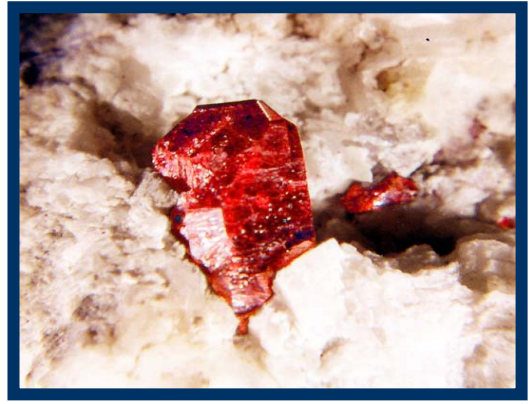
San Francisco Bay Mercury TMDL

Mercury Watershed Council

July 2, 2003

California Regional Water Quality Control Board

San Francisco Bay Region



A little history ….

- 1990 Mercury mines gain attention
- 1994 OEHHA fish advisory
- 1998 Preliminary report on Hg in North Bay
- 2000 Preliminary TMDL report
- 2002 CEQA scoping meeting

Next Steps

- Informal comments due: **Monday, July 14**
- Preparation of draft Basin Plan Amendment and supporting Staff Report
  - Scientific peer review
  - Formal public comment and responses
- Regional Board consideration: Fall 2003
- State Board consideration
- U.S. EPA consideration

Establishing the TMDL

	Regulatory element?	Include in Basin Plan?
Problem Statement	No	For context only
Numeric targets	Yes	Yes
Source Analysis	No	If needed for context
Linkage Analysis	No	If needed for context
TMDL Allocation	Yes	Yes
Implementation Plan	Yes	Yes

San Francisco Bay Does Not Fully Support Its Beneficial Uses

- Sport Fishing
  - Fish consumption advisory
- Wildlife Habitat
  - Mercury in bird eggs accounts for hatch failures
- Preservation of Rare and Endangered Species
  - e.g., California Clapper Rail

Striped Bass

California Clapper Rail

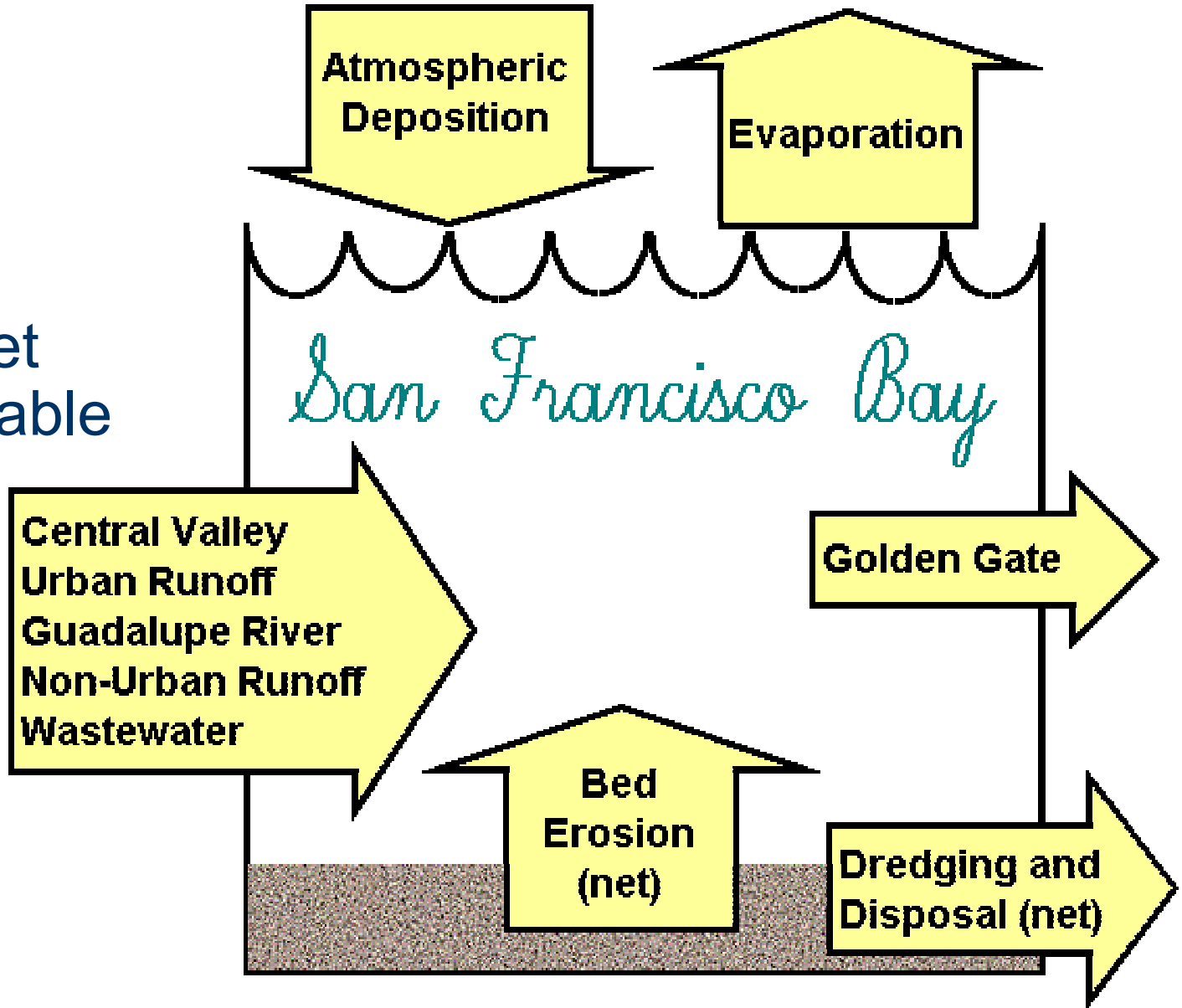
Targets Will Become Regulatory Provisions of Basin Plan

