



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 8

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Ref: 8EPR-ER

**ACTION MEMORANDUM**

**SUBJECT:** Approval and Funding for a Removal Action at the Jumbo Mine Site in Summit County, Colorado

**FROM:** Duane Newell, Martin McComb  
Federal On-Scene Coordinators *Laura Williams for*

**THRU:** Laura Williams, Unit Leader  
Emergency Response *Laura Williams*  
David A. Ostrander, Director *David A. Ostrander*  
Emergency Response & Preparedness Program

**TO:** Betsy Smidinger  
Assistant Regional Administrator  
Office of Ecosystems Protection and Remediation

Site ID# A8K5

**I. PURPOSE**

The purpose of this Action Memorandum is to request and document approval of the removal action described herein for the Jumbo Mine Site (Site) in Summit County, Colorado. This time-critical removal action involves the diversion of mine drainage away from and around waste rock piles to minimize both the generation of dissolved metals and erosion of waste rock material into Peru Creek and the Snake River watershed. Conditions existing 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 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 U.S. 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:	Jumbo Mine Site
Superfund Site ID (SSID):	A8K5
NRC Case Number:	

CERCLIS Number:	CON000802508
USGS MAS/MILS ID	0081170102
Site Location:	Summit County, Colorado
Lat/Long:	39.598277/-105.853400
Potentially Responsible Party (PRP):	
NPL Status:	Non NPL
Removal Start Date:	FY'17/4

**A. Site Description**

**1. Removal Site Evaluation**

The Jumbo Mine operated from 1915 to 1918 and produced 6,727.99 metric tons of ore per the USGS Mineral Resources On-Line Spatial Data at [https://mrdata.usgs.gov/mrds/show-mrds.php?dep\\_id=10240204](https://mrdata.usgs.gov/mrds/show-mrds.php?dep_id=10240204).

The mine produced gold, copper, lead, silver and zinc. The Site was identified in the early 1990s in the Abandoned Mine Lands Inventory report and again mentioned in a report prepared in 2002 for White River National Forest, Dillon Ranger District written by Erik A. Munroe. "Abandoned Mine Lands in Peru Creek, Deer Creek, Upper Snake River and Swan River Watersheds: Sources of metal contamination to the environment and their amelioration through passive treatment options."

The Colorado Department of Public Health & Environment, Water Quality Control Division (CDPHE) Snake River Watershed Plan (Plan) states that the Site provides a significant metal-contaminated point source which flows into Peru Creek and then into the Snake River. The Snake River is the primary eastern tributary to the Blue River in Summit County, Colorado.

Much has been done to study the problems in the watershed, beginning at least in the early 1970s. Most of this work has focused on the tributary Peru Creek, which is home to the largest, longest serving mine in the watershed, the Pennsylvania Mine. The Pennsylvania Mine has been remediated by the EPA and the Colorado Division of Reclamation Mining and Safety by addressing above and below groundwater contamination issues that impacted the Snake River watershed. The Jumbo Mine is the final site identified in the Plan as a "Priority One" potential remediation-project site that is significantly degrading the water-quality in the watershed.



Sample Locations

On August 28, 2017, EPA and START mobilized to the Site to perform an assessment. Water and soil samples were collected at the Site for metals analysis and sample locations are indicated on the map below. Field pH screening of surface water samples ranged from 2.89 to 5.61. The lowest pH reading was from leachate water at the toe of the waste rock pile.

Sample ID	pH
JM-SW01	4.63
JM-SW02	5.61
JM-SW03	4.61
JM-SW04	4.59
JM-SW05	4.93
JM-SW06	4.97
JM-SW07	4.54
JM-SW08	2.89

#### Surface Water Analytical Results

	Sample #	JM-SW01	JM-SW02	JM-SW03	JM-SW04	JM-SW05	JM-SW05	JM-SW06	JM-SW07	JM-SW08
Analyte	Units	Result	Result	Result	Result	Result	Result	Result	Result	Result
LEAD	mg/L	0.335	0.434	0.248	0.142	0.0114	0.0115	0.0106	0.251	0.376
LEAD, DISSOLVED	mg/L	0.278	0.289	0.217	0.0738	0.0107	0.0106	0.0105	0.257	0.268
ZINC	mg/L	5.33	5.28	5.10	3.66	1.42	1.42	1.44	5.42	5.33
ZINC, DISSOLVED	mg/L	5.47	5.49	5.27	3.72	1.47	1.47	1.47	5.54	5.33

#### Soil TCLP Analytical Results

	Sample #:	JM-TCLP01	JM-TCLP02	JM-TCLP03
Analyte:	Units:	Result	Result	Result
LEAD	mg/L	4.65	1.27	6.81
ZINC	mg/L	2.67	<0.5 U	5.40

#### XRF Sample Results

	Sample #:	JM-WR01	JM-WR02	JM-WR03	JM-WR04	JM-WR05
Analyte:	Units:	Result	Result	Result	Result	Result
LEAD	mg/L	2,909	1608	4,851	20,570	6673
ZINC	mg/L	240	495	4,677	8,430	2,972

