

TMDLs for Sediment Toxicity and Pyrethroid Pesticides in Sediment in the Lower Salinas River Watershed

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Presentation Outline

- Review
 - Project Area
 - Impairments (Sediment and Pyrethroids in Sediment)
 - Source analysis

- New
 - Targets
 - TMDLs
 - Allocations
 - Implementation
 - Monitoring
 - Timeline and Milestones
 - Project Schedule

TMDL Basics

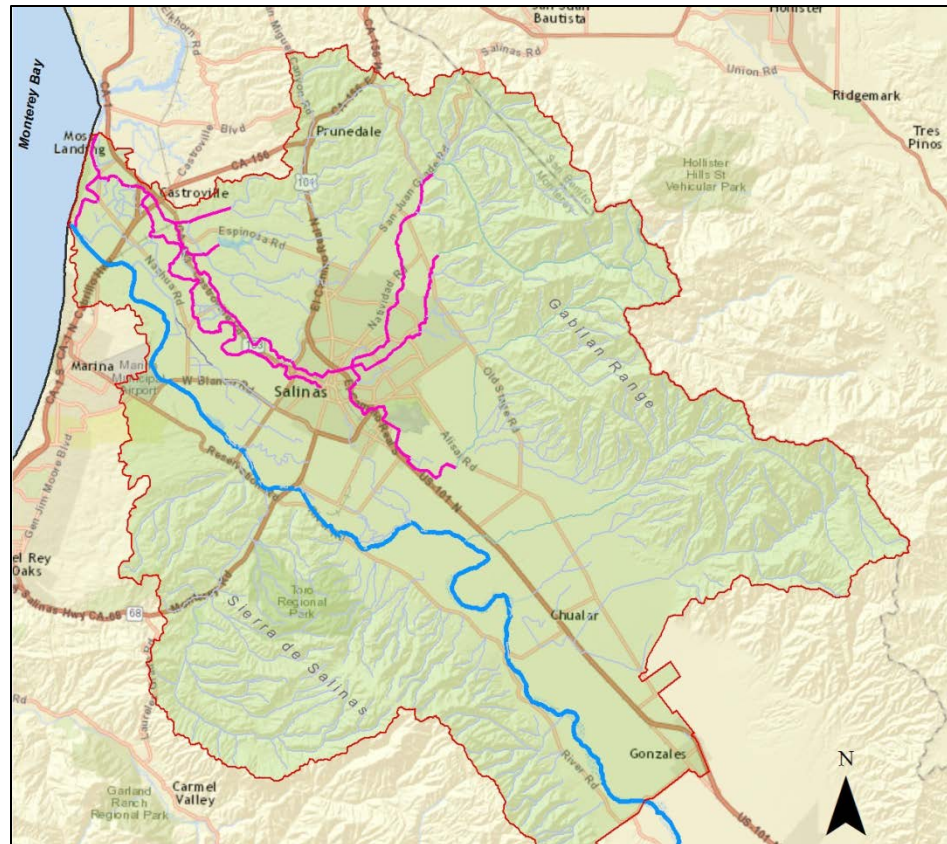
Water quality planning project to address impaired waters on the Clean Water Act 303(d) list

Impaired Water: A waterbody not meeting water quality standards or may be threatened in the future...

