Wastelands to Wetlands

Cooperative NRDAR at Richardson Flat Tailings Site, Utah

Silver Creek Stakeholders

- United Park City Mines and "Team"
  - Kerry Gee, Doug Reagan, Jim Fricke, Todd Leeds, Kevin Murray, Anna Bengston
- U.S. Fish and Wildlife Service
  - John Isanhart, John Wegrzyn, Chris Cline
- DOI – Solicitor's Office
  - Dana Jacobsen, Casey Padgett, Chris Morley
- DOI – Office of Policy Analysis
  - Christian Crowley
- DOI Restoration Support Unit
  - John Hughes and Sue Kennedy
  - Sue Kennedy
- EPA Region 8
  - Kathy Hernandez
- Bureau of Land Management
  - Glenn Carpenter and Paul Meyer

And Many Others

Case Milestones

CERCLA NRDAR Process

Coordination

- Pre-NRDA prep

Pre-Assessment

- Jurisdiction
- Is NRDAR warranted?

Assessment Plan

- Type A or B
- Sampling plan
- QA/QC

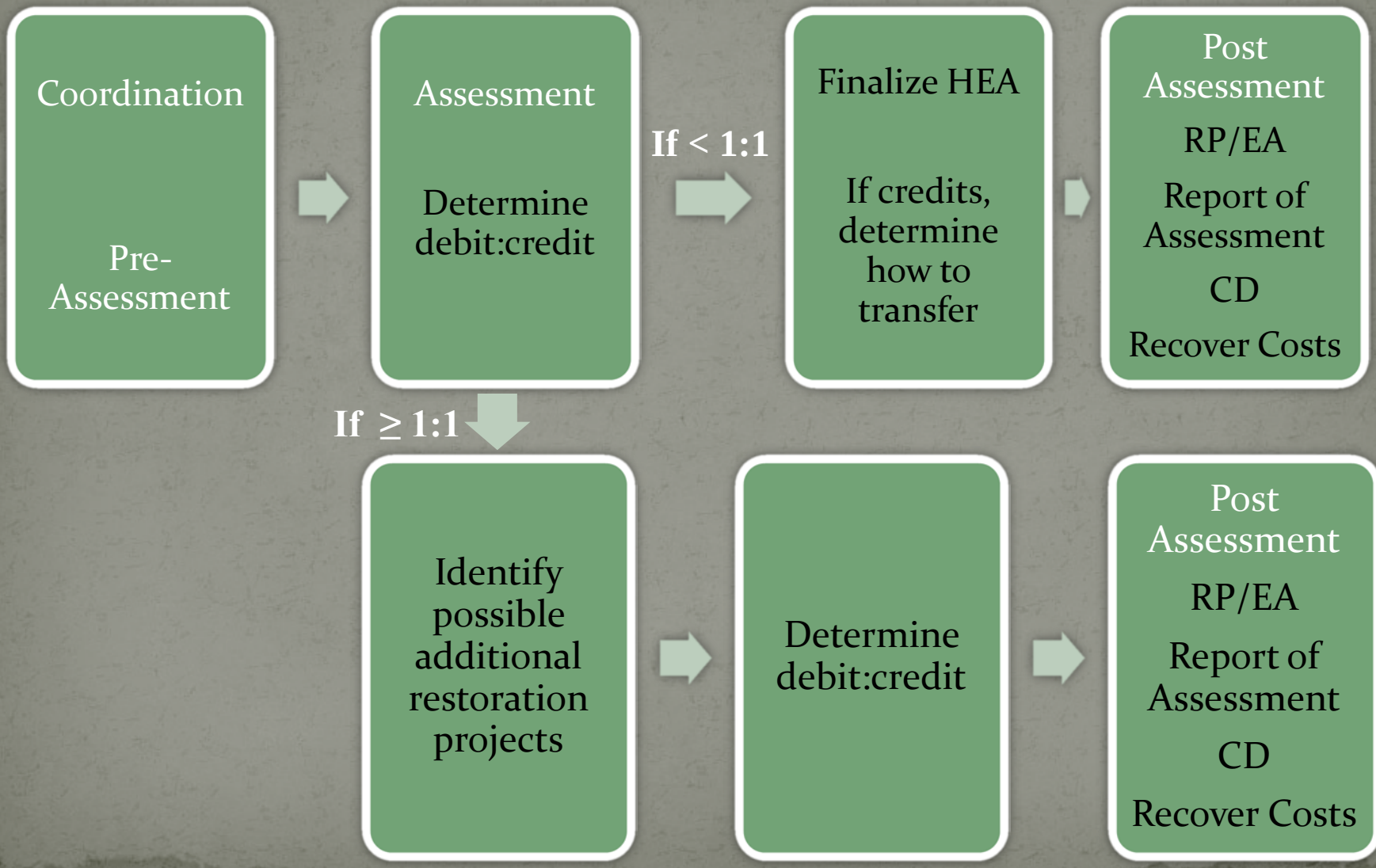
Assessment

- Injury Determination
- Injury Quantification
- Damage Determination

Post Assessment

- Report of Assessment
- Demand to PRPs
- Cost recovery
- Restoration Plan
- Plan Implementation

When Restoration is Already Done…



Service Categories	Proportion of Total Services
