Upper Coeur d'Alene Basin

Coeur d'Alene Basin Environmental Improvement Project Commission

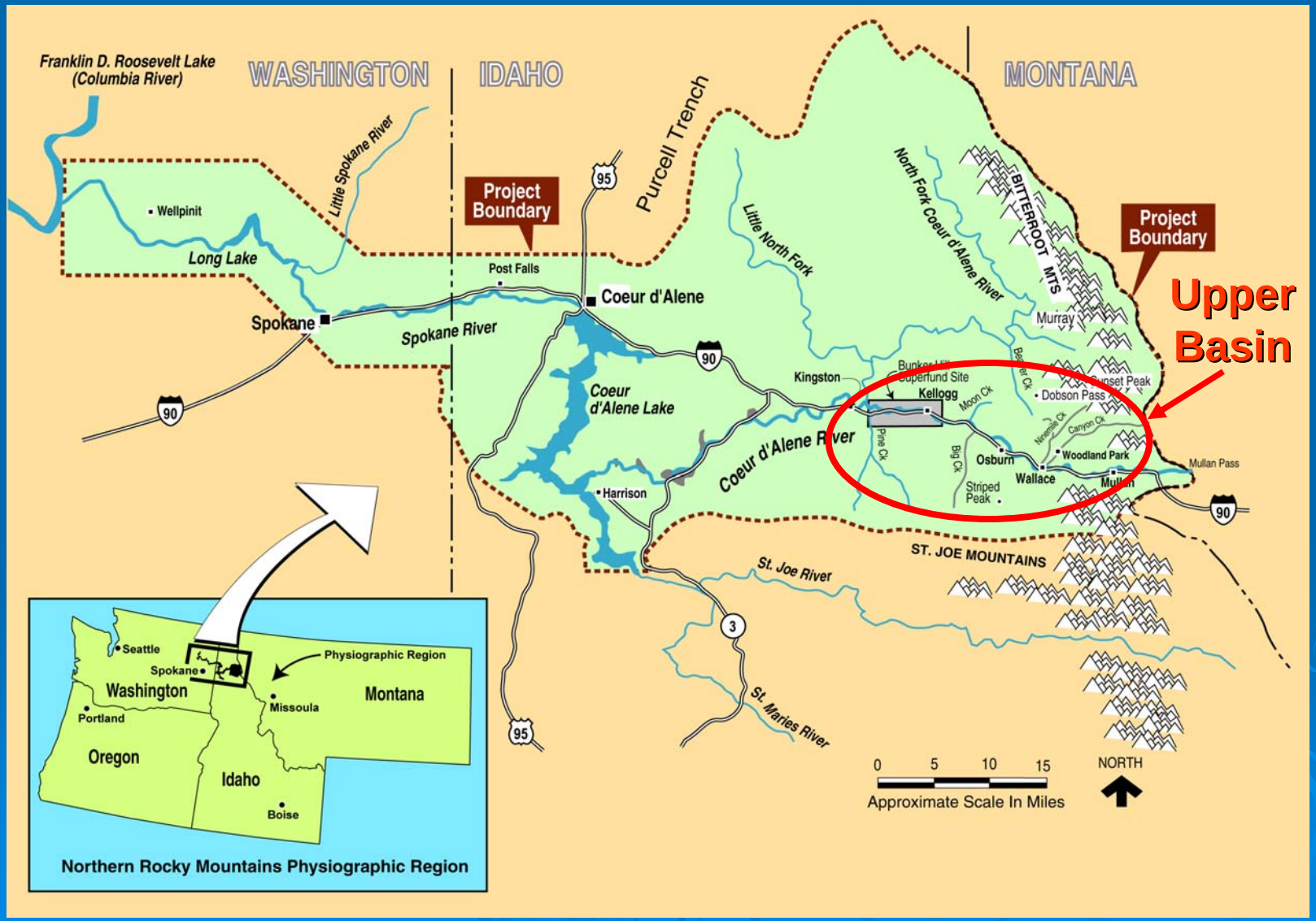
May 19, 2010

Topics

- New cleanup plan
- Description of Alternatives
- Preferred Alternative
- National Remedy Review Board Recommendations
- Implementation Plan
- Schedule

New Upper Basin Cleanup Plan

Coeur d'Alene Basin Location



What will new cleanup plan accomplish?

- Human health protection for surface water used for drinking water
- Ecological protection for surface water
- Human and ecological protection for soil, sediments and source material where remedial actions are taken

Why ROD Amendment Now?

- Present a comprehensive cleanup plan for the Upper Basin
  - Reflects improved knowledge of the Box and Upper Basin
  - Addresses NAS recommendations
  - Interim ROD was never intended to be a complete set of actions to meet water quality standards
  - Addresses groundwater and impaired surface water quality in OU2
- Include actions to protect remedies from tributary flooding and heavy precipitation

Improved Site Understanding

- Evaluation of implemented actions, monitoring data, and pilot studies
- Better understanding of source areas with high dissolved zinc
- Revised approach and conceptual designs for hydraulic isolation and water treatment
- Evaluation of permeable reactive barriers
- Evaluation of OU2 Phase I cleanup actions

Upper Basin ROD Amendment Approach

- **Remedy Protection Alternatives**
  - Protects existing remedy from tributary flooding and heavy precipitation
- **Remedial Alternatives**
  - Updates 2001 alternatives for OU3
    - Added additional mine/mill sites
    - Change in water treatment strategy
    - Incorporated learnings from pilot studies
  - OU2 Phase II actions for water quality

