



REGION 8

DENVER, CO 80202

ACTION MEMORANDUM

SUBJECT: Approval and Funding for a Removal Action at the Koehler Tunnel in the Bonita Peak Mining District NPL Site, Silverton, San Juan County, Colorado

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TO: Aaron Urdiales, Director
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Site ID # A8M5

I. PURPOSE

The purpose of this Action Memorandum is to request and document approval of the removal action described herein for the Koehler Tunnel (Site) in the Bonita Peak Mining District Site in Silverton, San Juan County, Colorado. This time-critical removal action involves installing additional ground support and reinforcing the portal shed at the Koehler Tunnel. Conditions existing at the Site present a threat to public health or welfare or the environment and meet the criteria for initiating a removal action under 40 CFR 300.415(b)(2) of the National Contingency Plan (NCP).

This removal action involves no nationally-significant or precedent-setting issues. This time-critical removal action will not establish any precedent for how future response actions will be taken and will not commit the US Environmental Protection Agency (EPA) to a course of action that could have a significant impact on future responses or resources.

II. SITE CONDITIONS AND BACKGROUND

Site Name: Bonita Peak Mining District (BPMD)

Removal Category: Time Critical

Site Spill ID (SSID): A8M5

NRC Case Number: N/A

CERCLIS Number: CON000802497

Site Location: just east of US550 at the top of Red Mountain Pass

Lat/Long: 37.8959°; -107.71179°

Potentially Responsible Party (PRP):

NPL Status: NPL

Operable Unit: 01

Removal Start Date: 4QTR, FY24

A. Site Description

1. Removal site evaluation

The BPMD Site includes 48 historic mines or mining-related sources along Mineral Creek, Cement Creek, and Upper Animas River drainages in San Juan County, Colorado. Mining operations were active in the area from the 1870s to the 1990s. Metals contamination of soils, groundwater, and surface water has occurred due to historical and ongoing releases of mine-influenced water (MIW) and sediments. The BPMD Site was listed on the NPL in 2016, following a release of MIW from the Gold King Mine in 2015.

The Koehler Tunnel Site is within a mining complex known locally as the Koehler Junction and is within the BPMD Superfund Site. This complex consists of three mines: Koehler Tunnel, Junction Mine, and Longfellow Mine. This complex is a popular recreational area and is commonly used for dispersed camping. Visitors to the area may be exposed to hazardous substances and contaminated mine waste that is present.

Koehler Tunnel is the southernmost mine and consists of an adit that drained the Carbon Lakes Mine. Koehler Tunnel was bulkheaded in 2003, with additional grouting around the bulkhead occurring in 2011; however, water still discharges from the tunnel. MIW from Koehler Tunnel flows from the tunnel, down the talus slope, and into the settling pond. In 1997, Koehler Tunnel MIW was responsible for 52 to 56 percent of the iron loading and over 90 percent of the zinc loading in Mineral Creek (Herron and others, 1997). Installation of the bulkhead improved water quality; however, metals from the tunnel's MIW still contribute to the metals concentrations in Mineral Creek headwaters. In June 2016, MIW flow rates from Koehler Tunnel were measured at 4.5 gpm, with a pH of 6.12. The water was measured to exceed acute standards for aluminum, arsenic, cadmium, copper, manganese, and zinc; and the chronic standard for iron. Waste rock samples from Koehler Tunnel exceeded the human health risk-based level for arsenic (EPA 2019).

The settling pond for Junction Mine and Koehler Tunnel is used to reduce metals concentrations from adit MIW discharges. Although Longfellow Mine is nearby, it does not drain into the settling pond. The settling pond allows metals to settle out of the MIW through either the formation of iron oxyhydroxides and subsequent co-precipitation (such as the case with arsenic) or through the physical settling of undissolved metals. This pond was the subject of previous work by EPA's Remedial and Removal Programs that is discussed further below.

In 2022, a bulkhead inspection was conducted at Koehler Tunnel by Schnabel Engineering under a separate contract, resulting in identifying five recommendations for action. A detailed account of this inspection is available in the final report located in the administrative record for this action. The action list included the following: 1) remove sludge (12 to 36 inches deep) from the Koehler Tunnel sill or floor, 2) replace the

sampling valve and pressure gauge downstream of the bypass valve as these were observed to be degraded and corroded, 3) re-establish drainage in the mine to reduce ponding, 4) replace failing ground support, and 5) exercise the bypass valve after cleaning to determine integrity (extreme caution must be used as this hasn't been performed in over 10 years). Additionally, bubbles were observed rising to the surface of pooled water at the base of the bulkhead, which could indicate MIW reacting with the concrete bulkhead and generating carbon dioxide.

