

# Basin Plan Amendment for the Development of Methylmercury Total Maximum Daily Load for the American River Watershed

## Stakeholder Meetings

Placerville - November 16, 2010

Auburn - November 17, 2010



# Overview

- Project Background
- Basin Plan Amendments (BPA) and Total Maximum Daily Loads (TMDL)
- Schedule and Next Steps

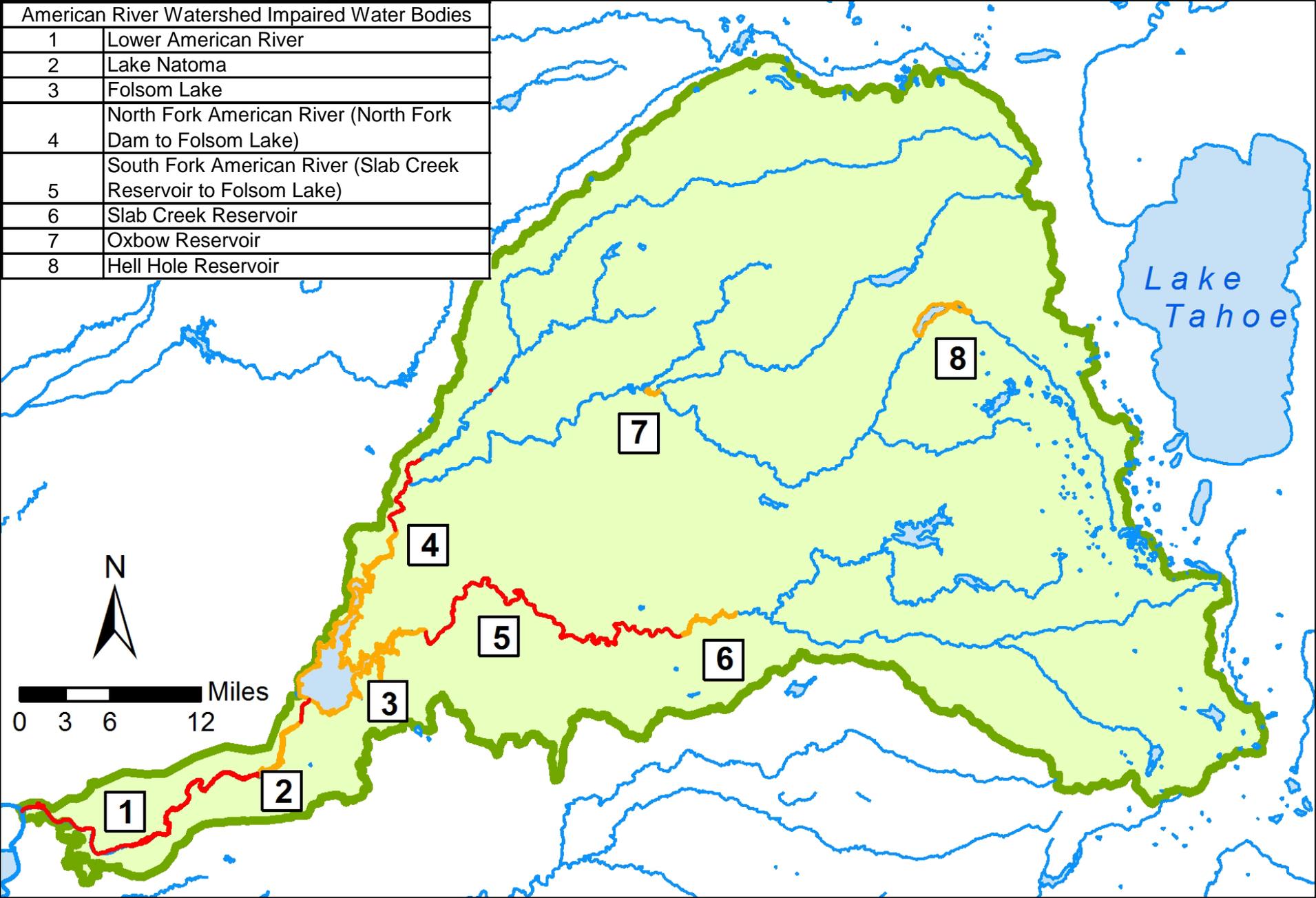
# Project Background

- Project Scope
- Problem with Mercury
- Extent of Mercury Impairment
- Sources of Mercury to the American River Watershed



