



EXPLANATION OF SIGNIFICANT DIFFERENCES
D&RGW Slag Piles and Easement, Operable Unit 3
California Gulch Superfund Site
Lake County, CO

August 2014

U.S. Environmental Protection Agency
Region 8
1595 Wynkoop Street
Denver, CO 80202-1129

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1 Introduction

1.1 Site Name and Location

Site Name: California Gulch Superfund Site (Site) Operable Unit 3 (OU3)
Site Location: Lake County, Colorado
Site ID: COD980717938

1.2 Lead and Support Agencies

The United States Environmental Protection Agency (EPA) is the lead agency. The Colorado Department of Public Health and Environment (CDPHE) is the support agency.

1.3 Legal Authority for Explanation of Significant Differences

Under Section 117 (c) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA or Superfund), as amended by the Superfund Amendment and Reauthorization Act of 1986 (SARA), the EPA is required to publish an Explanation of Significant Differences (ESD) when significant, but not fundamental, changes are proposed to a previously selected site remedy. Sections 300.435(c)(2)(i) and 300.825(a)(2) of the National Contingency Plan (NCP) set forth the criteria for issuing an ESD and requiring that an ESD be published if the remedy is modified in a way that differs significantly in either scope, performance, or cost from the remedy selected in the Record of Decision (ROD) for the Site.

1.4 Summary of Purpose

A Record of Decision (1998 ROD) was signed on May 6, 1998 for Stockpiled Fine Slag Arkansas Valley Smelter (AV Smelter) Slag Pile, Operable Unit 3 (OU3), of the California Gulch Superfund Site (Site) in Lake County, CO.

This ESD provides a brief history of the Site, describes the OU3 remedy as selected in the 1998 ROD, and explains how subsequent to the finalization of this decision document, issues concerning institutional controls (ICs) have been identified for this OU.

Due to the fact that residual slag remains onsite, this ESD addresses the need for ICs, and documents the decision to require ICs. In addition, the use of the term "contingency" for fine slag utilization in the 1998 ROD is clarified. Fine slag can be used for future commercial purposes by following the requirements set out in the 1998 ROD.

1.5 Administrative Record

This ESD and its supporting documentation has been incorporated into the Administrative Record as directed in Section 300.825(a)(2) of the NCP. The Administrative Record file is available for public review at the follow location:

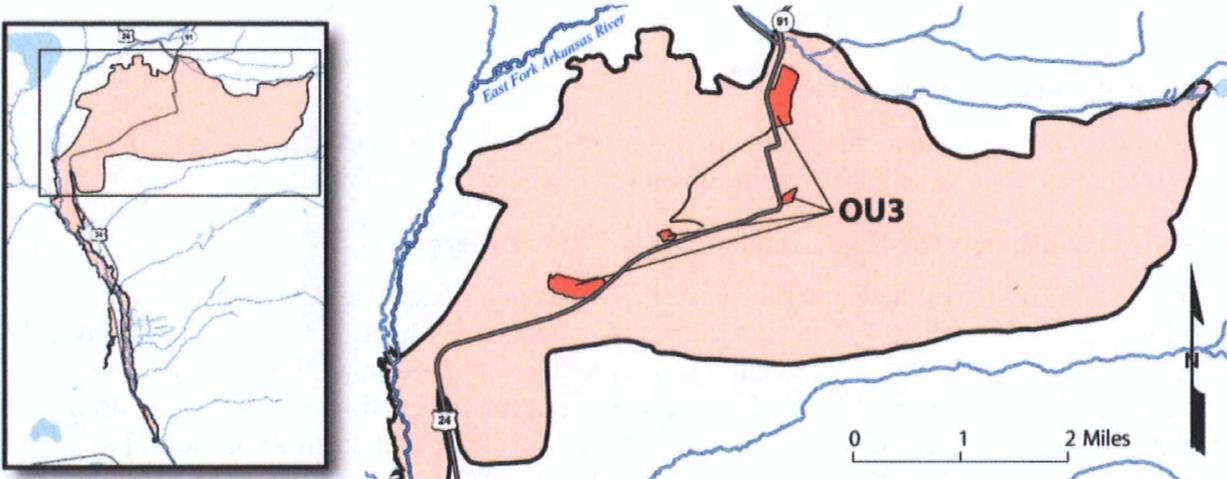
Lake County Public Library
1115 Harrison Avenue
Leadville, CO 80461

Or, by contacting Linda Kiefer, Project Manager, EPA – Region 8, 303-312-6689, or

kiefer.linda@epa.gov.