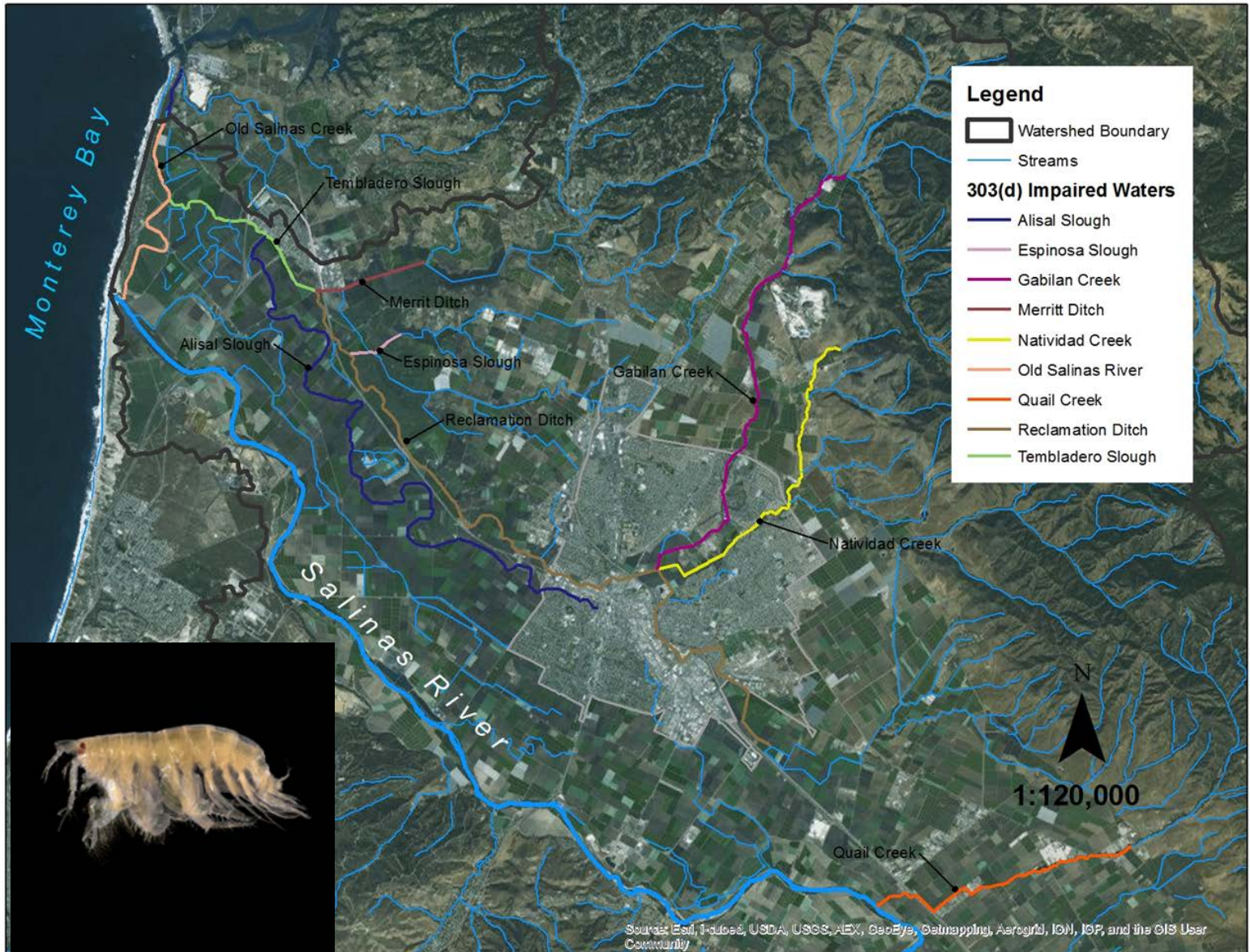
TMDL Project Documents (Staff report and attachments: resolution, basin plan amendment, technical report, CEQA)

Approval Process: Regional Board, State Board, Office of Adm. Law, EPA

Project Area



Impaired Waters



Sediment Toxicity Impaired Waters

- Alisal Creek* (2/3)
- Alisal Slough (3/9)
- Blanco Drain* (2/9)
- Chualar Creek* (5/9)
- Espinosa Slough (8/8)
- Gabilan Creek (6/7)
- Merrit Ditch (7/8)
- Natividad Creek (11/11)
- Old Salinas River (10/11)
- Quail Creek (11/11)
- Reclamation Canal (23/25)
- Salinas River (Lower)* (3/26)
- Tembladero Slough (20/22)
- **Total (111/159)**

Note: * not on the 303(d) list but identified as impaired

Pyrethroid Impaired Waters

- Alisal Creek/Reclamation Canal
- Natividad Creek
- Salinas River (lower)
- Tembladero Slough.

