Using Recent Science to Advise the Delta Mercury TMDL

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Data to decisions

- Data led to decision: Delta mercury TMDL
- Phase 1 Implementation Goals
- Filling information gaps: Pre-management questions and connecting the pieces

Delta Mercury Total Maximum Daily Load (TMDL)

Problem: Levels of mercury in fish in Delta and Yolo Bypass pose risk to human and wildlife consumers

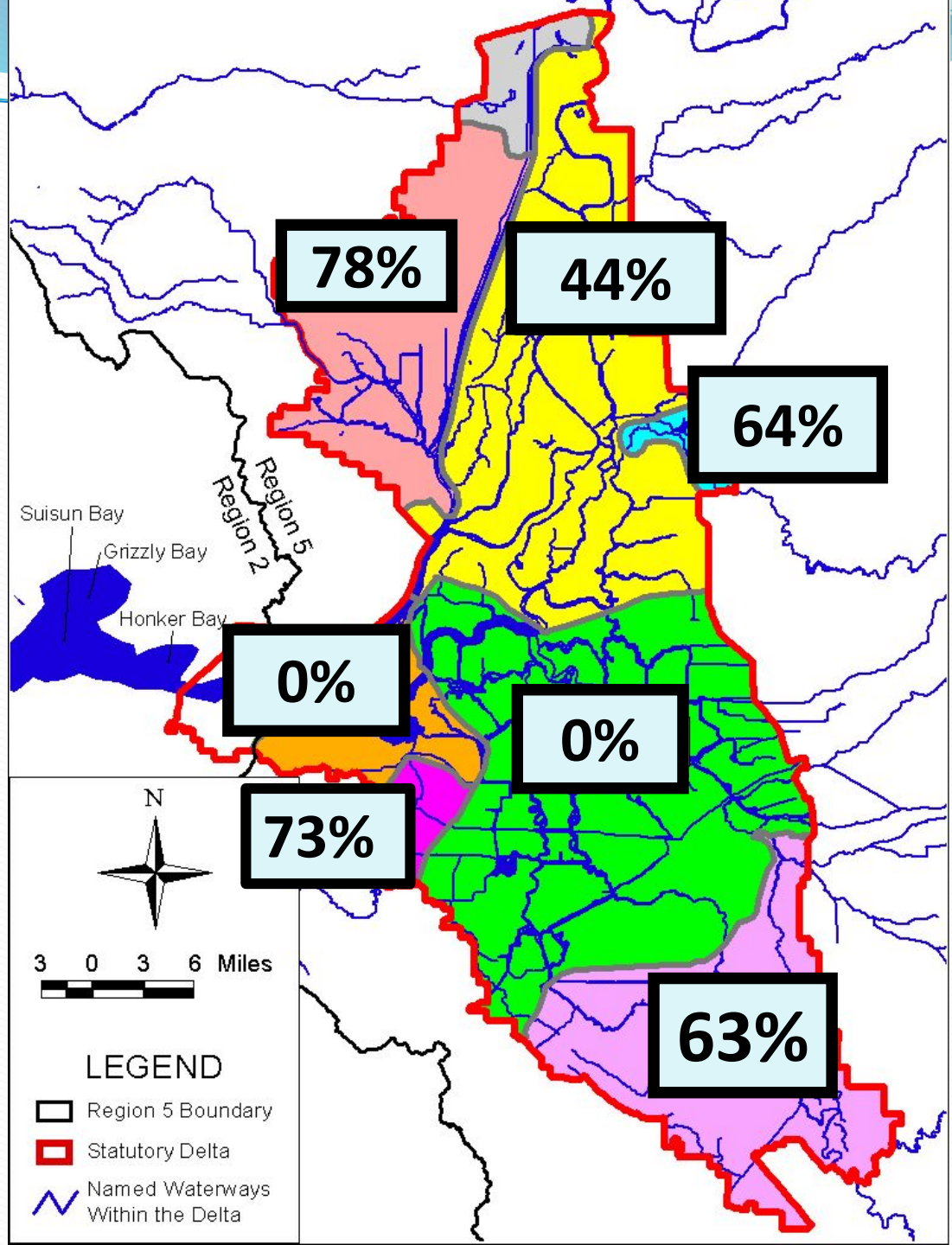
Program Goal: Reduce methylmercury in fish in the Delta and Yolo Bypass

