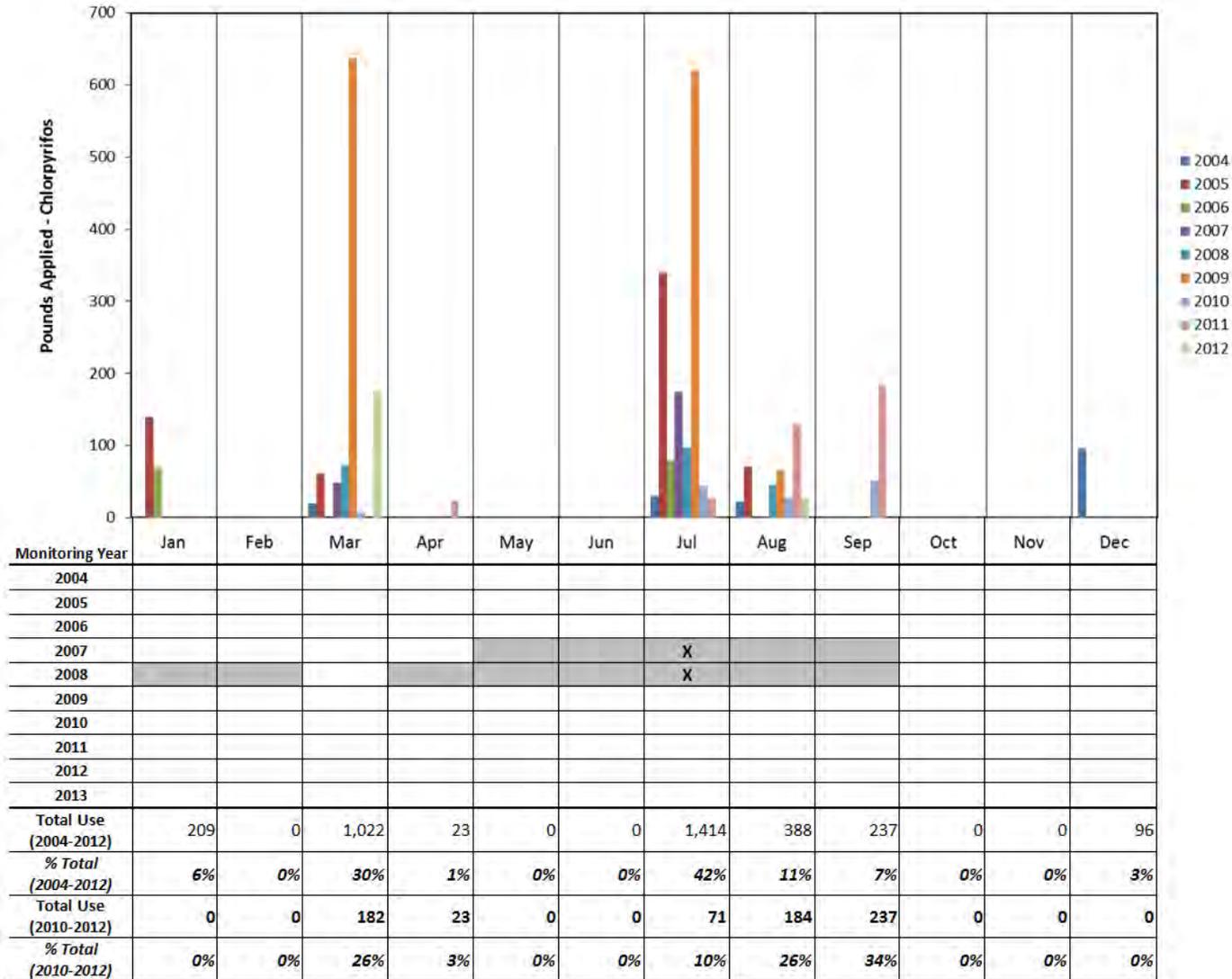
Westport Drain @ Vivian Rd is a sixth priority site subwatershed (2014-2016) located in Zone 2. Westport Drain @ Vivian Rd is currently in a management plan for chlorpyrifos and MPM is scheduled for the 2014 Water Year.

Chlorpyrifos

Management Plan Monitoring for chlorpyrifos will occur once in July based on previous exceedances. In addition, the Coalition will add MPM in March, August, and September based on a review of the most recent PUR data. March and July through September account for 96% of the pounds of chlorpyrifos applied in the site subwatershed over the past three years (2010-2012; Figure 31).

Figure 31. Westport Drain @ Vivian Ave 2004-2012 chlorpyrifos use and monitoring.

Shaded cells represent months of past monitoring. "X" depicts months in which exceedances occurred.



Total Maximum Daily Load Monitoring

The ESJWQC will monitor in accordance with adopted Basin Plan provisions or as directed by the Executive Officer parameters that are part of an adopted TMDL with a source of agriculture. Currently these include the San Joaquin River Deep Water Ship Channel (DWSC) dissolved oxygen; San Joaquin River salt, boron, selenium, diazinon and chlorpyrifos. The ESJWQC utilizes existing monitoring data for all of the above TMDLs except for diazinon and chlorpyrifos.

Chlorpyrifos and Diazinon

The ESJWQC and the Westside San Joaquin River Watershed Coalition are implementing monitoring and reporting programs to comply with requirements for the San Joaquin River diazinon and chlorpyrifos TMDL established by the Basin Plan. To determine compliance with diazinon and chlorpyrifos at the six compliance points designated in the Basin Plan. The ESJWQC monitors three compliance locations on the San Joaquin River for chlorpyrifos and diazinon: San Joaquin River at Hills Ferry Rd, San Joaquin River at the Maze Blvd Bridge, San Joaquin River at the Airport Way Bridge near Vernalis. These sites will be monitored once during the winter storm season (January or February) and monthly from May through September.

Addendum to the 2013 Monitoring Plan Update



October 2013 – September 2014

December 10, 2013

Irrigated Lands Regulatory Program

Central Valley Regional Water Quality Control

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List of Acronyms and Terms

ESJWQC	East San Joaquin Water Quality Coalition
MPM	Management Plan Monitoring
MPU	Monitoring Plan Update
PUR	Pesticide Use Report
Regional Board	Central Valley Regional Water Quality Control Board
TIE	Toxicity Identification Evaluation
WQTL	Water Quality Trigger Limit
WY	Water Year

Summary

The Coalition is submitting an addendum to the 2013 East San Joaquin Water Quality Coalition Monitoring Plan Update report (ESJWQC MPU) on December 10, 2013. This addendum is designed to be supplemental to the ESJWQC MPU and addresses the following recommendations made by Central Valley Regional Water Quality Control Board's (Regional Board) staff: 1) clarification on monitoring at Core sites during storm and irrigation seasons for metals and 2) additional evaluation of Represented site monitoring based on identified water quality impairments at both the Core and Represented sites, including previous monitoring results, Toxic Identification Evaluations (TIE) and Pesticide Use Report (PUR) data.

Core Site Monitoring

Core site monitoring for metals (arsenic, boron, cadmium, lead, molybdenum, nickel and zinc) will occur four times during the 2014 Water Year (WY) during two storm events and two high flow irrigation events as outlined in the 2013 MPU. For Core sites in a management plan for metals, the Coalition will conduct Management Plan Monitoring (MPM) based on previous use and months of exceedances in addition to two storm and two irrigation events. Core sites where metals have been removed from a management plan due to improved water quality will also be monitored during two storm and two irrigation events. In the 2013 MPU, the Coalition proposed to monitor for copper at Dry Creek @ Wellsford Rd monthly from January to August. However, since copper was removed from the Dry Creek @ Wellsford Rd management plan in 2012, and based on the comments provided by the Regional Board on October 8, 2013, the Coalition will monitor for copper during two storm and two irrigation events only.

Represented Site Monitoring

The ESJWQC MPU describes the evaluation of Represented sites on a zone by zone basis and includes a flowchart that depicts the monitoring strategy (Figure 6, ESJWQC MPU). The Coalition developed a monitoring schedule for Represented sites based on the Core site MPM schedule in the same zone if the following criteria were met: 1) the Core site is in a management plan for an applied pesticide, metal or toxicity, 2) the Represented site is not in a management plan for the specific constituent and 3) minimal or no monitoring has occurred for the applied pesticide, metal or toxicity. Due to a lack of previous monitoring history at a Represented site, the Coalition originally determined the months of monitoring at the Represented sites for high priority Core site management plan constituents based on Core site MPM. This addendum includes an additional evaluation of when monitoring should occur at these Represented sites based on available PUR data; Table I-1 groups the insecticides, herbicides and metals that are generally associated with *Ceriodaphnia dubia*, *Pimephales promelas* and *Selenastrum capricornutum* toxicity. In certain instances where TIEs indicated pyrethroids as the cause of toxicity, pyrethroids were graphed separately from the insecticide group. These pyrethroids are listed as both pyrethroids and insecticides in Table I-1. Represented sites that meet the above criteria for sediment toxicity to *Hyalella azteca* were not further evaluated since monitoring for sediment occurs twice a year; therefore, monitoring will occur at Represented sites based on the Core site MPM as outlined in the ESJWQC MPU (Table 17, ESJWQC MPU). Table I-2 includes the Represented sites meeting the criteria above. These sites were evaluated to determine if monitoring should occur in different months than Core site MPM. Table I-2 includes a listing of the months of monitoring for evaluated Represented sites and the associated Core site MPM schedule. The following sections discuss the evaluations and rationale for these changes.

Table I- 1. Active ingredient groupings associated with toxicity testing.

CHEMICAL GROUP	CHEMICAL NAME	C. DUBIA	P. PROMELAS	S. CAPRICORNUTUM
HERBICIDE	2,4-D, DIMETHYLAMINE SALT			X
HERBICIDE	4-(2,4-DB), DIMETHYLAMINE SALT			X
HERBICIDE	BENSULIDE			X
HERBICIDE	Bromacil			X
HERBICIDE	BROMOXYNIL OCTANOATE			X
HERBICIDE	CHLORTHAL-DIMETHYL			X
HERBICIDE	CLETHODIM			X
HERBICIDE	Clomazone			X
HERBICIDE	CYCLOATE			X
HERBICIDE	Cyhalofop butyl			X
HERBICIDE	DIGLYCOLAMINE SALT OF 3,6-DICHLORO-O-ANISIC ACID			X
HERBICIDE	DIURON			X
HERBICIDE	EPTC			X
HERBICIDE	FLUMIOXAZIN			X
HERBICIDE	GLUFOSINATE-AMMONIUM			X
HERBICIDE	GLYPHOSATE			X
HERBICIDE	GLYPHOSATE, DIAMMONIUM SALT			X
HERBICIDE	GLYPHOSATE, ISOPROPYLAMINE SALT			X
HERBICIDE	GLYPHOSATE, MONOAMMONIUM SALT			X
HERBICIDE	GLYPHOSATE, POTASSIUM SALT			X
HERBICIDE	HEXAZINONE			X
HERBICIDE	LINURON			X
HERBICIDE	MCPA, DIMETHYLAMINE SALT			X
HERBICIDE	METAM-SODIUM	X	X	X
HERBICIDE	METRIBUZIN			X
HERBICIDE	MSMA			X
HERBICIDE	NAPROPAMIDE			X
HERBICIDE	NORFLURAZON			X
HERBICIDE	ORYZALIN			X
HERBICIDE	OXYFLUORFEN			X
HERBICIDE	PARAQUAT DICHLORIDE	X	X	X
HERBICIDE	PENDIMETHALIN			X
HERBICIDE	PROMETRYN			X
HERBICIDE	PROPANIL			X
HERBICIDE	SETHOXYDIM			X
HERBICIDE	SIMAZINE			X
HERBICIDE	S-METOLACHLOR			X
HERBICIDE	SODIUM CHLORATE			X
HERBICIDE	THIOBENCARB			X
HERBICIDE	TRIFLURALIN			X
INSECTICIDE	Abamectin		X	
INSECTICIDE	ACEPHATE	X	X	
INSECTICIDE	ALDICARB	X	X	
INSECTICIDE	AZINPHOS-METHYL	X	X	
INSECTICIDE	BIFENAZATE	X	X	
INSECTICIDE	CARBARYL	X	X	
INSECTICIDE	CARBOFURAN	X	X	
INSECTICIDE	CHLOROPICRIN	X	X	X
INSECTICIDE	CHLORPYRIFOS	X	X	
INSECTICIDE	CYPERMETHRIN	X	X	

CHEMICAL GROUP	CHEMICAL NAME	C. DUBIA	P. PROMELAS	S. CAPRICORNUTUM
INSECTICIDE	Deltamethrin	X	X	
INSECTICIDE	DIAZINON	X	X	
INSECTICIDE	DICAMBA, DIMETHYLAMINE SALT			X
INSECTICIDE	DICOFOL	X	X	
INSECTICIDE	DIFLUBENZURON	X	X	X
INSECTICIDE	DIMETHOATE	X	X	
INSECTICIDE	DISULFOTON	X	X	
INSECTICIDE	ETHOPROP	X	X	
INSECTICIDE	FENAMIPHOS	X	X	
INSECTICIDE	IMIDACLOPRID	X	X	
INSECTICIDE	INDOXACARB		X	
INSECTICIDE	KAOLIN	X	X	
INSECTICIDE	MALATHION	X	X	
INSECTICIDE	METHIDATHION	X	X	
INSECTICIDE	METHOMYL	X	X	
INSECTICIDE	METHOXYFENOZIDE	X	X	
INSECTICIDE	METHYL BROMIDE	X	X	X
INSECTICIDE	OXAMYL	X	X	
INSECTICIDE	PHOSMET	X	X	
INSECTICIDE	POTASSIUM N-METHYLDITHIOCARBAMATE	X	X	
INSECTICIDE	PROPARGITE	X	X	
INSECTICIDE	PYRIDABEN	X	X	
INSECTICIDE	SODIUM TETRATHIOCARBONATE	X	X	
INSECTICIDE	SPINOSAD	X	X	
INSECTICIDE	SPIROMESIFEN	X	X	X
INSECTICIDE	THIOPHANATE-METHYL	X	X	
INSECTICIDE	Tralomethrin	X	X	
INSECTICIDE	(S)-CYPERMETHRIN	X	X	
INSECTICIDE	BIFENTHRIN	X	X	
INSECTICIDE	CYFLUTHRIN	X	X	
INSECTICIDE	ESFENVALERATE	X	X	
INSECTICIDE	FENPROPATHRIN	X	X	
INSECTICIDE	LAMBDA-CYHALOTHRIN	X	X	
INSECTICIDE	PERMETHRIN	X	X	
METALS	COPPER	X		X
METALS	COPPER HYDROXIDE	X		X
METALS	COPPER OXIDE (OUS)	X		X
METALS	COPPER OXYCHLORIDE	X		X
METALS	COPPER OXYCHLORIDE SULFATE	X		X
METALS	COPPER SULFATE (BASIC)	X		X
METALS	COPPER SULFATE (PENTAHYDRATE)	X		X
PYRETHROID	(S)-CYPERMETHRIN	X		
PYRETHROID	BIFENTHRIN	X		
PYRETHROID	CYFLUTHRIN	X		
PYRETHROID	ESFENVALERATE	X		
PYRETHROID	FENPROPATHRIN	X		
PYRETHROID	LAMBDA-CYHALOTHRIN	X		
PYRETHROID	PERMETHRIN	X		

Table I- 2. Revised Represented site monitoring schedule for the 2014 WY for select sites. Represented sites not listed here are discussed in the 2013 MPU main body.

Represented site monitoring schedules are evaluated and discussed in this addendum based on high priority Core site management plans. Core sites MPM schedules are bolded.

