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Ref: 8EPR-SA

ACTION MEMORANDUM

SUBJECT: Documentation of a second Removal Action (RV#2) at Standard Mine near Crested Butte, Gunnison County, Colorado, and to request an exemption from the $2M and 12-month Statutory Limits pursuant to the "Consistency Exemption" found at 40 CFR 300.415(b)(5)(ii).

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THROUGH: Johanna Miller, Supervisor
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TO: David A. Ostrander, Director
Preparedness, Assessment, & Emergency Response Branch

Site ID#: 08JM

I. PURPOSE

The purpose of this Action Memorandum is to request and document approval of a combined Removal and exemption from the $2 million and 12-month statutory limits for the Removal Action described herein for the Standard Mine Site (the Site) in Gunnison County, Colorado (See Attachments 1 and 2). This Action Memorandum provides a description of the threats and planned response actions for this 2007 construction season at the Standard Mine. This work is needed to complete work initiated in 2006 under a previous Action Memorandum (dated June 9, 2006) to mitigate the release of hazardous substances that pose significant threats to public health and welfare and the environment. However, as discussed further in this Action Memorandum the logistical constraints of the short construction season dictate that response actions be conducted in phases and thus likely continued into subsequent years.

The Site is currently on the National Priority List (NPL) and the Removal Program has been coordinating extensively with the Site Remedial Project Manager. Therefore, these Removal Actions will be appropriate and consistent with the anticipated Remedial Action to be taken.

This Removal Action (RV#2) addresses the need to mitigate threats to public health and environment and to the public drinking water source for the Town of Crested Butte. The threat is

posed by high concentrations of lead, arsenic, zinc and cadmium and other metals in waste piles from abandoned mining operations within the Site boundaries and a tailings impoundment dam. The piles and tailings impoundment contribute loading of heavy metals into Elk Creek, which then subsequently loads into Coal Creek. The drinking water intake for the Town of Crested Butte lies downstream on Coal Creek. The elevated levels of metals in the waste piles and tailings impoundment, which are actively eroding and/or leaching into Elk Creek; and the potential for future failure of the tailings impoundment resulting in mass loading of metals-laden tailings into Elk Creek dictate a need for a Removal Action. Because the Site was closed for the winter, a planning period was available during which time an Engineering Evaluation/Cost Analysis (EE/CA) was prepared thereby initiating a Non-Time-Critical Removal Action. Site conditions meet the criteria for initiating a Removal Action under 40 CFR Section 300.415(b)(2) of the National Contingency Plan (NCP) and meet the requirements for exemption from the $2 million and 12-month limits.

II. SITE CONDITIONS AND BACKGROUND

A. Site Description

The Site ID number is 08JM. Site conditions are such that RV#2 has been classified as Non-Time-Critical. Please refer to the previous Action Memorandum, dated June 9, 2006, for a detailed description of the Site Evaluation, Physical Location, Site Characteristics and information on the release or threatened release into the environment of a hazardous substance, or pollutant or contaminants. These conditions are unchanged and still present the same threat to human health and environment as stated in the 2006 Action Memorandum.

B. Other Actions to Date

1. Previous actions

The Removal Program initiated work at the site June 26, 2006, in accordance with the Action Memorandum signed June 9, 2006. The previous actions were designed to mitigate the on-going releases of hazardous substances from the Site as well as facilitate the implementation of long-term source control. Additionally, Investigation/Design Work was conducted to characterize the nature and extent of source material, to allow for a more thorough assessment of clean-up options and to support long-term source control measures for the Site. Below is a listing of tasks completed under the previous Action Memorandum:

a. Road improvements (i.e. "Roll & Dip" structures) to enable vehicles and other equipment to access the Site and to move water off the road;
b. Relocation of on-site debris. General "policing" of the Site to remove debris, not waste material, from the work areas. This material was

consolidated on-site;

c. De-water and lining of the tailings impoundment to eliminate contact between run-off and tailings; to reduce seepage from this feature into Elk Creek; and prepare the tailings impoundment for subsequent removal;
d. Re-contour the topography on-site to divert surface water run-off away from the source areas to further enhance stability of the area and reduce loading to Elk Creek;
e. Install erosion control features to reduce the scouring of the waste units into Elk Creek;
f. Re-route the adit drainage from "Level 1" of the mine;
g. Channelization of Elk Creek via concrete blocks to shield Elk Creek from direct contact with the mine waste units and contaminated soils found on-site by keeping the Creek in its channel;
h. Conduct high resolution imaging of the Site to produce an accurate digital plan view of the Site.
i. Survey work to delineate mine claims, property boundaries, and Site features;
j. Evaluation of potential repository sites; and,
k. Develop an alternative analysis of potential repository areas with appropriate design considerations;

Due to the short construction season, all mitigation work needed for the Site could not be completed within 12 months time. Additionally, because of the time required to complete the EE/CA the ability to complete removal work within 12 months time was further delayed. This was anticipated and discussed in the previous Action Memorandum.

Additionally, the Remedial Program conducted numerous sampling events throughout the 2006 season as part of the Remedial Investigation (RI) to characterize the Site and to collect data for the Baseline Human Health and Ecological Risk Assessments.

2. Current actions

Currently there are no actions occurring on-site; the Site is still "closed" due to winter conditions. During the 2007 construction season there will be concurrent Remedial and Removal Activities at the Site.

III. THREATS TO PUBLIC HEALTH OR WELFARE OF THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

Please refer to the previous Action Memorandum, dated June 9, 2006, for a detailed description of the threats to public health or welfare or the environment. Sample results

discussed in the 2006 Action Memorandum show heavy metals such as lead, arsenic, zinc and cadmium are present in waste materials at the Site in high concentrations; this is true for the waste rock piles and the tailings impoundment dam, both its surface water and soils. These high concentrations of metals present numerous threats to public health and/or the environment. One such threat is the occurrence of heavy metals loading into Elk Creek and subsequently into Coal Creek, which is the primary supply of drinking water for the Town of Crested Butte. Currently contaminated material is eroded and moved off-site by wind and stormwater and snowmelt run-off in a manner that is unchecked and uncontrolled. This off-site migration of materials causes bulk source loading of contaminated sediments into Elk Creek. Additionally, an event could occur that causes a catastrophic failure of either the tailings impoundment dam or waste rock piles resulting in mass loading of contaminated media into Elk Creek. Furthermore, sampling analyses, which were also described in the 2006 Action Memorandum, show the waste materials on-site have potential to leach, creating another mechanism by which contamination can migrate off-site. It is known the metals found in these waste materials can be toxic to aquatic ecosystems but the extent to which this occurs is dependent upon the release that occurs. The potential for direct contact with the mining wastes by recreational users is also of concern.