TMDL: Adopted and approved Oct. 2011

Review & possible revision ~2020

Photo Credit:s B. Brattain (top) A. Vernon, Flikr Creative Commons (b0tt0m)

Percent reductions in average methylmercury concentrations needed to meet fish mercury objectives



TMDL Phase 1 Actions

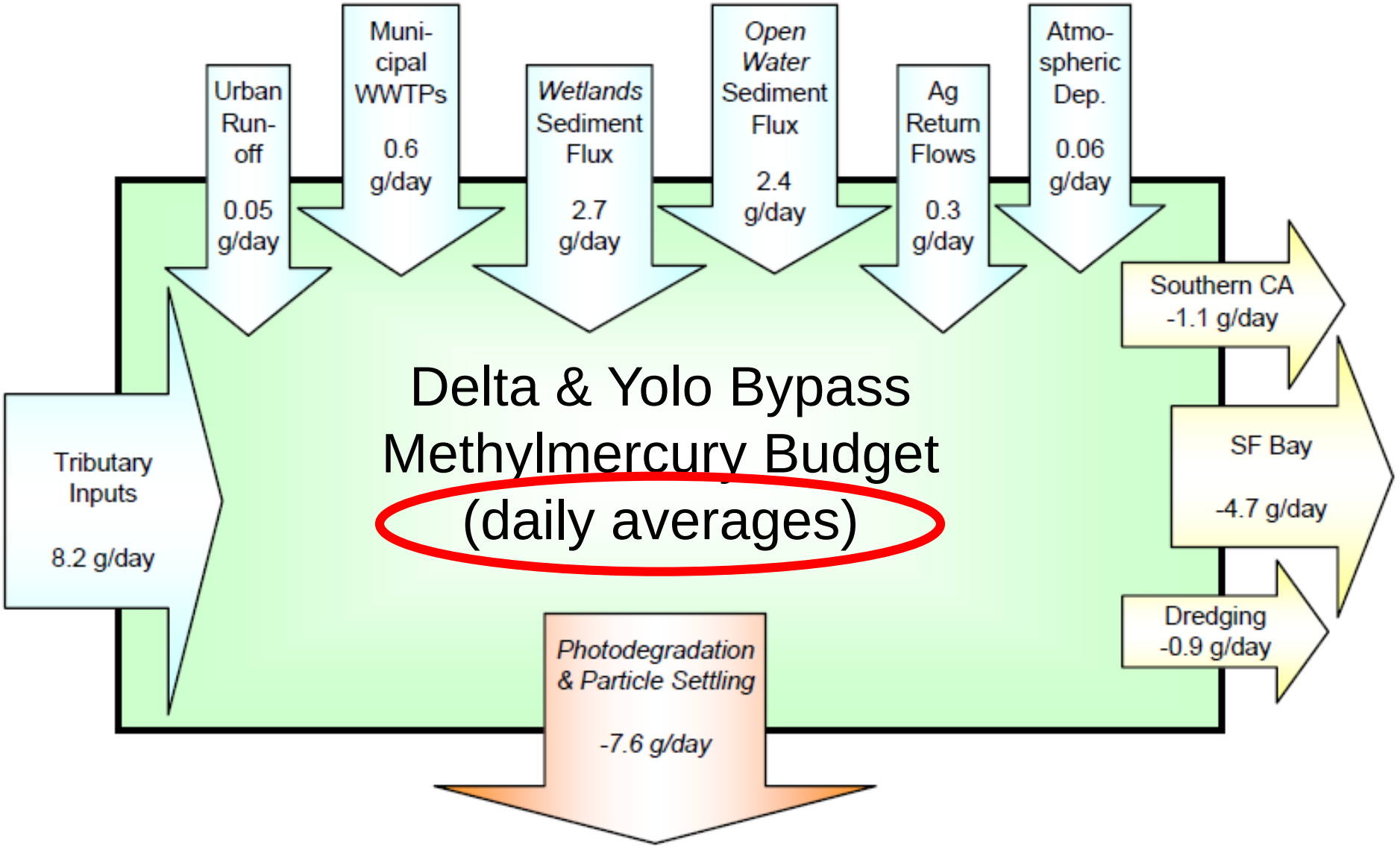
- Early implementation of mercury source control
- Outreach to protect human health
- More studies and data gathering

