

Bonita Peak Mining District Bonita Peak Repository Design

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COLORADO
Department of Public
Health & Environment

<http://www.epa.gov/superfund/bonita-peak>

The U.S. Environmental Protection Agency (EPA) is preparing to construct a sitewide mine waste repository at the Bonita Peak Mining District (BPMD) Superfund Site. The Bonita Peak Repository will be located on Tailings Impoundment 4 of the Mayflower Mill, as selected in EPA's [Interim Record of Decision](#).

Site Background

The BPMD was listed on the National Priorities List and was designated a Superfund Site in 2016. The site consists of historic and ongoing releases from mining operations in three drainages—Mineral Creek, Cement Creek, and Upper Animas—which converge into the Animas River near Silverton, Colorado.

A sitewide repository is necessary for the proper long-term disposal of mine wastes at the BPMD site. Currently, treatment generated solids (sludge) from the interim water treatment plant (IWTP) is stored at Gladstone (adjacent to the IWTP). The Bonita Peak Repository (BPR) will provide permanent disposal of the IWTP sludge to allow for continued operation of the IWTP. Additionally, the repository has been designed to accept mine waste from other cleanup activities at the site.

What wastes will be stored at the Bonita Peak Repository?

Wastes will include pH-stabilized sludge generated from the Interim Water Treatment Plant, mine waste from Interim Remedial Actions pursuant to 2019 IROD, and waste from future cleanup activities.

Bonita Peak Repository

Key Design Feature: Mitigating Contamination

- The design mitigates off-site migration of contamination through stormwater management, leachate collection, and avalanche protection measures on site. Groundwater monitoring and leak detection systems will be utilized during waste placement and operation of the BPR.
- The Stage 1 disposal cell includes multiple liners and a leak detection system. Any leaked material would be directed to regularly inspected monitoring points to ensure leachate is contained. The liner material will be tested before waste placement to ensure no damage occurred during construction.
- EPA assessed the geotechnical stability of the Mayflower Tailings Ponds during the site selection process. Tailings Impoundment #4 is the most stable of the impoundments. Although slope failure is unlikely, the final design includes robust geotechnical monitoring to mitigate this risk.

When will wastes be placed at the Bonita Peak Repository?

Waste placement will primarily occur in summer and/or fall, after which the repository will be winterized with a temporary cover.

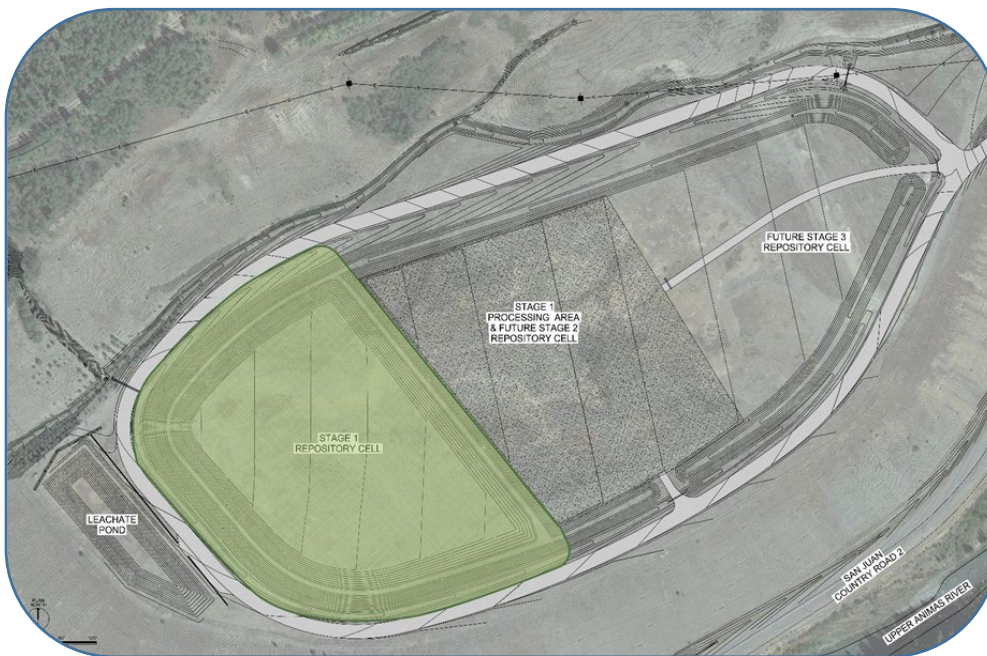
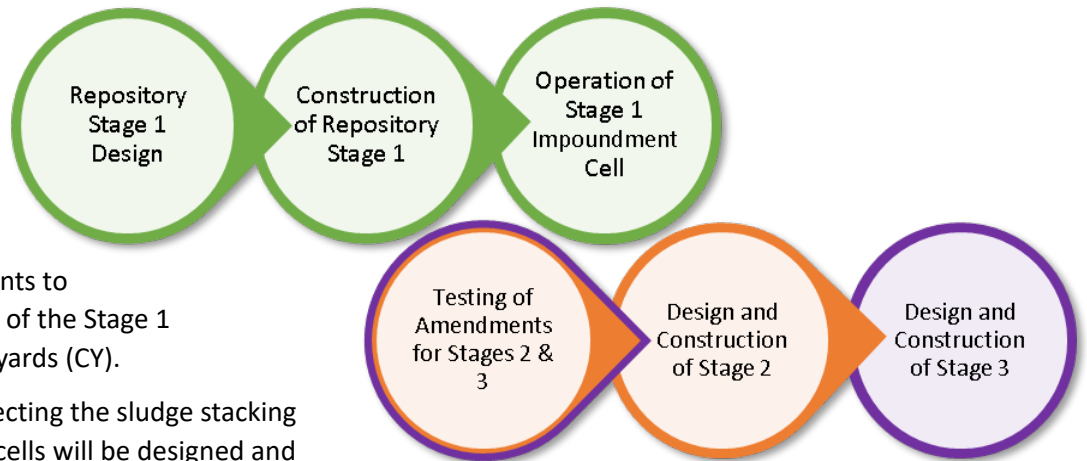
Staged Construction and Design