These site conditions are unchanged and present a threat to human health and environment as stated in the 2006 Action Memorandum. All reports cited in the previous Action Memorandum and in this document can be found in the Administrative Record File. The Site conditions cited previously continue to meet the same criteria as stated in the 2006 Action Memorandum for initiating a Removal Action. The criteria applicable, as defined in 40 CFR Section 300.415(b)(2) of the National Contingency Plan (NCP) are as follows:

(i) *Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants;*

(ii) *Actual or potential contamination of drinking water supplies or sensitive Ecosystems;*

(iv) *High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface, that may migrate;*

(v) *Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released;*

(vi) *The availability of other appropriate federal or state response mechanisms to respond to the release.*

These threats have been further characterized in the draft Baseline Ecological Risk Assessment (BERA) and the draft Baseline Human Health Risk Assessment (BHHRA), which are both part of the RI for the Site (See Administrative Record). These documents have been distributed to stakeholders for external review and are expected to be finalized by fall of 2007. Both documents further substantiate EPA's assessment, documented in the 2006 Action Memo, that conditions pose a threat to public health and the environment in the area at or near the Site. These risk assessments were conducted in accordance with EPA approved methodologies and are consistent with the Agency's standards; a summary of the findings follows.

A. Baseline Ecological Risk Assessment

The BERA describes the likelihood, nature and extent of adverse effects to ecological receptors that are exposed to site contaminants in Elk Creek and Coal Creek. Four exposure pathways were evaluated: direct contact of fish and benthic invertebrates with surface water; direct contact of benthic invertebrates with sediment; direct contact of terrestrial plants and soil invertebrates with on-site soil; and ingestion of on-site soil, surface water and food items by birds and mammals. Analysis of each pathway was performed using multiple approaches, where possible, and conclusions were based on a weighted consideration of all available data.

It was determined that mining-related releases from the Standard Mine into Elk Creek create conditions substantially toxic to fish in Elk Creek, and that these conditions are minimally to moderately toxic to fish in Coal Creek. For example, aquatic receptors in contact with dissolved metals found in Elk Creek are exposed to conditions having a high frequency of acute and/or chronic Hazard Quotient (HQ) values ranging between 10-100 for cadmium, copper, lead, manganese, silver and zinc. Typically if the HQ exceeds 1 the risk is a concern and a direct relationship exists where the probability and/or severity of effects increases as the HQ value increases. Additionally, site-specific surface water toxicity testing shows that surface water in Elk Creek is highly toxic to fish since there were significant increases in mortality for test organisms (rainbow trout fry) when in contact with water samples collected from Elk Creek versus test organisms in contact with water samples collected from the reference locations. Toxicity tests evaluating effects from exposure to water samples from Coal Creek shows low mortality, indicating dilution of Elk Creek water once it meets Coal Creek. Site-specific surveys of fish populations show that some fish were found at the confluence of Elk and Coal Creeks, although those found were considered to be at lower density and mass than expected. No fish are present further upstream in Elk Creek. This evidence supports the conclusion that the releases from the Site are substantially toxic to Elk Creek. Further, while water discharged from Elk Creek into Coal Creek elevates the concentrations of metals in the receiving stream; this discharge seems to have only a minimal to moderate toxicity on fish.

Risks to other receptors evaluated showed similar findings as those for fish exposed to surface water. Aquatic receptors associated with contaminated sediment and sediment porewater from Elk Creek reside in conditions with high levels of metals. The HQ values for sediment related receptors demonstrated a high frequency of values that ranged from 10-100 for numerous chemicals of concern; again, indication that these receptors had a substantially higher risk when exposed to these media. Similar to findings for surface water, the risk associated with sediment and/or sediment porewater was lower for receptors in Coal Creek. Assessment of risk to benthic organisms was likewise similar to the findings for fish exposed to surface water. Benthic community surveys show the communities are of lower quality than would be expected for Elk Creek.

Surveys of the benthic invertebrates in Coal Creek show this stream may be slightly impaired but the effect is minor.

Risks to the terrestrial system, which includes plants, soil organisms, birds, and mammals, had more uncertainties associated with the results than those predicted risks discussed previously for the aquatic receptors. Overall there were some HQ exceedences in soils for plants and soil invertebrates but the lack of background soil samples makes it difficult to assess the full impact and meaning of these results. Indicator species were selected to determine risks to birds and mammals instead of site-specific toxicity assessments. The calculations revealed that the risk is below a level of significant concern for most species; however, there are four species (American robin, northern flicker, masked shrew and deer mouse) for which the toxicity HQ values were greater than 1, meaning there is some level of concern associated with intake of contaminants from soil and/or diet. The type and method of calculation for the HQ values is such that there is evidence that the magnitude and/or severity of effects are likely to be low to moderate for even those four species. While some findings in the BERA contain inherent uncertainties, overall the findings show the conditions at the Standard Mine Site pose a threat to the environment because of the impacts on nearby ecosystems.

B. Baseline Human Health Risk Assessment

The BHHRA document assesses the potential risks to humans from site-related contamination assuming no steps are taken to remediate or reduce human contact with the contaminated environmental media. For the purposes of the BHHRA, the area was divided into two main sections – the Mine Facility Area and the Site Drainage Area. Each of these areas poses different threats to humans through different exposure routes. The populations whose contact with the Site poses chief concern at the Mine Facility Area were Hikers and ATV (all terrain vehicles) Riders; at the Site Drainage Area these were, Recreational Fisherman and Recreational Visitor (Child). For each population within the area, there are different exposure pathways to evaluate and each of these pathways may have different chemicals of concern. At the Mine Facility Area the routes of exposure are through soil, surface water and/or sediment whereas the route of exposure for populations at the Site Drainage Area is through surface water, sediment and/or ingestion of fish. Further, each individual that could be exposed to site-related contamination may have different levels of exposure based on the individuals' own physical make-up and the duration and frequency of their visits to one of the two areas of concern. To account for this, intake calculations are focused on a range of doses, usually intakes that are average (called the Central Tendency Exposure, CTE) and those that are upper end the range (Reasonable Maximum Exposure, RME).

Once the aforementioned information regarding exposure pathways is identified, additional considerations and calculations are completed and evaluated such as the rate at which contaminants are expected to become airborne as a result of the activity; what is

the bioavailability of the chemical; and assessment of the toxicity of the chemical, whether or not it will cause some cancer or non-cancer effect based on the dose, route and duration of exposure. Subsequently, a Hazard Quotient (HQ), similar to what was used in the BERA, is calculated. If the HQ is equal to one, then there is no appreciable risk that non-cancer effects will occur but if the HQ is greater than one there is some possibility for non-cancerous effect. The greater the HQ is greater the risk. Also, HQ values for multiple chemicals can be summed to develop a Hazard Index (HI). The application of the HI is similar to the HQ – values equal to 1 pose little concern but the greater the value, the greater the risk. To evaluate cancer risks requires different considerations to calculate the Excess Cancer Risk, the results of which are compared the value 1E-04, the level EPA considers risks to be sufficiently large that some action should be taken to reduce this risk.

