

# Mercury Programs Update

State Water Resources Control Board

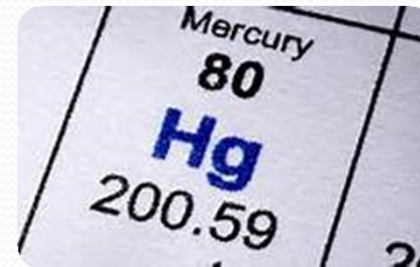
April 23, 2012 Board Meeting



Item # 4

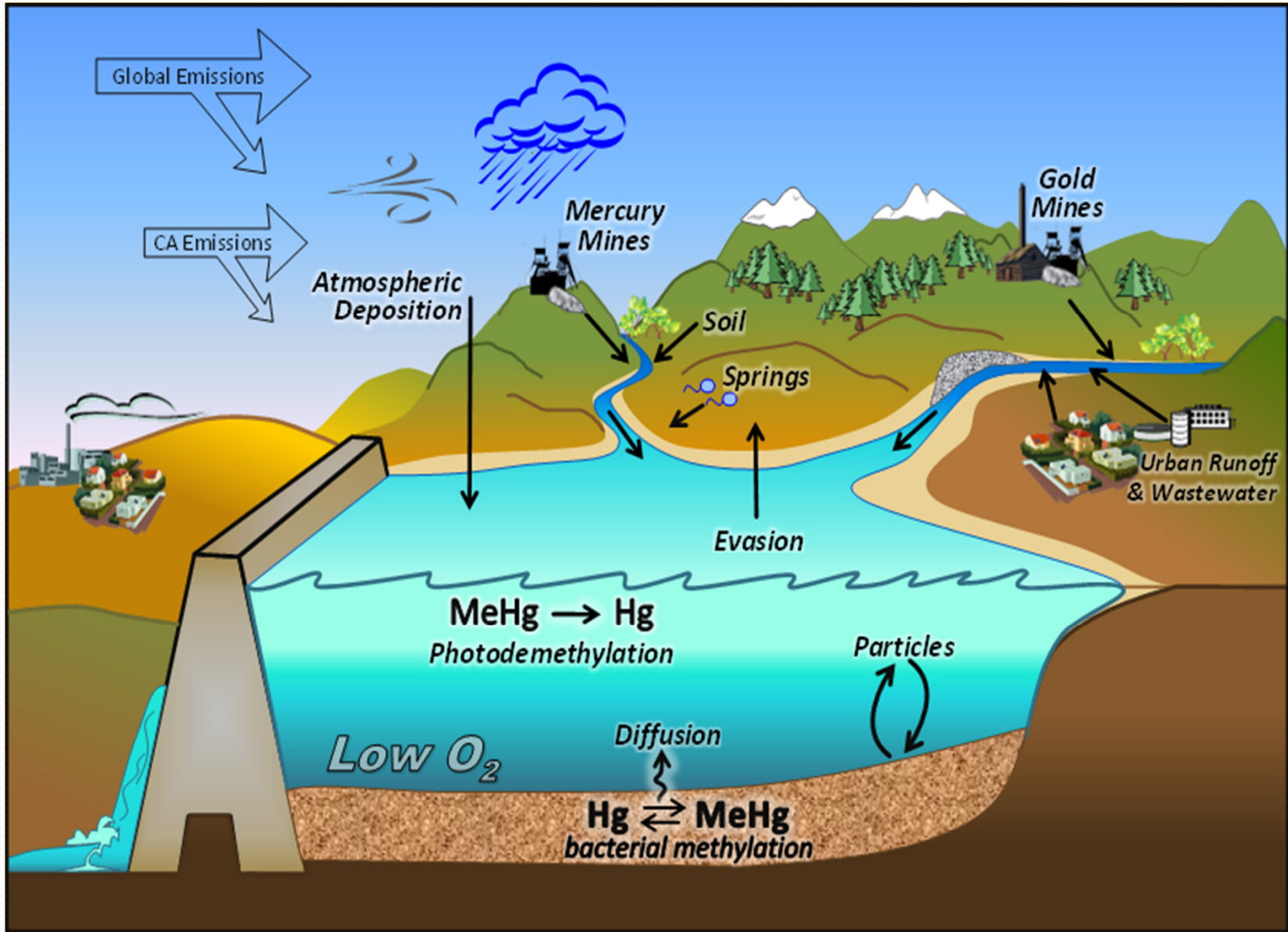


# Today's Agenda

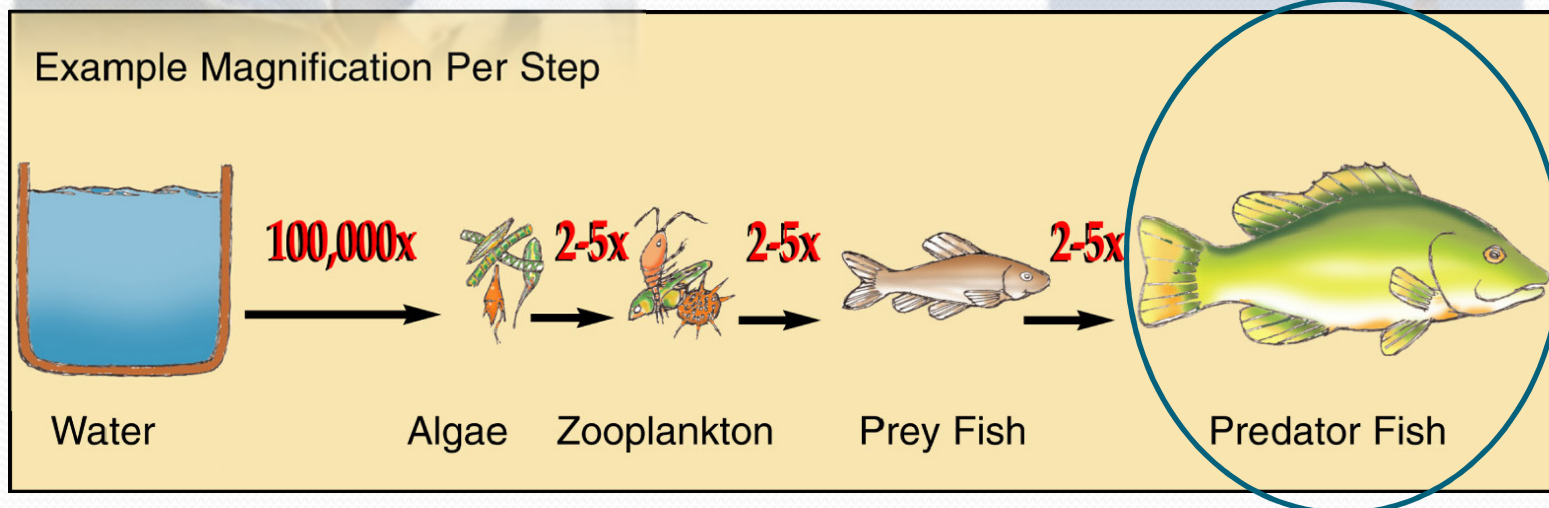


- Introduction to mercury
- Central Valley Water Board mercury TMDLs
- San Francisco Bay Water Board mercury TMDLs
- Statewide Mercury Program for Inland Surface Waters, Enclosed Bays and Estuaries
  - Control Program for Mercury Impaired Reservoirs
  - Methylmercury Fish Tissue Objectives and Implementation
  - Tribal Fish Consumption Study