# Scope of the Project

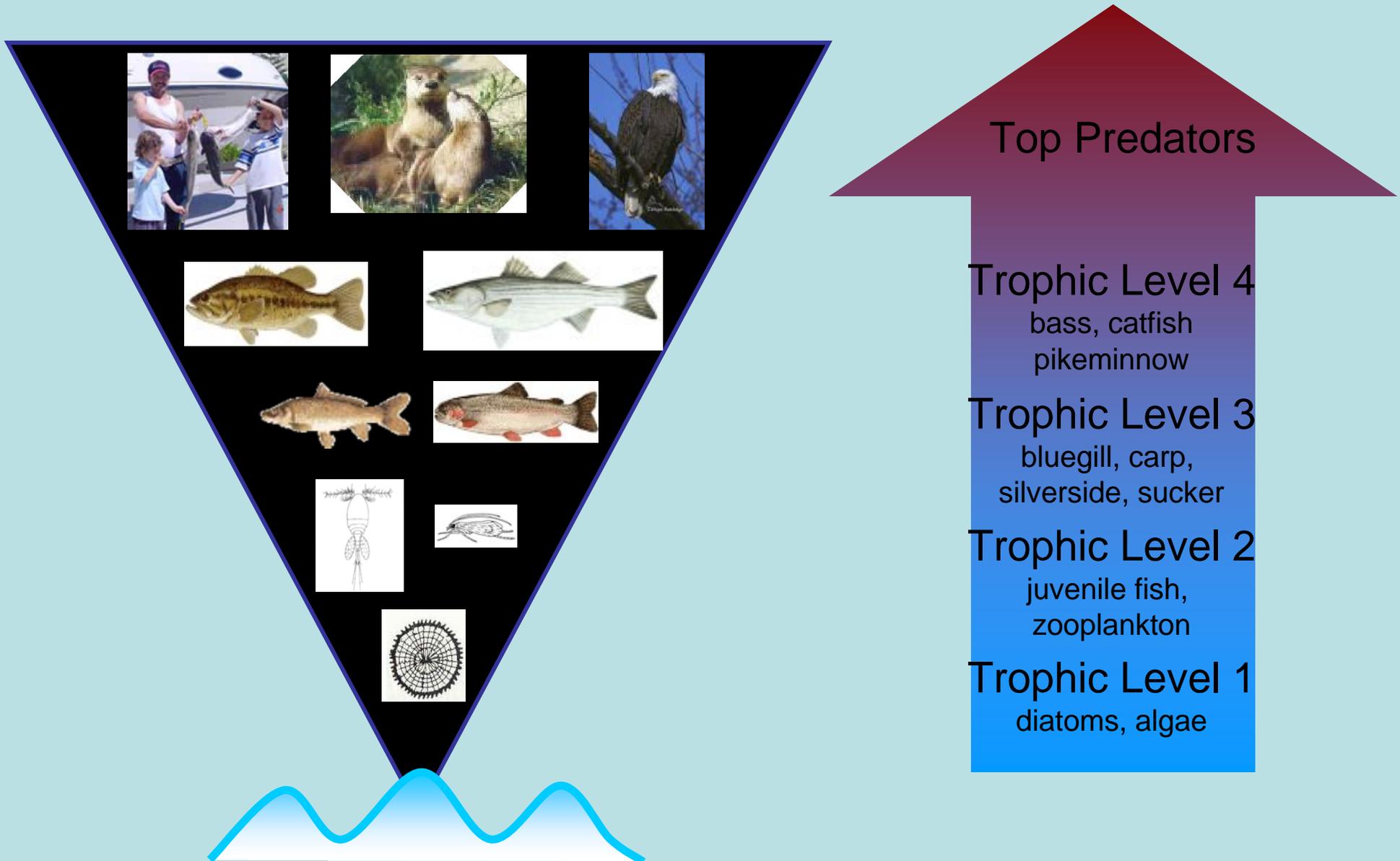
American River Watershed Impaired Water Bodies	
1	Lower American River
2	Lake Natoma
3	Folsom Lake
4	North Fork American River (North Fork Dam to Folsom Lake)
5	South Fork American River (Slab Creek Reservoir to Folsom Lake)
6	Slab Creek Reservoir
7	Oxbow Reservoir
8	Hell Hole Reservoir