#### XRF Sample Results

	Sample #:	JM-WR06	JM-WR07	JM-WR08	JM-WR09	JM-WR10
Analyte:	Units:	Result	Result	Result	Result	Result
LEAD	mg/L	1202	5,240	4,678	6,364	5,214
ZINC	mg/L	567	1793	394	861	403



On August 28, 2017, surface water and waste rock/soil samples were collected and analyzed for metals at the Mine Site. The results are reported in the September 1, 2017, Draft Letter Report on the Jumbo Mine from Weston Solutions. Lead concentrations in waste rock/soil ranged from 1,216 - 32,000 mg/kg. Lead, leaching from the waste rock/soil and mine, reached levels as high as 434 ug/l in the surface water. These concentrations of lead in the soil and surface water, as well as arsenic in the soil and manganese in the surface water exceeded EPA's Regional Removal Management Levels (<https://www.epa.gov/risk/regional-removal-management-levels-chemicals-rmls>). These values are used by the Emergency Removal Program as a basis for taking action and are based on a Hazard Quotient of 3 for non-carcinogens and a  $10^{-4}$  ( $1E-4$ ) risk level for carcinogens. *Hazard Quotients greater than 3 or cancer risks higher than  $1E-4$  are relatively immediate exposure risks that warrant action by the removal program. The cancer risk level of  $1E-4$  represents a 1 in 10,000 probability or chance that an individual who receives the highest amount of exposure reasonably possible at a site will come down with cancer. This probability is in addition to the background cancer levels in the United States of 1 in 2 males and 1 in 3 females. Non-carcinogens (e.g., contaminants that elicit adverse effects on the heart, liver, reproductive system, brain, etc.) are known to have a threshold or level at which there are no adverse effects. These risks are represented by Hazard Quotients. A Hazard Quotient less than or equal to one means that no adverse effects are expected. Hazard Quotients greater than 1 indicate the potential for adverse effects. The removal program uses a Hazard Quotient of 3 to indicate an immediate adverse risk which may require a removal action.*

The levels of lead in waste rock/soil are 40 times higher than the removal management level for industrial workers. The level of lead in surface water is approximately 30 times higher than the MCL of 15 parts per billion for drinking water, which is used as a basis for action by the removal program. Exposure to lead is associated with neurological effects in young children and cardiovascular effects in adults. The manganese in surface water represents a hazard quotient of 8. Ingestion of manganese in drinking water is associated with neurological effects similar to multiple sclerosis. The transportation of eroded waste rock material into surface water has been demonstrated to present an on-going release to the environment and an unacceptable risk to workers and recreational users who ingest the water. The elevated levels of lead and arsenic in soil above the removal management levels also present an unacceptable risk to people who come into contact with the soil.

## **2. Physical Location**

The Jumbo Mine Site is located in the White River National Forest in central Colorado, approximately 8 miles east of Keystone just on the west side of the Continental Divide (Attachment 1). The average annual snowfall over the past 34 years for Keystone is approximately 235 inches. The Site is approximately 200 yards above Peru Creek on a mountainside surrounded by evergreen trees just below the timberline. The Peru Creek/Snake River confluence is about two miles downstream of the mine. The Snake River flows into the Dillon Reservoir approximately 10 miles downstream and is a major municipal drinking water source of the Denver metropolitan area.

The Site is on private land surrounded by the White River National Forest managed by the United States Forest Service. The closest private residents are located approximately

one mile to the west. The area is a popular year-round recreational destination. Recreational activities include 4X4 off-roading, camping, hiking, biking, skiing, hunting, and fishing. The estimated population within a one-mile radius of the Site is 486 people (<https://www.freemaptools.com/find-population.htm>).

### **3. Site Characteristics**

The Site has been inactive since the early 1900s, is located on private land and consists of a relatively small set of mine works located adjacent to Peru Creek. There is a single adit with a collapsed portal that drains acid mine water. Adit water flow fluctuates during the year as the seasons change and may vary from 30 to 100 gallons per minute. The impact to surface water thus varies over the course of the year. The mine drainage currently flows directly on top of a mine waste rock pile that is approximately 25,000 cubic yards in volume. There is a cabin atop the waste rock pile that the property owner uses and wants to keep.

### **4. Release or Threatened Release into the Environment of a Hazardous Substance, Pollutant, or Contaminant**

Numerous samples have been taken within the Snake River watershed and the Snake River Watershed Coalition has identified the Jumbo Mine as a priority mine site along Peru Creek (Plan). Previous Removal Actions have addressed the top two priorities in the Peru Creek drainage. Peru Creek, the Snake River, and several of its other tributaries are on the Colorado Clean Water Act Section 303(d) listing as streams that do not meet water-quality stream standards due to low pH and high concentration of four trace metals: dissolved cadmium, copper, lead and zinc. The elevated metals concentrations in the surface water are attributed to the historic mining operations within the area.