Remedy Protection

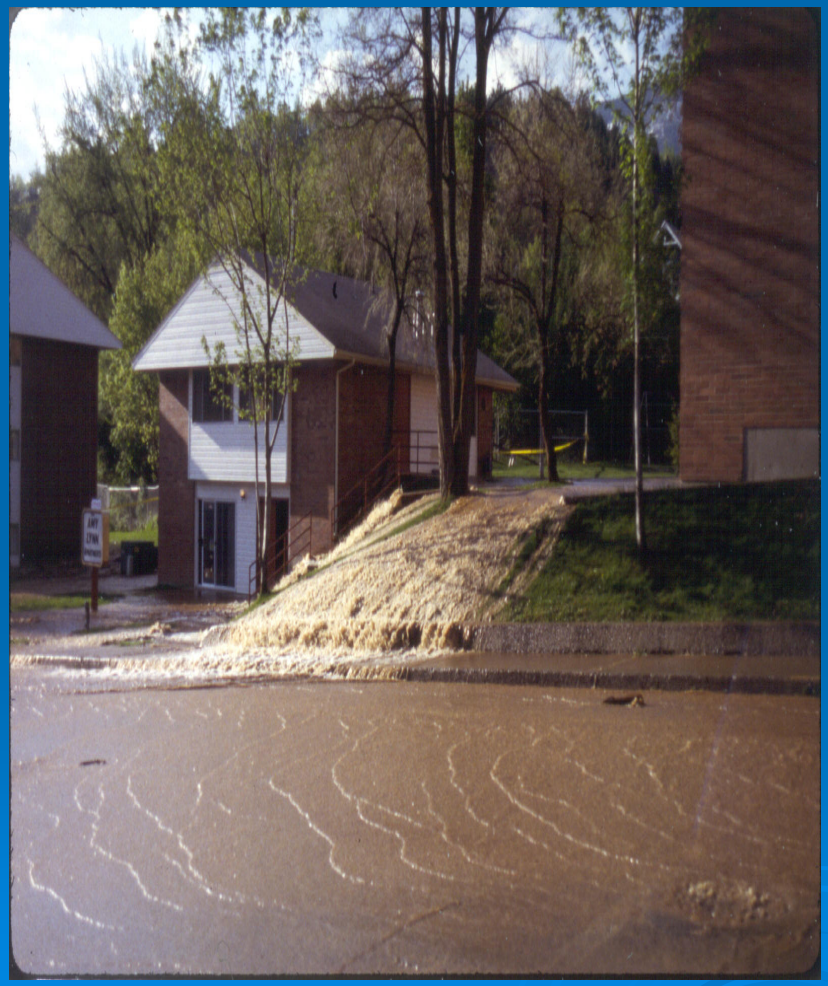
Remedy Protection Goals

- Protect human health and environment
  - Keep clean areas clean
  - Minimize erosion of clean barriers and deposition of contaminated sediment
  - Manage overland water flow from tributary flooding and rain events
- Protect CERCLA investment in human health barriers
  - Over 5,000 parcels remediated to date
  - Over $150M invested to date (EPA & PRPs)

