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The Otter Project

and

Monterey Coastkeeper

the water quality program of
The Otter Project

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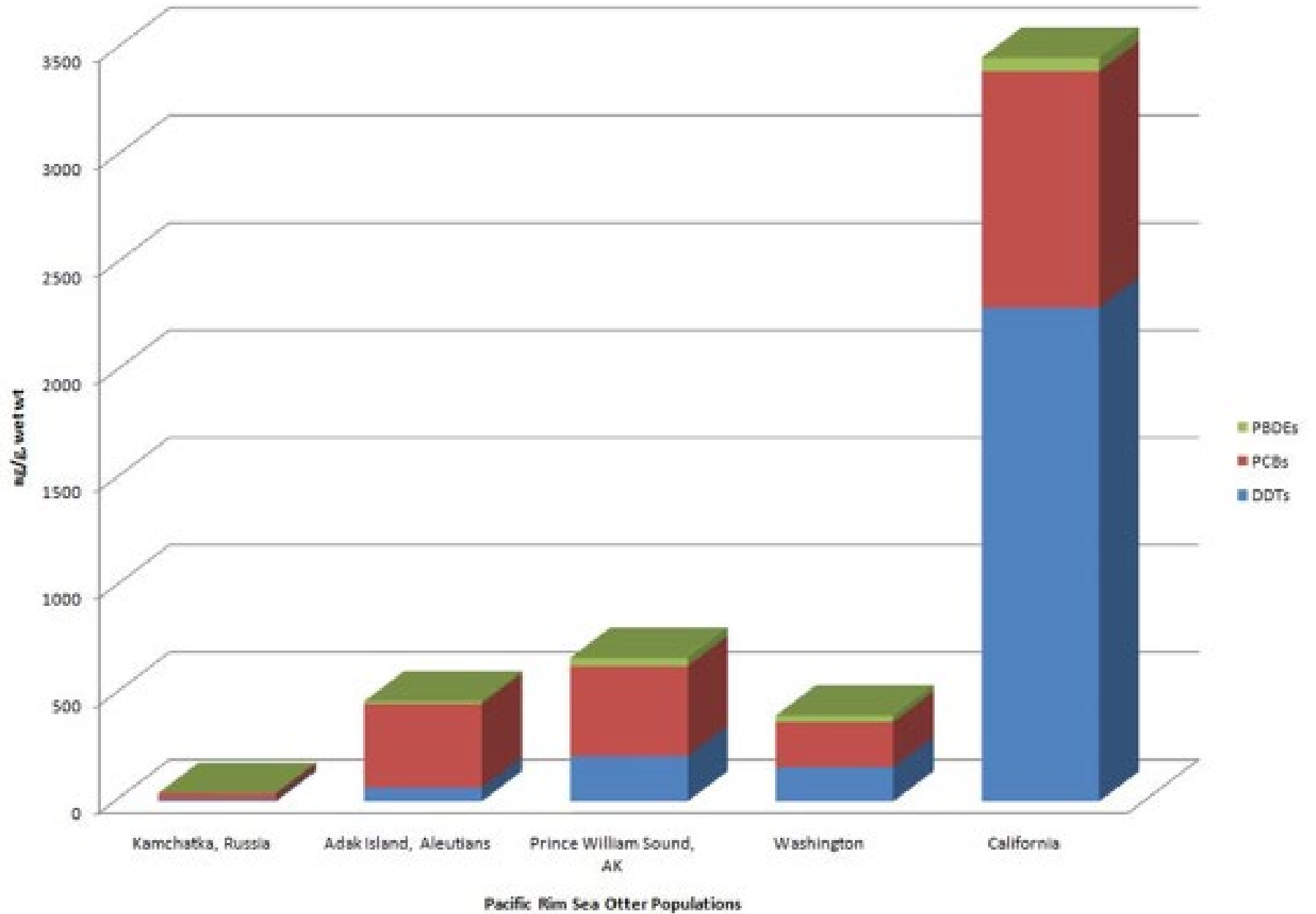
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The Otter Project

www.otterproject.org





Why are you here? Many, including the State Board, questioned the current monitoring program:

- Linkage of water quality data to management practices to water quality objectives. (timelines and milestones to reach WQOs)
- Spatial density of monitoring sites
- “Granularity of data”
- Transparency
- Exceedances up-watershed from Core monitoring sites
- Measuring achievement of timelines and milestones in meeting WQ objectives
- and more



COMMENTS ON SURFACE WATER QUALITY MONITORING

BASED ON TWO REPORTS BY **DR. REVITAL KATZNELSON**

- 30 YEARS EXPERIENCE WITH FIELD AND LAB WATER QUALITY MONITORING AND TESTING;
- TECHNICAL LIAISON FOR STATE WATER RESOURCES CONTROL BOARD;
 - CLEAN WATER TEAM / SWAMP;
 - SWAMP FIELD METHODS DISTANCE LEARNING COURSES;
 - EXPERIENCE IN MANY REGIONAL WATER BOARD REGIONS;
- TEACHING EXPERIENCE AT UC BERKELEY / UC EXTENSION.