- Fish tissue target
  - 0.2 ppm mercury
  - Relates to human health
- Bird egg target
  - 0.5 ppm mercury
  - Relates to wildlife and rare and endangered species
- Sediment target
  - 0.2 ppm mercury in sediment
  - Derived from the other targets

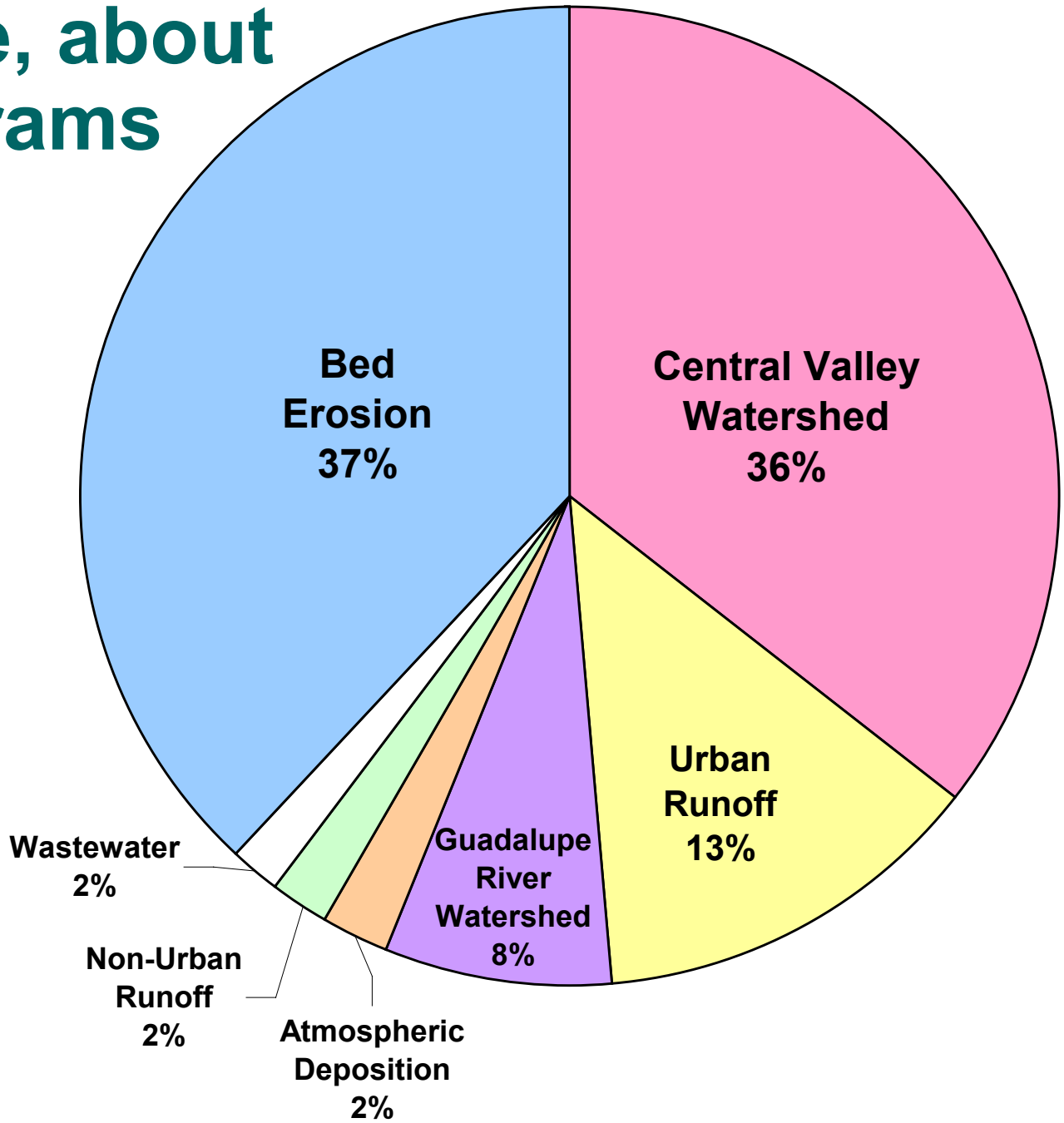
~50% Reduction Needed

Think Inside the Box….

- Identify and prioritize reasonable solutions
- Do not over-interpret limited available data



On Average, about 1,200 kilograms of mercury enter San Francisco Bay each year.



Mercury Loads Relate to Mercury Concentrations

	Mercury Load (kg/yr)	=	Sediment Load (M kg/yr)	x	Sediment Hg Conc. (ppm)
SOURCES					
Bed Erosion	**460**		1,100		0.42
Central Valley Watershed	**440**		1,650		0.26
Urban Runoff	**160**		410		0.38
Guadalupe River Watershed	**92**		*NA*		2.07
Atmospheric Deposition	**27**		*NA*		*NA*
Non-Urban Runoff	**25**		400		0.06
Wastewater	**19**		*NA*		*NA*
TOTAL	***1,220***		*3,570*		
LOSSES					
Dredging and Disposal (net)	**150**		400		0.37
Evaporation	**190**		*NA*		*NA*
Transport through Golden Gate	**1,400**		3,170		0.44
TOTAL	***1,730***		*3,570*		