# Why is Mercury a Problem?

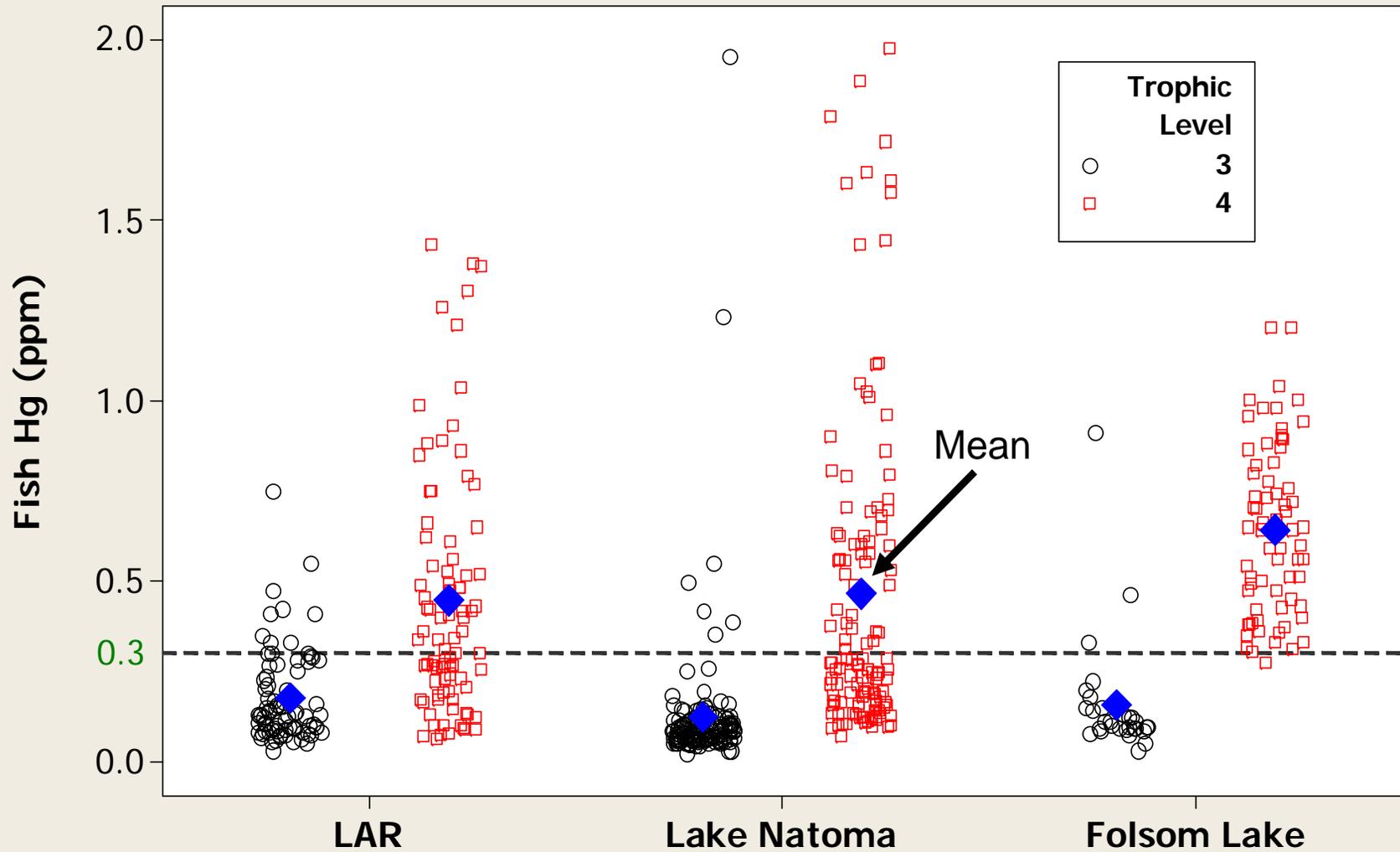
- Mercury is a toxicant that impairs the nervous, reproductive, and immune systems in humans and wildlife.
- Mercury can have lethal and sub-lethal effects.
- Offspring can be exposed to mercury during embryonic development.
- Methylmercury (MMHg) is one of the most toxic forms because it is more readily absorbed and excreted more slowly.
- Exposure is mainly through the consumption of fish.