ZONE	SITE TYPE	SITE NAME	CHLORPYRIFOS	COPPER	DIMETHOATE	C. DUBIA	P. PROMELAS	S. CAPRICORNUTUM	H. AZTECA
1	C	Dry Creek @ Wellsford Rd	Jul, Sep						Mar, Sep
1	R	Mootz Drain downstream of Langworth							Mar, Sep
2	C	Prairie Flower Drain @ Crows Landing Rd			Jul-Sep	Mar, Aug, Sep	Apr, Jul	Oct, Dec-Feb, Apr, May	Mar, Sep
2	R	Hatch Drain @ Tuolumne Rd			June, July				
2	R	Hilmar Drain @ Central Ave			Jul, Aug				
2	R	Lateral 5 1/2 @ South Blaker Rd			Jun, Jul, Aug	Mar, Jun, Jul, Aug	Mar, Jun, Jul	Jan-Jul	Mar, Sep
2	R	Lateral 2 1/2 near Keyes Rd						Feb, Apr, May, Dec	Mar, Sep
2	R	Lateral 6 and 7 @ Central Ave			Jun, Jul, Aug	Mar, Apr, Jul	Mar, Apr	Dec-Jun	Mar, Sep
2	R	Levee Drain @ Carpenter Rd			July	Feb, Jul	Feb, Jul	Feb, Jun, Jul	Mar, Sep
2	R	Lower Stevinson @ Faith Home Rd			Jun, Jul, Aug	Mar, Apr, Jul	Mar, Apr	Jan-Jun	Mar, Sep
2	R	Unnamed Drain @ Hogin Rd			Jul, Aug	Jul, Aug	Aug	Jun, Jul	Mar, Sep
2	R	Westport Drain @ Vivian Rd							Mar, Sep
3	C	Highline Canal @ Hwy 99		Dec-Apr		Mar, May, Sep		Feb-May	Mar, Sep
3	R	Mustang Creek @ East Ave							Mar, Sep
4	C	Merced River @ Santa Fe	Nov, Jan, Jul			Jan, Mar, Jul-Aug			
4	R	Canal Creek @ West Bellevue Rd	May, Aug			May, Aug			

ZONE 1 - DRY CREEK @ WELLSFORD RD (CORE SITE)

Dry Creek @ Wellsford high priority management plan constituents to be monitored in the 2014 Water Year:

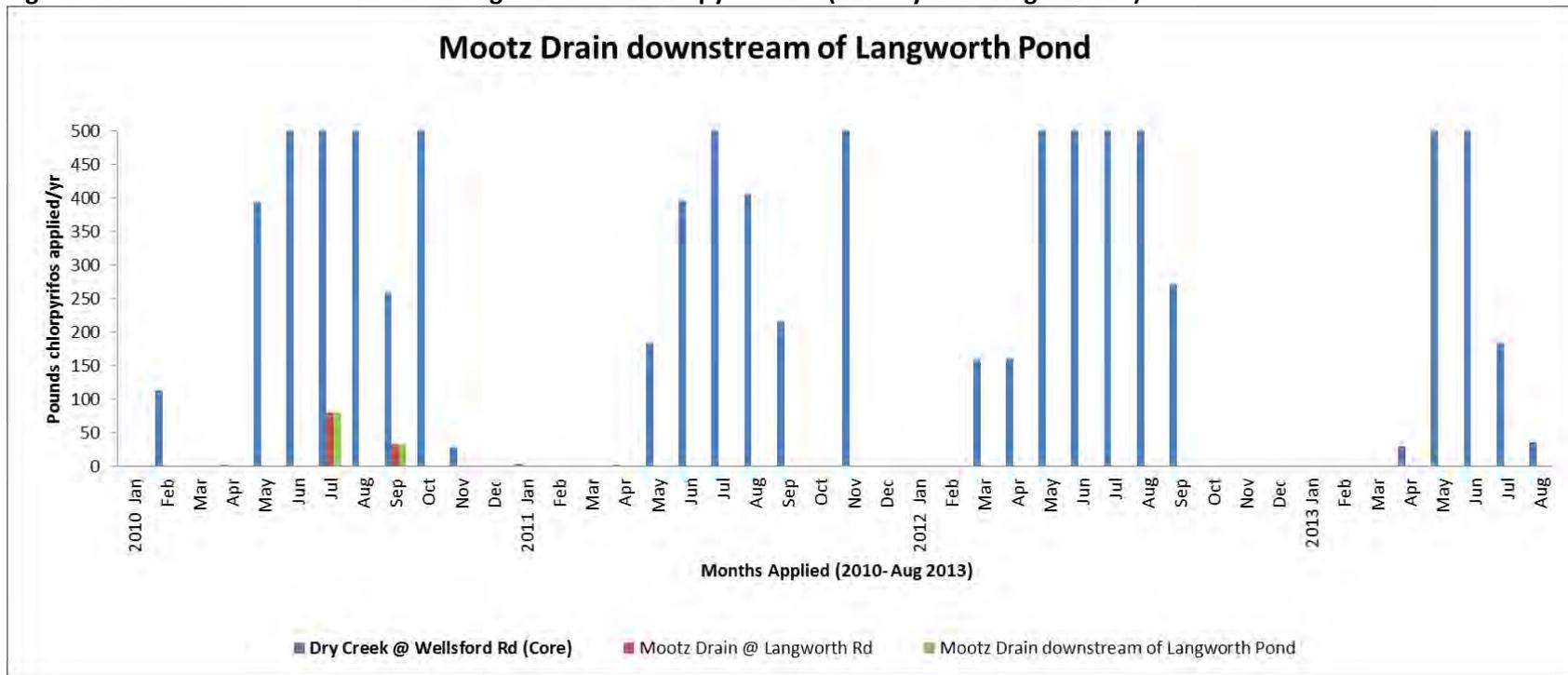
- chlorpyrifos
- *H. azteca* sediment toxicity

Mootz Drain downstream of Langworth Pond

Mootz Drain was monitored for chlorpyrifos at Langworth Rd from November 2008 through November 2009 and downstream of Langworth Pond 11 times from December 2009 through 2010 and 6 times from April to September 2013. Exceedances of the water quality trigger limit (WQTL) for chlorpyrifos occurred at Langworth Rd once in December 2008 and again in June 2009; no applications were recorded within 30 days of the exceedance and no toxicities were associated with either exceedance. No exceedances of the WQTL for chlorpyrifos occurred in the 17 samples collected from Mootz Drain downstream of Langworth Pond; all results were non detect. The Coalition reviewed the PUR data, January 2010 through August 2013, and based on low chlorpyrifos use in July and September 2010, no applications of chlorpyrifos since 2010 (Figure I-1), and recent monitoring in 2013, the Coalition will not monitor for chlorpyrifos in this subwatershed.

Sediment toxicity to *H. azteca* will be monitored in March and September at Mootz Drain downstream of Langworth Pond.

Figure I-1. Mootz Drain downstream of Langworth Pond chlorpyrifos use (January 2010-August 2013).



ZONE 2 - PRAIRIE FLOWER DRAIN @ CROWS LANDING RD

Prairie Flower Drain @ Crows Landing Rd high priority management plan constituents to be monitored in the 2014 Water Year:

- dimethoate
- *C. dubia* water column toxicity
- *P. promelas* water column toxicity
- *S. capricornutum* water column toxicity
- *H. azteca* sediment toxicity

Hatch Drain @ Tuolumne Rd

Hatch Drain @ Tuolumne Rd was monitored for dimethoate 13 times from 2007 through 2008; one exceedance of the WQTL occurred in August 2007. According to the current PUR data from January 2010 through August 2013, applications of dimethoate occurred in March, June, July and August. The amount applied in March (a sum of 28 pounds in 2011 and 2013 combined) and August (12 pounds, last applied in 2010) is minimal (Figure I-2). Therefore, the Coalition will monitor at Hatch Drain @ Tuolumne Rd in June and July during the 2014 Water Year (Table I-2).

The Coalition determined no Represented site monitoring is necessary for toxicity to *C. dubia*, *P. promelas* or *S. capricornutum* during the 2014 Water Year. The ESJWQC MPU details the rationale for no additional monitoring of the remaining high priority Core site management plan constituents. Sediment toxicity to *H. azteca* will be monitored in March and September.

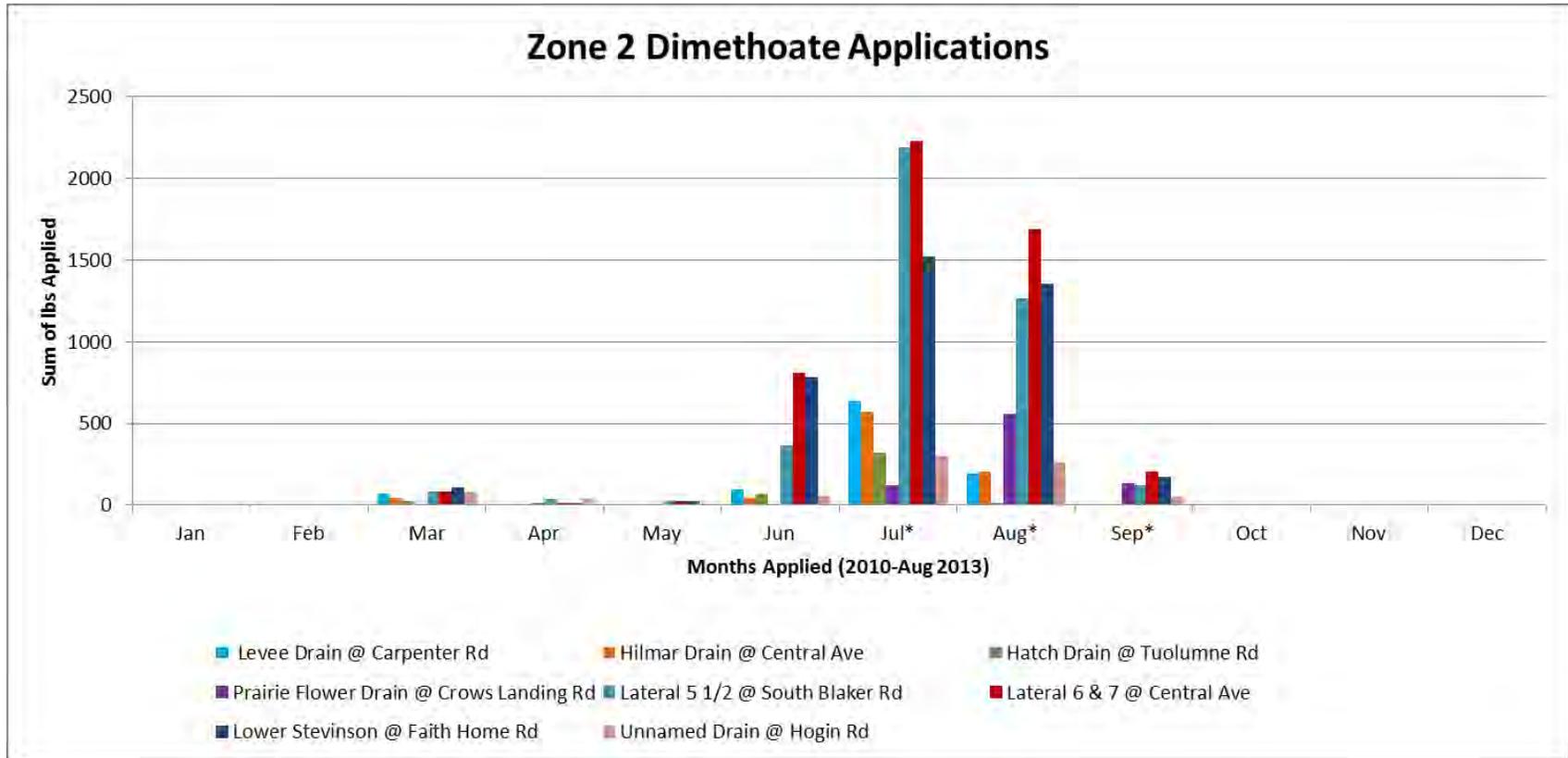
Hilmar Drain @ Central Ave

The Coalition monitored for dimethoate once a month in 2006 (May through September), 2007 (February through September) and 2008 (January, February and April through September). There were a total of 21 sampling events; 19 of the 21 samples were non detect for dimethoate and no exceedances of the WQTL for dimethoate (1.0 µg/L) occurred. Figure I-2 illustrates pounds of dimethoate applied in site subwatersheds within Zone 2. Since it has been over three years since Hilmar Drain has been monitored for dimethoate, the Coalition will monitor for dimethoate in the 2014 Water Year in July and August based on PUR data from January 2010 through August 2013.

The Coalition determined no Represented site monitoring is necessary for toxicity to *C. dubia*, *P. promelas* or *S. capricornutum* during the 2014 Water Year. The ESJWQC MPU details the rationale for no additional monitoring of the remaining high priority Core site management plan constituents. Sediment toxicity to *H. azteca* will be monitored in March and September.

Figure I-2. Zone 2 dimethoate use (January 2010 - August 2013).

Asterisk indicates when Core site MPM occurs for dimethoate.



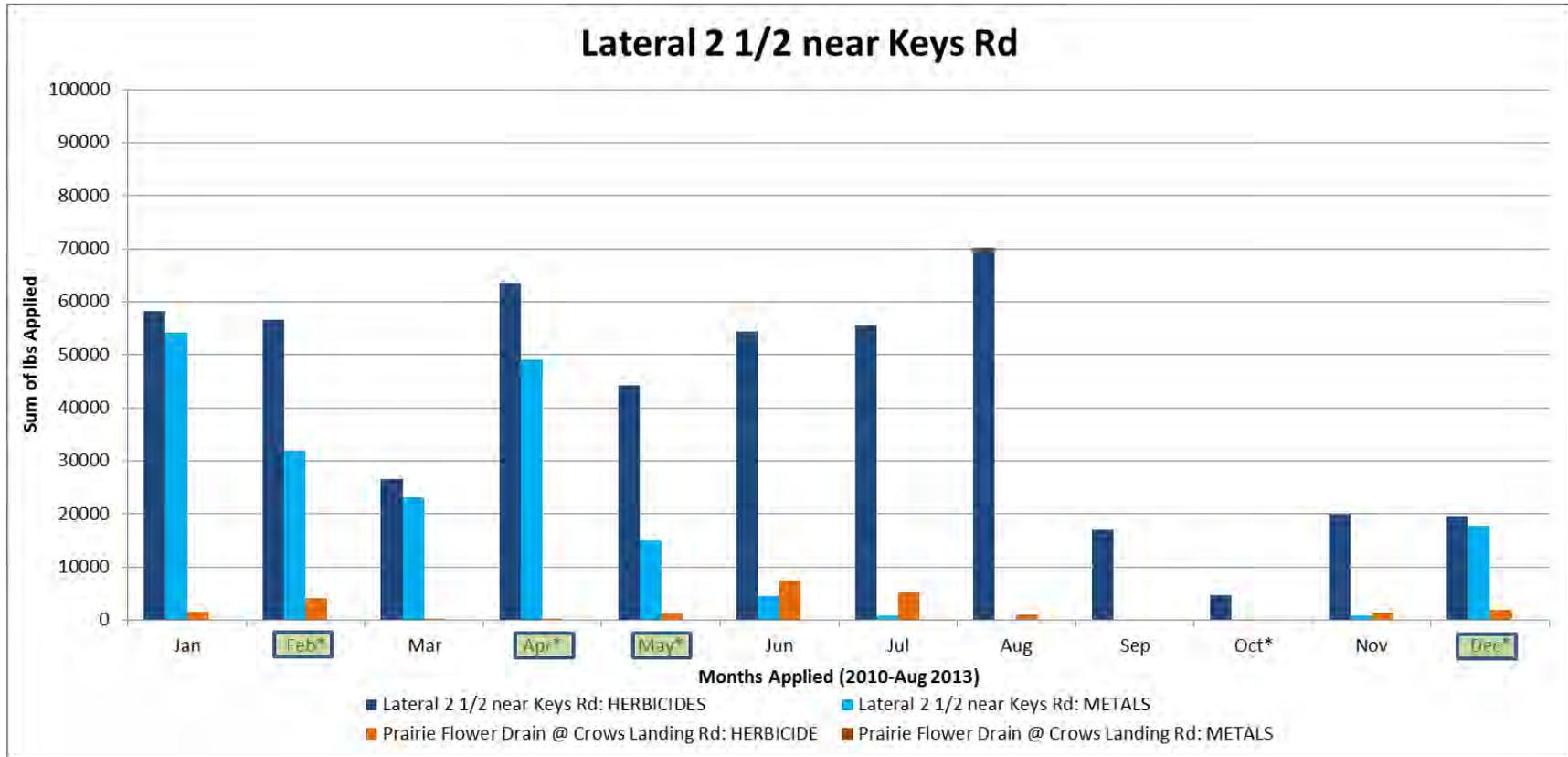
Lateral 2 ½ near Keyes Rd

Monitoring for toxicity to *S. capricornutum* occurred 17 times at Lateral 2 ½ near Keyes Rd from October 2008 through 2010; only one sample in May 2009 resulted in toxicity to *S. capricornutum*. No TIE was initiated for the 2009 toxic sample and therefore the cause of toxicity could not be determined. In general, herbicides and metals are associated with *S. capricornutum* toxicity. The Coalition evaluated the PUR data for herbicide and metal applications from January 2010 through August 2013 and months of past toxicity at both Lateral 2 ½ near Keyes Rd and the Core site to determine the months of monitoring required. During February, April, May and December toxicity to *S. capricornutum* occurred at the Core site. This coincided with applications of herbicides and metals at both the Core and Lateral 2 ½ near Keyes Rd sites (Figure I-3). Therefore, the Coalition will monitor at Lateral 2 1/2 near Keyes Rd February, April, May and December (Table I-2).

