

Cooperative Monitoring Status & Trends



CCRWQCB Meeting • San Luis Obispo, CA

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CMP Basics

Routine Monitoring

54 monitoring sites

19 Core parameters – monthly

3-species toxicity – quarterly

Sediment toxicity – annually

Bioassessment

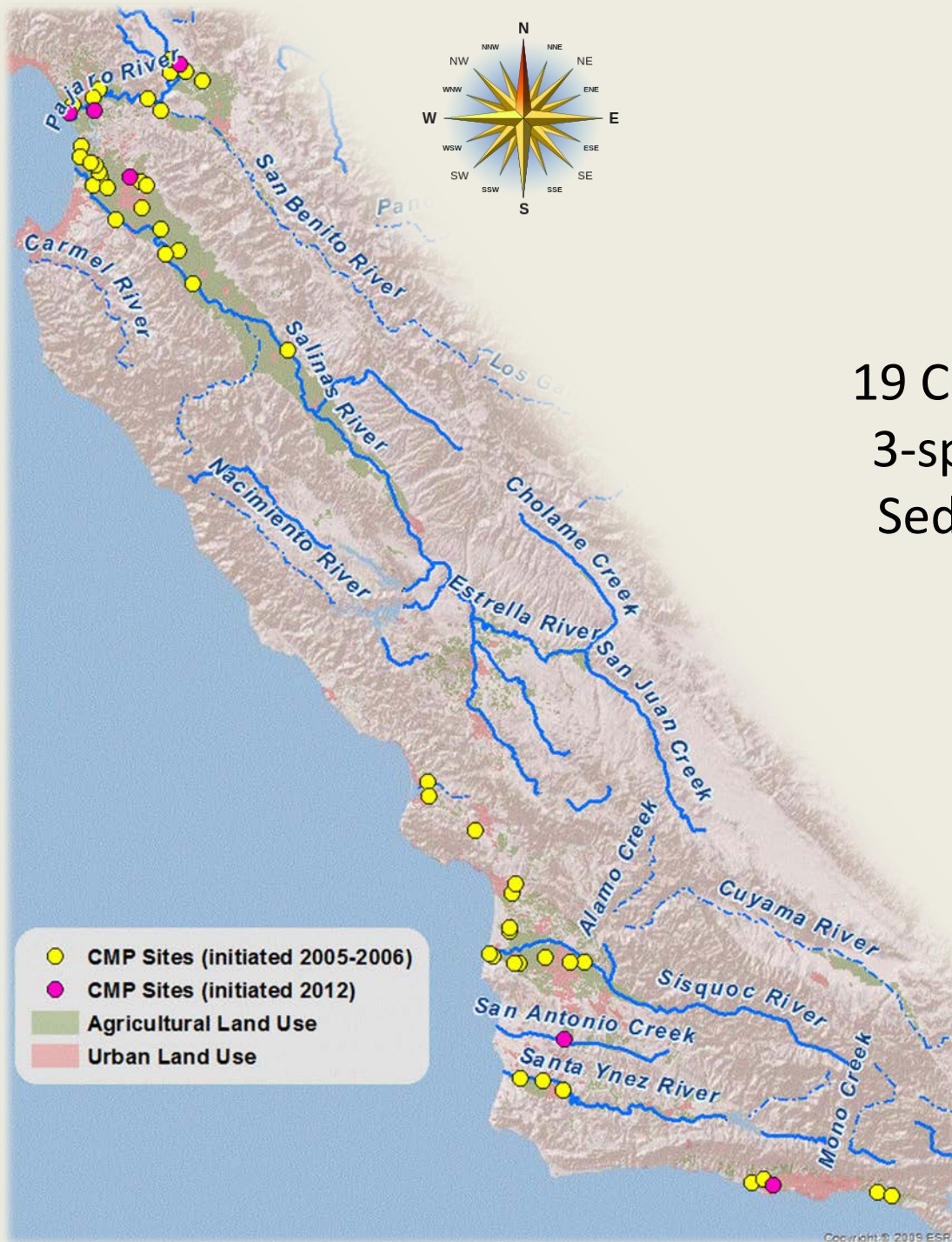
1x per Order period

Supplemental Chemistry

39 water parameters

17 sediment parameters

Quarterly, 1 year per Order



CMP Deliverables to Date

Quality Assurance Project Plan (QAPP)

- ❖ 9 revisions, most recently 2013

Narrative data summary reports

- ❖ 2005-2008 period (one report)
- ❖ 2010 program evaluation report
- ❖ 2012 monitoring year
- ❖ 2013 monitoring year
- ❖ 2014 monitoring year

Narrative Bioassessment reports

- ❖ 2005, 2006, 2007, 2008, 2009, 2011, 2012, 2013/2014

Follow-up monitoring reports

- ❖ Phase I organophosphate monitoring report (2008)
- ❖ Upstream monitoring (2008)
- ❖ Continuous flow monitoring (2008)
- ❖ Supplemental organophosphate and toxicity monitoring report (2009)
- ❖ Phase II organophosphate monitoring report (2010)
- ❖ Pesticides and toxicity in sediment monitoring report (2010)
- ❖ Supplemental chemistry and toxicity monitoring report (2013-2014 data)

Quarterly electronic data deliverables (EDD's)

- ❖ One (plus up to four revised versions) per quarter
- ❖ 2005 through 1st quarter 2015 = 41 quarterly EDD packages

