U.S. ENVIRONMENTAL PROTECTION AGENCY
POLLUTION/SITUATION REPORT
Carpenter Snow Creek - Removal Polrep
Final Removal Polrep

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region VIII

Subject: **POLREP #5**
Final - Waste Removal, Repository Cover and Restoration Complete
Carpenter Snow Creek
089X
Neihart, MT
Latitude: 46.9751143 Longitude: -110.6998538

To:

From: Steven Way, OSC
Steven Merritt, OSC

Date: 10/18/2014

Reporting Period: 9/15/14 to 10/18/14

1. Introduction

1.1 Background

Site Number:	089X	**Contract Number:**	
D.O. Number:		**Action Memo Date:**	9/2/2014
Response Authority:	CERCLA	**Response Type:**	Time-Critical
Response Lead:	EPA	**Incident Category:**	Removal Action
NPL Status:	NPL	**Operable Unit:**	OU 3
Mobilization Date:	8/11/2014	**Start Date:**	9/3/2013
Demob Date:		**Completion Date:**	10/18/2014
CERCLIS ID:	MT0001096353	**RCRIS ID:**	
ERNS No.:		**State Notification:**	
FPN#:		**Reimbursable Account #:**	

1.1.1 Incident Category

CERCLA Time-Critical Removal Action

1.1.2 Site Description

The NPL Site is within the Neihart Mining District, approximately 50 miles southeast of Great Falls, Montana. The mine district was a relatively steady producer of silver, lead and zinc from its discovery in 1881 to the 1940s. Historic mining and milling operations generated substantial volumes of waste rock and mill tailings that remain within the Site and continue to release hazardous substance into the environment. In 1925, the Silver Dyke tailings dam failed due to an earthquake resulting in tailings being deposited along the length of Carpenter Creek. Erosion and subsequent re-deposition of the tailings along Carpenter Creek and erosion from the upper and lower tailings impoundments moved waste into the floodplains of Carpenter and Belt creeks at least as far as Monarch, MT, approximately 14 miles downstream.

The Site has been divided into three operable units (OU). This removal action included activities in OU 3, which contains the Silver Dyke mining complex including upper mine sites and tailings in Carpenter Creek to the confluence with Belt Creek. The three main areas focused on in the removal action were the upper and lower Carpenter Creek tailings, and the Silver Dyke tailings pile

The Mackay Gulch Repository site was investigated as part of the remedial investigation and identified as one of two locations to store mine waste from the Site. The Mackay Gulch repository is proposed to have a capacity of approximately 600,000 cubic yards. As part of the removal action a small portion of the total area has been identified to receive waste from the Silver Dyke tailings impoundment area.

1.1.2.1 Location

The Site is located on the northern flank of the Little Belt Mountains at elevations from approximately 5,100 feet Above Mean Sea Level (AMSL) along Belt Creek to 8,621 feet AMSL on Long Mountain. It is located in the southeastern end of Cascade County, Montana, and primarily along Carpenter and Snow Creek and then along Belt Creek from the Town of Neihart extending downstream to Monarch, MT.

1.1.2.2 Description of Threat

Aquatic life surveys conducted in Carpenter Creek below the confluence with Sih-mem Creek, indicate

populations of benthic invertebrates are severely impaired, and fish populations are absent. Investigations conducted by Montana Fish Wildlife and Parks and the EPA in 2010 and 2011 (FWP, 2011, 2012, and TechLaw, 2011, 2012) clearly indicate that metals contamination associated with ongoing contaminant releases impairs water quality and severely inhibits aquatic life in Carpenter Creek, and suggests that they are contributing to the impairment of aquatic life in Belt Creek below the confluence of Carpenter Creek.

Water quality in Carpenter Creek is poor throughout the drainage due to degrading influences from the Carpenter Snow Creek Site. Creek waters are subject to active tailings erosion as well as metals contaminants from mine adits. There are general water quality standards exceedences for metals including arsenic, cadmium, copper, lead and zinc, that can be attributed in part to the erosion. Much higher exceedences of metals have been measured during storm events which are directly a result of erosion of the tailings. These metals inhibit aquatic life in the drainage.

