Flat Creek/IMM Superfund Site

Operable Unit 1, Superior, MT

U.S. EPA, Region VIII – Helena, MT *October 2011*

EPA Announces Proposed Plan

This Proposed Plan identifies the Preferred Alternative for cleaning up the contaminated soil at Operable Unit 1 of the Flat Creek/Iron Mountain Mine Superfund Site and provides the rationale for this preference. In addition, this Plan includes summaries of other cleanup alternatives evaluated for use at this site. This document is issued by the U.S. Environmental Protection Agency (EPA), the lead agency for site activities, and the Montana Department of Environmental Quality (MDEQ), the support agency. EPA, in consultation with the MDEQ, will select a final remedy for the site after reviewing and considering all information submitted during the 30-day public comment period. EPA, in consultation with the MDEQ, may modify the Preferred Alternative or select another response action presented in this Plan based on new information or public comments. Therefore, the public is encouraged to review and comment on all the alternatives presented in this Proposed Plan.

EPA is issuing this Proposed Plan as part of its public participation responsibilities under Section 300.430(f)(2) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This Proposed Plan summarizes information that can be found in greater detail in the RI/FS report and other documents contained in the Administrative Record file for this site. EPA and the State encourage the public to review these documents to gain a more comprehensive understanding of the site and Superfund activities that have been conducted sat the site.

This plan provides an overview of site history, contamination, and risk; summarizes the remedial alternatives EPA is considering; and details EPA's preferred remedial alternative and supporting rationale. Issuance of the plan denotes the start of a 30-day public comment period (October 3, 2011 to November 3, 2011). At the end of that period, EPA will review and consider all comments provided. EPA will then either move forward with the preferred alternative, modify it, or select another of the alternatives presented in this plan.

Information on how to provide comments or questions to EPA is provided on page 9, along with site contacts and public meeting details. Page 10 provides a list of commonly used environmental terms.

Understanding the Superfund Process

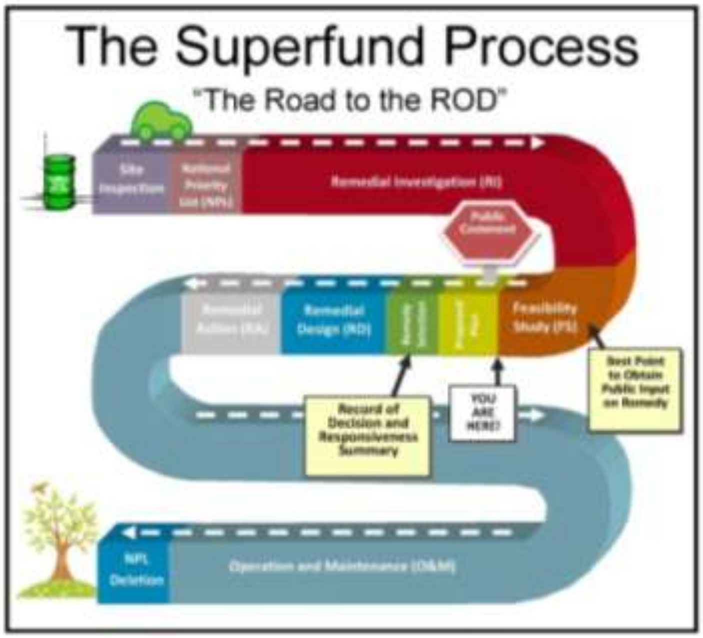
Issuance of this Proposed Plan is part of a step-wise process that starts with discovery and ends with cleanup (Exhibit 1). The remedial investigation (RI) and feasibility study (FS) for OU1 were completed in June and July 2011. These documents are prepared concurrently.

The RI characterizes site conditions, determines the nature of the waste, and assesses risk to human health and the environment. The FS uses information from the RI. It is the mechanism for identification, development, screening, and detailed evaluation of remedial alternatives capable of addressing risks to human health and the environment.

After the RI and FS reports are finalized, a preferred alternative for cleanup of OU1 is presented to the public in a Proposed Plan. A subsequent public comment period allows state and local governments and the public to provide comment on the preferred alternative.

The final phase of the RI/FS process is to prepare a Record of Decision (ROD). Following the receipt and evaluation of public comments and any final comments from MDEQ, EPA selects and documents the cleanup selection decision in a ROD.

Exhibit 1. Superfund Process



Site Background

The IMM is the primary source for contamination at the site. It operated from 1909 to 1930 and again from 1947 to 1953, producing silver, gold, lead, copper, and zinc ores. The now abandoned property includes tunnels, tailings, and the remnants of a mill and other mine buildings. The tailings from the mine contain elevated concentrations of metals. While the mine was in operation, tailings were disposed of along Flat Creek using gravity drainage. Those tailings have been distributed along Flat Creek as far as its confluence with the Clark Fork River.

Although wastes still exist on the IMM, most of the tailings were washed down onto the Flat Creek floodplain. Mine waste has also been imported into Superior by the local government and various individuals for use as fill material in yards, roadways, and other locations (e.g., the school track).