Allocations Reflect Sediment Target

	Mercury Load (kg/yr)	=	Sediment Load (M kg/yr)	x	Sediment Hg Conc. (ppm)
SOURCES					
Bed Erosion	**220**		1,100		**0.2**
Central Valley Watershed	**330**		1,650		**0.2**
Urban Runoff	**82**		410		**0.2**
Guadalupe River Watershed	**2**		*NA*		**0.2**
Atmospheric Deposition	**27**		*NA*		*NA*
Non-Urban Runoff	**25**		400		0.06
Wastewater	**19**		*NA*		*NA*
TOTAL	***1,220***		*3,570*		
LOSSES					
Dredging and Disposal (net)	**150**		400		0.37
Evaporation	**190**		*NA*		*NA*
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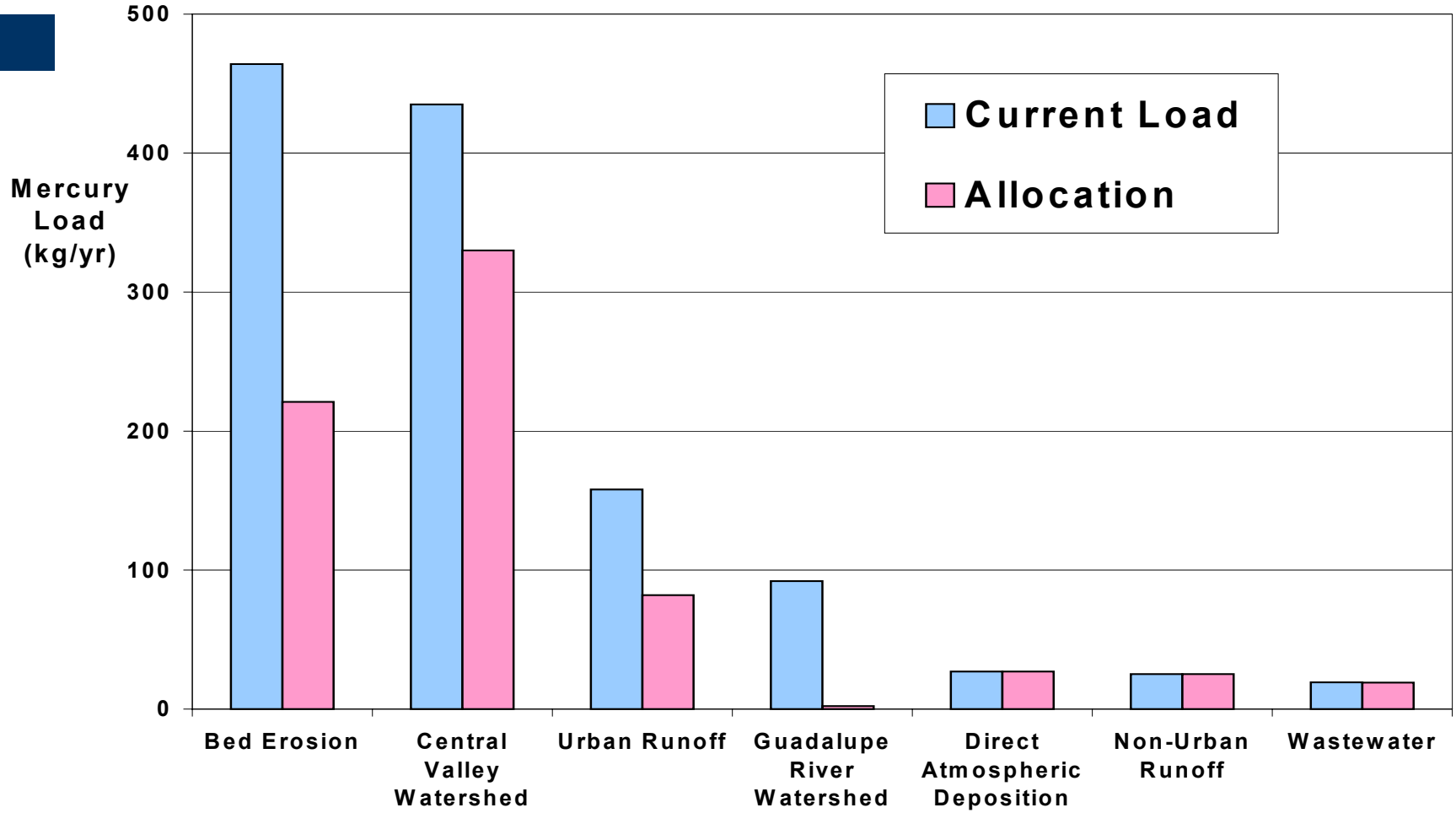
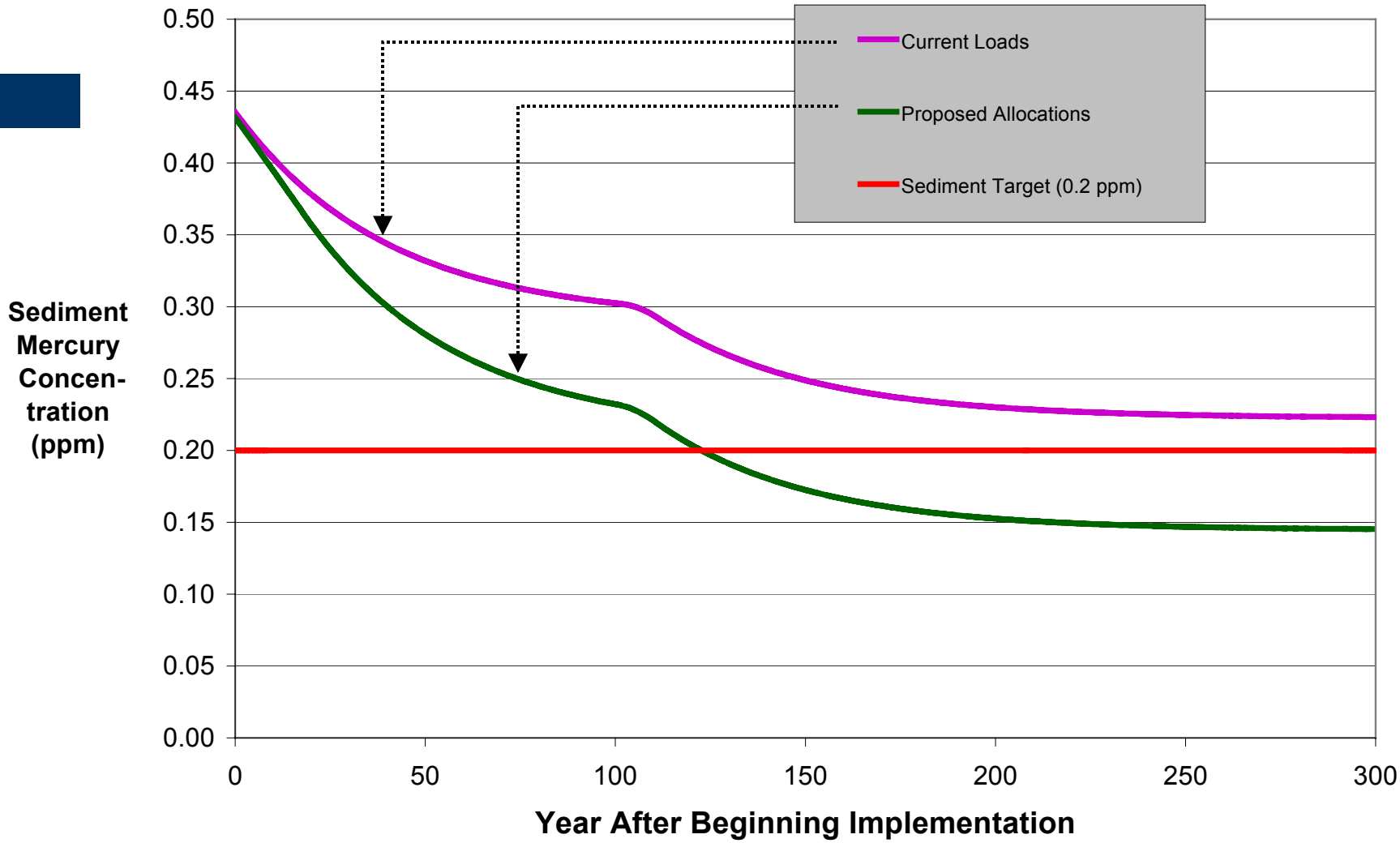
Allocations Will Become Regulatory Provisions of Basin Plan