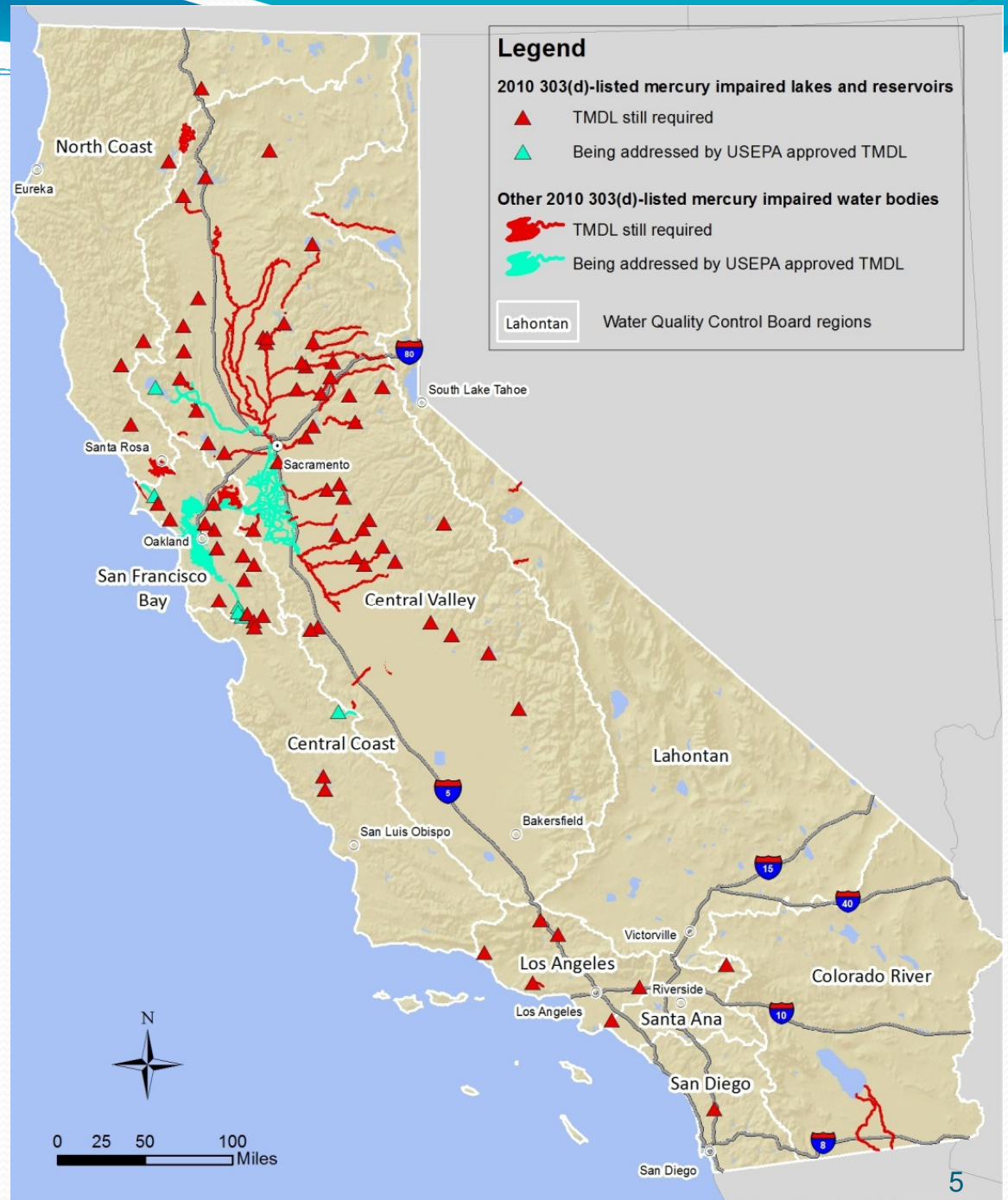
# Sources and Methylation of Mercury



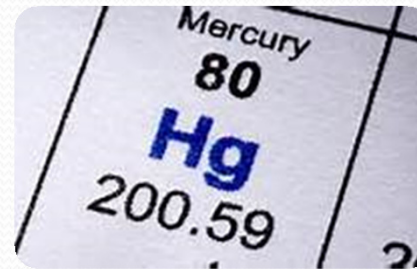
# Methylmercury Bioaccumulation



# Mercury-impaired waters



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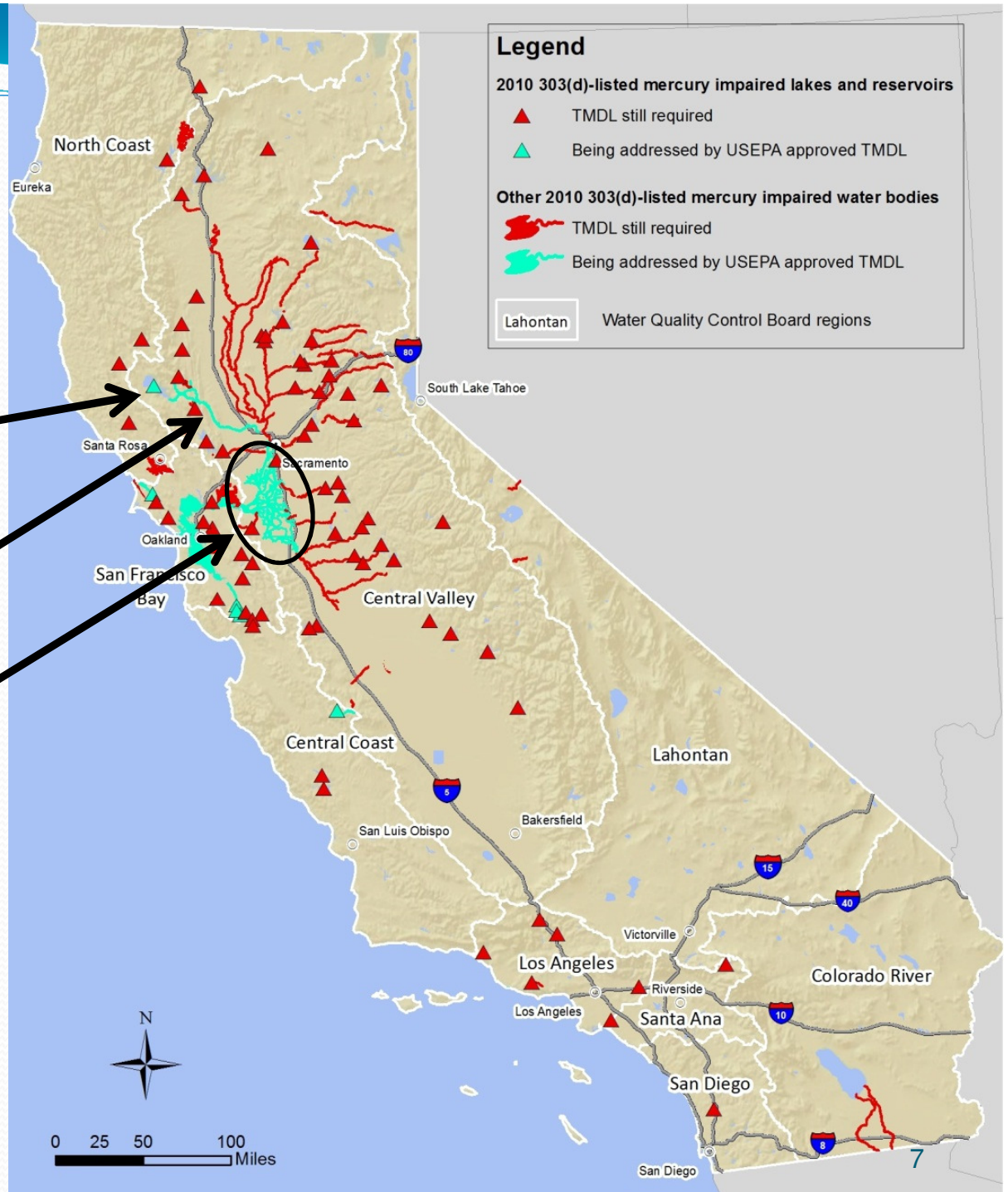
# RB5 Mercury TMDLs

Clear Lake 2003

Cache Creek Watershed 2005

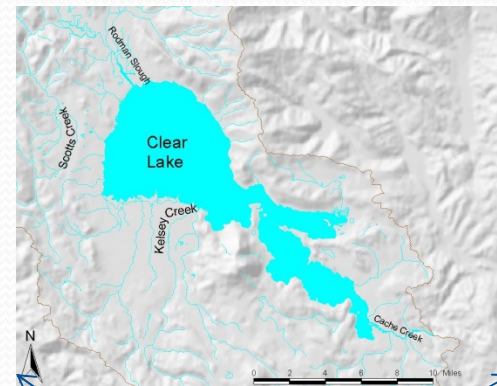
Delta 2010

Currently, 80 additional water bodies on the 303(d) list



# Clear Lake and Cache Creek TMDLs

- First water quality objective for methylmercury in fish in California
- Focused on inorganic mercury control:
  - Mine remediations
  - Erosion control





