Statement of Work

Minnesota Mine and Mill Site Removal
Arapahoe-Roosevelt National Forests
Clear Creek County, Colorado

Introduction
Following is a statement of work (SOW) for ongoing maintenance of the CERCLA non-time critical removal action completed in 1997 at the Minnesota Mine and Mill on the Arapahoe-Roosevelt National Forest in Colorado. In summary, the maintenance work includes three primary tasks: 1) amend or cap mine tailings on steep bank above Lions Creek and revegetate; 2) amend or cap tailings on hillside below lower loop road, recontour and revegetate; and 3) remove mine waste depositions along Lions Creek located directly below the Minnesota Mine and Mill Site.

Project Location
The Minnesota Mine and Mill are located approximately 1.5 miles north of Empire, Colorado in Clear Creek County. The mine site is located in NE ¼, NE ¼, Sections 20, Township 3 South, and Range 74 West. Elevation of the site is approximately 9,750 feet and located along Lions Creek. Lion Creek is a tributary of North Empire Creek, which drains into the West Fork of Clear Creek. The maintenance work covers approximately 1 surface acre.

Project Description
The Minnesota Mine and Mill were reclaimed in 1997. Reclamation consisted of construction of a concrete vault to allow evaporation of adit flow and the construction of a drainage system to divert mine waste away from the tailings and to keep sheet flow from draining off the tailings and into Lions Creek. In addition, the large volumes of tailings were recontoured, capped, and revegetated.

This SOW details maintenance work to be completed at the site which consists of three areas where mine tailing were deposited and are currently being eroded into Lions Creek and into the revegetated cap area. Two areas are steep slopes that consist of tailings with a pH of approximately 3 and contain little to no organic matter and no vegetation. The third area is located along the flood plain of Lions Creek where obvious tailings deposits are visible, but they have not been evaluated.

Site Health and Safety Plan

A Site Health and Safety Plan shall be submitted by the Contractor to the On-Scene Coordinator for approval prior to beginning work. The hazards at this site include, but are not limited to, 1) steep slopes in the tailings pile work area, 2) dust from construction activities, 3) limited work space in project area, 5) potential metals exposure through soil, water and air pathways.
Task 1: Steep Tailings Above Lions Creek

Objective: Reclaim tailings on slope above Lions Creek through incorporation of amendments or by capping and followed by revegetation.

Capping

If capping soil is available, agricultural lime will be applied at a rate of five tons per acre mixed into the top 12 inches of tailings to achieve a pH of 5.5 or greater. The tailings pile will be contoured to achieve a side slope and roughened so that the cap material will bond with the waste rock surface. The cap soil will be placed on top of the tailings with a depth of 6-12 inches.

The location of specific capping soil near the site will be determined by the On-Scene Coordinator. The capping soil will not require screening.

Incorporation of Amendments

If no capping soil is available, agricultural lime will be applied at a rate of eight tons per acre mixed into the top 12 inches of the tailings to achieve a pH of 5.5 or greater.

In addition to the agricultural lime, manure and woodchips will be applied to the tailings. Manure will be applied at a rate of 10 tons per acre; therefore approximately a total of 2.5 tons of manure is needed for this site.

Wood chips should be spread evenly across the tailings in a 3 to 6 inch layer and ripped into the top 6 to 12 inches of tailings creating a finished uneven surface.

Specific Amendments

Regardless of capping material being added or not added, the area will be amended with Biosol and Humate. These amendments should be evenly spread across the tailings and then raked or ripped into the top 6 inches of tailings surface (use the rates from the Fairday)

The area will be recontoured to slopes similar to adjacent topography and erosion control features will be installed such as water bars, seed, straw mulch, and erosion control matting. All water bars will be buried approximately 1/3 or 1/2 into the ground to prevent water from eroding and undercutting (i.e. logs or rocks used as water bars).

Seeding

Seed will be applied by broadcast seeding of a native seed mix over the entire area, which should then be lightly raking into the soil for immediate cover. Certified weed-free straw mulch will be applied at a rate of 1.5 tons per acre evenly across the seeded area. The mulch will be crimped into the surface to anchor the straw perpendicular to the soil surface in a way that prevents the mulch from blowing away. This also allows the mulch to catch snow and channel water down into the seeded surface.
Erosion control matting will be placed and anchored along the entire slope to provide a stable seedbed for one or more seasons. Erosion control matting is required if greater than 2.5:1 slope cannot be maintained.

**Task 2: Steep Slope below Lower Loop Road**

Objective: Recountouring slope and integrate erosion prevention controls to include vegetation establishment.

The top part of the steep tailings area to be reclaimed will be pulled back onto the lower road (closing off road access) as well as pulling up tailings and recountouring the slope to the adjacent topography.

A soil cap will be required or incorporation of amendments described in Task 1 will be applied correspondingly to the entire area.

**Task 3: Tailings Stream Deposits**

Objective: Remove mine waste depositions along Lions Creek Located directly below the Minnesota Mine and Mill site.

Tailings that have been deposited along the Lions Creek floodplain will be analyzed. If results are similar to the tailings pile results, the deposited sediment will be consolidated onto the west slope of reclamation (Task 1 area). Capping soil or amendments will be applied according to Task 1 reclamation activities.

**Other**

The contractor will implement Best Management Practices (BMPs) to control erosion and reduce sedimentation throughout the project. These BMPs will meet the minimum criteria described in the Forest Service’s Watershed Conservation Practices Handbook.

Existing vegetation and trees already established throughout the project area will be preserved and protected from damage as much as possible.

Erosion control matting recommended installation will vary, depending on the product purchased. For successful placement, the matting should be in contact with the ground as much as possible. Over soils with extreme surface roughness, the matting should not be stretched, but allowed to lay loosely on the surface. On steep slopes, matting should start at the bottom and be rolled uphill to prevent stretching. Staples or rocks will need to be placed in the bottom of depressions so that the matting does not stretch over the pockets.

A final project inspection will be held with the contractor’s project manager and the On-Scene Coordinator prior to demobilization.
Demobilization

The Contractor shall remove all materials from the site including any solid waste generated as part of the operation.

Contacts for this project will be:

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Deliverables

The Schedule of Deliverables corresponds to the following list.

1. Site Health and Safety Plan for internal FS review and approval

2. Final Construction Report. This report will describe all work activities, include photos of key work items, and include copies of warranties for materials (as appropriate), for example, seed certification, pipe warranty, etc. The report should include a site map outlining areas of work and a map showing final features of the site.

Schedule of Deliverables

<table>
<thead>
<tr>
<th>Deliverable</th>
<th>Number of Copies</th>
<th>Estimated Due Date</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site Health and Safety Plan</td>
<td>1</td>
<td>One Week prior to Construction</td>
<td>1-OSC</td>
</tr>
<tr>
<td>Final Construction Report</td>
<td>1</td>
<td>30 days following demobilization</td>
<td>1-OSC</td>
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</tbody>
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Approved:  
Andrew Archuleta, On-Scene Coordinator, U.S. Forest Service