12/21/2017. Katznelson, R. **Eastern San Joaquin Data Review Notes.** Prepared for The Otter Project / Monterey Coastkeeper.

- CEDEN accessed on December 8, 2017.
- The data span from 2004 to September 2016.
 - Habitat (field) observations, 34166 records;
 - Water conditions (field measurements) and water chemistry (constituent concentrations), 61824 records;
 - Sediment chemistry/grain size, 1250 records; and
 - Toxicity in water (1166 samples) and in sediments (339 samples).

12/20/2017. Katznelson, R. **Comments on Surface Water Monitoring Requirements in East san Joaquin Region's Agricultural Areas and Monitoring Design Recommendations.** Prepared for The Otter Project / Monterey Coastkeeper.

“Monitoring design and data reliability problems”

- Dissolved Oxygen
 - “Collected at time of day that does not reflect real risk”
- Failed station visits due to dry streams
 - Failed visits occurred during drought and non-drought years.
 - The 461 failed visits were counted as “no exceedances, “which may be misleading.”
- Sediment monitoring
 - Trigger based design
 - Water 1166 samples; Sediments 339 samples

FALL 2014: DPR/SWAMP/CMP Region 3

Salinas and Santa Maria Valley Sites	<i>Hyalella</i> 10d water	<i>Chironomus</i> 10d water	EPA 3 species chronic
Water Sample	SWAMP		CMP
Alisal Slough @ Hartnell Rd	T	T	-
Chualar Creek @ Chualar River Road*	T	NT	NT
Main St. Ditch @ Main St.	NT	NT	NT
Orcutt Creek @ West Main	T	T	NT
Oso Flaco Creek @ OF Lake Rd	T	T	NT
Quail Creek @ SR-101	T	T	NT
Rec Ditch III (Near Airport Blvd)	T	T	NT
Solomon Creek @ SR-1	NT	T	NT
Tembladero Slough @ Haro	T	NT	NT
Percent Toxic	78%	67%	0%
Combined Percent Toxic	89%		



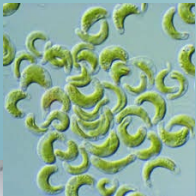
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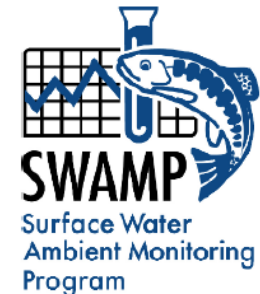
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Updated recommendations for monitoring current-use pesticide toxicity in water and sediment in the Surface Water Ambient Monitoring Program



Prepared by: Brian Anderson¹, Bryn Phillips¹, Marie Stillway and Linda Deanovic², Debra Denton³, Michael Lyons⁴, Mary Hamilton⁵

¹University of California, Davis–Granite Canyon

²University of California, Davis–Aquatic Toxicity Lab

³U.S. Environmental Protection Agency, Region 9

⁴California Regional Water Quality Control Board, Region 4

⁵California Regional Water Quality Control Board, Region 3

SWAMP Technical Memorandum

SWAMP-TM-2015-0001

September 2015 (updated July 2018)

Found at:

https://www.waterboards.ca.gov/water_issues/programs/swamp/docs/workplans/tox_recs_tech_memo.pdf

