DAVENPORT AND FLAGSTAFF SMELTERS SUPERFUND SITE
SALT LAKE COUNTY, UTAH
OPERABLE UNIT TWO
EXPLANATION OF SIGNIFICANT DIFFERENCES

July 2012

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I. INTRODUCTION

This Explanation of Significant Differences (ESD) is being issued to document the significant differences between the remedy selected in the Record of Decision (ROD) on September 16, 2009, and the remedy implemented for Operable Unit Two (OU2) of the Davenport and Flagstaff Smelters Superfund Site (Site), located in Salt Lake County, Utah. The Utah Department of Environmental Quality (UDEQ) is the lead agency for OU2 and is conducting the Remedial Action (RA) under a Cooperative Agreement, with the EPA assisting as the support agency.

Under Section 117(c) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendment and Re-authorization Act of 1986 (SARA), EPA is required to publish an ESD when significant, but not fundamental changes are proposed to the previously selected Site remedy. Sections 300.435 (c)(2)(i) and 300.825(a)(2) of the National Contingency Plan (NCP), 40 C.F.R. Part 300, set forth the criteria for issuing an ESD and requiring that an ESD be published if a remedial action is taken that differs significantly from the remedy selected in the ROD with respect to scope, performance or cost.

The Site is currently in the Remedial Action Phase of the CERCLA cleanup process. Based on new information obtained during construction of the remedy, UDEQ and EPA made three changes that form the basis of this ESD:

- Excavation depth increased in some areas to remove principal threat waste material;
- Contamination at concentrations greater than the cleanup goals identified in the ROD was left in place at depth due to physical restrictions presented by topography and existing utility structures, or to leave mature vegetation in place to enhance overall remedy performance; and
- Principal threat waste remained in place after construction activities were completed.

The modifications to the remedy described in the ESD do not alter the selected remedy in any fundamental aspect regarding primary treatment method. The remedy for the Site remains protective of human health and the environment and continues to meet ARARs. This ESD has been prepared for the following reasons:

- To provide the public with an explanation of the changes to the remedy;
- To summarize the circumstances that led to the changes to the remedy; and
- To affirm that the revised remedy complies with all statutory requirements.

This ESD provides a brief history of the Site, describes the original remedy selected in the ROD, and explains how the modified remedy differs from the original. It also discusses the modified remedy's

compliance with all legal requirements. The Administrative Record, which contains the documentation supporting this decision, is available for public review at the locations indicated at the end of this ESD.

This document will be incorporated into the Administrative Record maintained for this Site, as required by NCP Section 300.825(a)(2). The complete Administrative Record for this Site is available for public review at the following locations:

EPA Superfund Record Center
U.S. EPA, Region 8
1595 Wynkoop St.
Denver, Colorado 80202-1129

Utah Department of Environmental Quality
195 North 1950 West
Salt Lake City, Utah
84116

This ESD and its supporting documentation will be available for public review at these locations and a notice containing a brief summary of the action will be published in a local newspaper, as required by NCP Section 300.435(c)(2)(i)(A) & (B).

II. SITE HISTORY, CONTAMINATION, SELECTED REMEDY AND BACKGROUND

A. Location

The Davenport and Flagstaff Smelters Superfund Site (UTD988075719) is located approximately 15 miles southeast of Salt Lake City, Utah near the mouth of Little Cottonwood Canyon (Figure 1). The Davenport Smelter was located on the southern side of the canyon, near Little Cottonwood Canyon Road and the Flagstaff Smelter was located north of Little Cottonwood Creek (Figure 2). The land use at the Site and in the surrounding area is mainly residential with some agricultural and commercial facilities.

The Site has been separated into three Operable Units (OUs). Operable Unit One (OU1) addressed residential properties with lead and arsenic contamination in surface and subsurface soils. The OU1 cleanup was conducted from 2004 to 2008. Operable Unit Three (OU3) addressed agricultural land proposed for future residential use near the Flagstaff Smelter. OU3 was cleaned up in 2006 by a private entity with EPA and UDEQ oversight. Operable Unit Two (OU2) covers approximately 29 acres and consists of a mixture of commercial and undeveloped land. The physical construction for the Remedial Action was completed on OU2 on 11/29/2011. OU1, OU2 and OU3 are shown on Figure 2.

The commercial area of OU2 consists of a restaurant and reception center that covers approximately six acres and contains landscaped lawns and hedges as well as vineyards. The undeveloped area of OU2 is a 22.8 acre wooded and marshy area with Little Cottonwood Creek forming the northern border. Two large ponds are located in the northwest corner of the undeveloped area. A ground water seep acts as a tributary to the ponds. There are also three other seeps within the undeveloped area that appear to be the water sources for an extensive system of wetlands.

B. Site History

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.

Smelting technology of the era was relatively basic. The ore was first crushed to a reasonable size and placed, along with fuel (either wood or coal), into the smelter. As the fuel burned, the temperature of the ore was raised to the melting points of lead and silver. As the liquid metal drained to the bottom of the smelter, a gate was opened and the molten metal was poured into ingots and then shipped to a more advanced smelter for further processing and refining.

The waste ore and fuel, or slag, was usually stockpiled at locations away from the smelters. The ore crushing process likely generated dust contaminated with lead and arsenic. In addition, flue ash from the smelters likely contained concentrated levels of these metals, which would have settled in the vicinity of the smelters. 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.

C. History of Site Investigations

The discovery of smelting debris in Little Cottonwood Creek, near the Flagstaff Smelter location in 1991, prompted a study of historical smelter sites in the Salt Lake Valley. During investigations performed in 1992 by EPA and in 1994 by UDEQ, elevated concentrations of arsenic and lead were detected in soil at both smelter locations. A Phase I Site Assessment was conducted by EPA in April of 1992. During the assessment, elevated levels of arsenic and lead were detected in surface and subsurface soil near the Flagstaff Smelter. Based on these results, EPA performed a Phase II Site Assessment.

During the Phase II investigation, the Davenport Smelter was discovered approximately 0.25 miles south of the Flagstaff Smelter. The area around the Davenport Smelter was investigated as a Phase III Site Assessment of the Little Cottonwood Creek Smelter Sites in July of 1992. The limited sampling performed during both the Phase II and Phase III assessments revealed high levels and widespread distribution of arsenic and lead contaminated soils surrounding the former smelters.

Based on the results of the 1992 sampling efforts, a Preliminary Assessment (PA) was performed by UDEQ in August of 1992. DERR also initiated Focused Site Inspections for the Davenport and Flagstaff Smelters in 1994 to determine the distribution of soil contamination that had migrated from the source area via air, surface water, and/or ground water pathways. It was determined that the possibility of exposure to contamination was likely due to the proximity of surface water, proximity to the ground water recharge area, and the commonly observed dispersion of windblown dust. The results of the Site Inspections are presented in the Analytical Results Report for each representative smelter and available in the administrative record.

A Site Characterization of the residential areas near the two smelters was performed by UDEQ as part of the Site assessment process in order to evaluate the Site for NPL listing in 1998. A total of 740 samples were collected from 32 residences near the locations of the two smelters. Surface and subsurface samples were collected in the general area of the former smelter locations in order to provide information regarding the source, nature, and extent of arsenic and lead contamination. Lead and arsenic contamination was found in surface and subsurface soils at concentrations well above risk-based screening levels established by the EPA in the residential areas surrounding both of the smelters. The Site was proposed for the Superfund National Priorities List (NPL) in December of 2000 and placed on the NPL in April 2002. As mentioned previously the Site is separated into three Operable Units (OUs).