The Coalition determined no Represented site monitoring is necessary for dimethoate, toxicity to *C. dubia*, or *P. promelas* during the 2014 Water Year. The ESJWQC MPU details the rationale for no additional monitoring of the remaining high priority Core site management plan constituents. Sediment toxicity to *H. azteca* will be monitored in March and September.

Figure I-3. Lateral 2 ½ near Keyes Rd PUR data for herbicide and metal use (January 2010-August 2013).

Asterisk indicates when Core site MPM occurs for *S. capricornutum*. Highlighted months indicate when Represented site monitoring will occur for *S. capricornutum*.



Lateral 5 ½ @ South Blaker Rd

Lateral 5 ½ @ South Blaker Rd is one of the Coalition's new monitoring locations in Zone 2 and therefore no monitoring has occurred at this site. The Coalition will conduct monitoring at Lateral 5 ½ @ South Blaker Rd based on MPM for dimethoate at the Core site and an evaluation of current PUR data from January 2010 through August. The highest applications of dimethoate at Lateral 5 ½ @ South Blaker Rd occurred in June, July and August (Figure I-2). Therefore, the Coalition will monitor at Lateral 5 ½ @ South Blaker Rd in June, July and August for dimethoate during the 2014 Water Year (Table I-2).

Since no monitoring has occurred at Lateral 5 ½ @ South Blaker Rd, the Coalition reviewed the current PUR data for insecticides and metals applied from 2010 through August 2013 (Table I-1). The Coalition compared the PUR results with the toxicity occurrences at the Core site to determine the months of Represented site monitoring required at Lateral 5 ½ @ South Blaker Rd for toxicity to *C. dubia*, *P. promelas* and *S. capricornutum*.

Toxicity to *C. dubia* occurred at the Core site in March 2006, September 2007 and August 2011. No TIE was conducted on the March 2006 toxic sample. The TIE conducted on the September 2007 toxicity sample indicated that organophosphates caused the toxicity. The TIE conducted on the August 2011 toxic sample indicated pyrethroids were the cause of the *C. dubia* toxicity. The PUR data indicate that the highest use of insecticides occurred during March and a combination of high insecticide and pyrethroid applications occurred during June, July and August at Lateral 5 ½ @ South Blaker Rd (Figure I-4). Therefore, the Coalition will monitor for toxicity to *C. dubia* at Lateral 5 ½ @ South Blaker Rd during March, June, July and August during the 2014 Water Year (Figure I-4).

Toxicity to *P. promelas* occurred at the Core site in July 2006 and April 2011. The TIE conducted on the July 2006 toxic sample concluded that ammonia was the cause. No TIE was conducted on the April toxic sample since the reduction in survival was not greater than 50%. *P. promelas* are sensitive to insecticides and ammonia. The Coalition reviewed the PUR data for insecticides applied from 2010 through August 2013 (Figure I-5). The Coalition will monitor at Lateral 5 ½ @ South Blaker Rd in March, June and July during the 2014 Water Year based on insecticide use compared to insecticide use within Prairie Flower Drain watershed (Table I-2).

Toxicity to *S. capricornutum* occurred at the Core site during January, February, April, May and December sampling events from 2007 through 2013. The January 2013 toxicity coincided with high ammonia levels, low DO and high suspended solids; therefore, a TIE was not conducted because it was determined that the cause of toxicity was most likely due to extremely high levels of ammonia (24 mg/L). The TIEs for the January 2008, February 2008, October and December 2011 events were inconclusive because the toxicity was not persistent and therefore the cause of toxicity could not be determined. In general, herbicides and metals are associated with *S. capricornutum* toxicity. The TIEs for April 2008 and May 2009 toxic samples indicated that cationic metals and ammonia were the cause of toxicity, respectively. The highest sum of application of herbicides from 2010 to 2013 at Lateral 5 ½ @ South Blaker Rd occurred in the month of June (Figure I-6). Other months of relatively high uses

include January through May and July (Figure I-6). Therefore, the Coalition will monitor at Lateral 5 ½ @ South Blaker Rd in January through July for toxicity to *S. capricornutum* during the 2014 Water Year (Table I-2).

Sediment toxicity to *H. azteca* will be monitored at Lateral 5 ½ @ South Blaker in March and September.

Figure I-4. Lateral 5 ½ @ South Blaker Rd and Core site PUR data for insecticide, metal and pyrethroid applications (January 2010-August 2013).

Asterisk indicates when Core site MPM occurs for *C. dubia*. Highlighted months indicate when Represented site monitoring will occur for *C. dubia*.

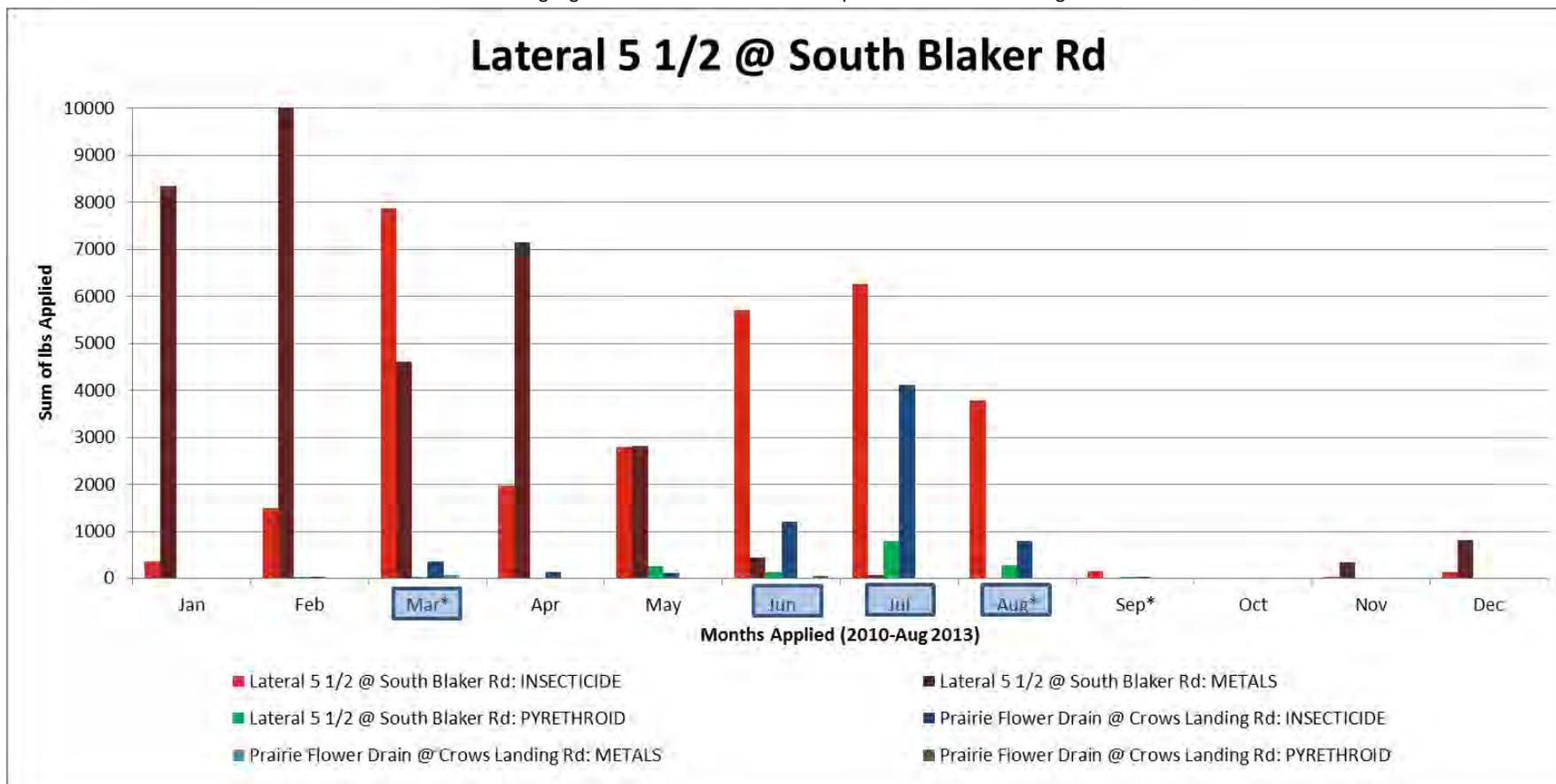


Figure I-5. Lateral 5 ½ @ South Blaker Rd and Core site PUR data for insecticide use (January 2010-August 2013).

Asterisk indicates when Core site MPM occurs for *P. promelas*. Highlighted months indicate when Represented site monitoring will occur for *P. promelas*.

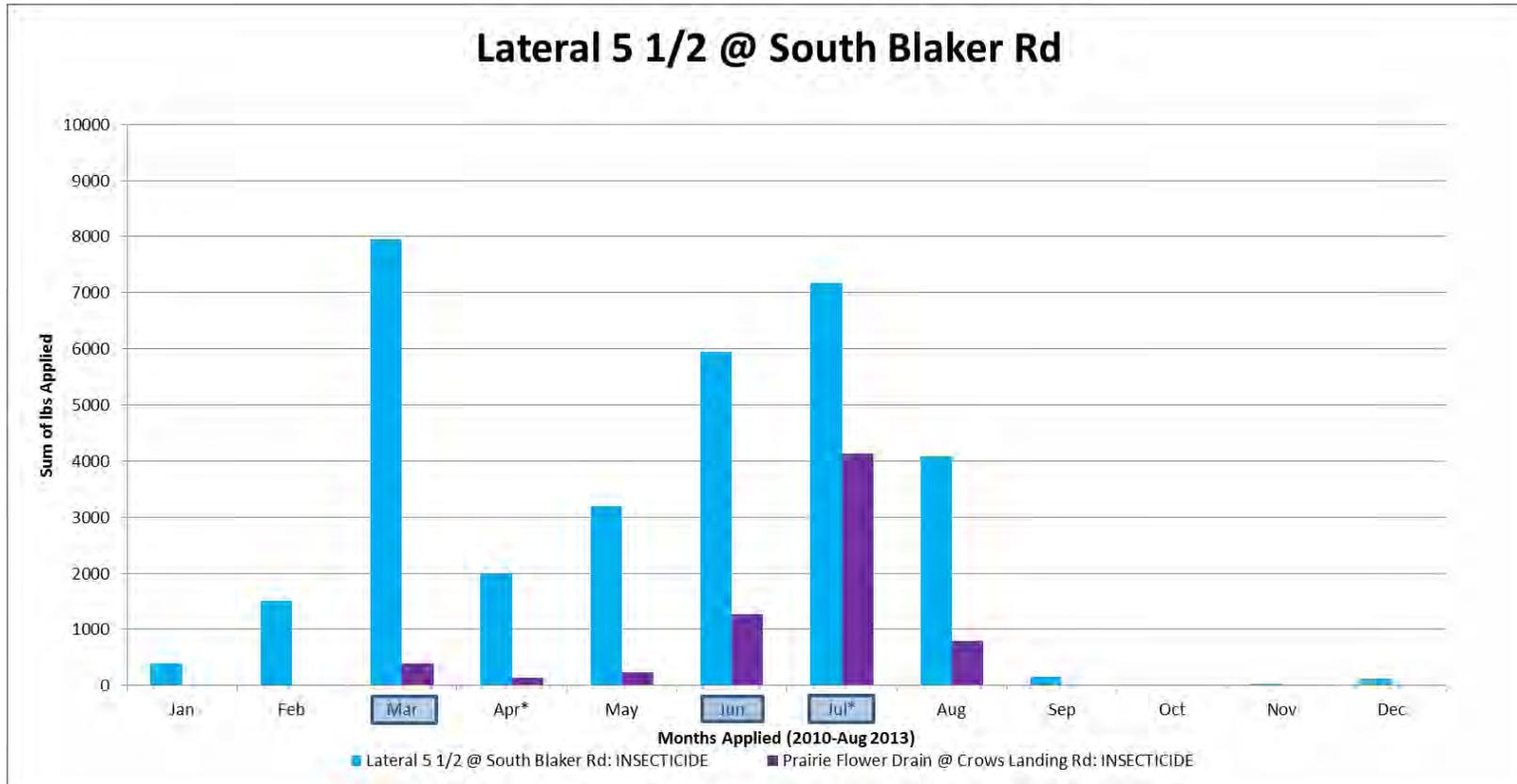
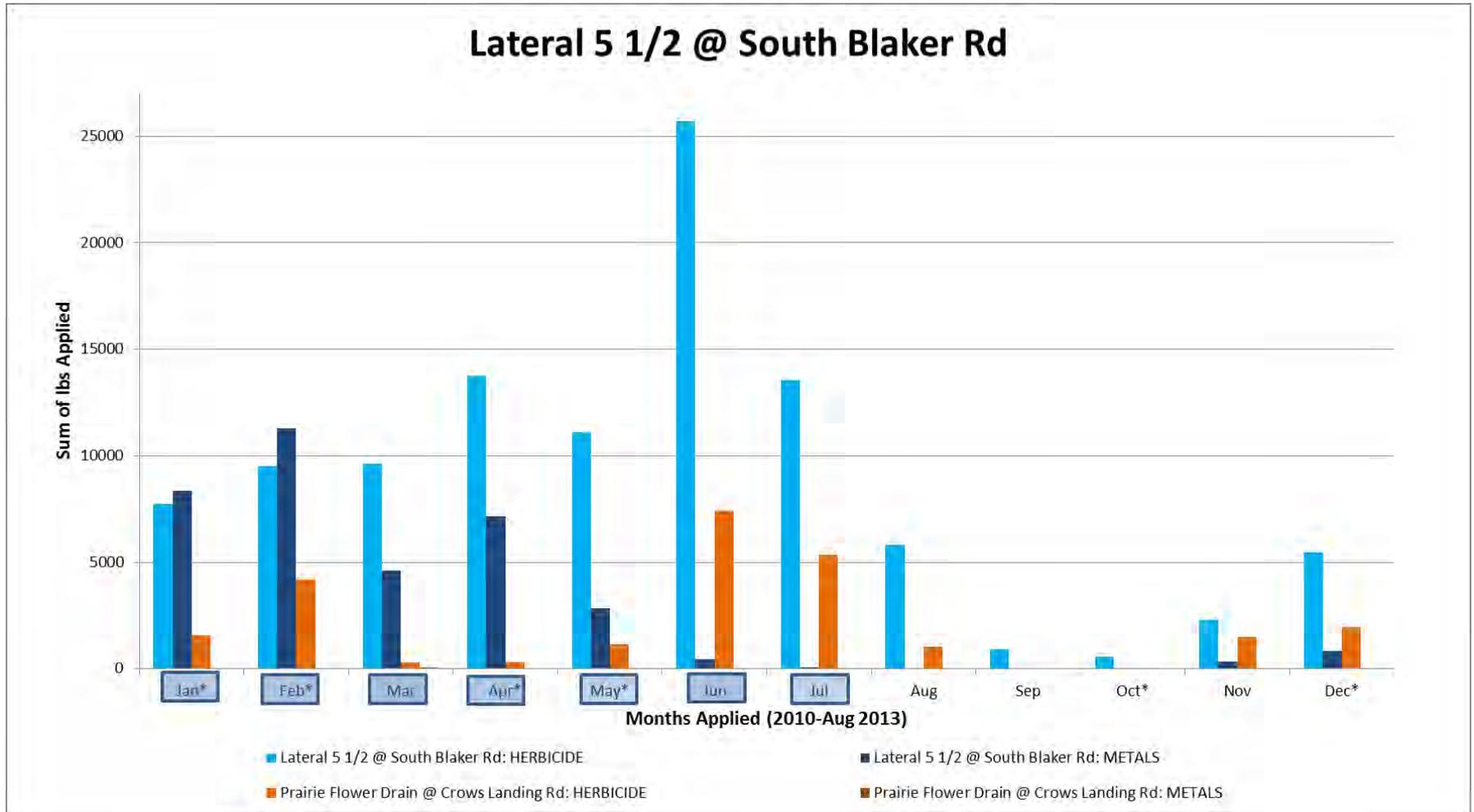


Figure I-6. Lateral 5 ½ @ South Blaker Rd PUR data for herbicide and metal use (January 2010-August 2013).

Asterisk indicates when Core site MPM occurs for *S. capricornutum*. Highlighted months indicate when Represented site monitoring will occur for *S. capricornutum*.