EPA conducted a preliminary assessment/site inspection (PA/SI) at the site in 2001, at the request of local government and DEQ. As a result, additional sampling and a time critical removal action (TCRA) were conducted in 2002. Wastes were stockpiled in a repository at the local airport. The PA was updated in 2007 in preparation for potential listing on EPA's National Priorities List (NPL). The listing occurred in 2009, which is when the RI began. Prior to being listed, the site was known as the *Superior Waste Rock* site. A subsequent TCRA was conducted in 2010 on the basis of the initial results obtained from the 2009 field events. A permanent repository (OU3) is currently under construction and will be used to inter the contaminated soil in fall of 2011.

Site Characteristics

The site is located in and around the community of Superior, in western Montana, approximately 47 miles east of the Idaho border (Exhibit 2). The Clark Fork River and Flat Creek are within its boundaries. The nearest community is St. Regis (14 miles west), and the nearest city is Missoula (58 miles east). Superior is located at exit 47 of U.S. Interstate 90 (I-90) and has an area of 1.18 square miles. Most of Superior lies north and west of I-90 and south and east of the Clark Fork River.

Exhibit 2. Site Location Map

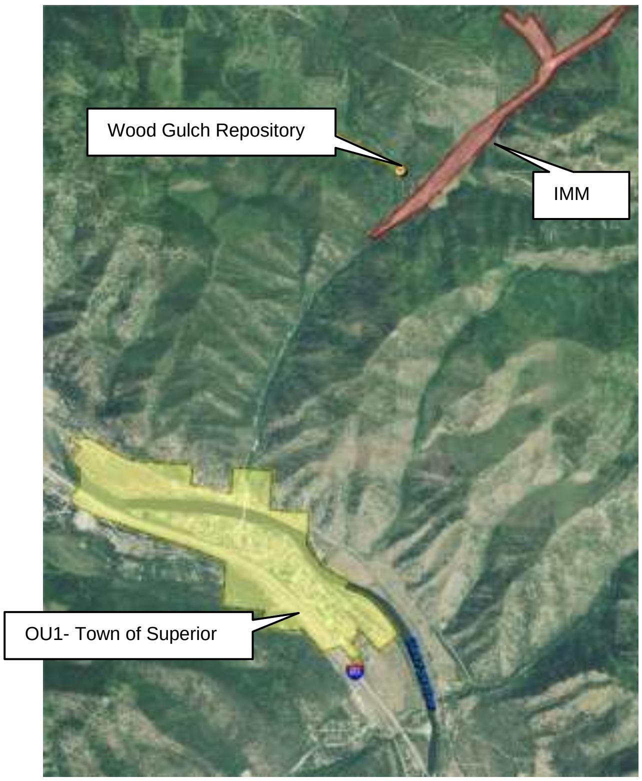
OU1 is one of three site OUs:

- **OU1 – Town of Superior**. This OU is limited to the shallow soils at residential and other properties in Superior.
- **OU2 – Flat Creek Watershed.** This OU2 includes the mine site where the contamination originated, the stream corridor down gradient of the mine, and the overall site groundwater and surface water issues.
- **OU3 – Wood Gulch Mine Waste Repository.** This OU in the mine waste repository that is being constructed specifically to accept wastes from OU1 and OU2.

Exhibit 3 shows the location of layout of the Town of Superior as well as the location of the Wood

Gulch repository. The airport repository is approximately one mile beyond the southeast boundary of the exhibit. As yet, there are no site boundaries or OU boundaries.

Exhibit 3. Site Layout



EPA designated the shallow soils of Superior as a separate OU so that the contamination that potentially presented the greatest risk to residents of Superior could be addressed in an expedited fashion, without having to wait for the investigation of the entire site to be completed. Issues in Superior beyond the shallow soils, such as groundwater and surface water, will be addressed in the overall site remedy under OU2.

The 2010 census showed a population of 812 in Superior, with 239 children enrolled in school. Within OU1, land ownership is primarily comprised of privately-owned residential parcels (85 percent) versus non-residential (15 percent). The non-residential properties include municipal, state, or federal land that is used for open space, roadways, or buildings (e.g. schools). A small percentage of properties are privately-owned for commercial purposes (e.g., gas stations, shops, etc.). The town of Superior has no zoning regulations so use at a given property can change over time. Therefore, future anticipated land use assumes that all properties could be residential.

RI Scope and Results

The RI included screening by visual observation and x-ray fluorescence (XRF) of all properties for which access was granted and for which there was at least a reasonable expectation that material might have been imported. Large, open fields that appeared to be unaltered were not sampled. EPA estimates that approximately 95 percent of all properties in town were screened. This is more than sufficient to characterize nature and extent of contamination in local soils. Most alleys were also screened to provide information on locations that had the potential to generate dust.