From this evaluation it was concluded that recreational visitors to the Main Facility Area had exposures resulting in non-cancer risks below a level of concern for all receptors and all chemicals, except for manganese. ATV Riders had HI values for manganese exposure of 2 and 4, for adults and children respectively. Excess cancer risks do not exceed EPA's level of concern (1E-04) for any receptor or any chemical. Recreational visitors to the Site Drainage Area who are at risk of exposure to arsenic through ingestion of fish caught in Elk Creek or Coal Creek were found to be a low risk. Non-cancer risks and associated HI values are below a level of concern for all receptors; similarly the excess cancer risks do not exceed the 1E-04 level of concern. These results are an indication the health risk is below a level of concern unless activities result in the generation of elevated levels of dust.

Also evaluated in the BHHRA was the risk associated with exposure to lead present in media at the Site. Based on the exposure assumptions used for this portion of the assessment the levels of concern for female visitors, Hikers and ATV Riders are considered to be very low. This indicates the levels of lead in on-site soils will not likely pose a risk to recreational visitors, regardless of their activity.

IV. ENDANGERMENT DETERMINATION

Actual or threatened releases of hazardous substances from this Site, if not addressed by implementing the Removal Action described in this Action Memorandum, may present an imminent and substantial endangerment to public health or welfare or the environment.

V. EXEMPTION FROM STATUTORY LIMITS

A. Consistency Exemption

Exemption from the $2 million and 12-month statutory limits for the Removal Action described herein is necessary and appropriate to complete mitigation of release or

threat of release of heavy metals into Elk Creek, and Coal Creek downstream. The need for this exemption is the same as stated in the previous Action Memorandum and is two-fold. First, is a matter of timing and the second is for the anticipated long-term removal actions. As to the timing, the clean up will be greatly hampered by the extremely short construction season. Due to the elevation and alpine climate at the Site, snow normally limits working access until around mid-June. Likewise, autumn snows normally begin in earnest by early October and it is generally unwise to count on access past this time. This results in a construction season of little over three months in a normal year. This will therefore necessitate a phased approached for the implementation of any Removal work, extending the timeline beyond 12 months.

The NCP at 40 CFR 300.415(b)(5)(ii) allows for an exemption of these normal statutory limits if:

> "Continued response action is otherwise appropriate and consistent with the remedial action to be taken"

For the first construction season (Summer 2006) the anticipated and actual clean-up costs were below $2 million. In close coordination with the Remedial Program and the United States Forest Service (USFS), the Removal Program has conducted an evaluation of long-term source control actions for the waste materials in the various units (e.g. waste piles at Levels 1, 2 and 3 and the tailings impoundment), which have been presented in the form of an EE/CA and has elected to site a waste rock repository nearby. Cost estimates for construction of this repository were developed for the EE/CA and are also under $2 million (approximately $1.6 million) but do not include considerations for all work necessary at the Site. Specifically the EE/CA estimates cost for construction and completion of a repository; it does not include estimates for stabilization and restoration work needed in excavated areas or additional assessment (i.e. sampling and analysis) work needed to complete site clean-up. When all proposed project tasks are included, plus the cost of 2006 work already completed, the total cost is greater than $2 million, as outlined in Section VI. B and C.

While a ROD for the Site has not yet been issued, the mitigation activities completed in 2006 and the consolidation of waste materials in 2007 (and possibly subsequent years) are fairly universal actions for mine sites similar to Standard Mine. In fact, in 2002 the USFS drafted a preliminary EE/CA addressing the relocation of mining wastes on its portion of the Site to a nearby repository. Also site evaluations have concluded, as discussed in the Phase I EE/CA, that the steep terrain and the fact that Elk Creek currently runs directly through or adjacent to almost all of the waste units on site, it is necessary to relocate the wastes. The Removal Program has already taken steps to coordinate its investigation activities to help support the development of the RI and the Remedial Program has been in direct coordination on the development of the creation of the EE/CA. This approach has allowed for ample community and stakeholder input to

the project. For these reasons the Removal Actions taken at this Site will be both "appropriate and consistent" with the anticipated remedial actions. Given that, the proposed approach meets the criteria for the "consistency exemption" to the $2 million and 12 month statutory limits.

VI. PROPOSED ACTIONS AND ESTIMATED COSTS

A. Proposed Actions

1. Proposed action description

These tasks are proposed to finalize assessment of the selected repository site and to complete the mitigation of release from the tailings impoundment and waste rock. This work will address contamination at Levels 1, 2 and 3 including waste rock and the tailings impoundment dam. Waste materials at Levels 4, 5, 98 and 99 and the adit discharge water at Level 1 are being addressed by the Remedial Process.

This removal strategy will accomplish several goals; these are mentioned here as well as within the EE/CA for the Site. Removing the waste rock material and tailings impoundment dam structure to a consolidated, engineered, and properly maintained repository cell reduces and, in some cases eliminates completely, the threat posed by these waste materials. With the exception of work done under the 2006 Action Memorandum, which only served to temporarily and partially mitigate releases, site conditions are such that waste rock material is eroded and moved off-site by wind and stormwater and snowmelt run-off in a manner that is currently unchecked and uncontrolled. This off-site migration of materials causes bulk source loading of contaminated sediments into Elk Creek; excavating and moving this material into a repository will eliminate it from eroding into the creek. Additionally, the removal of this material will decrease leaching of heavy metals into Elk Creek. Currently, numerous seeps and springs flow through and have direct contact with waste material on-site; this is a situation responsible for acidic conditions and subsequent creation of leachate that is another source of loading of metals into Elk Creek. Finally, this removal strategy eliminates the threat of some event causing a catastrophic failure to the tailings impoundment or waste rock piles in which the entire mass of contaminated material could "wash" into Elk Creek or other areas down gradient of the Site. This loading of metals through erosion and leaching of contaminated soils and sediments and leachate water into Elk Creek, and the threats associated with it, will be greatly reduced by this removal strategy. If the Remedial Program develops remedial action goals and associated clean-up targets for the Site, these will be evaluated to determine if their inclusion into this RV#2 is practical and feasible. However, the adherence to these targets (if developed) is greatly dependent upon the geological setting and

conditions found throughout the excavation of waste materials.

Using information gathered during the 2006 work season, an EE/CA was done to aid in the selection of a repository location and to outline conceptual design of the repository. These actions will result in a repository located at the area known as United State Forest Service Site 2 (USFS Site 2) and will be designed with a 3H:1V side slope and a compacted soil cover with a riprap top cover. The following is a listing of tasks to be completed during RV#2:

a. Road improvements to maintain the condition of the access road as well as to improve roadways used in transport of material from the mine site area to the selected repository location;
b. Removal/Relocation of on-site debris from the work areas; this for general debris, not waste material;
c. Conduct preparatory work necessary at the selected repository location (i.e. clearing of trees, grading and excavation of topsoil);
d. Construct a permanent waste repository and associated infrastructure at the selected repository location;
e. Preparation of waste material for transport. Tailings material may require some form of additional de-watering and/or treatment measures prior to movement and placement in the repository;
f. Excavate, transport, placement, and compaction of tailings and waste rock materials and capping of those at the selected repository location;
g. Stabilization and/or re-vegetation of excavated areas and restoration of impacted stream segments;
h. Conduct sampling and analysis to support construction of the repository and to support excavation, stabilization, re-vegetation and restoration at construction areas;
i. Install erosion control features and/or re-contour the topography on-site to support construction and stabilization efforts and to reduce scouring or erosion into Elk Creek; and,
j. Restore power, phone and other utility services to support site work proposed herein.