Lateral 6 and 7 @ Central Ave

Lateral 6 and 7 @ Central Ave is one of the Coalition's new monitoring locations in Zone 2 and therefore no monitoring data have been collected at the site. The Coalition will conduct Represented site monitoring at Lateral 6 and 7 @ Central Ave based on MPM for dimethoate at the Core site and an evaluation of current PUR data for Lateral 6 and 7 @ Central Ave (2010- Aug 2013). According to the PUR data, the highest applications of dimethoate occurred in June, July and August (Figure I-2). Due to the high use of dimethoate in June through August and past exceedances of the WQTL for dimethoate at the Core site, the Coalition will monitor at Lateral 6 and 7 @ Central Ave in June, July and August during the 2014 Water Year (Table I-2).

Since no monitoring has occurred at Lateral 6 and 7 @ Central Ave, the Coalition reviewed the PUR data for insecticides and metals applied from 2010 through August 2013 (Table I-1) and compared use with occurrences of toxicity at the Core site to determine the months of monitoring required at Lateral 6 and 7 @ Central Ave for toxicity to *C. dubia*, *P. promelas*, and *S. capricornutum*.

Toxicity to *C. dubia* occurred at the Core site in March 2006, September 2007 and August 2011. As explained in previous sections, insecticides and pyrethroids were the possible causes of toxicity to *C. dubia*. The PUR data indicate that the highest use of insecticides occurred during March and April. A combination of insecticide and pyrethroid applications occurred during June, July and August, however all applications were low. The highest applications of pyrethroids from 2010 through August 2013 occurred in July 2012 (339 lbs of AI) and the highest applications of insecticide occurred in July 2010 (2963 lbs of AI; Figure I-7). Therefore, the Coalition will monitor for toxicity to *C. dubia* at Lateral 6 and 7 @ Central Ave during March, April and July during the 2014 Water Year (Table I-2).

Toxicity to *P. promelas* occurred at the Core site in July 2006 and April 2011. As previously discussed, ammonia and insecticides are the likely sources of *P. promelas* toxicity at the Core site. The Coalition will monitor at Lateral 6 and 7 @ Central Ave in March and April during the 2014 Water Year which correspond to the months of highest use of insecticides from 2010 through August 2013 (Figure I-8).

Toxicity to *S. capricornutum* occurred at the Core site in January, February, April, May and December sampling events from 2007 through 2013. As discussed earlier, the cause of most of the toxicities at the Core site could not be identified by a TIE (4 out of 7). The remaining samples were associated with high ammonia concentrations, and two TIEs concluded cationic metals as well as ammonia were the cause of the toxicity. Since no monitoring has occurred at Lateral 6 and 7 @ Central Ave, the Coalition reviewed the current PUR data for all herbicides and metals applied from 2010 through August 2013 and compared the results with the toxicity occurrences at the Core site (Figure I-9). The highest application of herbicides at Lateral 6 and 7 @ Central Ave occurred during June between 2010 and 2013, similar to the Core site. Both herbicides and metals have been applied from December through June. Therefore, the Coalition will monitor at Lateral 6 and 7 @ Central Ave from December through June for toxicity to *S. capricornutum* during the 2014 Water Year (Table I-2).). Sediment toxicity to *H. azteca* will be monitored t Lateral 6 and 7 @ Central Ave in March and September.

Figure I-7. Lateral 6 and 7 @ Central Ave and Core site PUR data for insecticide and metal use (January 2010-August 2013).

Asterisk indicates when Core site MPM occurs for *C. dubia*. Highlighted months indicate when Represented site monitoring will occur for *C. dubia*.

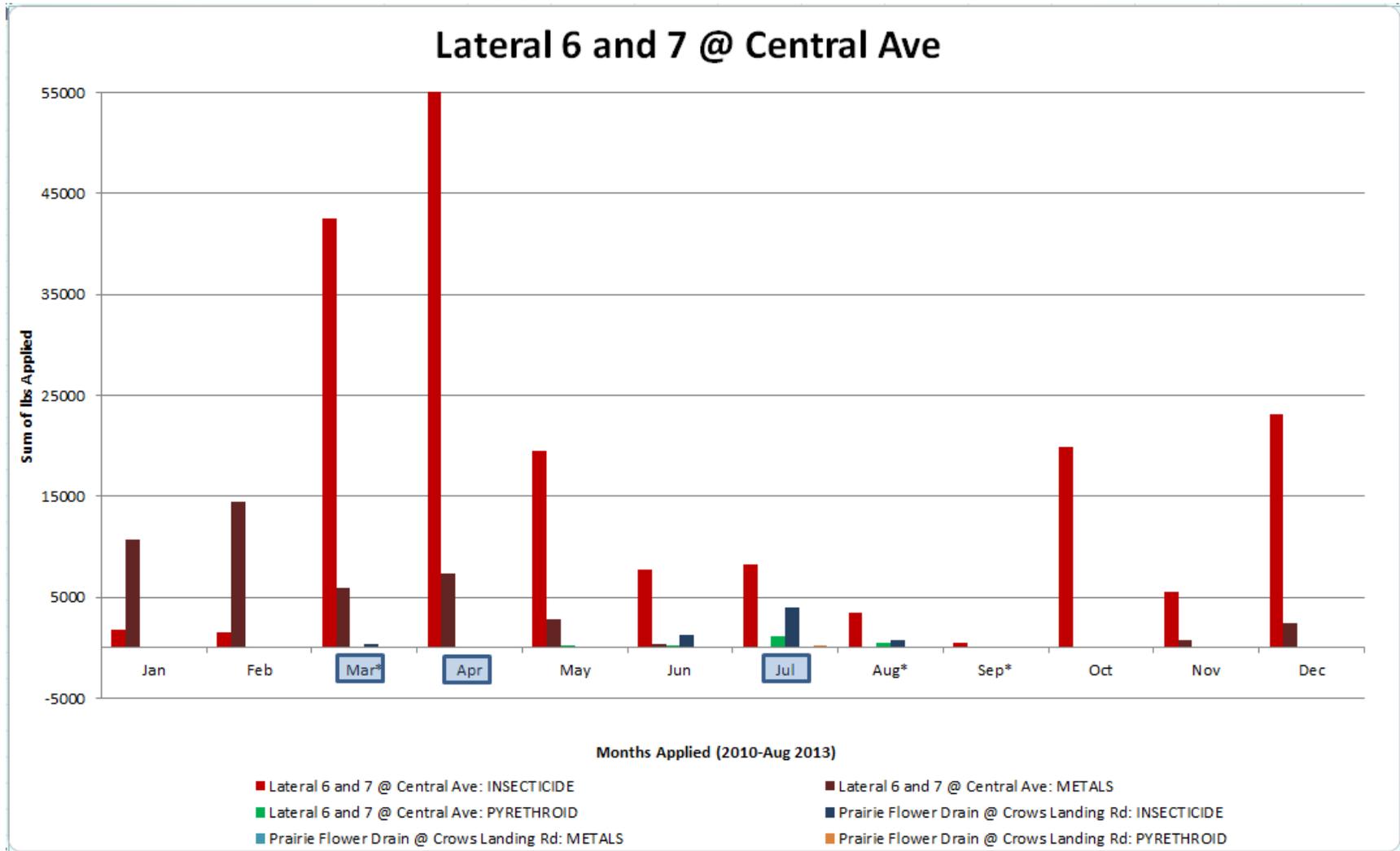


Figure I-8. Lateral 6 and 7 @ Central Ave and Core site PUR data for insecticide use (January 2010-August 2013).

Asterisk indicates when Core site MPM occurs for *P. promelas*. Highlighted months indicate when Represented site monitoring will occur for *P. promelas*.

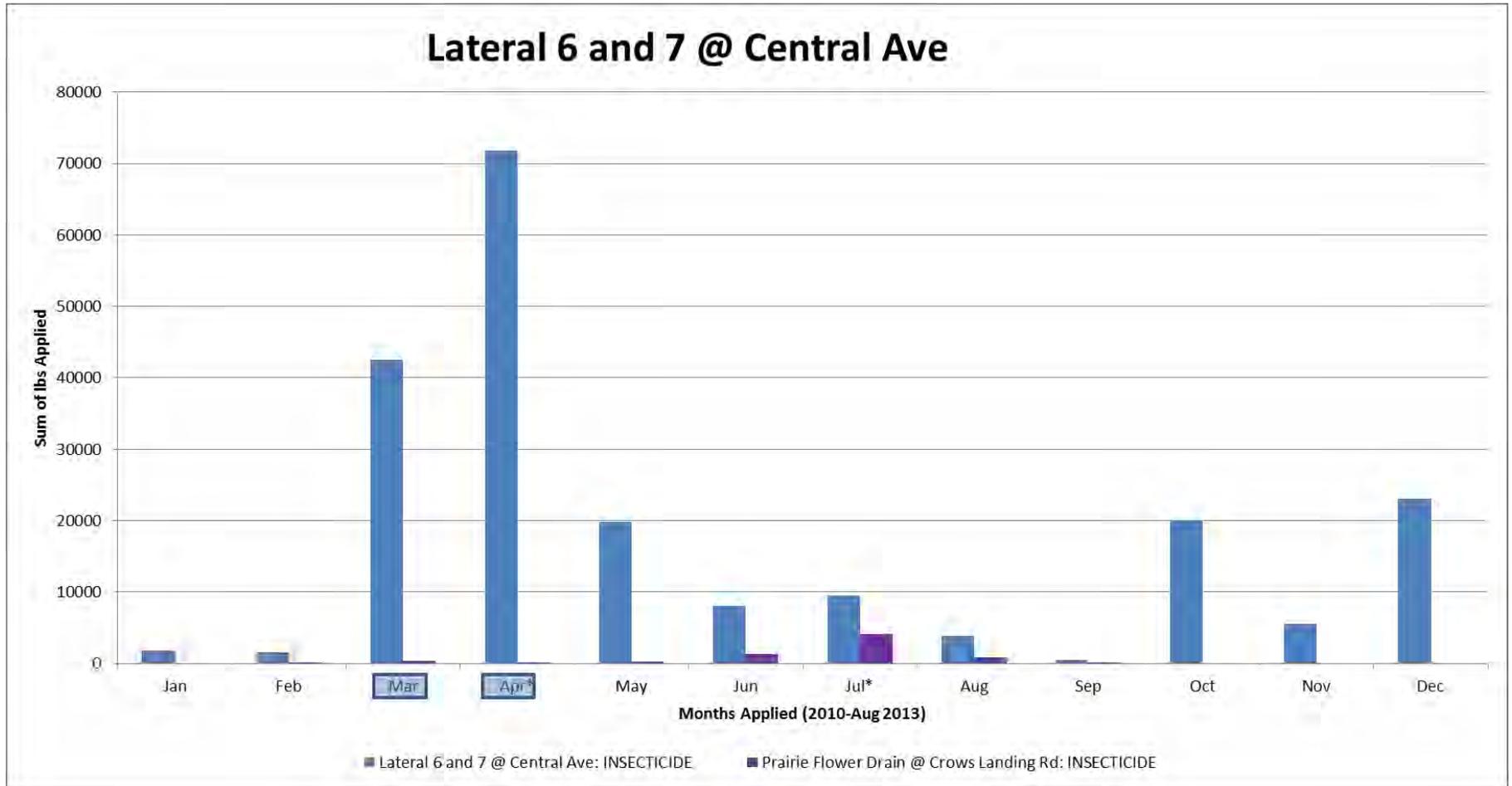
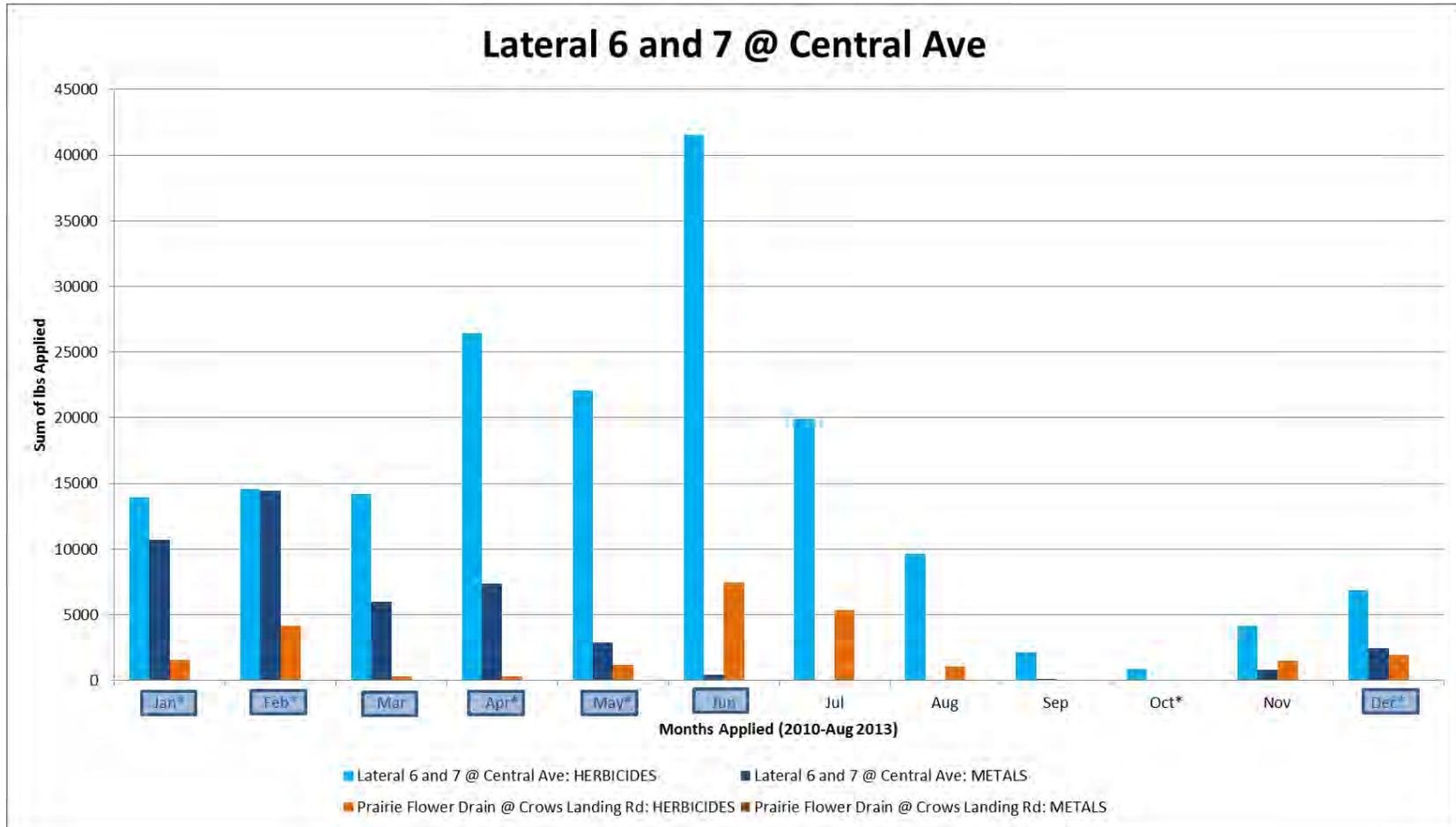


Figure I-9. Lateral 6 and 7 @ Central Ave PUR data for herbicide and metal use (January 2010-August 2013).

Asterisk indicates when Core site MPM occurs for *S. capricornutum*. Highlighted months indicate when Represented site monitoring will occur for *S. capricornutum*.



Levee Drain @ Carpenter Rd

Levee Drain @ Carpenter Rd was monitored 19 times for dimethoate from January 2012 through June 2013; all results were non detect. According to the PUR data, January 2010 through August 2013, dimethoate applications occurred in January, and March through August. However, the highest applications of dimethoate occurred in July (Figure I-2). Applications of dimethoate follow a decreasing trend; in 2010 there were 360 pounds of AI applied compared to 42 lbs of AI in 2013. Therefore, the Coalition will monitor at Levee Drain @ Carpenter Rd for dimethoate in July during the 2014 Water Year (Table I-2).

Levee Drain @ Carpenter Rd was monitored for toxicity to *C. dubia* from January 2012 through June 2013 and toxicity occurred in February 2013. A TIE was conducted on the February 2013 toxic sample and results indicated that ammonia was the cause of the toxicity (17 mg/L ammonia detected; Figure I-10). Ammonia also resulted in toxicity to *P. promelas* samples collected at the same time. Insecticides and pyrethroids were the cause of *C. dubia* toxicity at the Core site in September 2007 and August 2011. PUR data for Levee Drain @ Carpenter Rd indicate the highest insecticide use occurred in July which is also the same month with the largest amount of pyrethroids applied over the same time period (Figure I-10). Therefore, the Coalition will monitor for toxicity to *C. dubia* (as well as *P. promelas* and *S. capricornutum*) in February based on past toxicity and in July based on high applications of pyrethroids and insecticides (Table I-2, Figure I-10).