A removal assessment was conducted during the 2023 field season to further investigate and prepare for future actions. EPA contractors removed sludge from the tunnel floor, inspected the ground support and bulkhead, and prepared a design necessary to stabilize the portal shed and tunnel from the surface to the bulkhead. Details surrounding this work are available in Attachment 1.

2. Physical location

The Koehler Tunnel Site is located at the headwaters of Mineral Creek, approximately 6 miles north-northwest of Silverton, San Juan County, Colorado, and is situated along Red Mountain Pass just east of Highway 550. It is located at a latitude of 37.8959° and longitude of -107.71179°, and at an elevation of approximately 11,100 to 11,600 feet above mean sea level (AMSL). As noted above, this location is frequently used in the summertime for dispersed camping and other recreational activities, as well as being the headwaters of Mineral Creek.

3. Site characteristics

This Koehler Tunnel is an abandoned mine, and has been the subject of several private, state, and federal cleanup/stabilization actions over the last 25-30 years. This is the first federal-lead removal action at this mine but is the 3rd removal conducted in OU1 of the larger BPMD Site.

According to EPA's Environmental Justice (EJ) Screening and Mapping Tool for this Site, the data does not indicate potential areas of EJ concern at or near the Site.

4. Release or threatened release into the environment of a hazardous substance, or pollutant or contaminant.

The actions described below are necessary to prevent the release of aluminum, arsenic, cadmium, copper, manganese, and zinc – all of which are hazardous substances as defined by section 101(14) of CERCLA. As noted above, the MIW draining from the Koehler tunnel was responsible for over 50% of the zinc loading in the Mineral creek watershed prior to bulkheading.

5. NPL Status

The Koehler Tunnel is within the BPMD Superfund Site, which is listed on the National Priorities List and currently in the Remedial Investigation/Feasibility Study phase of remediation.

6. Maps, pictures and other graphic representations

A map of the Koehler Tunnel Site is available in Attachment 2. Relevant Site photos are available in Attachment 1. Additional Site photos and maps are also available in the BPMD Site file and in the administrative record for this action.

B. Other Actions to Date

1. Previous actions

The Koehler Tunnel was bulkheaded by a private party in 2003. In 2011, Colorado's Department of Reclamation and Mining Safety (DRMS) conducted additional pressure grouting around the bulkhead in an attempt to improve the water seal of the structure.

From 2020 to 2021, Emergency and Rapid Response Services (ERRS) contractor Environmental Restoration, LLC, created two temporary repositories (Repositories 1 and 2) to the north of the settling pond in which to place sludge removed from the settling pond (Figure 2). During sludge removal, quick lime was used to adjust the pH of the sludge to between 9 and 10. After the temporary repositories were filled, they were capped with 12 inches of common fill material and hydroseeded with a preapproved seed mixture of variable native species. Based on the survey conducted by Southwest Land Surveying and Consulting, LLC, in August 2021, Temporary Repository 1 has a volume of 611 cubic yards, and Temporary Repository 2 has a volume of 104 cubic yards.

2. Current actions

Other than described in this document, there are no current activities taking place at the Koehler Tunnel.

C. State and Local Authorities' Roles

1. State and local actions to date

See above for State actions to date. Planned work has been communicated to CDPHE and DRMS. Local authorities do not have the authority, resources, or ability to conduct this action.

2. Potential for continued State/local response

EPA's remedial program has requested that EPA Removal conduct this work because of the time critical nature of the required actions.

III. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

Conditions at the Site present a threat to public health and the environment and meet the criteria for initiating a removal action under 40 CFR 300.415(b)(2) of the NCP. EPA has considered all the factors described in 40 CFR 300.415(b)(2) of the NCP and determined that the following factors apply at the Site.

“(i) Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants.”

The hazardous substances identified above all have aquatic toxicity. If flows from the bulkhead were to suddenly increase, water quality in Mineral Creek and downstream bodies would degrade. Given past observations, it is reasonable to conclude that water would degrade to the point that fish and other invertebrates in the streams would not survive.

“(ii) Actual or potential contamination of drinking water supplies or sensitive ecosystems.” Similar to the above, should flows from the bulkhead increase, downstream water intakes would be negatively impacted.