2. Contribution to Remedial performance

The proposed action will support and compliment any future Remedial Actions. Removal of the tailings impoundment dam structure and waste rock piles at Levels 1, 2 and 3 will eliminate that source of loading to Elk Creek. In order to reduce the metals loading from the discharging adits and remaining waste rock piles, further investigation is needed to fully understand the extent of the problem, which is being conducted under the Remedial Process.

3. Description of alternative technologies

No alternative technologies are currently proposed for this Removal Action.

4. EE/CA

An EE/CA has been prepared for the determination of the most suitable method to affect long-term source control measures for the Site. The EE/CA was completed in two phases.

a. Phase I EE/CA - The Phase I EE/CA, Finalized April 2007, outlined potential repository areas and evaluated their suitability to hold waste material from the Site. Taken into consideration for this were numerous factors such as geology, topography, the distance from the potential repository area to surface water, haul route difficulties, and presence/absence of wetlands or TES. Analysis included research of USGS mapping of geologic features, on-site reconnaissance, test pit investigations, and sample collection for analysis of soil characteristics. From this evaluation, several areas were eliminated due to "fatal flaws" that made the area unacceptable to house a repository resulting in four most preferable areas for consideration. For example, one potential area, Area 99, was eliminated because it was mapped as a landslide feature and test pit investigations showed evidence that substantiated this. Additionally, EPA reviewed the potential for leaving the waste material in-place, referred to as potential repository location Level 1. Because of the proximity to surface water (i.e. it's adjacent to Elk Creek), the numerous springs, seeps and shallow groundwater and the inability to hold the estimated volume of material above the 100-year floodplain, it was determined an in-place closure or repository at Level 1 was not a preferred or stable location. A summary table outlining the comparison criteria as it applies to the four most preferable repository areas was given in Table 5-1 of the Phase I EE/CA and as Attachment 3 of this Action Memorandum.

The Phase I EE/CA was distributed to Federal and State agencies and community stakeholders for public comment during December 2006 and January 2007. No substantive comments were received disputing the findings in the Phase I EE/CA but there were several questions/comments EPA responded to; all of which can be found in the Administrative Record File. As a result of input and coordination with partnering agencies, EPA selected two locations for additional evaluation and analysis; this subsequent evaluation was presented in Phase II of the EE/CA.

b. Phase II EE/CA – The Phase II EE/CA, Finalized July 2, 2007, outlined a comparative analysis of four capping alternatives and two potential repository areas in accordance with the "Guidance on Conducting Non-Time-Critical Removal Actions Under CERCLA." The following Removal Action Objectives for RV #2 were developed and identified in the Phase II EE/CA:

- Reduce human and ecological exposure to metals by reducing metals loading from site soils and tailings.
- Reduce metals loading and risk to aquatic life in Elk Creek from surface water runoff and leaching from waste rock piles and tailings into Elk Creek.
- Reduce erosion of tailings and waste rock to Elk Creek, Coal Creek and the Crested Butte drinking water supply.
- Eliminate the threat of a catastrophic failure of the tailings impoundment by removing the material/structure.

These objectives serve as a basis upon which to evaluate the four capping alternatives and the remaining two potential repository areas for effectiveness, implementability, and cost. The evaluation and design concepts were developed assuming the tailings impoundment dam and waste rock piles located at Level 1, 2 and 3 would be included as part of the Removal Action. It was also assumed the adit discharge water and waste piles remaining at Levels 4, 5, 98 and 99 would be addressed under the Remedial Process.

Based on this evaluation, EPA and the USFS have selected USFS Site 2 as the permanent repository area (see Attachment 4). This repository will be designed to hold an estimated 80,000 cubic yards of material; it will have a 3H:1V side slope and 2% top slope design; and it will be closed with a compacted soil cover with a riprap top cover. The analysis in the Phase II EE/CA shows this alternative offers immediate protection to public health and the environment since it removes the tailings impoundment and waste rock piles from the drainage area and floodplain thereby eliminating erosion and leaching of those features into Elk Creek. The threat of a catastrophic failure of the tailings impoundment dam is eliminated by removing this structure from the Creek. Additionally the selected alternative provides an impermeable cover layer to minimize infiltrating water and subsequent leachate; it minimizes the repository footprint; locally available materials are used in contruction; and it provides immediate stability and reduced long-term Operations & Maintenance (O&M) via the riprap top cover.

The Phase II EE/CA was distributed to Federal and State agencies and community stakeholders for public comment May 24 through June 30, 2007. Comments were received will be addressed in the responsiveness summary; all of which can be found in the Administrative Record File.

5. **Applicable or relevant and appropriate requirements (ARARs)**

Because tasks to be completed during 2007 are different from those done in 2006, the Colorado Department of Health and Environment (CDPHE) and EPA worked to develop an updated list of ARARs for the Site. These can be found in Attachment 5 of this Action Memorandum.

6. **Project schedule**

Currently the Removal Program is working with the START and ERRS contractors to develop a more detailed Project Work Plan and Schedule. The proposed tasks will commence early July 2007, completing as many tasks as possible until weather conditions limit Site access.

B. Expended Extramural Costs

The table below outlines the extramural costs for work at the Site to date including all work completed during the 2006 season, as outlined in Section II.B.1 above, and work done for completion of the EE/CA process.

EXTRAMURAL COSTS FOR 2006

	Budgeted	Actual
START - Removal Assessment	$485,000.00	$435,495.00
START - Removal Support	$85,000.00	$74,075.00
ERRS	$550,000.00	$309,640.00
ERT	$46,000.00	$46,000.00
TOTAL COSTS	$1,166,000.00	$865,210.00

** START - Removal Assessment costs do not track toward the ceiling for the project ($1.3 million per the previous Action Memorandum) and subsequently do not apply to the $2 million limit. These are CERCLA 104(b) costs provided as information only.

C. Estimated Costs

A table containing cost estimates for the Removal project ceiling for the work anticipated to complete RV#2 is shown below. This table does not include any costs incurred for work conducted under the 2006 Action Memorandum. The mitigation work costs reflect the total ceiling for the project. Costs associated with ongoing CERCLA 104(b) tasks are also shown in the table containing estimated costs for the remaining investigation/design work. Because these task elements are considered CERCLA Section 104(b) costs, they do not track against the Site ceiling for purposes of the $2 million and 12 month limits. They are listed here for informational purposes only.

