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## American Fork Canyon Abandoned Mine Land Restoration

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### Stage Construction Work Plan

**Overview of the Project:** Trout Unlimited proposed to reclaim four abandoned mine and mill sites in American Fork Canyon, Utah all located on privately owned lands managed by Snowbird Corporation. The sites are the Pacific Mine, Pacific Mill, Scotchman #2 Mine, and Blue Rock Mine. The waste rock deposits at the Pacific Mine will be reshaped to develop a repository at that site. The repository will have slopes of 3:1 on the face with a top that drains back into the hillside at a -2% slope in both westerly and northern orientations. The waste rock piles at Scotchman #2 Mine and Blue Rock Mine will excavated and hauled to the Pacific Repository for disposal.

The Pacific Mill was located on a steep hillside adjacent to the proposed repository. The footprint of the mill contains some of the highest concentrations of heavy metals in American Fork Canyon. That footprint, and surrounding area with elevated metals, will be stripped of its surface soils until the heavy metal concentrations are below the Preliminary Remediation Goal (PRG). The contaminated soils will be placed in the repository.

An impervious composite liner will be installed on the top of the repository to prevent water from seeping into the consolidated mine and mill wastes. The face and top of the repository will be capped with 3 feet of clean, glaciated soils obtained from a borrow site 0.25 miles upcanyon. An interceptor ditch will be constructed along the hillside interface to collect and transport any overland flow that drains onto the site and any water that accumulates on the top of the repository. The ditch will flow into an existing channel containing mine drainage from the plugged Pacific adit.

All of the disturbed sites will be revegetated using a native seed mix, fertilizer, and mulch. The steeper hillsides at Pacific Mill and Scotchman #2 will be covered with biodegradable erosion control netting to stabilize the soil until the vegetation reestablishes. Signage and vehicle barriers will be installed to notify the recreating public of the establishment of the Pacific Repository and to prevent any vehicle use on the repository.

The construction details for the removal of the contaminated materials and placement of those materials in the repository will be defined in the plans and specifications being developed by Trout Unlimited for this project. Those documents will be reviewed and approved by EPA prior to commencement of any work on this project.

**Need for Stage Construction:** Trout Unlimited is working with the Environmental Protection Agency (EPA) to obtain permission and authorization to proceed with the proposed work through an Administrative Order on Consent (AOC) as provided in Sections 104, 106(a), 107, and 122 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

Trout Unlimited is a non profit conservation organization and has no vested interest or ownership of the lands containing the abandoned mine wastes in American Fork Canyon. Trout Unlimited is not a Potentially Responsible Party (PRP) under CERCLA. Trout Unlimited has voluntarily gained permission to take the lead in developing and implementing a mine reclamation project at these sites under a Memorandum of Understanding with Snowbird Corporation. The proposed removal action is consistent with the goals and mission of Trout Unlimited. This project will serve as a demonstration project for future mine restoration projects throughout the western United States.

Before the work can be implemented, even after signing of the AOC with EPA, Trout Unlimited must raise the funds needed to fund the construction project. Those funds can come from various sources including foundations, interested parties, land owners, industry, government allocations, etc.

Numerous contacts have been made in preparation for funding of this project and some funding has already been received or approved. The project development costs have been secured through grants from two separate organizations and foundations.

**Stage 1:** Project initiation funding (for on the ground work) was provided by a Congressional Earmark of the 2005 appropriation for the Natural Resource Conservation Service (NRCS) in the amount of \$45,000. The total estimated cost of the entire project approaches \$200,000. In discussions with the NRCS, leading to an agreement to be signed by NRCS and Trout Unlimited, certain deliverables have been identified that can be provided in 2005 with the funding now available. Those deliverables are items of work pertaining to the implementation of the overall project that can be done "without disturbance of any of the contaminated mine or mill wastes". This work has been identified as Stage 1 of the project for implementation in 2005. A description of this work follows later in this document.

**Stage 2:** This work will include the removal and disposal of the contaminated mine/mill wastes from the various sites and the construction of the Pacific Repository. This stage includes the revegetation of all the disturbed sites. There are plans for another NRCS earmark in 2006 which will allow the commencement and completion of the removal of the contaminated mine/mill wastes and construction of the Pacific Repository. Trout Unlimited continues to explore other funding sources to reduce the size of the needed earmark in 2006. All work at the site is planned for completion in 2006.