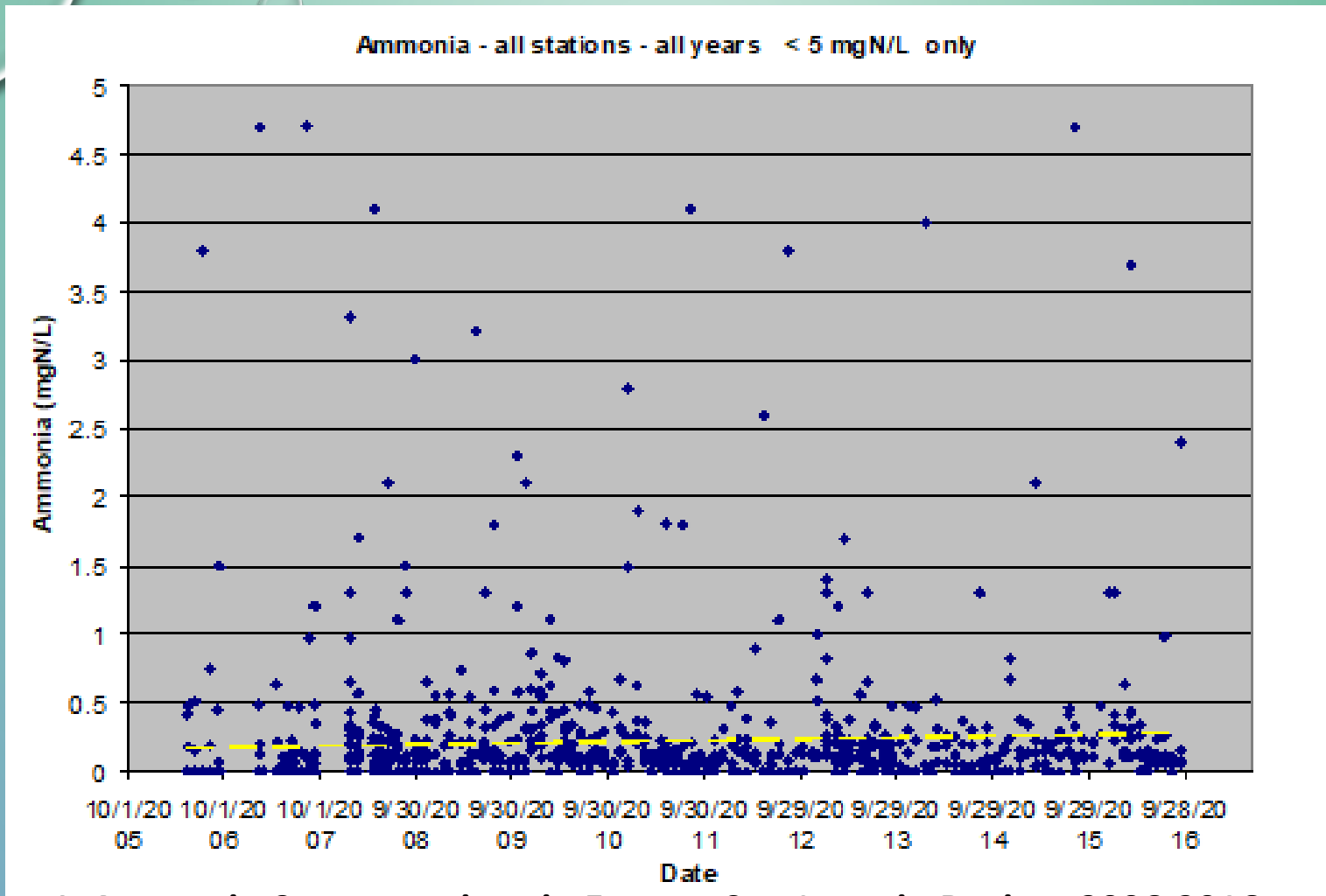


Figure 1 Ammonia Concentrations in Eastern San Joaquin Region, 2006-2016.

Legend: 20 outlier values between 5 and 155 mgN/L were excluded. Non-detects were plotted as 0.001 mgN/L