Cleanup activities associated with OU1 were conducted by EPA from 2004 to 2008 as both time-critical and non-time-critical removals. OU3 was cleaned up by a private entity in 2006 under an agreement (docket number CERCLA-08-2006-0004) with EPA. EPA and UDEQ provided oversight for OU3 cleanup activities.

Extensive sampling activities took place at OU2 during the summer of 2006. The results of the sampling activities were used to develop a Remedial Investigation (RI), Human Health Risk Assessment (HHRA), Ecological Risk Assessment (ERA), and Focused Feasibility Study (FFS). During the investigation, three residential properties within the boundaries of OU2 were found to contain lead and arsenic concentrations greater than the residential cleanup levels established for OU1. These three properties were incorporated into the OU1 cleanup and were addressed under that removal action.

Lead and arsenic were identified as the contaminants of concern (COCs) for OU2. RI sampling results indicate, that lead concentrations in soil ranged from 82 to 10,800 milligrams per kilogram (mg/kg) and arsenic concentrations in soil ranged from 4.5 mg/kg to 300 mg/kg. The elevated concentrations of lead and arsenic were found in both surface and sub-surface soils.

Based on data collected during the RI and HHRA, cleanup levels of 1,000 mg/kg lead and 3,000 mg/kg lead were established respectively for commercial and undeveloped areas. A clean-up level of 1,000 mg/kg arsenic was established for both commercial and undeveloped areas. No collected samples exceeded the OU2 action level for arsenic. The OU2 RI also investigated metals concentrations in surface and ground water, including the aforementioned seeps, ponds and wetlands. The investigation did not find a significant risk to human health or the environment related to metals in these media.

A Focused Feasibility Study (FFS) was performed in 2008 to screen different remedial technologies for the Site. The FFS investigated appropriate remedial technologies for OU2 and identified three cleanup alternatives for the commercial area and three alternatives for the undeveloped areas of OU2.

D. History of Enforcement Activities.

The Flagstaff Smelter, discovered in 1991, was assigned an EPA Identification Number (UTD988075719) and placed on the EPA Comprehensive Environmental Response, Compensation, and Liability Act Information System (CERCLIS) for Utah on April 20, 1992, under the name of Little Cottonwood Smelter. The Davenport Smelter was discovered in 1992. In 1994 the Site was renamed in CERCLIS as the

Davenport and Flagstaff Smelters Site. The Site was proposed for the NPL on December 1, 2000, and was placed on the NPL April 30, 2002.

EPA initiated a Potentially Responsible Party (PRP) search in 2000, focusing on owners and operators of the smelters. However, none of the companies that owned or operated the smelters still exist, nor could they be traced to current operating entities. No general or special notice letters have been issued.

E. Description of the OU2 ROD Remedy

Four Remedial Action Objectives (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 (BLL) of 10 micrograms per deciliter (ug/dL);
- Reducing the risks from exposure to arsenic-contaminated soil such that no person has greater than a 1 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 RAOs described above were developed to be protective of the current and reasonably anticipated future land uses at OU2. As described previously, OU2 consists of a commercial area and an undeveloped area (Figure 3). The commercial area is comprised of a restaurant and reception center, and covers approximately six acres. The undeveloped area is comprised of a 22.8 acre wooded and marshy area with two large ponds located in the northwest corner of the area and Little Cottonwood Creek forming the northern border. The undeveloped area owned by Salt Lake City is a designated watershed protection zone, but is also used by trespassers for recreational purposes, such as hiking and walking dogs. Based on conversations with Salt Lake City, the future use is unlikely to change from the observed present use as a watershed protection zone, with occasional trespasser/recreational use. In order to achieve the RAOs that were developed to protect these current and reasonably anticipated land uses at OU2, cleanup goals for lead and arsenic were developed for both the commercial and undeveloped areas.

EPA uses the Integrated Exposure Uptake Biokinetic model to predict risk for lead exposure to humans. Using this model UDEQ developed cleanup goals for OU2 with the target being to limit the risk to a developing fetus of a pregnant women exposed to lead in soil to no more than a 5% chance of exceeding a blood lead level of 10 ug/dL. Arsenic clean up levels were calculated so that no person will have a greater than one in 10,000 chance of developing cancer due to exposure to arsenic in soil and no increase of non-cancer related illness. The cleanup goals for OU2 are as follows:

- The human health cleanup goal for lead in the commercial area of OU2 is 1,000 mg/kg.
- The human health cleanup goal for lead in the undeveloped area of OU2 is 3,000 mg/kg.
- The human health cleanup goal for arsenic throughout all of OU2 is 1,000 mg/kg.

The selected remedy for OU2 was excavation and off-Site disposal of soils in excess of 1,000 mg/kg lead in the commercial area and 3,000 mg/kg lead in the undeveloped area, with ex-situ treatment and off-Site disposal of all principal threat waste. Excavated soils were replaced with clean soil and affected areas were re-vegetated. As previously stated, no contaminated soils with arsenic concentrations greater than the arsenic clean up level for OU2 were detected during the RI.

The Selected Remedy achieves the RAOs through the following key components:

- Excavation of surface soils with lead concentrations exceeding 1,000 mg/kg in the commercial area to an expected maximum depth of 12 inches and 3,000 mg/kg in the undeveloped area to an expected maximum depth of 18 inches.
- Excavation of all principal-threat waste (defined as soils with leachable levels of lead and arsenic above 5 mg/L based on the Toxicity Characteristic Leaching Procedure (TCLP)). Based on TCLP analysis conducted during Remedial Design (RD) arsenic was determined to not be leachable.
- Ex-situ treatment of principal threat waste by stabilizing leachable lead in soil.
- Transportation and disposal of all excavated soil to an appropriate landfill.
- Placement of clean topsoil and re-vegetation of excavated areas.
- Removal of an access road constructed during OU1 construction activities.
- Institutional Controls (ICs), such as environmental covenants under the State of Utah's Environmental Covenants Act, conservation easements, or land use controls established through Salt Lake County Zoning Authorities, and/or notification services, to ensure the remedy remains protective.

One of the areas identified in the ROD requiring remedial action was located at the southern portion of OU2 (identified as U2, U3 and U4 in Figure 3). This area is the subject of the Minor Modification, completed in the fall of 2011, as well as this ESD.

F. Minor Modification

Sampling for lead contaminated soil was conducted as part of the Remedial Design (RD) to accurately define the area requiring excavation. Sampling during the RD indicated that the area of contamination in excess of the 3,000 mg/kg lead clean-up level, extended into U5 (Figure 4).

The inclusion of the area in U5 containing lead concentrations in excess of 3,000 mg/kg would impact much more of the vegetation, mainly mature gambel oak. Through the RD, as well as a Value Engineering Study (VE), it became clear that one of the challenges of assuring a successful remedy was the reclamation and re-vegetation of the Site. One of the items proposed in the VE 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 optimize re-vegetation of gambel oak was to leave areas of mature and slow-growing gambel oak.