All samples collected during screening were analyzed for lead and arsenic by XRF. Samples with concentrations greater than 250 parts per million (ppm) of lead were sent for laboratory analysis of a list of contaminants typical of mining sites – the Target Analyte List. At least 5 percent of all non-elevated samples were submitted to the laboratory for QA purposes, and samples were sent in, as needed, to account for special requests or to address issues at a property.

A total of 7,209 samples from 588 properties were screened by XRF. Most (500) of those properties were residential properties. The screening included 6,197 residential samples and 1,174 non-residential samples. A total of 1,012 samples from 345 properties were submitted to the laboratory. This represents 14 percent of all samples collected and 59 percent of all properties screened. Only 279 (4 percent of all samples collected or 27 percent of the samples sent to the laboratory) of those samples were submitted because of lead concentrations above the 250 ppm screening level.

The results of the RI confirm the original understanding of the contaminant model for the site. Mine waste tailings were transported to town on an individual basis by land owners or government entities for use as fill material. Because of this random process of importing waste, there is no obvious spatial pattern to the distribution of contamination in the upper 12 inches of soils in OU1. However, clusters of contamination are seen in properties adjacent to where the material was brought in for use in construction of Mullan and River Roads. This random distribution is why EPA sampled the upper 12 inches of soil at almost every property in town. Approximately 95 percent of the properties located in town were sampled during the RI. This provided enough data to confirm the contaminant model and to select a protective remedy.

Mine waste material from the IMM was free, relatively easy to obtain, and had physical properties that made it desirable for use in driveways, road beds, and as fill for building pads. These same physical characteristics made it undesirable for areas such as gardens or children's play areas (e.g., sand boxes). As a result, it was not seen in those areas during the RI field sampling events. It was also reportedly used along the sides of properties to keep down the growth of weeds, and it was seen along the edges of some properties.

Key Findings from the RI

- There are no principal threat wastes at the site. Principal threat wastes are source materials considered to be highly toxic or highly mobile that generally cannot be reliably contained or would present a significant risk to human health or the environment should exposure occur.

- The contaminants of concern (COCs) in soils from OU1 identified in the human health risk assessment (HHRA) are lead, arsenic, and antimony.

- Most properties (88 percent) in Superior are in the low concentration category: less than 400 ppm of lead, 100 ppm of arsenic, or 130 ppm of antimony.

- A total of 29 properties (5 percent) (22 residential and 7 non-residential) had moderate concentrations of arsenic (100 to 400 ppm) or lead (400 to 1,200 ppm) in one or more of the three depth intervals sampled.

- A total of 42 properties (7 percent) (30 residential and 12 non-residential) had concentrations in the high category for arsenic (greater than 400 ppm) or lead (greater than 1,200 ppm) in one or more of the three depth intervals sampled.

- Elevated antimony concentrations generally ranged from 130 to 3,490 ppm, and were seen in properties that also had elevated concentrations of arsenic and/or lead.

- Contamination is scattered, rather than clustered in specific areas, confirming reports that waste was imported on a yard-by-yard basis as fill in driveways or other small areas. Mine waste was also used in municipal road construction and on municipal properties such as the school track and the fairgrounds.

- Emergency removals were conducted on 29 properties (25 residential and 4 non-residential) in 2010, addressing concentrations greater than 3,000 ppm of lead or 400 ppm of arsenic.

- Emergency removals significantly reduced the overall concentrations of contaminants at the site. However, moderate to high concentrations remain. These concentrations do not present an immediate unacceptable risk, but are likely to be addressed in the risk management decisions made for the site.

Summary of Site Risks

The source of excess concentrations of lead, arsenic, and antimony is believed to be mine waste from the IMM that was imported to individual properties, generally for use as fill in driveways and under structures. The material was free, easy to transport, and had characteristics that made it desirable for these uses.

Migration routes considered at OU1 include migration in soil and wind erosion. Migration of COCs in surface water and groundwater is possible and will be addressed under OU2. Ecological risk will also be addressed under OU2.

Current potential human receptors at OU1 include area residents and visitors. The routes of exposure for those receptors are:

- **Incidental Ingestion of Outdoor Soil.** Residents (especially children) may ingest soil that sticks to their hands during outdoor work or play. Contact is primarily with surface soil.

- **Ingestion of Indoor Dust.** Outdoor soil may be tracked inside or may enter by deposition of dust and ingestion of dust can occur.

- **Inhalation of Airborne Soil Particulates**. Particles of exposed contaminated soil may be suspended in air by wind or mechanical disturbance and be inhaled. This is generally minor compared to ingestion.

Additional pathways that were considered but not evaluated further in the HHRA because of low potential for risk are: dermal (skin) contact with soil and ingestion of homegrown produce.

The HHRA showed that there was significant hazard to receptors, particularly children, from concentrations of COCs in shallow soils. The most highly contaminated properties have been addressed through emergency removals conducted by EPA's Removal Group. However, elevated concentrations resulting in unacceptable long-term risk remain and will be addressed.