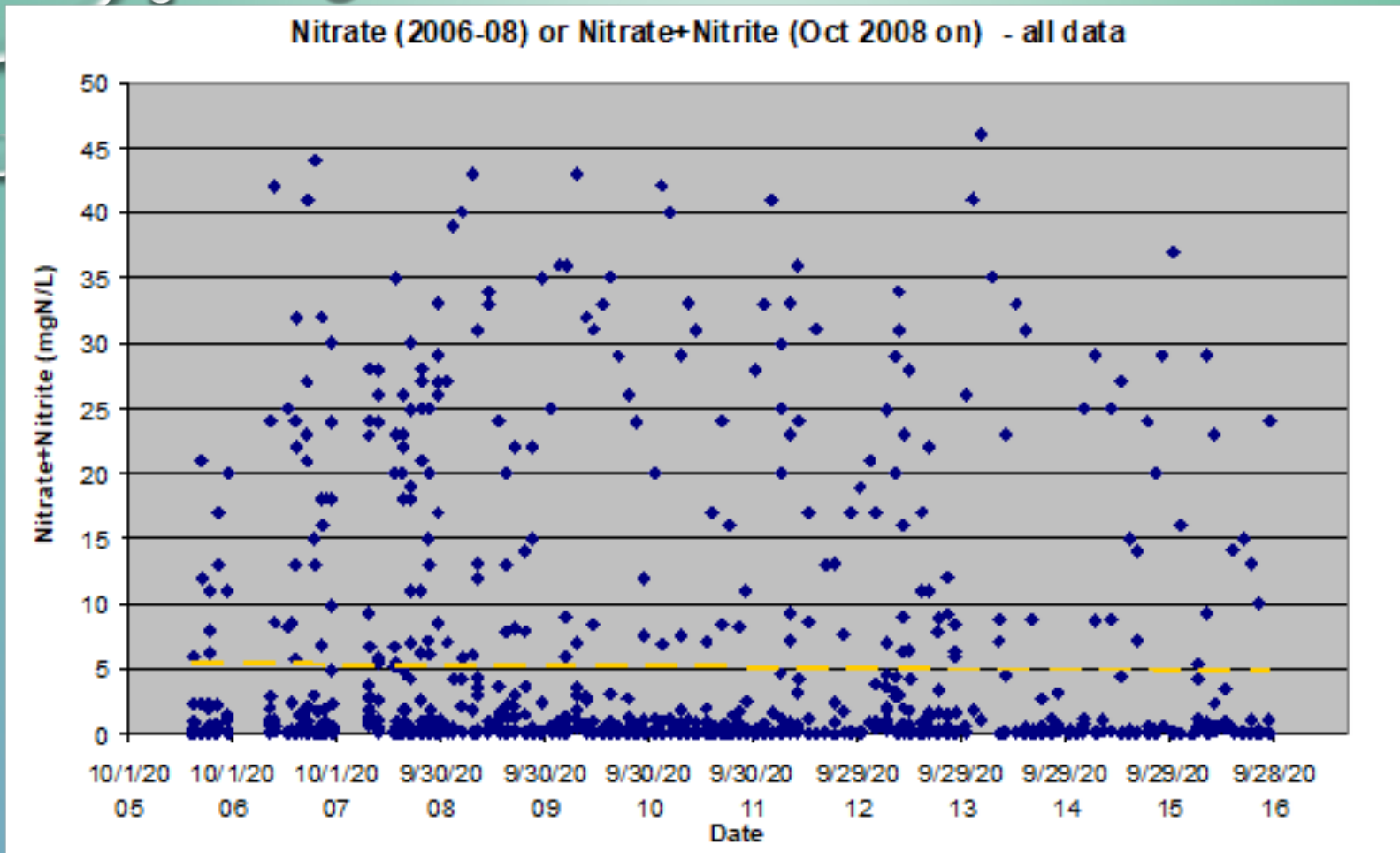


Figure 2: Nitrate + Nitrite Concentrations in Eastern San Joaquin Region, 2006-2016

Legend: One outlier value of 68 mg N/L was not included. Nitrite was usually <10% of Nitrate (when analyzed separately between 2006 and 2008; data not plotted). Non-detects are plotted as 0.01 mg N/L