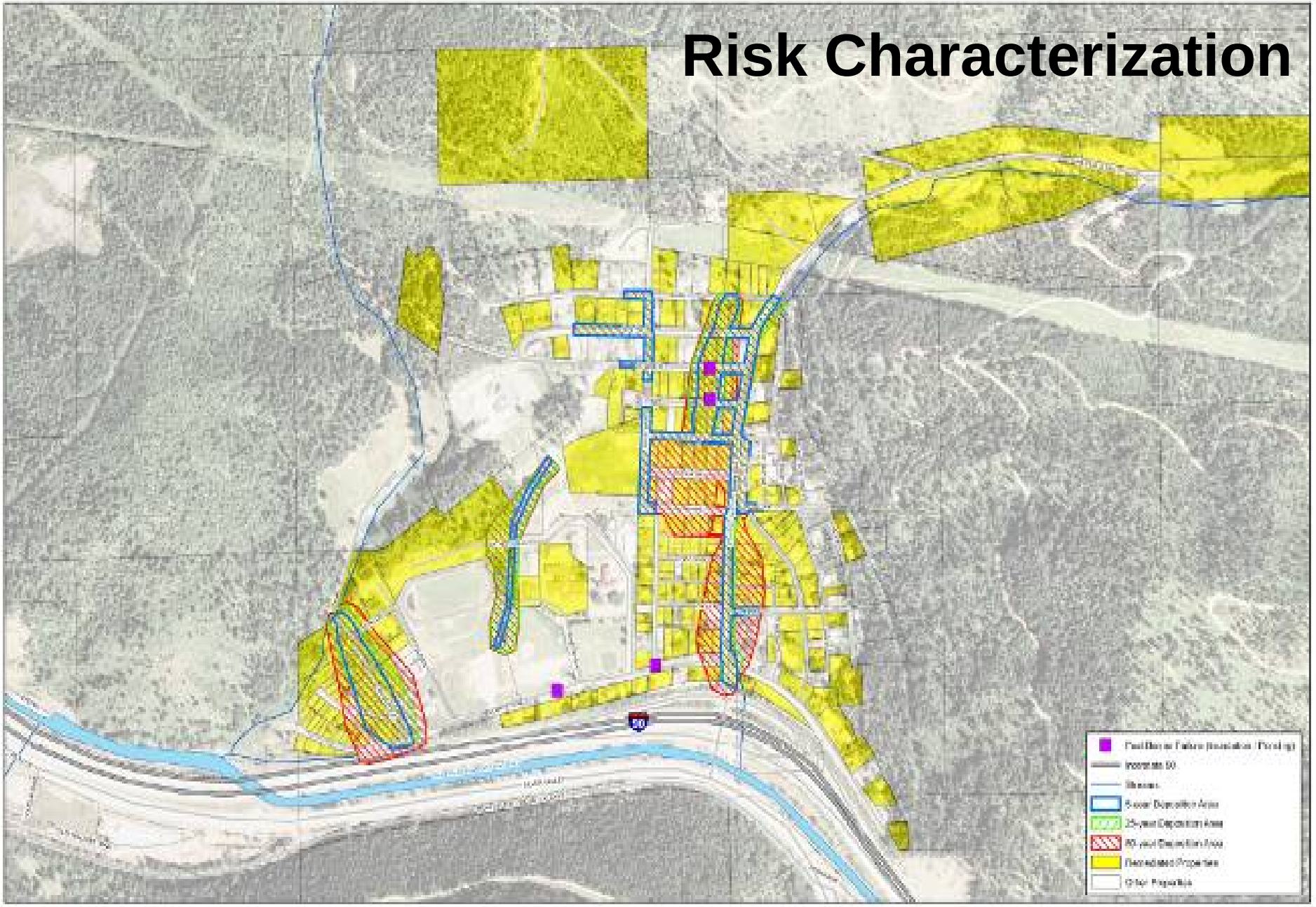
Remedy Protection Focus

- Proposes specific infrastructure actions to address identified risks to human health barriers
- Addresses previously experienced flooding issues
- Provides framework to evaluate additional side gulches

Tributary Flooding & Heavy Precipitation



Risk Characterization



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Environmental Engineering, Inc.
www.terragraphics.com

ROD Amendment

Silverton Deposition Areas

Remedy-at-Risk Summary

At-Risk*	Parcels At-Risk*	Design Storm
7%	350	5-year
16%	800	25-year
25%	1250	50-year

**Within the 8 communities analyzed*

Remedy Protection Alternatives in Draft Focused Feasibility Study

- Alternative RP1 "No Further Action"
  - No modifications to existing infrastructure
  - Relies on
    - Post-Event Response
    - Existing systems
  - Total 30-year NPV cost $50.1M
- Alternative RP2 "Modifications to Selected Remedies to Enhance Protectiveness"
  - Modifies existing drainage controls
  - Relies on Remedy Protection infrastructure projects
  - Total 30-year NPV cost $33.9M

Remedy Protection Components of Preferred Alternative

- 14 individual actions to safely transmit tributary flows & heavy precipitation through communities to the SFCDR:
  - Armor/pave roadside ditches
  - Upsize culverts
  - Replace inlet structures
  - Increase channel capacities
  - Install below grade bypass drainage pipes
- Framework to evaluate 18 Side Gulches

Remedy Protection Benefits

- Increases long-term effectiveness and permanence of existing human health remedies
- Reduces mobility of waste left in-place
- Reduces potential post-flood exposures
- Cost effective

Remedial Actions

Remedial Action Objectives

- Final Remedy for:
  - Human health protection for surface water used for drinking water purposes
  - Ecological protection for surface water
  - Human health and ecological protection for soil, sediments and source material in locations where actions are taken.

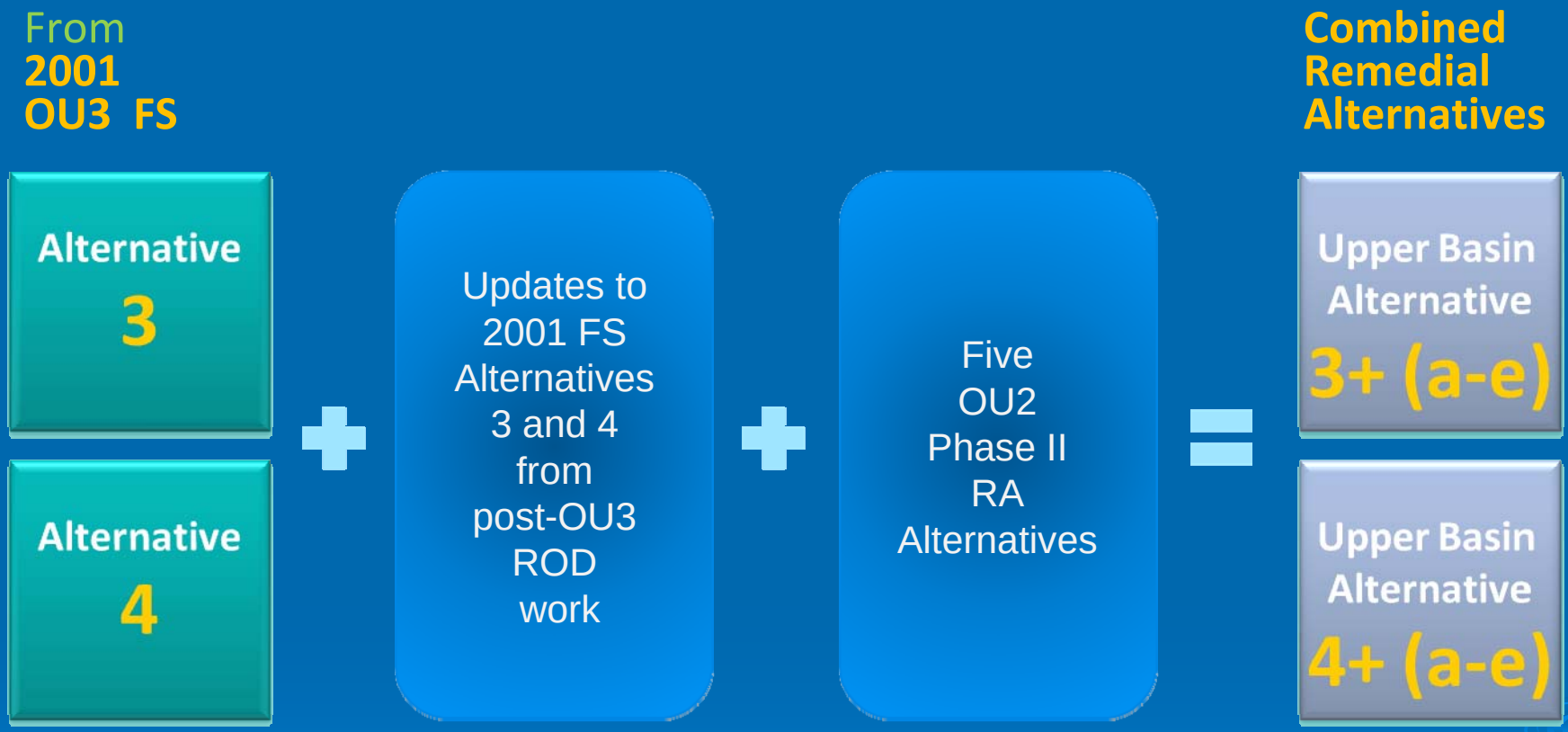
RA Objectives (cont.)