Cadmium, copper, lead, and zinc are listed as hazardous substances as provided at section 101(14) of CERCLA.

The following chart is from the Total Maximum Daily Load Assessment (TDML), Snake River and Peru Creek, Summit County, CO; Prepared by Rebecca Anthony, Water Quality Control Division, August, 2008 which summarizes the Snake River water quality just above the Peru Creek confluence.

Current TVS Standards and Ambient Water Quality for Snake River above Peru Creek											
	Avg. Hardness, mg l <sup>-1</sup>	pH Std.	Observed pH	Cd-D, TVS	Cd-D, µg l <sup>-1</sup>	Cu-D, TVS	Cu-D, µg l <sup>-1</sup>	Pb-D, TVS	Pb-D, µg l <sup>-1</sup>	Zn-D, TVS	Zn-D, µg l <sup>-1</sup>
Jan	62	6.5-9.0	6.3	0.27	1.5	6.0	9.0	1.5	0.0	74.7	483.9
Feb	59	6.5-9.0	5.7	0.26	1.6	5.7	7.9	1.4	0.0	72.4	490.9
Mar	65	6.5-9.0	5.4	0.29	1.8	6.2	7.2	1.6	0.0	80.4	531.3
Apr	57	6.5-9.0	5.2	0.26	1.4	5.5	6.6	1.4	0.0	71.2	634.9
May	43	6.5-9.0	5.3	0.22	1.8	4.4	7.9	1.0	0.7	59.3	844.5
Jun	33	6.5-9.0	5.9	0.16	0.8	3.5	1.5	0.7	0.0	42.0	250.0
Jul	42	6.5-9.0	5.7	0.18	1.0	4.3	1.8	1.0	0.0	47.1	275.4
Aug	53	6.5-9.0	5.7	0.19	2.0	5.2	5.8	1.3	0.0	50.8	469.1
Sep	54	6.5-9.0	5.5	0.22	2.2	5.3	9.3	1.3	0.0	60.5	498.8
Oct	60	6.5-9.0	5.4	0.25	1.6	5.8	5.0	1.4	0.0	67.7	505.6
Nov	56	6.5-9.0	5.2	0.26	1.7	5.5	7.6	1.3	0.0	71.2	436.2
Dec	57	6.5-9.0	5.8	0.25	1.9	5.5	9.0	1.4	0.0	70.0	456.0

Source CDPHE, (2008)

TVS-Table Value Standards

The following chart from the TDML summarizes the Peru Creek water quality entering the Snake River.

Current TVS Standards and Ambient Water Quality for Peru Creek										
	pH Std	Observ pH	Cd-D TVS	Cd-D µg/L	Cu-D TVS	Cu-D µg/L	Pb-D TVS	Pb-D µg/L	Zn-D TVS	Zn-D µg/L
Jan	6.5-9.0	-	0.28	-	5.6	-	1.4	-	78.1	-
Feb	6.5-9.0	4.9	.029	5.2	5.9	60.3	1.4	7.2	81.6	1398.2
Mar	6.5-9.0	5.6	0.29	5.3	5.8	69.7	1.4	4.3	80.4	1640.0
Apr	6.5-9.0	5.9	0.29	5.5	5.9	64.3	1.4	5.9	81.6	1397.5
May	6.5-9.0	5.0	0.24	5.2	4.8	69.4	1.5	6.1	66.5	1264.0
Jun	6.5-9.0	5.1	0.2	6.3	3.7	102.0	1.5	7.1	52.0	1487.5
Jul	6.5-9.0	4.7	0.23	5.7	4.4	167.0	1.5	6.0	61.7	1508.5
Aug	6.5-9.0	5.1	0.22	3.4	4.2	56.6	1.5	4.8	58.1	955.0
Sep	6.5-9.0	4.7	0.28	4.6	5.5	108.6	1.4	6.0	77.0	1290.0
Oct	6.5-9.0	4.3	0.27	7.3	5.3	230.3	1.4	7.5	73.5	1700.0
Nov	6.5-9.0	5.4	0.28	5.7	5.7	75.5	1.4	5.8	79.3	1369.7
Dec	6.5-9.0	5.0	0.27	4.4	5.5	60.0	1.4	4.0	75.8	1300.0

Source CDPHE (2008)

Peru Creek's flow into the Snake River further degrades the water quality of the Snake River. The flows are approximately equal, and the low quality of Peru Creek is easily seen in the water quality of the combined streams. The following chart, from the TDML report, summarizes the water quality of the Snake River below its confluence with Peru Creek. The adit water flowing across the Jumbo Mine waste rock is a significant contributor to the degradation of the watershed.