Further design work was conducted to determine how to retain as much of the mature gambel oak as possible while still cleaning up the area to meet the RAOs identified in the ROD. Based on the RD sampling data and several inspections of the Site, areas of gambel oak that were good candidates for

preservation were identified (Figure 5). These areas had lower lead concentrations than other portions of the property that needed cleanup. Leaving established stands of gambel oak in known contaminated areas allowed UDEQ and EPA to optimize the design to promote Site reclamation and re-vegetation, as well as address community and landowner concerns related to construction of the remedy, namely preservation of gambel oak. This minor change did not have a significant impact on the scope, performance, or cost of the remedy described in the OU2 ROD. In other words, the modified remedy still met risk based clean up goals. UDEQ coordinated all aspects of this minor change with the EPA and documented the minor change in a March 22, 2012 memorandum to the Site file.

III. BASIS FOR THE DOCUMENT

The remediation area described in the Minor Modification was designated Area One in the RD and was used to establish the limits of the excavation area and the excavation depth as part of the bidding process (Figure 6). Based on these limits and excavation depths, the amount of contaminated material to be removed from Area One was estimated at 3,952 tons. The initial cost of the RA construction contract for the entire Site was $597,644.00

During construction activities contaminated material was discovered to extend deeper than was anticipated in several portions of Area One. The additional contaminated material consisted of a slag deposit ranging between 18 and 24 inches in thickness with lead concentrations as high as 40,000 mg/kg that was situated under a layer of fill ranging from two feet to six and a half feet in thickness (Photo No. 1) . The fill material over the slag layer was below the 3,000 mg/kg clean up level; however, it did not meet the specifications for fill material in the construction specifications and was treated and disposed of along with the slag layer.

The slag layer met the description of principal threat waste designated in the ROD; therefore, contaminated slag and soil material within the boundaries of excavation Area One was removed, treated and disposed of at the Salt Lake County Landfill. This resulted in the excavation of an additional 2,655 tons of soil. With the inclusion of this additional contaminated material the total cost of the RA increased from $597,644 to $879,914, or a total of $282,270 for this work.

IV. DESCRIPTION OF SIGNFICANT DIFFERENCES

The activities described in this ESD differ from the remedy described in the ROD in that:

1. The expected maximum depth of excavation was exceeded within portions of Area One;
2. Contamination at concentrations greater than the action levels identified in the ROD was left in place due to physical restriction presented by the topography and existing utility structures or to leave mature vegetation in place to enhance overall remedy performance.
3. Principal threat waste remained after construction activities were completed.

As described above, excavation activities encountered a layer of slag in the south east section of Area One. Field analysis of the slag layer using a portable X-Ray Flourescence unit showed that the lead concentrations of the slag layer ranged between 10,000 and 40,000 mg/kg, which was well above lead

concentrations associated with soils found to be leachable during previous sampling efforts. As a result, the entire slag layer was addressed as principal threat waste.

Several test pits and trenches were excavated throughout Area One to delineate the extent of the slag layer (Photo 1 and Photo 4). The slag layer was 18 to 24 inches thick throughout the southeastern portion of Area One and situated under a layer of fill material ranging from two feet to six and a half feet in thickness (Photo 3). Trenching also showed the slag layer extended east of excavation Area One underneath a storm sewer, and steep slope (Photo 1), and underneath an established stand of oak brush to the south (Photo 2). Approximately three feet of fill was situated above the slag layer on the eastern side of Area One and approximately four feet of fill was situated above the slag layer on the southern side.

The slag layer within the boundaries of Area One, as well as the fill material above it was excavated. Slag was treated ex-situ to stabilize the leachable constituents (principal threat waste) and disposed of at an appropriate landfill in accordance with the ROD. However, two areas outside the boundary of Area One, where the slag layer extended, were not cleaned up for reasons explained below.

Further excavation on the eastern side of Area One could impact the stability of the slope and result in damage to both the storm sewer as well as houses built on the slope. It was determined that three feet of fill material provided an effective barrier to human exposure from lead-contaminated soil associated with the slag layer. Leaving the lead-contaminated soil associated with the slag layer in place, in this area, did not pose a threat to human health when combined with ICs.

Leaving the oak brush located at the southern end of Area One was beneficial for re-vegetation. Additionally, the excavation of the lead-contaminated soil associated with the slag layer in this area was not warranted. The four feet of fill material provided an effective barrier to human exposure to the lead contaminated soil. Similar to material left on the eastern side of Area One, this material will not pose a threat to human health. Figure 7 shows the extent of the slag layer that was excavated in Area One as well as the locations where contamination remains at depth beneath approximately three to four feet of clean material.

All other components of the ROD, including placement of clean topsoil, re-vegetation and reclamation of excavated areas as well as the removal and reclamation of the access road constructed during OU1 construction activities were also performed in accordance with the ROD.

The Institutional Controls described in the ROD remain unchanged. UDEQ and EPA are currently working with property owners and Salt Lake County to develop Institutional Controls at the Site and ensure protectiveness of the remedy.

V. STATUTORY DETERMINATIONS

Statutory Determinations

In accordance with CERCLA Section 121, 42 U.S.C. § 9621, EPA and UDEQ believe that this action is protective of human health and the environment and complies with Federal and State requirements that are applicable or relevant and appropriate to the remedial action. This ESD makes no changes to the remedy's use of permanent solutions and alternative treatment (or resource recovery) technologies to the maximum extent practicable.

Because this action 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 continue to be conducted within five years after the remedial action to ensure that the remedy is, or will be, protective of human health and the environment.

VI. PUBLIC PARTICIPATION COMPLIANCE

All of the public participation requirements set forth in section 300.435(c)(2)(i) of the NCP have been met. UDEQ has coordinated and consulted with EPA Region 8 during all aspects of the preparation of this ESD and the documents that serve as the basis of this ESD. EPA Region 8 did not have any comments on the ESD. Documents referenced within this ESD are part of the Administrative Record for the Davenport and Flagstaff Smelters Superfund Site.