# MMHg Bioaccumulates...



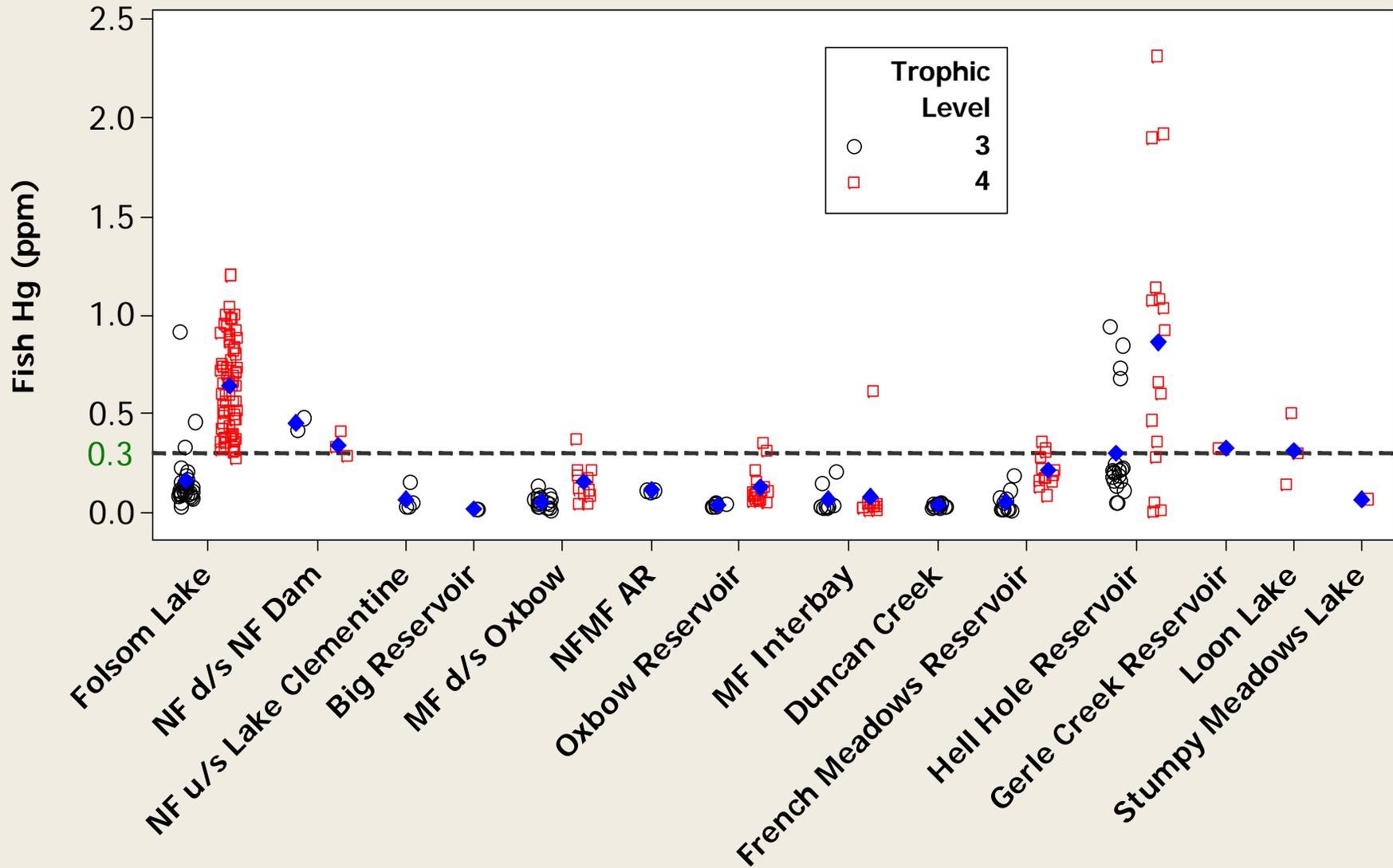
# Fish Mercury Concentrations

Value Plot and Means of Fish Tissue Mercury Levels