# Clear Lake and Cache Creek

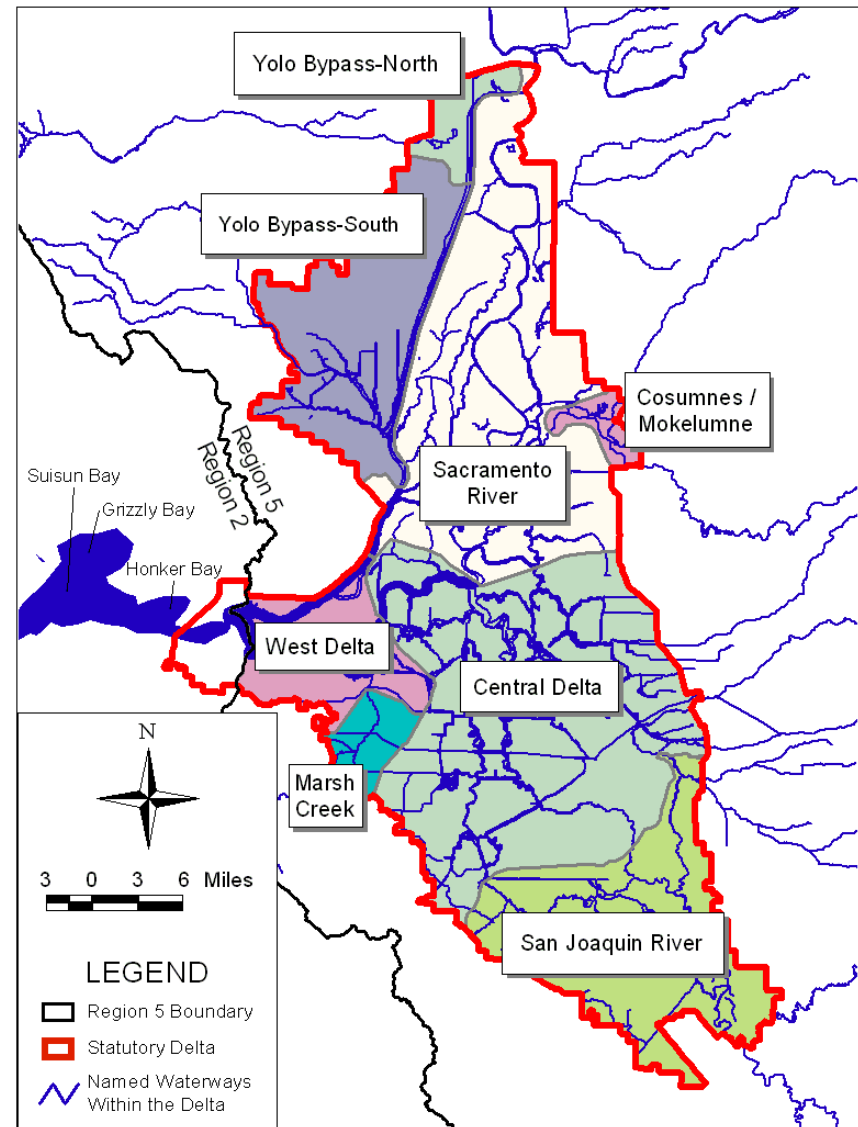
## TMDLs

- Sulphur Bank Mine
- Abbott and Turkey Run mines  
18,000 kg mercury contained



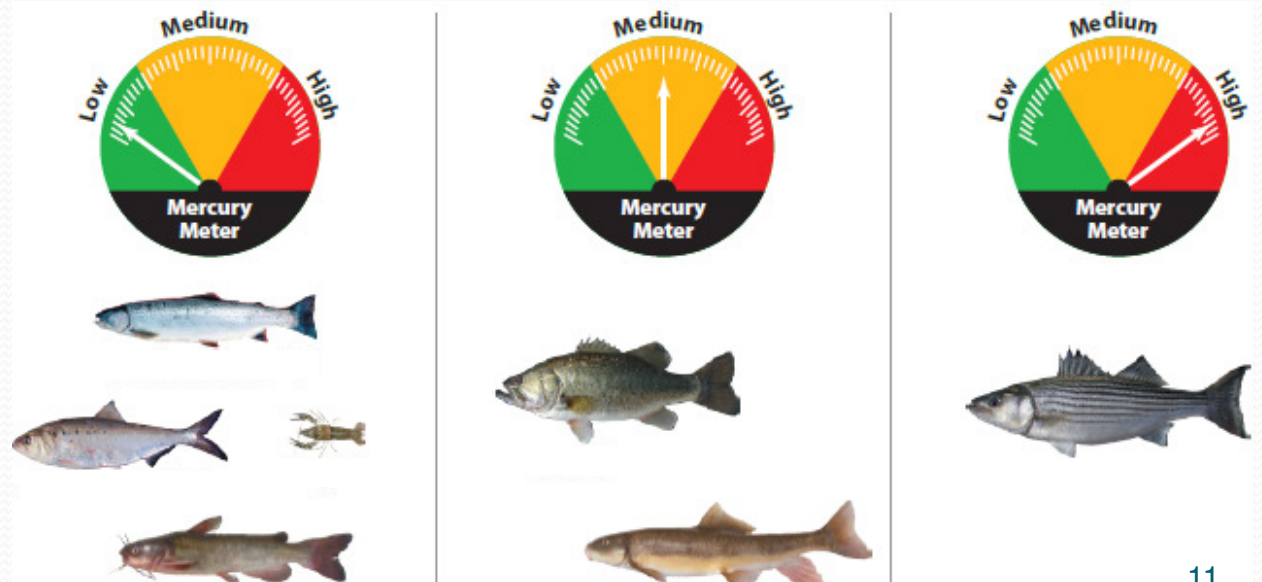
# Delta & Yolo Bypass TMDL

- TMDL requirements for methylmercury & inorganic mercury sources
- Methylmercury control studies in Phase 1



# Exposure Reduction Programs

- Response to Resolution 2005-0060
- San Francisco Bay and Delta Mercury TMDLs
- Goal: protect fish consumers
- Mercury and PCBs