2 Site History, Contamination, and Selected Remedy

OU3 Location Map



Disclaimer: This map and any boundary lines within the map are approximate and subject to change. The map is not a survey. The map is for informational purposes only regarding the EPA's response actions at the Site, and is not intended for any other purpose.

2.1 Site History and Contamination

The Site is located 100 miles southwest of Denver in Lake County, Colorado. The Site covers 18 square miles and includes the City of Leadville, various parts of the Leadville Historic Mining District, and Stringtown. The Site also includes a section of the Arkansas River from the confluence of California Gulch to the confluence of Two-Bit Gulch. The Site was placed on the National Priorities List due to concerns about the impact of mine drainage on surface waters in California Gulch and the impact of heavy metals loading in the Arkansas River.

Pursuant to a 1994 Consent Decree, the EPA divided the Site into the 12 operable units (OUs). OU1 through OU11 were designated to facilitate source remediation and correspond with areas of responsibility. OU12, which covers the entire Site, was designated to address site-wide surface and groundwater. The cleanup strategy at the Site entailed conducting source remediation response actions at OU1-OU11, then OU12 would look at how well these source remediation response actions reduced or eliminated the release of contaminants of concern such that the surface and groundwater RAOs and ARARs selected in the OU12 ROD will be met. Additional source remediation may be selected as part of the OU12 remedy.

OU3 includes three slag piles (Arkansas Valley (AV), La Plata, and Harrison Street), approximately 12 acres at Harrison Avenue and Monroe Street which contained the Harrison Street slag pile, an easement that runs diagonally through the City of Leadville, and a portion of the rail yard known as Poverty Flats (see OU3 Location Map) all owned by the Denver & Rio Grande Western Railroad Company (D&RGW) when OU3 was designated in 1994.

In 1961, D&RGW purchased the AV Slag Pile from ASARCO, Incorporated for use as railroad

ballast. D&RGW purchased the La Plata Slag Pile from the Leadville Sanitation District in 1970. Additionally, D&RGW purchased the Harrison Street Slag Pile and Harrison Avenue property from NL Industries in 1983.

The AV Slag Pile covers approximately 40 acres just west of Stringtown. The pile generally consists of slag produced by the AV smelter that operated from 1882 to 1960. Based on aerial photography, the pile volume in the late 1950s was approximately 1.2 million cubic yards, whereas in 1998 approximately 422,000 cubic yards of slag remained, of which, approximately 190,000 cubic yards is stockpiled fine slag.

The La Plata Slag Pile, located west of the city limits of Leadville on Elm Street, has a volume estimated at 105,000 cubic yards. Bimetallic Smelting Company leased the La Plata Smelter Works in OU3 from 1892 to 1900 for pyritic smelting of low-grade ores.

The Harrison Reduction Works was located near the northeast corner of Harrison Avenue and Elm Street, in a residential area. The Harrison Street Slag Pile ranged from 20 to 50 feet in height and covered an area of approximately 3 acres. The Harrison Street Slag Pile was removed to original grade and relocated to the AV Slag Pile in March 1998.

Once a hot bed of transportation activities mostly related to mining, the Poverty Flats rail yard, located between 12th Street, Highway 24, 17th Street and County Road 8, is now vacant. The portion of the Poverty Flats rail yard formerly owned by D&RGW is located near the north end of the City of Leadville, encompasses an area of roughly 43 acres, and is crossed by abandoned rail lines and access roads. Slag, which was used in the rail yard as ballast and as a road base to provide support for heavy vehicle traffic, was also deposited around the loading dock due to spillage during transportation activities.

The rail easement includes the portion of railroad track that runs diagonally through Leadville and consists of approximately 25 feet on either side of the track centerline. Slag was used as a road base to provide support for heavy vehicle traffic. Slag was also deposited as spillage from passing rail cars.

EPA and D&RGW entered into an Administrative Order on Consent (D&RGW AOC) on December 3, 1991, which required D&RGW to perform remedial investigations of major lead slag piles and one zinc slag pile within the Site. D&RGW completed the slag remedial investigation (1992 Slag RI) in 1992.

It was concluded that the fine fraction of slag was the only part of the slag that may present an unacceptable risk. Slag was found to have elevated levels of zinc, lead, arsenic and cadmium along with a low acid-generating potential, and a neutral to basic pH. Fine slag, which is less than 3/8 of an inch, was found to have elevated lead levels.