“(vii) The availability of other appropriate federal or state response mechanisms to respond to the release.” Local and state governments do not have the capability to conduct the action in a timely manner. The EPA Remedial Program has made funding available from the BPMD Site's special account such that EPA Removal can do this work in a timely manner.

IV. PROPOSED ACTIONS AND ESTIMATED COSTS

A. Proposed Actions

1. Proposed action description

The overall objective of this removal action is to stabilize the portal and tunnel structure to prevent further impoundment of MIW resulting from roof-fall by installing improved ground support. This ground support will also provide a safe work environment to allow further assessment of the bulkhead stability. Work will generally include:

- Reconfiguring the portal structure to improve worker protection and reduce water impoundment
- Clearing/scaling loose rock from the back (roof) and ribs (sides) of the tunnel
- Removing debris
- Installing ground support as indicated in the design drawings
 - Spiles
 - Epoxy-coated rock bolts
 - Mine mesh
- Restructuring drainage at the portal to allow water to exit the tunnel and to allow flow monitoring

The above broad tasks will be conducted according to design documents prepared and stamped by a professional engineer. The final tunnel conditions will be documented via “as-built” drawings, which will also capture any deviations from the design required during construction.

This construction is anticipated to generate a small amount of debris that has been removed from the tunnel during construction. As a general rule, all wood/metal/plastic/non-rock debris will be taken for appropriate offsite disposal. Any waste-rock or muck generated by this process will be staged with other waste at the Koehler Tunnel and handled in accordance with the larger 2019 Interim Record of Decision for the Bonita Peak Mining District Site. Due to this, no additional post removal Site controls are deemed necessary at this time.

2. Contribution to remedial performance

The proposed actions will, to the extent practicable, contribute to the efficient performance of any long-term remedial action. The actions above are necessary to enable further study by EPA and Colorado remedial programs at the BPMD Site.

3. Engineering Evaluation/Cost Analysis (EE/CA)

An EE/CA is not required for a time-critical removal action.

4. Applicable or relevant and appropriate requirements (ARARs)

Removal actions conducted under CERCLA are required, to the extent practicable considering the exigencies of the situation, to attain ARARs. In determining whether compliance with an ARAR is practicable, the lead agency may consider appropriate factors, including the urgency of the situation and the scope of the removal action to be conducted. A table containing Site-specific ARARs is provided as Attachment 3 to this Action Memorandum.

5. Project schedule

Removal activities are generally planned to start in summer of 2024 and last approximately 3 weeks.

B. Estimated Costs

| | Estimated Costs |
|--------------------------------------|------------------|
| ERRS contractor | \$340,000 |
| START contractor | \$150,000 |
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| | |
| SUBTOTAL | \$490,000 |
| Contingency costs (20% of subtotal) | \$98,000 |
| Total Removal Project Ceiling | \$688,000 |

*EPA direct and indirect costs, although cost recoverable, do not count toward the Removal Ceiling for this removal action. Liable parties may be held financially responsible for costs incurred by the EPA as set forth in Section 107 of CERCLA

V. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

The situation is not expected to improve should action be delayed or not taken.

VI. OUTSTANDING POLICY ISSUES

None.

VII. ENFORCEMENT

A separate Enforcement Addendum has been prepared providing a confidential summary of current and potential future enforcement activities.

VIII. RECOMMENDATION

This decision document represents the selected removal action for the Koehler Tunnel Site in the BPMD Site, in Silverton, San Juan County, Colorado, developed in accordance with CERCLA as amended, and is not inconsistent with the NCP. This decision is based on the administrative record for the Site.

Conditions at the Site met the NCP section 300.415(b) criteria for a removal action and through this document, I am approving the proposed removal actions. The total project ceiling is \$648,000. This amount will be funded from a special account for the BPMD Site.