Levee Drain @ Carpenter Rd was monitored for toxicity to *P. promelas* from January 2012 through June 2013 and toxicity occurred in February 2013. As mentioned above, the cause of the toxicity in February was ammonia. In addition to ammonia, insecticides are generally associated with *P. promelas* toxicity; the highest use of insecticides at Levee Drain @ Carpenter Rd occurred in July (Figure I-11). Based on an evaluation of the PUR data and past monitoring results, the Coalition will monitor for toxicity to *P. promelas* at Levee Drain @ Carpenter Rd in February and July during the 2014 Water Year.

Levee Drain @ Carpenter Rd was monitored for toxicity to *S. capricornutum* from January 2012 through June 2013 and toxicity occurred in February 2013. A TIE was conducted on the February 2013 sample and results indicated that the sample lost all toxicity prior to the evaluation; however, in general, herbicides and metals are associated with *S. capricornutum* toxicity. The Coalition evaluated the PUR data (2010-Aug 2013) and past toxicities at both the Core and Levee Drain @ Carpenter Rd sites. The Coalition will monitor for toxicity to *S. capricornutum* in June and July which have the highest amounts of insecticides applied and in February which had a previous toxic sample (Figure I-12).

Sediment toxicity to *H. azteca* will be monitored at Levee Drain @ Carpenter Rd in March and September.

Figure I-10. Levee Drain @ Carpenter and Core site PUR data for insecticide and pyrethroid use (January 2010-August 2013).

Asterisk indicates when Core site MPM occurs for *C. dubia*. Highlighted months indicate when Represented site monitoring will occur for *C. dubia*.

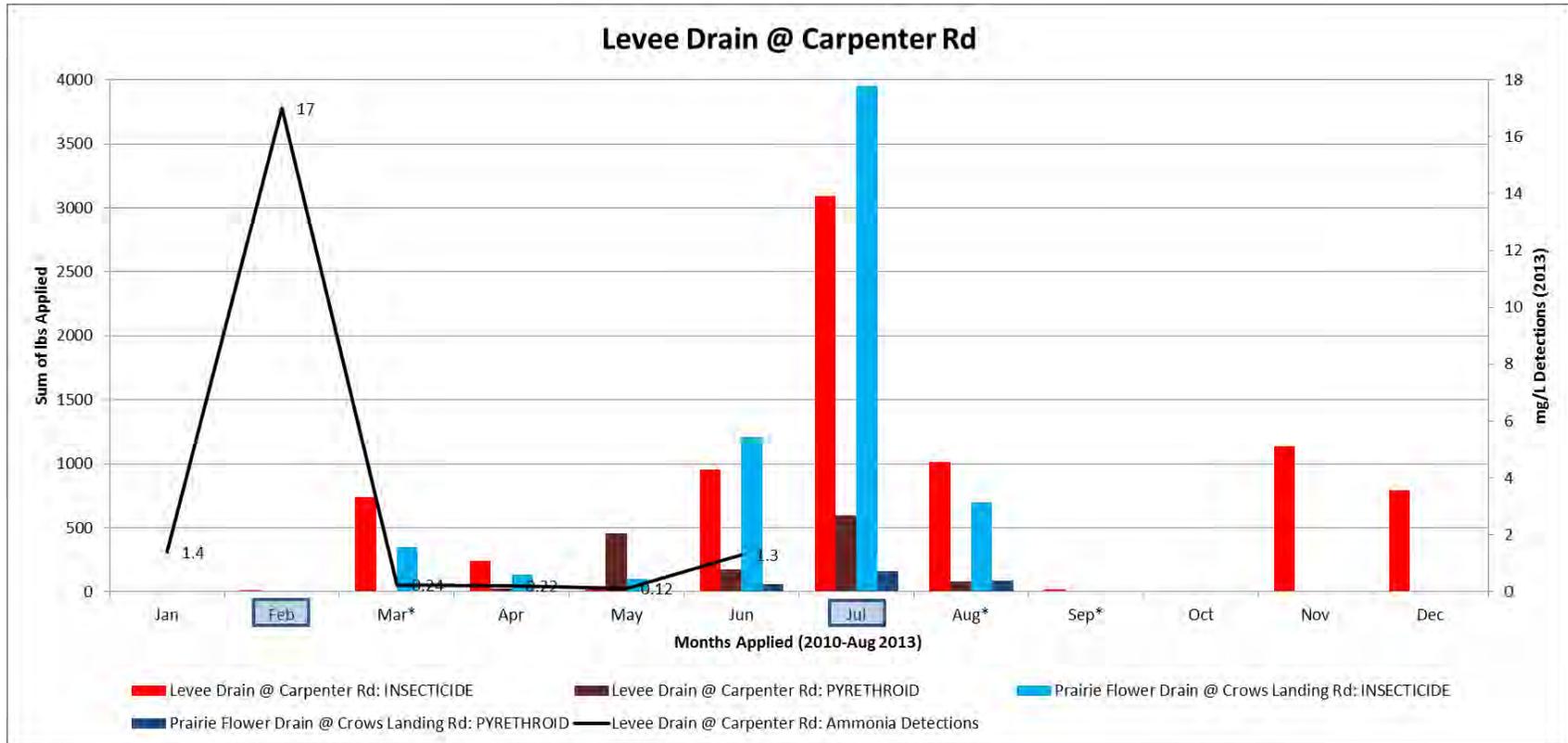


Figure I-11. Levee Drain @ Carpenter Rd and Core site PUR data for insecticide use (January 2010-August 2013).

Asterisk indicates when Core site MPM occurs for *P. promelas*. Highlighted months indicate when Represented site monitoring will occur for *P. promelas*.

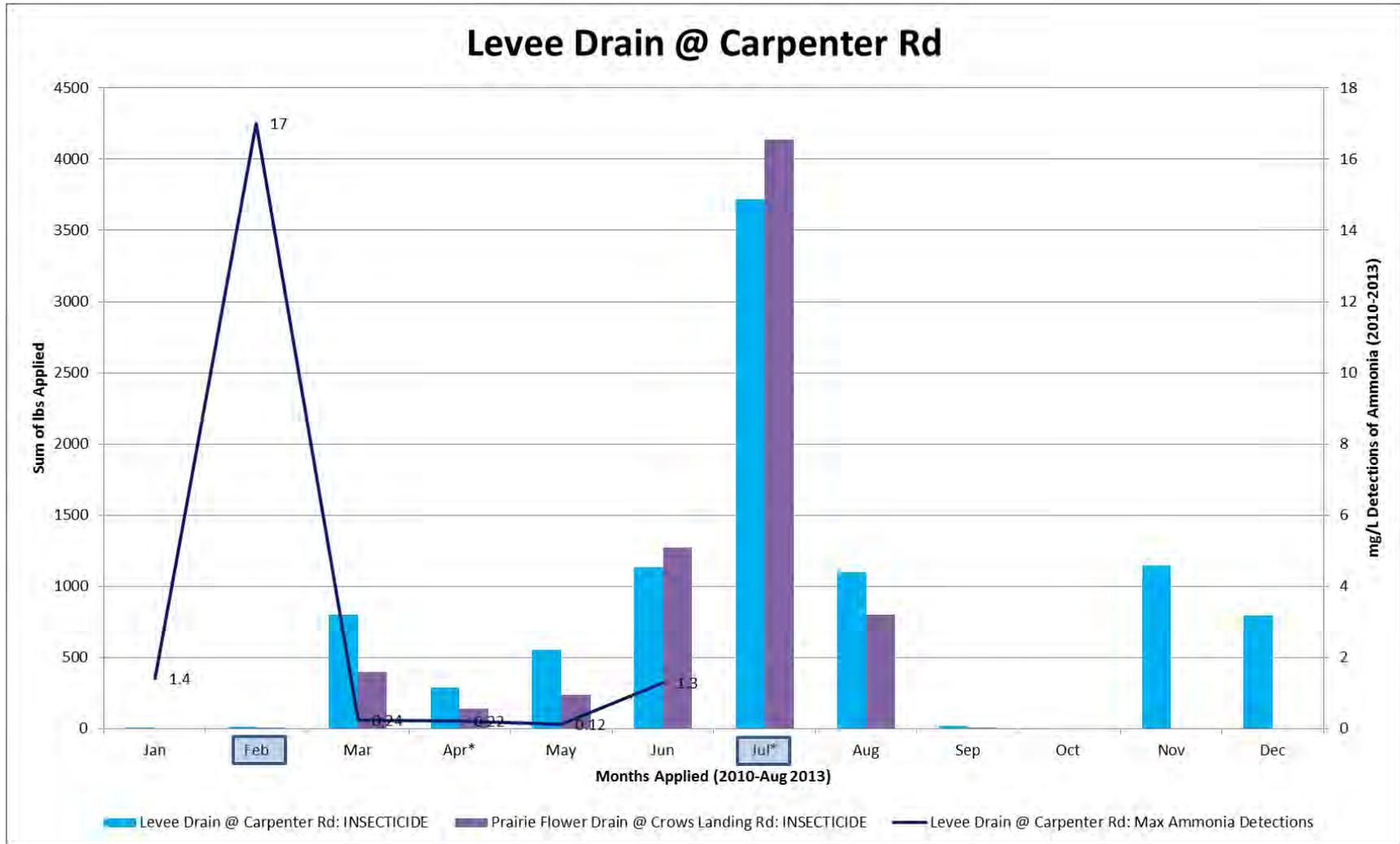
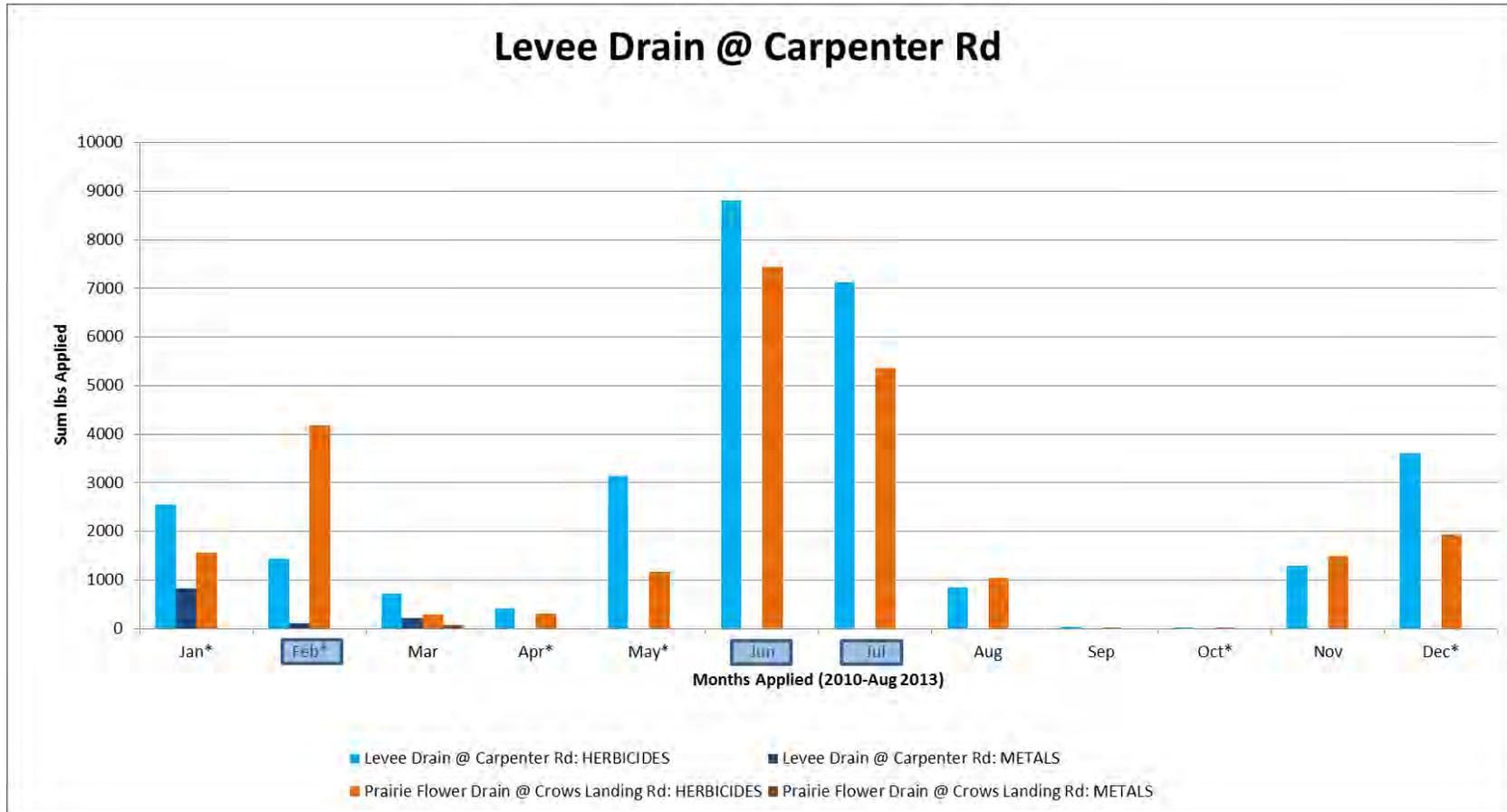


Figure I-12. Levee Drain @ Carpenter Rd PUR data for herbicide and metal use (January 2010-August 2013).

Asterisk indicates when Core site MPM occurs for *S. capricornutum*. Highlighted months indicate when Represented site monitoring will occur for *S. capricornutum*.



Lower Stevinson @ Faith Home Rd

Lower Stevinson @ Faith Home Rd is one of the Coalition's new monitoring locations in Zone 2 and therefore no monitoring data have been collected at the site. The Coalition will conduct Represented site monitoring at Lower Stevinson @ Faith Home Rd based on MPM for dimethoate at the Core site and an evaluation of current PUR data for Lower Stevinson @ Faith Home Rd (2010- Aug 2013). According to the PUR data, the highest applications of dimethoate occurred in June, July and August (Figure I-2). The Coalition will monitor at Lower Stevinson @ Faith Home Rd in June, July and August during the 2014 Water Year (Table I-2).

Toxicity to *C. dubia* occurred at the Core site in March 2006, September 2007 and August 2011. As explained in previous sections, insecticides and pyrethroids were the possible sources of toxicity to *C. dubia*. Since no monitoring has occurred at Lower Stevinson @ Faith Home Rd, the Coalition reviewed current PUR data for insecticides and pyrethroids applied from 2010 through August 2013 (Table I-1) and compared the results with the toxicity occurrences at the Core site (Figure I-13). Since the highest use of insecticides occurred in March and April, and the highest use of pyrethroids occurred in July, the Coalition will monitor for toxicity to *C. dubia* in March, April and July at Lower Stevinson @ Faith Home Rd during the 2014 Water Year (Figure I-13).

Toxicity to *P. promelas* occurred at the Core site in July 2006 and April 2011. As previously discussed, ammonia and insecticides are the likely sources of *P. promelas* toxicity at the Core site. In addition to ammonia, insecticides are generally associated with *P. promelas* toxicity. Since no monitoring has occurred at Lower Stevinson @ Faith Home Rd, the Coalition reviewed current PUR data for insecticides applied from 2010 through August 2013 (Figure I-14). Insecticide applications associated with *P. promelas* toxicity were highest during the months of March and April at Lower Stevinson @ Faith Home Rd; the Coalition will monitor at Lower Stevinson @ Faith Home Rd in March and April during the 2014 Water Year (Figure I-14).

Toxicity to *S. capricornutum* occurred at the Core site in January, February, April, May and December sampling events from 2007 through 2013. As discussed earlier, most of the toxicities at the Core site could not be sourced by a TIE (4 of 7). The remaining samples were associated with high ammonia concentrations and two TIEs concluded cationic metals as well as ammonia were the cause of the toxicity. However, in general, herbicides and metals are associated with *S. capricornutum* toxicity. Since no monitoring has occurred at Lower Stevinson @ Faith Home Rd, the Coalition reviewed current PUR data for all herbicides and metals applied from 2010 through August 2013 and compared the results with the occurrences of toxicity at the Core site (Figure I-15). The highest use of herbicides occurred from March through June. January and February have the highest amounts of metals applied over this period of time (Figure I-15). Therefore, the Coalition will monitor for toxicity to *S. capricornutum* at Lower Stevinson @ Faith Home Rd from January through June during the 2014 Water Year.

Sediment toxicity to *H. azteca* will be monitored at Lower Stevinson @ Faith Home Rd in March and September.