# Exposure Reduction

- Educational materials
- Pier signs
- Community-based projects
- Training & technical assistance
- Evaluation

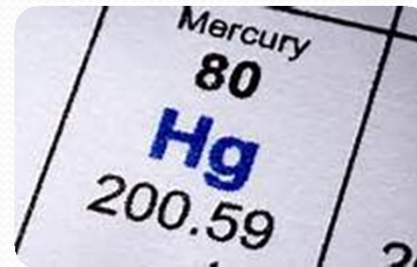


# Exposure Reduction Programs

- Funded by entities responsible for reducing loads
- SF Bay Program completed first “cycle” of activities
- Work plan for Delta activities due Oct. 2013
- Challenges
  - Funding & coordination
  - Dept. of Public Health resources



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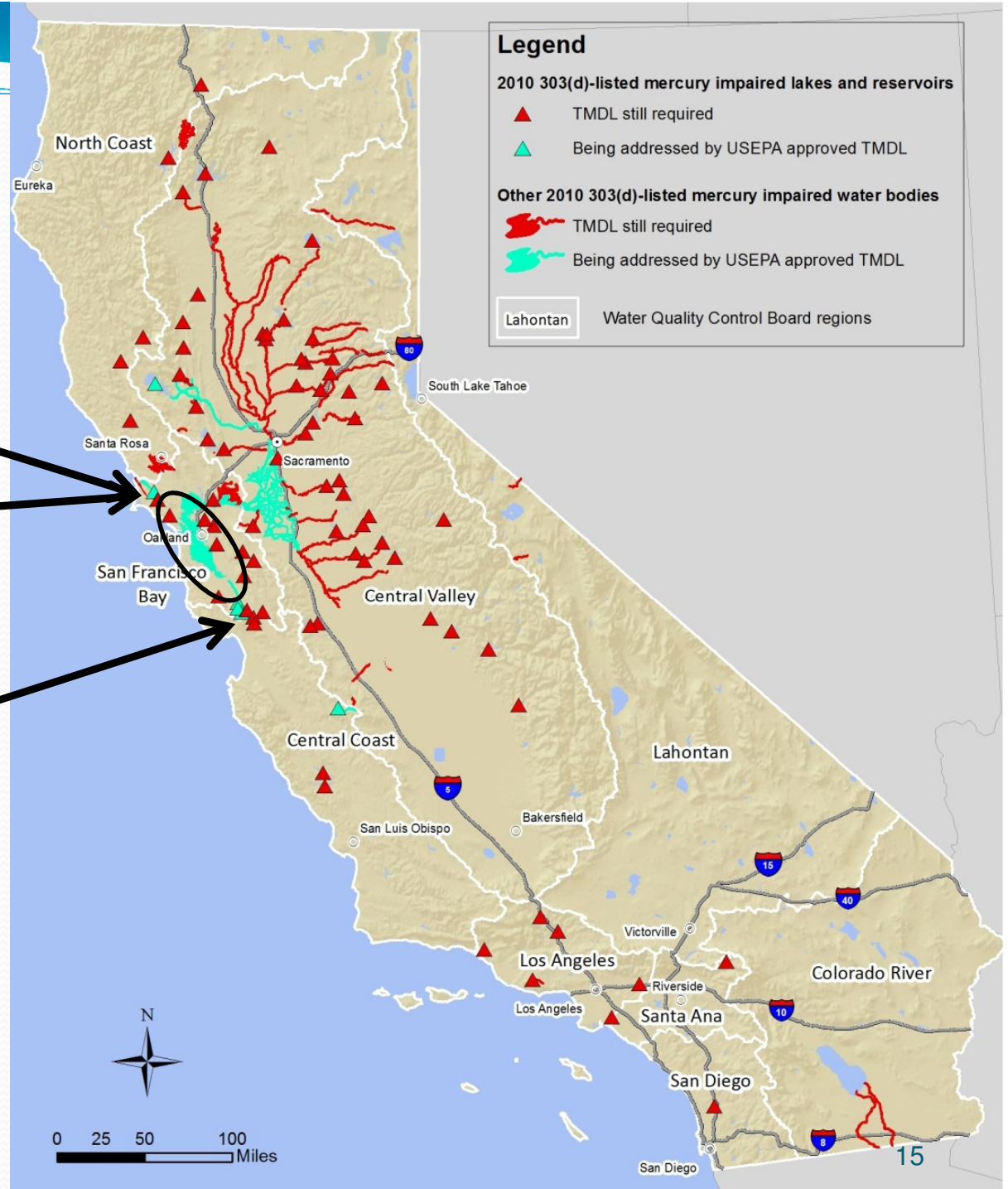