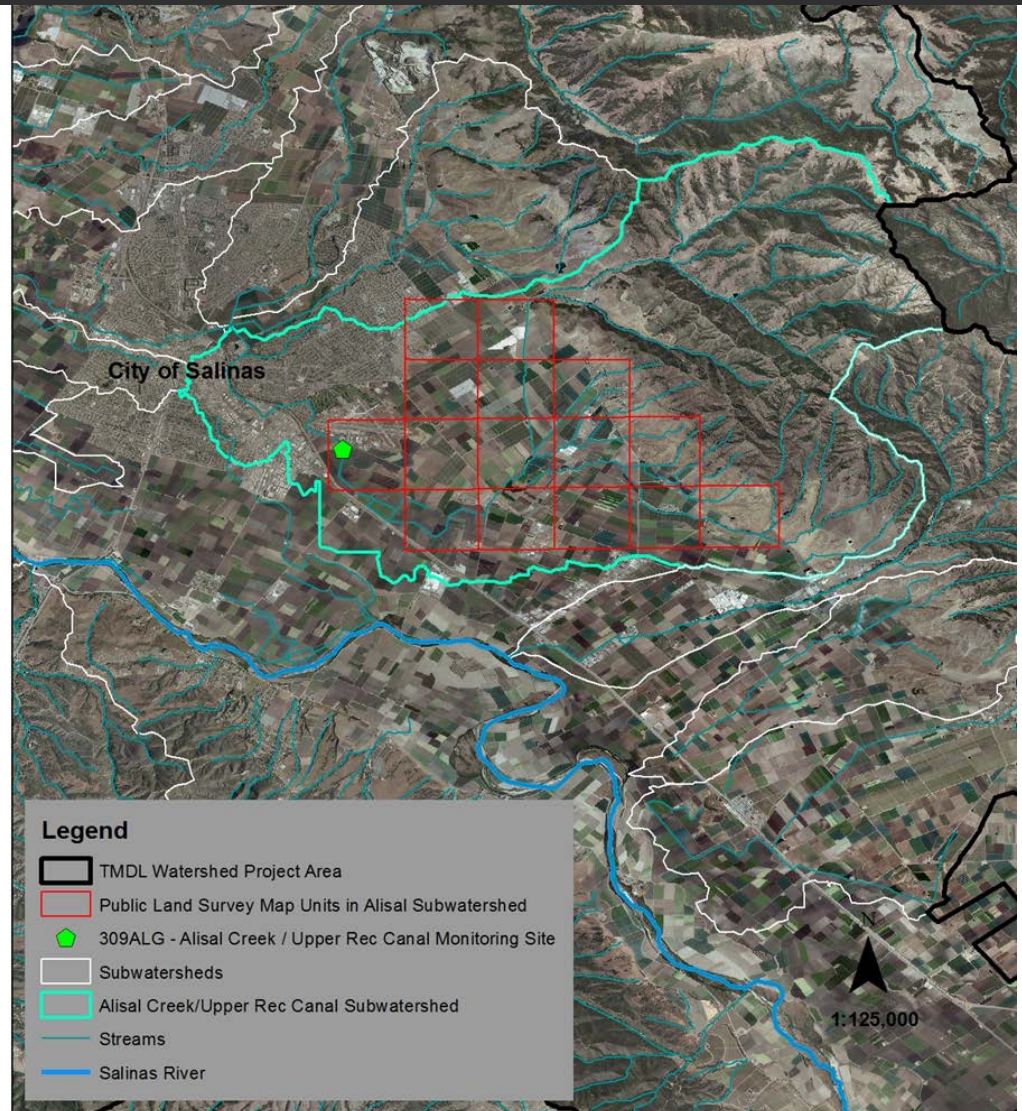
Sources of Pyrethroids



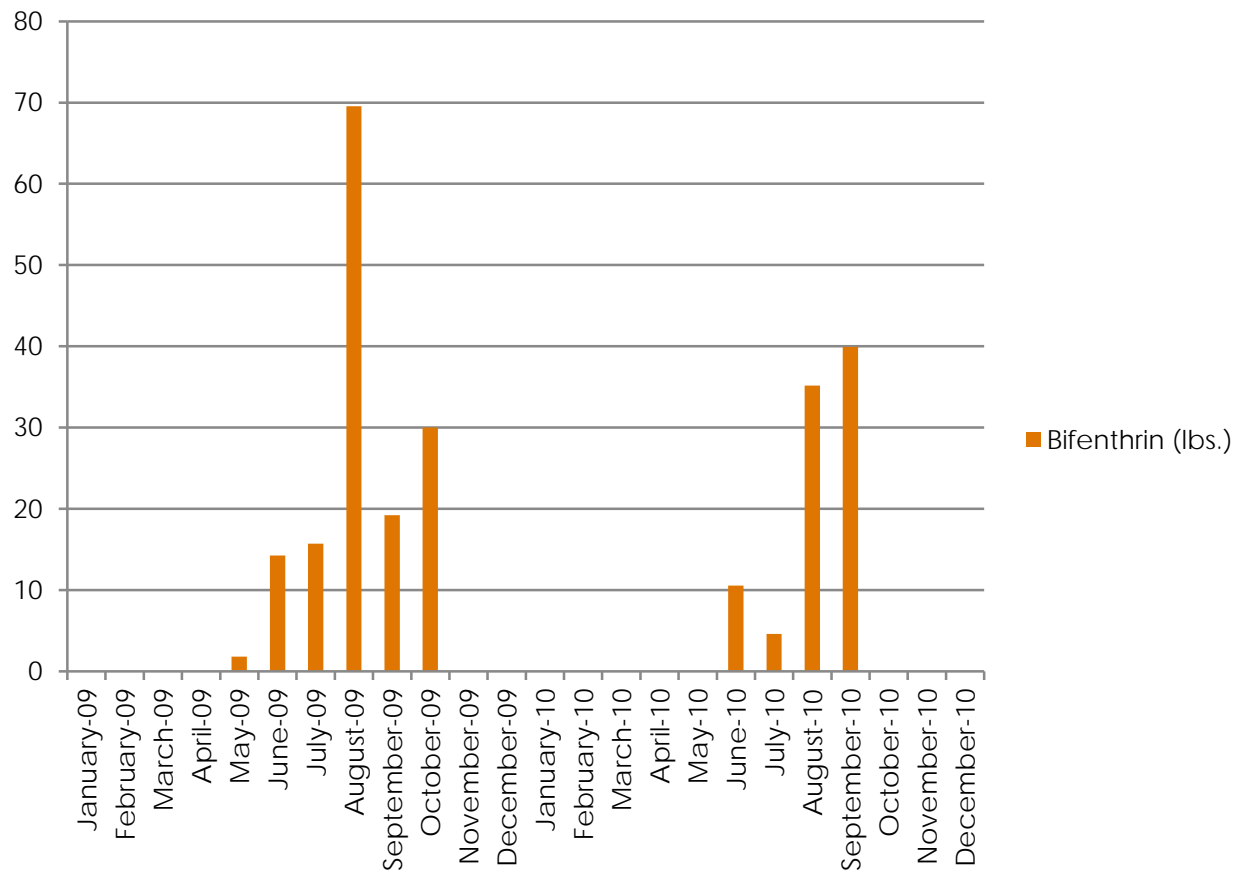
Alisal Creek Subwatershed

Pyrethroid TUs (5/24/2010) Monitoring site 312ALG

- Bifenthrin (1.79 TUs) - Strawberry
- Cypermethrin (1.84 TUs) - Lettuce
- Esfenvalerate/Fenvalerate (1.84 TUs) – Broccoli, cauliflower, lettuce
- Lambda-Cyhalothrin (2.22 TUs), Lettuce



Bifenthrin Applied 2009-2010 (309ALG)



Targets

- TMDL water quality numeric targets were developed to ascertain when and where the narrative water quality objectives are achieved, and hence, when beneficial uses are protected.
- Targets for sediment toxicity and pyrethroids