Approve

Aaron Urdiales, Director
Superfund and Emergency Management Division

Date

Disapprove

Aaron Urdiales, Director
Superfund and Emergency Management Division

Date

Attachments

Attachment 1: START Report and Photos

Attachment 2: Map

Attachment 3: ARARs

**Attachment 3: Applicable or Relevant and Appropriate Requirements
Koehler Tunnel
Time Critical Removal Action**

| State Location-Specific ARARs | | | |
|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Relevant wildlife habitat | Prohibits willfully damaging or destroying any wildlife den or nest, or their eggs, or harassing any wildlife. "Harass" means to unlawfully endanger, worry, impede, annoy, pursue, disturb, molest, rally, concentrate, harry, chase, drive, herd, or torment wildlife. See C.R.S. § 33-1-102(24) (Definitions) | Performing response activities in relevant wildlife habitat. | Colorado Wildlife Enforcement and Penalties Act, Colorado Revised Statutes (C.R.S.) § 33-6-128 |
| Relevant wildlife habitat | Prohibits harassment, taking or possession of nongame species and subspecies, including threatened or endangered wildlife, with limited exceptions. The designations of species as endangered, threatened, or a nongame species, are made pursuant to 2 C.C.R. 406-10:1002-4. This regulation incorporates definitions of terms found in the Colorado Wildlife Enforcement and Penalties Act, C.R.S. § 33-1-102. | Performing response activities in relevant wildlife habitat. | Colorado Non-game, Endangered, or Threatened Species Act, C.R.S. §§ 33-2-104(3) and Colorado Wildlife Commission Regulations, 2 Code of Colorado Regulations (C.C.R.) 406-10:1002-1004 4(Protected Species) |
| Relevant land use zone | Sound levels that exceed the limits at a distance of 25 feet from the property line or greater are prima facie evidence of a public nuisance. Activities must be conducted in a manner so that any noise produced is not objectionable due to intermittence, beat frequency, or shrillness. For construction projects, maximum noise levels will be those specified for industrial zones for the time period within which construction is to be completed. For industrial zones, the maximum permissible sound level from 7:00 am to the next 7:00 pm is 80 A-weighted decibels (db[A]) and from 7:00 pm to the next 7:00 am is 75 db(A). | Location of response activities is within a designated land use zone subject to noise regulation. | Colorado Noise Abatement Statute, C.R.S. § 25-12-103 (Maximum Permissible Noise Levels) |
| Relevant land use zone | Sets forth maximum permissible noise levels specific to off-highway vehicles defined in 25-12-102 (5.6) as a self-propelled vehicle with wheels or tracks in contact with the ground that is designed primarily for use off the public highways: (a) If manufactured before January 1, 1998; 99 db(A); (b) If manufactured on or after January 1, 1998; 96 db(A). Measurements should be conducted using SAE J1287. | Use of off-highway vehicles in response activities | Colorado Noise Abatement Statute, CRS § 25-12-103 (Maximum Permissible Noise Levels) and CRS § 25-12-110 (Off-highway vehicles) |

Attachment 3: Applicable or Relevant and Appropriate Requirements
Koehler Tunnel
Time Critical Removal Action

| Action | Requirements | Prerequisite | Citation(s) |
|------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State Action-Specific ARARs | | | |
| Managing mine waste; constructing drainage channels. | Establishes requirements and procedures for land disposal of solid wastes. Pursuant to the Solid Wastes Disposal Sites and Facilities Act, C.R.S. § 30-20-102(4), mining operations including reclamation activities with approved reclamation plans under a Colorado Mined Land Reclamation Board (MLRB) permit may dispose of solid wastes generated by such operations within the permitted area without obtaining a Certificate of Designation. CDPHE interprets this provision to allow CERCLA response actions performed consistently with the MLRB regulation 2 C.C.R. 407-1 Rule 3 (Reclamation Performance Standards) to be compliant with Colorado's regulation pertaining to solid waste disposal. | Disposing solid waste. | Colorado Solid Waste Disposal Sites and Facilities Regulations, 6 C.C.R. 1007-2, pursuant to C.R.S. §§ 30-20-100.5, <i>et seq.</i> |
| Managing mine waste; constructing drainage channels. | The MLRB Regulations require reclamation of permitted mined lands, defined as "employment of procedures reasonably designed to minimize as much as practicable the disruption from mining operations and to provide for the establishment of plant cover, stabilization of soil, the protection of water resources, or other measures appropriate to the subsequent beneficial use of such affected lands." Reclamation must be conducted in accordance with the performance standards in Rule 3 of the Regulations. | Managing mine waste. | Colorado Mined Land Reclamation Board Regulations ("MLRB Regulations"), Reclamation Performance Standards, 2 C.C.R. § 407-1, Rule 1.1 (definitions) and Rule 3 (Reclamation Performance Standards), pursuant to the Co. Mined Land Reclamation Act, C.R.S. § 34-32-101, <i>et seq.</i> |
| Managing mine waste; constructing drainage channels. | Acid forming or toxic producing mined materials must be handled and disposed in a manner that will control unsightliness and protect the surface and groundwater drainage system from pollution. | Managing mine waste. | MLRB Regulations, Rule 3.1.5(5), (10), (11) |
| Managing mine waste; constructing drainage channels. | Reclamation activities must minimize disturbances to the prevailing hydrologic balance of the mined land and surrounding area by complying with all laws pertaining to water rights, water quality and dredge and fill activities. Minimizing measures also include removing temporary or large siltation structures from drainageways after stabilization and rehabilitation. | Managing mine waste. | MLRB Regulations Rule 3.1.6 (3) |