- *Additional Goals*
  - Reduce contribution of contaminated groundwater to surface water
  - Reduce groundwater metals levels
  - Reduce particulate lead in river and recontamination potential in Lower Basin

2001 OU3 FS Ecological RAs

- Alternative 1 - No Action
- Alternative 2 - Contain/Stabilize with Limited Removal & Treatment
- Alternative 3 - Extensive Removal, Disposal & Treatment
- Alternative 4 - Maximum Removal, Disposal & Treatment
- Alternative 5 - State of Idaho Plan
- Alternative 6 - Mining Company Plan

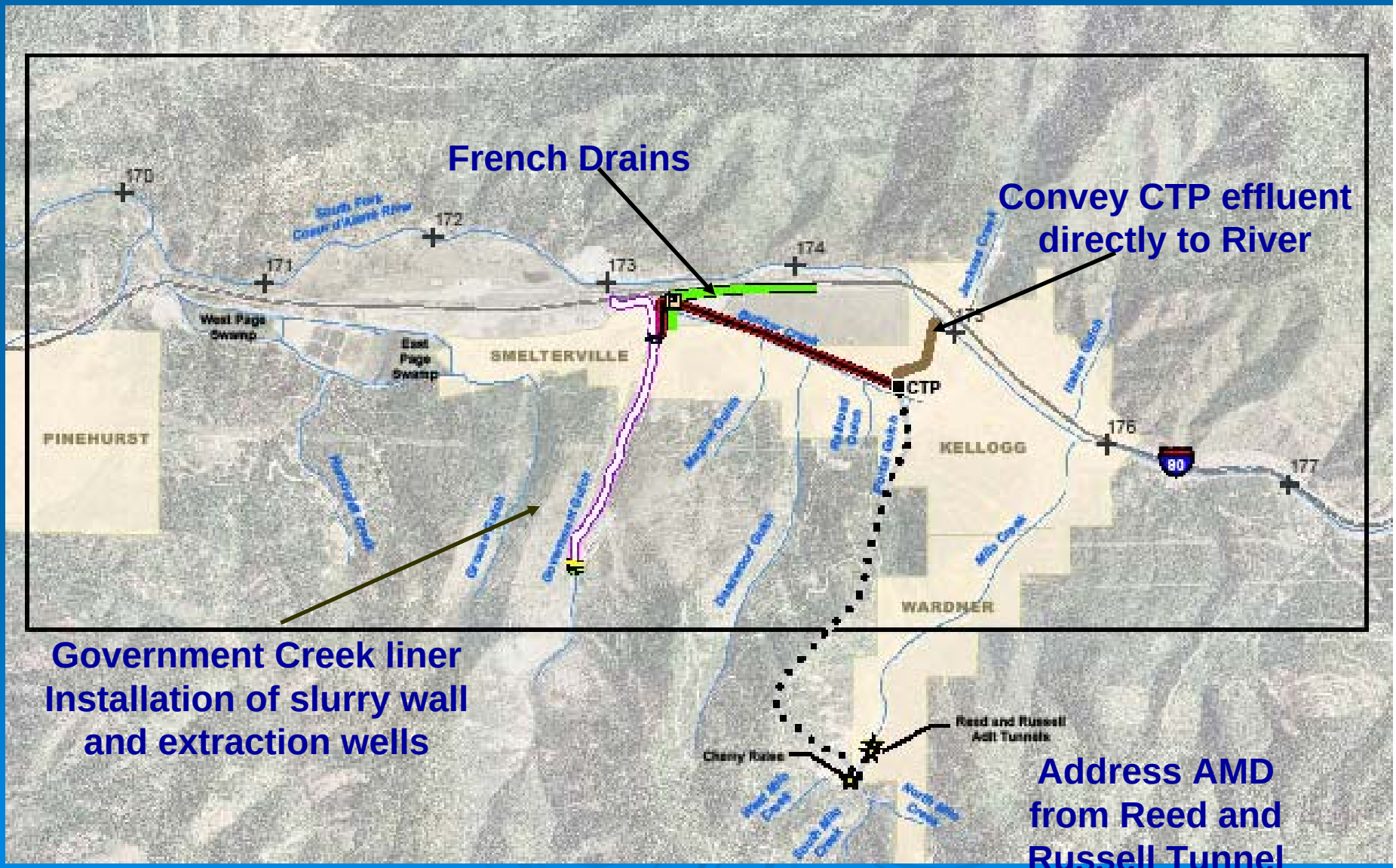
Development of Remedial Alternatives in Draft Focused Feasibility Study



OU2 Phase II RA Alternatives

- Alternative (a) Minimal Stream Lining
- Alternative (b) Extensive Stream Lining
- Alternative (c) French Drains
- Alternative (d) Stream Lining/French Drain Combination
- Alternative (e) Extensive Stream Lining/French Drain Combination

