Ballard Mine Superfund Site
EPA Releases Record of Decision

United States Environmental Protection Agency

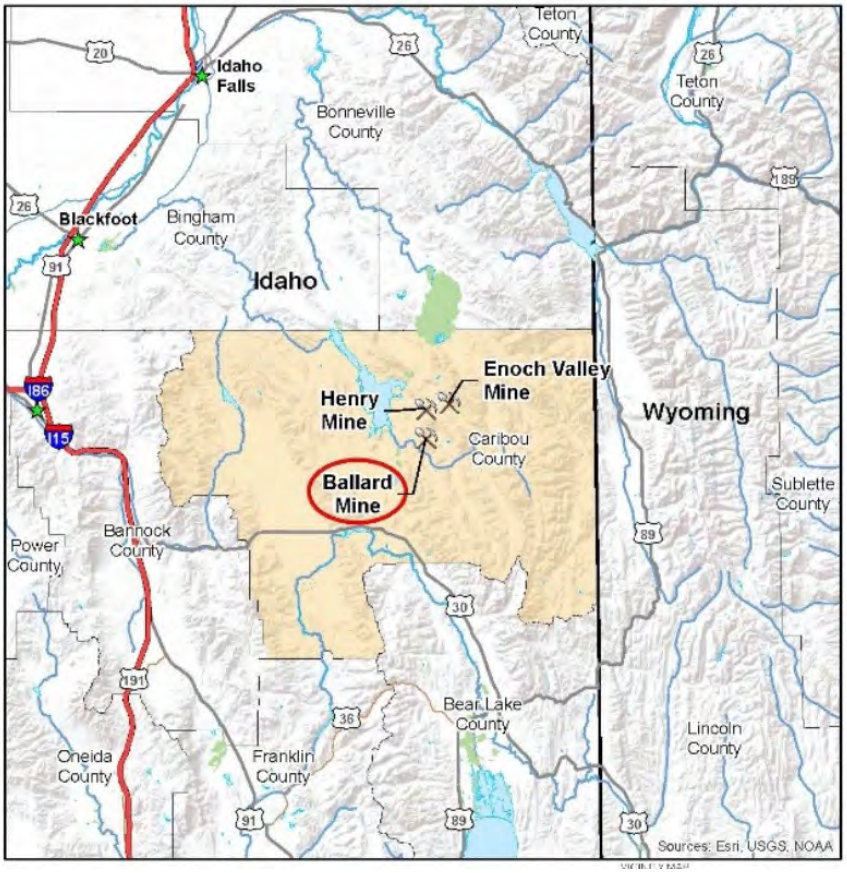
Caribou County, Idaho

September 2019

This fact sheet summarizes the Environmental Protection Agency's Record of Decision (ROD) for cleanup of the Ballard Mine site in Caribou County, Idaho.

P4 Production LLC, a subsidiary of Monsanto (now Bayer), with EPA oversight, and with support from the Idaho Department of Environmental Quality, other agencies, and the Shoshone-Bannock Tribes, have investigated contamination resulting from phosphate mining at the site.

After gathering and evaluating the data, carefully considering the cleanup options, and considering community input during a formal public comment period, EPA has reached an important milestone in issuing the ROD. The ROD selects a final cleanup plan for Ballard Mine site.



About Ballard Mine

The Ballard Mine site is a former open-pit phosphate mine located in the Phosphate Resource Area of Southeast Idaho, where phosphate-rich rock is present near the surface and has been mined for more than 100 years. There are many historic mines within the mining district, four active mines, and a number of proposed mines.

The Ballard site covers approximately 534 acres and is located about 13 miles north-northeast of Soda Springs, Idaho, in Caribou County. Monsanto operated the Ballard Mine from 1951 to 1969. During that time, workers mined phosphate-rich rock and hauled it to Monsanto's processing plant near Soda Springs.

During mining, waste covering and surrounding the phosphate ore was removed and piled at the surface. Physical processes, such as weathering, released contaminants such as selenium to the environment.