In 1994, D&RGW entered into a Consent Decree (1994 D&RGW CD) with the EPA. In May 1996, D&RGW submitted a Feasibility Study (FS) for the stockpiled fine slag at the AV Smelter Slag Pile, in accordance with the terms of the 1994 D&RGW CD. In addition, D&RGW identified a small volume of fine slag in the rail yard (Poverty Flats). D&RGW prepared a plan which addressed removal of the fine slag from this area to the AV Smelter Slag Pile.

As a result of the Union Pacific Railroad Company (UPRR) purchase of the Southern Pacific Transportation Company (surviving corporation from an earlier merger of D&RGW and

Southern Pacific Railroad), UPRR took ownership of all D&RGW property at the Site in 1996 and assumed D&RGW's responsibilities under the 1994 D&RGW CD.

During the summer and fall of 1997, UPRR removed 1,264 cubic yards of slag, including fine slag, from the rail yard and placed it onto the AV Slag Pile. As a result, soils were exposed containing elevated concentrations of lead. Soils samples, taken before and after removal of the slag, showed levels of lead in soil that exceed the Site-wide residential action level of 3500 mg/kg lead, thus lead in the soils on this property may create the potential for unacceptable human health risks should the property be developed for residential use. To date, the land remains vacant, and is zoned Business by Lake County.

As part of their ballast operations, UPRR relocated approximately 104,000 cubic yards of slag to the AV Slag Pile in March 1998 to bring the Harrison Street Slag Pile to grade. Soils samples taken after removal of the slag showed levels of lead in soils, both under where the slag pile was located and otherwise on the Harrison Avenue property, that exceed the residential action level for lead in soils of 3500 mg/kg. Thus lead in the soils on the Harrison Avenue property may create the potential for unacceptable human health risks should the property be developed for residential use. To date, the land remains vacant. Sections along the highway are zoned Commercial, and the remaining sections are zoned Transitional Commercial by the City of Leadville.

In July 1998, UPRR submitted a *Work Plan for the Consolidation of Fine Slag at the Railroad Easement Near McWethy Drive to 12th Street, Leadville, Colorado*, July 20, 1998. The work plan provided for the easement to be converted into a segment of the Mineral Belt Trail. Consistent with the plan, fine slag from the rail easement was used as base material on the Mineral Belt Trail. More specifically, the fine slag was consolidated and covered with a compacted gravel sub-base of six inches and then two one-inch layers of asphalt to encapsulate it. This resource utilization was consistent with the requirements for resource utilization set out in the Record of Decision for OU3. The completion of the consolidation work was approved in September 1998. The conversion of the railroad easement to the Mineral Belt Trail was completed with the installation of a sub-base, culverts, asphalt, signs, centerline striping, and revegetation. In accordance with a 1998 Memorandum of Understanding between EPA, UPRR, and Lake County, Lake County completed these projects, and UPRR provided funding for the sub-base, culverts, and asphalt in 2000. Ownership of the easement has been transferred to Lake County via quitclaim deed.

2.2 Summary of Selected Remedy

The EPA issued the Stockpiled Fine Slag – Arkansas Valley Smelter Slag Pile ROD (1998 ROD) for OU3 on May 6, 1998. Based on consideration of CERCLA requirements, detailed analyses of alternatives, and public comments, the EPA determined that a No Action alternative was the appropriate remedy. The No Action alternative leaves the stockpiled fine slag in its existing condition with no control or cleanup planned. The No Action alternative includes a provision, denoted as a contingency, for future utilization of the slag, if it is encapsulated prior to its use or reuse. The 1998 ROD also provides a provision to use the slag in the future if regional market demand exists for the material as a component in construction materials.

The 1998 ROD did not require maintenance of the fine slag piles. Any future use of the slag would require encapsulation prior to reuse. Encapsulation can include the use of fine slag in

concrete or asphalt aggregate, as a road base, or as backfill (so long as the slag is chemically bound or physically separated from an exposure by a barrier consisting of a different material).

3 Basis for and Description of Significant Differences

Sampling in the Poverty Flats rail yard property and the Harrison Avenue property shows levels of lead in soils above levels that would allow for unlimited use and unrestricted exposure. In addition, the Mineral Belt Trail, which was constructed on the former railroad easement, acts as a cap for fine slag. Thus, ICs are needed at OU3 because the remedial action results in hazardous substances, pollutants, or contaminants remaining at the Site above levels that allow for unlimited use and unrestricted exposure to soils. The remedial action, selected in the 1998 ROD, does not include ICs. As a result, this ESD requires ICs in the form of a local ordinance, environmental covenant, and/or restrictive notice as part of the OU3 remedy.