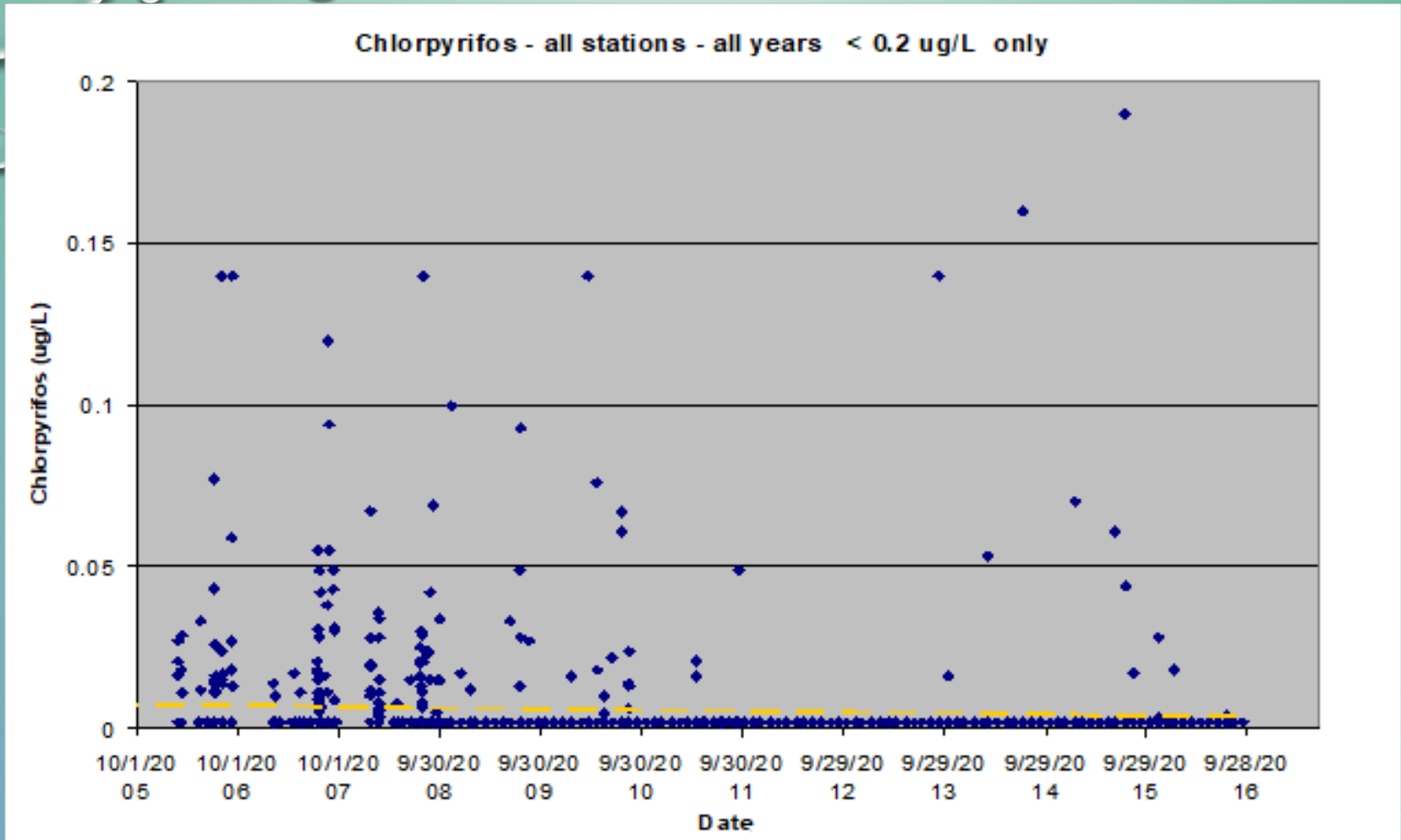
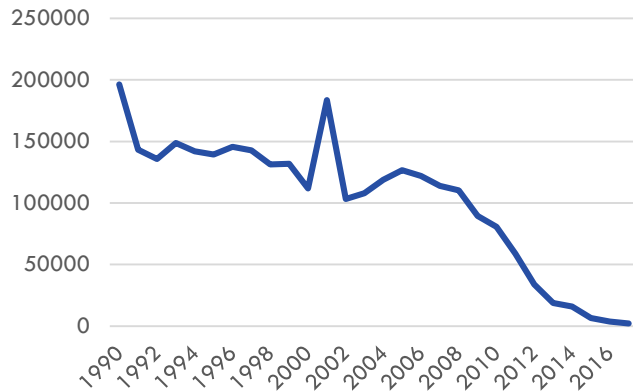
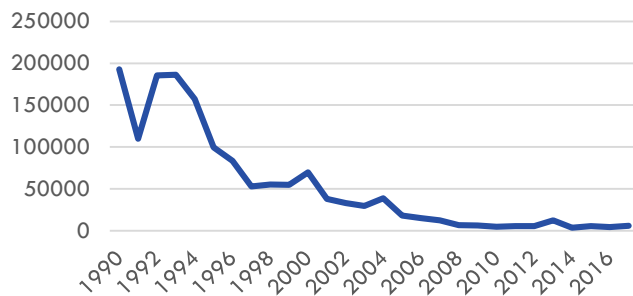


Figure 4; Chlorpyrifos Concentrations in Eastern San Joaquin Region, 2005-2016
Legend: 10 values 0.2 to 4.2 ug/L not included. Non-detects were plotted as 0.002 ug/L

