September 2015

Region 8

Proposed Plan for Jacobs Smelter Superfund Site Operable Unit 2

UTAH DEPARTMENT OF ENVIRONMENTAL QUALITY

This Proposed Plan also provides information related to cultural resources at the Site (see page 3).

MARK YOUR CALENDAR

Public Comment Period:
9/21/2015 - 11/21/2015

Public Meeting

Thursday, October 15, 2015
Stockton Fire Station
207 N. Connor Ave.
Stockton, Utah

From 6:30 PM to 8 PM
Written or oral comments will be accepted at the meeting

Send Written Comments to:

Tom Daniels
Project Manager
Division of Environmental Response and Remediation
Utah Department of Environmental Quality (UDEQ)
P.O Box 144840
Salt Lake City, UT 84114-4840
Email: tdaniels@utah.gov

Written comments must be post-marked by : 11/21/2015

EPA and UDEQ Announce Preferred Clean-up Alternative and Public Comment Period

Introduction

The U.S. Environmental Protection Agency (EPA) and the Utah Department of Environmental Quality (UDEQ) seek public comment on the proposed clean-up plan for the Jacobs Smelter Site (Site) Operable Unit 2 (OU2), located near Stockton, Tooele County, Utah. This Proposed Plan summarizes the possible OU2 clean-up alternatives and presents the preferred clean-up alternative. The clean-up alternatives address lead and arsenic contamination related to historic smelting

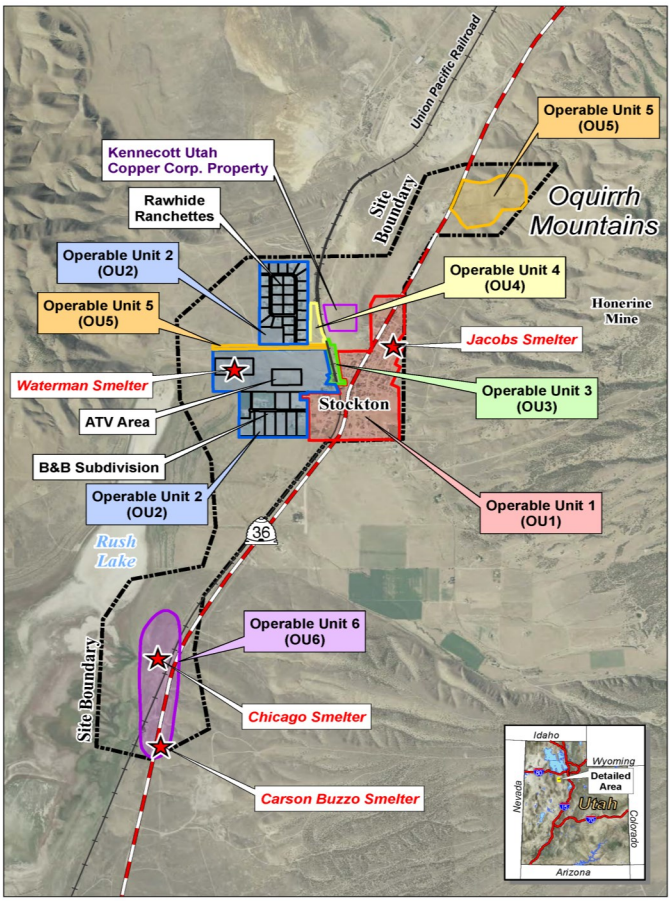

Figure 1: Location of Jacobs Smelter Superfund Site

activities. The EPA and the UDEQ encourage the public to review the Proposed Plan and provide comments or concerns before the final remedy selection.

The Proposed Plan summarizes information that can be found in detail in the Remedial Investigation (RI) and the Updated Revised Feasibility Study reports (URFS). These documents and others are in the Administrative Record for this Site at the locations listed on page 5. Additionally, these reports are available online at *http://www2.epa.gov/region8/jacobs-smelter*.

The Proposed Plan also provides the rationale for the selection of a preferred alternative. In addition, this plan includes summaries of other clean-up alternatives evaluated for use at this Site. The UDEQ is the lead agency for Site activities and the EPA is the support agency.

This Proposed Plan fulfills the requirements of CERCLA §117(a) and Section 300.430(f)(2) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP).

The EPA and the UDEQ will select a final remedy for the Site after reviewing and considering all comments and information submitted during the public comment period. Based on the public comments and/or new information, the EPA and the UDEQ may modify the preferred alternative or select another alternative presented in this Proposed Plan.

Summary of Preferred Alternative

Alternative 2 – Excavate contaminated soil to a depth of 18 inches and place in an off-site repository.

Approximately 70,000 tons of contaminated soil will be removed from the Site and disposed of at a permitted off-site disposal facility. Contaminated soil at depths greater than 18 inches will be covered with clean soil, reducing the risk of direct exposure, ingestion or inhalation.

The potential for contaminated soil spreading is minimized due to the permanent removal of accessible contamination and clean soil over any remaining contamination.

Institutional controls, annual monitoring and operations and maintenance are needed to assure the protectiveness of the remedy.

Summary of Alternatives

- Alternative 1 – No action.
- Alternative 2 – Excavate contaminated soil to a depth of 18 inches and place in an off-site repository.
- Alternative 3 – Cover contaminated material with clean soil.
- Alternative 4 – Excavate contaminated soil to a depth of 18 inches and place in an on-site repository with a RCRA Subtitle-C cap.
- Alternative 5 – Excavate all contaminated soil in non-residential areas. Excavate contaminated soil to a depth of 18 inches in residential areas. Place excavated soil in an on-site repository with a RCRA Subtitle-C cap.
- Alternative 6 – Excavate all contaminated soil in non-residential areas. Excavate contaminated soil to a depth of 18 inches in residential areas. Place excavated soil in an on-site repository with a soil cover cap.

All of the alternatives, with the exception of the "no action" alternative, include institutional controls such as environmental covenants, environmental easements, building permit restrictions, deed restrictions or public awareness. All alternatives include continued operation and maintenance (O&M) to ensure the protectiveness of the remedy.

Site Background

The Jacobs Smelter Site is located within Rush Valley, Tooele County, Utah near the town of Stockton (Figure 1), approximately 38 miles southwest of Salt Lake City, and five miles south of the city of Tooele. No industries and very few retail/commercial businesses currently exist in Stockton. In general, land surrounding the town of Stockton is used for agricultural and recreational purposes.