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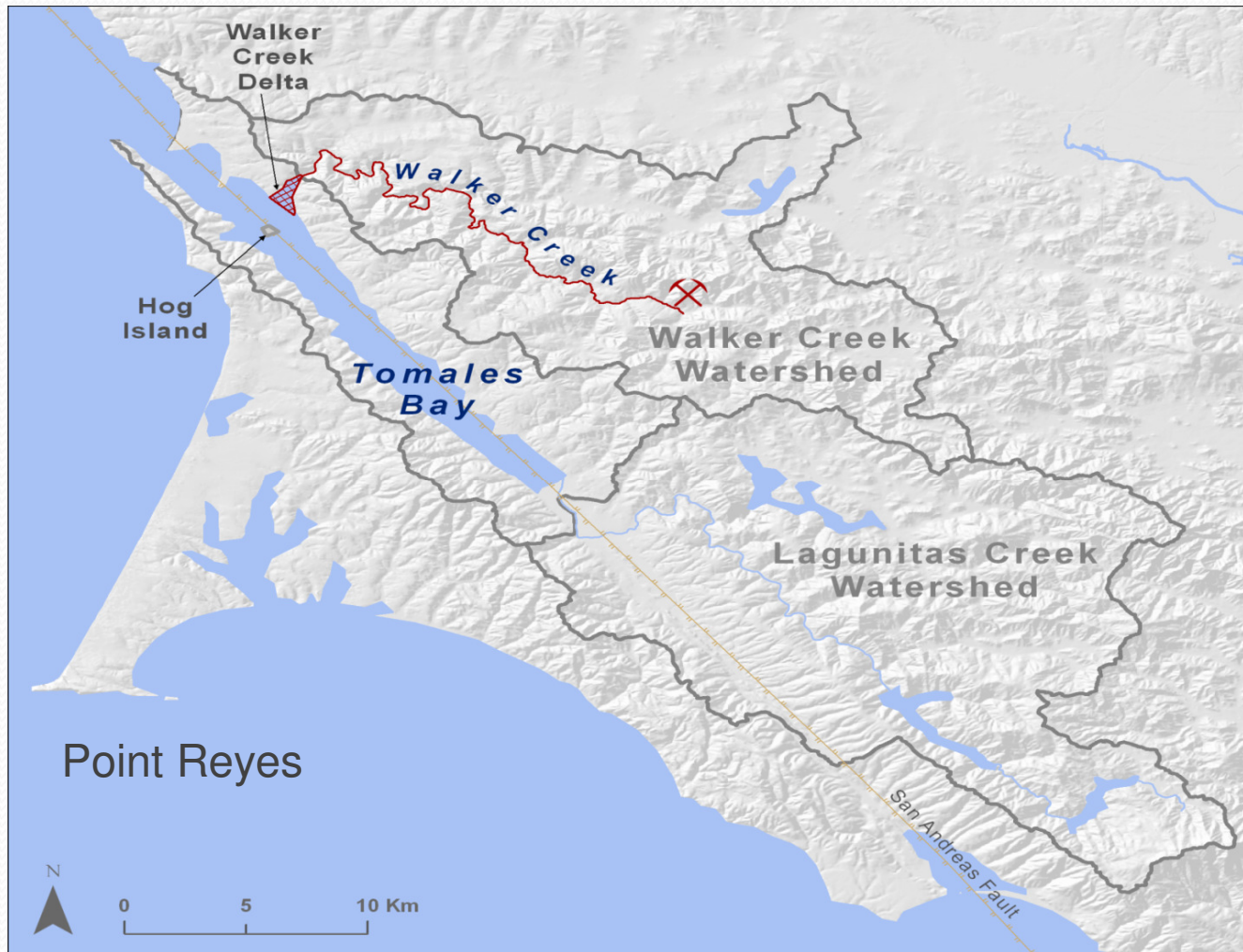
# RB2 Mercury TMDLs