1.1.3 Preliminary Removal Assessment/Removal Site Inspection Results

The Site investigations by the State and MT Operations office determined that approximately 35,000 cubic yards of tailings remain on the slopes of the No Name Creek valley. This was the location of the former tailings impoundment that failed and dispersed tailings throughout the Carpenter Creek floodplain. Analyses of samples collected at the Site indicate the presence of high concentrations of heavy metals including zinc, cadmium and lead in waste and sediment. Routine run-off and high flows during spring snow melt continue to cause migration of the tailings materials from the Carpenter Creek and Silver Dyke tailings impoundment into the environment

2. Current Activities

2.1 Operations Section

2.1.1 Narrative

The objective of this removal action is to prevent continued releases from the estimated 35,000 cubic yards of tailings at the Silver Dyke tailings impoundment within No Name Creek drainage area. The action includes the following elements: (1) removing the tailings from the hillside slopes and staging for disposal; (2) constructing an onsite repository, pending the repository decision; (3) placing the tailings in an onsite repository; (4) reclaiming/restoring removal area slopes. Designs have been developed for the repository construction and waste placement, and preliminary plans are developed for the Site restoration and revegetation.

The Proposed Plan public comment period ended on August 30, 2014, and the the Mackay Gulch Repository site was approved in the Action Memorandum Amendment and signed on September 2, 2014.

2.1.2 Response Actions to Date

Week of 9/15/14

- Tailings removal / haul continued on the East Slope and was largely complete by Thursday, September 18, 2014. Additional removal was determined necessary because of high concentrations of heavy metals in certain areas of the slope to a depth of 6 to 18 inches. The north end nearest the creek required a 12 to 18 inch cut 20 feet wide. Concentrations of Pb were approximately 3,000 to 5,000 ppm and reduced to near 500 ppm by removing additional material.
- West slope tailings removal started Wednesday and continued through Saturday. Material is generally silt to sand size and adequate moisture, with some areas of slimes holding high moisture.
- Northwest slope tailings (gravel to sand size) were pushed down slope near the original grade and concentrations of metals remained high (3,000 to 5,000 ppm Pb). Removal continued down to native ground on Saturday by removing an additional 6 to 12 inches of material.
- Northwest slope road bench at the top was retained to allow for access and drainage control (run-on) and six loads of common borrow soil were hauled from the repository to this location to cover the road bench.
- Haul route road modification was required due to safety and equipment problems developing with the haul trucks attempting to backup and unload into the repository. An existing road to the top of the repository that continues out towards the Silver Dyke adit access road was opened so that trucks are able to haul the upper, steepest repository elevation and exit on-grade to the north. Otherwise, haul trucks were required to descend through the repository into soft tailings off a steep drop. This operation posed a risk of equipment damage due to debris in the waste and a risk during operations in wet conditions.
- As of Friday, September 19th, an estimated 20,660 cubic yards of tailings have been hauled to and placed in the repository. Haul truck mechanical problems resulted in two trucks not hauling for 4 hours on 9/17. The 6th haul truck arrived at 1:00 PM on September 17, 2014.

Week of 9/22/14

- Hauling operations continued to the repository on Monday, September 22, 2014, through Friday, September 26, 2014, with up to five to six 30-Ton off-road trucks hauling simultaneously. The load counts per day ranged from 82 (~1,640 cubic yards) and 142 (~2,840 cubic yards).
- Compaction and moisture testing of the material placed in the repository occurred with acceptable results.
- Tailings hauling from the entire west slope of the tailings area was generally completed by Friday, September 26, 2014, when Tetra Tech conducted a gridded composite sampling of the slope.
- Hauling was postponed and shut down on Saturday and Sunday, September 27 and 28, 2014, due to extensive rain to the Carpenter Creek watershed and the Belt Mountains. Limited operations continued with the excavators, and dozers continued removing tailings from banks of No-Name Creek and constructing the channel.