Preliminary Remedial Action Objectives

Preliminary Remedial Action Objectives (PRAOs) are goals developed by EPA to protect human health and the environment. These are the overarching goals that selected cleanup activities should strive to meet. EPA considers current and future site use when determining PRAOs. Future use for OU1 is assumed to continue to be residential and non-residential. The expectation and assumption is that remediation that results in acceptable risks for residential use would also result in acceptable risks for nonresidential uses.

The final RAOs for OU1 soils will be documented in the ROD. The PRAOs are:

1. Mitigate inhalation and ingestion exposures by human receptors to antimony and arsenic in soil resulting in cancer risks that exceed one additional case per one thousand individuals (1E-04).

2. Mitigate inhalation and ingestion exposures by human receptors to lead in soil resulting in risks exceeding a 5 percent probability of blood lead in children above 10 micrograms per deciliter (μg/dL).

3. Control erosion of antimony, arsenic, and lead in soil by wind and water to prevent the spread of contamination to unimpacted locations and media.

Preliminary Remediation Goals

A Preliminary Remediation Goal (PRG) is the average concentration below which a contaminant does not pose an unacceptable risk. For cancer risk, EPA prefers the risk for additional occurrences to be one in one million (1E-06) or less. This is referred to as the "point of departure." After that is established, other factors are taken into account to determine where within the acceptable range the remediation goals for a given contaminant at a specific site should be established. A 1E-06 risk is generally not possible at western mining sites, including the Flat Creek site. Risks from naturally occurring background concentrations in soils at such sites are typically in the 1E-04 to 1E-05 range. The RAOs for the Flat Creek site focus on keeping risk below 1E-04.

Selection of PRGs is based on PRAOs, current and expected future land uses, and ARARs. The PRGs are typically presented as chemical- and media-specific values that directly address the PRAOs.

The HHRA identified antimony, arsenic, and lead as the contaminants that constituted unacceptable risk at the site. The PRGs selected for those contaminants in site soils are: 130 mg/kg for antimony, 100 mg/kg for arsenic, and 400 mg/kg for lead. The final remedial goals will be documented in the ROD.

Properties Identified for Remedial Action

Based on the presence of exposure pathways, receptors (particularly children in the case of lead exposure), and elevated concentrations of COCs in shallow soils at properties where emergency removals had not occurred, the HHRA identified seven residential properties where exposures to antimony, arsenic and/or lead exceed the PRGs, indicating a need for cleanup of further investigation.

The HHRA focused on shallow soils and used yard-wide average concentrations for the three COCs. EPA's risk management team considered future land use and other factors to broaden the list of properties to be remediated. Non-residential properties were added, as the lack of zoning allows them to be used for residential purposes in the future. Subsurface depths were included, as disturbances (e.g. building or gardening) that would expose contamination in the 2 to 12 inch depth interval. Finally, individual quadrants, rather than yard-wide averages, were used to trigger cleanup for lead or arsenic. Yard-wide averages were used for antimony. As a result, 35 residential and 17 non-residential properties have been identified for potential cleanup.

Summary of Remedial Action Alternatives

A number of proven, remedial technologies and process options were used to develop remedial alternatives for cleanup. The five alternatives that were screened in the FS consisted of combinations of those technologies and process options.

As shown in Exhibit 4, the main differences between alternatives relate to the following:

Exhibit 4. Remedy Components by Alterative

Remedy Component	Alternative				
	1	2	3	4	5
Five-Year Reviews	●	●	●	●	●
Land use controls (as needed to prevent exposure to contaminated soils)		●	●	●	●
In-place capping of contaminated soil		●			
Excavation of contaminated soils			●	●	●
Offsite disposal at licensed solid waste facility (assumed to be 60 miles away)			●		
Disposal at local mine waste joint repository				●	●
Treatment of newly-excavated soils					●

- Are contaminated soils capped in place (Alt. 2) or excavated (Alts. 3, 4, and 5)?
- Are excavated soils disposed locally (Alts. 4 and 5) or at a licensed facility elsewhere (Alt. 3)?
- Are excavated soils treated prior to disposal (Alt. 5) or disposed untreated (Alts. 3 and 4)?

For the evaluation, assumptions were made regarding the number of properties that would potentially require cleanup based on the RI sampling results. Those assumptions are detailed in the FS and summarized in the description of EPA's Preferred Alternative (page 8). A total of 63 properties were identified for potential cleanup. The actual number of properties and volume of material to be remediated may increase in the design phase, after the ROD is issued, based on new information from properties not sampled during the RI or in areas where additional contamination may be discovered.

Each remedial alternative was evaluated to determine overall effectiveness, implementability, and cost. All alternatives (except Alternative 1) were deemed to have at least a moderate level or effectiveness and were retained for detailed analysis. Alternatives 2 through 5 include institutional controls (ICs). Five-year reviews are required if contaminated soils are knowingly left in place. In Alternatives 3, 4, and 5, such soils are expected to be limited to only a few properties (at most) due to inaccessibility from structures or obstructions. ICs related to the repository (OU3) or other areas of the site (e.g., under Mullan Road) would be addressed as site-wide ICs under OU2.