Phosphate mining has created some negative environmental consequences, including impacts to surface water, groundwater, upland soils, vegetation, and other media. The levels of contamination at the site can pose unacceptable risks to people and wildlife.

How we came to the Record of Decision

Cleanup methods and technologies were evaluated for soil, sediment, surface water, and groundwater contamination at Ballard Mine. Alternatives were considered for detailed evaluation against a list of nine criteria, including state, tribal, and community acceptance.

The remedy EPA has selected for the site is a combination of engineered source controls (on-site consolidation and containment of waste rock), water treatment technologies, and other approaches (detailed in the table) that will work together to protect people and the environment.

The selected remedy includes the following key components:

Component	***Description***
Engineered Cover System	Waste rock will be consolidated in dumps and backfilled pits, and then graded and shaped to ensure geotechnical stability and to promote runoff. An evapotranspiration (ET) cover system, approximately five to six feet thick, will be constructed over the more than 500 acres of the site where wastes are left in place.
Permeable Reactive Barriers (PRBs)	A series of PRBs will be constructed downgradient of the source areas to intercept and treat contaminated shallow alluvial groundwater.
Wetland Treatment Cells	A series of semi-passive bioreactors will be constructed on site margins to treat contaminated residual seeps and springs. These treatment units will be designed and operated to remove selenium and other contaminants. Some of the treatment units may be phased out in the future as the engineered cover system reduces water infiltration and the flow discharging at seeps and springs is reduced/eliminated.
Groundwater Monitored Natural Attenuation (MNA)	If necessary, “Monitored Natural Attenuation” (with dispersion and dilution of contaminants over time) will be used as a secondary step to further reduce contaminant concentrations to achieve Remedial Action Objectives in the groundwater. However, the primary strategy to restore groundwater is implementing the source controls (cover system) and water treatment (PRBs and wetland treatment cells). It is expected that these technologies will greatly reduce flow and may eliminate many contaminated seeps and springs. These components are also expected to greatly reduce contaminant concentrations in groundwater.
Stormwater and Sediment Control Best Management Practices (BMPs)	During the construction phase, sediment ponds and other sediment control BMPs will be constructed to control release of sediment to downstream water bodies. These features will be constructed in headwater locations of the water bodies draining the site.
Sediment Monitored Natural Recovery (MNR)	Intermittent and ephemeral stream sediment and riparian soil will be addressed through the source controls described above in stormwater and sediment control BMPs, combined with natural processes of dilution, mixing, and dispersion of contaminated sediment over time (MNR). Together, these components are expected to result in recovery of these impacted areas and attainment of Remedial Action Objectives.
Adaptive Management	A site-wide adaptive management plan will be developed and implemented to evaluate critical elements of the remedy and make revisions (such as design modifications or operational changes) to optimize performance.
Operation and Maintenance (O&M)	An O&M plan will be developed and implemented to ensure the integrity, proper functioning and performance of all engineered controls and treatment facilities (the PRBs, wetland treatment cells, and BMPs).
Long-Term Monitoring	Monitoring will be conducted to assess the effectiveness of various components of the remedy and progress toward achieving Remedial Action Objectives.
Institutional Controls (ICs) and Access Restrictions	Institutional controls will be applied to protect the remedy and prevent human exposure by limiting some specific types of land and resource use. Fences, gates, and physical barriers will be built to prevent damage to engineered and vegetated components of the remedy.

Compatibility with re-mining

In the selected remedy, EPA recognizes that P4 intends to recover phosphate ore while implementing the remedy. Information collected during site characterization activities confirmed that about 4 million tons of phosphate ore remain at the site, exposed at the surface and in the bottoms and sidewalls of existing mine pits. Although potential ore recovery is not a part of the remedy, EPA is selecting a remedy that is compatible with re-mining. Specific plans for potential ore recovery will be accommodated during the design and implementation phases of the project.