Annual electronic bioassessment data

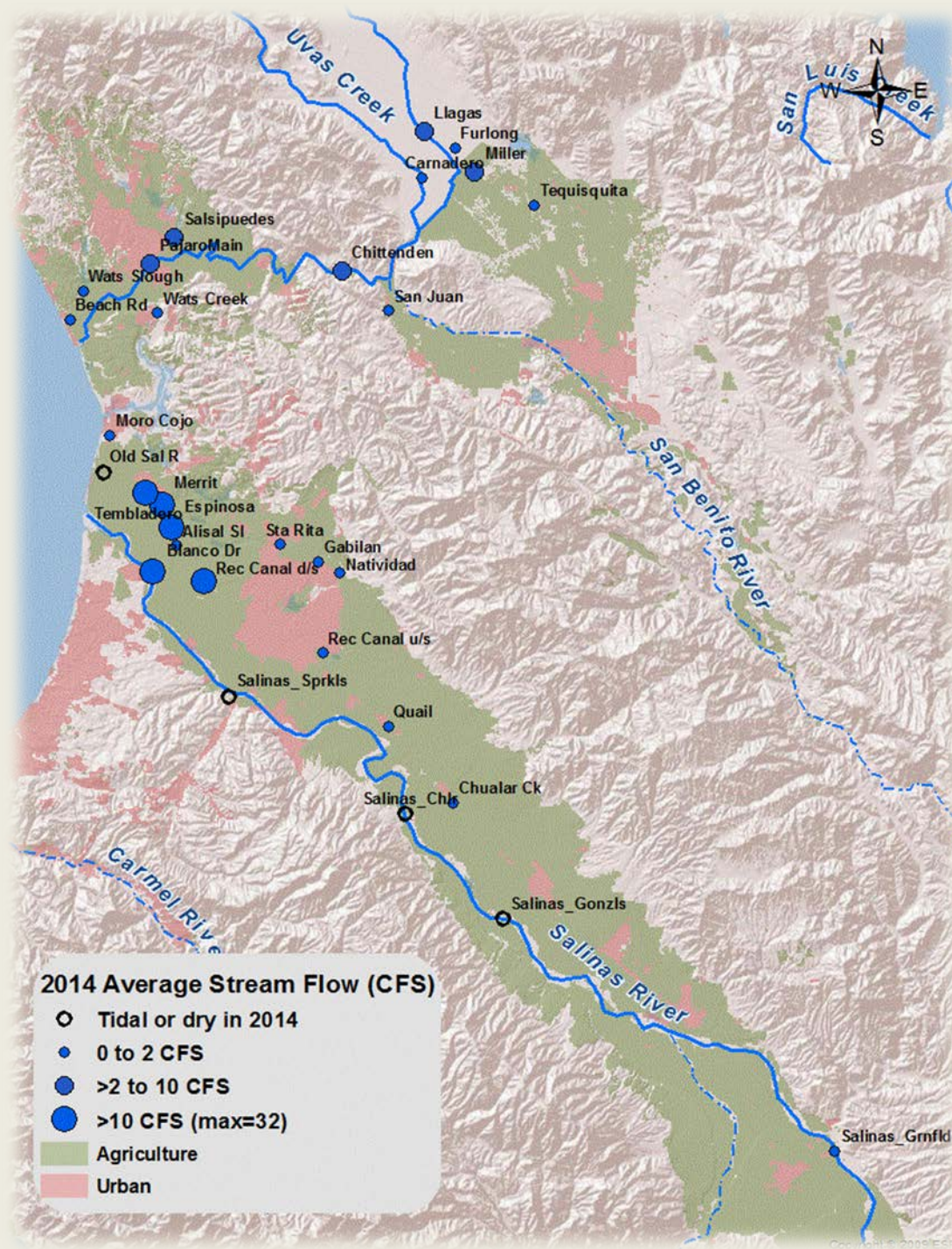
Stream Flow Pajaro & Salinas

STATUS

- 3 sites with no water in any 2014 monitoring event
- 2 sites with tidal influence, 1 with negative avg. Flow
- 16 sites with avg. Flow < 2 CFS
- 5 sites with moderate Flow
- Highest avg. Flow at Salinas sites with tile drain influence