Alternative 1

- **No Further Action**

Est. Total Capital Costs: $0
Est. Total Operations and Maintenance (O&M) Costs (first 50 years): 0
Est. Total Periodic Costs (first 50 years): $480,000
Est. Construction Timeframe: None
Est. Total Alternative Cost (Present Value [PV]): $123,000

Superfund requires that EPA retain a no further action alternative as a baseline for comparison to other alternatives. This alternative would require that current site operations be suspended and no further action be taken. Periodic costs are for five-year reviews for a period of 50 years. The alternative is not protective and does not comply with PRAOs.

Alternative 2

- **In-Place Capping of Contaminated Soil**
- **Land Use Controls with Monitoring**
- **Five-Year Reviews**

Est. Total Capital Costs: $897,000
Est. Total O&M Costs (first 50 years): $784,000
Est. Total Periodic Costs (first 50 years): $680,000
Est. Construction Time: less than one season
Est. Total Alternative Cost (PV): $1,292,000

Alternative 2 provides protection of human health through in-place containment (cover) of contaminated surface soil using covers. It would also include construction of a permanent cover over the existing waste repository at the airport to ensure the interim cover installed in 2010 is protective. Two feet of clean cover would be placed over contaminated soils at residential and commercial properties to serve as a permanent cover. The repository at the airport would also receive an earthen cap to ensure protectiveness. Land use controls would be used to provide protection of human health and protect the remedy. Monitoring and five-year reviews would be performed under OU1.

Alternative 3

- **Excavation of Contaminated Soils**
- **Offsite Disposal at Licensed Waste Facility**
- **ICs and Five-Year Reviews**

Est. Total Capital Costs: $2,685,000
Est. Total O&M Costs (first 50 years): $0
Est. Total Periodic Costs (first 50 years): $490,000
Est. Construction Time: less than one season
Est. Total Alternative Cost (PV): $2,811,000

Most contaminated soils on individual properties would be excavated to a depth of 18 inches. Confirmation that soils remaining in excavations are below PRGs would be made using visual inspections and sampling and analysis. Excavations would be backfilled with clean soil, covered with topsoil and revegetated, or otherwise restored to match pre-existing surface conditions (e.g., fill and gravel for a driveway). The airport repository would be excavated.

Trucks would transport contaminated soils to the nearest available Class II solid waste facility (approximately 60 miles). Generally, exempt mining waste will be accepted at such a facility without prior treatment, and that assumption was made in the FS. However, final acceptance is determined by the individual facility.

In the event that contamination greater than PRGs is knowingly left in place at depth or under structures or obstructions, ICs and inspections during five-year reviews would be required on that property to limit exposure and ensure protectiveness. No maintenance or monitoring would be required. Maintenance of filled areas would be the property owner's responsibility.

Alternative 4

- **Excavation of Contaminated Soils**
- **Disposal of Contaminated Soils at Mine Waste Joint Repository**
- **ICs and Five-Year Reviews**

Est. Total Capital Costs: $1,369,000
Est. Total O&M Costs (first 50 years): $0
Est. Total Periodic Costs (first 50 years): $490,000
Est. Construction Time: less than one season
Est. Total Alternative Cost (PV): $1,496,000

As with Alternative 3, most contaminated soils would be excavated to a depth of 18 inches. Confirmation that soils remaining in excavations are below PRGs would be made with visual inspection and sampling and analysis. Excavations would be backfilled with clean soil and topsoil and revegetated, or otherwise restored to match pre-existing surface conditions. The airport repository would be excavated.

Unlike Alternative 3, trucks would transport contaminated soils to the mine waste joint repository in Wood Gulch (3 miles north of Superior). The repository will be constructed, operated, and maintained under OU3. ICs, five-year reviews, and maintenance and monitoring would be the same as those for Alternative 3.

Alternative 5

- **Excavation of Contaminated Soils**
- **Treatment of Newly-Excavated Soils**
- **Disposal of Contaminated Soils at Mine Waste Joint Repository**
- **ICs and Five-Year Reviews**

Est. Total Capital Costs: $2,048,000
Est. Total O&M Costs (first 50 years): $0
Est. Total Periodic Costs (first 50 years): $490,000
Est. Construction Time: less than one season
Est. Total Alternative Cost (PV): $2,174,000

Alternatives 4 and 5 are the same, except, prior to disposal, newly excavated soils would be treated with a stabilization/solidification agent at a staging area adjacent to the repository. ICs, five-year reviews, and maintenance and monitoring would be as for Alternatives 3 and 4.