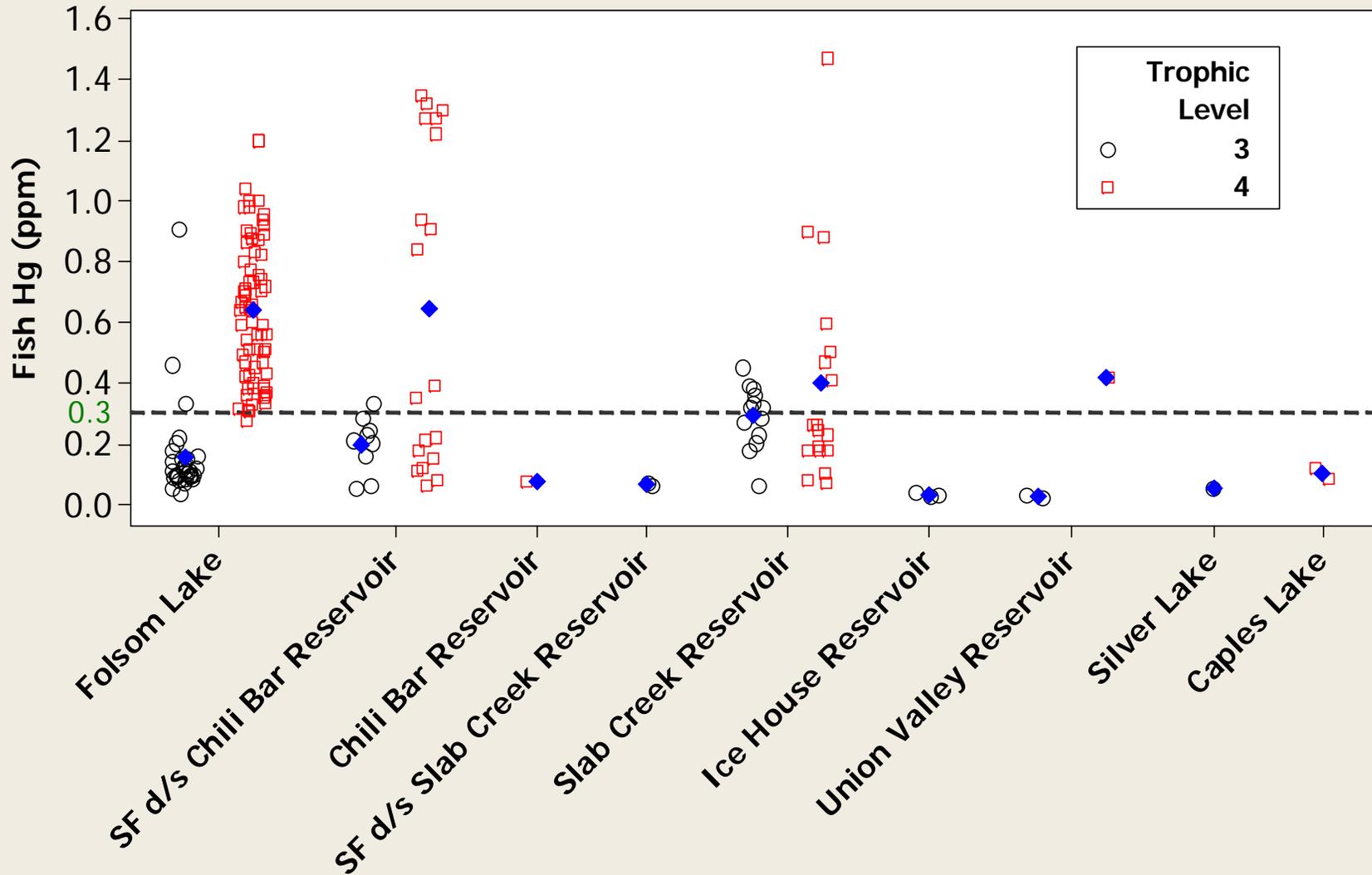
# Fish Mercury Concentrations

Value Plot and Means of Fish Tissue Mercury Levels in the NF and MF American River Watersheds