EXTRAMURAL COSTS:

Mitigation Work

Development/Construction of Repository Site, Excavate, Haul and Placement of Waste Material Into Repository	$1,650,000.00
Road Improvements (access road)	$30,000.00
Road Improvements (repository road)	$85,000.00
Preparation / Treatment (of tailings material)	$120,000.00
Site Restoration (for any excavated areas, both waste removal and development of clean fill materials)	$625,000.00
Site Stabilization (erosion controls)	$75,000.00
Construction Oversight (engineer oversight)	$55,800.00
Utilities / Decon / Mobilization / Fuel	$254,000.00
START Support (documentation)	$95,000.00
Subtotal, extramural costs	$2,989,800.00
Contingency (20%)	$597,960.00
TOTAL REMOVAL PROJECT CEILING	**$3,587,760.00**

Investigation/Design Work (Removal Assessment Costs per CERLCA 104(b))

Completion of TES Assessment	$60,000.00
Completion of Repository Design	$65,000.00
Development of Sampling Plan	$15,000.00
Sample Collection & Analysis	$20,000.00
Subtotal	$160,000.00
Contingency (20%)	$32,000.00

TOTAL REMOVAL ASSESSMENT COST **$192,000.00**

D. Cost Share

EPA is sharing the cost of site clean-up with the USFS. An Interagency Agreement (IAG) was developed between EPA and USFS for both Remedial and Removal work done in 2006; that IAG is currently being updated to reflect work planned for 2007 and future years, as needed. For work proposed by the Removal Program, as outlined previously in this memorandum, the cost share is based on the "waste in" to the repository. EPA developed waste volume estimates to determine amount of waste located on private property and the amount of waste located on public lands. It is expected USFS will pay for the portion of waste currently located on public land; EPA will pay the portion of waste currently located on private land, all of which will be outlined specifically in the updated IAG.

VII. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

Delayed or no action will increase public health risks and threats to the environment because the hazardous substances on site pose a health risk to any persons who visit the Site, as well as the wildlife in the area. The tailings impoundment dam instability is an on-going concern. The features at the Site will also continue to impact the quality of the water supply for the Town of Crested Butte.

VIII. OUTSTANDING POLICY ISSUES

USFS and EPA are currently developing the Memorandum of Understanding (MOU) for the repository to be built at the Site. The MOU, also referred to as the Repository Agreement, is similar to the IAG in that it outlines an agreement for what agency will do the work to develop the repository and place waste materials in it as well as what agency will conduct the post removal site control work at the repository.

IX. ENFORCEMENT

EPA has identified potentially responsible parties for the Site. Investigations are underway to assess their involvement as owners/operators of the Site and to subsequently determine their liability under CERCLA and their ability to pay. In addition, as mentioned previously, the USFS has Trust responsibility for and manages a portion of the Site. The Remedial and Removal Programs are actively working with the USFS on a cost share arrangement (see Section VI.D. above) to fund the cleanup effort, and all will be working cooperatively with the State. A confidential Enforcement Addendum was included with the

previous Action Memorandum; please refer to that document for updated information on enforcement activities.

The total EPA costs for this removal action based on full-cost accounting practices that will be eligible for cost recovery are estimated at:

Total Removal Project Ceiling	$3,587,760.00
EPA's Direct Intramural Costs	$200,000.00
Subtotal	$3,787,760.00
Regional Indirect Cost (35%)*	$1,325,716.00
ESTIMATED TOTAL EPA COSTS	**$5,113,476.00**

* Direct Costs include direct extramural costs and direct intramural costs. Indirect costs are calculated based on an estimated indirect cost rate expressed as a percentage of site-specific direct costs, consistent with the full cost accounting methodology effective October 2, 2000. These estimates do not include pre-judgment interest, do not take into account other enforcement costs, including Department of Justice costs, and may be adjusted during the course of the removal action. The estimates are for illustrative purposes only and their use is not intended to create any rights for responsible parties. Neither the lack of total cost estimates nor deviation of actual costs from this estimate will affect the United States' right to cost recovery.

X. RECOMMENDATION

This decision document represents the selected Removal Action for the Standard Mine NPL Site that is part of the Coal Creek watershed, in Gunnison County, Colorado, developed in accordance with CERCLA, as amended, and consistent with the NCP. This decision is based on the administrative record for the Site.

Conditions at the Site meet the NCP Section 300.415(b)(2) criteria for a Removal, and we recommend your approval of the proposed Removal Action. The total project costs if approved will be $5,113,476.00. This includes the costs for all the actions contemplated in this Action Memorandum. Of the total costs, an estimated $3,587,760.00 comes from the Regional removal allowance and constitutes the "Removal Ceiling."

Approve: _____ Date: 7/10/07
David A. Ostrander, Program Director
Preparedness Assessment and
Emergency Response

Disapprove: _____ Date: _____
David A. Ostrander, Program Director
Preparedness Assessment and
Emergency Response

XI. RECOMMENDATION FOR FOREST SERVICE

This decision document represents the selected Removal Action for the Standard Mine NPL Site that is part of the Coal Creek watershed, in Gunnison County, Colorado, developed in accordance with CERCLA, as amended, and consistent with the NCP. This decision is based on the administrative record for the Site.

Conditions at the Site meet the NCP Section 300.415(b)(2) criteria for a Removal, and we recommend your approval of the proposed Removal Action. The total project costs if approved will be $5,113,476.00. This includes the costs for all the actions contemplated in this Action Memorandum. Of the total costs, an estimated $3,587,760.00 comes from the Regional removal allowance and constitutes the "Removal Ceiling."

Approve: _____ Date: _____

Glenda Wilson
Regional Engineer
United States Forest Service
Rocky Mountain Region

Disapprove: _____ Date: _____

Glenda Wilson
Regional Engineer
United States Forest Service
Rocky Mountain Region

Attachments:

1 - Site Location Map
2 – Standard Mine Features Map
3 – Phase I EE/CA Table 5-1 Four Most Preferable Repository Areas
4 – USFS Site 2 Location Map
5 - Applicable or Relevant and Appropriate Requirements (ARARs)

SUPPLEMENTAL DOCUMENTS

Support/reference documents which may be helpful to the reader and/or have been cited in this report or previous reports may be found in the Administrative Record File at the Superfund Records Center for Region VIII EPA, 999 18th Street, Denver, Colorado 80202.

EPA. NPL Site Narrative for Standard Mine. Retrieved March 24, 2006 from http://www.epa.gov/superfund/sites/npl/nar1740.htm

EPA. Spring 2005 Surface Water Sampling Results. Standard Mine Superfund Site.

EPA. Fall 2005 Surface Water and Sediment Sampling Results. Standard Mine Superfund Site.

National Primary Drinking Water Regulations (NPDWRs), 40 C.F.R. § 141 (2004).

Science Applications International Corporation (SAIC). 2002. Final Engineering Evaluation/Cost Analysis Report. July 9, 2002

Syracuse Research Corporation. 2007. Baseline Human Health Risk Assessment for the Standard Mine Site, Gunnison, Colorado. April 16, 2007.