Figure I-13. Lower Stevinson @ Faith Home Rd and Core site PUR data for insecticide and pyrethroid use (January 2010-August 2013).

Asterisk indicates when Core site MPM occurs for *C. dubia*. Highlighted months indicate when Represented site monitoring will occur for *C. dubia*.

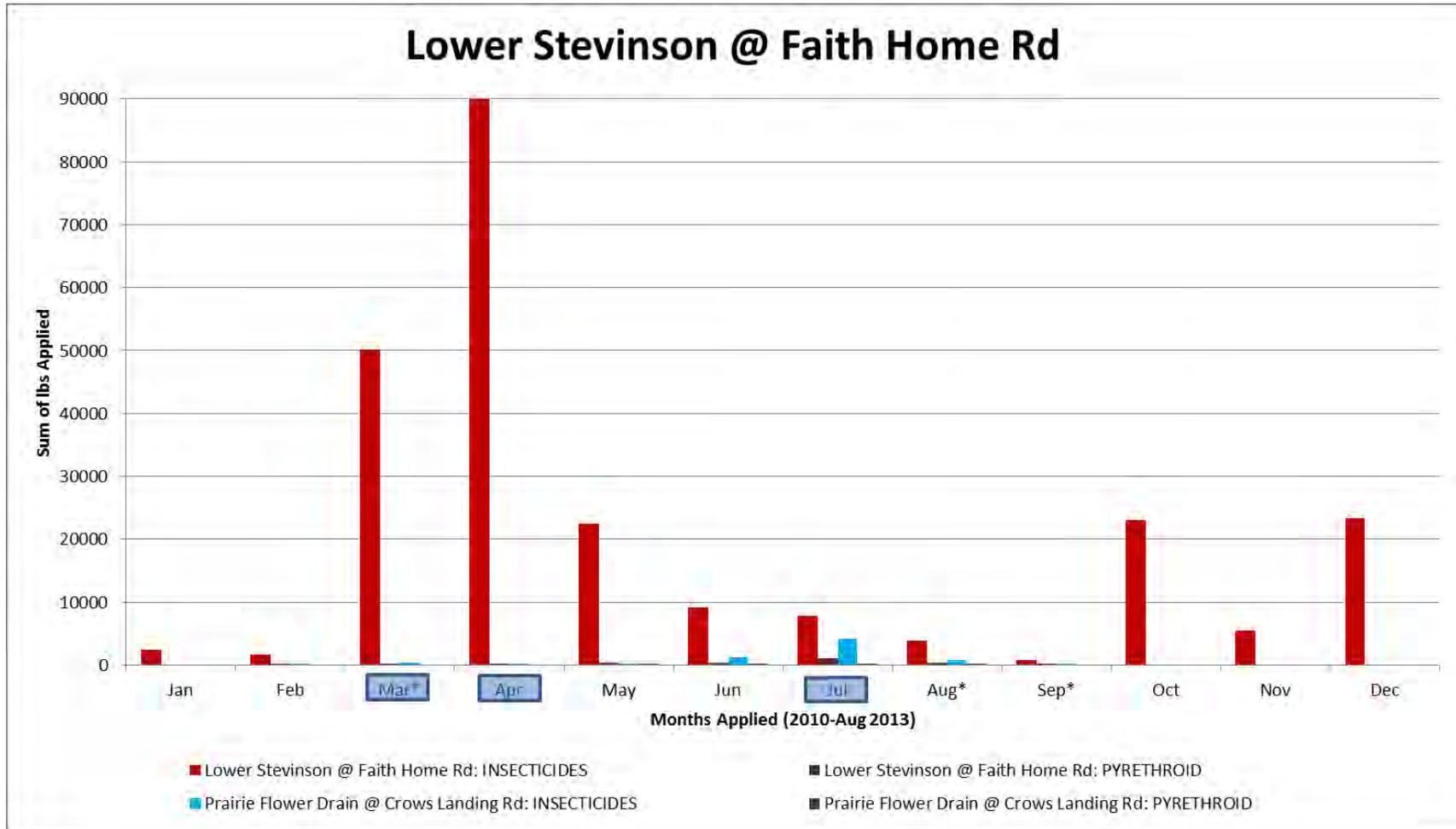


Figure I-14. Lower Stevinson @ Faith Home Rd and Core site PUR data for insecticide use (January 2010-August 2013).

Asterisk indicates when Core site MPM occurs for *P. promelas*. Highlighted months indicate when Represented site monitoring will occur for *P. promelas*.

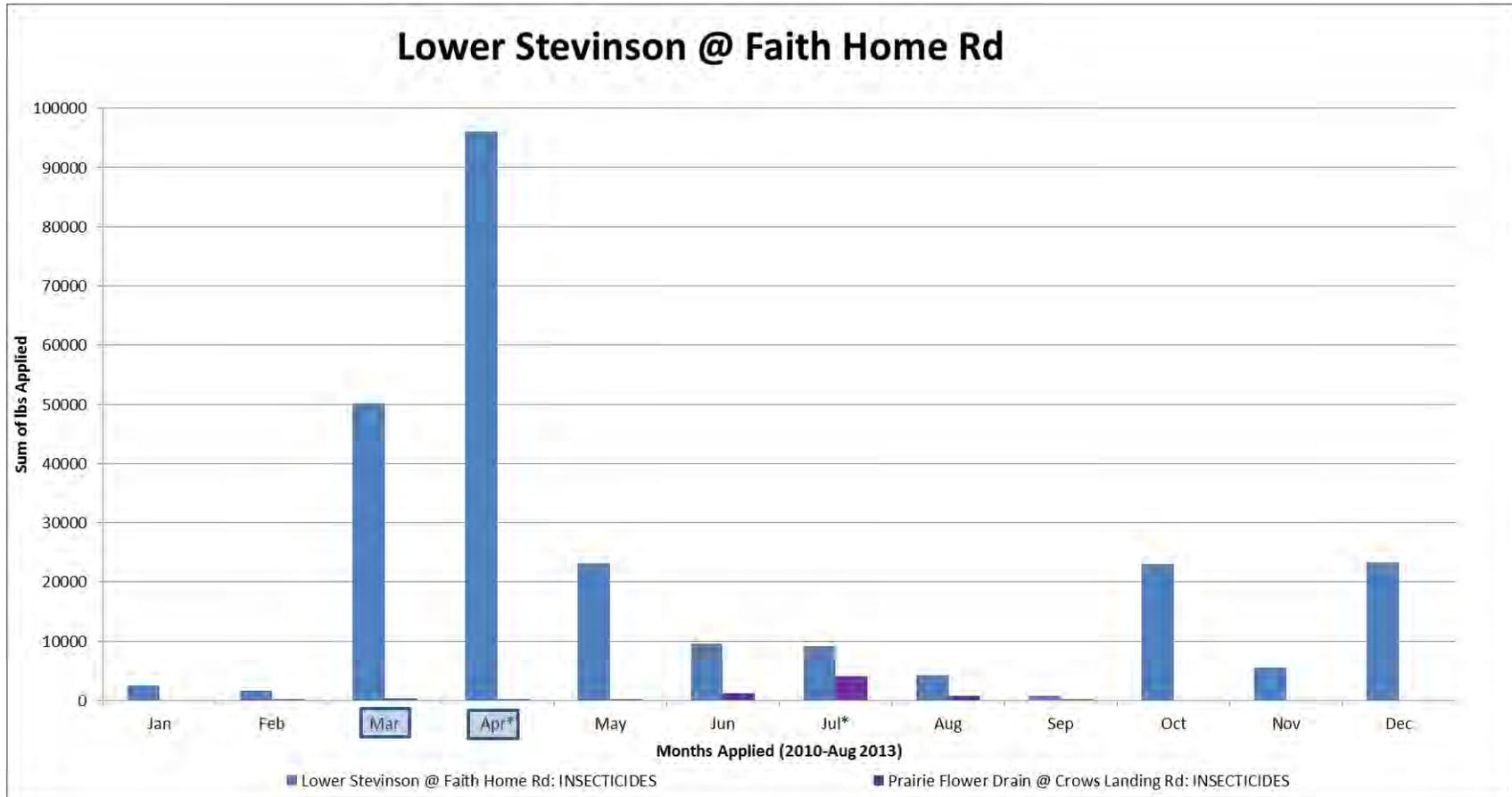
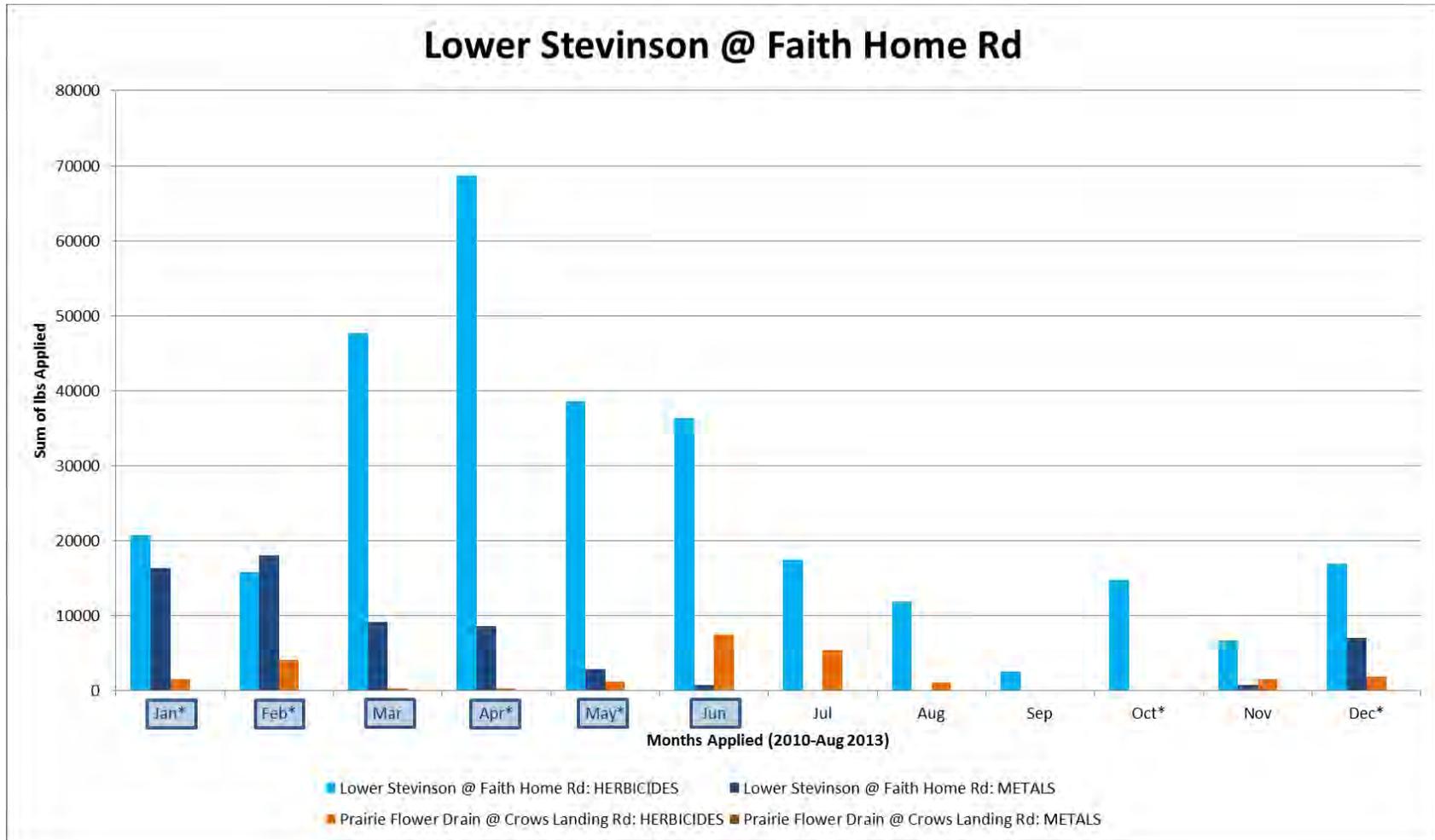


Figure I-15. Levee Drain @ Carpenter Rd PUR data for herbicide and metal use (January 2010-August 2013).

Asterisk indicates when Core site MPM occurs for *S. capricornutum*. Highlighted months indicate when Represented site monitoring will occur for *S. capricornutum*.



Unnamed Drain @ Hogin Rd

Unnamed Drain @ Hogin Rd is one of the Coalition's new monitoring locations in Zone 2 and therefore no monitoring data have been collected at the site. The Coalition will conduct Represented site monitoring at Unnamed Drain @ Hogin Rd based on MPM for dimethoate at the Core site and an evaluation of the PUR data from Unnamed Drain @ Hogin Rd, January 2010 through August 2013. According to the PUR data, the highest applications of dimethoate occurred in July and August (Figure I-2). Due to the high use of dimethoate in July and August, the Coalition will monitor for dimethoate at Unnamed Drain @ Hogin Rd in July and August during the 2014 Water Year (Table I-2).

Toxicity to *C. dubia* occurred at the Core site in March 2006, September 2007 and August 2011. As explained in previous sections, insecticides and pyrethroids were the possible sources of toxicity to *C. dubia*. Since no monitoring has occurred at Unnamed Drain @ Hogin Rd, the Coalition reviewed PUR data for insecticides and pyrethroids applied from January 2010 through August 2013 (Table I-1) and compared the results with the occurrences of toxicity at the Core site (Figure I-16). The highest use of insecticides occurred in July (total of 950 lbs of AI) and August (total of 513 lbs of AI), and pyrethroid use is very low at Unnamed Drain @ Hogin Rd (a total of 38 lbs of AI in August). The Coalition will monitor for toxicity to *C. dubia* in July and August at Unnamed Drain @ Hogin Rd during the 2014 Water Year (Figure I-16).

Toxicity to *P. promelas* occurred at the Core site in July 2006 and April 2011. As previously discussed, ammonia and insecticides are the likely sources of *P. promelas* toxicity at the Core site. Since no monitoring has occurred Unnamed Drain @ Hogin Rd, the Coalition reviewed PUR data for insecticides applied from January 2010 through August 2013 (Figure I-17). Insecticide applications associated with *P. promelas* toxicity were highest during the August months at Unnamed Drain @ Hogin Rd; the Coalition will monitor Unnamed Drain @ Hogin Rd in August during the 2014 Water Year (Figure I-17).

Toxicity to *S. capricornutum* occurred at the Core site in January, February, April, May and December sampling events from 2007 through 2013. As discussed earlier, most of the toxicities at the Core site could not be sourced by a TIE (4 of 7). The remaining samples were associated with high ammonia concentrations, and two TIEs concluded cationic metals as well as ammonia were the cause of the toxicity. However, in general, herbicides and metals are associated with *S. capricornutum* toxicity. Since no monitoring has occurred at Unnamed Drain @ Hogin Rd, the Coalition reviewed current PUR data for herbicides and metals applied from 2010 through August 2013 and compared the results with the occurrences of toxicity at the Core site (Figure I-18). The highest use of herbicides occurred during June and July; there have been no metal applications at Unnamed Drain @ Hogin Rd during this time period (Figure I-17). Therefore, the Coalition will monitor for toxicity to *S. capricornutum* at Unnamed Drain @ Hogin Rd in June and July during the 2014 Water Year (Figure I-18).

Sediment toxicity to *H. azteca* will be monitored at Unnamed Drain @ Hogin Rd in March and September.

Figure I-16. Unnamed Drain @ Hogin Rd and Core site PUR data for insecticide and pyrethroid use (January 2010-August 2013).

Asterisk indicates when Core site MPM occurs for *C. dubia*. Highlighted months indicate when Represented site monitoring will occur for *C. dubia*.