Expect Significant Improvement



Implementation Plan has 4 Goals

1. Reduce mercury loads to SF Bay.
2. Reduce production of methyl mercury.
3. Monitor and investigate bay system.
4. Encourage actions that address multiple contaminants.

Implementation At a Glance

- Urban Stormwater Runoff
  - Demonstrate load reductions via source control.
- Municipal and Industrial Wastewater
  - Maintain good current performance.
  - Control sources and do pollution prevention.
- Industrial Wastewater
  - Maintain good current performance.
  - Control sources and do pollution prevention.

Implementation At a Glance

- Non-Urban Stormwater Runoff
  - No actions planned (sediments below target).
- Dredging and Disposal
  - Expect LTMS implementation.
  - Investigate impact of dredging on mercury uptake and compliance with permits already in effect.
- Direct Atmospheric Deposition
  - Investigate relevance and controllability.
  - Support and track national and international efforts.

Implementation At a Glance

- Bay Margin Contaminated Sites
  - Quantify mercury on-site and loading to Bay.
  - Quantify impacts relevant to TMDL targets.
- Wetlands
  - Investigate wetland role in mercury cycling.
  - Manage wetlands to minimize methylation.

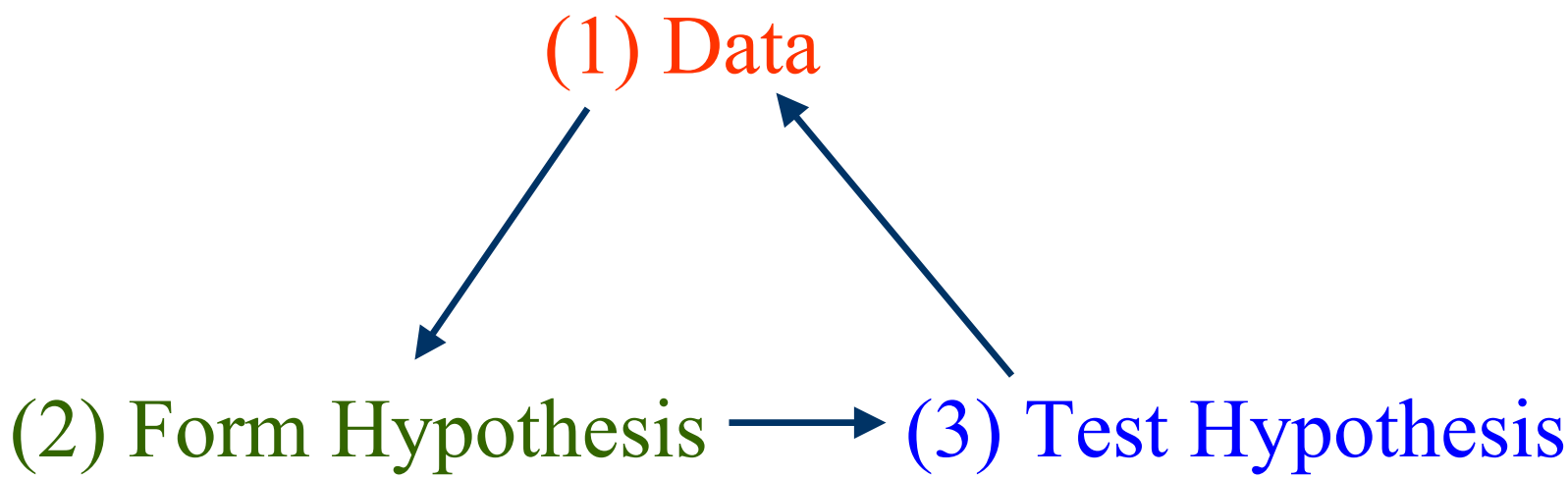
Implementation At a Glance

- Abandoned Mercury Mines
  - Bring local mines into compliance with Basin Plan conditions.
- Central Valley Watershed
  - Develop and implement Bay TMDLs in Central Valley region.