Syracuse Research Corporation. 2007. Baseline Ecological Risk Assessment for the Standard Mine Site, Gunnison, Colorado. May 14, 2007.

Town of Crested Butte Watershed Protection District Ordinance (Article 14-5). http://www.crestedbutte.govoffice2.com/vertical/Sites/{6058FFBB-CB06-4864-B42F-B476F794BE07}/uploads/{7CD6988A-E04B-4634-9679-6C04BFF06871}.PDF

URS Operating Services, Inc. (UOS). 2006. Conceptual Project Plan Standard Mine Site. March 20, 2006.

URS Operating Services, Inc. (UOS). 2000. Expanded Site Inspection Analytical Results Report. June 30, 2000.

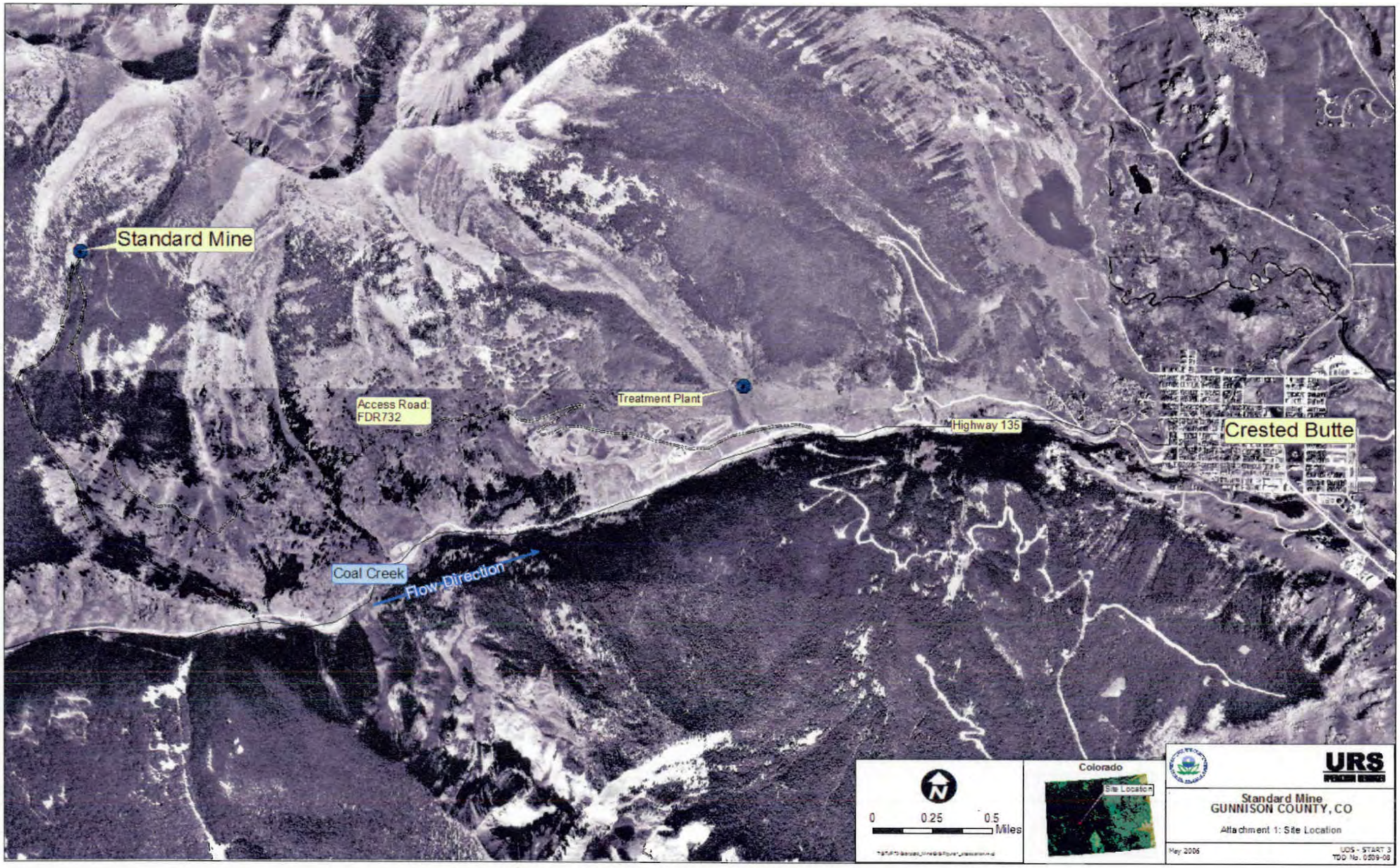
URS Operating Services, In. (UOS). 2006. Phase I Engineering Evaluation / Cost Analysis, Standard Mind Site, Crested Butte, Colorado. April 2007.

URS Operating Services, In. (UOS). 2006. Phase II Engineering Evaluation / Cost Analysis, Standard Mind Site, Crested Butte, Colorado. July 2, 2007.

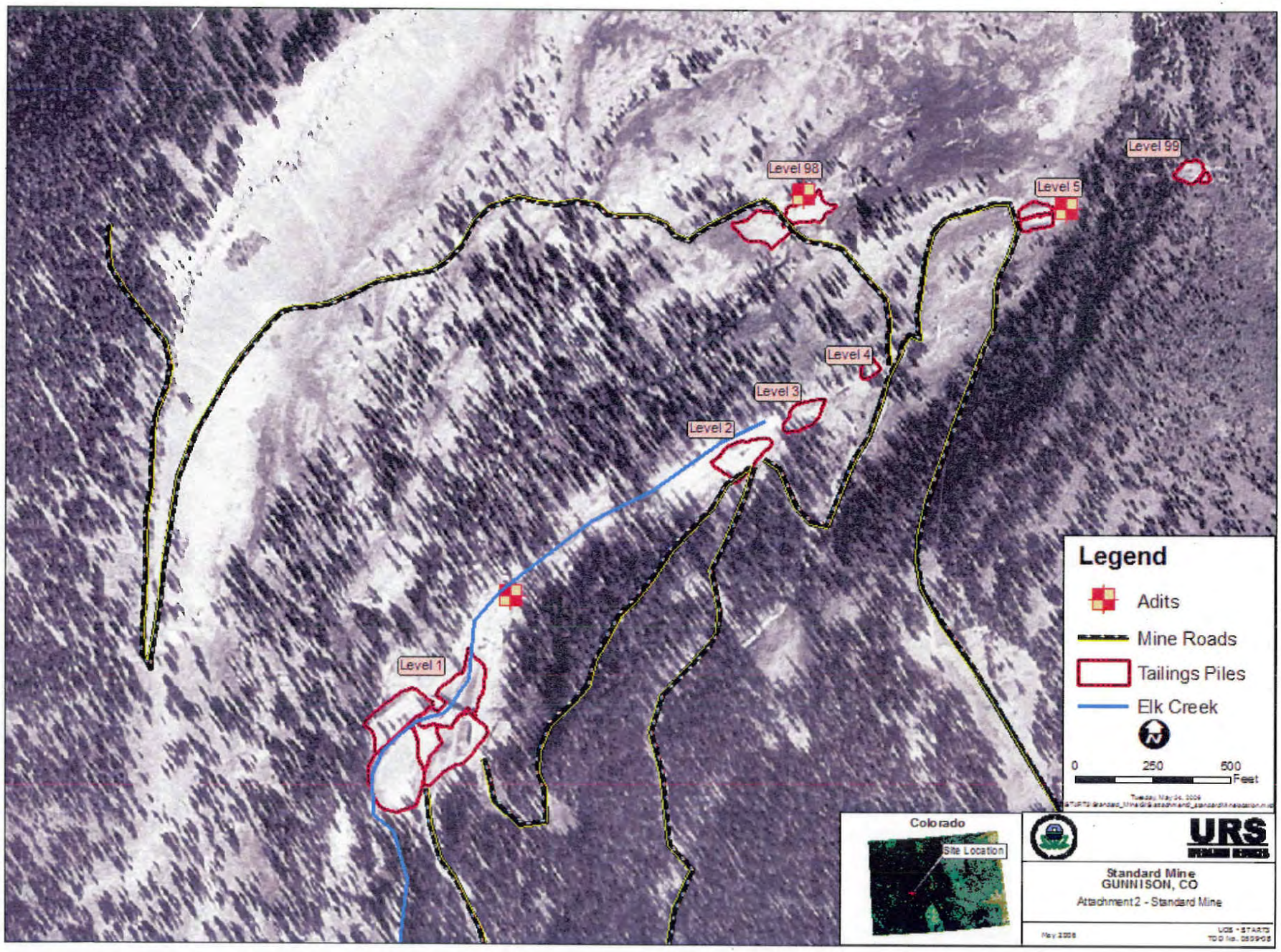
URS Operating Services, Inc. (UOS). 1998. Preliminary Assessment for Combined Assessment. Ruby Mining District – South and Ruby Mining District – West. January 1999.