Tomales Bay 2012  
Walker Creek 2007  
SF Bay 2006  
Guadalupe River 2008

Currently, 14  
additional water  
bodies on 303(d) list

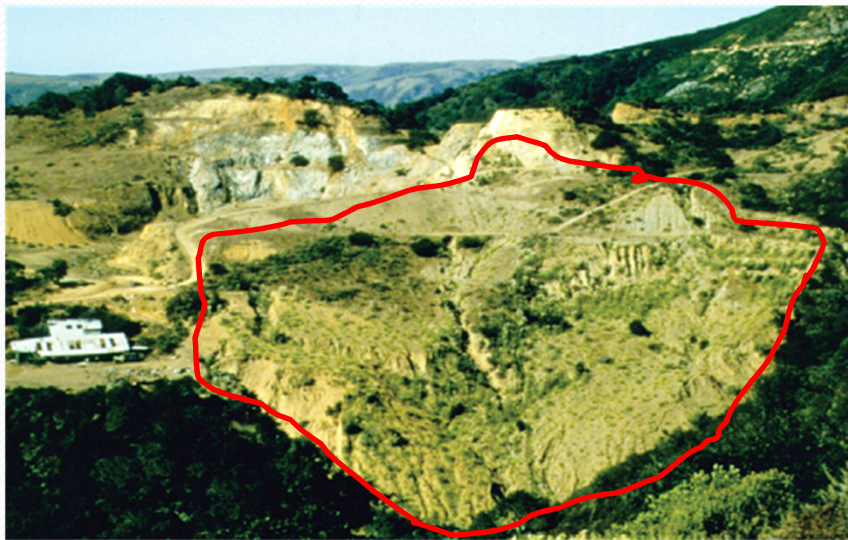


# Tomales Bay and Walker Creek Mercury TMDLs





# Tomales Bay and Walker Creek Mercury TMDLs



Before



After

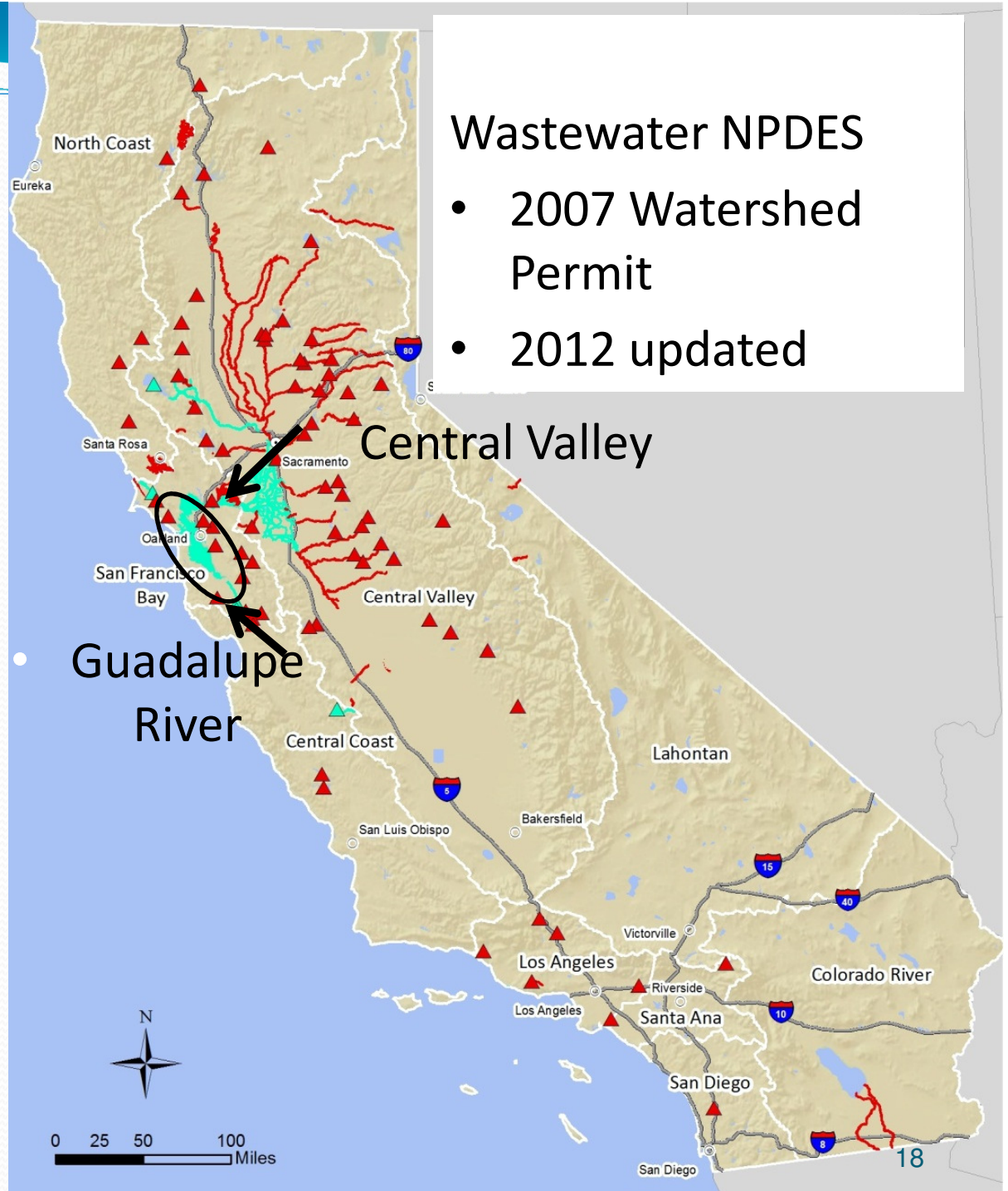
Gambonini Mercury Mine

# San Francisco Bay

Examples and studies:

Dental amalgam  
separators >85%

Household  
hazardous waste



# San Francisco Bay

Examples and studies:

Stormwater:  
PCBs and mercury  
pilot projects

Methylmercury studies

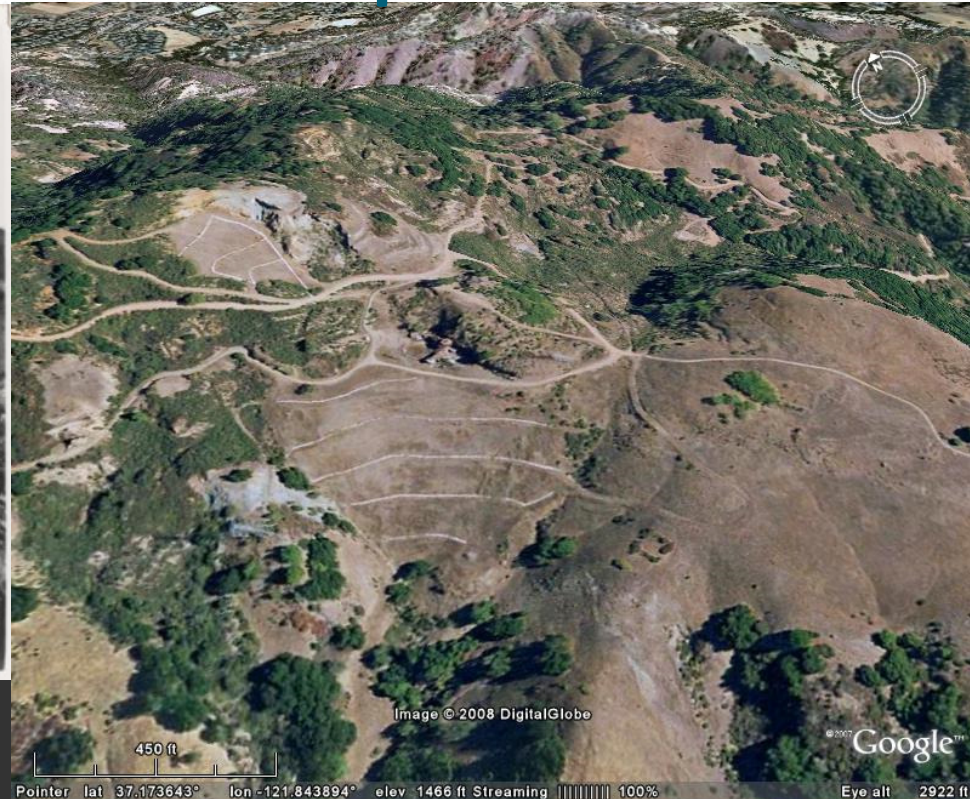


San Leandro Bay, [alamedainfo.com](http://alamedainfo.com)

