

PRELIMINARY CLOSE OUT REPORT
Davenport and Flagstaff Smelters Superfund Site
Salt Lake County, Utah

I. INTRODUCTION

This Preliminary Close Out Report (PCOR) documents that the Utah Department of Environmental Quality (UDEQ), Division of Environmental Response and Remediation (DERR) in coordination with the U.S Environmental Protection Agency (EPA) completed construction activities at the Davenport and Flagstaff Smelters Superfund Site (Site) located in Salt Lake County, Utah, in accordance with Close Out Procedures for National Priorities List Sites (OSWER Directive 9320, 2-22, May 2011). DERR conducted the final inspection for this Site on November 30, 2011 and determined the remedies were constructed in accordance with remedial design plans and specifications. No further remedy construction for the Site is anticipated.

II. SUMMARY OF SITE CONDITIONS

Background

The Site is located in a residential area at the mouth of Little Cottonwood Canyon, approximately fifteen miles southeast of Salt Lake City, Utah. The Davenport Smelter was located on the southern side of the canyon and the Flagstaff Smelter was located north of Little Cottonwood Creek. The land use at the Site and in the surrounding area is mainly residential with some agricultural and commercial facilities.

The Davenport and Flagstaff smelters were both constructed around 1870 at the mouth of Little Cottonwood Canyon. Both of these smelters processed lead and silver ore removed from mines located near Alta, Utah. Ore was delivered to the smelters using wagons and possibly rail cars. The ore was stockpiled near the smelters until it was processed. Both of the smelters were decommissioned and dismantled by 1879 and the area was mainly used for agricultural purposes until the 1970's and 1980's when it started being developed as a restaurant and residential community.

Contamination at the Site was associated with slag and other smelter waste. Contaminants of Concern at the Site are lead and arsenic in surface and subsurface soils. EPA listed the Site on the National Priorities List (NPL) April 30, 2002.

The Site was divided into three Operable Units:

- Operable Unit One (OU1) – Addressed residential properties with lead and arsenic soil contamination. The OU1 cleanup was conducted by EPA's emergency response program from 2004 to 2008.
- Operable Unit Two (OU2) - Consisted of contaminated soil within commercial and undeveloped areas. The OU2 clean-up was conducted as a UDEQ lead Remedial Action (RA). Physical construction for OU2 was completed on November 29, 2011.

- Operable Unit Three (OU3) – Addressed agricultural land that was developed as residential properties near the Flagstaff Smelter. OU3 was cleaned up in 2006 by a private entity as a non-time critical removal with EPA and UDEQ oversight.

Removal Actions

From 2004 to 2008 a removal action was conducted at OU1. The EPA removal program conducted clean-up activities on residential properties that contained soils impacted with elevated levels of lead and arsenic. Contaminated soils were removed and replaced with clean fill and the landscapes were restored at 26 properties. A total of 33,290 cubic yards of lead and arsenic impacted soils were removed and transported to the Salt Lake Valley Solid Waste (SLVSW) Management Facility, a Resource Conservation and Recovery Act (RCRA) Subtitle “D” facility. Construction activities for OU1 were completed in the autumn of 2008.

In April 2005 an Explanation of Significant Differences (ESD) to the OU1 Record of Decision (ROD) was developed that determined that the OU1 ROD clean-up levels were appropriate for approximately 50 acres of agricultural land within the Site that a private entity wished to develop as residential. This agricultural area was designated as OU3 and a non-time critical removal action was conducted in the summer of 2006. Little Cottonwood Canyon Partners LLC (LCCP) conducted clean-up activities under an agreement with EPA. LCCP remediated approximately 49 acres of agricultural property to residential cleanup levels for use as 28 private single family residential lots. A total of 77,466 tons of contaminated soil was excavated, treated and disposed of at the Allied Waste Wasatch Regional Landfill located in Tooele County, Utah. EPA and UDEQ provided oversight for OU3 cleanup activities. The Removal Completion Report for OU3 was approved by EPA on October 12, 2006.

Record of Decisions

OU1

A ROD signed in September 2002 identified excavation and off-site disposal of leachable principal-threat waste associated with smelter activities in the residential areas of the Site as the selected remedy for OU1.