URS Operating Services, Inc. (UOS). 2006. Sampling Activities Report Standard Mine Site. March 20, 2006.

ATTACHMENT 1
Site Map


Standard Mine
Access Road:
FDR732
Treatment Plant
Highway 135
Crested Butte
Coal Creek
Flow Direction
0
0.25
0.5
Miles
Colorado
Site Location
URS
Standard Mine
GUNNISON COUNTY, CO
Attachment 1: Site Location
May 2006
UDS - START 3
TDD No. 0509-08

ATTACHMENT 2
Standard Mine Features


Level 99
Level 98
Level 5
Level 4
Level 3
Level 2
Level 1
Legend
Adits
Mine Roads
Tailings Piles
Elk Creek
0
250
500
Feet
Colorado
Site Location
URS
Standard Mine
GUNNISON, CO
Attachment 2 - Standard Mine

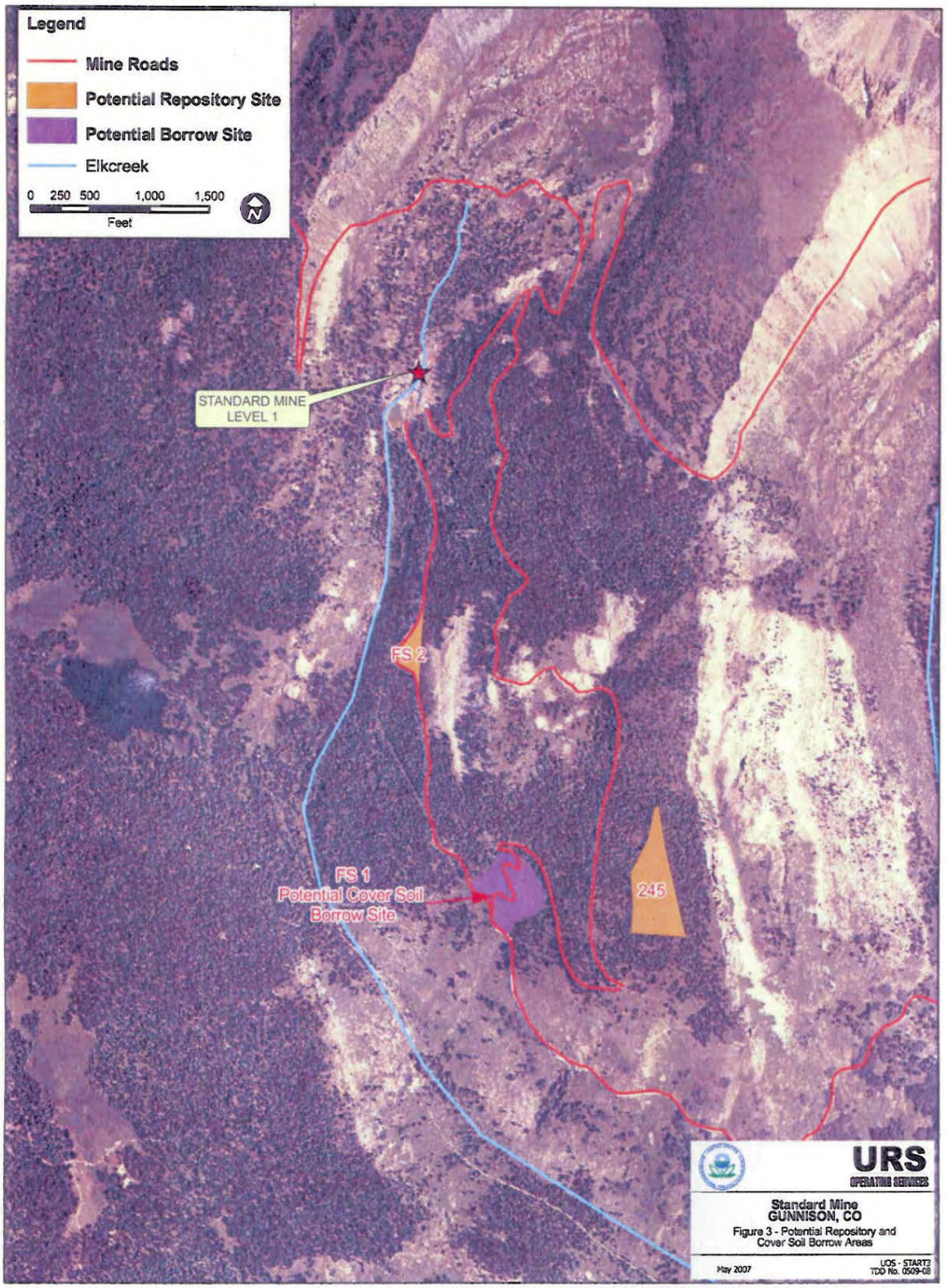
ATTACHMENT 3
Phase I EE/CA, Table 5-1, Repository Site Comparison Criteria

Standard Mine. These criteria could be modified based on input from stakeholders to include additional items, and could also be incorporated into a rating matrix to aid in the selection of a repository site or sites for additional design and construction as a mine waste repository.