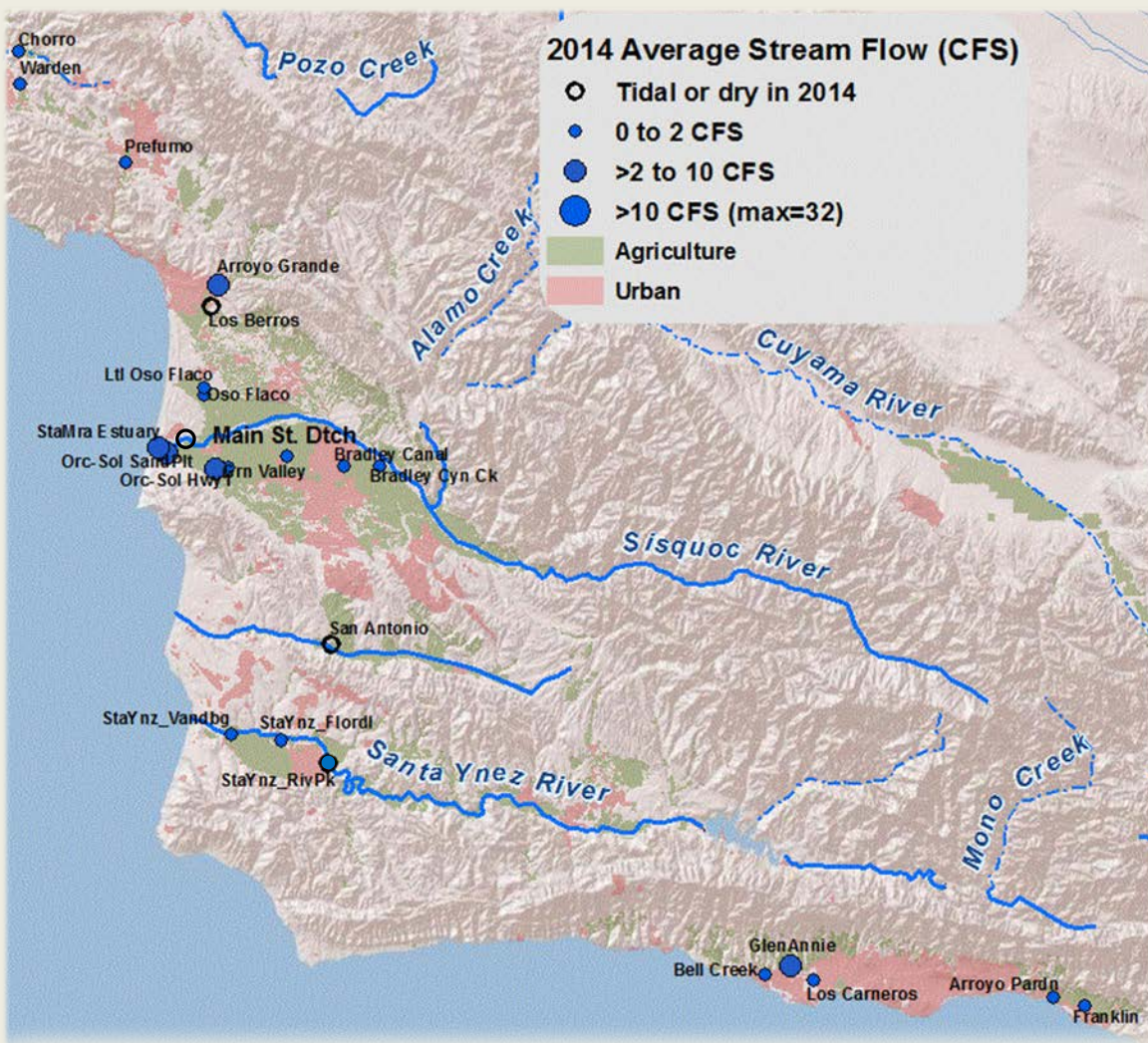
TRENDS

- Half of Pajaro & majority of Salinas sites show statistically significant, declining trends in Stream Flow
- No increasing trends in Flow (except tidal)



Stream Flow

SLO & SB counties



STATUS

- 3 sites with no water in any 2014 monitoring event
- 1 site with tidal influence but positive average Flow
- 16 sites with avg. Flow < 2
- No sites with avg. Flow >10
- Many of the higher Flow sites have tile drain influence

TRENDS

- Nearly all sites show statistically significant, declining trend in Stream Flow

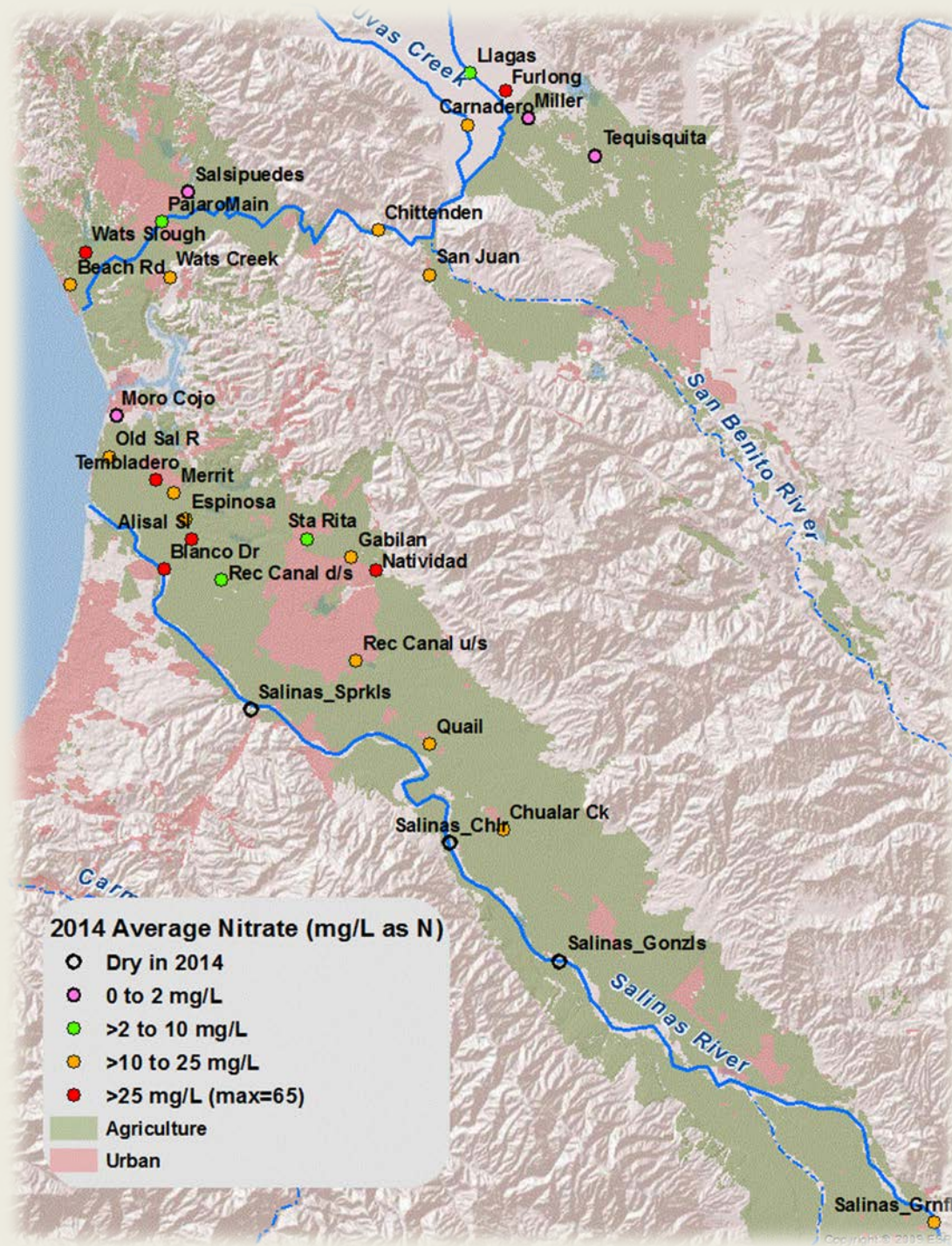
Nitrate (as N) Pajaro & Salinas

STATUS

- 3 sites with no water in any 2014 monitoring event
- 4 sites with avg. Nitrate <2 mg/L
- 8 sites with avg. Nitrate < 10 mg/L
- 13 sites averaged 10-25 mg/L
- Highest Nitrate (>25 mg/L avg.) at tile drain sites, one exception