Key Design Feature: 3 Stages

The BPR features a staged design and construction approach for three cells.

Stage 1: Impoundment-style cell provides needed sludge storage capacity while EPA tests amendments to stack sludge. The planned capacity of the Stage 1 impoundment cell is 40,000 cubic yards (CY).

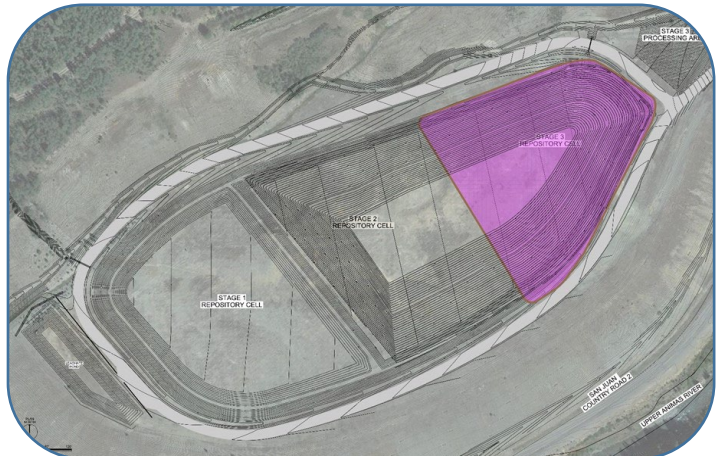
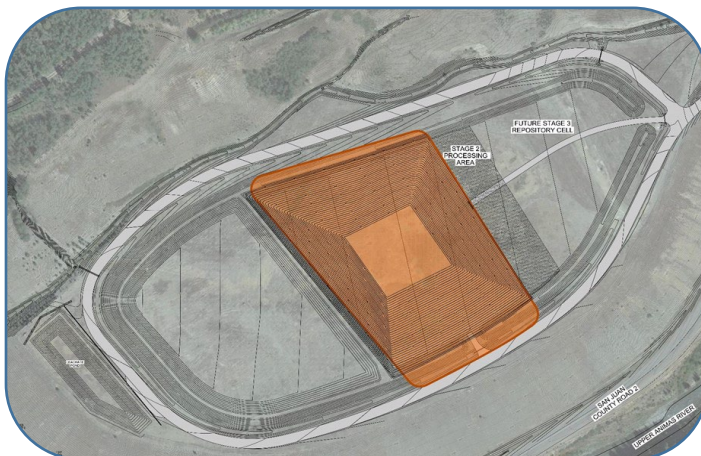
Stages 2 & 3: After testing and selecting the sludge stacking amendment, the middle and final cells will be designed and constructed to allow stacking the amended waste above ground level. The planned capacity for Stages 2 & 3 of the repository is 335,000 CY. This corresponds to approximately 60-80 years of capacity at the current rate of generation of treatment plant sludge. Many factors can influence this lifespan such as improved sludge drying methods or the addition of waste from other source areas.



Stage 1 (left) Repository layout with impoundment style cell, leachate pond, and facility infrastructure in place

Stage 2 (bottom left) repository cell in the center of TP4 with stacked waste to increase capacity.

