Discussion Outline

• Abandoned Mine Lands (AMLs) Sites Challenges

• Superfund Mine/Mineral Processing sites

• Site cleanup, reuse, and collaboration opportunities

• Technology Advancement Needs/Collaboration

• AML Good Samaritan Update
Abandoned Mine Lands (AMLs) Challenges

- Universe of hardrock abandoned mine lands (AMLs) is enormous (Estimates range between 100,000 to 500,000)
- No single inventory of the most serious hardrock AMLs exists (Superfund address less than 0.1 percent of this large AML universe)
- No comprehensive federal or state regulatory program to address hardrock AML issues across the United States
- Mining sites generally span large areas (mining districts/watersheds) and pose complex technical and policy issues
- Federal cross-agency partnerships bring EPA and other relevant federal departments through the Federal Mining Dialogue to discuss issues address AMLs cooperatively
• There are more than 50,000 abandoned coal mines, which fall under the jurisdiction of the Office of Surface Mining Reclamation and Enforcement as well as authorized states
• Funding cleanup/reclamation of this large Hardrock and Coal AMLs universe is limited
• Long-term treatment of Mine Influenced Waters
• **Need for coordination and collaboration to address AMLs challenges across the US**
Superfund Mine/ Mineral Processing Sites

- Mining sites are some of the Superfund program’s largest and most complex sites; size and complexity cause them to be some of most costly to address

- 140 Superfund sites (Superfund National Priorities List [NPL] or Superfund Alternative Approach) are mining and mineral processing sites:
  - More than half are greater than 500 acres in size; Bunker Hill Mining and Metallurgical Complex site (a.k.a., Coeur d’Alene Basin; Idaho and Washington), which cover 1,500 sq miles, is largest
  - Mine influenced waters will need to be addressed at more than 30 percent of these sites
Superfund Mine/ Mineral Processing Sites

• Primary contaminants most frequently driving remedies:
  – Arsenic and lead (>50 percent)
  – Radium, asbestos, cadmium, cyanide, copper, cyanide, zinc, chromium and uranium (37 percent)

• Primary remedies include: Institutional Controls, On and Offsite Disposal of Source Materials, On-Site containment, Surface Water Diversion and Active Water Treatment

• EPA Superfund program has spent more than $4B to address mining and mineral processing sites to date
Site Cleanup, Reuse, and Partnerships

- Address NPL AML sites using Innovative Technologies, Adaptive Management and Optimization
- Reuse
  - Remining, Reprocessing, Metals Recovery from MIW (e.g., Remining - Ballard Mine, Idaho; Reprocessing Proposal Barite/Nevada Goldfield, SC; Metals Recovery - Silver Bow/Butte, Montana)
  - Beneficial reuse of mining waste (e.g., Tar Creek, Oklahoma)
- Partnerships: Need to work with States, Industry, Academia, Mining Companies to advance state of science and technology
Technological Innovation Needs

- Treatment of mine-influenced waters (MIW)
- Source treatment/waste piles/migration control;
- Site restoration and reuse
- Resource recovery
- Characterization and monitoring tools
- Involve
  - Chemistry, biology
  - Geology, hydrogeology
  - Engineering
Key Considerations

• Preface: All potential issues are manageable
• Legal issues
  – Liability
  – Complex ownership
  – Intellectual property
• Funding and human resources
• Health and Safety
• Transferring experience, lessons
  – Documenting results
  – Quality assurance
Collaboration is Essential

- Site owners
- Regulators
- Industry
- Research Organizations/Entrepreneurs
- Academia
- Funding, technology incubation
- Leveraging/Collaborating vs. Duplicating
Good Samaritan Update

• No Federal-level Good Samaritan legislation
  – Clean Water Act “Citizen Action Suits” main deterrent to “Good Sam” agreements
  – Good Samaritan Remediation of Orphan Hardrock Mines Act of 2018
• Pennsylvania Coal Good Samaritan Act of 1999:
  – Resulted in about 80 AMD treatment projects in 20 counties
• EPA “toolbox” resources:
  – Good Samaritan CERCLA (2007); Clean Water Act Clarification 2012
• EPA involvement to date at Good Samaritan sites:
  – American Fork Canyon, UT (2004); Kerber Creek, CO (2016); Black Swann Site, CO (2018)
    Corona & Twin Peaks, CA (2018 projected)
• Agency is committed to work with key stakeholders to facilitate the process of getting
demonstration projects off the ground
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