Site History

The Stockton area was the center of a silver and base metal mining, milling and smelting district from the 1860's until 1970. By 1886, several smelters had been built within the Stockton area. These smelters operated for a few years and then shut down. Jacobs

Smelter was located on the northeast end of Stockton and operated in the 1870s. The largest smelter in the Stockton area was the Waterman Smelting Works, which opened in 1871 and operated continuously until 1886. The Chicago and Carson Buzzo smelters were located about two miles south of Stockton and operated from 1873 to 1880.

The Jacobs Smelter Superfund Site was added to the Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) in 1995 under the name Stockton Smelters. In 1998, the Site was divided into three operable units; OU1, OU2, and OU3. OU1 addressed residential properties within the town limits of Stockton, which were cleaned up in 1999. At that time, OU2 addressed land outside of the town limits of Stockton. OU3 addressed contaminated soils within the Union Pacific Railroad (UPRR) right of way, and was cleaned up by Union Pacific in 1999.

Three additional OUs have been designated at the Site since 1998. OU4 is on Rio Tinto Kennecott Copper (formerly Kennecott Utah Copper LLC (KUCC)) property and is located directly north of OU3 and adjacent to the Rawhide Ranchettes subdivision. OU4 was remediated by KUCC in 2008. OU5 consists of Bureau of Land Management (BLM) property northeast of Stockton and a thin strip of land north of the Waterman Smelter (See Figure 1).

Contamination associated with the Chicago and Carson Buzzo Smelters was originally included within OU2. In January, 2014 these areas were removed from OU2 and established as OU6 due to location, differences in land use and potential exposure pathways.

National Historic Preservation Act (NHPA): Site Cultural Resources

Under the NHPA Section 106, an area (property) within OU2 near the historic Waterman Smelter has been identified as potentially eligible for listing on the National Register of Historic Places. The EPA must consider the effects of its actions on this historic property and has determined that all the action alternatives will have a negative impact on the property in regards to the NHPA.

The EPA has begun consulting with parties outside the agency to resolve the adverse effects of clean-up activities at the Site. Several interested parties have already been identified including representatives from the Town of Stockton and Stockton Daughters of Utah Pioneers Museum. If you are interested in participating in the consultation process or would like additional information, please contact Lisa Lloyd, EPA project manager as listed on page 14.

You are also invited to comment on the project as it relates to cultural resources and its effects on the historic property.

Previous Investigations and Actions

A Preliminary Assessment and Site Investigation (PA/SI) performed in 1998 detected lead and arsenic in Site soils. A removal assessment conducted in 1998 discovered lead and arsenic at concentrations that represented a significant risk to human health and the environment. The EPA conducted a time critical removal action, initiated in March 1999, that cleaned up 29 of the most contaminated residential properties in the town of Stockton.

A Record of Decision (ROD) for OU1 was signed in July 1999. The Jacobs Smelter Superfund Site was added to the Superfund National Priorities List (NPL) on February 4, 2000. Pursuant to the ROD, an additional 126 properties within OU1 were cleaned up in 2001.

In 1999, UPRR entered an agreement with the EPA, and addressed the contamination on OU3 by placing a 16-inch soil cover over the contaminated soils in the railroad right-of-way through Stockton.

Remedial Investigations for OU2 began in 1999. Due to the large geographic extent of OU2 and the relatively small amount of data available, UDEQ conducted a Contaminant Screening Study (CSS) to identify the general areas of contamination in OU2 and to establish a geographic boundary for future study. During the CSS, elevated concentrations of lead and arsenic were found in a proposed subdivision within OU2, known as the Rawhide Ranchettes.

A focused investigation of the Rawhide Ranchettes subdivision in May 2001 indicated that five of the 30 lots within the subdivision exceeded residential lead screening levels. A non-time-critical removal action under an Administrative Order on Consent (AOC) for the five contaminated lots was completed by the developer in 2001. Clean-up activities consisted of excavating six to 18 inches of contaminated soil from the identified lots and placing contaminated soil in a covered repository and underneath the road in the subdivision.

In order to address remaining data gaps and to focus Remedial Investigation activities for OU2, the UDEQ conducted a Pre-Remedial Investigation Study in early 2001. Additionally in 2001, the EPA and the UDEQ developed a Human Health Risk Assessment (HHRA) and an Ecological Risk Assessment (ERA).

A Feasibility Study was prepared for OU2 in December 2001, followed by a Revised Feasibility Study (RFS) in 2004.

In July 2004, KUCC conducted a soil characterization investigation of two parcels within OU2. One was located to the northeast of Stockton and the other near the Stockton rail yard (OU3).

In July 2008, the EPA entered into an AOC with KUCC that required KUCC to clean-up the parcel located near OU3. The parcel was designated as OU4. Between mid-September and mid-November 2008, KUCC conducted a removal action consistent with the terms of the AOC. Soil with lead concentrations greater than 500 mg/kg was removed from OU4, except for where contaminated soil was located underneath a large gravel hill. Excavated soil was disposed at the Arthur Stepback Repository owned and operated by KUCC.

In order to address concerns regarding lead and arsenic contaminated soil associated with the Waterman Smelter and to re-visit the remedial alternatives and associated cost estimates in the 2004 RFS, soil samples were collected and analyzed during 2009 and 2010. The results of this sampling triggered a non-time critical removal of contaminated soil from residences within the Rawhide Ranchettes subdivision, performed in 2010 and 2011.

In July 2012, the BLM issued an Action Memorandum for removal activities for part of OU5. Other investigation and remediation activities at OU5 are being conducted by BLM.

Public Participation

In July 2004, the EPA and the UDEQ issued a Proposed Plan for OU2 that identified preferred alternatives for cleaning up contaminated soil. A public comment period was held to accept comments about the plan and a public meeting occurred August 4, 2004. Since then, the EPA and the UDEQ have been addressing comments on certain aspects of the original Proposed Plan, conducting additional investigations, and working to resolve technical and legal issues to allow clean-up to proceed.

The EPA and the UDEQ have also participated in several town council meetings, availability sessions and meetings with home owners and other members of the community.