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VII. APPROVAL

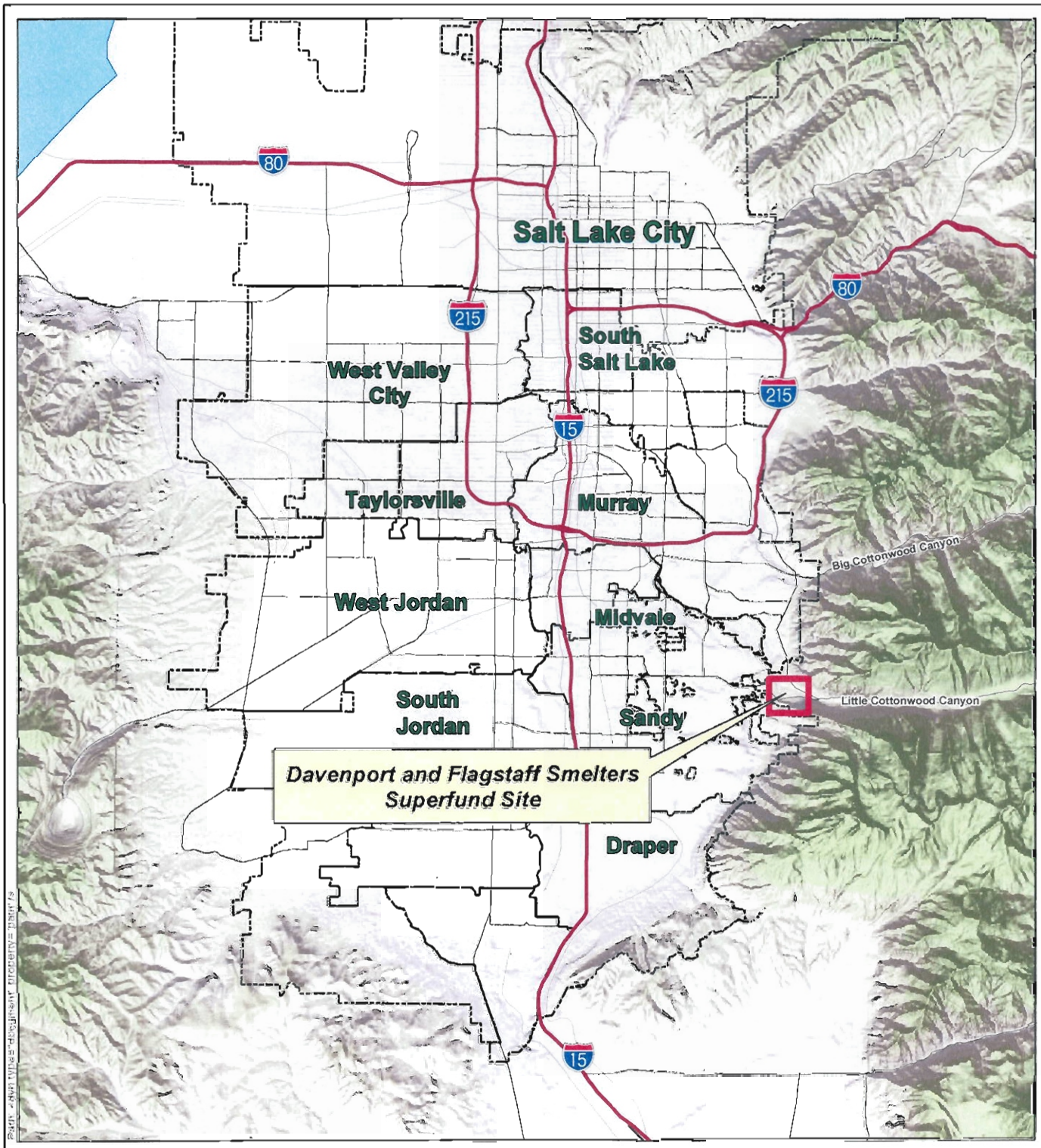
Martin Hestmark
Acting Assistant Regional Administrator
Office of Ecosystem Protection and Remediation
U.S. Environmental Protection Agency, Region 8

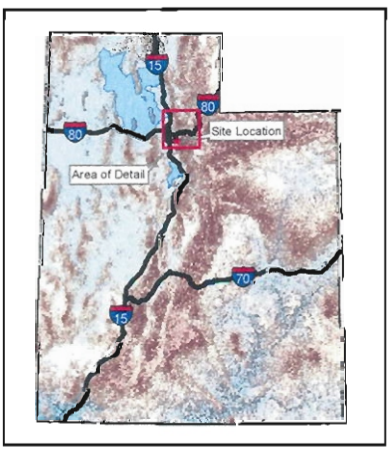
7/3/12
Date

Amanda Smith
Executive Director
Utah Department of Environmental Quality

July 2, 2012
Date

FIGURES





N
W E
S

2 0 2 4
Miles

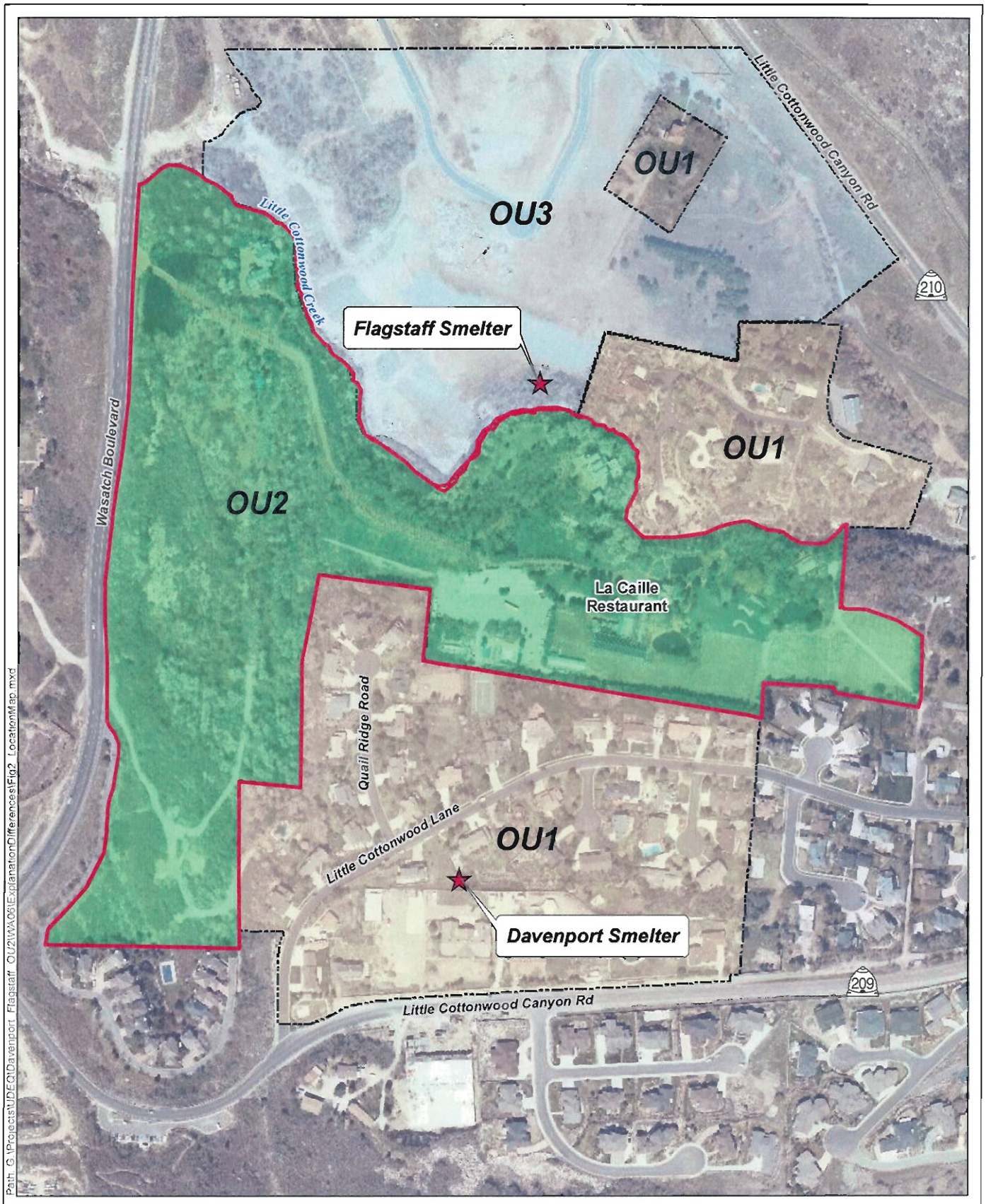
Davenport and Flagstaff Smelters Superfund Site