# More Fish Mercury Concentrations

Value Plot and Means of Fish Tissue Levels in the SF American River Watershed



# Inorganic Mercury Sources

- Gold Mines



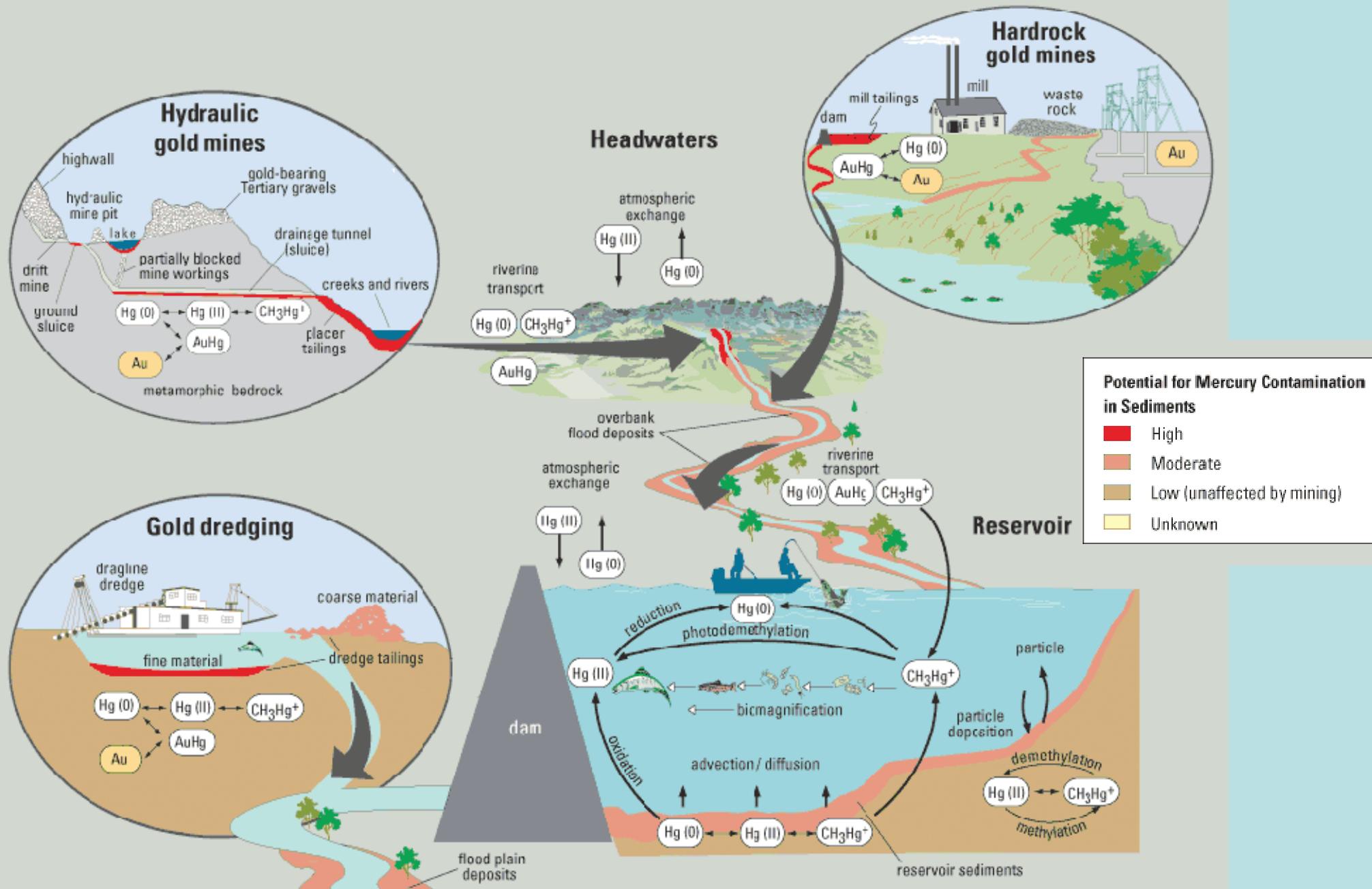
- Mine Tailings



# Inorganic Mercury Sources

- Atmospheric Deposition
- Stormwater Runoff
- Contaminated River, Stream, and Lake Bottoms

# Conceptual Model of Mercury Fate and Transport



Adapted from Alpers *et al.*, 2005  
US Geological Survey

Central Valley Regional Water  
Quality Control Board

# Possible Sources of Methylmercury

- Lake and river beds
- Wetlands
- Urban Runoff
- NPDES Permitted Facilities
- Atmospheric Deposition
- Other Land Uses (Agricultural, Pasture, non-Urban Runoff, etc.)

# What are some actions that could be taken to reduce mercury levels?

Less mercury in the environment

=

Less mercury in the fish

# Possible Implementation Actions

- Reduce inorganic mercury by mine cleanup, contaminated sediment erosion controls, clean up of mine tailings, removal of elemental mercury in tributaries, etc.;
- Reduce inorganic mercury in sediment where methylmercury can be produced (sequestration, burial, etc.);



# Possible Implementation Actions

## (continued)



- Conduct studies to determine methylmercury sources;
- Develop management practices to reduce methylmercury levels in water;
- Modify water management operations to minimize methyl- and/or inorganic mercury discharges;
- Mitigate methyl- and inorganic mercury increases from new land developments or changes in land uses.