Weeks of 9/29 - 10/17

- Hauling operations resumed with four haul trucks on Monday, September 29, 2014, for a limited period with 46 loads transported to the repository. Road conditions and limited material to load required haul operations to discontinue early.
- Soil samples for agrinomics and onsite analysis have been collected and results have guided additional removal of waste/soils on the Silver Dyke removal area.
- Hauling continued Tuesday, and then snow and rain shut down hauling on Wednesday. Limited hauling occurred on Thursday, October 3, (one truck operated) for a short period. Hauling operations resumed on Friday, October 4th.
- Hauling was completed on Tuesday, October 7, with a total load count of 1937 loads at approximately 20 cy/truck for an estimated 38,740 cy placed in the repository. (Final surveyed quantities to be provided.)
- Repository cover soil hauling began with four trucks at the repository. (Two haul trucks were released from rent on Tuesday by 1630 hours.) Cap thickness was reduced to a total of 18 inches (12 inch common fill and 6 inches topsoil) based on discussions with MTDEQ and Tetra Tech engineering staff.
- Density and moisture measurements were performed by the engineering subcontractor and results were within specifications.
- Final grading of the waste was completed on Tuesday, October 7, and the repository cover soil placement started on Wednesday.
- MTDEQ was onsite on September 30 and October 7 to inspect the removal including review of sample results regarding remaining metals concentrations and final reclamation plans.
- Soil organic carbon content was determined to be too low based on soil analysis received on Friday,October 3. Organic carbon amendments were acquired for reclamation. Compost was added to the available borrow soil to be placed along the No Name channel banks and the adjacent lower East Slope. In addition, on the steeper slopes it required hydraulic application of a compost product to increase the organic carbon content of the soil.
- Final channel re-construction and revetment was performed with rock (riprap) from the Site and tree trunks recovered from the removal area as specified by Tetra Tech engineering staff.
- Diversion dam removal occurred following completion of the channel construction.
- Erosion control features were installed on the NW Slope and East Slope that include water bars, gouges/pits, log and straw waddle combinations and tree slash.
- Haul route roads were appropriately graded to allow proper drainage, gates were installed or re-installed along the private road access points and fencing as needed to restrict access to the re-vegetation areas.
- Repository area common fill soil stockpile was graded to approximately 3H:1V where possible and erosion controls were left in place including placing slash along slope.
- Re-vegetation actions began on October 13 that included broadcast seeding of specified seed mix for the removal areas, and drill seeding the repository mix with a separate seed mix. Mulch and fertilizer were applied on all areas that received seed; the mulch type differed for the steeper slopes than the flatter slopes. This work was completed on October 17.
- Erosion blanket was placed, following seeding and mulch application, on a portion (approximately 50 ft wide x 400 ft) of the NW Slope where the removal depths were deeper and water will now flow during run-off events.
- Demobilization completed on October 18.

2.1.3 Progress Metrics

Waste Stream	*Medium*	*Quantity*	*Manifest #*	*Est. Percent Complete*	*Disposal*
Tailings	solids	38,740 cy	N/A	100%	On-Site Repository

2.2 Planning Section

2.2.1 Anticipated Activities

2.2.1.1 Planned Response Activities

Removal area restoration and erosion control measures will be monitored by the State and EPA-MT Operations office (Superfund Remedial) during 2015. Based on meetings October 2 with MTDEQ, EPA-MO and Tetra Tech engineering staff, the decision was made to reduce the temporary cover depth to 18 inches versus the planned 24 inches. Given the temporary nature of the cap and the need to conserve borrow material this was determined to be an appropriate design adjustment.

2.2.1.2 Next Steps

2.2.2 Issues

Weather related delays of approximately 5 days during this reporting period continued to hamper hauling operations and increase the difficulty of placing and compacting the repository. The delays resulted in these operations needing to continue beyond the planned dates, and costs were increased. In addition, the requirement to increase organic carbon content in the removal area soil surface required additional operations and material costs.

2.3 Logistics Section

During the Reporting Period:
1 Excavator with Thumb (75,000 lb)
1 Heavy Excavator (100,000 lb)

1 Small Excavator w/ thumb (20,000 lb)
2 Dozers
4 - 6 30 Ton Articulated Dump Trucks
1 Grader/Blade

2.4 Finance Section

No information available at this time.

2.5 Other Command Staff

No information available at this time.

3. Participating Entities

No information available at this time.

4. Personnel On Site

ERRS - 12
RM - 1
Foreman/Grader/Loader - Operator - 1
Haul Truck Driver - 4 - 6
Water Truck Driver / Laborer - 1
Excavator Operator - 2 - 3
Dozer Operator - 2

EPA - 1
OSC -1
RPM - 1

TETRA TECH - 1

STATE -
DEQ - 1
FWP - 2

5. Definition of Terms

No information available at this time.

6. Additional sources of information

No information available at this time.

7. Situational Reference Materials

No information available at this time.