Site Characteristics

OU2 consists of both residential and undeveloped land that is used for agricultural purposes including grazing livestock and recreation. OU2 incorporates the Rawhide Ranchettes, the B&B subdivision and the area between the two subdivisions containing the Waterman Smelter. (See Figure 2)

Approximately 30 acres within OU2 contain lead and arsenic contaminated soil with lead concentrations as high as 150,000 mg/kg. Contaminated soil extends below 18 inches near the location of the former smelter and other locations throughout the Site.

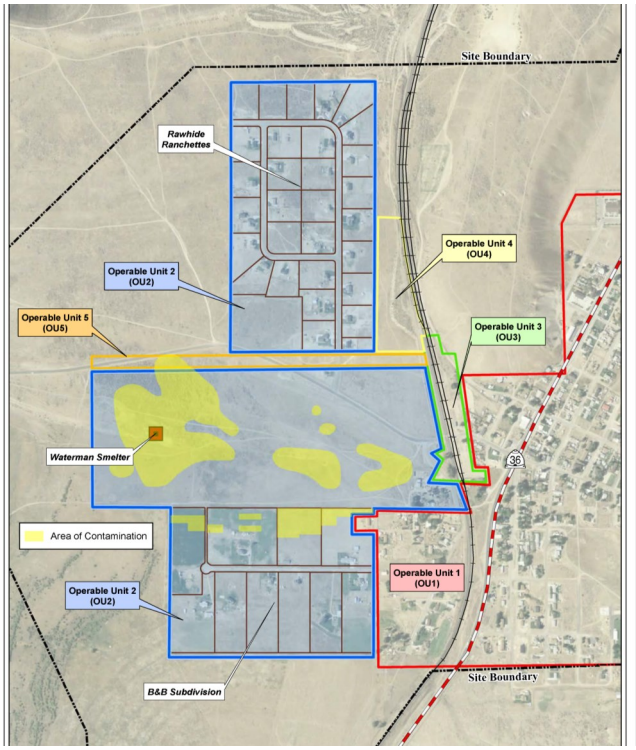

Figure 2: Operable Unit 2 Boundary

Surface and subsurface soil, sediment, surface water and groundwater samples have been collected and analyzed during investigations performed at OU2.

Sampling results did not indicate that surface water had been impacted by smelter contamination.

Sampling wells were installed up-gradient and down-gradient of the Waterman Smelter to depths of 100 feet below ground surface (bgs) and 47 feet bgs

respectively, but groundwater was not encountered. Based on the lack of groundwater encountered at the Waterman Smelter, and the depth to groundwater in the Rush Valley, the EPA and the UDEQ have determined that the groundwater exposure pathway is incomplete and have no plans to investigate groundwater further.

Scope and Role of Operable Unit

This Proposed Plan addresses Remedial Actions for OU2 of the Jacobs Smelter Superfund Site. A 2001 ROD for OU1 addressed homes within Stockton. Actions for OU3 and OU4 were carried out by UPRR and KUCC. OU5 is being addressed by BLM. OU6,

Figure 3: Historic Waterman Smelter Area in OU2

the Chicago and Carson Buzzo Smelters, will be addressed by the EPA and the UDEQ in the future.

Two residential developments, Rawhide Ranchettes and the B&B subdivision lie within the boundaries of OU2. Rawhide Ranchettes was initially cleaned up by the developer in 2001. Additional work was performed by the EPA in 2010 and 2011 and requires no further clean-up. The clean-up of OU2 will address contaminated soil from historical smelter operations on both residential and undeveloped land. As described previously, the remedial action described in this proposed plan will not address surface water or groundwater.

Clean-up activities at Jacobs Smelter OU2 will address Site contamination by either removing smelter contaminated soil from the Site, providing a physical barrier, or by consolidating contaminated soil in an on-site repository or a combination of these technologies.

Information Repositories:

The Proposed Plan and other documents in the Administrative Record are available at the following locations:

Superfund Record Center
1595 Wynkoop St.
Denver, CO 80202
303-312-7273
800-227-8917 ext. 312-7273
(Toll Free Region 8 only)

Tooele City Library
128 W Vine St, Tooele, UT 84074

Select documents also available at:
http://www2.epa.gov/region8/jacobs-smelter.

Or contact:

Tom Daniels	Lisa Lloyd
Project Manager	Remedial Project Manager
801-536-4090	303-312-6537
tdaniels@utah.gov	Lloyd.Lisa@epa.gov

Summary of Site Risks

The EPA and the UDEQ evaluated whether contamination within OU2 might harm human health or the health of ecological receptors (plants and wildlife). This study, called a Baseline Risk Assessment, was conducted in two parts—a Human Health Risk Assessment (HHRA) and an Ecological Risk Assessment (ERA). The risk assessments evaluated risk based on current and potential Site uses.

The HHRA focused on the following major human health exposure pathways:

- Incidental ingestion (eating, drinking, or swallowing) of indoor dust;
- Incidental ingestion of outdoor surface and subsurface soil; and
- Direct ingestion of contaminated soil.

The ecological pathways considered were:

- Ingestion of contaminants in surface and subsurface soil through ingestion of the soil itself or through the ingestion of impacted food sources, surface water and sediment in the undeveloped area; and

- Direct contact with surface water in the undeveloped area.

Human Health Risks

The HHRA concluded that there is an unacceptable risk to both adults and children from lead and arsenic-contaminated soil. The most likely pathways for contaminated soil to enter the body are eating and breathing contaminated soil and dust. Children, particularly those under the age of seven, are the most vulnerable because their central nervous system (i.e., brain) is rapidly developing, making them more susceptible to the adverse effects of lead. In addition, children play outside, and are more likely to ingest contaminated soil when they put fingers and toys that have been in contact with soil into their mouths.

Ecological Risks

An Ecological Risk Assessment (ERA) was conducted to evaluate potential threats to ecological receptors (such as plants and animals) in and around Rush Lake and the surrounding area from exposure to Site contaminants. It concluded that animals are at risk. The primary threat to ecological receptors is from exposure to lead contaminated soil.

It is the Agencies' current judgment that the preferred alternative identified in this Proposed Plan, or one of the other active measures considered in the Proposed Plan, is necessary to protect public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment.

Remedial Action Objectives

The clean-up objectives for OU2 are to protect human health and the environment from exposure to lead and arsenic contaminated soil by:

- Reducing risks from exposure to lead and arsenic-contaminated soil to human receptors;
- Reducing the risk from exposure to lead contaminated soil to ecological receptors.