Evaluation of Alternatives

The remedial alternatives were evaluated in detail with respect to seven of EPA's nine evaluation criteria (Exhibit 5). The criteria fall into three groups: Threshold, Primary Balancing, and Modifying. Each alternative (except no further action) must meet the Threshold criteria. The Primary Balancing criteria are used to weigh major trade-offs among alternatives. The Modifying criteria are State and public acceptance and can be fully evaluated only after public comment is received on this Proposed Plan.

Exhibit 5. FS Evaluation Criteria

Criterion	Description
Overall protection of human health and the environment	Determines whether an alternative eliminates, reduces, or controls threats to public health and the environment through ICs, engineering controls, or treatment.
Compliance with ARARs	Evaluates whether the alternative meets Federal, State, and Tribal environmental statutes, regulations, and other requirements that pertain to the site, or whether a waiver is justified.
Long-term effectiveness and permanence	Considers the ability of an alternative to maintain protection of human health and the environment over time.
Reduction of toxicity, mobility, or volume through treatment	Evaluates an alternative's use of treatment to reduce a) the harmful effects of principal contaminants, b) the contaminant's ability to move in the environment, and c) the amount of contamination remaining after remedy implementation.
Short-term effectiveness	Considers the length of time needed to implement an alternative and the risk the alternative poses to workers, residents, and the environment during implementation.
Implement-ability	Considers the technical and administrative feasibility of implementing the alternative, including factors such as the availability of materials and services.
Cost	Includes estimated capital and annual operations and maintenance costs, as well as present value cost. Present value cost is the total cost of an alternative over time in terms of today's dollar value. Cost estimates are expected to be accurate within a range of +50 to -30 percent.
State/Support agency acceptance	Considers whether the State agrees with the EPA's analyses and recommendations, as described in the RI/FS and proposed plan.
Community acceptance	Considers whether the local community agrees with the EPA's analyses and preferred alternative. Comments received on the proposed plan are an important indicator of community acceptance.

The following is a discussion of how the various alternatives compare against the threshold and modifying evaluation criteria.

Overall Protection of Human Health and the Environment

All of the alternatives evaluated, with the exception of Alternative 1, are protective of human health and the environment. Alternative 2 addresses the PRAOs primarily through in-place capping of contaminated soils using covers to reduce risks from contact with these materials. Capping provides an exposure barrier to the contaminated soils. However contaminated soils still remain beneath covers across a large extent of the site and could pose risks if the covers are compromised.

Alternatives 3, 4, and 5 address the PRAOs primarily through excavation and disposal of contaminated soils. Long-term protection of human health and the environment is more certain than alternatives that leave contaminated soils in place. Alternative 3 uses offsite disposal at licensed solid waste disposal facilities and Alternatives 4 and 5 use on-site disposal at the Wood Gulch repository.

Alternative 5 the contaminated soils are treated using solidification/stabilization prior to disposal. Thus overall protection of human health and the environment is more certain than alternatives that do not employ treatment.

Compliance with ARARs

Alternative 1 is not compliant with ARARs since no further action is taken. All remaining alternatives are compliant. These include location- action-, and chemical-specific ARARs.

Long-term Effectiveness and Permanence

No additional cleanup measures are initiated under Alternative 1, and contaminated soils are left exposed. Alternative 2 addresses contaminated soils primarily through in-place capping using covers to reduce risks from contact with these soils. Capping provides an exposure barrier to the contaminated soils. However, contaminated soils still remain beneath covers across a large extent of OU1 and could pose risks if the covers are compromised. Thus, long term effectiveness and permanence is not as certain as for Alternatives 3, 4, and 5 where contaminated soils are removed for disposal.

Long-term effectiveness and permanence is highest for Alternative 5, as newly-excavated contaminated soils are treated via solidification/ stabilization prior to disposal at the on-site repository. Treatment provides added protection from leaching of contaminants to surrounding soils and groundwater.

Reduction of Toxicity, Mobility, or Volume of Contaminants through Treatment

Alternatives 1 through 4 provide no treatment. Therefore, they do not reduce toxicity, mobility, or volume of contaminants through treatment. By contrast, Alternative 5 treats contaminated soils by solidification/stabilization prior to disposal in the on-site repository. Treatment would provide additional protection to surrounding soils and groundwater from contaminated soils that are potentially leachable.

Short-Term Effectiveness

Alternative 1 uses no additional cleanup measures and contaminated soils are left exposed. Thus there are no short-term effectiveness issues.

The remaining alternatives address short-term risks to workers, the community, and the environment. Alternative 2 has the smallest disturbance (construction of covers) to contaminated soils. Its disturbance is primarily at the surface and entails the importation and placement of clean cover material over the contaminated soils. Trucks used to haul offsite borrow used to construct the covers slightly increase short-term risks to the community. Transport and placement of borrow has potential environmental impacts from equipment emissions and disturbance of borrow locations.

Alternatives 3, 4, and 5 involve excavating contaminated soils, which creates a greater short-term disturbance. They also require importation of greater amounts of imported material for backfill of excavations. Transport of borrow materials for backfilling excavations increases truck traffic and related risks workers and to the community as compared to Alternative 2.