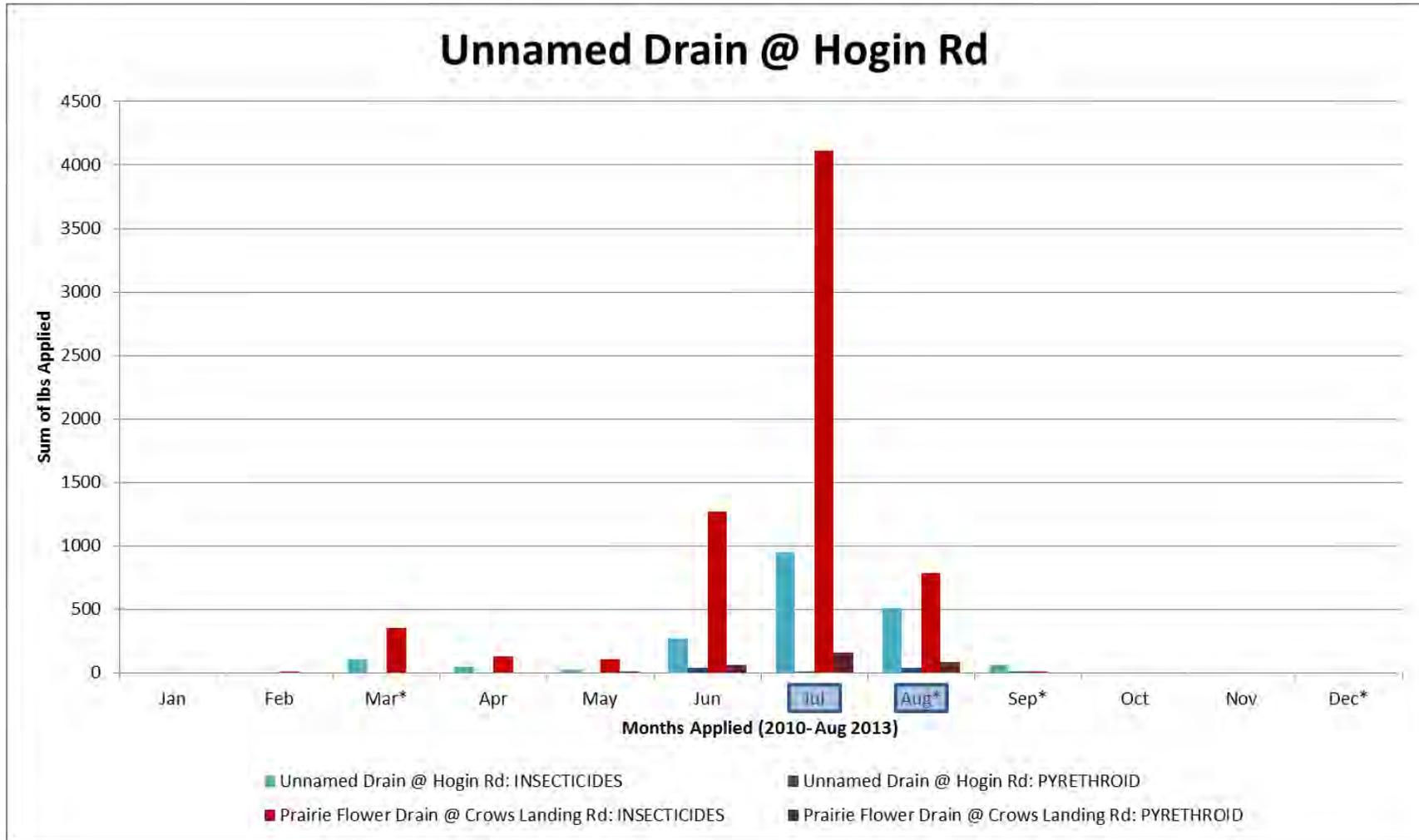


Figure I-17. Unnamed Drain @ Hogin Rd and Core site PUR data for insecticide use (January 2010-August 2013).

Asterisk indicates when Core site MPM occurs for *P. promelas*. Highlighted months indicate when Represented site monitoring will occur for *P. promelas*.

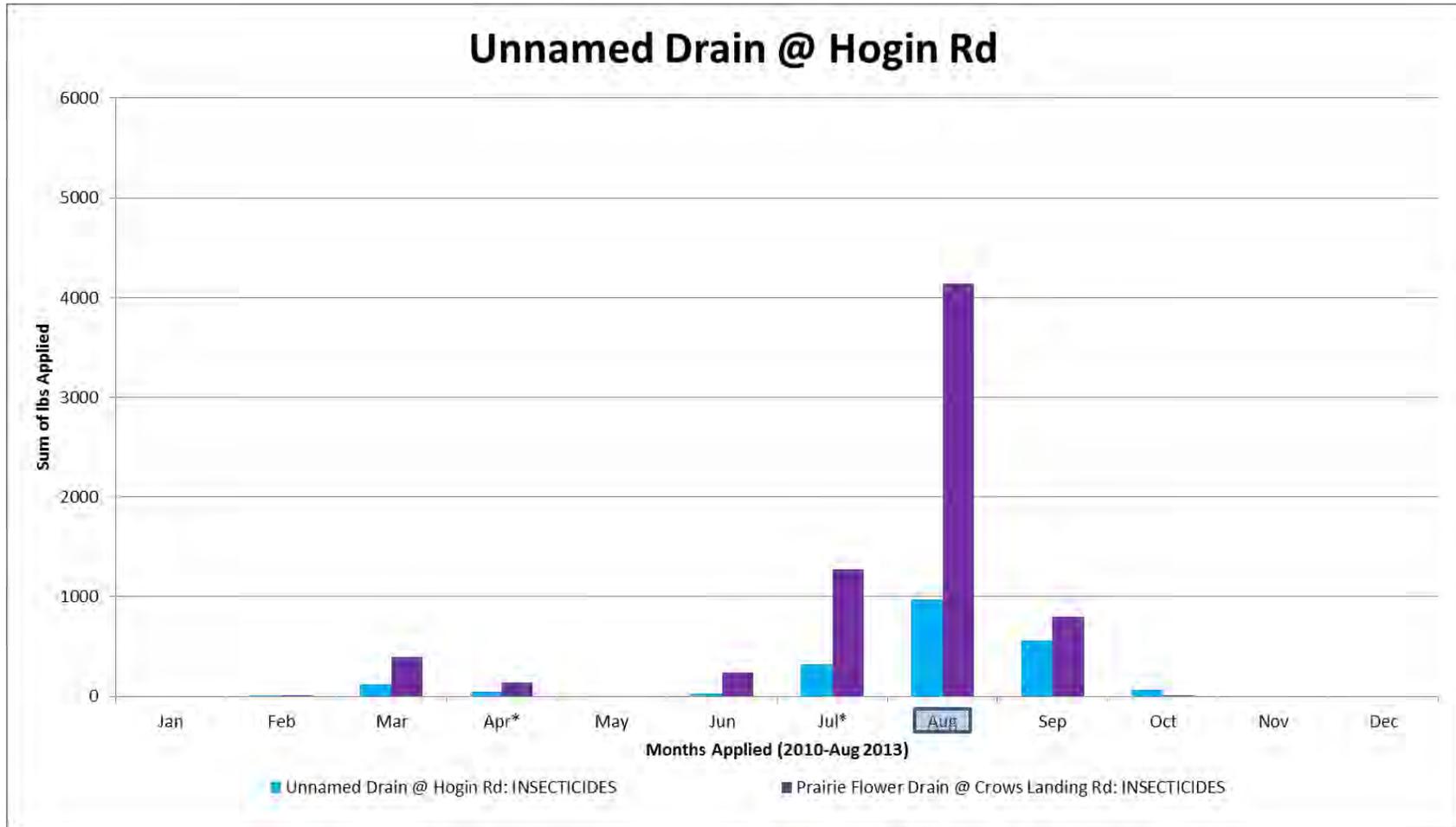
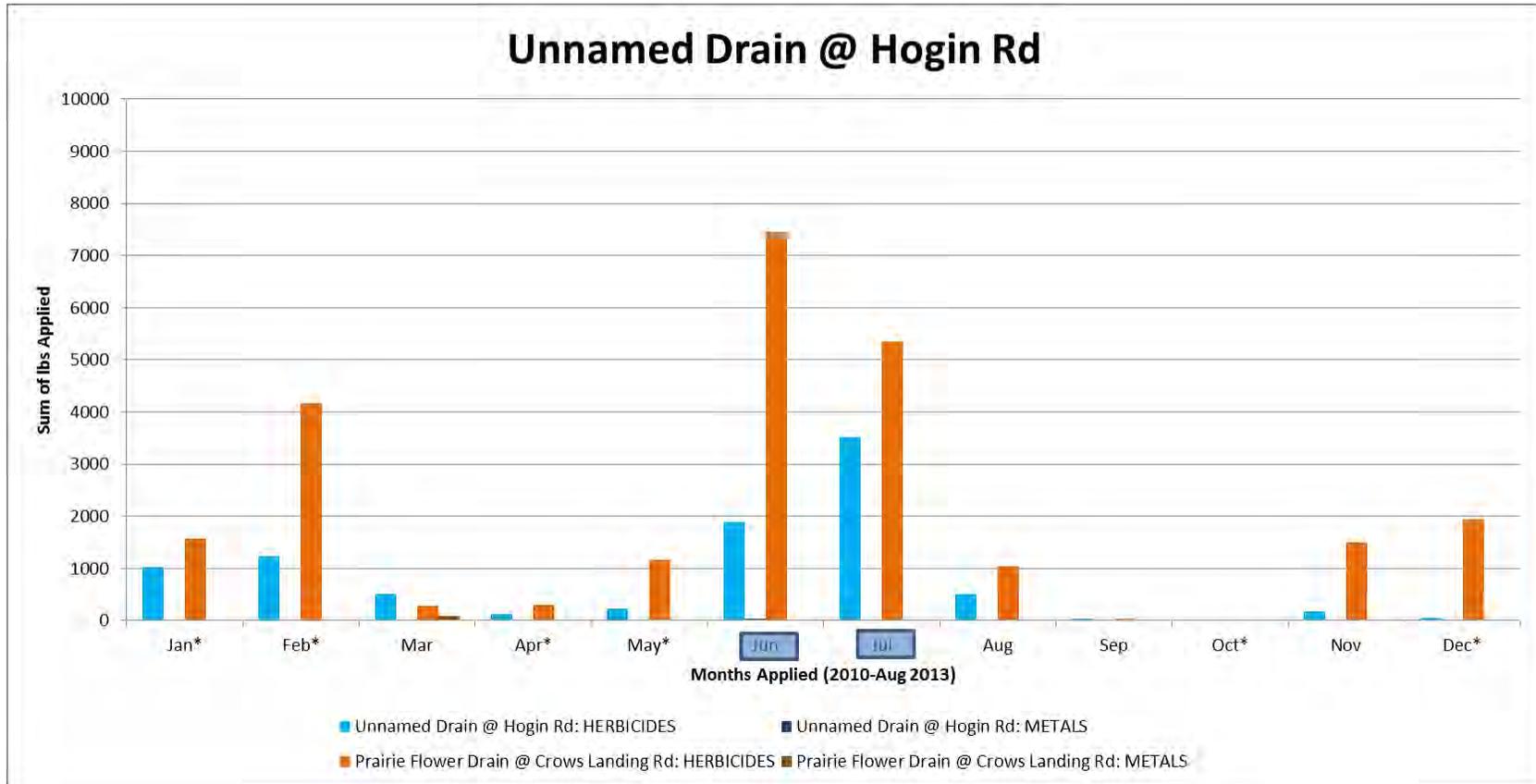


Figure I-18. Unnamed Drain @ Hogin Rd PUR data for herbicide and metal use (January 2010-August 2013).

Asterisk indicates when Core site MPM occurs for *S. capricornutum*. Highlighted months indicate when Represented site monitoring will occur for *S. capricornutum*.



Westport Drain @ Vivian Rd

The Coalition determined no Represented site monitoring is necessary for dimethoate, toxicity to *C. dubia* and *P. promelas* during the 2014 Water Year. The ESJWQC MPU details the rationale for no additional monitoring of the remaining high priority Core site management plan constituents. Sediment toxicity to *H. azteca* will be monitored in March and September.

ZONE 3 - HIGHLINE CANAL @ HWY 99

Highline Canal @ Hwy 99 Management Plan Monitoring high priority constituents to be monitored in the 2014 Water Year:

- copper
- *C. dubia* toxicity
- *S. capricornutum* toxicity
- *H. azteca* sediment toxicity

Mustang Creek @ East Ave

Mustang Creek @ East Ave was monitored for toxicity to *C. dubia* 54 times from 2006 through 2010 and during Assessment Monitoring in 2013. Mustang Creek @ East Ave was dry 33 times from 2006 through 2013; every sampling event was dry in 2013 except January and February. A total of 20 samples have been tested for toxicity to *C. dubia*; one sample collected in January 2008 was toxic. A TIE conducted on the January toxic sample indicated that pyrethroids were the cause of the toxicity to *C. dubia*. Toxicity to *C. dubia* occurred at the Core site May 2005 and April and September 2006. The Coalition reviewed PUR data, January 2010 through August 2013, for pyrethroid and organophosphate applications at Mustang Creek @ East Ave and Highline Canal @ Hwy 99 (Figure I-19). Although the highest use of pyrethroids occur in May and July and the highest use of organophosphates occur in August and October, Mustang Creek @ East Ave is typically dry during those months and therefore water quality is not affected by runoff from these applications. Based on the monitoring history at Mustang Creek @ East Ave, the Coalition will not monitor for *C. dubia* during the 2014 Water Year and will continue to conduct *C. dubia* MPM at the Core site, Highline Canal @ Hwy 99.

Mustang Creek @ East Ave was monitored for toxicity to *S. capricornutum* 54 times from 2006 through 2010 and during Assessment Monitoring in 2013; however, the site was dry 33 of those times. A total of 20 samples have been tested for *S. capricornutum*; a single toxicity to occurred in February 2008. A TIE was initiated on the February sample, however the sample lost all toxicity and toxicity was not persistent in the resample. In general, herbicides and metals are associated with *S. capricornutum* toxicity; therefore the Coalition evaluated the PUR data from January 2010 through August 2013 and past toxicities at both the Core and Mustang Creek @ East Ave sites. Toxicity to *S. capricornutum* occurred at the Core site in March 2006, February, April and May 2008, and February 2013. Applications of herbicides at Mustang Creek @ East Ave that coincide with past toxicity to *S. capricornutum* at the Core site occurred in March through May, however herbicide applications were much lower at Mustang

Creek @ East Ave compared to the Core site. No applications occurred at either site in February (Figure I-20). Since the toxicity samples are not tightly connected with herbicide use at either the Core or Mustang Creek @ East Ave sites and Mustang Creek @ East Ave is typically dry most of the year, the Coalition determined no monitoring is necessary during the 2014 Water Year, but will continue to conduct *S. capricornutum* MPM at the Core site.

Copper MPM is scheduled at Mustang Creek @ East Ave during the 2014 Water Year. Sediment toxicity to *H. azteca* will be monitored in March and September.

Figure I-19. Mustang Creek @ East Ave and Core site PUR data for insecticide and pyrethroid use (January 2010-August 2013).

Asterisk indicates when Core site MPM occurs for *C. dubia*.