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Current TVS Standards and Ambient Water Quality for Snake River below Peru Creek

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	Avg. Hardness, mg l <sup>-1</sup>	pH Std.	Observed pH	Cd-D, TVS	Cd-D, µg l <sup>-1</sup>	Cu-D, TVS	Cu-D, µg l <sup>-1</sup>	Pb-D, TVS	Pb-D, µg l <sup>-1</sup>	Zn-D, TVS	Zn-D, µg l <sup>-1</sup>
Jan	77	6.5-9.0	7.3	0.35	2.0	7.2	7.3	1.9	0.0	99.5	666.5
Feb	74	6.5-9.0	7.0	0.34	2.7	6.9	9.0	1.8	0.0	96.2	829.8
Mar	71	6.5-9.0	6.8	0.33	3.1	6.7	10.0	1.7	0.0	92.8	916.9
Apr	57	6.5-9.0	6.9	0.28	2.7	5.5	10.2	1.4	0.0	77.0	942.0
May	43	6.5-9.0	6.5	0.22	2.1	4.4	10.4	1.0	0.2	60.5	1000.6
Jun	39	6.5-9.0	6.6	0.21	2.0	4.0	5.9	0.9	0.1	55.7	499.4
Jul	49	6.5-9.0	6.4	0.25	2.5	4.9	10.0	1.2	0.0	67.7	621.9
Aug	51	6.5-9.0	6.5	0.25	2.4	5.0	18.4	1.2	1.2	70.0	742.4
Sep	63	6.5-9.0	5.4	0.30	2.8	6.0	32.1	1.5	2.6	83.8	829.6
Oct	63	6.5-9.0	5.9	0.30	2.9	6.0	33.8	1.5	0.0	83.8	860.8
Nov	70	6.5-9.0	6.2	0.32	2.0	6.6	4.0	1.7	0.0	91.7	675.6
Dec	72	6.5-9.0	7.0	0.33	2.1	6.8	8.1	1.8	0.0	93.9	658.5

Source CDPHE, 2008

## Toxicity

According to the Agency for Toxic Substances and Disease Registry (ATSDR), "The effects of lead are the same whether it enters the body through breathing or swallowing. Lead can affect almost every organ and system in your body. The main target for lead toxicity is the nervous system, both in adults and children. Long-term exposure of adults can result in decreased performance in some tests that measure functions of the nervous system. It may also cause weakness in fingers, wrists, or ankles. Lead exposure also causes small increases in blood pressure, particularly in middle-aged and older people and can cause anemia. Exposure to high lead levels can severely damage the brain and kidneys in adults or children and ultimately cause death. In pregnant women, high levels of exposure to lead may cause miscarriage. High level exposure in men can damage the organs responsible for sperm production.

Children are more vulnerable to lead poisoning than adults. A child who swallows large amounts of lead may develop blood anemia, severe stomachache, muscle weakness, and brain damage. If a child swallows smaller amounts of lead, much less severe effects on blood and brain function may occur. Even at much lower levels of exposure, lead can affect a child's mental and physical growth.

Exposure to lead is more dangerous for young and unborn children. Unborn children can be exposed to lead through their mothers. Harmful effects include premature births, smaller babies, decreased mental ability in the infant, learning difficulties, and reduced growth in young children. These effects are more common if the mother or baby was exposed to high levels of lead. Some of these effects may persist beyond childhood."

The Department of Health and Human Services (DHHS) has determined that lead and lead compounds are reasonably anticipated to be human carcinogens and the EPA has determined that lead is a probable human carcinogen. The International Agency for Research on Cancer (IARC) has determined that inorganic lead is probably carcinogenic to humans and that there is insufficient information to determine whether organic lead compounds will cause cancer in humans.



According to the ATSDR, zinc is ubiquitous in the environment, constituting 20–200 ppm (by weight) of the Earth's crust. It is not found as elemental zinc in nature, instead being found mainly as zinc oxide or sphalerite (ZnS). Zinc is released into the environment as the result of mining, smelting of zinc, lead, and cadmium ores, steel production, coal burning, and burning of wastes. Exposure of the general population to zinc is primarily by ingestion. Gastrointestinal symptoms reported in cases of excess zinc exposure include vomiting, abdominal cramps, and diarrhea, in several cases with blood. In general, oral exposure levels associated with gastrointestinal effects of zinc have not been reliably reported, but the limited available data suggest that oral concentrations of 910 mg zinc/L or single-dose exposures of ~140–560 mg zinc (acute oral doses of 2–8 mg/kg/day) are sufficient to cause these effects. The noted effects are consistent with gastrointestinal irritation. EPA has derived an oral reference dose (RfD) of 0.3 mg/kg/day for zinc (IRIS 2005).

According to the ATSDR, breathing high levels of cadmium can severely damage the lungs. Eating food or drinking water with very high levels severely irritates the stomach, leading to vomiting and diarrhea. Long-term exposure to lower levels of cadmium in air, food, or water leads to a buildup of cadmium in the kidneys and possible kidney disease. Other long-term effects are lung damage and fragile bones.

The DHHS and the IARC have determined that cadmium and cadmium compounds are human carcinogens. The EPA determined that cadmium is a probable human carcinogen (group B1).