Sediment Toxicity Target

- *All waters shall be maintained free of toxic substances in concentrations which are toxic to, or which produce detrimental physiological responses in, human, plant, animal, or aquatic life.*
- Sediment toxicity test - *Hyalella azteca*, % survival after 10 days



Pyrethroid Pesticide Targets

- *No individual pesticide or combination of pesticides shall reach concentrations that adversely affect beneficial uses. There shall be no increase in pesticide concentrations found in bottom sediments or aquatic life.*
- Numeric targets for concentrations of pyrethroids in water
- Pyrethroid sediment concentration toxicity unit numeric target

Pyrethroid Water Conc. Targets

Chemical	Acute Criteria ug/L (ppb)	Chronic Criteria ug/L (ppb)
Bifenthrin	0.004	0.0006
Cyfluthrin	0.0003	0.00005
Lambda- cyhalothrin	0.001	0.0005

Pyrethroid Sediment Target

$$\text{Pyrethroid TUs} = \frac{\text{actual concentration (OC)}}{\text{known LC50 concentration values (OC)}}$$

$$\text{Sum Pyrethroid TUs} = \text{Pyrethroid TU (1)} + \text{Pyrethroid TU (2)}$$

Note: TU is Toxicity Unit and OC is organic carbon normalized

TMDLs

- ▣ Sediment Toxicity = Sediment Toxicity Numeric Target
- ▣ Pyrethroid in Sediment = Pyrethroid Sediment Target (TUs)

Allocations

- Waste Load Allocations

- Load Allocations

TMDL Implementation

- Interagency approach with DPR
- Municipal stormwater permits
- Ag Order

Interagency Implementation with DPR

- Management Agency Agreement
- California Pesticide Management Plan for Water Quality
- Four-stage approach
- Response process

Municipal Stormwater Implementation

- City of Salinas and County
- DPR urban regulations
- Wasteload Allocation Attainment Plan (WAAP)

Irrigated Agricultural Implementation

- USEPA pyrethroid label requirements
 - Conservation buffers
- Ag Order
 - Farm Plan
 - Implement management practices
- TMDL Recommendations

TMDL Recommendations for Ag

- 1) Pyrethroid Pesticide Worksheets/Plans,
- 2) Farm Sediment Control and Monitoring,
- 3) Subwatershed Regional Treatment Systems, and
- 4) Subwatershed Verification

Monitoring

- MS4 Monitoring
- Ag Order
- SPoT
- CCAMP
- DPR
- City of Salinas stormwater

Estimated Timeline and Milestones

- Current – implementation of DPR urban regulations
- 3 years – development of Ag pyrethroid implementation program
- 5 years – urban TMDLs achieved
- 8 to 10 years - agricultural TMDLs achieved
- 12 to 15 years – targets achieved in receiving waters

Project Schedule

- Documents for public review – by end of the month
- 45 day public comment period – mid February
- Public meeting -
- Regional Board hearing – May 2016

Questions?

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Extra Slides

Sediment Toxicity Monitoring Data

Waterbody Name	303(d) List		Additional Monitoring		Total	
	Exc.	Samples	Exc.	Samples	Exc.	Samples
Alisal Creek	1	2	1	1	2	3
Alisal Slough	2	3	1	6	3	9
Blanco Drain	0	2	2	7	2	9
Chualar Creek			5	9	5	9
Espinosa Slough	2	2	6	6	8	8
Gabilan Creek	4	5	2	2	6	7
Merrit Ditch	2	2	5	6	7	8
Natividad Creek	5	5	6	6	11	11
Old Salinas River	7	8	3	3	10	11
Quail Creek	2	2	9	9	11	11
Reclamation Canal	8	9	15	16	23	25
Salinas River (Lower)	1	5	2	21	3	26
Tembladero Slough	3	3	17	19	20	22
Totals	37	48	74	111	111	159