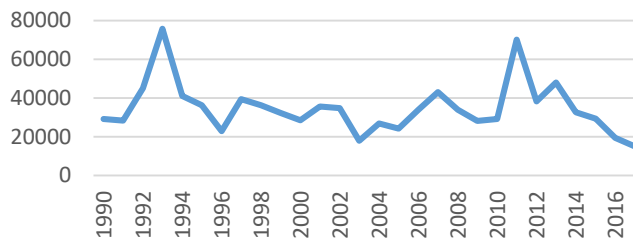
Chlorpyrifos



Diazinon

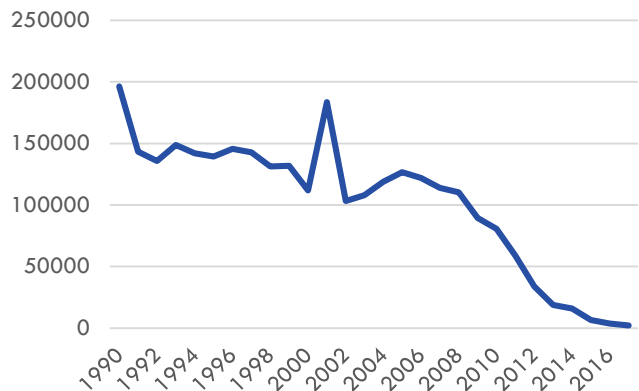


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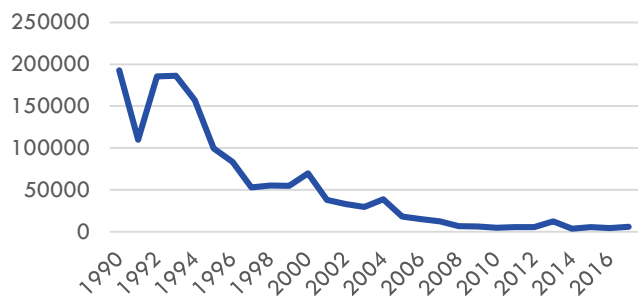


- Sum of lbs. active ingredient applied in Madera, Mariposa, Merced, Stanislaus, Tuolumne counties.
- Ag applications only.
- DPR data-run, 12/16/19,
- Updated database.

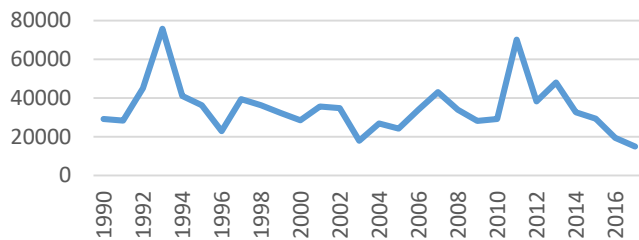
Chlorpyrifos



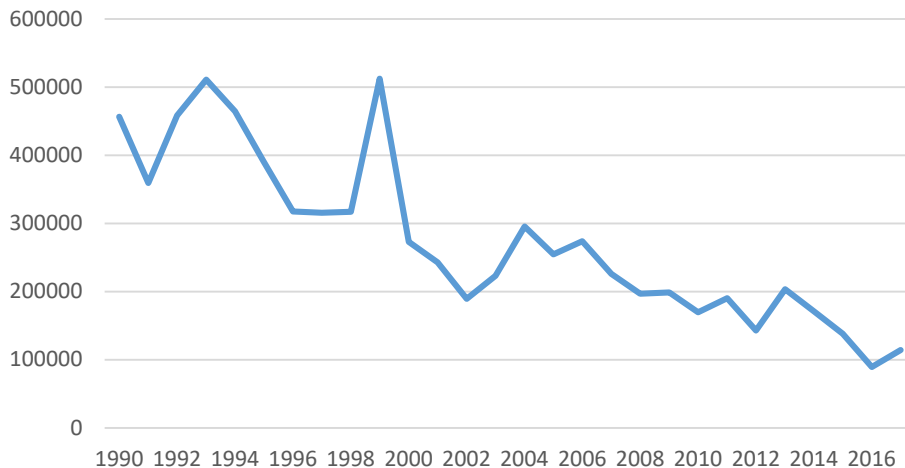
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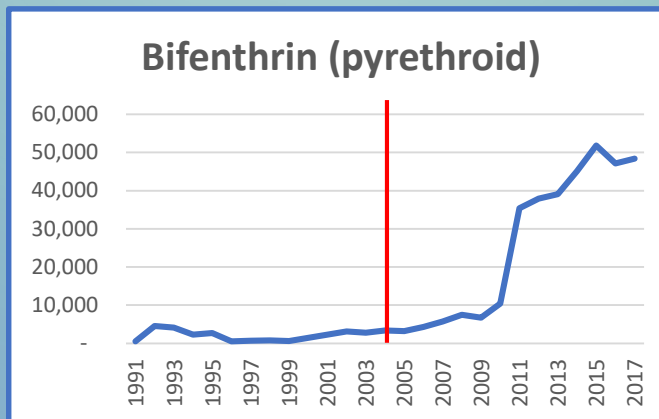
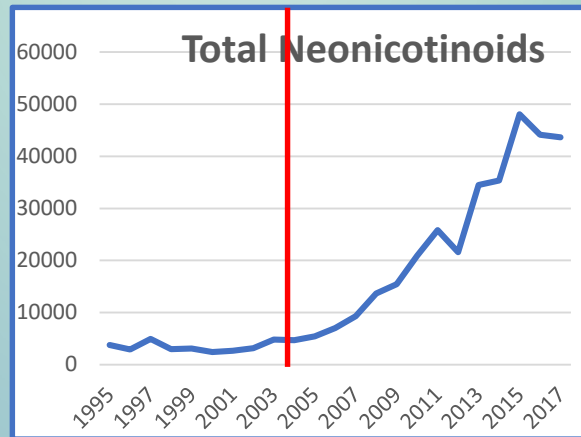
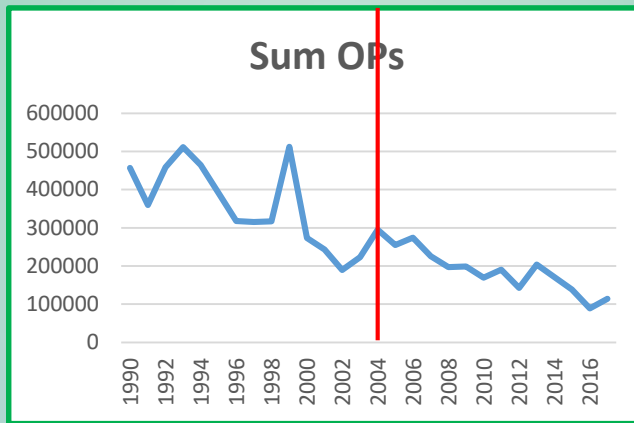