Preferred OU2 Alternative “d” Stream Lining/French Drains



Description of Remedial Alternatives

- Excavation, regrading and capping and Mine and Mill Sites and in selected floodplain locations
- Hydraulic Isolation in selected areas
- Collection and Treatment of Adit Discharge, Seeps, and Groundwater
  - Upgrade and expansion of the Central Treatment Plant
  - Passive treatment at selected locations
- Stream and riparian cleanups

Excavation, regrading and capping

- Alt 3+ and Alt 4+ include actions at 345 and 760 mine and mill sites respectively
- Focuses on key source areas such as floodplain tailings and mine/mill areas prone to erosion and leaching
- Actions primarily consist of consolidation of wastes in upland areas and capping based on waste type and loading potential

Consolidation at Golconda

Hydraulic isolation

- Stream lining in key gaining reaches
- French drains for groundwater collection
- Targeted source control actions
- Piping of groundwater to Central Treatment Plant

Central Treatment Plant Upgrades

- Expansion of CTP from 5,000 gpm up to 33,000 gpm depending on alternative
- Discharge pipeline to South Fork
- Expansion conducted in phases as source areas connected
- Provides greatest efficiency for treatment of all waters within existing plant area

Stream and Riparian Cleanups

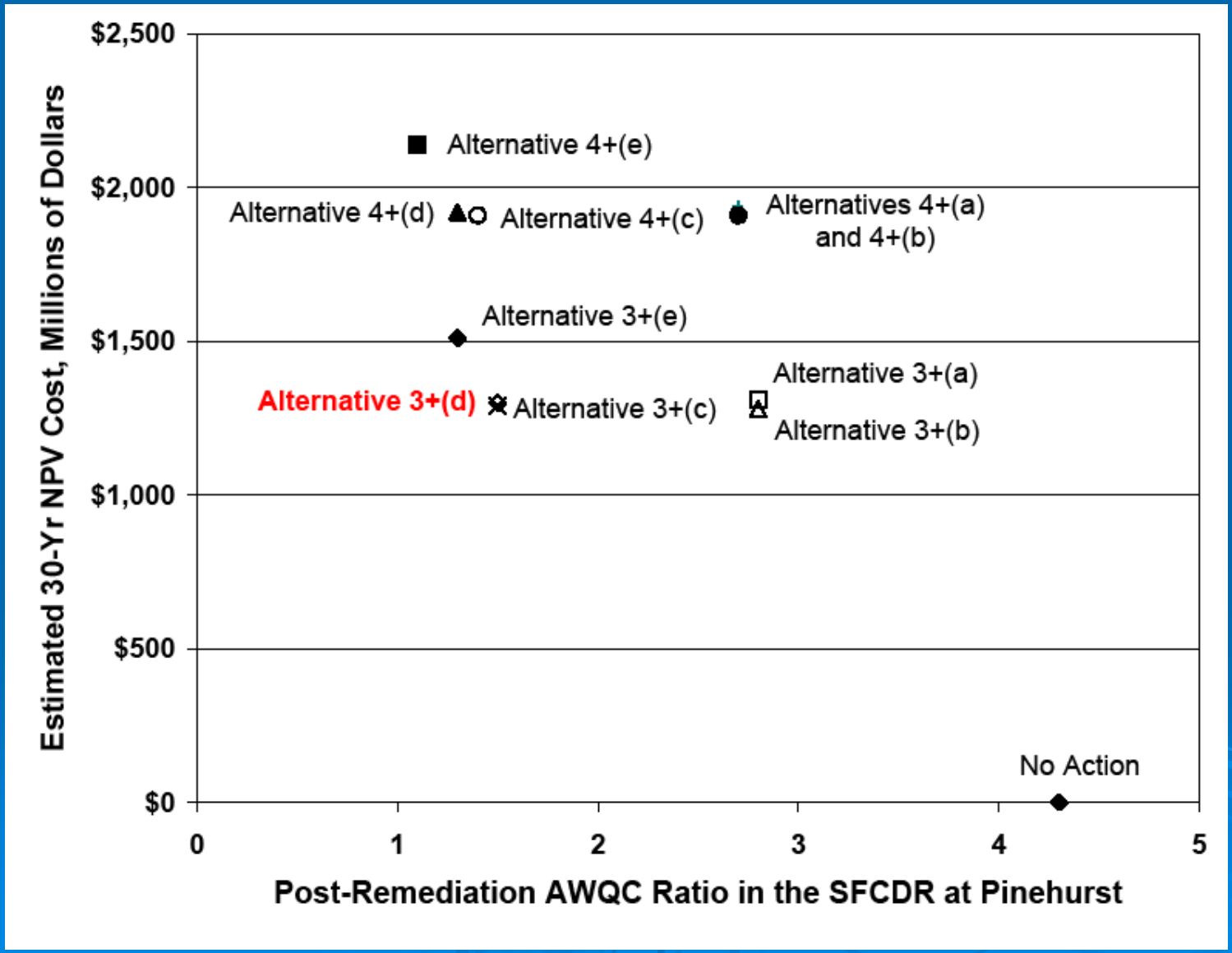
Silver Crescent Mill and Tailings Site

US Forest Service project

Comparison of SW Quality Improvements

RA Alternatives	Post-Remediation Zinc Load at Pinehurst (lbs/day)
No Action Alternative	2,120
Alternative 4+(e)	632
Alternative 3+(e)	738
Alternative 4+(d)	706
Alternative 4+(c)	734
Alternative 3+(d)	**812 (1310 lbs/day reduction)**
Alternative 3+(c)	840
Alternative 4+(b)	1,140
Alternative 4+(a)	1,130
Alternative 3+(a)	1,240
Alternative 3+(b)	1,240