**Attachment 3: Applicable or Relevant and Appropriate Requirements
Koehler Tunnel
Time Critical Removal Action**

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| Managing mine waste; constructing drainage channels. | Reclamation activities must take into account the safety and protection of wildlife on the mined site and along access roads with special attention given to critical periods in the life cycle of species requiring special consideration (elk calving, migration routes, peregrine falcon nesting, grouse strutting grounds). | Managing mine waste. | MRLB Regulations Rule 3.1.8 |
| Managing mine waste; constructing drainage channels. | Any grading shall be done in a manner to control erosion and siltation and protect from slides and other damage. High walls shall be stabilized or eliminated. Grading shall create a final topography appropriate to the future land use. Slopes and slope combinations shall be compatible with the configuration of surrounding conditions and future land use. | Managing mine waste. | MLRB Regulations Rule 3.1.5(1), (3) |
| Managing storm water runoff during construction and disposal. | <p>The Colorado Discharge Permit System general permit COR40000 includes the following substantive requirements:</p> <ol style="list-style-type: none"> 1. Control measures must be installed before the commencement of activities at the site that could contribute pollutants to stormwater discharges. Such control measures should minimize the discharge of pollutants at the site. The control measures must meet the following requirements: <ol style="list-style-type: none"> a. Where vehicle tracking occurs, vehicle tracking controls that minimize vehicle tracking of sediment from disturbed areas. b. Containment or filtration of stormwater flows from disturbed areas and soil storage areas, such that flows from such areas must go to at least one control measure. c. Where there are discharges from basins and impoundments, outlets that withdraw water from or near the surface (unless infeasible). d. Maintenance of pre-existing vegetation or equivalent control measures for areas within 50 horizontal feet from receiving waters. e. Minimization of soil compaction where there are infiltration control measures, or final stabilization, from vegetative cover. f. In areas where vegetative final stabilization is utilized, preservation of topsoil (unless infeasible). | Discharging storm water from a construction activity. | <p>Colorado Discharge Permit System (CDPS) Regulations 5 C.C.R. 1002-61.3(2)(a) and (f)(ii), and CDPS general permit No. COR400000 (Stormwater discharges associated with construction activity), pursuant to C.R.S. § 25-8-501</p> <p>Permit available (as of May 9, 2023) at: https://drive.google.com/file/d/1Cs_nfVYo-sTVmStX9pwtnpKoN7DYmumYP/view</p> |

Attachment 3: Applicable or Relevant and Appropriate Requirements
Koehler Tunnel
Time Critical Removal Action

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| | <ul style="list-style-type: none"> g. Minimization of soil exposed during construction activity. h. Where there is bulk storage of liquid chemicals (including petroleum products), secondary containment or equivalent protection. i. Concrete washout control measures sufficient to ensure the washing activities do not add pollutants to stormwater runoff or receiving waters. Discharges to the ground of concrete washout waste must go through soil with buffering capacity, and cannot occur in areas near natural drainages, shallow groundwater, springs, or wetlands. j. For earth disturbing activities, temporary stabilization measures such as tarps, soil tackifier, and hydroseed, which must be implemented wherever construction activity disturbed the ground and has ceased for fourteen days or is permanently ceased. <ul style="list-style-type: none"> 2. All control measures must remain in effective operating condition and be protected from activities that would make them less effective. 3. The adequacy of control measures must be monitored, and corrective action must be taken when a measure becomes inadequate. 4. Discharges may not cause, have the reasonable potential to cause, or measurably contribute to an exceedance of any applicable water quality standard. 5. Site inspections with one of the following minimum frequencies: <ul style="list-style-type: none"> a. One per every 7 calendar days b. One per every 14 calendar days, and post storm event inspections within 24 hours after the end of any precipitation or snowmelt event that causes surface erosion. c. If the two options above are impractical, an alternate schedule. d. If the site is temporarily idle or completed, less frequent inspections depending on the circumstances. | | |
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