ERRG
Engineering/Remediation Resources Group, Inc.
616 First Ave, Suite 300
Seattle, WA 98104
P: 206-282-4749
F: 206-282-4789
www.errg.com

September 12, 2012 Ref.: 2010-084

Mr. Pete Jones
On-Scene Coordinator
USDA Forest Service, Region 6
645 Washington Street
Ashland, Oregon 97520

Technical Memorandum
August 2012 Site Inspection Report
Blue Ledge Mine
Rogue River-Siskiyou National Forest

Dear Mr. Jones:

Engineering/Remediation Resources Group, Inc. (ERRG) is submitting this technical memorandum summarizing the site meeting conducted on July 17, 2012, the maintenance activities conducted August 6 through August 24, 2012, and the site inspection performed on August 23 and 24, 2012, at the Blue Ledge Mine site. ERRG performed the maintenance activities in accordance with the Summary Work Plan for Summer 2012 Activities[1]. ERRG performed the site inspection in accordance with the operations, maintenance, and monitoring (OM&M) requirements for the Blue Ledge Mine site under U.S. Department of Agriculture Forest Service (Forest Service) Contract No. GS-10F-0294R, Delivery Order No. AG-0489-D-10-0126. For a full list of elements inspected, please see the attached site inspection checklist (Enclosure 1), overall site plan (Enclosure 2), photographic log (Enclosure 3), and maintenance checklist (Enclosure 4).

Background

In 2010, ERRG was contracted to perform a removal action to remove waste rock from four waste rock piles (WRPs) near the mine adits. The waste rock was relocated to a newly constructed onsite repository. The repository was capped after the waste rock had been removed from the WRPs. Disturbed soil areas within the reclamation areas were revegetated with native species. Nine pH treatment and sediment basins were constructed below the WRPs to capture sediment and to treat mine drainage prior to discharge into Joe Creek. ERRG was contracted to perform OM&M of the repository cap and structures constructed to control erosion and treat mine drainage, as outlined in the Removal Action Work Plan (RAWP)[2]. The RAWP specifies that site inspections will be performed after rain events generating greater than 0.5 inches of precipitation, as recorded by nearby representative weather stations, and on a monthly basis when the site is accessible, which is generally between April through October.

During each site inspection, ERRG reviews the following elements:

- Integrity of the reclamation areas
- Areas where erosion or deterioration has occurred since the last site visit

[1] ERRG, 2012. "Summary Work Plan, Summer 2012 Activities, Operations, Monitoring and Maintenance at Blue Ledge Mine"
[2] ERRG, 2010. "Removal Action Work Plan, Non-Time-Critical Removal Action for Former Blue Ledge Mine Site, Siskiyou County, California."

- Condition of the erosion control and sediment control measures
- Integrity of constructed site elements (documented via photographs)
- Condition of reclamation plantings
- Needed maintenance and repairs

July 17, 2012 Repository Inspection and Recommendations

Because many of the reclamation shrubs on the repository were dead, a site visit was conducted on July 17, 2012, to evaluate the condition of the repository and to discuss alternate plans for planting on the repository. The site visit had two primary objectives, to inspect the repository by a Certified Landfill Inspector (performed by Mr. Peter Loveridge, P.E.) and to assess the condition of the reclamation plants with the Forest Service reclamation specialist Mr. David Steinfeld. Results of the July 17, 2012 site visit are summarized as follows:

- Based on the visual inspection of the repository cap and drainage system by Mr. Loveridge, no significant conditions were observed that reduce the effectiveness of the cap in protecting the public from exposure to underlying waste. An annual repository inspection letter documenting these observations was provided to the Forest Service[3].
- Mr. Steinfeld recommended mixing the top deck soil 25 percent bark mulch to 75 percent soil mixture. A reasonable approach was discussed as:
  - Spread the existing bark mulch over the entire area
  - Use the rest of the stockpiled bark mulch to meet the 1/3 ratio
  - Rip the soil to loosen the soil
  - Scarify the mulch and soil 8 to 10 inches deep
  - Hydroseed the entire top of the repository
  - Add a line of straw wattles to the top edge of the repository to encourage sheet flow down the slope
- Add two more rows of straw wattles to the repository face.
- Add another row of straw wattles to the toe of the access road so that stormwater coming off the repository slope won't overtop the wattles during peak events.
- Hand rake the previously stabilized rills in the bark mulch below the access road to prevent further rilling.
- Forest Service botanist Mr. Wayne Rolle subsequently recommended a light application of hydroseed on the repository slopes to enhance grass coverage.

The other site reclamation areas were also visited and the observations are as follows:

- The Repository Stockpile Area has good grass growth and good plant survival. No planting or maintenance is expected in this area.
- A review of the plants in the North Storage Area indicated most plants looked healthy and the area had uniform plant coverage.
- The South Storage Area has good coverage and growth of the plants.
- The Rock Stockpile Area had great plant and grass growth. No planting or maintenance is expected in this area.
- WRP-2 has low plant mortality. No planting or maintenance is expected in this area.