TRENDS

- 2 Pajaro sites w/ declining trends
- 2 Pajaro sites w/ increasing trends
- 4 Salinas sites w/ increasing trends
- If Nitrate trend is up, Flow trend is down (mostly)



Nitrate (as N)

SLO & SB counties



STATUS

- 4 sites with avg. Nitrate < 2 mg/L
- 9 sites with avg. Nitrate < 10 mg/L
- 8 sites with avg. Nitrate >25 mg/L

TRENDS

- 11 sites show statistically significant, declining trend in Nitrate (4 in Santa Maria)
- 3 sites with increasing trends in Nitrate
- Sites with increasing Nitrate trends have decreasing trends in Flow

Turbidity

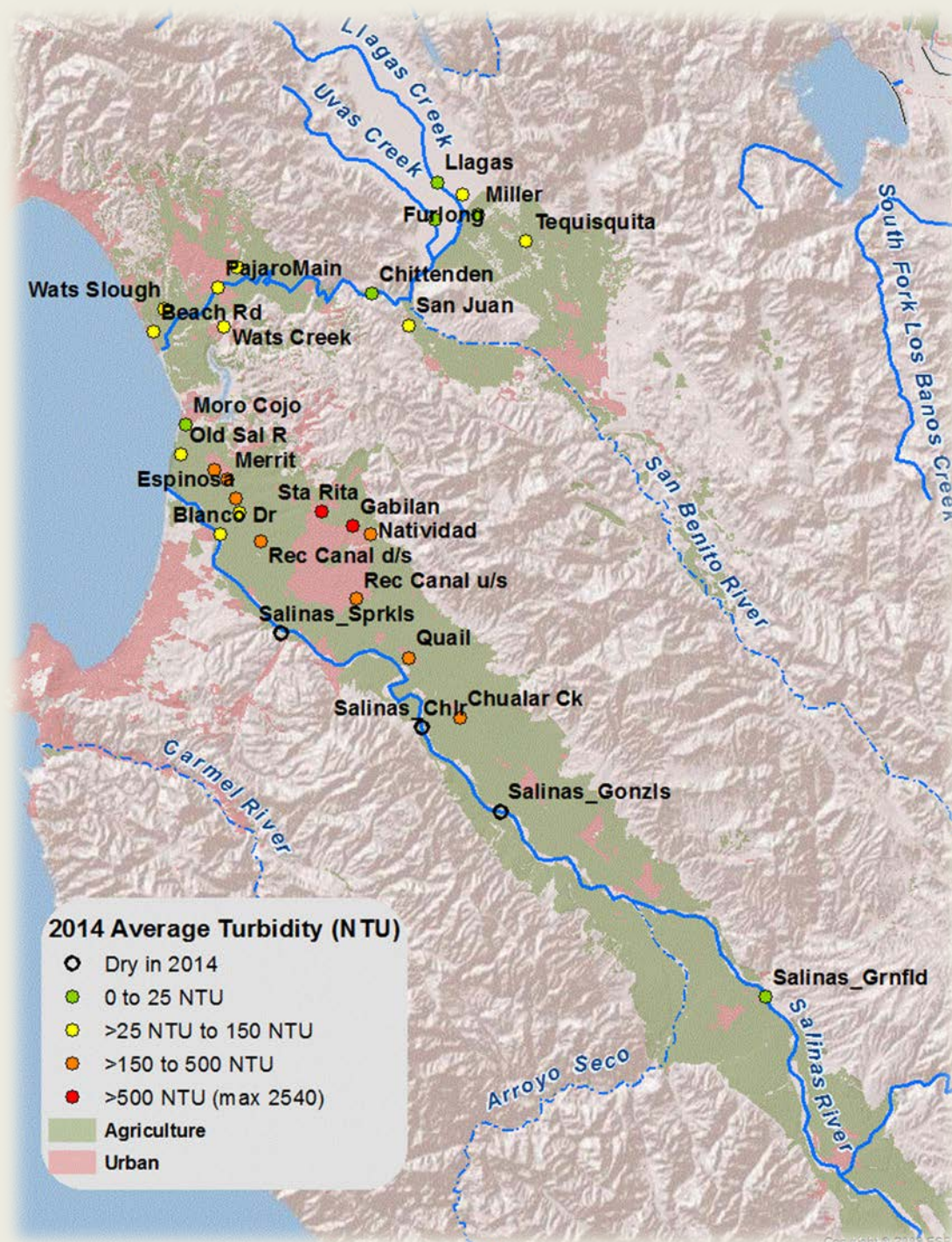
Pajaro & Salinas

STATUS

- 6 sites with avg. Turbidity <25 NTU
- Pajaro sites all under 150 NTU avg
- 5 Salinas sites under 150 NTU avg
- 8 Salinas sites 150-500 NTU avg
- 2 Salinas sites avg >1000 NTU

TRENDS

- 5 Pajaro sites w/ declining trends
- 7 Salinas sites w/ declining trends
- No increasing trends in Turbidity
- Sometimes paired w/ declining Flow





Turbidity

SLO & SB counties

STATUS

- 6 sites < 25 NTU average
- 9 sites avg 25-150 NTU
- 4 sites avg 150-500 NTU
- 2 sites avg >500 NTU (storm-related)

TRENDS

- 6 sites show statistically significant, declining trend in Turbidity, including 3 in Santa Maria
- 1 increasing trend (Santa Ynez below Lompoc), coupled with declining trend in Flow

Additional Trends of Note

- Numerous *declining pH* trends in north; fewer trends and mostly *increasing* in south
- Numerous and almost exclusively *increasing* trends in salinity-related parameters in north
- Numerous and almost all *declining* trends in salinity-related parameters in south