Salt Lake County, Utah

OU2 Explanation of Significant Differences

Figure 1: Site Location

URS



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Residential Operable Unit 1 (OU1)

Operable Unit 2 (OU2)

Operable Unit 3 (OU3)

N W E S

175 0 175 350

Feet

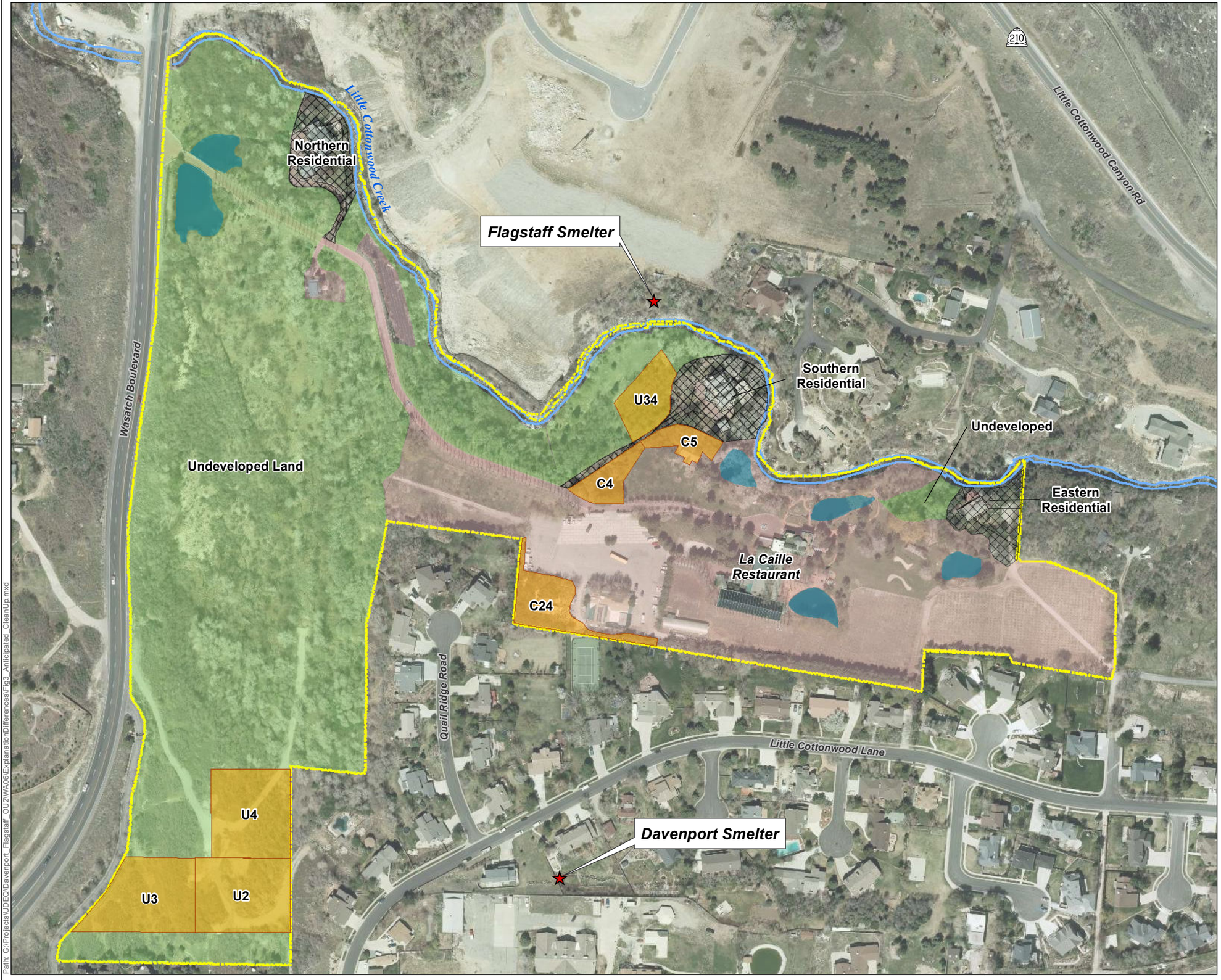
Davenport and Flagstaff Smelters Superfund Site

Salt Lake County, Utah

OU2 Explanation of Significant Differences

Figure 2: Operable Units

URS



Grids Exceeding Lead Clean-Up Level & Requiring Remediation

Commercial

Undeveloped

Remediated Residential Properties

OU2 Boundary

Note: Commercial Clean-Up Level > = 1,000 mg/kg; Undeveloped Clean-Up Level > = 3,000 mg/kg

N W E S

100 0 100 200 Feet

Projection: UTM NAD83 Zone 12N

Aerial Reference: AGRC 2009 High Resolution Ortho-Imagery 1 Foot Color

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Davenport and Flagstaff Smelters Superfund Site

Salt Lake County, Utah

OU2 Explanation of Significant Differences

Figure 3: Extent of Clean-up Described in ROD

URS

U4-PT90
Depth PB (MG/KG)
Surf - 20,977
00-06 - 18,006
06-12 - 102
12-18 - 32
18-24 - 29
24-30 - 41
30-36 - 39

U4-PT85
Depth PB (MG/KG)
Surf - 880
00-06 - 1,744
06-12 - 1,864
12-18 - 8,281
18-24 - 1,785
24-30 - 279
30-36 - 38

U4-PT129
Depth PB (MG/KG)
Surf - 3,550
00-06 - 1,530
06-12 - 44
12-18 - 54
18-24 - 36

U4-PT67
Depth PB (MG/KG)
Surf - 38,733
00-06 - 3,714
06-12 - 236
12-18 - 38
18-24 - 67
24-30 - 66
30-36 - 31

U4-PT56
Depth PB (MG/KG)
Surf - 3,587
00-06 - 4,374
06-12 - 174
12-18 - 64
18-24 - 61
24-30 - 28
30-36 - 25

U4-PT30
Depth PB (MG/KG)
Surf - 24,953
00-06 - 23,287
06-12 - 1,480
12-18 - 251
18-24 - 25
24-30 - 50
30-36 - 34

U4-PT38
Depth PB (MG/KG)
Surf - 36,372
00-06 - 4,530
06-12 - 55
12-18 - 32
18-24 - 26

U4-PT12
Depth PB (MG/KG)
Surf - 18,967
00-06 - 25,015
06-12 - 13,216
12-18 - 425
18-24 - 388
24-30 - 42
30-36 - 37

U2-PT67
Depth PB (MG/KG)
Surf - 210
00-06 - 174
06-12 - 57
12-18 - 2,170
18-24 - 13,288
24-30 - 456
30-36 - 51
36-37 - 52

U3-PT53
Depth PB (MG/KG)
Surf - 45,259
00-06 - 9,777
06-12 - 156
12-18 - 43
18-24 - 36
24-30 - 28
30-36 - 20
36-37 - 31

U4-PT15
Depth PB (MG/KG)
Surf - 10,847
00-06 - 18,236
06-12 - 21,962
12-18 - 19,085
18-24 - 21,264
24-30 - 11,349
30-36 - 13,341
36-37 - 94