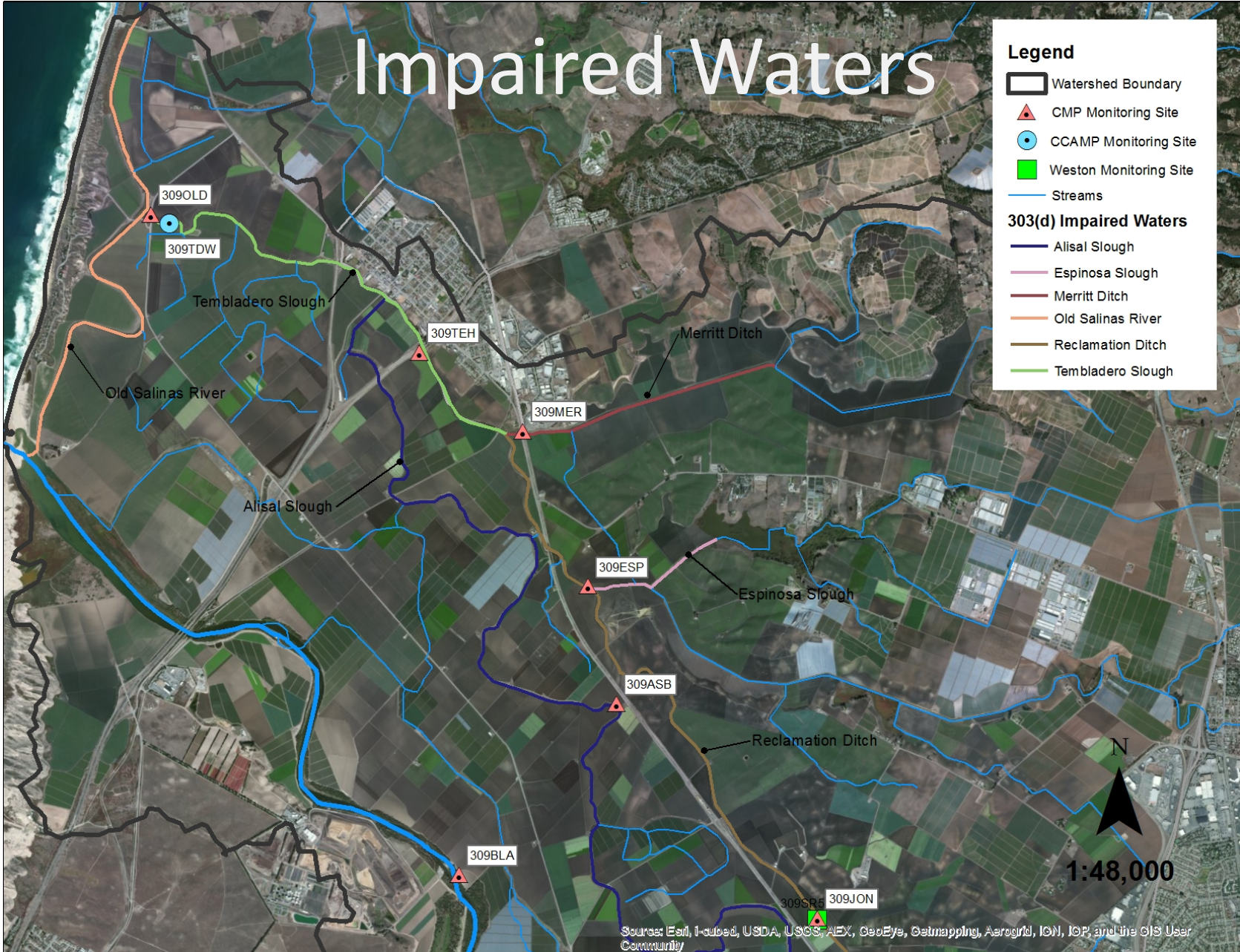
Impaired Waters

Legend

- Watershed Boundary
- CMP Monitoring Site
- CCAMP Monitoring Site
- Weston Monitoring Site
- Streams