Malathion



Sum OPs





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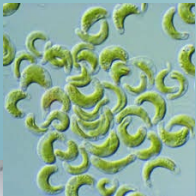
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You only find what you are looking for. The water quality monitoring corollaries are:

- We must use the right test, as we've seen for toxicity testing.
- We must use the correct trigger levels as we've seen with nitrates and ammonia.
- We must look in the right places – as we've seen again with pesticides with sediment versus water.
- We must look at the right time, as we've seen with measuring dissolved oxygen in the early morning.

A Vision of a Monitoring Framework for East San Joaquin

Goal One: Compliance

Goal Two: Source Identification

Goal Three: Management Practice Effectiveness Evaluation

**Goal Four: Long Term Trends in Achieving Water Quality
Objectives**

“The current ESJ monitoring Program, as noted by both the State Board and numerous environmental advocates, is inadequate.”

“[M]onitoring goals cannot be achieved using only one study design.”

Goal One and Two: Compliance and Source Identification

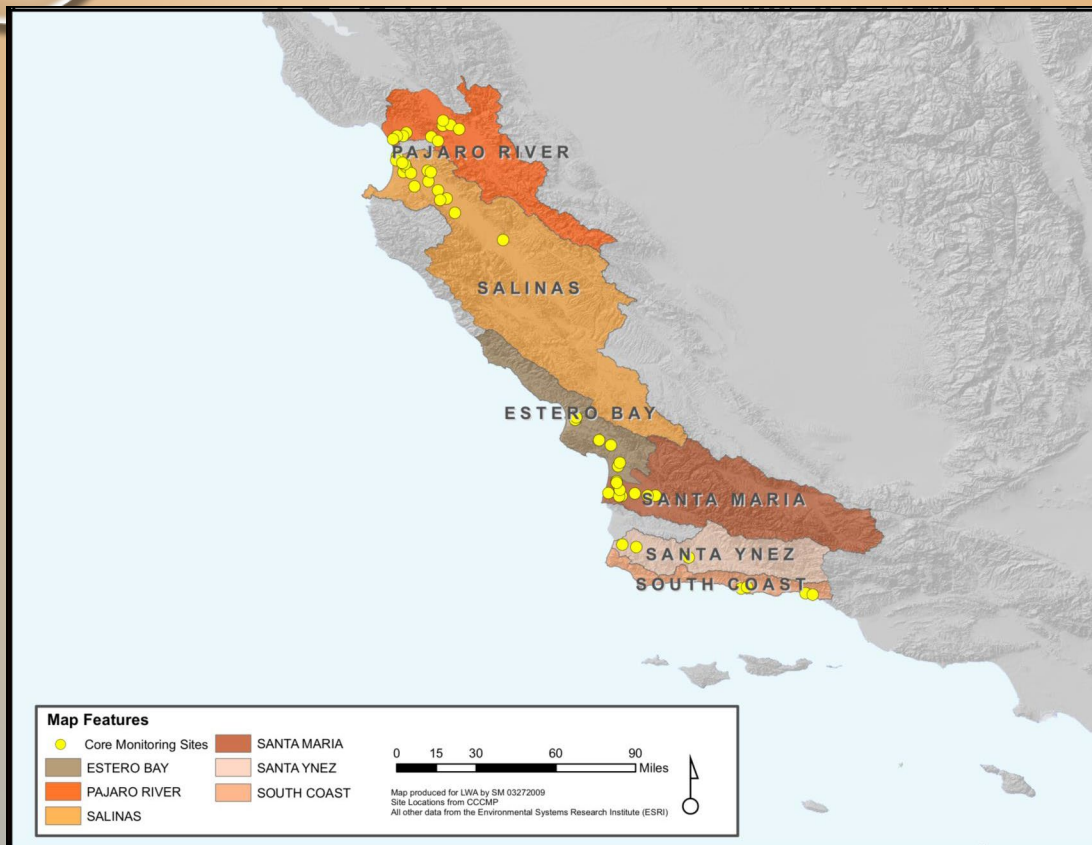
- ARTICLE 4. Waste Discharge Requirements [13260 - 13276]
- NPS Policy