Cost versus Estimated Post-Remediation AWQC Ratio at Pinehurst



Comparison of Alternatives

- Threshold Criteria: All RA Alternatives in the FFS, except No Action, meet threshold criteria

- Balancing Criteria
  - Alternative 3+(d) provides the best balance of tradeoffs
    - Easier to implement
    - Similar water quality improvements relative to more costly alternatives
    - Decrease reliance on repositories
    - Fewer impacts on communities

Preferred Remedial Action Alternative: Alternative 3+(d)

- Extensive Removal, Disposal, Treatment in OU3 and
- Stream Lining/French Drain Combination in OU2

Preferred Remedial Action Alternative

- Components of Preferred Alternative
  - 59 miles of pipeline
  - 67,000 feet of both French drain and stream liner
  - 6.1 million cubic yards of contaminated soils, sediments, and tailings consolidated on site or in repository
  - 16,900 average gpm treated at Central Treatment Plant
  - 47 miles of stream and riparian cleanups
- Estimated Cost and Timeframe
  - $1.28 Billion
  - 50 to 90 years depending on funding

Key Benefits of Preferred Alternative: Alt 3+(d) and RP-2

- Achievement of ARARs for surface water
  - Significant reduction in dissolved metals
  - Improved conditions for fish and other aquatic life
- Reduction in particulate lead in surface water
  - Reduced exposure and potential for recontamination
  - Enables Lower Basin cleanups to proceed
- Reduced direct contact to heavy metals in mine waste by humans and wildlife

Anticipated Benefits of Preferred Alternative

- Reduce dissolved metals in surface water and groundwater to improve conditions for fish and other aquatic life
- Reduce particulate lead in surface water
  - Reduce exposure and potential for recontamination downstream
  - Facilitate the start of cleanups in Lower Basin
- Reduce direct contact with heavy metals in mine waste by humans and wildlife
- Protect existing remedies from damage during tributary flooding and high precipitation events

National Remedy Review Board

National Remedy Review Board

- Internal EPA technical and policy review
- High cost cleanups ($25M+)
- Helps to evaluate if proposed remedies are consistent with law, regulations, policy
- Product is recommendation memo – EPA is final decision-maker

National Remedy Review Board Recommendations

- Significant risks in Lower Basin – continue to refine conceptual model and take steps to address risks
- Supports adaptive implementation approach and recommends description of:
  - Uncertainties
  - Repository siting approach
  - Community involvement process
- Explain rationale for addressing media types and cleanup actions

National Remedy Review Board Recommendations (cont.)

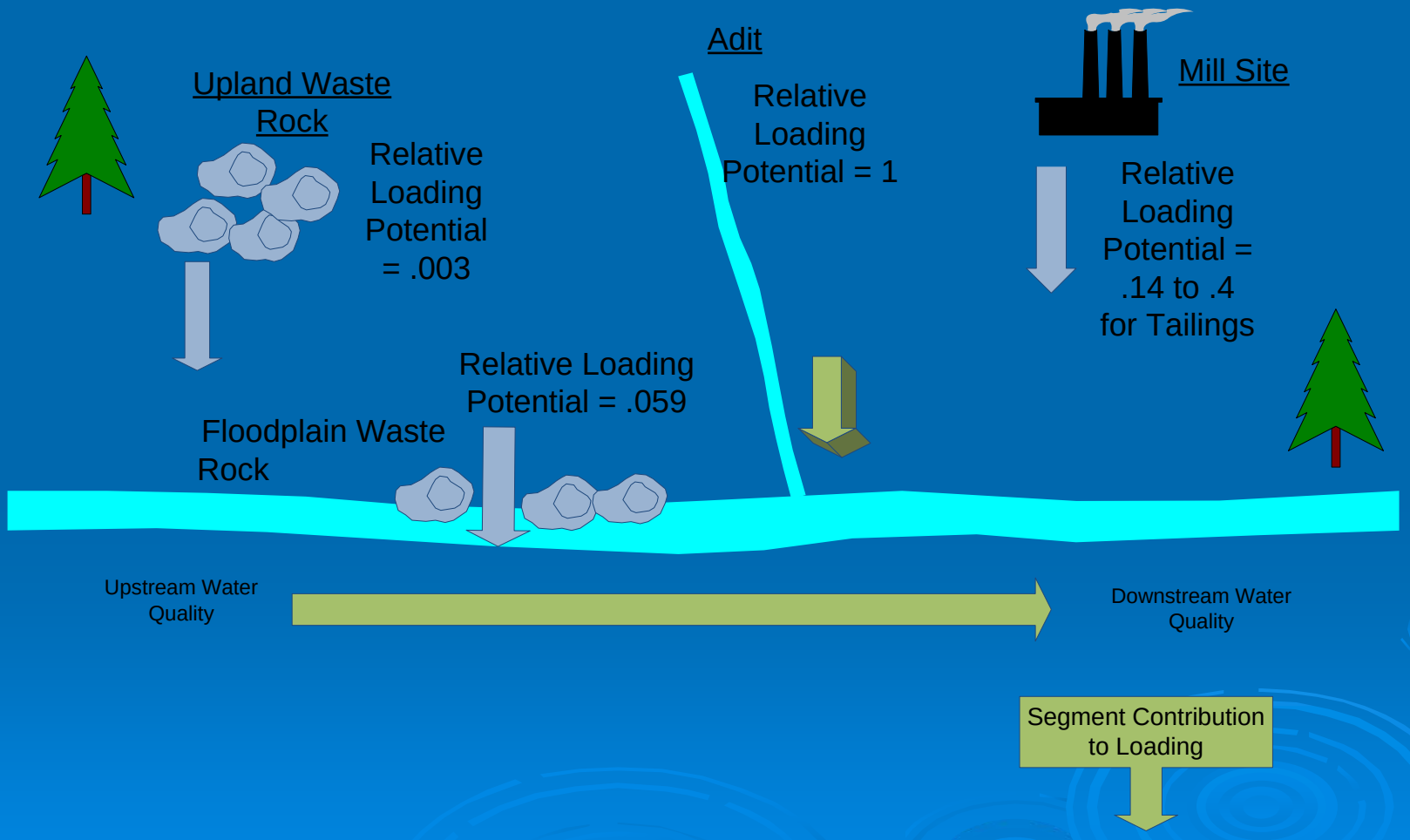
- Provide overview of cleanup priority projects in Implementation Plan
- Clearly spell out measures of success
- Include background on Principal Threat Waste values
- Identify Institutional Controls requirements
- Continue to work with State of Idaho to reach agreement on funding