The EPA uses a model to predict the risk for lead exposure to humans. Using this model, the EPA's target for this OU is to limit the risk to a typical child exposed to lead in soil to no more than a 5% chance of exceeding a blood lead level of 10 ug/dL. This blood lead target is used to calculate lead clean-up levels.

Preliminary Remedial Goals (PRGs), or clean-up goals, were calculated for lead contamination in Site soils. Arsenic contamination is co-located with lead contamination and will be addressed by clean-up of lead contaminated soil. Therefore an arsenic clean-up level is not necessary or being proposed.

Based on the specified land uses, the clean-up goals proposed for OU2 are:

Residential Area:	500 mg/kg lead surface; and 800 mg/kg lead sub-surface
Commercial Area:	2,200 mg/kg lead;
Undeveloped Area:	3,000 mg/kg lead.

The human health clean-up goal of 3,000 mg/kg lead for the undeveloped area will also address the risk of exposure to ecological receptors.

The remedial action objectives address contaminated soil located within OU2. Surface water has been evaluated and found to not be impacted by Site contamination. The Agencies have determined the groundwater exposure pathway is incomplete and will not be addressed.

Anticipated Extent of Clean-up

Figure 4 illustrates the areas within the B&B subdivision with soil lead concentrations above the residential clean-up goals. The extent of clean-up at the B&B subdivision is estimated to be 5.4 acres. The majority of the clean-up areas within the residential properties are located in the northern half of the subdivision and are not near buildings or homes.

Figure 5 illustrates the soil lead concentration in the undeveloped area of OU2 with soil lead concentrations above the undeveloped land clean-up goals. The extent of clean-up of the undeveloped area is estimated as 26.7 acres. The vertical extent of contamination was investigated to a depth of 18 inches with the following results: approximately 14.6 acres of the undeveloped area require clean-up to a depth of 16 inches, 3.6 acres require clean-up to a depth of 12 inches and 8.5 acres require clean-up to at least a depth of 18 inches. It is anticipated that contamination extends below depths of 18 inches in areas of OU2.

The Rawhide Ranchettes subdivision was cleaned up as part of a 2010 time-critical removal action and requires no additional remedial activities.

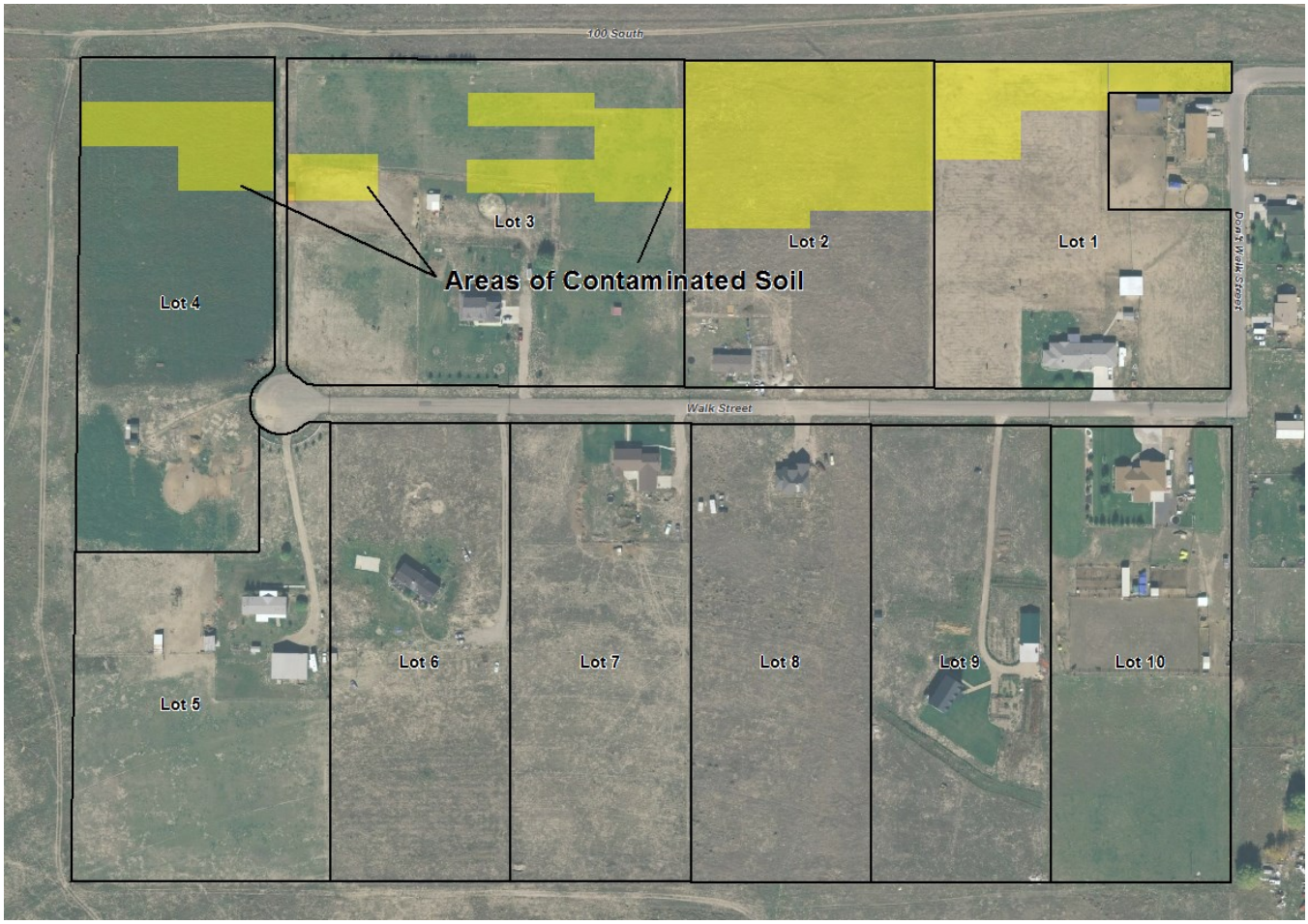

Figure 4: Extent of Contamination B&B Subdivision (above 500 mg/kg lead surface and 800 mg/kg lead subsurface)