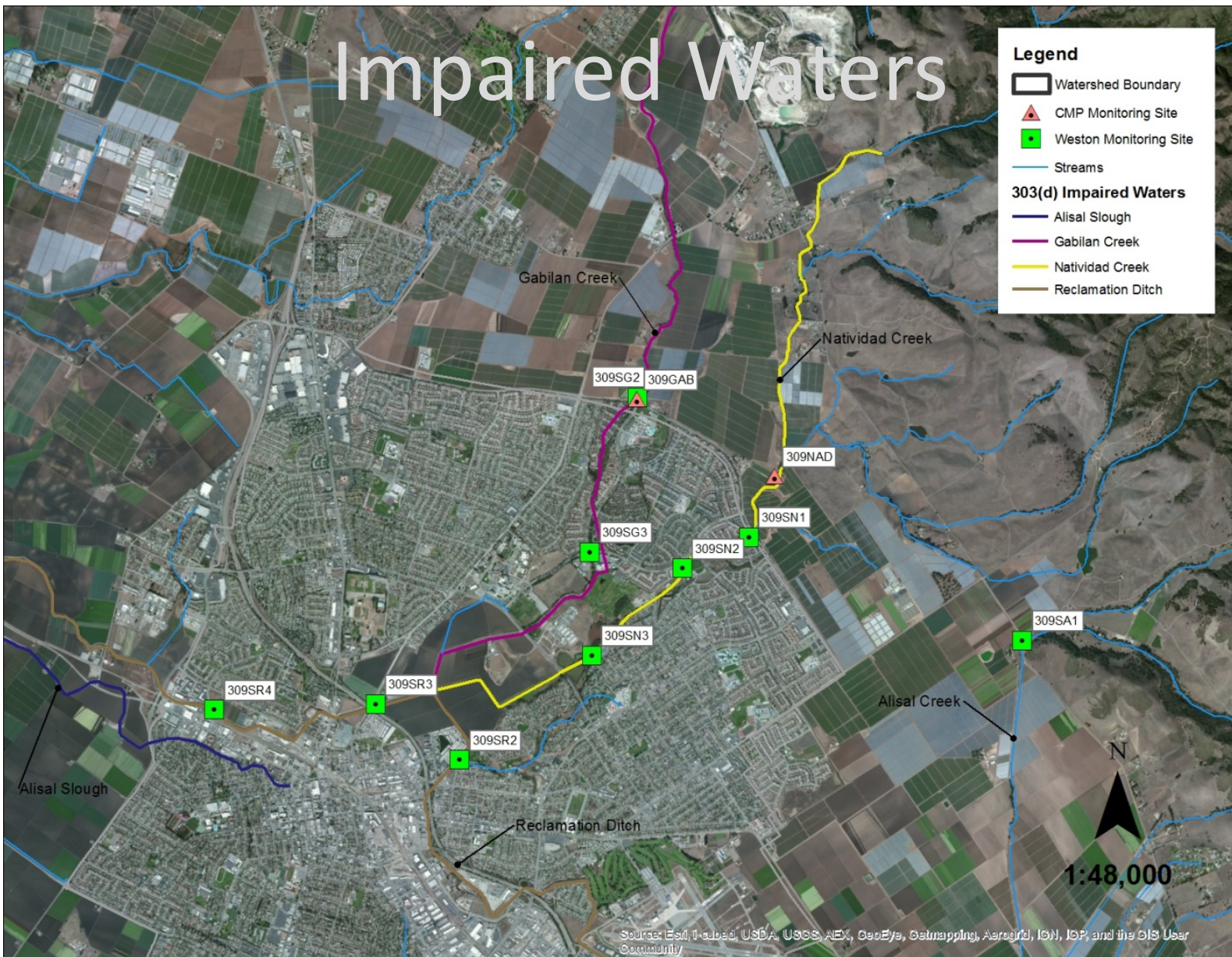
303(d) Impaired Waters

- Alisal Slough
- Espinosa Slough
- Merritt Ditch
- Old Salinas River
- Reclamation Ditch
- Tembladero Slough