Goal Three: Management Practice Effectiveness Evaluation

- NPS Policy KEY ELEMENT 2

Goal Four: Long term Trends in Achieving Water Quality Objectives

- NPS Policy KEY ELEMENTS 3 and 4



Central Coast

- Forty sites consistently monitored monthly
- 435,000 irrigated acres
- “[S]taff cannot assign a cause to these trends or conclude that overall water quality conditions are changing in such a way that water quality objectives will be achieved or beneficial uses will be protected. Where water quality problems are detected at CCAMP or CMP sites, a higher resolution network of monitoring sites would be needed to determine causality.” Central Coast RWQCB, 22 March 2018, Agenda Item 4 Staff Report, pg. 2.

Six specific studies/activities:

1) Fixed stations at integrative sites

- a. Long term
- b. 3-4 fixed sites, bottom of watersheds where exceedances have occurred
- c. Monitored four times a year in dry weather
- d. Field and lab tested samples

2) Commodity-based stations

- a. 12 stations, 2 each for the top six commodities
- b. Data loggers for some measurements, continuous logging for 20 weeks
- c. 4 rain event, 4 irrigation event, four toxicity samples per year

3) Routine observations and reporting

- a. Growers required to submit frequent field level measurements and observations
- b. Report information using an electronic, smart-phone form
- c. Report unusual events
- d. Alert skilled teams if certain events occur
- e. Massive amount of data

“It makes sense to require each grower to pay attention and to collect evidence that they are paying attention via reported observations.”

Six specific studies/activities (continued):

4) Responsive monitoring when alerted by observations

- a. Rapid response Technical Support Team(s)
- b. Field test kits
- c. Collect samples for lab analysis only as necessary
- d. Track-back monitoring

5) Special studies

- a. Technical support team pursues chronic problems
- b. Field test kits
- c. Track-back monitoring

6) Follow-up studies as necessary

Monitoring Goal One: Compliance

- The fixed stations at integrative sites can indicate whether we are achieving overall compliance and how fast.
- Commodity based stations can help determine if one commodity is achieving more success than another (narrow the possibilities)
- When water quality problems are identified, the Coalitions' technical team can track-back to the problem's source in real time for acute problems and with special studies for chronic problems.

Monitoring Goal Two: Source identification

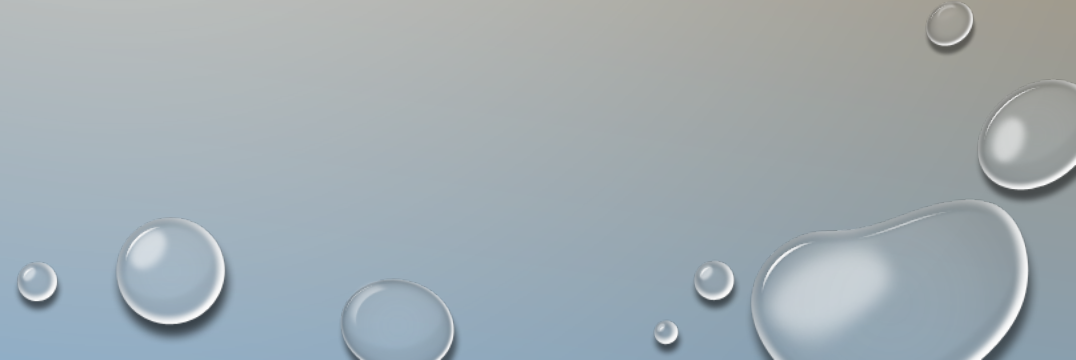
- Responsive monitoring and special studies may be very useful in achieving this goal often in real time and at a fraction of the cost needed for laboratory analyses.

Monitoring Goal Three: Management practice effectiveness evaluation

- When water quality problems are identified, the Coalitions' technical team can track the problem's source by moving up the watershed and relate the problem to the practices in use.
- Commodity sites, generally using many of the same practices, will also be helpful.



Monitoring Goal Four: Long term trends in achieving Water Quality Objectives

- Long term monitoring sites will provide a robust dataset that will enable the detection of change over time with a high level of confidence.
 - The commodity sites will also be very useful.
- 

- **Your recommendations will be attached to an order that is meant to be precedential to the entire state.**
- **We hope you either identify the limits of your recommendations OR be general enough to leave room for local interpretations**

Thank you!

Questions??