Bird and Mammal Production	0.16
Biotic Habitat	0.14
Abiotic Habitat	0.13
Macroinvertebrate Production	0.11
Primary Production	0.11
Water Quality	0.11
Decomposition	0.06
Fish and Amphibian Production	0.06
Food Provision	0.06
Macroinvertebrate Diversity	0.06
Composite Total	1.00

- Focus the assessment on aquatic services vs. terrestrial services
- Determine service categories and baseline service levels
- Estimate baseline service levels using site data, aerial photographs, and professional judgment

Service Categories	Baseline Service Level	Proportion of Total Services	Weighted Baseline Service Level
Water Quality	90%	0.11	10%
Abiotic Habitat	70%	0.13	9%
Biotic Habitat	60%	0.14	8%
Primary Production	60%	0.11	7%
Macroinvertebrate Production	50%	0.11	6%
Bird and Mammal Production	40%	0.16	6%
Decomposition	60%	0.06	4%
Macroinvertebrate Diversity	60%	0.06	4%
Food	55%	0.06	3%
Fish and Amphibian Production	50%	0.06	3%
Composite Total		1.00	60%

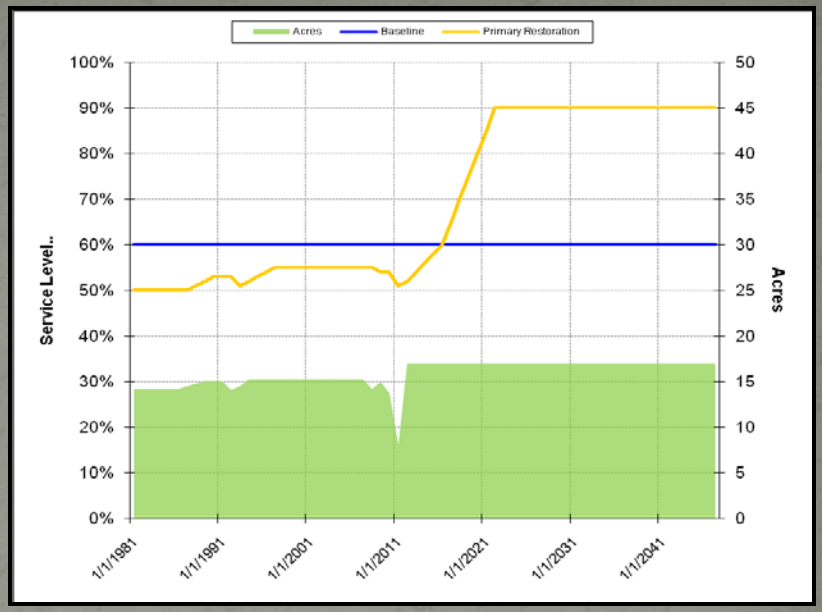
- **Estimate injured service levels using site data, peer-reviewed literature, and professional judgment**