Methylmercury Control Studies

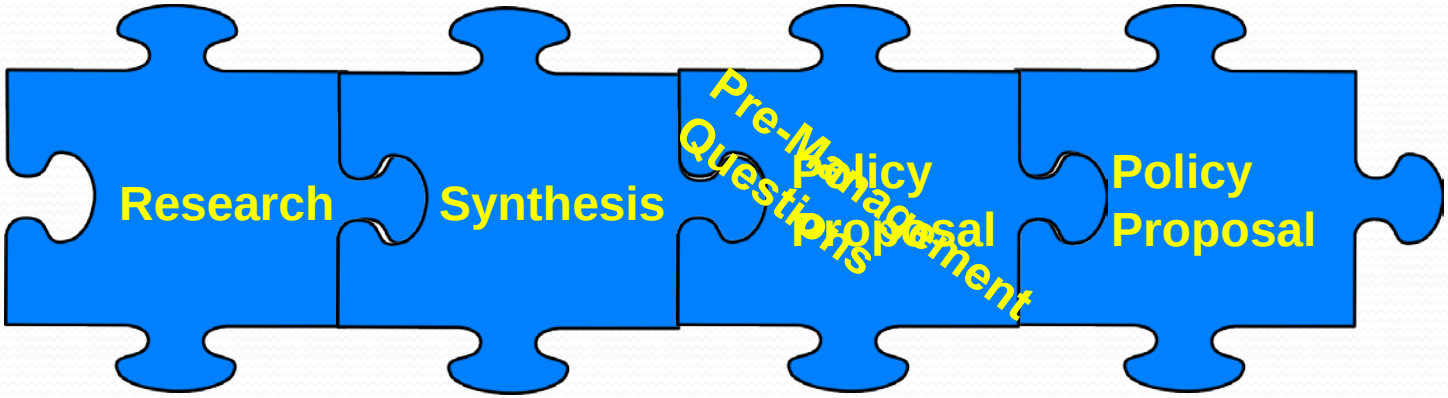
Objectives

- Test and evaluate management measures
- Develop new measures as needed

- Fill information gaps
  - Where can management be applied?
  - What are unintended consequences of application?
  - How effective will management measures be?


Urban Run-off 0.05 g/day
Muni-cipal WWTPs 0.6 g/day
Wetlands Sediment Flux 2.7 g/day
Open Water Sediment Flux 2.4 g/day
Ag Return Flows 0.3 g/day
Atmo-spheric Dep. 0.06 g/day
Tributary Inputs 8.2 g/day
Delta & Yolo Bypass Methylmercury Budget (daily averages)
Southern CA -1.1 g/day
SF Bay -4.7 g/day
Dredging -0.9 g/day
Photodegradation & Particle Settling -7.6 g/day