**Stage 3:** There is a Stage 3 for this project. That work will be done on National Forest System lands at the Miller Hill Tunnel disturbed area. The investigations of that site performed by the Forest Service have determined that there are no Concentrations of Concern of heavy metals at that site. It consists of a disturbed area of about 0.7 acre that needs to be revegetated. That work will be separate from the work approved under the AOC by EPA. The Miller Hill Tunnel work was authorized by a Decision Memo signed by the Pleasant Grove District Ranger, Uinta National Forest, in 2001. This work will be implemented during the construction phase of Stage 2 while the needed equipment is on site.

## Work Plan Detailed by Item of Work

### Stage 1 Items of Work (2005)

#### COMPLETE PRECONSTRUCTION ACTIVITIES

Obtain and analyze a soil sample from the designated Borrow Area to demonstrate that material is free from contamination and suitable for capping the repository. *June 2005*

Provide Slope Stakes for the construction of a new 400 foot road segment downhill from the repository site. (This road segment will move the Miller Hill Access Road that is now located on top of the Pacific Mine waste rock pile to a new location free from contamination.) *July 2005*

Provide Slope Stakes for the excavation of the Borrow Area *July 2005*

Select an Owner/Operator of heavy equipment and sign an agreement for use of that equipment to complete the on the ground work included in Stage 1. *July 2005*

#### IMPLEMENT STAGE 1 - CONSTRUCTION PHASE

*August 2005*

Mobilize Equipment and Materials

Trackhoe Excavator

Dump Truck

Cache of Hand Tools for Emergency Firefighting

Fuel/Mechanics Truck

Bring In Materials; Silt Fences, Straw Bales, Culverts, Fencing Materials, Etc.

## Prepare the Borrow Area

Use the trackhoe to knock down and remove the trees within the borrow area perimeter.

Strip and stockpile 3 inches of topsoil from a portion of the borrow area as designated by TU's engineer. (The remainder of the borrow area will have the topsoil removed in 2006.)

Construct the new road segment below the repository and close the road across the waste rock pile.

Remove and salvage a portion of the guardrail barrier to gain access to the new road location.

Install an 18 inch diameter culvert in the channel at the beginning of the new road segment.

Install erosion control devices (silt fence/straw bales) at locations designated by the engineer.

Excavate and haul 200 cubic yards of borrow material and construct the new road segment.

Install barriers to prevent vehicle use on lands reclaimed by the FS and on the Pacific waste rock pile.

Relocate the guardrail barrier at Pacific Mine to the toe of the embankment of the new road.

Install a temporary three strand barbed wire fence around the Pacific Mine waste rock pile.

Relocate a closure sign from the top of the waste rock pile to a location inside the new fence.

Widen the road accessing Blue Rock Mine to accommodate haul trucks. (For use in Stage 2.)

Remove trees flagged by the engineer with the trackhoe.

Establish a wider road surface to accommodate articulated dump trucks in 2006.

Use downed trees to block the road to discourage public use of this road.

Connect mine adit drain pipes to existing culvert to prevent diversion of mine drainage onto rock pile.

Fabricate a six foot long pipe to connect 2 six inch diameter pipes to a 12 inch culvert.

Backfill around the pipe connection with 2 feet of cover material from the borrow area.

Purchase materials needed during implementation of Stage 2 and stockpile for use in 2006.

Guardrail, W-beam, weathering steel rail and posts, 400 feet with flared terminal sections.

Closure signs for repository, borrow area, and mill site.

Interpretive signs addressing abandoned mine lands and potential environmental hazards.

Erosion control netting to protect steep slopes.

Native seed mix for reseeded of disturbed areas.

Fabrics and liners for Composite Liner for repository top if funding allows.

Conduct project inspection with Snowbird, EPA and NRCS.

*August 2005*

Demobilize equipment.

Provide status reports to NRCS and EPA including expenditures and accomplishments.

*Sept 2005*

## Stage 2 Items of Work (2006)

### COMPLETE PRECONSTRUCTION ACTIVITIES

Sign construction contract between Trout Unlimited and Snowbird Corp. Snowbird will provide construction services to remove waste materials and construct the repository.

*May 2006*

Provide construction personnel with Hazwoper Training and Health Screening.

*May 2006*

Provide Slope Stakes for the construction of the Pacific Repository.