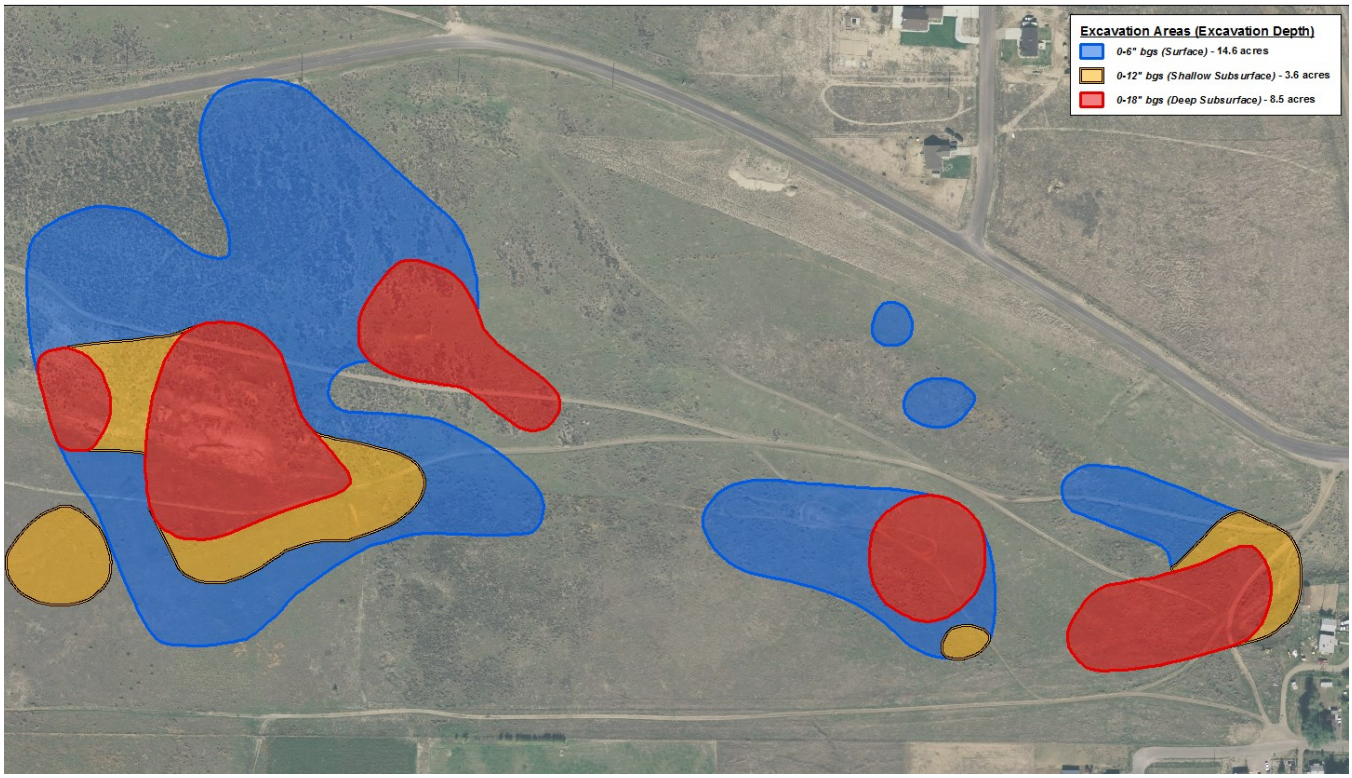

Figure 5: Extent of Contamination Undeveloped Area (above 3000 mg/kg lead)

Summary of Remedial Alternatives

Six alternatives have been developed for clean-up of the residential and undeveloped areas of OU2. One remedial alternative is the "no action" alternative, which is required by the NCP.

All of the "action" alternatives will address Site contamination by either removing contaminated soil from the Site, providing a physical barrier, or by consolidating contaminated soil within an on-site repository.

All of the alternatives, with the exception of the "no action" alternative, include institutional controls such as environmental covenants, environmental easements, building permit restrictions, deed restrictions, public awareness as well as continued O&M to ensure the protectiveness of the remedy.

Since residual contamination remains, five-year reviews will be required for all of the alternatives evaluated.

The following six remedial alternatives for OU2 apply to soils that exceed the Site cleanup goals on residential and non-residential properties:

Alternative 1: No action.

Capital Cost:	**$0**
Operation & Maintenance Cost:	**$0**
Present Worth Cost (30 year)	**$0**
Construction Time Frame:	**None**

No action will be taken to address soil contamination. This alternative does not include any remedial action, any engineering or institutional controls on land-use, and construction activities or any other actions that incur costs.

Regulations governing the Superfund program require that a no action alternative be evaluated to establish a baseline for comparison. Under this alternative, contaminated soil will remain in place leaving the threat to human health and the environment unchanged.

Alternative 2: Excavate contaminated soil to a depth of 18 inches and place in an off-site repository.

Capital Cost:	**$9,443,000**
Operation & Maintenance Cost:	**$204,000**
Present Worth Cost (30 year):	**$9,647,000**
Construction Time Frame:	**12 months**

Alternative 2 addresses contamination in both residential and non-residential areas by excavating contaminated soil to a depth of 18 inches and permanently removing it from the Site by disposing it in an off-site commercial facility.

Approximately 70,000 tons of contaminated soil will be removed from the Site and disposed at a commercial landfill permitted to accept lead contaminated soil. Areas with contamination remaining at depths greater than 18 inches will be covered with a geo-textile fabric that will act as a visible marker. Clean imported fill and topsoil will be used to cover excavated areas and to restore them to original grade.

Clean-up areas will be re-vegetated with a native grass seed mixture.

Alternative 3: Cover contaminated soil with clean soil.

Capital Cost:	**$5,056,000**
Operation & Maintenance Cost:	**$222,000**
Present Worth Cost (30 year):	**$5,278,000**
Construction Time Frame:	**9-12 months**

Alternative 3 addresses contaminated soil in residential and non-residential areas by creating a barrier of clean soil that reduces exposure to contamination.

Contaminated soil remains in place and is covered with a geo-textile fabric that acts as a visible marker and 18 inches of clean fill and top soil. After compaction and contouring, the soil cover will be 12 to 14 inches thick over the entire contaminated area.

Covered areas will be re-vegetated with a native grass seed mix.