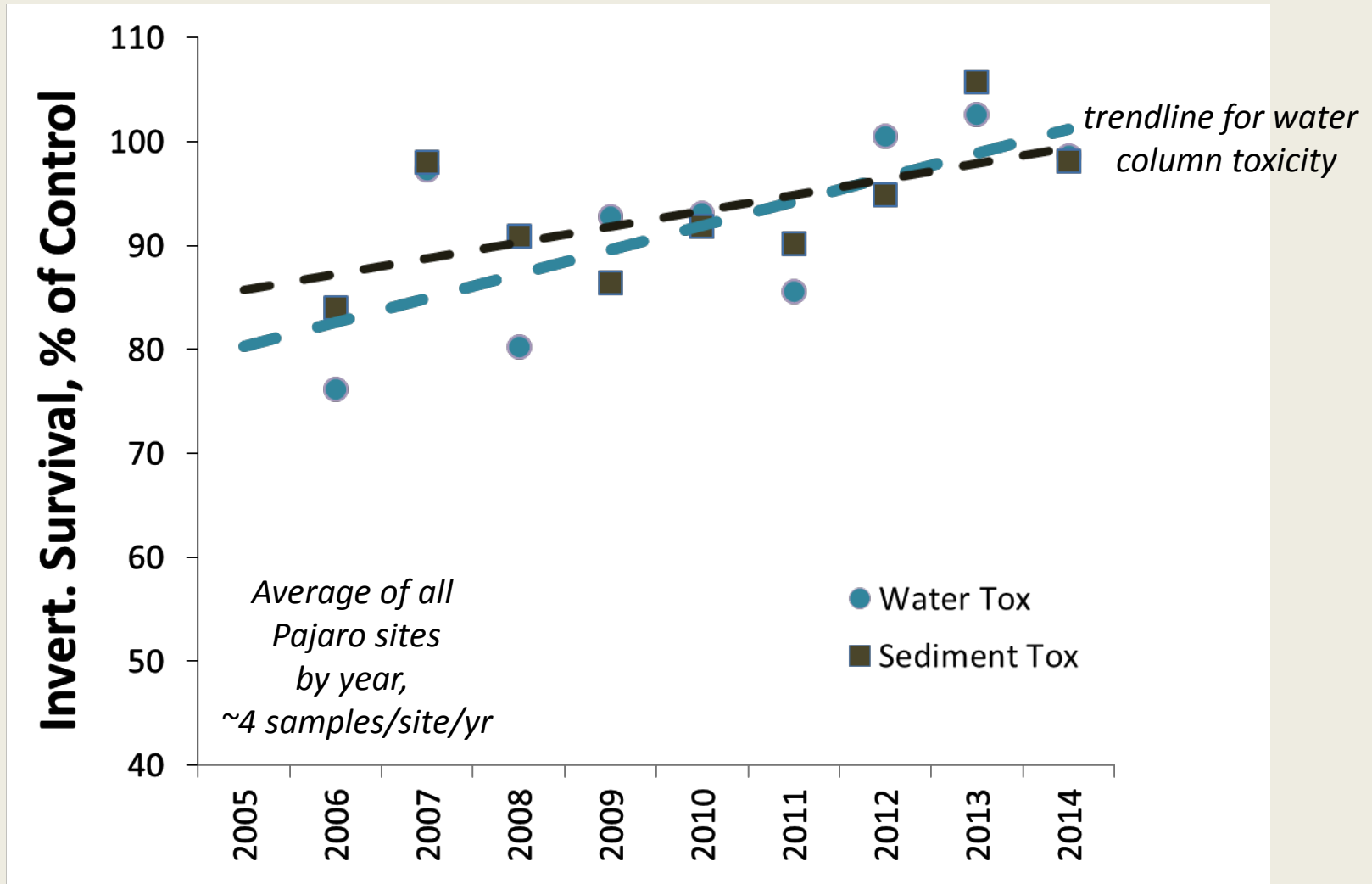
Percent of Aquatic Toxicity Samples Showing Toxic Effects

2014 vs. Initial 5 Years (2005-'09)

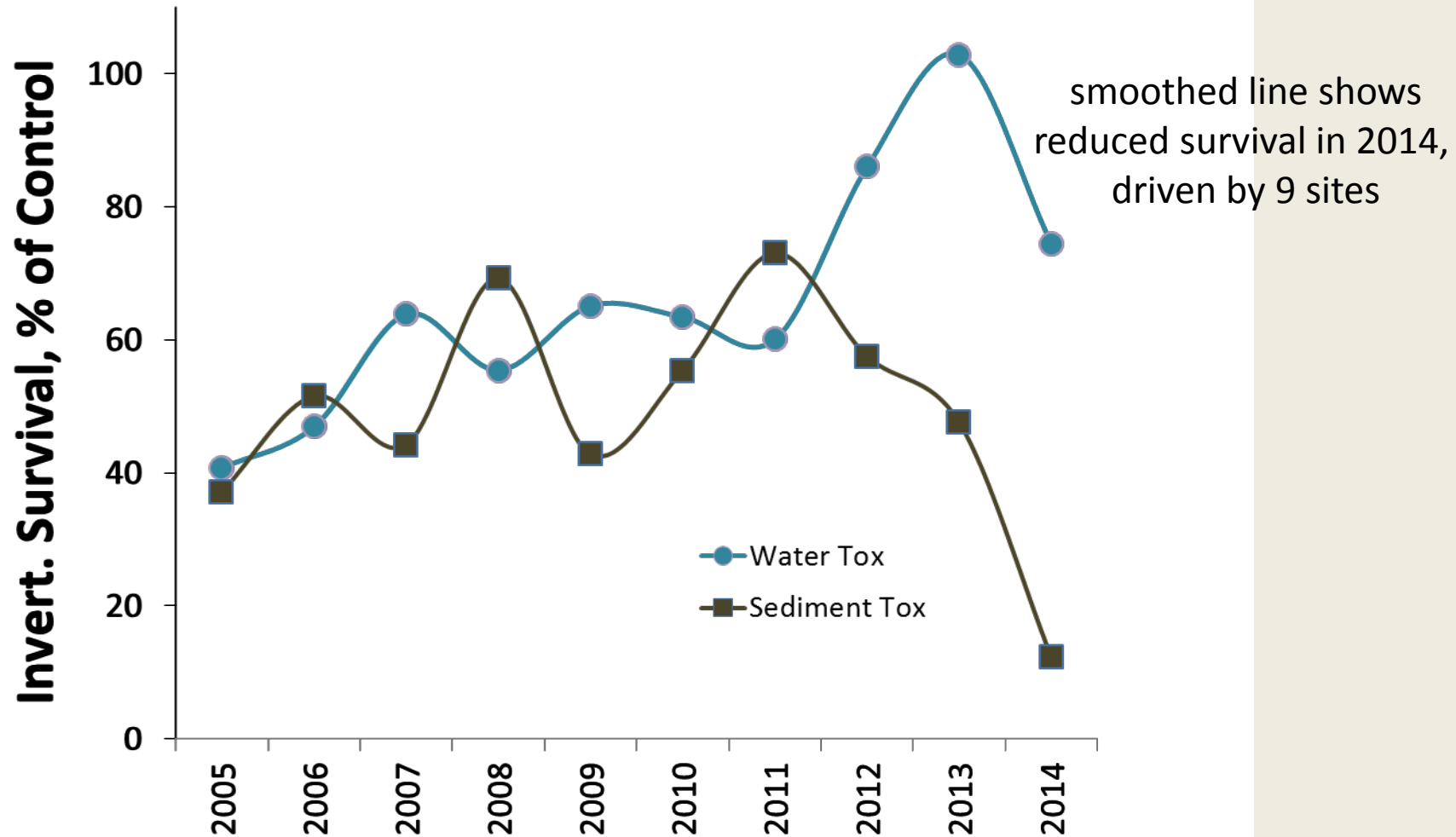
	<u>Algae</u>		<u>Fish</u>		<u>Invertebrates, Water</u>		<u>Invertebrates, Sediment</u>	
	2005-'09	2014	2005-'09	2014	2005-'09	2014	2005-'09	2014
Survival	n/a	n/a	5% <i>declining toxicity</i>	2%	37% <i>declining toxicity</i>	26%	52% <i>increasing toxicity</i>	74%
Growth/ Reproduction	13% <i>declining toxicity</i>	5%	---	5%	---	25%	---	8%
Total	13%	5%	---	6%	---	51%	---	82%