Table 5-1
Repository Site Comparison Criteria

	COMPARISON CRITERIA	Area 225	Area 245	Level 2	USFS Site 2
TECHNICAL PERFORMANCE	Topography	Less Favorable	Favorable	Not Favorable	Favorable
	Foundation Conditions	Favorable	Very Favorable	Less Favorable	Less Favorable
	Ability to Accommodate Variable Waste Volumes	Favorable	Very Favorable	Less Favorable	Less Favorable
	Watershed Area	Relatively Large	Relatively Small	Relatively Small	Relatively Large
	Shallow Groundwater	Not Likely	Not Likely	Possible	Possible
	Seepage/Springs	Not Likely	Not Likely	Possible	Not Likely
	Ease of Design	More Difficult	Average	More Difficult	Average
	Ability to Use of Riprap Cover	Less Favorable	Less Favorable	Less Favorable	Favorable
	Distance to Existing Watercourse	>300'	>300'	Adjacent	>300'
CONSTRUCTION	Topography	Less Favorable	Favorable	Not Favorable	Favorable
	Access	Steep	Good	Acceptable	Good
	On-Site Borrow	Little Available	Little Available	Little Available	Available
	Approximate Mine Waste Haul Distance	0.9 miles	1.7 miles	0.4 miles	0.4 miles
	Mine Waste Haul Difficulty	Downhill from Level 1	Uphill from Level 1	Uphill from Level 1	Downhill from Level 1
	Surface Water Control	More Difficult	Less Difficult	More Difficult	Less Difficult
	Approximate Borrow Material Haul Distance	0.4 miles	0.5 miles	1.2 miles	0.4 miles
	Approximate Additional Access Roads Required	0.25 miles	0.15 miles	None	None
ENVIRONMENTAL	Additional Access Roads	0.25 miles	0.15 miles	None	None
	Existing Tree Removal	Dense Forest	Heavily Wooded	Partially Wooded	Less Heavily Wooded
	Wetlands	Vernal Pool	None	None Likely	None
	Aesthetics/Visibility	Low Visibility	Low Visibility	Visible	Less Visible
	Previous Disturbance	None	None	Disturbed Area Adjacent	None
	TES Habitat	Yes	Yes	Yes	Yes
	Other Wildlife Use	Yes	Yes	Yes	Yes
COSTS	Construction Cost	Preliminary estimated construction costs expected to vary by less than about 15 percent for all sites			
	Operation and Maintenance Cost	More Than Average	Average	Average	Less Than Average
	Schedule	Average	Average	Average	Average

ATTACHMENT 4
USFS Site 2 Location Map


Legend
Mine Roads
Potential Repository Site
Potential Borrow Site
Elkcreek
0 250 500 1,000 1,500
Feet
STANDARD MINE
LEVEL 1
FS 2
FS 1
Potential Cover Soil
Borrow Site
245
URS
OPERATING SERVICES
Standard Mine
GUNNISON, CO
Figure 3 - Potential Repository and
Cover Soil Borrow Areas
May 2007
UOS - START3
TDD No. 0509-08

ATTACHMENT 5
Applicable or Relevant or Appropriate Regulations (ARARs)

APPLICABLE OR RELEVANT AND APPROPRIATE REGULATIONS (ARARs)

REGULATION	CITATION	COMMENTS	TYPE OF ARAR	RATIONALE
Colorado Water Quality Control Regulations 5 CCR 1002	5 CCR 1002-31	Substances which form harmful surface material or detrimental bottom deposit, create a nuisance or harm beneficial use, are toxic to humans, produce predominance of undesirable aquatic life, or cause film or shoreline deposit, shall not be introduced into state waters. Basic standards, anti-degradation rule, implementation process, and system for classifying surface water, assigning water quality standards and review of classifications and standards.	Chemical-Specific	Relevant and Appropriate for Anti-degradation standard. The Removal Action will be implemented such that no further degradation to the ambient water quality of Elk Creek and/or Coal Creek occurs. Measures such as sediment controls and other best management practices will be implemented to ensure the removal action will not result in increased sedimentation to downstream areas.
	5 CCR 1002 - 35	Colorado Classification and Numeric Standards for the Upper Gunnison River Basin, River segments 11 and 12 as amended January 1, 2007.	Chemical-Specific	Applicable for current numeric standards for Elk Creek and Coal Creek immediately downstream of the Elk Creek confluence (Segment 11), and for Coal Creek immediately downstream of the Crested Butte Water Supply intake (Segment 12) . There are temporary modifications for cadmium, chronic (2.3 µg/L) and zinc, chronic (518 µg/L). Modifications are effective until 12/31/2011. After that date, the modification may be deleted or renewed.
	5 CCR 1002-61	Implementation of the Colorado Water Quality Control Act, and applies to operations discharging to waters of the state from a point source.	Action-Specific	Applicable for water discharges. The Removal Action will likely be treating water removed from the subsurface tailings material and discharging to Elk Creek; this work will be done in accordance with this regulation to the extent practicable.
	5 CCR 1002-62	Stormwater Discharge Regulations - Regulates discharge of stormwater during construction.	Action-Specific	Applicable. Implementation of best management practices for sediment control will be performed to comply with the intent of this regulation.
Colorado Noise Abatement Statute	CRS 25-12-103	Provides limits for noise based on time periods and zones.	Action-specific	Applicable

APPLICABLE OR RELEVANT AND APPROPRIATE REGULATIONS (ARARs)

REGULATION	CITATION	COMMENTS	TYPE OF ARAR	RATIONALE
Colorado Solid Waste Disposal Sites and Facilities Act	6 CCR 1007-2	Regulations applicable to solid waste disposal units.	Action-specific	Part B Section 3 is TBC, all other parts are Not Applicable (NA).
Fish and Wildlife Coordination Act	40 CFR Section 6.302(g)	Requires coordination with federal and state agencies to provide protection of fish and wildlife.	Location-specific	Applicable. The U.S. Fish and Wildlife Service, U.S. Forest Service, and other trustees have participated in planning and/or commented on plans for the Removal Action.
Endangered Species Act	50 CFR Parts 17 and 402 40 CFR Section 6.302(b)	Regulates the protection of threatened and endangered species.	Location-specific	Threatened and endangered species have not been identified at this site; however, a survey will be conducted to support this conclusion.
Colorado Wildlife, Non-game, Endangered and Threatened Species Act	CRS 33-2-101 to 108	Regulates non-game wildlife and threatened and endangered species	Location-specific	Relevant and appropriate for activities that affect the habitat of game and non-game species. These species have not been identified on the Standard Mine site; however, a survey will be conducted to support this conclusion.
Executive Orders No 11988 and 11990	40 CFR Section 6.302 and Appendix A	Regulates construction in floodplains and minimizes allowable impacts to wetlands.	Location-specific	TBC – the repository was sited such that it was not located in a floodplain.