With Alternatives 3, 4, and 5, hauling of contaminated soils for disposal increases short-term risks. Risks increase with distance traveled and population density. As such, risks are highest for Alternative 5, which specifies disposal at an off-site, licensed, solid waste facility.

For Alternatives 2, 3, 4, and 5, short-term risks to workers would be mitigated through use of safety measures such as PPE. Short-term risks to workers, the community, and the environment could be mitigated through measures such as water-based dust suppression, traffic controls, and worker training. Land use controls could be quickly implemented to address potential exposure to contaminated soils.

Implementability

Alternative 1 requires no further action other than 5-year site reviews, so this alternative has no implementability issues.

For Alternative 2, the construction resources and materials needed to construct the quantity of covers should be available, but borrow materials would require transportation to properties requiring covers. There may be difficulties transitioning covers into existing grades on properties that are relatively level while still facilitating residential uses. There may be additional difficulties associated with implementation of ICs and access controls. Maintenance of covered areas and monitoring, especially on residential properties, could provide difficulties in the future.

For Alternatives 3, 4, and 5, excavation of contaminated soils could be difficult in areas of underground utilities, trees, roads, and near structures. The construction resources and materials needed to backfill excavations should be available, but borrow materials would require transportation to the properties requiring backfill. Logistical coordination is needed since both contaminated soils and offsite borrow would be transported simultaneously.

Alternative 3 specifies offsite disposal of large volumes of contaminated soils and will require coordination with trucks transporting backfill to excavation areas as well as additional coordination with the offsite disposal facilities. The ability to obtain the necessary approvals and the logistics of transporting and disposing of large volumes of contaminated soils for long distances to offsite disposal facilities decreases the implementability of this alternative.

Alternative 5 has an additional challenge to implementability in the form of stabilization which requires additional coordination for delivery of stabilization agents as well as implementation of the treatment process before disposal at the Wood Gulch Repository.

Cost

The estimated present worth cost of Alternative 1 is the lowest, as that alternative requires only implementation of 5-year reviews. For the remaining alternatives, the cost from lowest to highest is: Alternative 2, 4, 3, and 5. The estimated present worth cost of Alternative 2 (capping) is approximately half that of the most expensive alternative (Alternative 5). Alternatives 3 and 4 differ in cost primarily because Alternative 3 requires off-site disposal and Alternative 4 uses the on-site Wood Gulch Repository. Alternative 5 is the most costly alternative, because it requires the additional step of treatment of newly-excavated wastes prior to disposal.

Short-Term Effectiveness

MDEQ generally concurs with EPA's selection of Alternative 4 for the Preferred Alternative. Final concurrence has not yet been obtained.

Community Acceptance

Community acceptance will be evaluated after the public comment period ends and will be described in the ROD for the site.

EPA's Preferred Alternative (Alternative 4)

EPA's Preferred Alternative for cleanup of contamination at OU1 is Alternative 4 (*Excavation and Disposal of Contaminated Soils at the Mine Waste Joint Repository*). Alternative 4 provides protection of human health through excavation of contaminated soils at individual properties and at the repository at the airport. Disposal of contaminated soil would be at the newly constructed Mine Waste Joint Repository in Wood Gulch.

Est. Total Capital Costs: $1,369,000
Est. Total O&M Costs (first 50 years): $0
Est. Total Periodic Costs (first 50 years): $490,000
Est. Construction Time: less than one season
Est. Total Alternative Cost (PV): $1,496,000

The Preferred Alternative offers an equal level of overall protectiveness of human health and the environment and compliance with ARARs as Alternatives 3 and 5 at a significantly lower cost. It is protective of human health and the environment and complies with ARARs. The Preferred Alternative is the most implementable of all alternatives, and has equal or better short-term effectiveness. As with Alternatives 2 and 5, it keeps the excavated soils in the general area where they were produced, reducing energy costs for transportation and minimizing transportation-related safety issues.

Unlike Alternative 2, the majority of contaminated soils is removed from individual properties and the airport repository and is consolidated in a single location that can be efficiently managed and monitored. Excavation offers less long-term disruption to local residents than capping and removes the perceived stigma of contamination on a residential property. Alternative 5 provides treatment, but the difficulties and additional costs to implement treatment outweigh the limited benefit due to relatively low concentrations of contaminants in newly-excavated soils.

The primary implementation details are:

- During construction, water or chemical-based suppression would be used to limit dust. Temporary lay down areas and access roads would be constructed to limit disturbance of contaminated soil during removal.
- Clean soil would be brought from offsite and analyzed for contaminants before use.
- If elevated contamination is knowingly left in place (e.g., under structures) property-specific ICs would address exposure. Such ICs are expected to be limited to only a few properties - at most. Five-year reviews would be required in this instance, and the community would be kept informed during implementation and by the 5-year reviews.

The summary of the major components of this remedy and their associated quantities is shown in Exhibit 6.