U4-PT02
Depth PB (MG/KG)
Surf - 11,419
00-06 - 13,194
06-12 - 16,991
12-18 - 13,111
18-24 - 6,075
24-30 - 109
30-36 - 124
36-37 - 80

U5
U4
U3
U2
18"
12"
6"
36"
24"
6"
24"

- Sample Location and Result (mg/kg)
- Depth Sample Location

Lead Results Contours
- 2,000 ppm Pb
- 2,500 ppm Pb
- 3,000 ppm Pb

Remediation Areas and Depth (inches)
- 6" (0.99 acres)
- 12" (0.30 acres)
- 18" (0.02 acres)
- 24" (0.27 acres)
- 36" (0.04 acres)

U2 — Grids With RI Sample Results Exceeding Lead Clean-Up Level & Requiring Pre-Design Sampling

OU2 Boundary

Note: Undeveloped Clean-Up Level > = 3,000 mg/kg

N W E S

30 0 30 60 Feet

Projection: UTM NAD83 Zone 12N

Aerial Reference: AGRC 2009 High Resolution Ortho-Imagery 1 Foot Color

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Davenport and Flagstaff Smelters Superfund Site

Salt Lake County, Utah

OU2 Explanation of Significant Differences

Figure 4:
Area 1 Pre-Design Sample Results and Remedial Areas

URS

Davenport and Flagstaff Smelters Superfund Site

Salt Lake County, Utah

OU2 Explanation of Significant Differences

Figure 7:
Area 1 Completed Excavation Limits and Depths

URS

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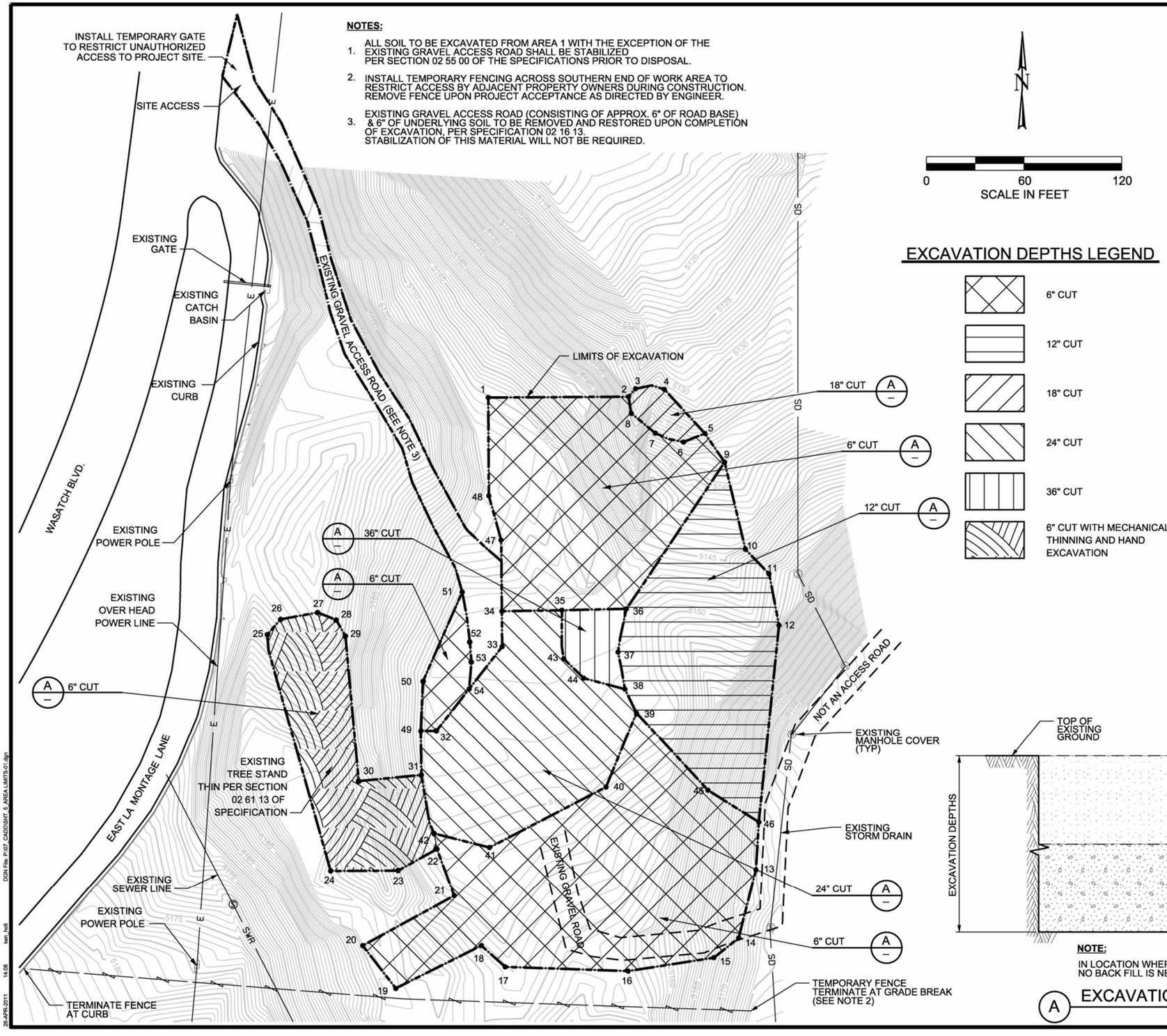
NOTES:

1. ALL SOIL TO BE EXCAVATED FROM AREA 1 WITH THE EXCEPTION OF THE EXISTING GRAVEL ACCESS ROAD SHALL BE STABILIZED PER SECTION 02 55 00 OF THE SPECIFICATIONS PRIOR TO DISPOSAL.
2. INSTALL TEMPORARY FENCING ACROSS SOUTHERN END OF WORK AREA TO RESTRICT ACCESS BY ADJACENT PROPERTY OWNERS DURING CONSTRUCTION. REMOVE FENCE UPON PROJECT ACCEPTANCE AS DIRECTED BY ENGINEER.
3. EXISTING GRAVEL ACCESS ROAD (CONSISTING OF APPROX. 6" OF ROAD BASE) & 6" OF UNDERLYING SOIL TO BE REMOVED AND RESTORED UPON COMPLETION OF EXCAVATION, PER SPECIFICATION 02 16 13. STABILIZATION OF THIS MATERIAL WILL NOT BE REQUIRED.