Stage 3 (bottom right) adds to this concept after Stage 2 is completed



Incorporating Community Feedback

Meaningful community involvement throughout design, construction, and operation is critical to the success of the BPR project. Community feedback was gathered during the [Proposed Plan](#) public comment period and through EPA's regular community engagement activities. The following features incorporate community input to date:

Location:

- The use of Mayflower Tailings Impoundment #4 (TP4) was driven by its large capacity compared with TP's 1,2, and 3.
- TP4 was also selected due to its distance from the historic Mayflower Mill and various private properties. The planned construction at TP4 will not impact the Mayflower Mill or Silverton's drinking water intake on the Animas River.

Construction & the Silverton Community:

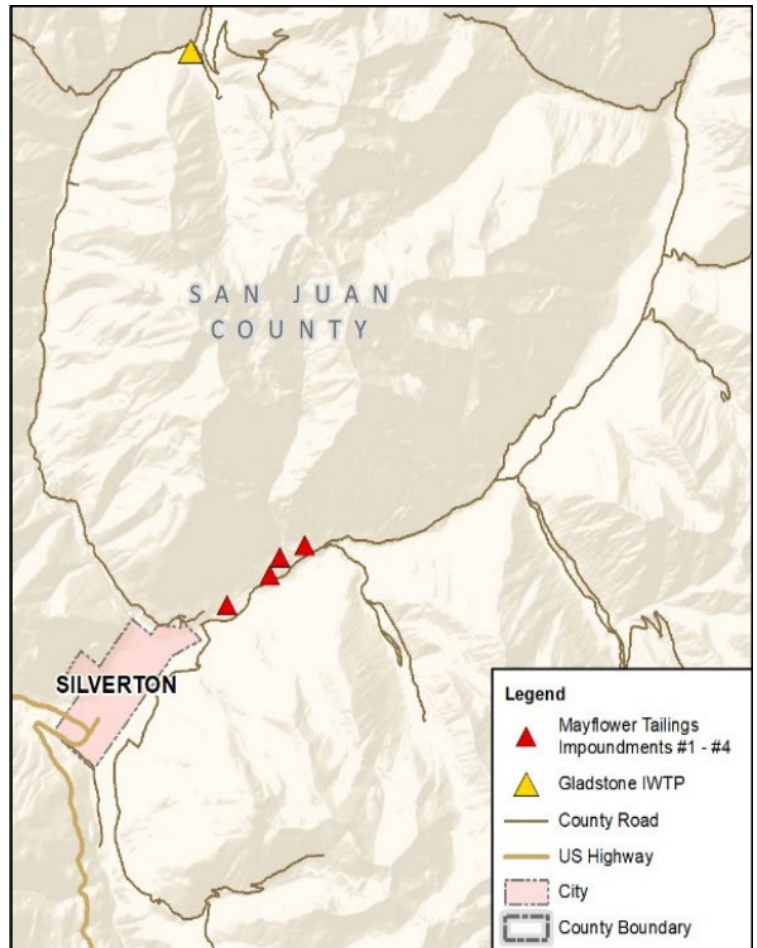
- EPA's staged design and construction approach to repository development allows for community input and feedback between stages.
- EPA is working directly with the Town of Silverton to minimize impacts of BPR construction activities, especially at important places near the construction site, including the non-motorized trail and Hillside Cemetery.

Habitat:

- EPA minimized the use of fencing to allow access to wintering elk populations and preserve the viewshed. Boulders will be used in place of fencing around the facility where possible.

Protecting Water Quality:

- Protecting water quality through mitigation of contaminant migration is critically important to both EPA and downstream communities. The final design mitigates off-site migration of contamination through stormwater management, leachate collection, avalanche protection measures, groundwater monitoring and leak detection systems.
- The final design also includes upsized culverts and stormwater channels, to prevent road washout and interaction between stormwater and mine waste.



For more information about the BPR, please contact:

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View: CR 2 Eastbound

Viewshed Impacts

USACE developed a 3-dimensional model of the final repository to show the potential impacts to viewsheds in town. The orange lines on the photos show the impacts to viewshed for Stage 3, to demonstrate the maximum impact to viewshed over the life of the project.



View: CR 2 Westbound

Next Steps

Construction of the BPR will begin in Summer 2023 and is expected to continue through the Fall. EPA is committed to continuous engagement throughout the construction process with the Silverton community and other stakeholders at the Bonita Peak Mining District Superfund Site. Details on the construction schedule and what the community can expect will be shared in a BPR Construction Factsheet in Spring 2023.

References

- [Bonita Peak Mining District Sitewide Repository Proposal Plan Fact Sheet](#), July 2020.
- [Proposed Plan for Bonita Peak Repository](#), July 2020.
- [Interim Record of Decision for Bonita Peak Repository](#), April 2021.
- [Technical Considerations Report, Remedial Design Bonita Peak Repository Interim Remedial Action Phase 1](#), April 2021.
- (NEW) [Remedial Design, Bonita Peak Repository, Phase 1 Design Analysis Report](#), May 2022
 - [Appendix H: Drawings](#)
 - [Appendix I: Specifications](#)