Four Remedial Action Objectives (RAOs) were established in the OU1 ROD:

- Reducing risks from exposure to lead-contaminated soil such that no child under the age of seven has more than a five percent chance of exceeding a blood lead level of ten micrograms of lead per deciliter.
- Reducing risks from exposure to arsenic-contaminated soil such that no person has greater than a one in 10,000 increased risk of contracting cancer from contaminated soil.
- Remediating soils to levels that allow continued residential use.
- Preventing the occurrence and spread of windblown contamination.

The major components of the selected remedy include:

- Excavation of soils, under non-native vegetation, within OU1 exhibiting lead concentrations greater than 600 mg/kg and arsenic concentrations greater than 126 mg/kg to a depth of 18 inches, where practicable.
- Hand excavation around areas of native vegetation, within OU1 exhibiting lead concentrations greater than 600 mg/kg lead and 126 mg/kg arsenic to a depth of 18 inches where practicable.
- Excavation of leachable principal threat wastes associated with smelter activities.
- Off-site treatment and landfill disposal of contaminated soil classified as hazardous waste in accordance with RCRA subtitle C.
- Off-site landfill disposal, in accordance with RCRA subtitle D, of contaminated soil not classified as hazardous waste.
- Replacement with clean backfill, six inches of topsoil, and landscaping of affected properties.
- Interior cleaning of affected homes to remove any contaminated dust.
- Implementation of institutional controls, if necessary, on properties containing residual contamination.

Principal Threat Waste is defined as soils with leachable levels of lead and arsenic above 5 mg/L based on the Toxicity Characteristic Leaching Procedure (TCLP)

An ESD for the OU1 ROD was issued by EPA in April 2005. The ESD addressed an undeveloped portion of the Site targeted by LCCP for development of residential properties. The ESD applied the remedy components of OU1 to the potentially developed properties targeted by LCCP. The ESD also modified the remedy to allow on-site treatment of principal threat waste and off-site disposal as solid waste if the treated material no longer exhibited a characteristic of hazardous waste and complied with land disposal restrictions.

OU2

The Selected Remedy for OU2 addressed lead and arsenic contaminated soil associated with historical smelter activities in commercial areas and undeveloped areas of the Site. Surface water and ground water were evaluated and have not been impacted by Site contamination. The ROD for OU2 was signed in September 2009.

Four RAOs were established in the ROD:

- Reducing risks from exposure to lead-contaminated soil such that no developing fetus of an adult visitor has more than a five percent chance of exceeding a blood lead level of ten micrograms per deciliter (ug/dl).
- Reducing the risks from exposure to arsenic-contaminated soil such that no person has a greater than a one in 10,000 increased risk of contracting cancer;
- Preventing the occurrence and spread of windblown contamination; and
- Addressing the bulk of the source material that is driving the risk to ecological receptors, while minimizing the damage that the undeveloped area would sustain through more extensive construction activities.

The components of the selected remedy include:

- Removal of existing vegetation from the contaminated areas.
- Excavation of all surface soils with lead concentrations exceeding 1,000 mg/kg to an expected maximum depth of 18 inches in commercial areas.
- Excavation of all surface soils with lead concentrations exceeding 3,000 mg/kg to an expected maximum depth of 18 inches in undeveloped areas.
- Excavation of all principal threat waste.
- Ex-situ treatment of all principal threat waste by stabilizing leachable lead in soil.
- Transportation and disposal of all excavated soil at an appropriate landfill.
- Placement of clean topsoil and re-vegetation of excavated areas.
- Removal and reclamation of access road.
- ICs, such as environmental covenants under the State of Utah's Environmental Covenants Act, conservation easements, land use controls established through Salt Lake County Zoning Authorities, and/or notification services, to ensure the remedy remains protective.

Principal threat waste, as in OU1, is defined as soils with leachable levels of lead and arsenic above 5 mg/L based on the TCLP. Stabilization of principal threat waste renders leachable lead in soil non-leachable so the soils can be disposed in a RCRA Subtitle D Landfill.

A minor modification to the ROD that allowed for contamination above the clean-up levels to remain in areas where mature stands of gambel oak were located in order to promote re-vegetation was memorialized on March 22, 2011. An ESD that documented how additional contaminated material encountered during RA construction activities was addressed was signed July 3, 2012.