Alternative 4: Excavate contaminated soil to a depth of 18 inches and place in an on-site repository with a RCRA Subtitle-C cap.

Capital Cost:	**$7,647,000**
Operation & Maintenance:	**$417,000**
Present Worth Cost (30 year):	**$8,065,000**
Construction Time Frame:	**24 months**

Alternative 4 addresses contaminated soil in residential and non-residential areas by excavating contaminated soil to a depth of 18 inches and placing it in an on-site repository.

Approximately 70,000 tons of contaminated soil will be excavated and consolidated in an engineered repository with a RCRA Subtitle C-cap designed to prevent water infiltration.

Areas with contamination remaining at depths greater than 18 inches will be covered with a geo-textile fabric that will act as a visible marker. Clean imported fill and topsoil will be used to cover excavated areas and to restore them to original grade.

Clean-up areas will be re-vegetated with a native grass seed mixture.

Alternative 5: Excavate all contaminated soil in non-residential areas. Excavate contaminated soil to a depth of 18 inches in residential areas. Place that soil in an on-site repository with a RCRA Subtitle-C cap.

Capital Cost:	**$7,956,000**
Operation & Maintenance Cost:	**$371,000**
Present worth Cost (30 year):	**$8,326,000**
Construction Time Frame:	**24 Months**

Alternative 5 addresses contaminated soil in residential and non-residential areas by excavating all contaminated soil in non-residential areas and to a depth of 18 inches in residential areas and placing that soil in an on-site repository.

Approximately 80,000 tons of contaminated soil will be excavated and consolidated in an engineered repository with a RCRA Subtitle-C cap designed to prevent water infiltration.

After excavation, non-residential areas will be regraded and contoured to retain original drainage patterns and covered with six inches of clean topsoil. Residential areas with contamination remaining at depths greater than 18 inches will be covered with a geo-textile fabric that will act as a visible marker. Clean imported fill and topsoil will be used to cover excavated areas and to restore them to original grade.

All clean-up areas will be re-vegetated with a native grass seed mixture.

Alternative 6: Excavate all contaminated soil in non-residential areas. Excavate contaminated soil to a depth of 18 inches in residential areas. Place in an on-site repository with soil cover.

Capital Cost:	**$7,293,000**
Operation & Maintenance Cost:	**$371,000**
Present Worth Cost (30 year):	**$7,664,000**
Construction Time Frame:	**24 Months**

Alternative 6 addresses contaminated soil in residential and non-residential areas by excavating all contaminated soil in non-residential areas and to a depth of 18 inches in residential areas and placing it in an on-site repository with a soil cover cap.

Approximately 80,000 tons of contaminated soil will be excavated and consolidated in an engineered repository with a soil cover cap that provides a physical barrier to contamination but does not prevent infiltration of water.

All clean-up areas will be re-vegetated with a native grass seed mixture.

Evaluation of Alternatives

Nine criteria are used to evaluate each remedial alternative in order to select a preferred remedy. This section describes the relative performance of each alternative against the nine criteria, noting how it compares to the other alternatives under consideration. A more detailed analysis can be found in the URFS.

1. Overall Protection of Human Health and the Environment

The clean-up plan must provide adequate protection by eliminating, reducing, or controlling unacceptable risks.

Alternative 1 does not remediate any areas and the risk to human health and ecological receptors will remain unchanged.

Human health and ecological hazards for the areas containing soil contamination greater than the clean-up levels will not be mitigated or eliminated.

Alternative 1 does not meet the threshold criterion for protection of human health and the environment.

Alternative 2 involves the excavation and off-site disposal of up to 18 inches of contaminated soil in affected areas.

Removal of contaminated soil to a depth of 18 inches removes the risk of direct contact, inhalation or ingestion of contamination and eliminates human health and ecological risk for the soil removed from the Site. Off-site landfill disposal reduces the migration potential and the potential for future direct contact, ingestions and inhalation by permanently removing the majority of the contaminated soil from the Site.

A barrier of 18 inches of clean soil over residual contamination reduces the risk of direct contact, inhalation or ingestion. Institutional controls limiting property use and soil disturbance are required to prevent exposure to residual contamination.

Alternative 2 meets the threshold criterion for protection of human health and the environment.

Alternative 3 involves placing a 12 to 14 inch soil cover over contaminated soil as a barrier to prevent exposure. All contamination remains in place and is not removed from the Site.

Soil cover reduces direct contact, inhalation or ingestion of contamination as long as the soil cover remains intact. Engineering controls to protect the soil cover barrier from burrowing animals and ATV use are required to prevent exposure to contaminated soil. Annual monitoring and O&M are also required to ensure that the soil cover remains intact and the remedy remains protective. Institutional controls limiting property use and soil disturbance are required to prevent exposure to contaminated soil.

With effective engineering and institutional controls, Alternative 3 meets the threshold criterion for protection of human health and the environment.

Alternative 4 involves the excavation of up to 18 inches of contaminated soil in affected areas and disposal at an on-site repository with a RCRA Subtitle-C cap.

Removal of contaminated soil to a depth of 18 inches reduces the risk of direct contact, inhalation or ingestion of contamination. Disposal of contaminated soil in an on-site repository with a Subtitle-C cap reduces the risk of direct contact, inhalation or ingestion of contamination by consolidating contaminated soil and placing it in an engineered repository with a cover designed to prevent water infiltration.

Contamination remains on-site within a repository located near residential and recreational areas, as well as underneath 18 inches of clean soil elsewhere at the Site.

Engineering controls are required to protect the repository cap from burrowing animals. Annual monitoring and O&M are also required to evaluate the integrity of the repository. Institutional controls limiting property use and soil disturbance are required to prevent exposure to contaminated soil.

With effective engineering and institutional controls, Alternative 4 meets the threshold criterion for protection of human health and the environment.

Alternative 5 involves the excavation of all contaminated soil in non-residential areas and to a depth of 18 inches in residential areas and disposal at an on-site repository with a RCRA Subtitle-C cap.

Removal of all contaminated soil in the non-residential area eliminates the risk of direct contact, inhalation or ingestion of contamination. Removal of contaminated soil to a depth of 18 inches in residential areas reduces the risk of direct contact, inhalation or ingestion of contamination. Disposal of contaminated soil in an on-site repository with a RCRA Subtitle-C cap reduces the risk of direct contact, inhalation or ingestion of contamination by consolidating contaminated soil and placing it in an engineered repository with a cover designed to prevent water infiltration.