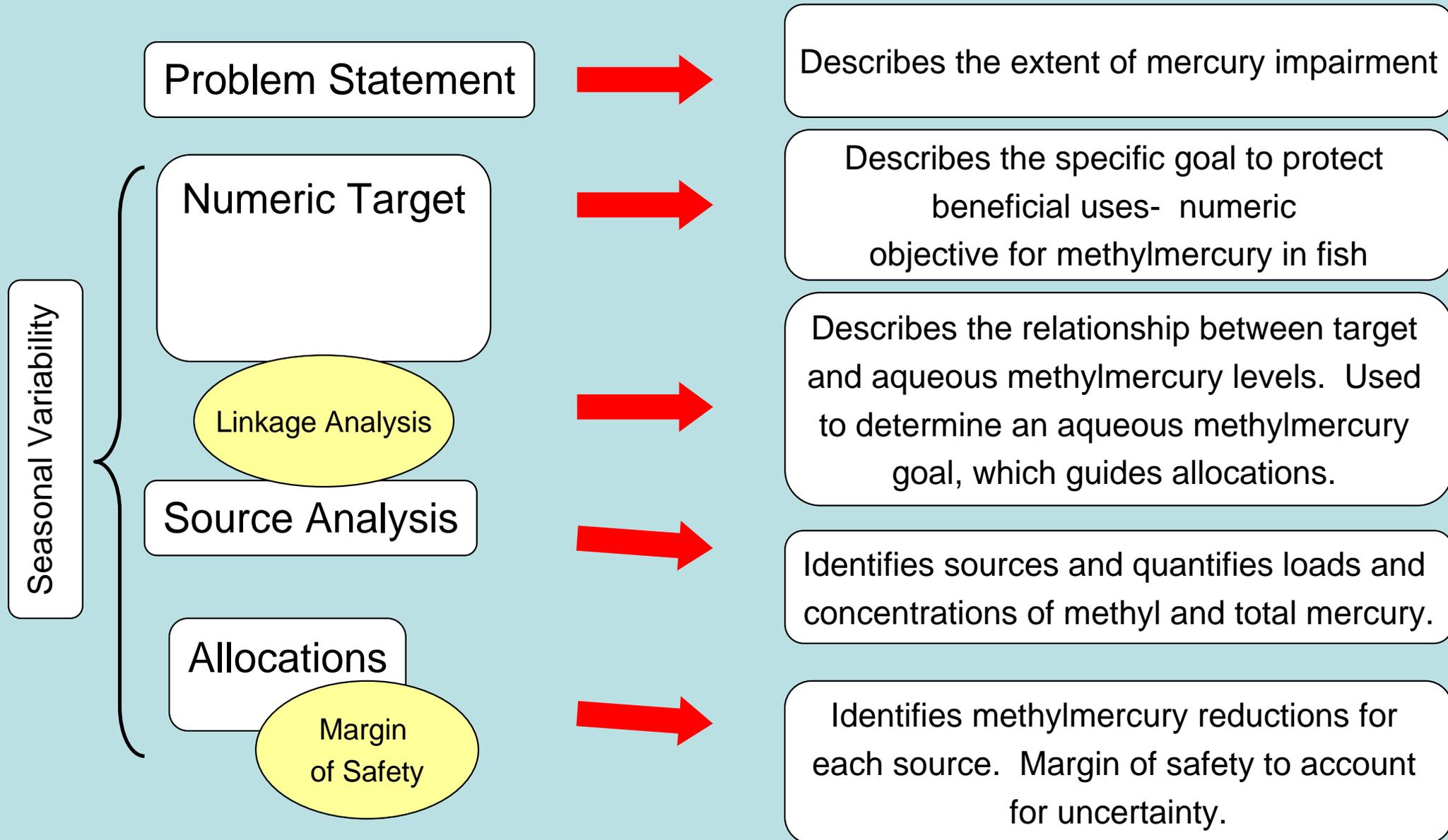
# Regulatory Requirements

- Federal Clean Water Act
  - CWA Section 303(d):
    - Identify waters that do not meet standards.
    - Establish Total Maximum Daily Loads designed to attain standards.
    - TMDL is the amount of pollutant a water body can receive and still attain water quality standards.

# Regulatory Requirements

- Porter-Cologne Water Quality Control Act
  - Regional Water Quality Control Boards protect surface and ground water quality.
  - Regional Boards must establish Basin Plans.
  - Central Valley Region Water Quality Control Plan – Sacramento and San Joaquin River Basins
    - Designates Beneficial Uses
    - Establishes Water Quality Objectives
    - Describes the Implementation Plan