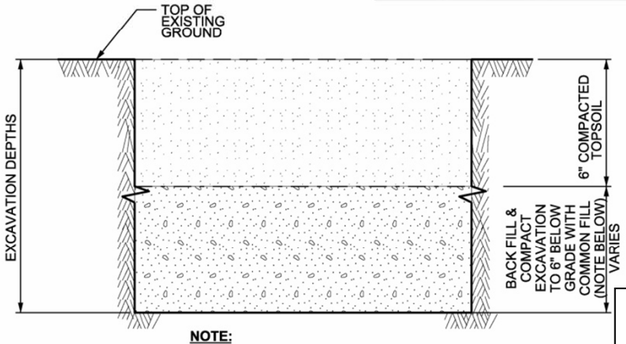


0 60 120
SCALE IN FEET

EXCAVATION DEPTHS LEGEND

- 6" CUT
- 12" CUT
- 18" CUT
- 24" CUT
- 36" CUT
- 6" CUT WITH MECHANICAL THINNING AND HAND EXCAVATION

POINT #	EASTING	NORTHING
1	1557998.524	7378059.665
2	1558084.693	7378060.196
3	1558088.951	7378065.119
4	1558106.678	7378064.732
5	1558131.582	7378037.628
6	1558118.496	7378032.349
7	1558101.118	7378037.760
8	1558086.353	7378049.921
9	1558143.695	7378019.968
10	1558156.481	7377966.455
11	1558170.900	7377951.423
12	1558177.135	7377919.711
13	1558162.970	7377769.559
14	1558152.372	7377727.643
15	1558137.150	7377715.677
16	1558084.474	7377707.448
17	1558008.971	7377710.006
18	1557994.323	7377723.001
19	1557941.790	7377696.785
20	1557921.451	7377722.958
21	1557977.705	7377753.550
22	1557967.076	7377782.264
23	1557943.235	7377769.048
24	1557901.755	7377768.810
25	1557862.807	7377913.958
26	1557870.975	7377923.348
27	1557893.746	7377927.589
28	1557905.171	7377922.983
29	1557910.832	7377913.112
30	1557919.004	7377823.844
31	1557957.484	7377827.629
32	1557966.672	7377854.831
33	1558007.094	7377906.702
34	1558006.900	7377928.356
35	1558043.776	7377928.988
36	1558083.382	7377929.841
37	1558078.245	7377903.341
38	1558082.488	7377880.570
39	1558089.572	7377865.938
40	1558070.896	7377820.214
41	1557999.304	7377783.211
42	1557965.423	7377791.763
43	1558044.897	7377899.238
44	1558057.163	7377887.340
45	1558133.502	7377818.320
46	1558164.743	7377798.838
47	1558006.383	7377972.049
48	1557998.870	7377999.309
49	1557957.137	7377854.831
50	1557958.449	7377885.356
51	1557982.544	7377940.181
52	1557987.268	7377909.427
53	1557988.224	7377897.218
54	1557986.828	7377880.696



NOTE:
IN LOCATION WHERE 6" OF CUT IS REQUIRED, NO BACK FILL IS NECESSARY, TOPSOIL ONLY.

A EXCAVATION/FILL DETAIL

DIVISION OF ENVIRONMENTAL RESPONSE AND REMEDIATION

USEPA

UDEQ DAVENPORT AND FLAGSTAFF, OU2 REMEDIAL ACTION

URS
756 EAST WINCHESTER ST.
SALT LAKE CITY, UT 84107

SCALE: AS SHOWN
DATE: 10/2010
DRAWN BY: CJH
DESIGNED BY: MHG
CHECKED BY: TLM
URS PROJECT NUMBER: 24585144

REVISION RECORD

NO.	BY	PURPOSE	DATE	CKD
1	XX	XX	XX	XX

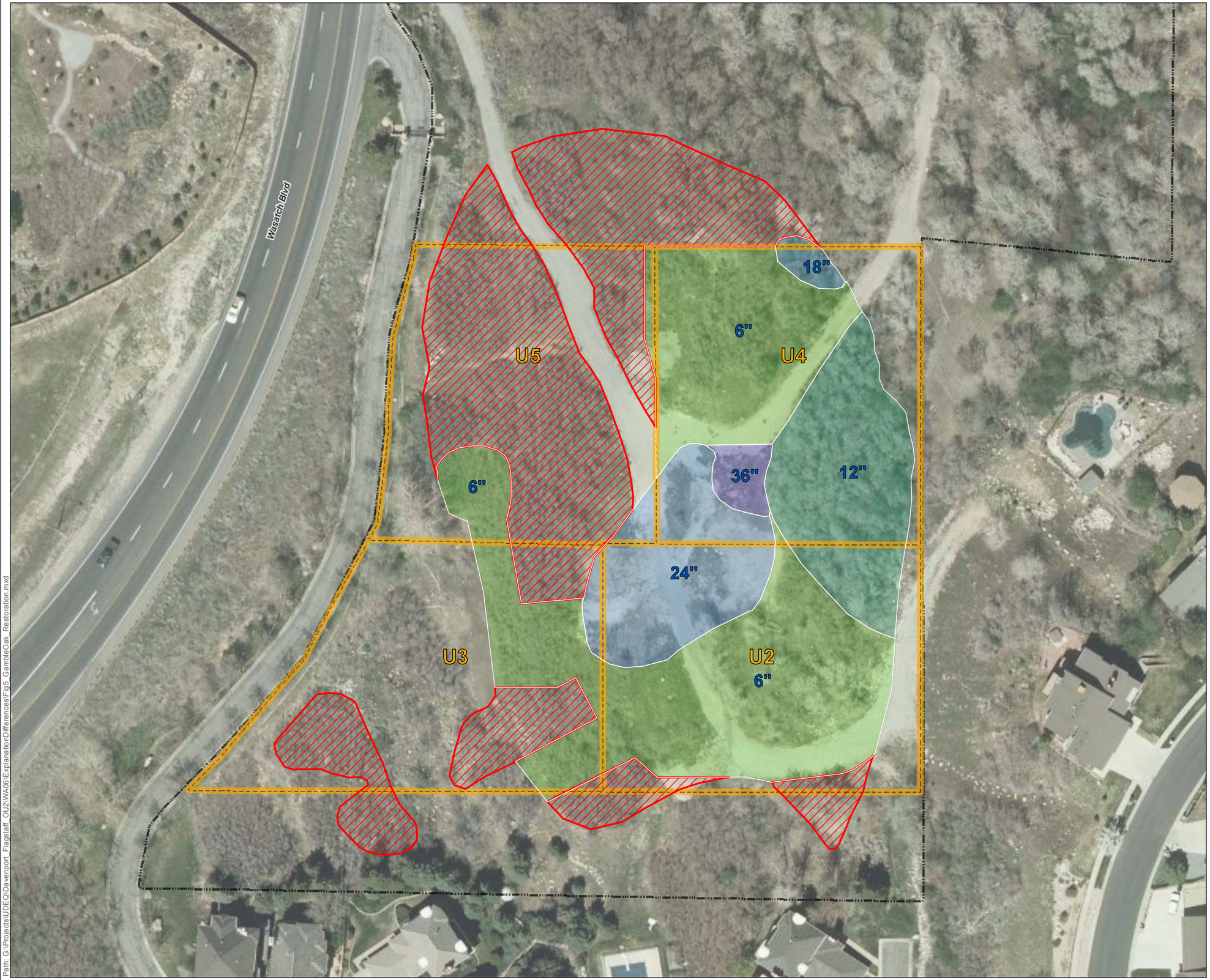
SHEET TITLE:

DGN File: P:\07 CAD\SHT 5 AREA LIMITS-01.dgn
ken_holt
14:08
29-APR-2011

Davenport and Flagstaff Smelters Superfund Site
Salt Lake County, Utah
OU2 Explanation of Significant Differences

Figure 6: Area 1 Limits of Excavation

URS



Remediation Areas and Depth (inches)

- 6" (0.99 acres)
- 12" (0.30 acres)
- 18" (0.02 acres)
- 24" (0.27 acres)
- 36" (0.04 acres)