Contamination remains on-site within a repository located near residential and recreational areas and underneath 18 inches of clean fill and topsoil in some residential areas.

Engineering controls are required to protect the repository cap from burrowing animals. Annual monitoring and O&M are also required to evaluate the integrity of the repository. Institutional controls

limiting property use and soil disturbance are required to prevent exposure to contaminated soil.

With effective engineering controls and institutional controls, Alternative 5 meets the threshold criterion for protection of human health and the environment.

Alternative 6 involves the excavation of all contaminated soil from non-residential areas and to a depth of 18 inches in residential areas and disposal at an on-site repository with a soil cover cap.

Removal of all contaminated soil in the non-residential area eliminates the risk of direct contact, inhalation or ingestion of contamination. Removal of contaminated soil to a depth of 18 inches in residential areas reduces the risk of direct contact, inhalation or ingestion of contamination. Disposal of contaminated soil in an on-site repository with a soil cover cap reduces the risk of direct contact, inhalation or ingestion of contamination by consolidating contaminated soil and placing it in an engineered repository with a cover designed to provide a barrier to contaminated soil.

Contamination remains on-site within a repository located near residential and recreational areas and underneath 18 inches of clean fill and topsoil in some residential areas.

Engineering controls are required to protect the repository cap from burrowing animals. Annual monitoring and O&M are also required to evaluate the integrity of the repository. Institutional controls are required to prevent exposure to contaminated soil.

With effective engineering and institutional controls, Alternative 6 meets the threshold criterion for protection of human health and the environment.

2. Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)

The EPA and the UDEQ must select a clean-up plan that meets all Federal and State standards required by environmental laws, or if not, the agencies must justify waiving these standards.

Alternative 1 takes no action to remediate the contaminated soil or reduce risk of exposure and does not comply with the risk-based standards established for the Site.

Alternatives 2-6 will all meet their respective Federal and State ARARS.

3. Long-Term Effectiveness and Permanence

This criterion considers the magnitude of risk that will remain after each alternative is implemented and the ability to provide protections of human health and the environment over time.

Alternative 1 would not reduce any of the risk to human health or the environment and does not provide any control over the existing contamination. Alternative 1 is not evaluated further because it does not meet the threshold criteria of protectiveness and compliance with ARARs.

In **Alternative 2**, contaminated soil to a depth of 18 inches is permanently removed from the Site, as is the threat posed by the excavated soil There is a high amount of adequacy and reliability of controls associated with off-site disposal. Institutional controls and annual monitoring are needed to assure the long-term effectiveness and permanence of the clean fill and topsoil placed over residual contamination. However, there is much less residual contamination with Alternative 2 than with the other alternatives discussed in this Proposed Plan

In **Alternative 3**, all of the contaminated soil remains at the Site underneath a 12 to14 inch soil cover. Engineering controls are necessary to prevent damage to the soil cover by burrowing animals and ATV use. Institutional controls and annual monitoring are also needed to assure the long-term effectiveness and permanence of the soil cover.

In **Alternative 4**, the same amount of contaminated soil is excavated as in Alternative 2. However, in Alternative 4 the contaminated soil is consolidated within an on-site repository with a protective cap that prevents water infiltration. Engineering controls are required to prevent damage to the repository from burrowing animals. Institutional controls and annual monitoring are needed to evaluate the integrity of the repository and the effectiveness of the clean fill and topsoil placed over residual contamination in both residential and non-residential areas.

In **Alternative 5**, contaminated soil is completely removed from the non-residential area and to a depth of 18 inches in residential areas, resulting in a slightly larger repository than Alternative 4. Contaminated soil is consolidated within an on-site repository with a

protective cap that prevents water infiltration. Engineering controls are required to prevent damage to the repository from burrowing animals. Institutional controls and annual monitoring are needed to evaluate the integrity of the repository and the effectiveness of the clean fill and topsoil placed over residual contamination in both residential and non-residential areas.

In **Alternative 6**, the same amount of contaminated soil is excavated as in Alternative 5 and placed in an on-site repository with a soil cover cap. The soil cover provides a physical barrier to contaminated soil but does not prevent water infiltration. Engineering controls are required to prevent damage to the repository from burrowing animals. Institutional controls and annual monitoring are needed to evaluate the integrity of the repository and the effectiveness of the clean fill and topsoil placed over residual contamination in both residential and non-residential areas.

While each of the Alternatives rely on engineering and institutional controls as well as annual monitoring to maintain long-term effectiveness of the remedy, **Alternative 2** leaves the least amount of contaminated soil at the Site and provides the most long-term effectiveness and permanence.

For each of the alternatives, the reliability of institutional controls is dependent on land owners and land users notifying proper authorities if contaminated soil is disturbed or if the repository is compromised.

4. Reduction of Toxicity, Mobility or Volume through Treatment.

The Superfund law places a preference on alternatives that include a physical or chemical treatment process to reduce or eliminate the hazardous nature of material, its ability to move in the environment and/or the quantity left after treatment.

None of the alternatives evaluated meet the statutory preference for reduction of toxicity, mobility or volume through treatment.

Alternative 2 significantly reduces the mobility of contaminants by removing the contaminated soil and placing it in an approved landfill which is managed to minimize contaminant transportation. There is no reduction in volume or toxicity.

Alternative 3 uses no treatment process and the composition of the contaminated soil is not altered. Soil cover provides no reduction of either toxicity or volume, but does reduce the mobility of the contaminants via wind and water erosion.

Alternatives 4, 5 and 6 provide no reduction in toxicity or volume; however, mobility is greatly reduced through disposal in an on-site repository.

5. Short-Term Effectiveness

This criterion evaluates the risks posed to the community and workers during construction of each alternative and the time it will take each alternative to achieve protection of human health and the environment.

There will be no closure or relocation of any business required during the implementation of any of the alternatives. **Alternatives 4, 5 and 6** pose more risk of exposure to workers due to increased soil handling and more risk of exposure to the community due to the longer construction times.

6. Implementability

The selected remedy must be technically and administratively feasible, and services and material needed to implement the remedy must be available.