*July 2006*

### IMPLEMENT STAGE 2 - CONSTRUCTION PHASE

*August 2006*

Mobilize Equipment, Materials, And Workforce

Trackhoe Excavator

D-5 Dozer

Two Articulated Dump Trucks

Cache of Hand Tools for Emergency Firefighting

Fuel/Mechanics Truck

Reshape the North Fork Road as Needed for Access – Minimize Effort

Bring In Materials; Silt Fences, Straw Bales, Culverts, Etc.

#### **Pacific Mine**

- Maintain Erosion Control Devices – Silt Fences and Straw Bales
- Clear Trees and Brush on Repository Footprint – Deck Trees
- Bury Abandoned Automobile in Waste Rock Pile
- Place Extension on Ground Water Monitoring Well
- Dispose of Mill Site Material on Waste Pile
- Reshape Waste Rock Pile to Establish 3:1 Exterior Slopes
  - Do Not Damage North Loading Structure – Remove Two Others
- Add Blue Rock Mine Waste Rock Pile to Repository
  - Layer Place Waste in Repository and Walk with Dozer (Typical)
- Add Scotchman #2 Waste Rock to Repository
- Finish Shaping of Repository
- Cover Repository (with Liner Materials and 3 Feet of Borrow Material)
- Construct Interceptor Ditch and Place Riprap
- Reset Ground Water Monitoring Well Cap
- Prepare Repository for Seed, Mulch, and Fertilizer – Apply Each
- Remove and Dispose of Silt Fences – Break and Scatter Bales on Repository
- Construct Weathered Guardrail Vehicle Barrier Around Repository
- Install Regulatory and Interpretive Signing

#### **Pacific Mill**

- Place Erosion Control Devices at Toe of Worksite – Silt Fences and Straw Bales
- Pioneer Access Road for Trackhoe Up Hillside
- Excavate Contaminated Material from Hillside for Removal to Repository
  - Start at Upper Concrete Wall Pulling Material Downhill
  - Remove Unstable Concrete Structures – Dispose of Them in Repository
  - Reshape Hillside as Proceeding Downhill in Preparation for Revegetation
- Sample Underlying Soils to Demonstrate Heavy Metal Concentration Meets PRG
- Stockpile Larger Trees for Use as Barrier at Toe of Reclaimed Hillside
- Proceed with Revegetation Efforts Including a Erosion Blanket on Steep Hillside
- Place Tree Barrier at Toe of Hillside and Install Signing

#### **Scotchman # 2**

- Excavate Waste Rock and Haul It to Repository
- Sample Underlying Soils to Demonstrate Heavy Metal Concentration Meets PRG
- Reshape Hillside and Apply Revegetation Materials Including Erosion Blanket

#### **Blue Rock Mine**

- Remove Cabin and Loading Structure – Bury in Repository
- Excavate Waste Rock Pile and Haul to Repository
- Sample Underlying Soils to Demonstrate Heavy Metal Concentration Meets PRG
- Apply Revegetation Materials to Hillside
- Obliterate Haul Road and Revegetate

#### **Borrow Site**

- Complete Topsoil Removal and Stockpile
- Excavate Borrow Material and Place as Cover On Repository
- Finish Grade Borrow Site and Place Topsoil
- Scatter Downed Trees Over Site
- Apply Seed, Fertilizer, and Mulch
- Install Closure Sign

### **Stage 3 Items of Work (2006)**

#### **COMPLETE PRECONSTRUCTION ACTIVITIES**

Provide Slope Stakes for the excavation of FS Borrow Area

*July 2006*

#### **IMPLEMENT STAGE 3 - CONSTRUCTION PHASE AT MILLER HILL TUNNEL**

*August 2006*

Remove rock barriers to gain access to the site

Widen road from borrow area to accommodate articulated dump trucks

Backfill existing culvert at entrance to Miller Hill Tunnel site

Install a temporary culvert in secondary stream channel

Set silt fences and straw bales at temporary stream crossing

Excavate borrow material and place a 1 foot thick layer on disturbed area at Miller Hill Tunnel

Final shape the borrow area to form 2 dispersed camping areas

Apply seed, mulch and fertilizer on borrow area slopes and over the covered area at MHT

Remove the temporary stream crossing – remove culvert from the canyon

Reset the Rock Barriers as directed by the Forest Service

#### **FINAL OUT PROJECT**

Conduct project inspection with Snowbird, EPA and NRCS.

*Sept 2006*

Demobilize equipment.

Provide Final Reports to NRCS and EPA including expenditures and accomplishments.

*Sept 2006*