Implementation of Preferred Alternative

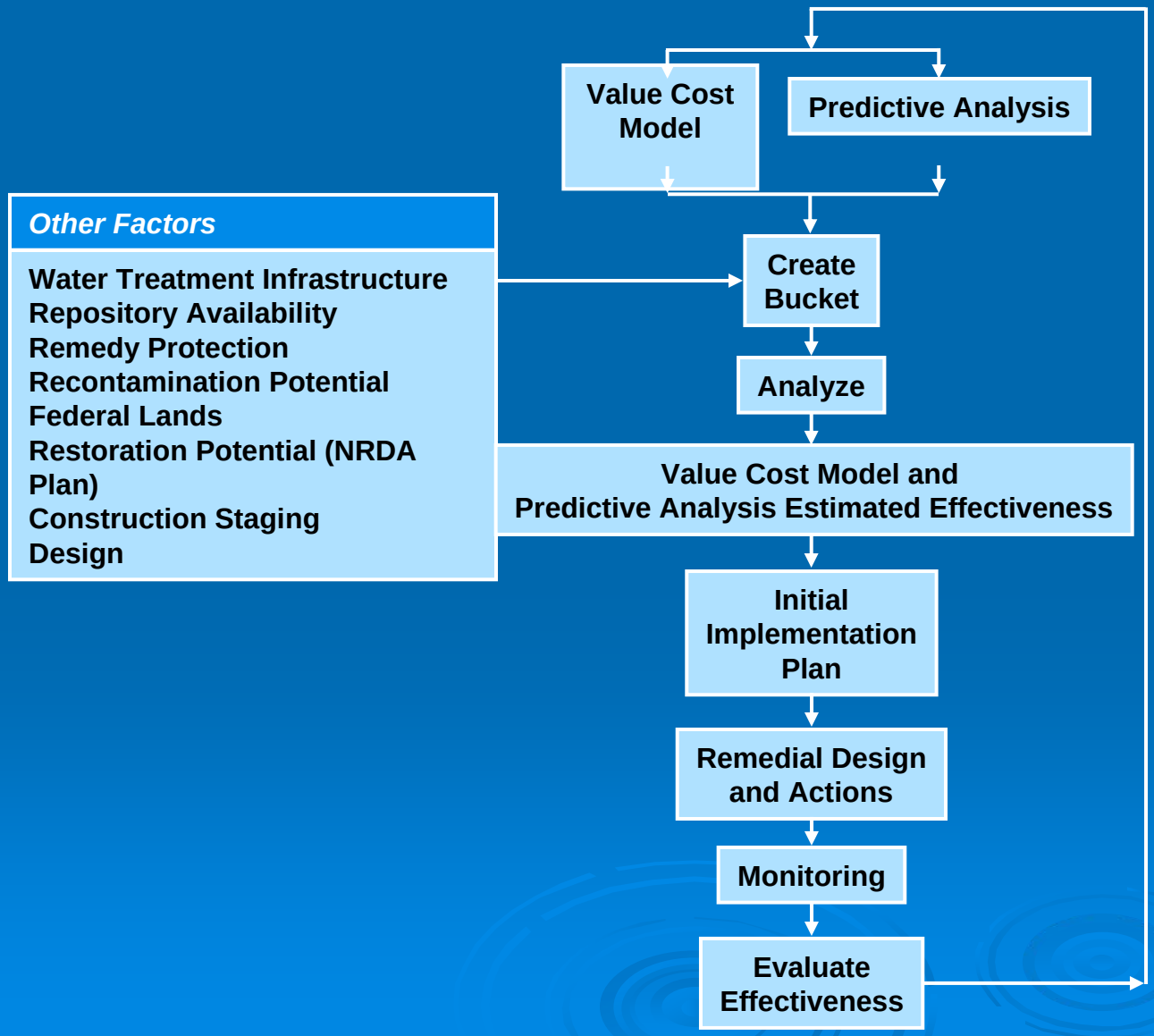
Adaptive Management Plan

- Helps define a process for managing uncertainty about remedial effectiveness estimates
- Coordinates work with a variety of stakeholders such as Natural Resource Trustees for restoration activities and future land use by land owners or mining companies
- Uses several tools to help sort sites and predict effectiveness of actions – Value Cost Model and Predictive Analysis
- Will adapt cleanup to what is learned from actions taken