Invertebrate Survival Rates in Toxicity Tests

Pajaro Hydrologic Unit

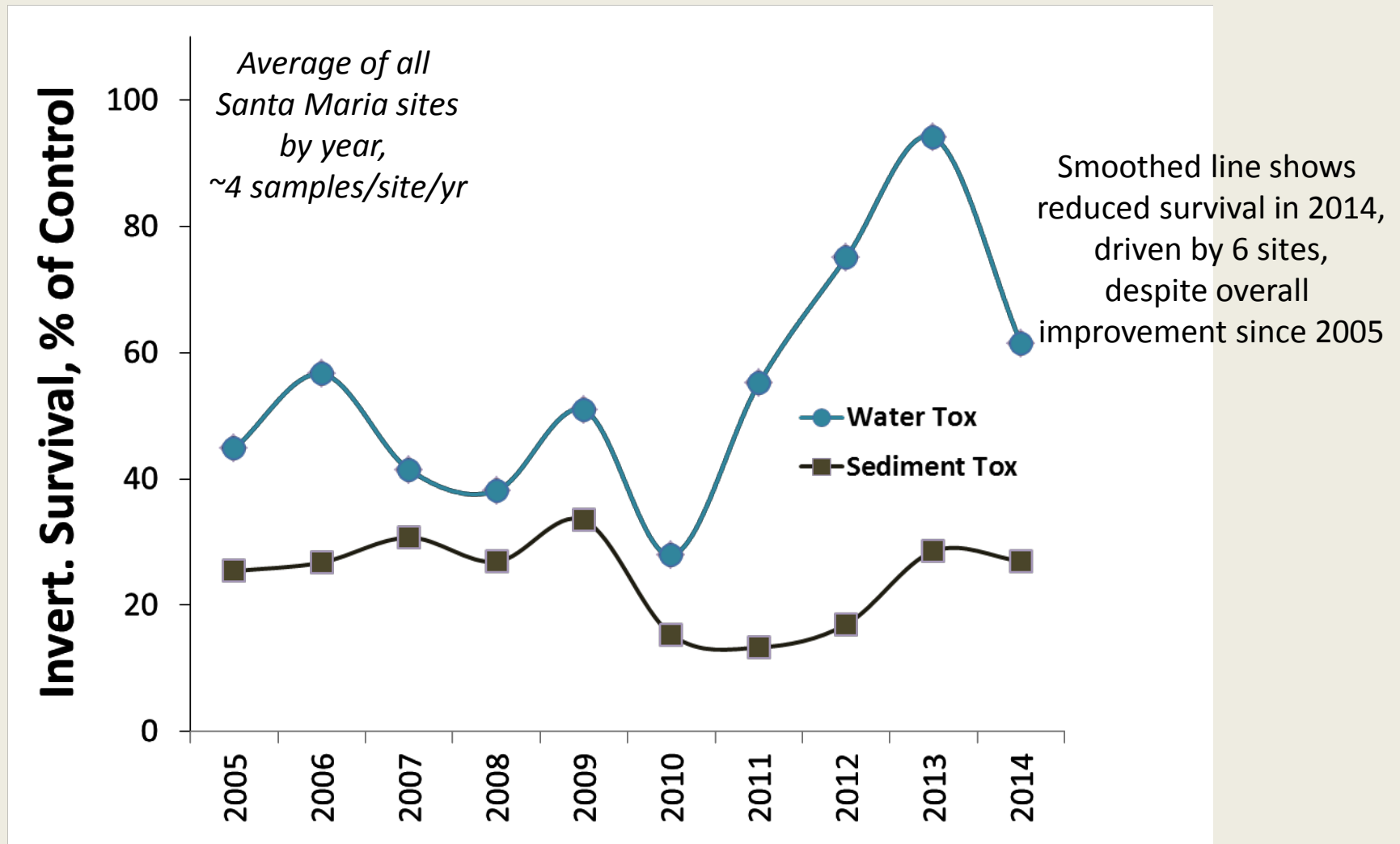


Invertebrate Survival Rates in Toxicity Tests Salinas Hydrologic Unit



Invertebrate Survival Rates Toxicity Tests

Santa Maria Hydrologic Unit



Invertebrate Survival Rates in Toxicity Tests Other Hydrologic Units

HU 310 (Estero Bay): Sustained high survival rates in water (low toxicity), except 2011. Sustained high sediment survival, except in Chorro Creek.