Areas of Gambel Oak Retained

U2 — Grids With RI Sample Results Exceeding Lead Clean-Up Level & Requiring Pre-Design Sampling

OU2 Boundary

Note: Undeveloped Clean-Up Level > = 3,000 mg/kg

N W E S

30 0 30 60

Feet

Projection: UTM NAD83 Zone 12N

Aerial Reference: AGRC 2009 High Resolution Ortho-Imagery 1 Foot Color

Path: G:\Projects\UDEQ\Davenport_Flagstaff_OU2\WA06\ExplanationDifferences\Fig5_GambleOak_Restoration.mxd

Davenport and Flagstaff Smelters Superfund Site

Salt Lake County, Utah

OU2 Explanation of Significant Differences

Figure 5:
Area 1
Areas of Gambel Oak Retained

URS

URS

PHOTOGRAPHIC LOG

UDEQ Davenport and Flagstaff
Remedial Action
Area 1

Photo No. 1	Oct. 10, 2011

Direction Photo Taken:

Looking southeast.

Description:
Eastern Boundary

View across the eastern excavation boundary showing trench location.

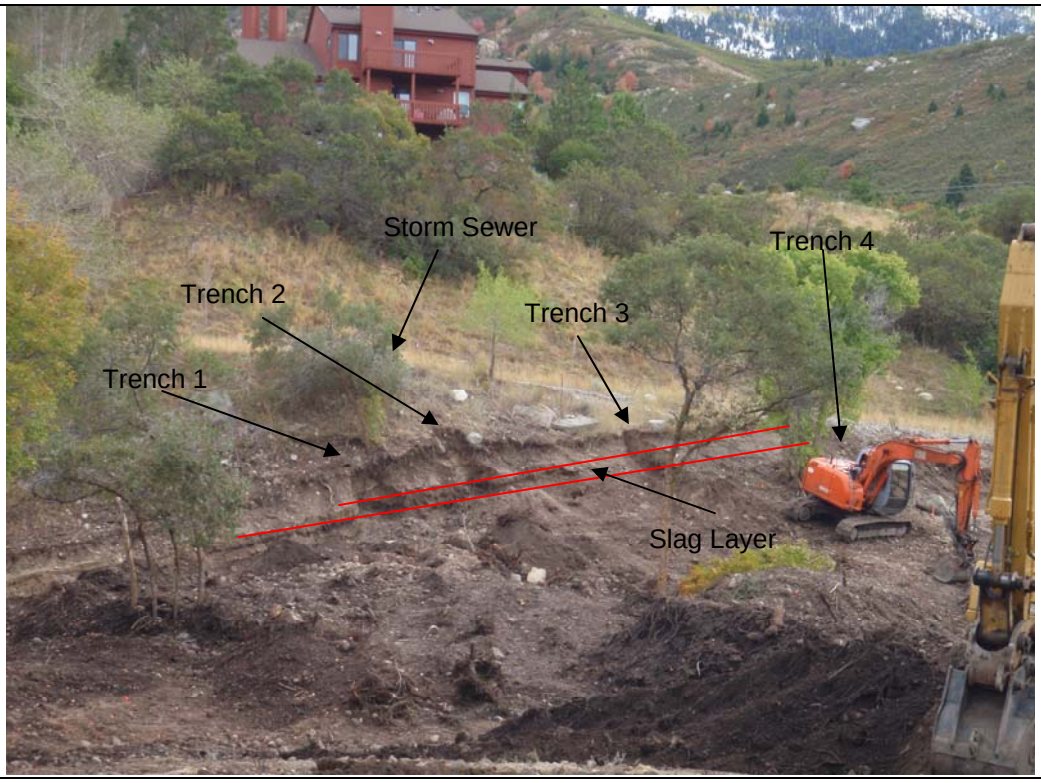


Photo No. 2	Oct. 25, 2011

Direction Photo Taken:

Looking south.

Description:
Vegetation

East excavation face showing vegetation and large boulder.

Excavation face contains some whole and crushed slag.

URS

PHOTOGRAPHIC LOG

UDEQ Davenport and Flagstaff
Remedial Action
Area 1

Photo No. 3	Oct. 25, 2011

Direction Photo Taken:

Looking south.

Description:
South Excavation Slag Layer

South excavation between Area 1 Subparts P and O. Material contains crushed slag and charcoal.

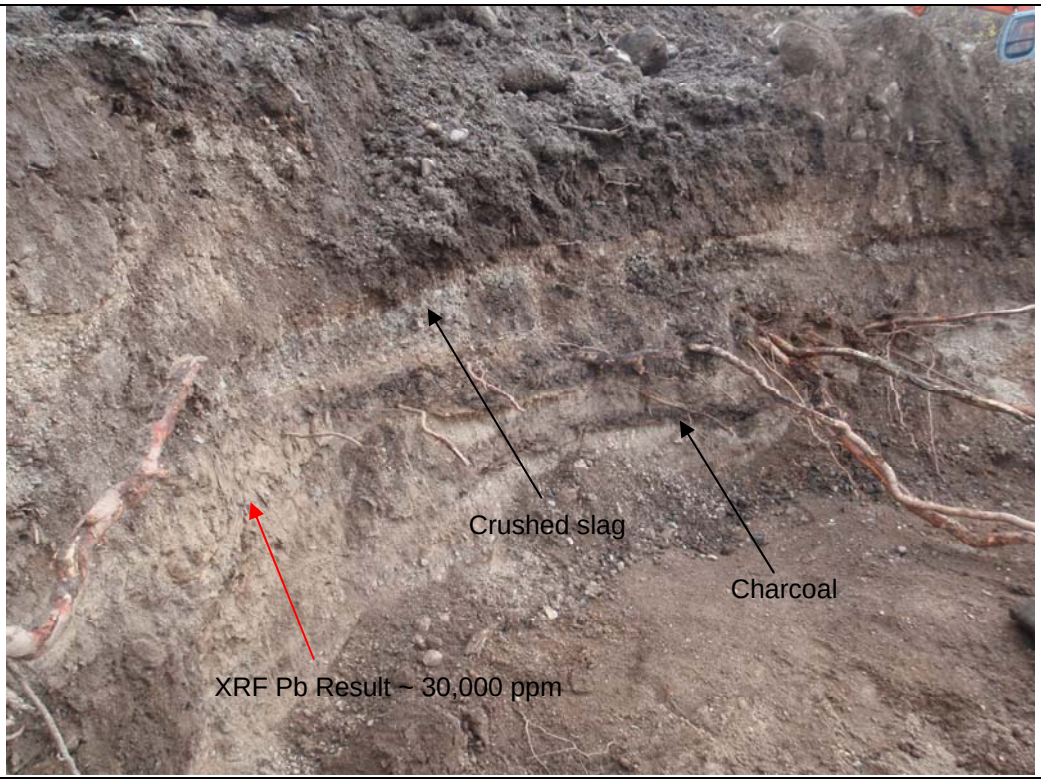


Photo No. 4	Oct. 19, 2011

Direction Photo Taken:

Looking west.

Description:
Area Requiring Additional Excavation

View across the southern excavation showing trench location and areas where additional excavation depth is needed to remove slag.

Areas approximately shown.