- Guadalupe River Watershed
  - Develop and implement Guadalupe River TMDL.

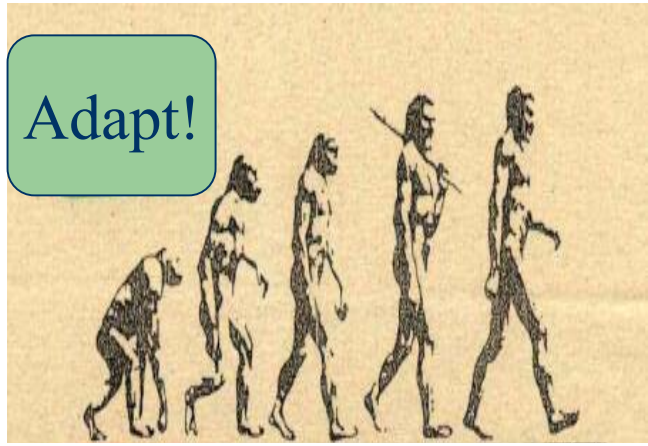
Adaptive Implementation = Using The Scientific Method

From National Academy of Science Report

"…ultimate way to improve the scientific foundation of the TMDL program is to incorporate the ***scientific method***"

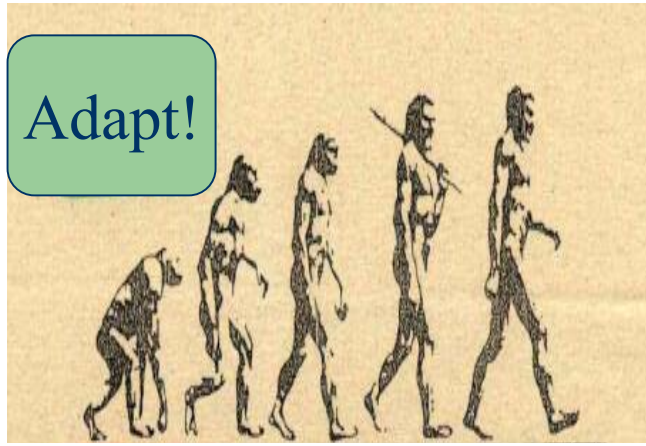


Adaptive Implementation



- State hypotheses and rationale
- Monitor to assess progress
  - toward targets and allocations.
- Special studies to assess:
  - Appropriateness of targets; and
  - Controllability of loads and methylation.
- Re-visit decisions on targets, allocations, and implementation actions every 5 years.
- Form new hypotheses. Lather, rinse, repeat.

We will be adaptable



During the 5 year review, we will ask:

- Is bay making progress toward targets?
- Should we modify monitoring?
- What are loads and how have they changed?
- Is there new information that suggests modifications to targets, allocations, or actions.

Comment Now – Big Changes Become Harder and Harder to Make

- Focus on regulatory provisions
- Be substantive — TMDL must be based on evidence in administrative record
- Suggest feasible revisions or solutions
- Recognize that TMDL must move forward

www.swrcb.ca.gov/rwqcb2/sfbaymercurytmdl.htm

What Do You Think?

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Comments Due July 14

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