Both the minor modification and the ESD satisfied the RAOs of the OU2 ROD.

OU3

An Enforcement Action Memorandum issued in July 2005 established OU3, created from agricultural land within the Site boundaries. Private developers (LCCP) were willing to take reasonable steps to conduct remediation and to develop a residential subdivision. However, rather than complete the normal Bona Fide Prospective Purchaser process, an Agreement and Covenant Not to Sue between EPA and LCCP was negotiated, signed by EPA and the Department of Justice, published in the Federal Register with a 30-day public comment period, and became effective on March 22, 2006. The agreement outlined the work required under the Enforcement Action Memorandum and included a work plan.

The memorandum identified the following actions:

- Excavation of contaminated soil.
- Consolidation of contaminated soil at a staging area for treatment and disposal at an appropriate facility.
- Transportation, on-site treatment of excavated soil exceeding 5 mg/L of extractable lead (to meet land disposal requirements), and disposal of characteristically hazardous soil at a suitable pre-approved RCRA subtitle C landfill or disposal of non-hazardous soil at a RCRA subtitle D landfill.

- Development and implementation of ICs for any contamination left in place.

Remedy Implementation

As described above, OU1 and OU3 were cleaned up using removal authority.

UDEQ was the lead agency for the OU2 RA as defined in a cooperative agreement between EPA and UDEQ dated October 26, 2010. The RA was initiated in June 2011, with the selection of Direct Push Services, LLC (DPS) as the RA contractor. The notice to proceed was given on July 21, 2011. Work at the Site started immediately thereafter with procurement of the necessary permits and Site mobilization began on August 22, 2011.

A pre-final inspection was conducted on November 16, 2011 by representatives for the contractor (DPS) and DERR. Several punch list items were noted during the inspection and a final inspection was conducted on November 30, 2011, with representatives for DPS and DERR in attendance. All issues with the construction had been resolved and work at OU2 was complete in accordance with the approved RA design and specifications.

A warranty Site walk was performed on May 19, 2012 to determine overwinter mortality of the installed plants in compliance with the warranty clause in the RD specifications. Present at the inspection were representatives for the contractor, DERR and EPA. A report detailing the Site walk and providing recommended actions was sent to DPS on July 10, 2012. DPS will perform the recommended actions prior to the warranty period expiring in November of 2012.

The results of the RA implemented at OU2 meet the Remedial Action Objectives as stated in the OU2 ROD.

Institutional Controls

The RODs for OU1 and OU2 rely on Institutional Controls (ICs), such as environmental covenants under the State of Utah's Environmental Covenants Act, and conservation easements and/or land use controls established through Salt Lake County Zoning Authorities, to ensure the remedy remains protective.

Currently the Salt Lake Valley Health Department, in conjunction with the Salt Lake County Planning and Zoning Department are preparing an ordinance that will provide land use controls for contamination left in place at OU1. UDEQ is also preparing environmental covenants for the properties remediated as part of the OU2 RA.

The only areas with remaining contamination at OU3 are on heavily vegetated slopes that are too steep for building. Salt Lake County Planning and Zoning has already established ordinances that prevent construction on steep slopes. No other ICs are required for OU3.

III. DEMONSTRATION OF CONSTRUCTION QUALITY ASSURANCE AND QUALITY CONTROL.

Performance Standards and QA/QC

OU1 and OU3 were cleaned up as removal actions. The performance standards and QA/QC are contained in the respective completion documents for each OU.

OU2 is the only OU that was cleaned up as a remedial action.

The performance standards for OU2 construction were the clean-up goals established in the OU2 ROD, which were 1,000 mg/kg lead in commercial areas and 3,000 mg/kg lead in undeveloped areas (no areas exceeded the site-wide cleanup goal of 1,000 mg/kg arsenic). Confirmation sampling was performed on all excavated surfaces. The results from the confirmation sampling indicate that all excavated surfaces meet these standards.