For ore to be recovered during implementation of the remedy, P4 would need to acquire a federal mineral lease and seek approval from the Bureau of Land Management of a plan for ore recovery.

Next steps

P4, with oversight from the EPA project team, will proceed with the remedial design, followed by implementing the remedy (referred to as "remedial action"). We estimate the timeline for construction to be six to eight years. The cost of implementing the Selected Remedy is approximately $41 million. After the construction is complete P4 is responsible for maintaining the remedy (Operations & Maintenance). Its effectiveness will be evaluated every five years.

For questions about the Ballard Mine Record of Decision, please contact:

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For more information:

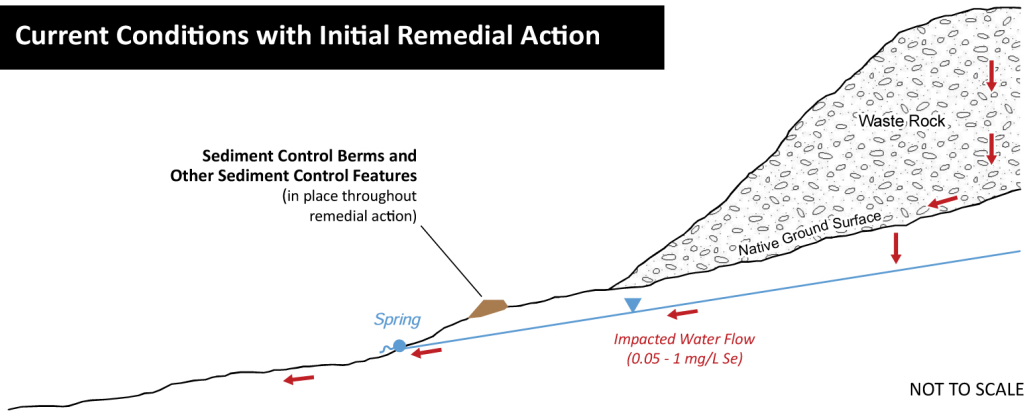
Visit **EPA's website** to see the full Record of Decision, and for additional documents about our work at the site:

- www.epa.gov/superfund/ballard-mine

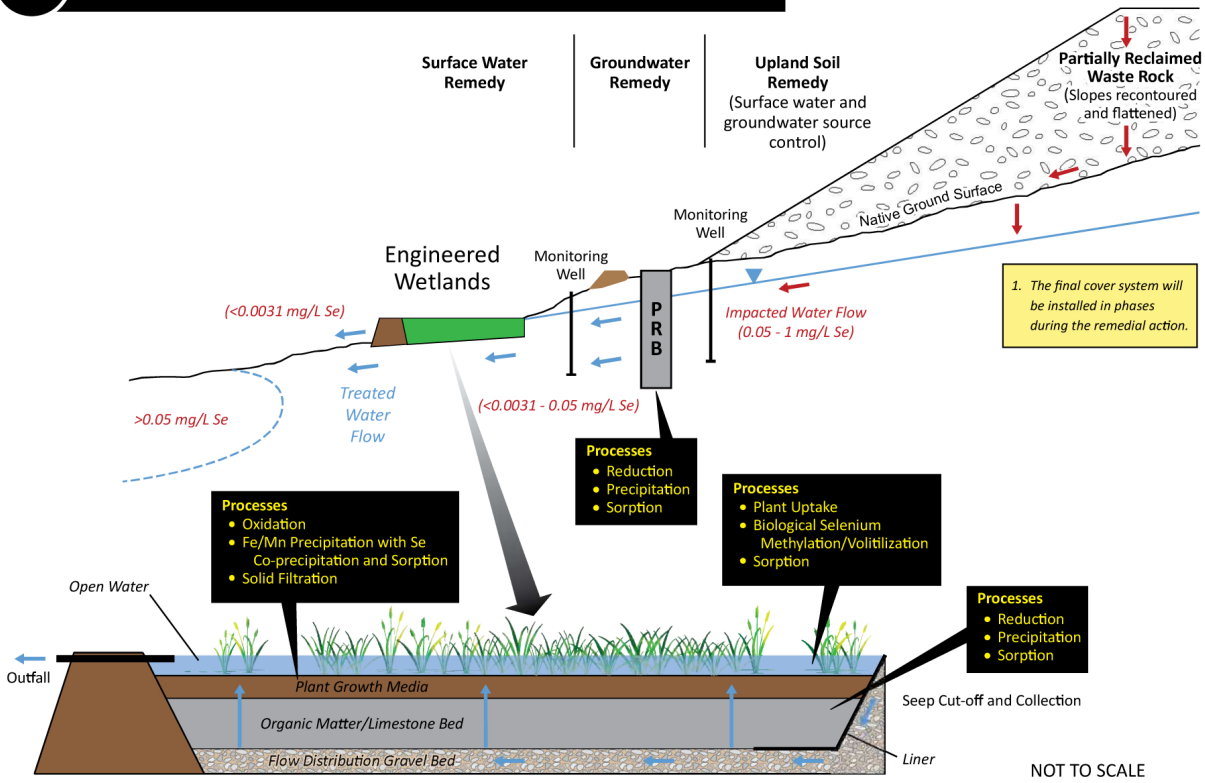
Visit **Idaho Department of Environmental Quality's website** for additional information, including about the other P4 mines in the area:

- www.deq.idaho.gov/regional-offices-issues/pocatello/southeast-idaho-phosphate-mining/ballard-henry-and-enoch-mines

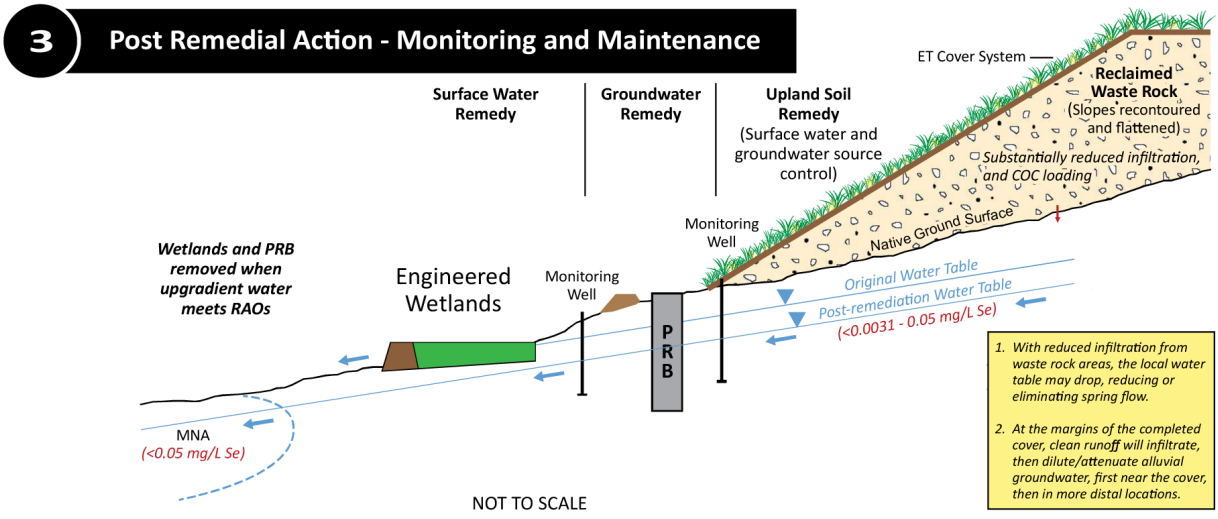
1 Current Conditions with Initial Remedial Action



2 Remedial Action - Installation of All Remedy Elements



3 Post Remedial Action - Monitoring and Maintenance



Site-wide remedial components conceptual model. P4 Production, LLC