According to the ATSDR, everyone must absorb small amounts of copper every day because copper is essential for good health. High levels of copper can be harmful. Breathing high levels of copper can cause irritation of your nose and throat. Ingesting high levels of copper can cause nausea, vomiting, and diarrhea. Very-high doses of copper can cause damage to your liver and kidneys, and can even cause death.

## **5. NPL Status**

This Site is neither on nor currently being considered for inclusion on the NPL.

## **6. Maps, Pictures, Other Geographic Representations**

A map of the Site is available in Attachment 1.



Jumbo Mine Site Aerial



Beginning of the mine Adit outfall water.





Adit outfall water pathway next to the toe of the waste rock pile.



**General Site View**





**General Site View**

**B. Other Actions to Date**

**1. Previous Actions**

There have been no prior actions conducted at this Site.

**2. Current Actions**

There are no current activities on the Site.

**C. State and Local Authorities' Role**

**1. State and Local Actions to date**

Significant efforts have been made by various state and local stakeholders to not only document the quality and quantity of water in Peru Creek and the Snake River watershed but also to investigate strategies to reduce historic mining operations' impact on Peru Creek. These stakeholders include the Snake River Watershed Task Force, Northwest Colorado Council of Governments, Summit County, and the CDPHE- Division of Reclamation, Mining and Safety (CDRMS).

## **2. Potential for Continued State/Local Response**

State and local entities do not have the resources or authority to conduct this removal action, and are involved in a consultation role only.

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

The conditions at the Site present a threat to public health and welfare and meet the criteria for initiating a removal action under Section 40 CFR section 300.415(b)(2) of the NCP.

EPA has considered all the factors described in 40 CFR section 300.415(b)(2) of the NCP and determined the following factors apply at the Site.

Per 40 CFR 302.4, cadmium, copper, lead and zinc are listed as hazardous substances and have been detected entering Peru Creek at high concentrations from the Jumbo Mine Site. Site conditions present a direct threat to public health and the environment. Exposure to these metals could lead to both acute and chronic health effects in both humans and wildlife. Because of the dangerous nature of the contaminants involved and the concentrations in which they have been found at the Site, conditions present a threat to public health and welfare and meet the criteria for initiating a removal action under 40 CFR §300.415(b)(2) of the NCP.

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

Metals transported into Peru Creek and the Snake River from the Jumbo Mine are acutely toxic to fish and invertebrates. These conclusions are supported by several lines of evidence including 1) calculated hazard quotient values using water quality data; 2) direct toxicity testing; and 3) Site-specific observations of fish and invertebrate populations. Under current conditions, the metals concentrations in Peru Creek and significant portions of the Snake River prevent the survival of trout populations and other fish species, and likely restrict the diversity and abundance of benthic invertebrate communities. Historical accounts indicate a healthy fish population in Peru Creek before mining operations occurred in the area.

Potential pathways of human exposure to Site contaminants include consumption of surface water and groundwater emanating from and in the vicinity of the Site, and consumption of fish obtained from the Snake River downstream of the Site. The Site is a very popular area for camping, hiking, off-roading, sightseeing, and skiing thus exposure would occur when people are in the area. The Snake River also flows into Dillion Reservoir which is a drinking water source for the City and County of Denver.

- (iv) High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface, that may migrate;

Adit water flowing across the waste rock entrains hazardous, metals-containing sediment that is deposited into Peru Creek and is distributed down through the watershed. In-addition, adit water flows through the waste rock pile leaching metals and impacting the watershed and potentially the groundwater.

- (v) Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released;

Seasonal flooding is a regular occurrence in this high alpine environment be it from intense summer rain storms, rapid springtime snowmelt or a combination of the two. There is a demonstrated short lag time between heavy precipitation and/or rapid melting and an increase in discharge from the mine.

(vii) The (lack of) availability of other appropriate federal or state mechanisms to respond to the release;

CDRMS has asked EPA to address the significant anthropogenic, mine-related water-quality degradation that the Jumbo Mine drainage is having on the Peru Cheek and thus the Snake River watershed.

#### **IV. PROPOSED ACTIONS AND ESTIMATED COSTS.**

##### **A. Proposed Actions**

###### **1. Proposed Action Description**

The EPA Region 8 Removal Program, in consultation with CDRMS and the Snake River Watershed Coalition, plans the following: 1. Adit water discharging out of the collapsed portal will be routed to the west of the waste pile in a constructed, lined channel through a lime rock matrix. 2. A toe drain, also lined and filled with lime rock, will be constructed along the base of the waste pile and connected to the west drainage system. 3. Areas of the waste pile impacted by operations may be slightly regraded if necessary. 4. Removal and disposal of a collapsed part of a cabin on top of the waste rock pile will be undertaken to gain access to the adit water channel. 5. No attempt will be made to open the Jumbo Mine adit or enter the portal.

###### **2. Contribution to Remedial Performance**

These planned removal action efforts can only help to substantially mitigate the existing contamination. These planned removal action activities will not interfere with any future Superfund remediation activities. However, no further federal action is anticipated at this time.