# Guadalupe Implementation Starts at the Top



•Mine Hill ca. 1870  
From: History San Jose website

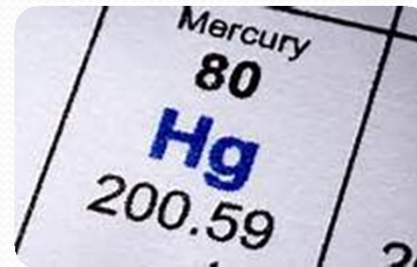


•Mine Hill 2008  
From: Google Earth

# Leaders in Innovation: Water Chemistry

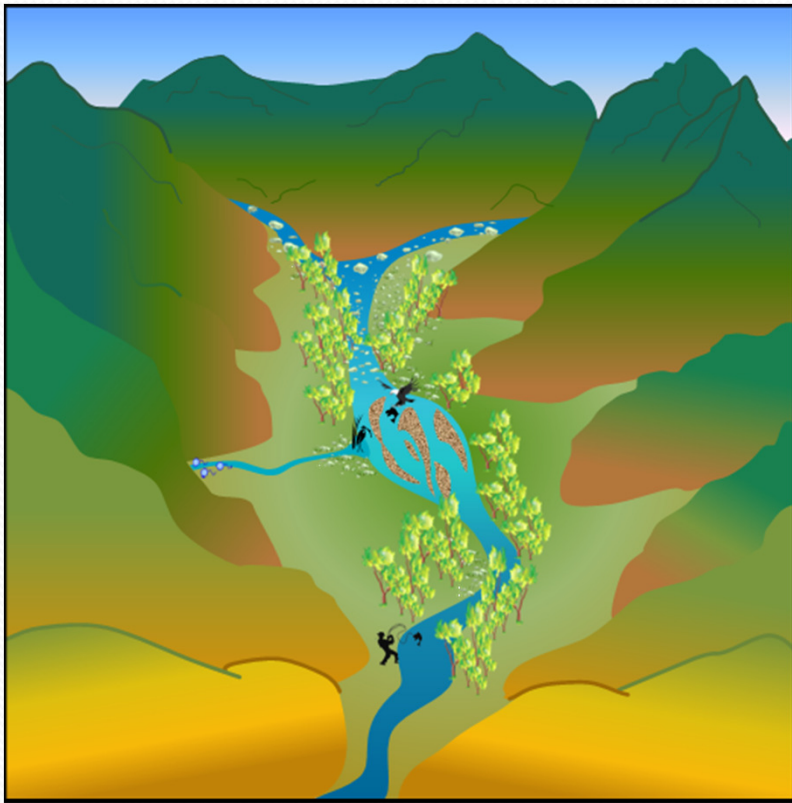


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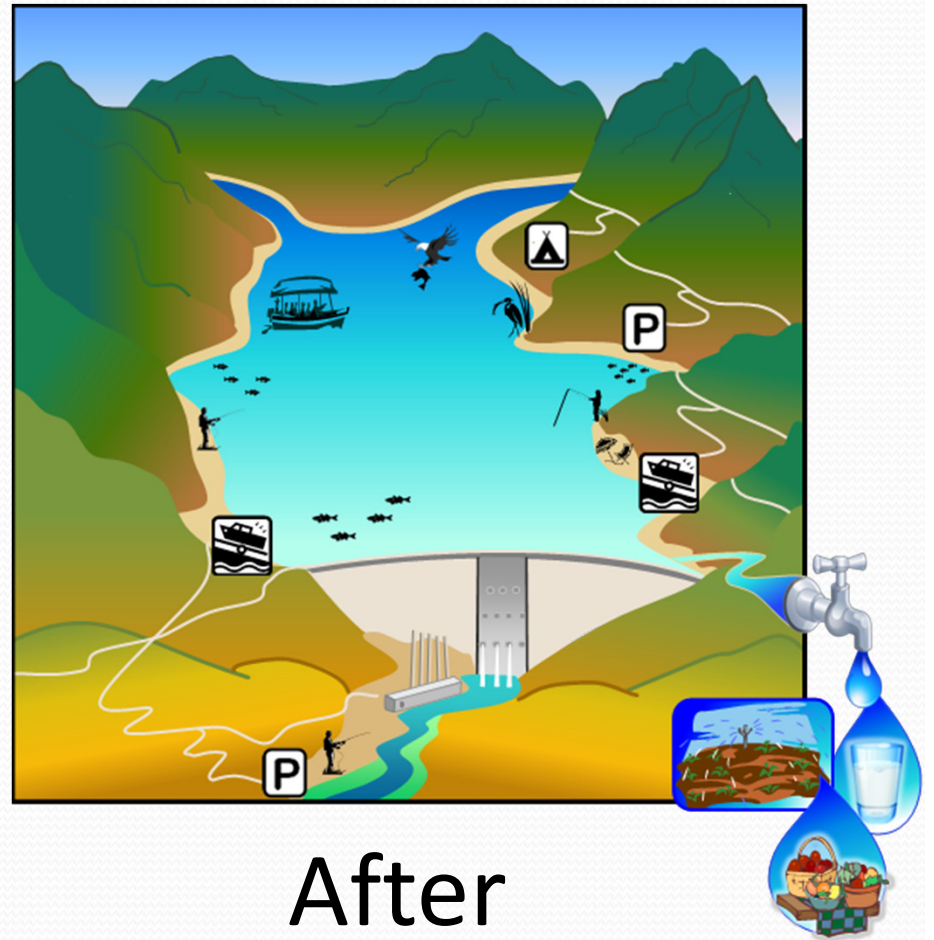