Oversight of construction activities was performed by DERR in conjunction with DERR's oversight contractor URS Corporation (URS). Oversight was performed for two reasons: (1) to ensure that the contractor's activities were conducted in accordance with the design plans and specifications and the Health and Safety Plan (HASP); and (2) to ensure compliance with applicable or relevant and appropriate requirements (ARARS) which include the Storm Water Pollution Prevention Plan (SWPPP), fugitive dust control and treatment standards for disposal.

Oversight, to ensure compliance with the plans and specification, consisted of detailed attention to construction activities, specifically excavation depths and areas, backfill placement, and planting and seeding. Testing for total organic content and compaction was performed to ensure that imported materials met or exceeded specifications. Confirmation soil screening and sampling was performed to ensure that Site performance goals were met.

Oversight to ensure compliance with ARARs included the installation and monitoring of the erosion control measures specified in the SWPPP, monitoring of fugitive dust emissions and analysis of treated soils. Oversight also included vigilant attention to safety, such that no unsafe activities were performed.

All confirmation soil samples were collected in accordance with an approved sampling and analysis plan (SAP), which included QA and QC measures. The resulting data were assessed by URS according to the data quality assessment procedures outlined in the SAP. All data were found to be usable as qualified and of quality sufficient for the defined project purposes.

All work was performed in accordance with the approved plans and incorporated all of EPA's requirements. EPA and DERR representatives visited the Site at least twice a week during implementation of the RA construction activities to review progress and evaluate and review the results of QA/QC activities. Deviations to QA/QC protocols, drawings or specifications were properly documented and resolved.

EPA analytical methods were used for all confirmation and monitoring samples during RA construction activities. EPA and DERR determined that the analytical results were accurate to the degree necessary to assure satisfactory execution of the actions.

Significant Deviations from the OU2 ROD

Minor Modification to the ROD

Remedial Design (RD) sampling was performed in the summer of 2010 to define the area required to be excavated. Analytical results indicated that the area containing lead contamination in excess of 3,000 mg/kg lead extended to the north and west of the areas identified in the ROD.

As part of the RD, a Value Engineering (VE) Study was performed by URS and the U.S. Army Corps of Engineers. Through the RD and VE study, it became evident that the largest factors for assuring a successful remedy were the reclamation and re-vegetation of the constructed areas.

One of the items proposed in the VE study was to retain gambel oak in some of the contaminated areas to encourage reclamation and re-vegetation. Further evaluation by a botanist confirmed that the best way to ensure the re-vegetation was to leave areas of mature gambel oak that would promote re-vegetation through root propagation. Leaving mature stands of gambel oak also incorporates green and sustainable remediation practices that were evaluated and noted in the VE report.

Based on the RD sampling data and inspections of OU2, stands of gambel oak that were good candidates for preservation were identified. This minor modification to the ROD was memorialized in a memorandum to the Post-ROD Site file dated March 22, 2011.

Explanation of Significant Differences

EPA concurred with the final RD May 2, 2011. Construction activities commenced in August of 2011 and were completed on November 23, 2011. During construction, contaminated soil was discovered to extend deeper than was originally anticipated. The additional contamination met the description of principal threat waste designated in the ROD and was removed, treated and disposed. Contaminated soil remains at locations where removal was not feasible. An ESD was prepared to document the changes from the ROD and was signed by the agencies July 3, 2012.

IV. SCHEDULE OF ACITIVITES FOR SITE COMPLETION

The following activities remain for the Site:

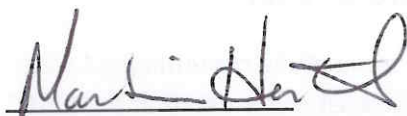
Task	Estimated Completion	Responsible Organization
1) Finalization of Remedial Action Report	September 2012	EPA/DERR
2) Warranty Inspection	November 2012	EPA/DERR
3) Development and Placement of Institutional Controls	April 2013	DERR

4) Final Close Out Report	After ICs are in place	EPA/DERR
5) Deletion from National Priorities List	After Final Close Out Report	EPA
6) Five-Year Review	August 2016	EPA/DERR

Due to hazardous substances remaining at the Site above levels that allow unlimited use and unrestricted exposure after the completion of remedial action, a statutory five-year review must be conducted. A discretionary five-year review was completed in July 2012. A statutory Five-Year Review Report for the Site will be completed in August 2016.

Approved by:

Date:



8/30/12

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