###### **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)**

As this action is being conducted as a time-critical removal, all federal and state ARARs may not have been identified at this time. The ARARs identified to date are provided in Attachment 2. In accordance with the NCP, all ARARs for the Site will be attained to the extent practicable given the scope of the project and the urgency of the situation.



## 5. Project Schedule

This removal action is planned to start the week of 9/25/2017. It is anticipated that the project will take approximately three to four weeks to complete if the channel placement is not in consolidated rock and the weather holds.

### B. Estimated Costs\*

	<b>Estimated Costs</b>
ERRS contractor	\$ 121,000
START contractor	\$0
Other (ESAT, travel, equipment)	
Other Extramural Costs (Strike Team, other Fed Agencies)	\$0
<b>SUBTOTAL</b>	<b>\$ 121,000</b>
Contingency costs (20% of subtotal)	\$ 25,000
<b>Total Removal Project Ceiling</b>	<b>\$ 146,000</b>

\*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

A delay in action or no action at this Site would increase the actual or potential threats to public health and/or the environment.

## 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.

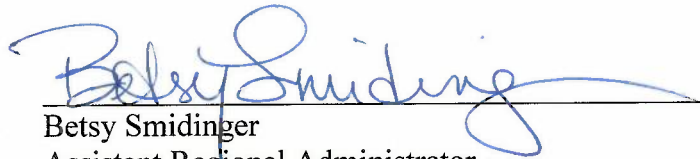
## VIII. RECOMMENDATIONS

This decision document represents the selected removal action for the Jumbo Mine Site in Summit 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 meet the NCP 40 CFR section 300.415(b)(2) criteria for a removal action,

and I recommend your approval of the proposed removal action. The total project ceiling, if approved, will be \$146,000; this amount will be funded from the Regional removal allowance.

APPROVE

  
Betsy Smidinger  
Assistant Regional Administrator  
Office of Ecosystems Protection and Remediation

9/28/17  
Date

DISAPPROVE

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Betsy Smidinger  
Assistant Regional Administrator  
Office of Ecosystems Protection and Remediation

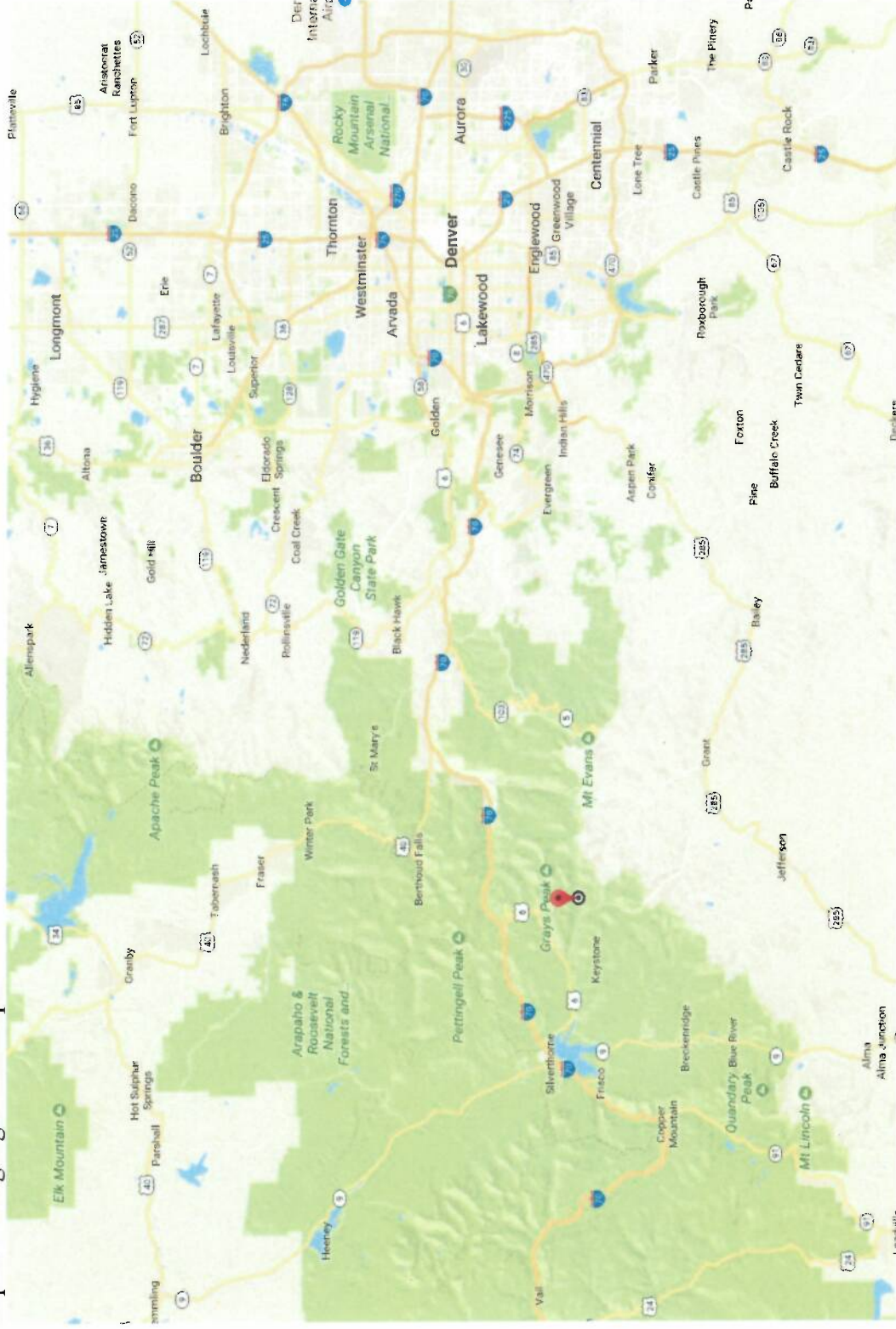
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**Attachments:**