Simplified Tool



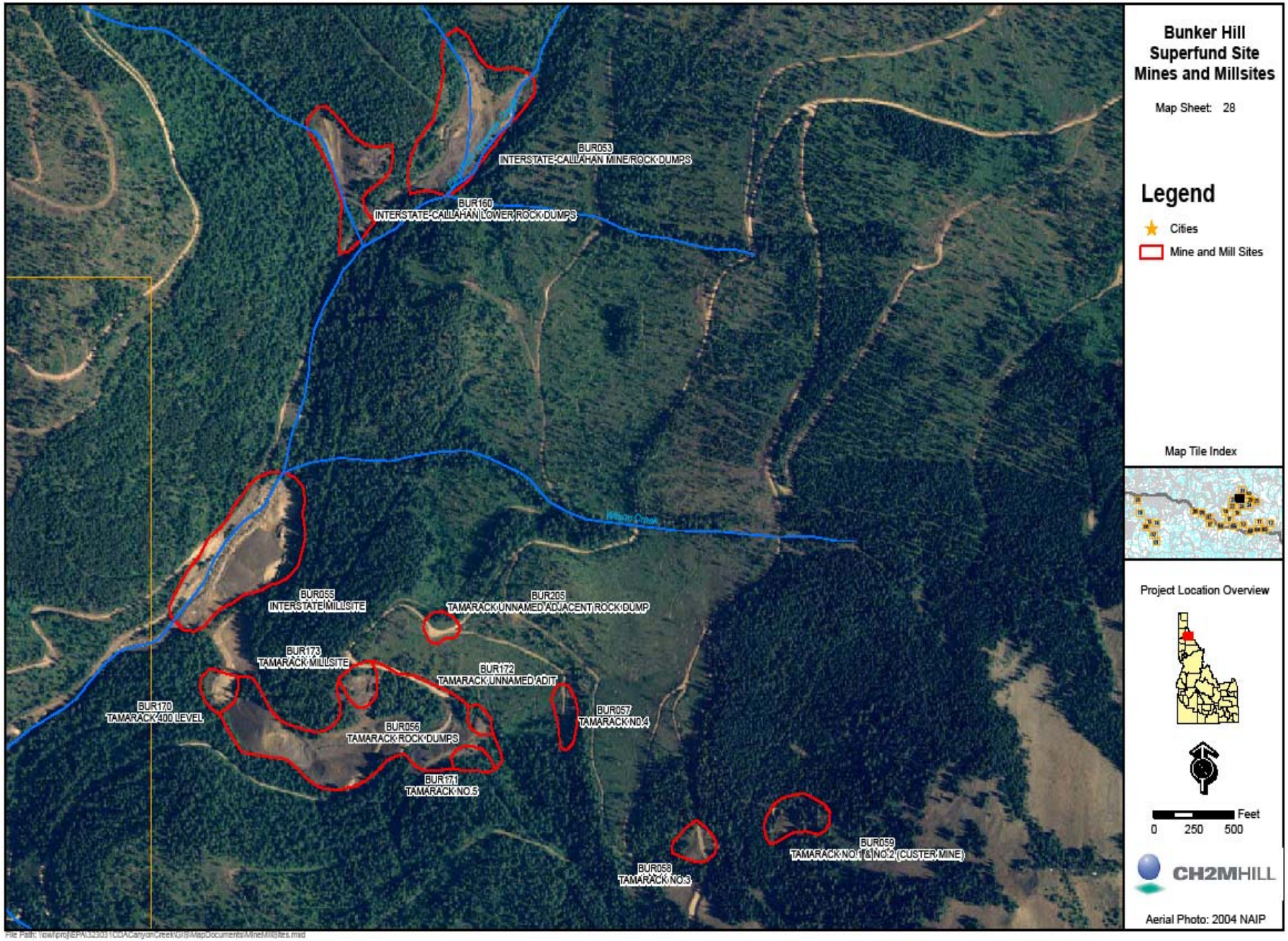
Implementation Plan Approach



Adaptive Management – testing by comparison of prediction with experience

Factors to Consider

- Value of meeting cleanup goals in specific stream segments that are in better shape
- Balancing expense and effectiveness of some actions to others
- Value of completing remedy protection projects
- Unknowns with many mine and mill sites
- Need to show progress
- Need to avoid recontamination where work is completed



Bunker Hill Superfund Site Mines and Millsites

Map Sheet: 28

Legend

- Cities
- Mine and Mill Sites

Map Tile Index

Project Location Overview

Feet

0 250 500

CH2MHILL

Aerial Photo: 2004 NAIP

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Next Steps for Implementation Plan

- Development of Text of Plan
  - Background
  - Objectives
  - Tools
  - Discussion of Tradeoffs
  - Monitoring and Evaluation of Actions
- Development of refined “Strawman” building upon input from last PFT meeting

Schedule

Schedule

- Focused Feasibility Study (FFS)
  - Draft document built with PFT
  - Draft shared for comment in February – early March
  - EPA addressing comments received and revising FFS
  - Draft Final FFS will be available during the Proposed Plan public comment period

Schedule (cont.)

- Implementation Plan development
  - Public Meeting – June 17th
  - Upper Basin PFT meeting – June 17th
- Proposed Plan comment period (45 days)
  - Delayed in response to requests
  - July 12th – August 25th
  - Workshop and Public Meeting – early August
  - Proposed Plan focus at August BEIPC meeting
  - Meet with community groups
  - Written comments due to EPA on August 25th

Schedule (cont.)

- Fall 2010 –
  - Evaluate and consider public comments
  - Develop responsiveness summary
  - Continue development of Implementation Plan
- Late Fall / Early Winter – Issue Record of Decision Amendment

Conclusions

- Significant measurable risks exist today to humans and the environment
- Upper Basin ROD Amendment is needed to:
  - Provide a comprehensive set of actions to meet surface water quality standards and protect human health
  - Provide actions in local communities to protect human health remedies from tributary flooding and heavy precipitation
- Preferred Alternative - $1.3 Billion and decades to implement
- Implementation Plan and adaptive management are critical


Thank you!
Questions?