Exhibit 6. Remedy Summary

Remedial Component	Unit	Quantity
Surface Area of Removal	Acres	6.2
Contaminated Soil Removed	Loose Cubic Yards	29,904
Gravel Required for Excavations		1,207
Backfill Required for Excavations		11,257
Topsoil Required for Excavations		4,438
Residential Properties Remediated	Each	35
Non-Residential Properties Remediated	Each	17

Quantities summarized in this exhibit are contained in the FS.

Based on the HHRA and the subsequent risk management decisions, the residential properties included for cleanup are: RY007, RY008, RY021, RY023, RY026, RY036, RY043, RY061, RY086, RY089, RY091, RY092, RY095, RY101, RY102, RY108, RY130, RY144, RY148, RY160, RY176, RY193, RY234, RY257, RY271, RY277, RY284, RY352, RY422, RY483, RY485, RY523, RY597, RY600, and RY616. The non-residential properties are: RY097, RY098, RY099, RY100, RY111, RY115, RY136, RY146, RY213, RY289, RY332, RY366, RY369, RY386, RY398, RY402, and RY627. These properties are shown above in purple to illustrate their distribution throughout the community. They are not identified to protect owner privacy.

Opportunities for Public Involvement

Public Meeting

EPA will provide a short presentation about the proposed plan at the public meeting. It's a great opportunity to learn more about the details.

Flat Creek/IMM Superfund Site
Public Comment Meeting

October 12, 2011
6:30 to 8:30 pm
Ambulance Facility
1202 5th Ave. East St
Superior, MT

If you like, you can provide your comment orally at the public meeting, and the meeting stenographer will record it.

Contacts

If you have questions or need additional help, please feel free to contact the following representatives:

U.S. EPA, Region 8
Helena, MT
1-866-457-2690 (toll free)

Leslie Sims
Remedial Project Manager
(406) 457-5032
Sims.leslie@epa.gov

Montana DEQ
Helena, MT
Daryl Read
State Project Officer
(406) 841-5040
dread@mt.gov

Written Comments

The public has 30 days to comment on this Proposed Plan. The public comment period runs from October 3, 2011 to November 3, 2011. You can submit a comment in writing (by mail, email, or at the public meeting).

The mailing address for written comments is:

Leslie Sims
U.S. EPA, Region 8, 10 West 15th Street, Suite 3200, Helena, MT 59626
sims.leslie@epa.gov

Documents

All public project reports and documents are available for viewing at EPA's website or at one of the document repositories. These are also excellent sources for all sorts of project information (fact sheets, brochures, etc.).

www.epa.gov/region8/superfund/mt/flatcreek/index.html

EPA Superfund Records Center
10 West 15th Street, Suite 3200, Helena, MT

Mineral County Courthouse
300 River Street, Superior, MT

Useful Terms

Understanding environmental cleanup can be daunting for the average person. The following are definitions of commonly used terms at the site to aid your understanding of this document.

- **Applicable and relevant or appropriate requirements (ARARs).** Any state or federal statute that pertains to protection of human life and the environment in addressing specific conditions or use of a particular cleanup technology at a Superfund site.
- **Exposure.** The amount of pollutant present in a given environment that represents a potential health threat to living organisms.
- **Exposure Pathway**. The path from sources of pollutants via, soil, water, or food to man and other species or settings.
- **Institutional Controls (ICs).** ICs are actions, such as legal controls, that help minimize the potential for human exposure to contamination by ensuring appropriate land or resource use.
- **National Priorities List (NPL).** EPA's list of the most serious uncontrolled or abandoned hazardous waste sites identified for possible long-term remedial action under Superfund. A site must be on the NPL to receive money from the Trust Fund for remedial action.
- **Operable Unit (OU).** A designation based on geography or other characteristics that defines a specific area of a site and enables the Superfund process to move forward in different areas at different times, speeding up the overall cleanup process at the site.
- **Operation and Maintenance (O&M).** Activities conducted after a Superfund site action is completed to ensure that the action is effective.
- **Present Value**. The present worth (of a sum payable in the future) calculated by deducting interest that will accrue between the present and future date.
- **Remedial Action (RA)**. The actual construction or implementation phase of a Superfund site cleanup that follows remedial design.
- **Interim Removal Action.** Short-term immediate actions taken to address releases of hazardous substances that require expedited response.
- **Record of Decision (ROD)**. A public document that explains which cleanup alternative(s) will be used at NPL sites where, under CERCLA, the Superfund Trust Funds pay for the cleanup.
- **Superfund.** The program that funds and carries out EPA solid waste emergency and long-term removal and remedial activities. These activities include establishing the NPL, investigating sites for inclusion on the list, determining their priority, and conducting and/or supervising cleanup and other remedial actions.

US Environmental Protection Agency
10 West 15th Street, Suite 3200
Helena, Montana 59626

Attn: Leslie Sims

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Please look inside for EPA's Proposed Plan for cleanup and for information on the upcoming public meeting!