- Attachment 1: Site Map
- Attachment 2: Applicable or Relevant and Appropriate Requirements (ARARs)

# Attachment 1: Site Map

<https://www.google.com/maps/>





## Attachment 2: Applicable or Relevant and Appropriate Requirements (ARARs)

### I. INTRODUCTION

40 CFR 300.415(i) provides that fund financed removal actions under CERCLA section 104, 42 U.S.C. § 9604, attain, to the extent practicable considering the exigencies of the situation, all state and federal applicable or relevant and appropriate requirements (ARARs). In considering whether compliance with ARARs is practicable, EPA will consider the urgency of the situation and the scope of the removal action being conducted. See 40 CFR sections 300.415(i)(1) and (2).

This document identifies potential ARARs for the removal action to be conducted at the Jumbo Mine Site. The following ARARs or groups of related ARARs are each identified by a statutory or regulatory citation, followed by a brief explanation of the ARAR and how and to what extent the ARAR is expected to apply to the activities to be conducted under this removal action.

Substantive provisions of the requirements listed below are identified as ARARs pursuant to 40 CFR section 300.400. ARARs must be attained during and at the completion of the removal action. See, Preamble to the National Oil and Hazardous Substances Pollution Contingency Plan, 55 Federal Register 8695, 8755 (March 8, 1990). No federal, state or local permit will be required for the portion of any removal action conducted entirely on Site in accordance with section 121 (e) of CERCLA, 42 U.S.C. § 9621(e).

### II. TYPES OF ARARs

ARARs are either "applicable" or "relevant and appropriate." Both types of requirements are mandatory under the NCP. See CERCLA § 121(d)(2)(A), 42 U.S.C. § 9621(d)(2)(A). See also 40 CFR § 300.430(f)(1)(i)(A) (note that that these references apply to remedial actions). Applicable requirements are those cleanup standards, standards of control, and other substantive requirements, criteria or limitations promulgated under federal environmental or state environmental and facility siting laws that specifically address a hazardous substance, pollutant, contaminant, removal action, location, or other circumstance found at a CERCLA site. Only those state standards that are identified by a state in a timely manner and that are more stringent than federal requirements may be applicable. See 40 CFR section 300.5.

Relevant and appropriate requirements are those cleanup standards, standards of control, and other substantive requirements, criteria or limitations promulgated under federal environmental or state environmental or facility siting laws that, while not "applicable" to hazardous substances, pollutants, contaminants, locations, or other circumstances at a CERCLA site, address problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well suited to the particular site. Only those state standards that are identified in a timely manner and are more stringent than federal requirements may be relevant and appropriate. See 40 CFR section 300.5.

The determination that a requirement is relevant and appropriate is a two-step process: (1) determination if a requirement is relevant and (2) determination if a requirement is appropriate. In general, this involves a comparison of a number of site-specific factors, including an examination of the purpose of the requirement and the purpose of the proposed CERCLA action; the medium and substances regulated by the requirement and the proposed action; the actions or activities regulated by the requirement and the removal action; and the potential use of resources addressed in the requirement and the removal action. When the analysis results in a determination that a requirement is both relevant and appropriate, such a requirement must be complied with to the same degree as if it were applicable. See, CERCLA Compliance with Other Laws Manual, Vol. I, OSWER Directive 9234.1-01, August 8, 1988, p. 1-11.

ARARs are contaminant, location, or action specific. Contaminant specific requirements address chemical or physical characteristics of compounds or substances on sites. These values establish acceptable amounts or concentrations of chemicals which may be found in or discharged to the ambient environment.

Location specific requirements are restrictions placed upon the concentrations of hazardous substances or the conduct of cleanup activities because they are in specific locations. Location specific ARARs relate to the geographical or physical positions of sites, rather than to the nature of contaminants at sites. Action specific requirements are usually technology based or activity based requirements or limitations on actions taken with respect to hazardous substances, pollutants, or contaminants. A given cleanup activity will trigger an action specific requirement. Such requirements do not themselves determine the cleanup alternative, but define how chosen cleanup methods should be performed.