HU 314 (Santa Ynez): Sustained or improved high survival rates (low toxicity). Sustained high sediment survival.

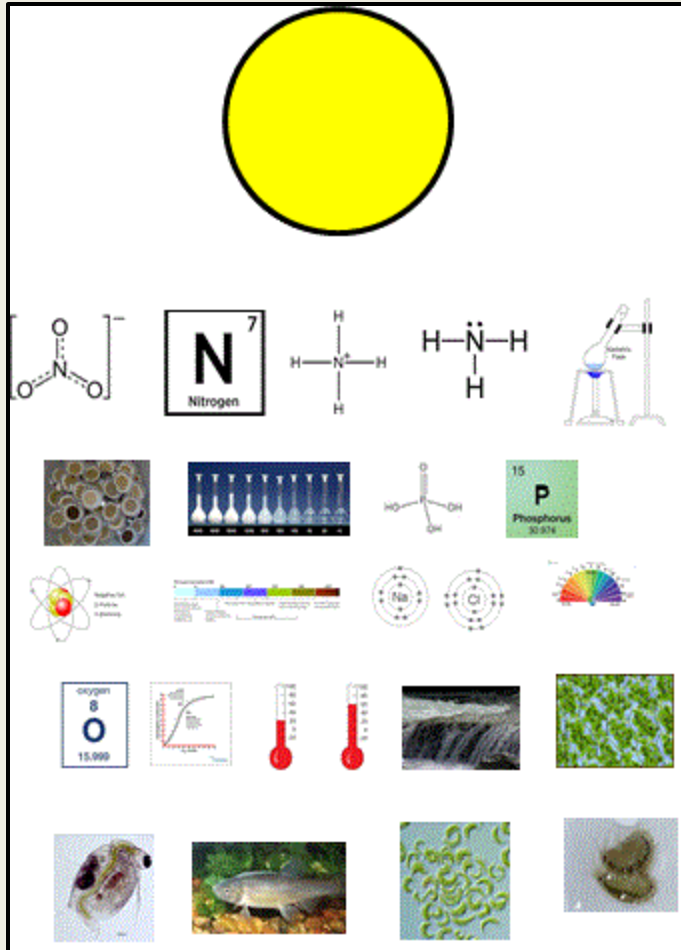
HU 315 (South Coast): Sustained or improved high survival rates (low toxicity) in Bell Creek & Glen Annie; Recently reduced survival in Franklin Creek (toxicity). Same pattern in sediment.

Summary

- ❖ Many sites show declining trends in Flow; no increasing trends
- ❖ Highest 2014 average Flows at sites with tile drain or wastewater facility inputs
- ❖ Mixed trends in Nitrate concentration; more declining trends in SLO & SB county sites; increasing trends offset by declining Flows
- ❖ Highest 2014 N averages generally at sites with tile drain inputs
- ❖ Trends in Turbidity almost entirely declining
- ❖ Toxicity to Algae & Fish further reduced from prior years
- ❖ Toxicity to Invertebrates in Water largely improved through 2013; unclear if trend is sustained in 2014
- ❖ Toxicity to Invertebrates in Sediment had some improvements in early years, but some cases of plateau or increased toxicity in 2014
- ❖ CMP monitoring design successfully shows status & trends

CMP Data Delivery & Availability via CEDEN

What's in an "EDD" (Electronic Data Deliverable)?



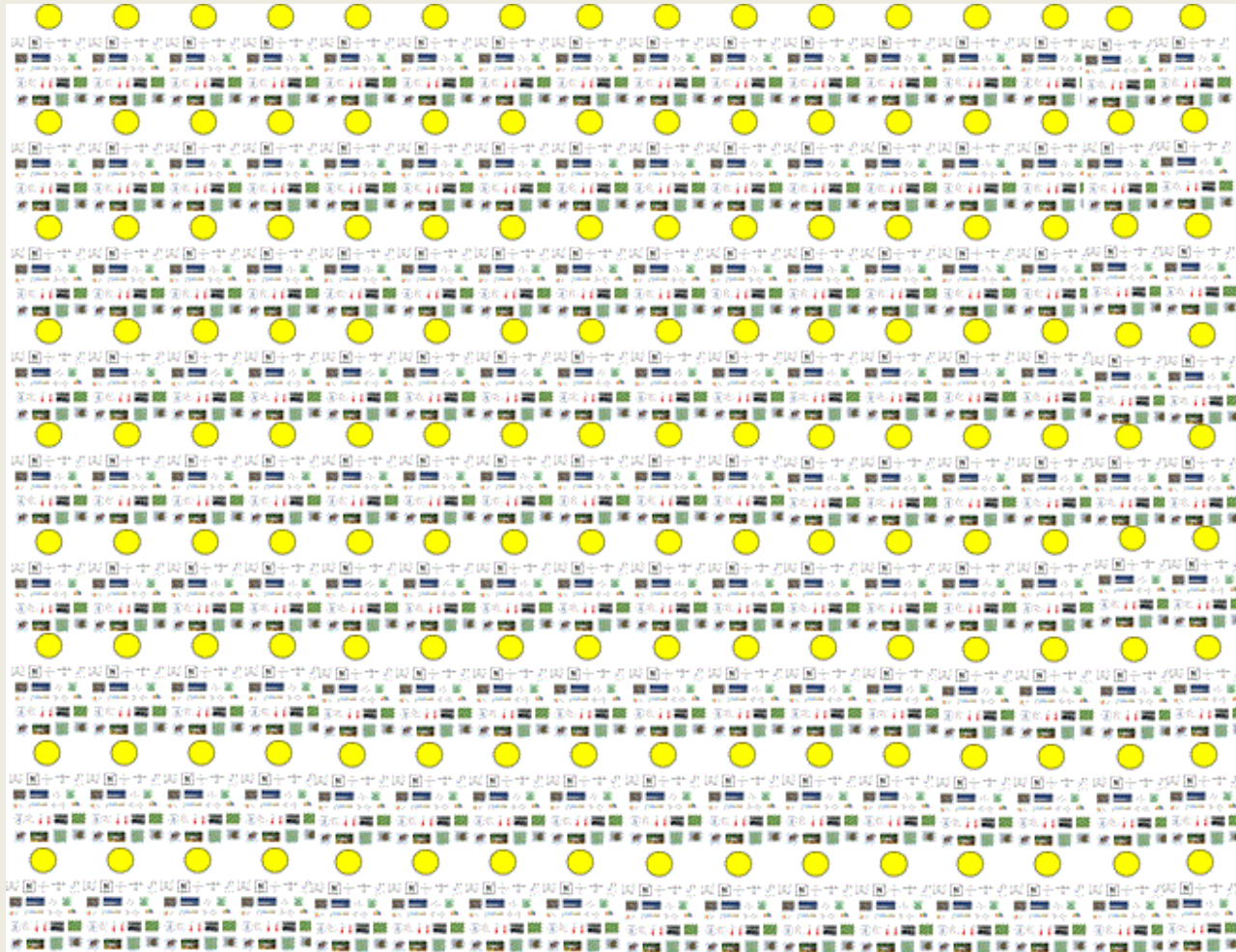
*Parameters measured at 1 site,
during 1 monitoring event
(19, plus up to 4 tox species)*