Science Communication Plus



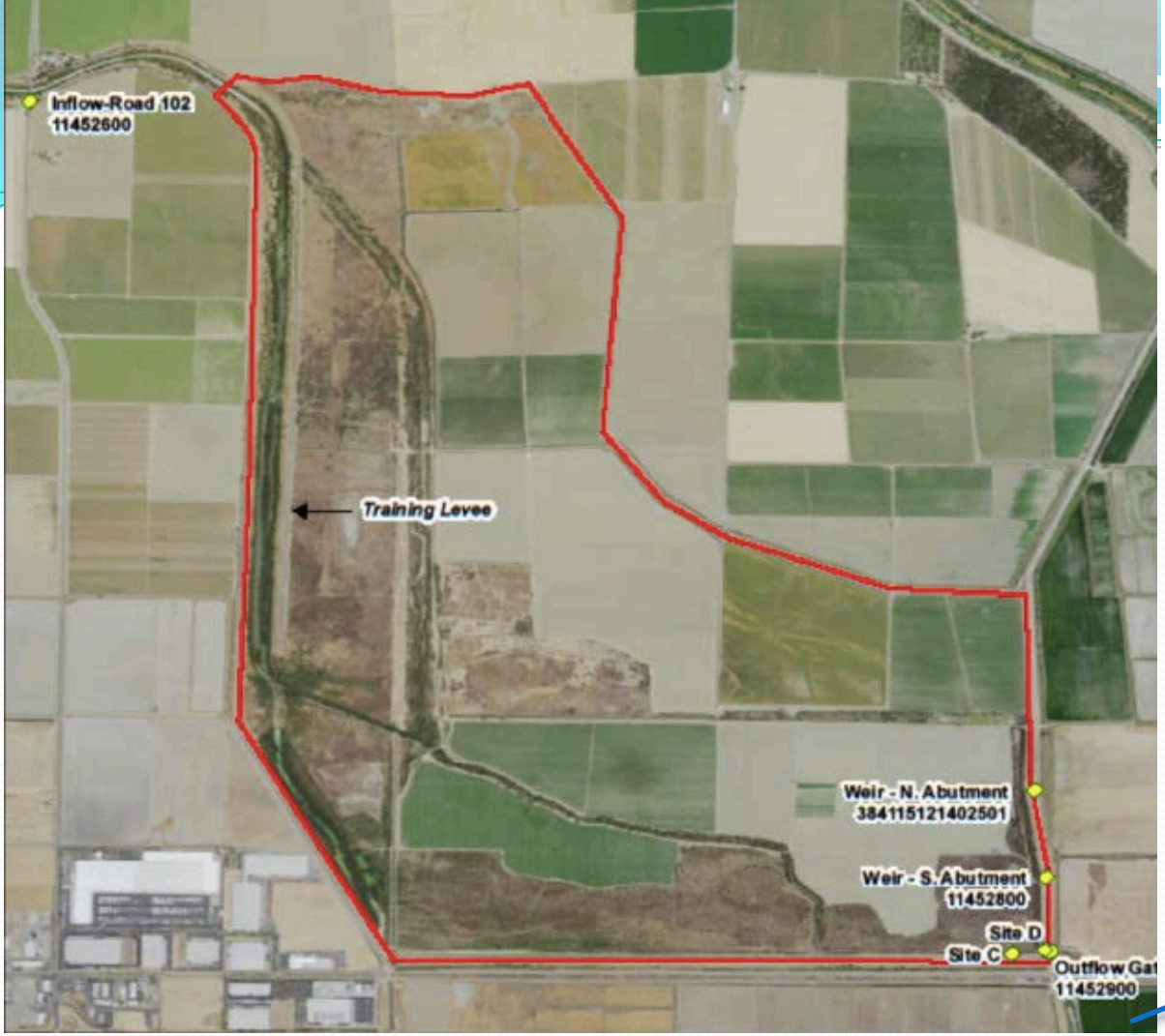
Pre-management questions - Sources

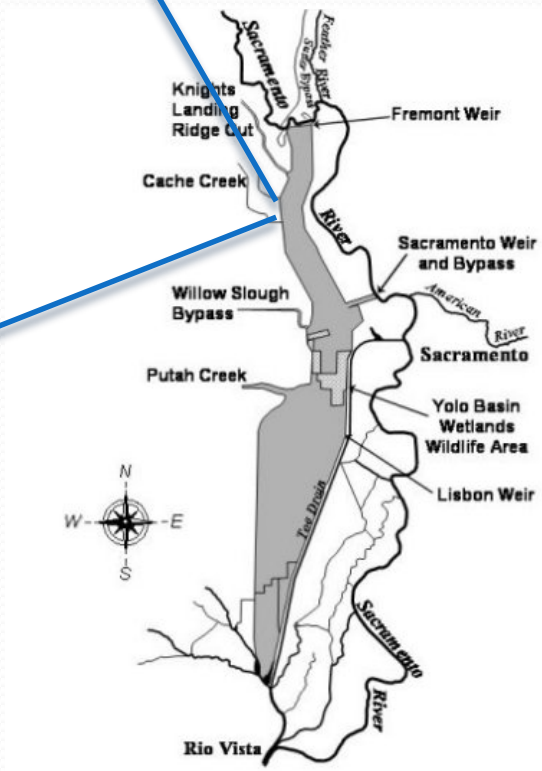
Is our understanding of relative reactivities of mercury from atmospheric, Coast Range and legacy gold mining sources sufficient to use this information for management?

Pre-management questions – Bioaccumulation and prioritization

We understand “hot moments” of methylmercury production and transport. Do these match locations and seasons of greatest exposure and risk to biota?