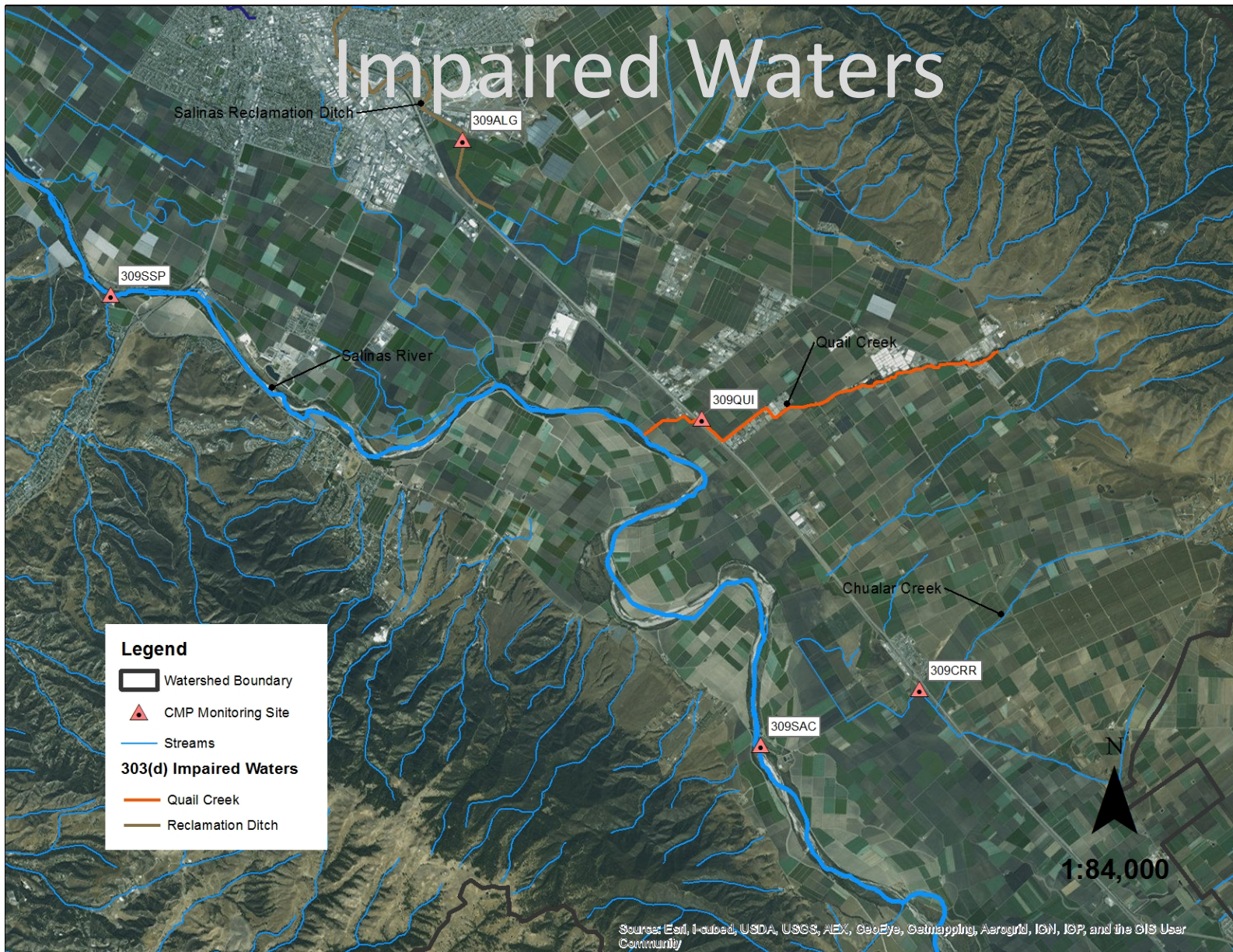


Source: Esri, i-cubed, USDA, USGS, AEX, GeoEye, Geomapping, AeroGRID, IGN, IGP, and the GIS User Community

Impaired Waters



Impaired Waters



Legend

- Watershed Boundary
- CMP Monitoring Site
- Streams
- 303(d) Impaired Waters**
 - Quail Creek
 - Reclamation Ditch

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Source: Esri, I-cubed, USDA, USGS, AEX, GeoEye, Geomapping, AeroGRID, IGN, IOP, and the GIS User Community