What's in an "EDD" (Electronic Data Deliverable)?



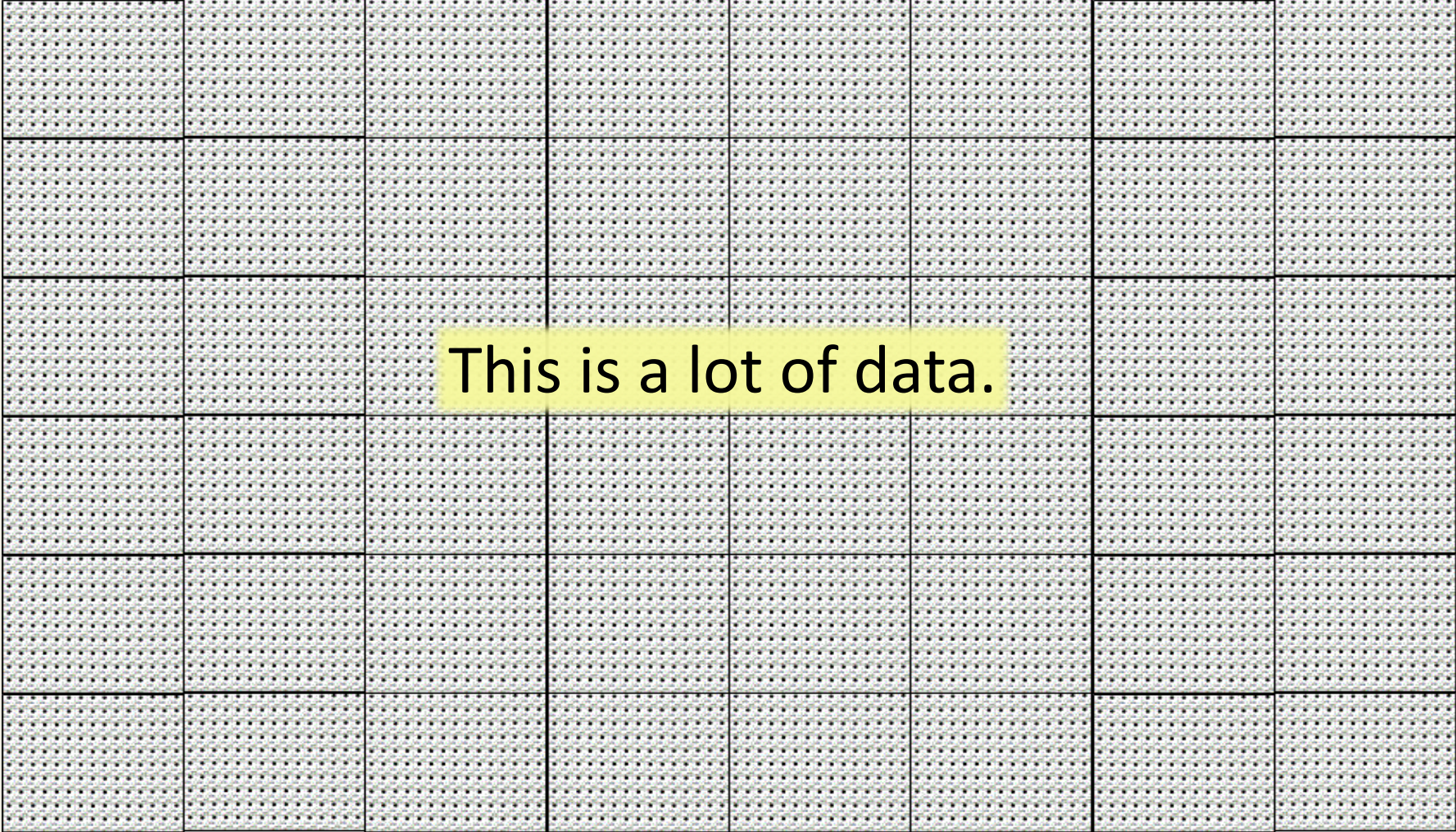
*Parameters measured at all sites during 1 monitoring event
(19, plus up to 4 tox species, time 50+ sites)*

What's in an "EDD" (Electronic Data Deliverable)?



*Parameters measured at all sites during all monitoring events for 3 months
(19, plus up to 4 tox species, time 50+ sites, times 3 events per quarter)*

What's in an "EDD" (Electronic Data Deliverable)?



This is a lot of data.

Parameters measured at all sites during all monitoring events for a year, with auxiliary data required for CEDEN EDD... over 40 additional pieces of info for each parameter (up to 23 parameters) at each site (50+) for each event (3 per quarter).