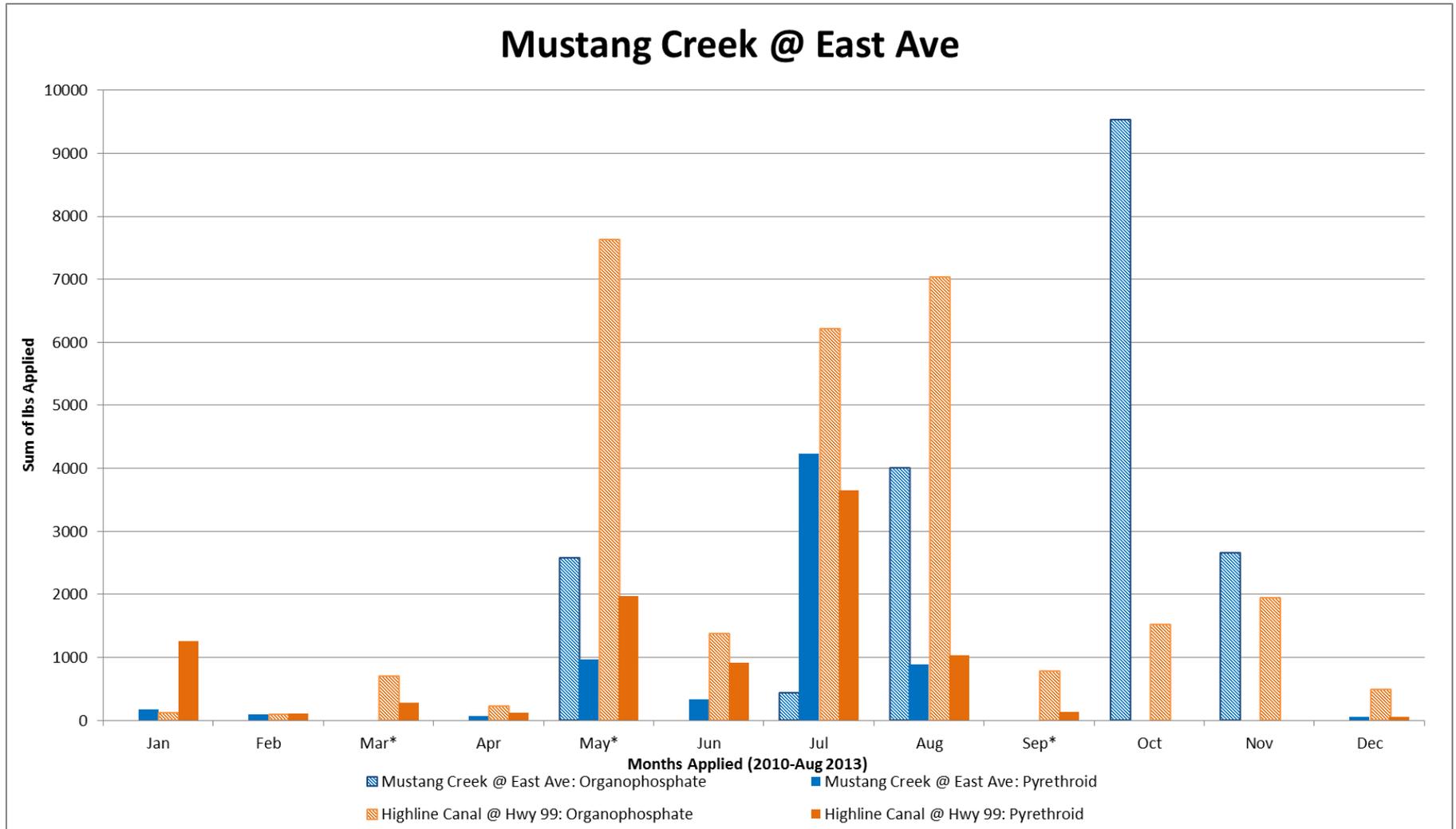
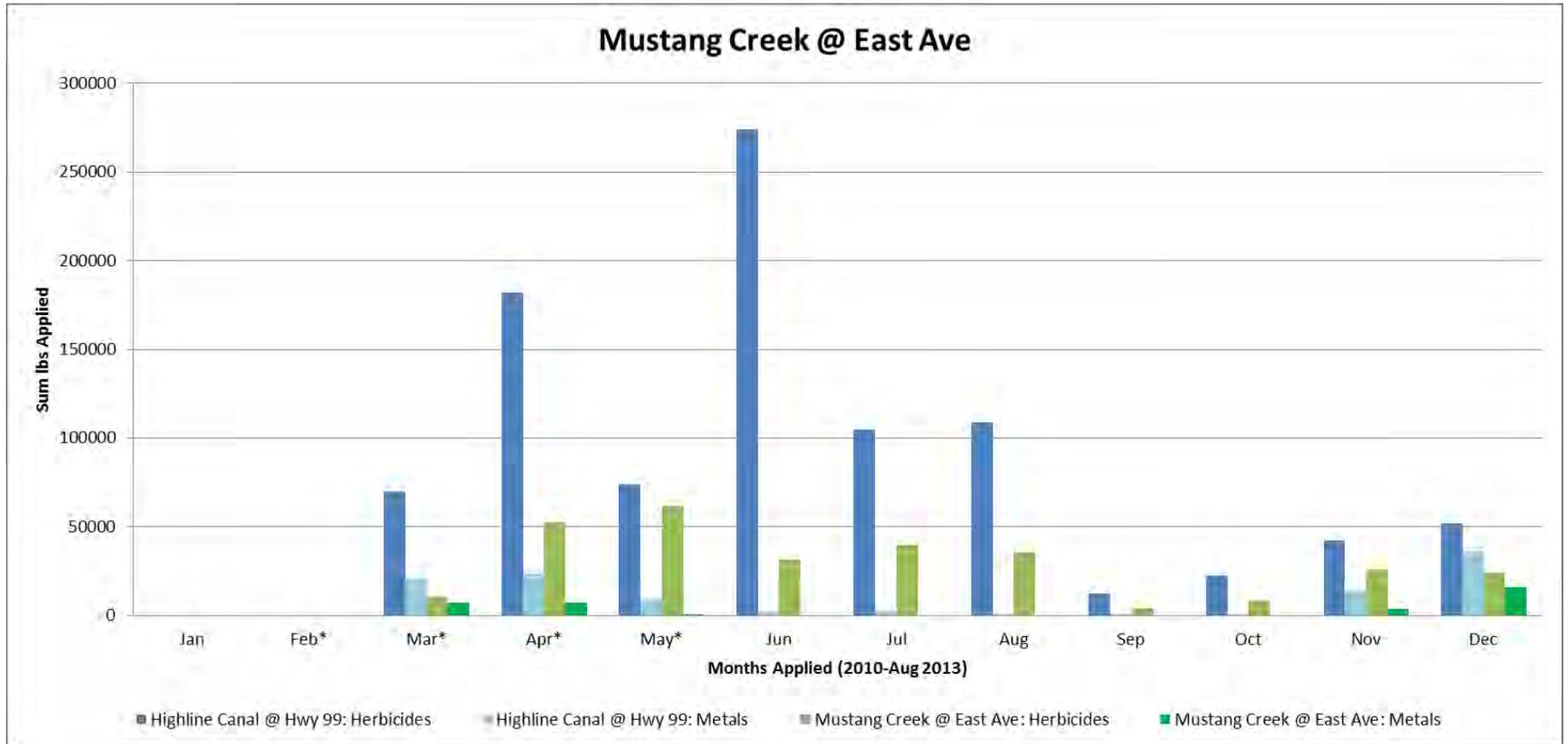


Figure I-20. Mustang Creek @ East Ave and Core site PUR data for herbicide and metal use (January 2010-August 2013).

Asterisk indicates when Core site MPM occurs for *S. capricornutum*.



ZONE 4 - MERCED RIVER @ SANTA FE

Merced River @ Santa Fe Management Plan Monitoring high priority constituents to be monitored in the 2014 Water Year:

- chlorpyrifos
- *C. dubia* toxicity

Canal Creek @ West Bellevue Rd

Canal Creek @ West Bellevue Rd is one of the Coalition's new monitoring locations in Zone 4 and therefore no monitoring data have been collected at the site. The Coalition will conduct Represented site monitoring at Canal Creek @ West Bellevue Rd based on MPM for chlorpyrifos at the Core site and an evaluation of current PUR data for Canal Creek @ West Bellevue Rd (2010- Aug 2013). According to the PUR data, the highest applications of chlorpyrifos occurred in May and August; however the applications were low (total of 438 lbs of AI in May and 460 lbs of AI in August; Figure I-21). The Coalition will monitor in May and August, during the highest applications of chlorpyrifos at Canal Creek @ West Bellevue Rd (Table I-2).

Toxicity to *C. dubia* occurred at the Core site during the months of January, March, July and August from 2004 through 2008. A TIE was conducted on the March 2006 sample; however, the cause of the toxicity could not be determined since the sample lost toxicity. The January 2008 TIE results indicated organophosphates were the cause of the *C. dubia* toxicity. In addition, chlorpyrifos (0.59 mg/L) and diazinon (0.01 mg/L) were detected in the samples collected at the Core site at the same time. Since no monitoring has been conducted at Canal Creek @ West Bellevue Rd, the Coalition reviewed PUR data for organophosphate applied from January 2010 through August 2013 and compared the results with the occurrences of toxicity at the Core site including chlorpyrifos and diazinon (Figure I-22). Since the highest use of organophosphates occurred in the Canal Creek @ West Bellevue Rd watershed in May and August, the Coalition will monitor for toxicity to *C. dubia* in May and August at Canal Creek @ West Bellevue Rd during the 2014 Water Year (Figure I-22). These are the same months that chlorpyrifos will be monitored at Canal Creek @ West Bellevue Rd.

Figure I-21. Zone 4 chlorpyrifos use (January 2010-August 2013).

Asterisk indicates when Core site MPM occurs for chlorpyrifos.

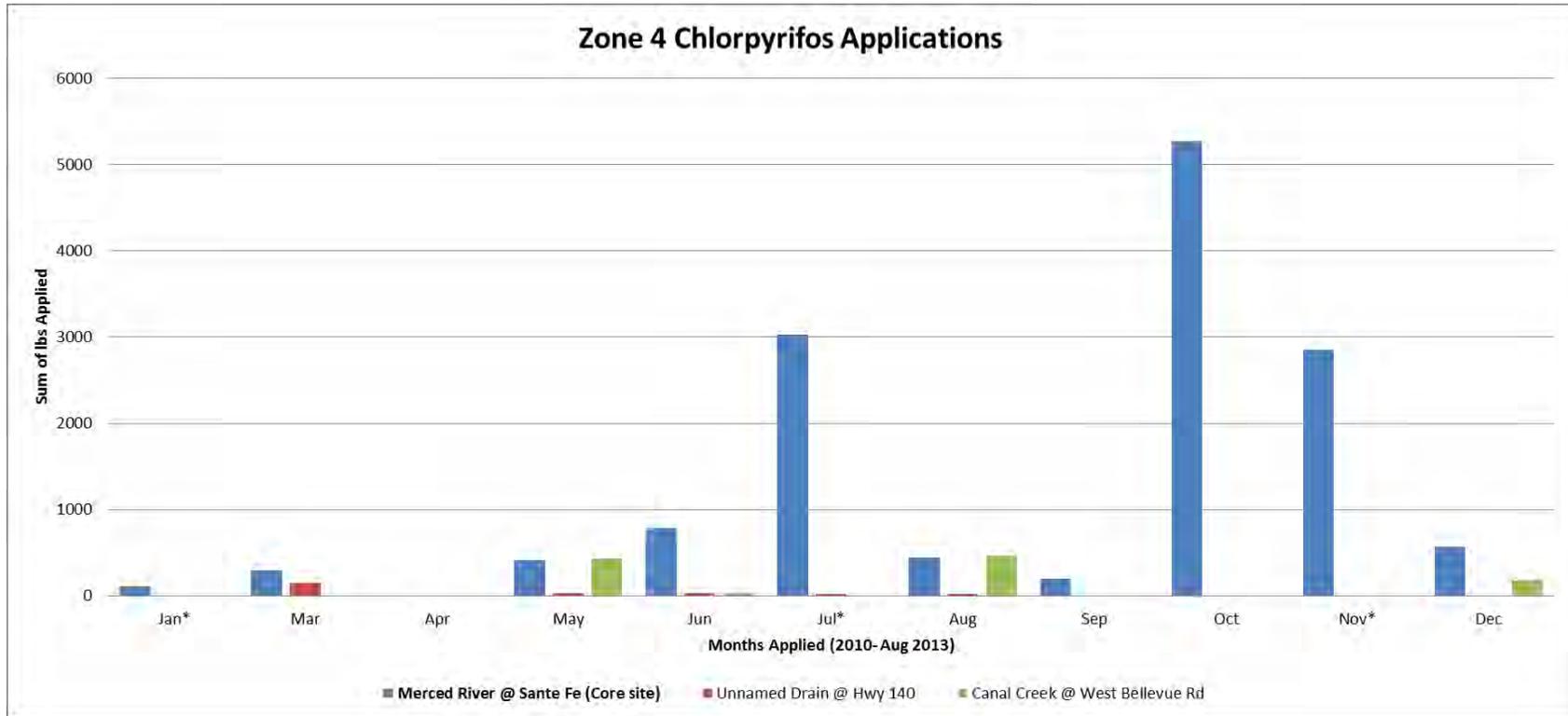
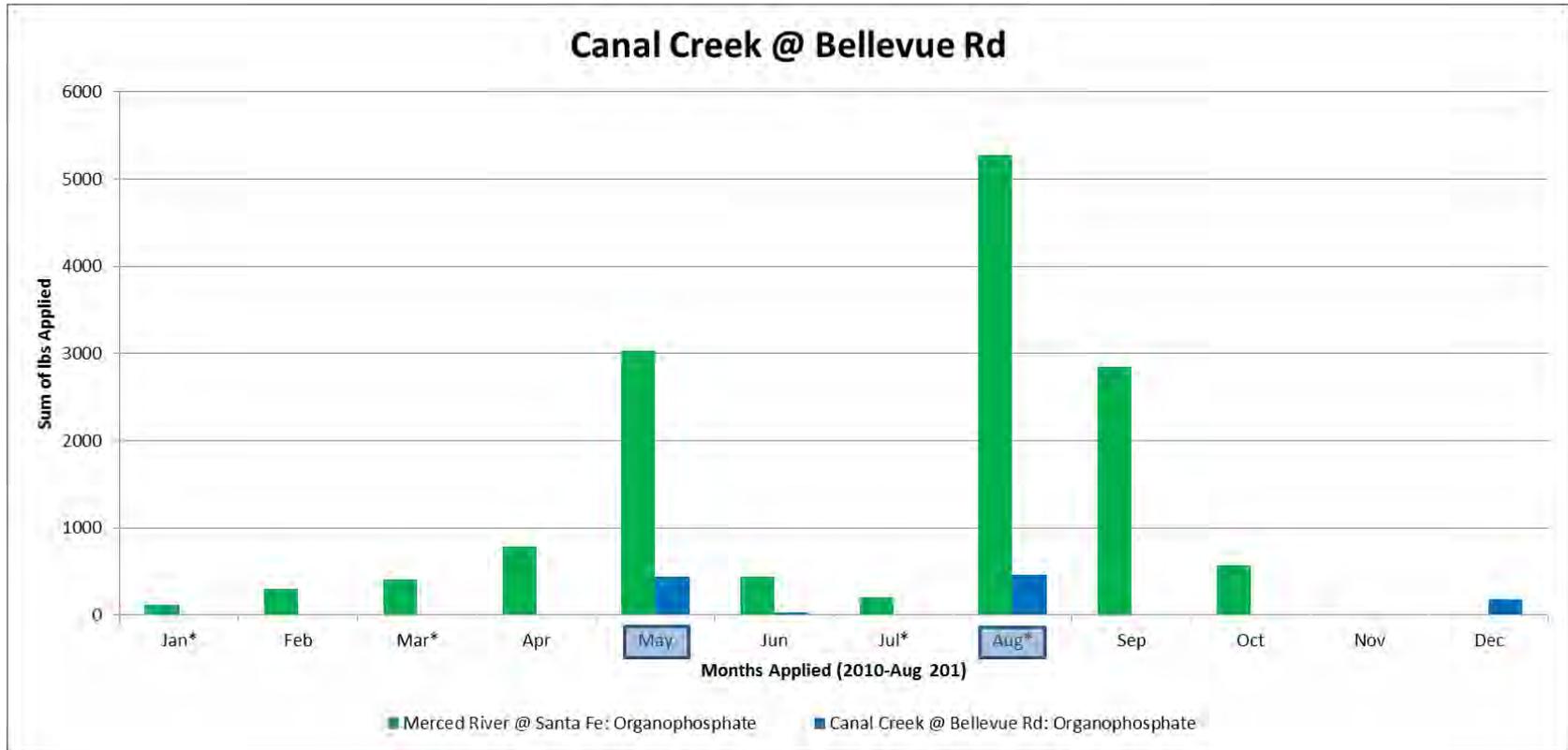


Figure I-22. Canal Creek @ West Bellevue Rd and Core site PUR data for organophosphate use (January 2010-August 2013).

Asterisk indicates when Core site MPM occurs for *C. dubia*. Highlighted months indicate when Represented site monitoring will occur for *C. dubia*.



Unnamed Drain @ Hwy 140

Unnamed Drain @ Hwy 140 was monitored for chlorpyrifos during 2013 Assessment Monitoring; all results were non detect. The PUR data indicate that few applications of chlorpyrifos occur at Unnamed Drain @ Hwy 140. The greatest amount of chlorpyrifos applied occurred during the months of March at Unnamed Drain @ Hwy 140, a total of 153 lbs of AI from January 2010 through August 2013 (Figure I-21). Therefore, due to minimal applications of chlorpyrifos at Unnamed Drain @ Hwy 140 with no detections of chlorpyrifos during 2013, the Coalition will not conduct monitoring for chlorpyrifos at this location in the 2014 Water Year (Table I-2).

Unnamed Drain @ Hwy 140 was monitored for toxicity to *C. dubia* during 2013 Assessment Monitoring and no toxicity occurred. Toxicity to *C. dubia* occurred at the Core site during the months of January, March, July and August from 2004 through 2008. The January 2008 TIE results indicated organophosphates were the cause of the *C. dubia* toxicity. It is likely that the concentrations of chlorpyrifos (0.59 mg/L) and diazinon (0.01 mg/L) detected in the sample resulted in the mortality to *C. dubia*. As mentioned above, the amount of chlorpyrifos applied within Unnamed Drain @ Hwy 140 subwatershed is minimal. In addition, none of the samples collected in 2013 were toxic to *C. dubia* or had detections of chlorpyrifos. Therefore the Coalition will not conduct monitoring for *C. dubia* at Unnamed Drain @ Hwy 140 in the 2014 Water Year (Figure I-23).