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# Building a Reservoir



Before



After



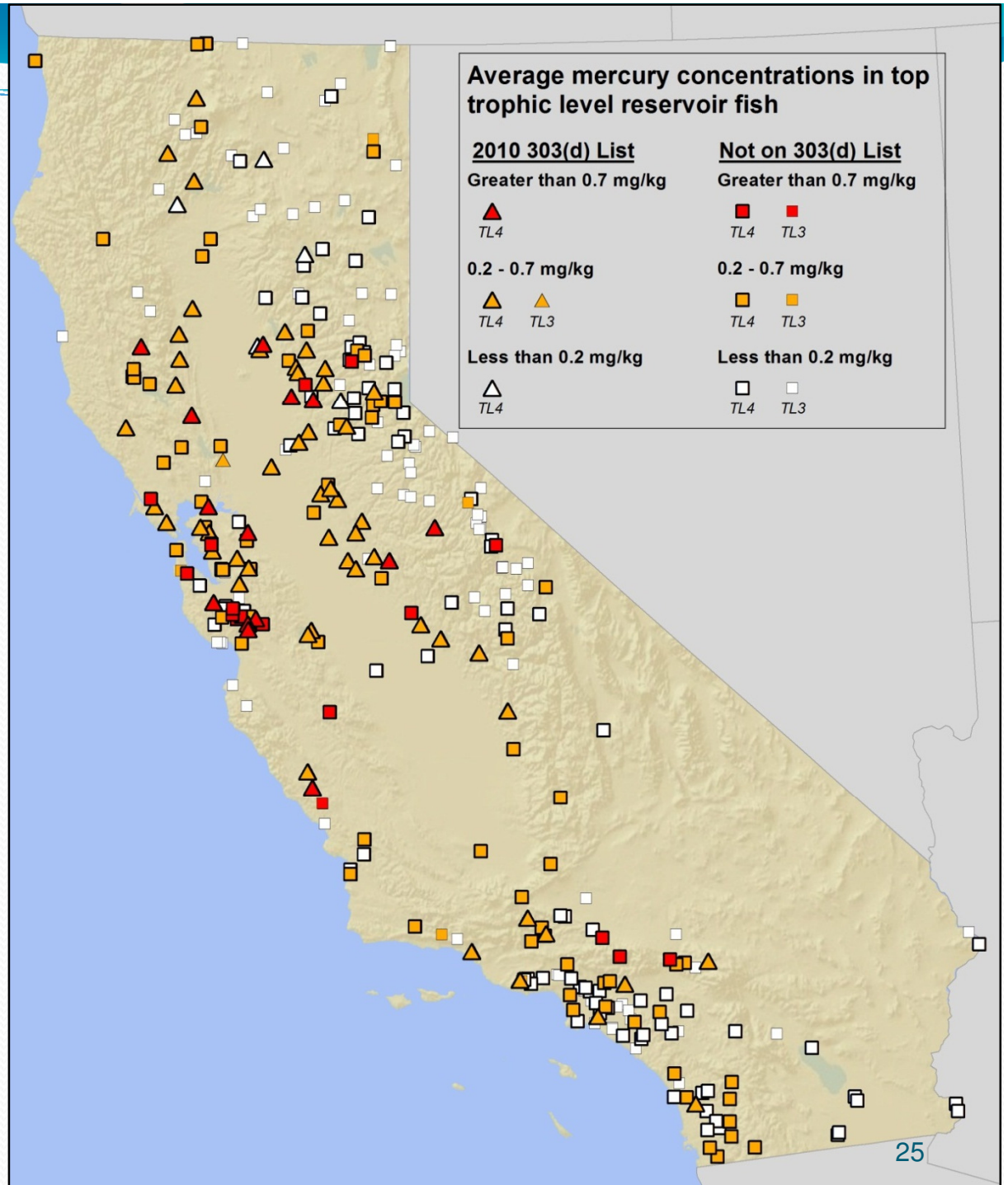
# Reservoirs: Multiple Factors Contribute to Impairment

- Linkage from sources to mercury in fish  
sources → methylation → bioaccumulation
- Several tools
  - Select right tool(s) for each reservoir



# Reservoir Fish Tissue Mercury Levels

- 74 listed reservoirs (this project)
- another ~ 75 likely soon to be listed
- Estimate ~50% of 1,000 – 1,400 CA reservoirs impaired



# Potential Solutions to Reduce Fish Mercury

- Source control



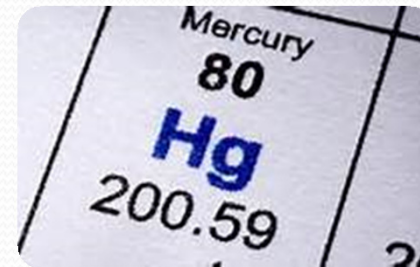
- Water chemistry  
(decrease methylation)



- Fisheries management



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# Background: Current Mercury Limits

## California Toxics Rule, 2000

- Aqueous Mercury Criteria
- Not updated with EPA's 2001 guidance
  - Fish tissue criterion
- Not protective of wildlife

Need new water quality objective



# Developing a Methylmercury Fish Tissue Objective

- “Fish tissue” objective
- Methylmercury: very toxic form of mercury
- Objective option: Similar to adopted site-specific objectives in San Francisco Bay and Delta TMDLs
  - 1 fish meal a week

# Developing a Small Fish Methylmercury Fish Tissue Objective

- Protect California least tern, an endangered bird
- Already adopted in Delta and San Francisco Bay TMDLs



Rinus Baak, U.S. Fish and Wildlife Service



Sightings: California Natural Diversity Database (CNDDDB): <http://www.dfg.ca.gov/biogeodata/cnddb/> (accessed 09/2012)  
Habitat: US Fish and Wildlife Service species profiles: <http://www.fws.gov/species/#endangered> (accessed 09/2012)



# Developing an Implementation Plan

- Apply to inland surface waters, enclosed bays and estuaries
  - Except where existing TMDL site-specific objectives and implementation plans
- Coordinated with Control Program for Mercury Impaired Reservoirs
- Utilize existing programs



# For People Dependent on Fish

## Statewide Beneficial Use Definitions:

1. Native American Culture
  2. Subsistence Fishing
- Already in Region 1 Basin Plan
  - Defining, not designating to water bodies





# Tribal Fish Consumption Study

- Study contract: UC Davis
  - Survey: which fish? where? how much?
  - About 20 tribes interested
  - Developing survey methods
- Study will not be complete before the Board considers objectives for adoption
- Reopener: to incorporate study results

# Overall Project Schedule

## Statewide Control Program for Mercury Impaired Reservoirs

<b>CEQA scoping</b>	<b>March 2012</b>
<b>Proposal Development</b>	<b><i>Ongoing</i></b>
<b>Stakeholder Outreach</b>	<b><i>Ongoing</i></b>
<b>Scientific Peer Review</b>	<b>Winter 2013/2014</b>
<b>State Water Board public workshop</b>	<b>Summer 2014</b>
<b>State Water Board adoption hearing</b>	<b>2015</b>

## Statewide Mercury Fish Tissue Objectives Project

<b>CEQA Scoping</b>	<b>February 2007</b>
<b>Proposal Development</b>	<b><i>Ongoing</i></b>
<b>Stakeholder Outreach</b>	<b><i>Ongoing</i></b>
<b>Scientific Peer Review</b>	<b>Fall 2013</b>
<b>State Water Board public workshop</b>	<b>Summer 2014</b>
<b>State Water Board adoption hearing</b>	<b>2015</b>

# Find Out More, Stay in Touch!

- Project web page:  
[www.waterboards.ca.gov/  
water\\_issues/programs/mercury](http://www.waterboards.ca.gov/water_issues/programs/mercury)
- Sign up for email notices at:  
[www.waterboards.ca.gov/resources/  
email\\_subscriptions  
/swrcb\\_subscribe.shtml#quality](http://www.waterboards.ca.gov/resources/email_subscriptions/swrcb_subscribe.shtml#quality)
- Email: [MercuryProject@waterboards.ca.gov](mailto:MercuryProject@waterboards.ca.gov)