The objectives of the ICs are to reduce or control human exposure to contaminants of concern. In the event that a change in land use is approved by local governments, procedures are in place for notification to the EPA and the CDPHE. Additionally, both the City of Leadville on May 7, 2013 and Lake County on March 3, 2009, passed ordinances that established ICs for OU3. Under these ordinances, a building permit will not be issued for any activity on a property within OU3 that contains a designated engineered remedy unless the permit applicant has secured approval for those activities from the CDPHE. For all other portions of OU3 not designated as part of an engineered remedy, the ordinance provides that any excavation or other earth removal activity that exceeds 10 cubic yards requires CDPHE approval for such activity as a condition precedent to the City or County granting a permit. Finally, the ordinance provides that all permit applicants shall be provided with information regarding best management practices regarding potentially contaminated soils and the applicant must certify they have received and reviewed this information before a permit will be issued.

Additionally, EPA is clarifying the use of the term “contingency” set out in the 1998 ROD. The use of the term contingency was not meant to establish a contingency remedy. It was meant in the sense that, if the owner of the fine slag wanted to use the fine slag in the future, the requirements set out in the 1998 ROD are the requirements that must be followed for use of the fine slag.

4 Support Agency Comments

CDPHE supports the EPA’s decision to modify the remedy for OU3.

5 Statutory Determinations

The EPA has determined that these significant changes comply with the statutory requirements of Section 121 of CERCLA such that the remedy remains protective of human health and the environment and complies with Federal and State requirements that are applicable or relevant and appropriate to this remedial action.

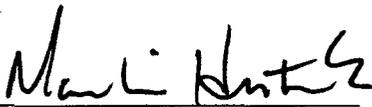
Because this remedy will result in hazardous substances, pollutants, or contaminants remaining on site above levels that allow for unlimited use and unrestricted exposure, a statutory review will be conducted no less often than each five years after the initiation of the remedial action to

ensure that the remedy is, or will be, protective of human health and the environment.

6 Public Participation

All of the public participation requirements set forth in Sections 117(c) and (d) of CERCLA, as well as Section 300.435(c)(2)(i) of the NCP will be met. Although a formal public comment period is not required when issuing an ESD, this ESD and all documents that serve as the basis of this ESD are contained in the Administrative Record for the California Gulch Superfund Site.

The EPA will also publish a notice of availability and a brief description of the ESD in the Leadville Herald Democrat.



Martin Hestmark
Assistant Regional Administrator
Office of Ecosystems Protection and Remediation
U.S. EPA, Region 8

8/6/14

Date

7 Appendix - References

- *Administrative Order on Consent for Remedial Investigation/Feasibility Study. CERCLA-VIII-92-06. California Gulch Superfund Site, Denver and Rio Grande Western Railroad. SDMS #1020621. December 3, 1991.*
- *Baseline Human Health Risk Assessment for the California Gulch Superfund Site – Draft Final - Part A - Risks to Residents from Lead, prepared by Roy F. Weston, Inc. SDMS #319625. U.S. Environmental Protection Agency. January 2, 1996.*
- *Baseline Human Health Risk Assessment for the California Gulch Superfund Site - Part B – Risks to Residents from Contamination Other than Lead prepared by Roy F. Weston, Inc. SDMS #319626. U.S. Environmental Protection Agency. January 2, 1996.*
- *Baseline Human Health Risk Assessment for the California Gulch Superfund Site - Part C - Evaluation of Recreational and Worker Scenarios prepared by Roy F. Weston, Inc. SDMS #316598. U.S. Environmental Protection Agency. April 17, 1995.*
- *Baseline Aquatic Ecological Risk Assessment - Final. California Gulch NPL Site. Prepared by Roy F. Weston, Inc. SDMS #320591. U.S. Environmental Protection Agency. September, 1995.*
- *Consent Decree with Denver and Rio Grande Western Railroad Civil Action No. 83-C-2388. California Gulch Superfund Site, Denver and Rio Grande Western Railroad. SDMS #318593. U.S. District Court. December 15, 1993.*