The excavation associated with **Alternatives 2, 4, 5 and 6** is a relatively simple process with proven procedures. Excavation is a labor intensive process with little potential for automation. Standard clearing and grubbing as well as soil excavating, hauling, backfilling and grading techniques are used. Equipment and other services associated with excavation disposal are readily available.

The placement of a soil cover described in **Alternative 3** can be easily performed. Standard clearing as well as soil hauling, placement and grading techniques are used. The construction equipment is readily available from several vendors. Under **Alternative 3**, the grading and/or retention of the soil cover so as not to permanently alter unaffected property may be difficult. Also, if earthmoving activities are required after the soil cover is in place, the cover may be damaged or destroyed. Annual monitoring and O&M are also required to ensure that the soil cover remains intact and the remedy remains protective. Additionally, soil excavated for landscaping activities may require testing and special handling requirements.

Under **Alternatives 4, 5, and 6**, the complexity of the alternative is increased due to the design and construction of the on-site repository making them more difficult to implement. Design and installation of the Subtitle-C cap in **Alternatives 4 and 5** would be more difficult than the soil cover cap described in **Alternative 6**. Annual monitoring and O&M are required to evaluate the integrity of the repository.

The re-grading and re-contouring described in **Alternatives 5 and 6** may be difficult to perform in a manner that does not permanently alter drainage patterns.

All of the proposed alternatives require institutional controls to limit property use and soil disturbance and will require significant coordination with and cooperation of local government agencies and property owners.

7. Cost

Before selecting a clean-up plan, the Agencies must consider the construction and long-term operations and maintenance costs of each alternative.

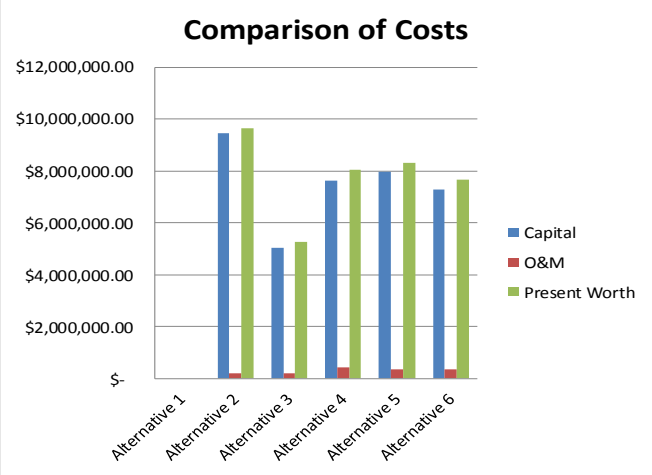

Figure 6: Comparison of Costs

A comparison of the alternative costs is shown in Figure 6. Capital costs represent the cost of constructing the remedy, O&M costs represent the cost of performing O&M activities over a 30 year time frame, and Present Worth costs represent the sum of Capital and O&M costs. The costs for each alternative are also listed in the summary of the remedial alternatives.

8. State Support

The UDEQ has been involved in conducting the RI and URFS and agrees with the EPA on the preferred alternative. However, UDEQ will provide final acceptance of, or comment on, the Preferred Alternative after considering public comment.

9. Community Acceptance

The EPA and the UDEQ must consider whether the local community agrees with the agencies' analysis and preferred alternative. Comments received on the Proposed Plan are an important indicator of community acceptance.

Community acceptance of the preferred alternative will be evaluated after the public comment period ends and will be described in the Record of Decision.

The **preferred alternative** for the Jacobs Smelter Superfund Site OU2 is **Alternative 2: Excavate contaminated material to a depth of 18 inches, backfill with clean soil, and dispose of excavated materials off-site.**

Summary of the Preferred Alternative

The preferred alternative will achieve substantial long-term risk reduction by removing and covering contaminated soil from the Site. Alternative 2 will reduce the risk associated with the contaminated soil in a reasonable time frame and provide more long term protectiveness than the soil cover or on-site repository alternatives. The implementability of off-site disposal will be easier than the siting, designing and construction of an on-site repository. Institutional controls such as environmental covenants, conservation easements or land-use zoning will be implemented to control future exposure to contaminants and to ensure that the remedy remains protective of human health and the environment.

Based on the information available at this time, the EPA and the UDEQ believe the preferred alternative will be protective of human health and the environment. The preferred alternative complies with ARARs, is cost effective, and utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable. The EPA and the UDEQ may change the Preferred Alternative in response to public comment or new information.

Community Participation

Over the past years, the EPA and the UDEQ have provided the public with information regarding the clean-up of the Jacobs Smelter Superfund Site through the following: public meetings; placing

information in the Site information repository; distributing fact sheets; and publishing notices in local newspapers.

The EPA and the UDEQ are distributing this Proposed Plan for public review and comment. Those who would like to know more about the information that was considered in selecting the Preferred Alternative may find that information in the OU2 Administrative Record (see page 5 for locations).

A 60-day public comment period on the Proposed Plan begins on September 21, 2015, and ends November 21, 2015. The EPA and The UDEQ are seeking public input on the agencies Preferred Alternative. Citizens may submit written comments by mail, fax or e-mail. The agencies also will host a public meeting on October 15 ,2015, at which time area residents will learn more about the Preferred Alternative and have an opportunity to ask questions. At that meeting, the public may also provide oral comments on the Proposed Plan and the Preferred Alternative.

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List of Acronyms and Abbreviations

ARAR	Applicable or Relevant and Appropriate Requirements
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act as amended 1986
EPA	Environmental Protection Agency
ERA	Ecological Risk Assessment
URFS	Updated Revised Feasibility Study
HHRA	Human Health Risk Assessment
mg/kg	milligrams per kilogram; equivalent to parts per million
NCP	National Contingency Plan
O&M	Operations and Maintenance
OU	Operable Unit
ppm	parts per million
PRGs	Preliminary Remediation Goals
RI	Remedial Investigation
Site	Jacobs Smelter Superfund Site
UDEQ	Utah Department of Environmental Quality
ug/dL	Micrograms per decaliter
NHPA	National Historic Preservation Act
PA/SI	Preliminary Assessment and Site Investigation
ROD	Record of Decision
BLM	Bureau of Land Management
UPRR	Union Pacific Railroad
NPL	National Priorities List
CSS	Contaminant Screening Study

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Proposed Plan for Jacobs Smelter Superfund Site Operable Unit 2

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