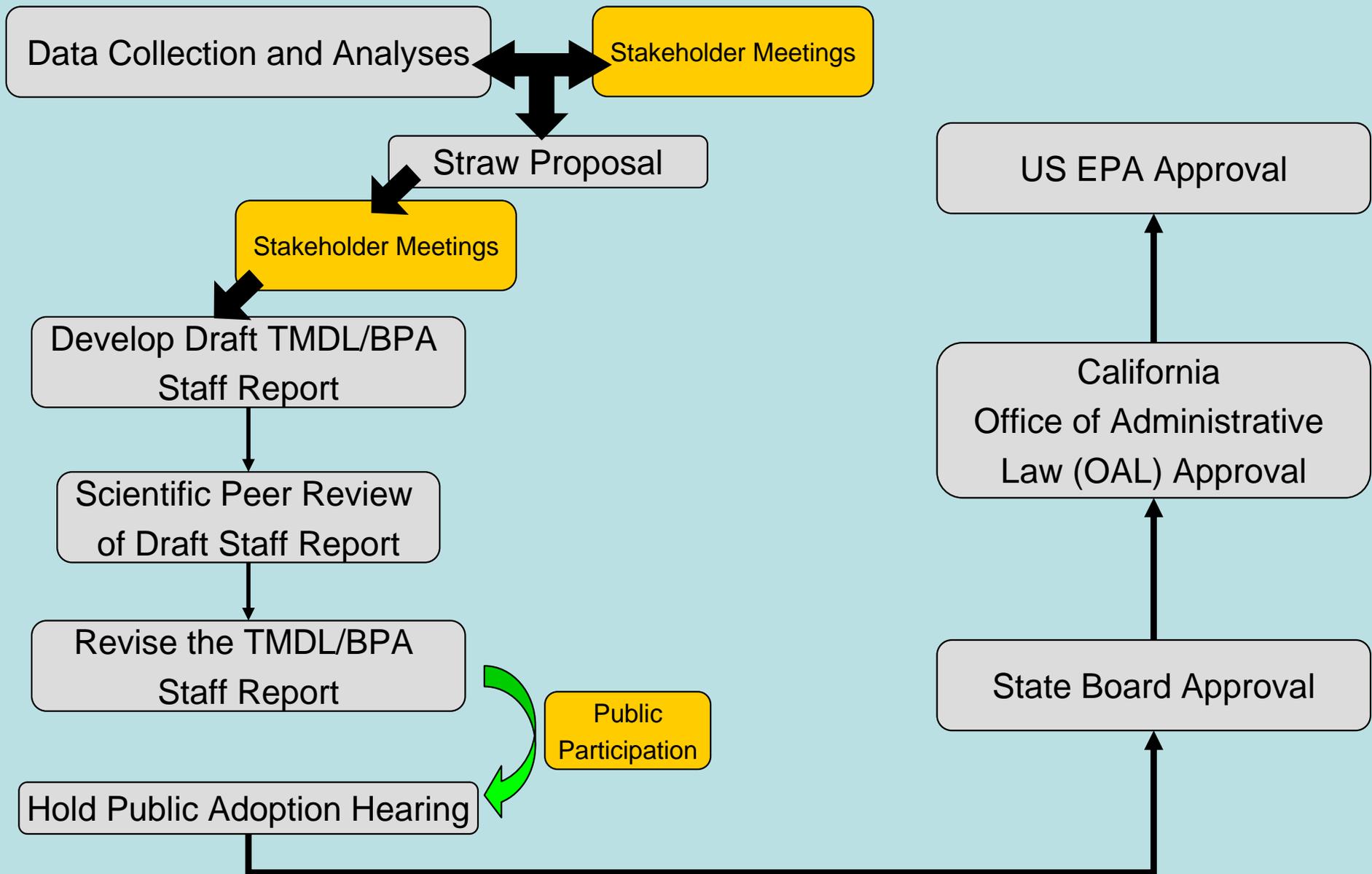
# TMDL Elements



# Basin Plan Amendment

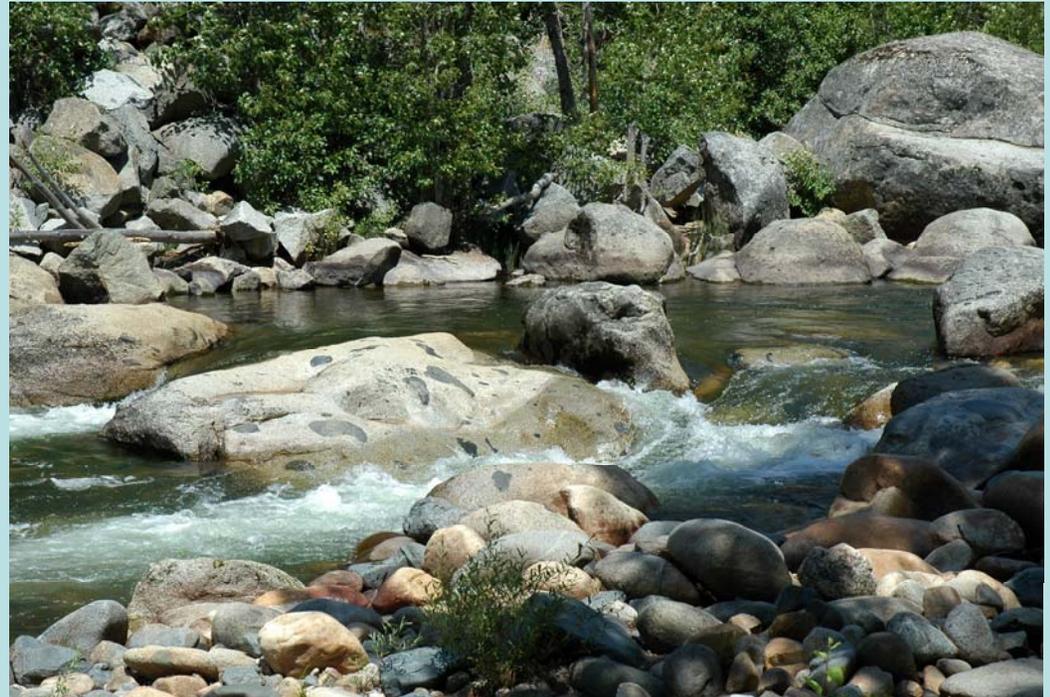
- Establish the American River Watershed Mercury Control Program
  - Numeric objectives for methylmercury in fish tissue
  - An implementation plan for controlling methyl- and total mercury sources
- Evaluation of Alternatives
- Environmental and Economic Analyses
- Scientific Peer Review
- Public Participation

# Basin Planning Steps



# Schedule and Next Steps

1. Stakeholder meetings to work on straw proposal and develop BPA – Winter 2010 /Spring 2011
2. Draft report to peer review – Summer 2011
3. Revise Draft BPA Report – Fall 2011
4. Formal Public Review – Spring 2012
5. Board Hearing – Spring 2012



# Contact Information

- American River Watershed TMDL/BPA

Webpage:

[http://www.waterboards.ca.gov/centralvalley/water\\_issues/tmdl/central\\_valley\\_projects/american\\_river\\_hg/index.shtml](http://www.waterboards.ca.gov/centralvalley/water_issues/tmdl/central_valley_projects/american_river_hg/index.shtml)

- Questions or Comments:

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- Patrick Morris, [pmorris@waterboards.ca.gov](mailto:pmorris@waterboards.ca.gov),  
(916) 464-4621

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