- *Ecological Risk Assessment for the Terrestrial Ecosystem. California Gulch NPL Superfund Site, Leadville, Colorado, prepared by Roy F. Weston, Inc.* SDMS #321677. U.S. Environmental Protection Agency. January 1997.
- *Feasibility Study Work Plan for Stockpiled Fine Slag at the California Gulch Site Leadville, Colorado, prepared for Denver & Rio Grande Western Railroad.* SDMS #316702. Morrison Knudsen Corporation. March 15, 1994.
- *Final Screening Feasibility Study for Remediation Alternatives at the California Gulch NPL Site, Leadville, CO.* SDMS #301445. U.S. Environmental Protection Agency. September 1993.
- *Findings of Metal Speciation Investigations- Draft Final- at the California Gulch NPL Site, prepared by John W. Drexler and Roy F. Weston, Inc.* SDMS #319693. U.S. Environmental Protection Agency. October 1995.
- *Ordinance 3, Series 2013.* SDMS # 1265522. City of Leadville, May 7, 2013.
- *Preliminary Human Health Baseline Risk Assessment for the California Gulch NPL Site, Leadville, Colorado. Prepared by Roy F. Weston, Inc. for the U.S. EPA.* SDMS #303951. U.S. Environmental Protection Agency. December 1991.
- *Proposed No Action Plan for Stockpiled Fine Slag, Arkansas Valley Smelter Slag Pile, California Gulch Superfund Site, Leadville, Colorado.* SDMS #321484. U.S. Environmental Protection Agency. September 1996.
- *Reconnaissance Report California Gulch Railroad Easement, prepared for Denver & Rio Grande Western Railroad.* SMDS #316700. Morrison Knudsen Corporation. February 8, 1995.
- *Reconnaissance Report California Gulch Railroad Yard Area, prepared for Denver & Rio Grande Western Railroad.* SDMS #316699. Morrison Knudsen Corporation. February 8, 1995
- *Record of Decision Stockpiled Fine Slag Arkansas Valley Smelter Slag Pile, California Gulch Superfund Site, Operable Unit 3, Leadville, Colorado.* SDMS # 323545. U.S. Environmental Protection Agency. May 1, 1998.
- *Remedial Investigation Draft Phase II Technical Memorandum 1986-1987. California Gulch Site, Leadville, Colorado, U.S. EPA, prepared by CH2M Hill.* SDMS #U.S. Environmental Protection Agency. May 1989.
- *Remedial Investigation Report for Lead Slag Pile at the California Gulch Site Leadville, Colorado, prepared for Denver & Rio Grande Western Railroad.* SDMS #s 305053, 305054, 307275. Morrison Knudsen Corporation. December 11, 1992.
- *Request for Certification of Closure, California Gulch Superfund Site, prepared for Union Pacific Railroad Company.* SDMS #485982. Environmental Resources Management. February 25, 1999.
- *Resolution 2009.* SDMS #1100390. Lake County Commissioners. March 3, 2009.

- *Stockpiled Fine Slag Feasibility Study - Final, prepared for Denver & Rio Grande Western Railroad.* SDMS #320758. Terranext. May 13, 1996.
- *Terrestrial Ecosystem Evaluation Report - Draft. California Gulch Site, Leadville, Colorado.* SDMS #303424. Woodward Clyde Consultants. April 1993.
- *Verification Report Consolidation of Fine Slag Denver & Rio Grande Western Rail Yard State Highway 24 and 12th Street Leadville, CO.* SDMS # . Environmental Resources Management. November 19, 1997.
- *Work Plan Consolidation of Fine Slag, prepared for Denver & Rio Grande Western Railroad.* SDMS #321511. Terranext. November 12, 1996.
- *Work Plan Consolidation of Fine Slag Railroad Easement Near McWethy Drive to 12th Street Leadville, CO, prepared for Union Pacific Railroad Company.* SDMS # . Environmental Resources Management. July 20, 1998,
- *Work Plan for Slag Pile Remedial Investigation at California Gulch Site, Leadville, CO, prepared for Denver & Rio Grande Western Railroad Company.* SDMS #316309. Morrison Knudson Corporation. October 1991.
- *Work Plan Harrison Street Slag Pile Closure Intersection of Harrison and Monroe Streets Leadville, CO, prepared for Union Pacific Railroad Company.* SDMS #323870. Environmental Resources Management. November 12, 1998.
- *Zinc Slag Pile Investigation Report, California Gulch Site, Leadville, CO, prepared for Denver & Rio Grande Western Railroad Company.* SDMS #s 318849, 307409, 317059 and 305592. Morrison Knudsen Corporation. December 11, 1992.