Cache Creek Settling Basin





Pre-management questions –Processes

Can the improved understanding of drivers of methylmercury production and transport be used to formulate management measures?

- Methylation rate (Kmeth)
- Hg+2 reactive
- Dissolved organic matter
- sulfate

Summary of TMDL review needs:

- Prioritize risks
- Refine allocations based on seasonality
- Impacts of restoration and land use changes
- Multi-compartment models for scenario testing

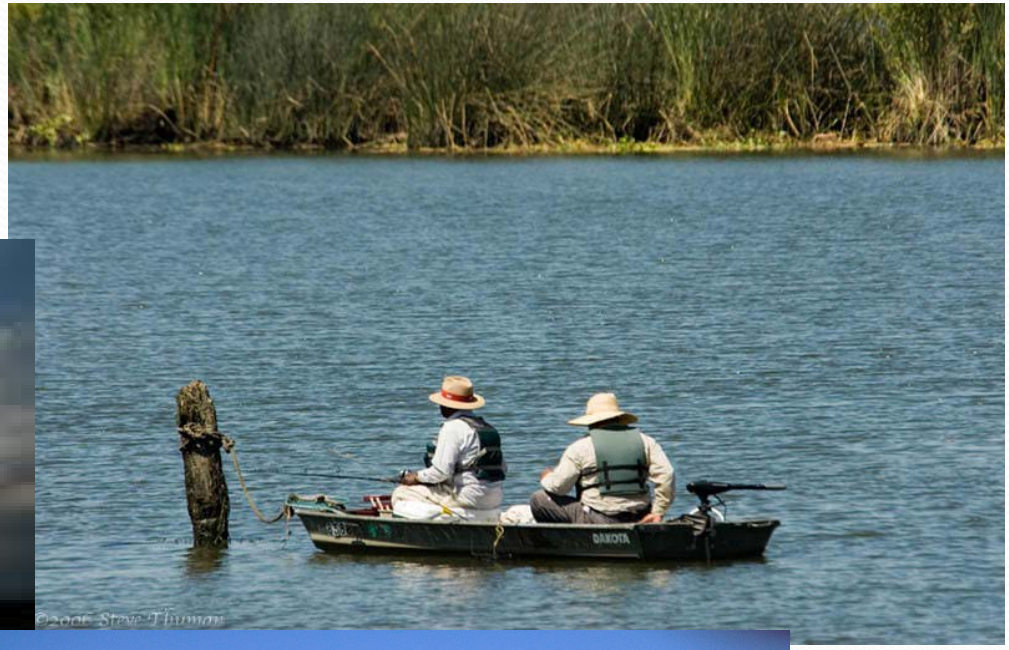


Photo credit: D. Feliz