Best Available Techniques & Prioritization of Mine Impacted Lands
Mercury Entrained in the Sediment

Deer Creek 1908
Greenhorn Creek 2011
Heavy Metals & Physical Hazards
1. **UPLAND SOURCES** such as hydraulic and hard rock mines that are contaminated with mercury.

2. **RESERVOIRS** where mercury-laden sediments accumulate.

*Conceptual drawing by Courtney Chatha, for The Sierra Fund - copyright 2013*
Long Term Solution - Clean it Up

• Mercury Removal from contaminated areas
  • What was once a non-point source is no longer
  • What was once low levels is now a concern

• Abandoned Mine Remediation
  • What was once remote is no longer
  • Smart Growth and Planning
CABY IRWMP SAM Projects

- Forum with presentations and field trips
- Landscape benefits
- Landowner Case Studies
- All at different stages
- Integration
- Coordination
- **Product:** Strategy for SAM for CABY Region
A Growing Need For:

- Standardization of Assessment Practices
- Centralization of Information
- Comprehensive Prioritization Efforts
- Evaluation of cumulative effects/benefits
Two Tracks of Technical Presentations

I. Prioritization of Remediation Efforts Track

II. Best Available Techniques Track
Prioritization of Remediation Efforts Track

• Prioritization through Modeling: upstream and downstream efforts

• Opportunities for Prioritization Efforts at the State and Local Government levels
Best Available Techniques Track

- Assessment, Evaluation and Monitoring of Remediation at Mine Impacted Lands
- Regulatory Framework for Remediation Efforts
Reclaiming the Sierra 2015

• Best Available Techniques Track
  • Kendra Zamzow, PhD
    • Hinde Auditorium/Forest Suite
• Prioritization of Remediation Efforts Track
  • Stephen McCord, PhD
    • Forest Suite/Hinde Auditorium
• Breakout Session
  • SWOT Analysis
    • Forest Suite
Reclaiming the Sierra
An Initiative to Address Historic Mining Impacts

Health Science Outreach Policy

Nevada City Legacy Mine Land Acquisition Project
Malakoff Diggins Assessment and Cleanup Project
Combie Reservoir Mercury and Sediment

www.sierrafund.org
Ranking of Mining-Impacted watersheds in the Sierra Nevada Province of the California Bay-Delta Authority Watershed

Source: CA Department of Conservation, 2003
DEPARTMENT OF TOXIC SUBSTANCES CONTROL
KERN COUNTY MINES AND MINING FEATURES

Legend
- Green circles: Kern County: 4146 Mine Features from Topographic Occurring Mine Symbols (TOMS)
- Purple circles: Kern County: 128 Mines from Principle Areas of Mine Pollution (PAMP)
- Orange line: Kern County
DEPARTMENT OF TOXIC SUBSTANCES CONTROL
MARIPOSA COUNTY MINES AND MINING FEATURES

Legend
- Green: Mariposa County: 947 Mine Features from Topographic Occurring Mine Symbols (TOMS)
- Purple: Mariposa County: 93 Mines from Principal Areas of Mine Pollution (PAMP)
- Yellow: Mariposa County
Two Policy Arena Workshop Tracks

I. Improving Mine Reclamation in California

II. Understanding the Multiple Benefits of Mine Reclamation
Improving Mine Reclamation in California

*Pre- vs. Post-SMARA* Makes a Difference

I. CA SMARA began regulating mining operations in the 1970s

II. Pre-CA SMARA mines not required to reclaim *Surface Mining and Reclamation Act*
Challenges to Remediation of Legacy Mines

- Multiple Agencies with multiple roles to play
- Limited resources for reclamation
- Liability Matters
- Due Diligence Prior to Public Acquisition of Toxic Assets
Improving Legacy Mine Reclamation Recommendations

A. Improve coordination both among governmental regulatory agencies and with the academic, business, community, and conservation institutions

B. Develop funding sources for reclamation activities on both public and private lands

C. Create new incentivizes for mine reclamation using best available technologies and practices for responsible and pro-active mine reclamation activities
Modern Mining - SMARA Permitting and Enforcement Issues

• SMARA is inconsistently enforced by lead agencies:
  o Inspections
  o Financial assurances
  o Reclamation plan enforcement

• Improved enforcement of SMARA by lead agencies protects the environment and taxpayers too
Three Workshops on Improving Mine Reclamation

facilitated by Caleb Dardick

Improving Pre-SMARA Legacy Mine Remediation Challenges and Opportunities

SMARA Mine Permitting and Reclamation Issues

Water Bond Implementation Issues and Opportunities
Understanding Multiple Benefits of Mine Reclamation

- Increased water storage capacity for reservoirs
- Restoration of watersheds, including forests and meadows
- Improved water quality, fish habitat
- Creation of job opportunities for reclamation
- Restoration the tribal cultural practices and leadership
- Production of quality materials such as gravel, sand, and gold
Recommendations for Action

A. Restore reservoir water storage capacity, improve water quality, enhance wildlife habitat, provide environmental benefits, and get gold, too.

B. Explore the potential for the development of an environmentally sound, economically viable, ethically mined (E3) gold product from legacy mine reclamation
Three Workshops on Multiple Benefits of Mine Reclamation

facilitated by Liz Mansfield

Multiple Benefits of Sediment Removal from Reservoirs

Definition of E3 Gold Standards

E3 Gold Market Analysis and Early Development