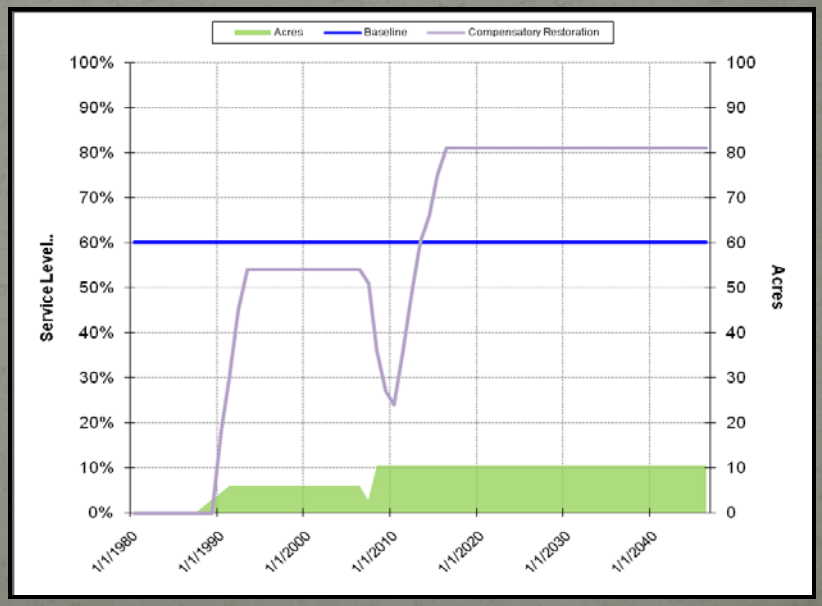
Service Categories	Baseline Service Level	Injured Service Level (1981)	Service Loss (Below Baseline)
Water Quality	90%	50%	40%
Abiotic Habitat	70%	70%	0%
Biotic Habitat	60%	46%	14%
Primary Production	60%	30%	30%
Macroinvertebrate Production	50%	27%	23%
Bird and Mammal Production	40%	35%	5%
Decomposition	60%	40%	20%
Macroinvertebrate Diversity	60%	40%	20%
Food	55%	28%	27%
Fish and Amphibian Production	50%	48%	2%

- Create a detailed timeline of acres and services gained or lost over time for each aquatic feature
  - Consider service levels of seasonal vs. permanent aquatic features
- Estimate recovery curves for each feature

Results

- Net gain of 13.2 and 21 acres of year-round and seasonal wetlands, respectively
- Restoration credit of ~1,000 DSAYS





Final Steps

- **Final discussion of HEA inputs / Finalize HEA**
  - **Final restoration credit ~1,000 DSAYs**
- **Complete Restoration Plan/EA**
- **Report of Assessment**
- **Continue negotiations on draft monitoring plan**
  - **Establish specific performance criteria**
- **Close assessment phase and enter consent decree**
- **Ongoing monitoring and site management**
  - **Coordination between UPCM and USFWS on site monitoring activities**
  - **Potential for a third party easement holder**

Accomplishments

- **Successful integration of restoration with remediation**
- **Coordination between UPCM and DOI throughout assessment phase**
  - **Established open lines of communication**
- **Numerous benefits achieved**
  - **Cost savings and shortened time to complete NRDAR**
  - **Early focus on restoration**
  - **Greater certainty throughout NRDAR process**
  - **Proven model for remaining portions of the watershed**

Recent Developments

- **Remediation and restoration at Richardson Flat addresses a small portion of Silver Creek watershed**
  - **UPCM working on RI/FS for lower Silver Creek (OU2)**
- **EPA issued an AOC for EE/CA and removal action in middle Silver Creek (OU3 and OU4)**
  - **Currently in negotiations stage**
  - **Ultimate goal of remediation and restoration in remainder of Silver Creek, including BLM Silver Maple Claims wetlands**
- **DOI is working with EPA to incorporate restoration language into the administrative settlement agreement**

The Long Road Ahead…