Many requirements listed as ARARs are promulgated as identical or near identical requirements in both federal and state law, usually pursuant to delegated environmental programs administered by EPA and the state. The Preamble to the NCP provides that such a situation results in citation to the state provision and treatment of the provision as a federal requirement. Also contained in this list are policies, guidance or other sources of information which are "to be considered" in the implementation of the removal action. Although not enforceable requirements, these documents are important sources of information which EPA and the Colorado Department of Public Health and Environmental (CDPHE) may consider, especially in regard to the evaluation of public health and environmental risks; or which will be referred to, as appropriate, in developing cleanup actions. See 40 CFR Section 300.400(g)(3); Preamble to the NCP, 55 Fed. Reg. 8744-8746 (March 8, 1990). These final ARARs will be set forth as performance standards for any and all removal work plans.

Standard, Requirement, Criteria, or Limitation	Citation	Description	Applicable or Relevant and Appropriate	Comments
<b>FEDERAL</b>				
National Historic Preservation Act	16 USC § 470 et seq.	Regulates impacts to historic places and structures	Applicable	Applicable if historical places and structures are impacted by response actions. Will be complied to the extent practical.
The Historic and Archaeological Data Preservation Act of 1974	16 USC 469	Protects sites with archeological significance	Applicable	Applicable if sites of archeological significance are impacted by response actions. To be considered to the extent practicable.
Historic Act of 1935, Executive Order 11593	16 USC §§ 461 et seq.	Regulates designation and protection of historic places	Applicable	Applicable if designated historic places are impacted by response actions. Will be complied to the extent practical.
The Archaeological Resource Protection Act of 1979	16 USC §§ 470aa-47011	Regulates removal of archeological resources from public or tribal lands	Applicable	Applicable if archeological resources exist on public or tribal lands affected by the response action. Will be complied to the extent practical.
Fish and Wildlife Coordination Act	16 USC § 661 et seq. 40 CFR § 6302(b)	Requires coordination with Federal and State agencies to provide protection of fish and wildlife	Applicable	Applicable if impacts to fish and wildlife will occur. Will be complied to the extent practical.
Endangered Species Act	16 USC §§ 1531-1543, 50 CFR Parts 17,402, 40 CFR § 6.302(b)	Regulates the protection of threatened or endangered species.	Applicable	Applicable if threatened or endangered species are identified. Will be complied to the extent practical.
<b>STATE</b>				



Colorado fugitive Dust Control Plan/Opacity Regulation No. 1	5 CCR 1001-3. pursuant to CRD 25-7-101 et. Seq.	Regulates fugitive emissions generated during construction	Applicable	Contemplated actions would not trigger permit requirements, however dust control may be required. Will be considered to the extent practical.
Colorado Mined Land Reclamation Regulations	2 CCR 407-1 Rule 3, pursuant to CRS 34-32-101 et. seq.	Regulates all aspects of mining, including reclamation plans and socioeconomic impacts	Relevant and Appropriate	While on site removal actions do not require permits, the substantive requirements of these regulations are relevant and appropriate to mine reclamation activities including reclamation of waste rock and revegetation.
Colorado Environmental Covenants Law	CRS §§ 25-15-317 to 327	Requires environmental covenants (ECs) or notices of environmental use restrictions (RNs) whenever residual contamination not for all uses is left in place or an engineered feature or structure that requires monitoring, maintenance, or operation is included in the remedy	Applicable (Substantive provisions) <sup>1</sup>	See footnote 1
Colorado Wildlife Commission Regulations	2 CCR 406. pursuant to CRS § 33-2-101 et. Seq.	Establishes specific requirements for protection of wildlife	Relevant and Appropriate	Will be considered to the extent practical.
Colorado Species of Special Concern and Species of Undetermined Status	Colorado Division of Wildlife Administrative Directive E-1, 1985, modified	Protects species listed on Colorado Division of Wildlife generated list.	Relevant and Appropriate	Will be considered to the extent practical.

Colorado Non-game, Endangered, or Threatened Species Act	CRS §§ 13-2-101 to 108	Standards for regulation of non-game wildlife and threatened and endangered species	Relevant and Appropriate	Will be considered to the extent practical.
Historic Places Register	CRS §§ 24-80.1-101 to 108	The State historic preservation officer reviews potential impacts to historic places and structures.	Applicable	Applicable if historic places and structures are impacted by removal actions. Will be considered to the extent practical.
<p>1 The substantive provisions of CRS §§ 25-15-317, et seq. are ARARs. Creation of a legal EC or RN is dependent on compliance with procedural or administrative provisions at the discretion of CDPHE. CDPHE states that if the EC or RN presented to CDPHE for acceptance or approval includes appropriate land use restrictions, is signed or approved by the landowner, and follows the provisions of the Colorado Environmental Covenant Statute, CDPHE will accept the EC or RN. Further, CDPHE states that ECs and RNs will only be modified or terminated to reflect changes made to the Superfund remedy.</p>				