[3] ERRG, 2012. "2012 Annual Repository Inspection, Blue Ledge Mine"

ERRG

- Based on the site inspection reports and the July 2012 plant mortality estimate, WRP-3 was characterized as having significant mortality of plants. The estimates of mortality were overstated. The Forest Service was satisfied with the uniform distribution of the trees and shrubs with White Pine and Maple exhibiting the best survival. Most of the Douglas Fir had died. The speculation is that the cold, dry November and early December weather killed most of the Douglas Fir before they were protected by the snow. There was also good grass growth on the area. There will likely be no additional planting required assuming that most of the plants currently living don't die over the summer. The soil was still moist due to precipitation that has been occurring about every week thus far. A white pine was dug up to see if the roots had entered the native soil. The roots did penetrate the native soil below the tree planting hole. This was a very good sign that the white pine will continue to survive.
- WRP-1 and WRP-4 were not visited during this inspection. Replanting is not expected for either of these areas based on the monthly site inspections.

Summary of Site Maintenance Activities

ERRG performed maintenance of the reclamation areas during the period of August 6 through August 24, 2012.

ERRG constructed temporary bridges at each of the three creek crossings with existing timber salvaged and stockpiled on site instead of installing and removing culverts each work season. The crossings are constructed of 18- to 24-inch diameter Douglas Fir log stringers and pressure treated bridge planks. The bridges are designed to support minimal equipment travel because loaded dump trucks are not needed for maintenance tasks. Equipment is limited to the spider excavator, skidsteer loader, small excavator, small dozer, and other small equipment as necessary to access the sediment basins and to make minor erosion repairs. There is adequate clearance under the bridges to provide a minimum of 23 square feet of surface area to meet the URS Q100 design for two 42-inch culverts[4]. The bridges will be left in place during the maintenance period and allow safe access across the creeks during high water flow periods. The entrance to Haul Road 1 was blocked with a log after the work was complete to prevent vehicle or ATV access.

Road maintenance included the following tasks:

- Grade the erosion rill and spring water drainage at the large rolling water bar on Forest Road 1060, and clear woody debris, rocks, slough, etc. along roads 1060 and 1060-400.
- Restore ditches and drainage patterns on the repository access road at the entry to the repository.
- Clean out and restore water bars on the haul roads after maintenance of the sediment basins was complete.
- Install two new water bars at the Haul Road 1 switchback at Adit A5 to capture runoff from the hillside.
- Repair erosion rills on the fill slope of Haul Road 4 above sediment basin 2B and above sediment basin 3 by armoring with rock and slash to limit further erosion.
- Install new water bars above the erosion rills to reduce the amount of water entering the existing water bars and rills in the future.
- Repair the Haul Road 1 crossing in the drainage above sediment basin 2A, where erosion had occurred. The crossing and drainage channel in sediment basin 2A was rebuilt using existing soil and rock to form a rolling drainage crossing, covered by geotextile, then riprap rock.

[4] URS, 2010. "Blue Ledge Mine Removal Action, Drawing 103"

Because the reclamation shrubs on the repository top deck were dead, ERRG and the Forest Service decided to replace the plants on the top deck with grass seed as discussed during the July 17, 2012 site meeting. The existing bark mulch was spread out to cover the entire top deck approximately 2 inches thick. A small dozer scarified the top 8 to 10 inches of soil and bark to loosen the surface and allow blending of the bark mulch into the soil. ERRG added straw wattles across the center of the scarified area, at the repository shoulder, two extra rows of wattles on the slope, and one extra row of wattles along the downslope side of the repository access road. The previously stabilized rills in the bark-mulched areas below the access road were raked with bark to minimize preferential flow paths. The scarified top deck will be hydroseeded with Flexterra, grass seed, and fertilizer during September 2012. The surface of the slope will be covered with a light hydroseed application of Flexterra, grass seed, and fertilizer as recommended by the Forest Service botanist to enhance previously established grasses.

A stockpile of excess logs that was generated during the Non Time Critical Removal Action was moved on August 24, 2012 to a publicly accessible location at the intersection of the 1050 and 1055 roads in accordance with Work Order 20 and Work Order 24.

Sediment and debris that accumulated in each basin was removed and placed in upland locations near the sediment basins as agreed to by the Forest Service, where it was buried and covered with 18 inches of native soil, seeded with grass seed and fertilizer, and covered with straw and slash. Approximately 45 cubic yards of sediment from basins 1A through 1F was buried at the Haul Road 3 upper switchback at an adequate distance away from surface water. Approximately 20 cubic yards of sediment and debris was removed from basin 2A and buried in the abandoned mine access road to the west of the basin where it is away from drainage patterns. Approximately 15 cubic yards of sediment and debris was removed from basin 2B and buried in the slope adjacent to the south side of the basin where it is away from drainage patterns. Approximately 1 cubic yard of sediment was removed from basin 3 and buried at the upper edge of the haul road adjacent to basin 3 where it is located away from any surface runoff.

After sediment removal from the basins was completed, the rocks that provide scour protection over the geotextile that covers the agricultural limestone were removed to allow the geotextile to be peeled back to expose the limestone to evaluate the amount of fouling. The amount of fouling was determined by the staining and coating of the limestone. The scaling and coating with metal precipitates may reduce the permeability and the reactivity of the limestone. In most cases the limestone in basins 1A through 1F had developed an outer crust that likely reduces the permeability, and the limestone beneath the crust looked like it was not impacted at all. The limestone was stirred to break up the crust and blend it into the underlying limestone. Additional limestone was added to restore permeability and reactivity. The geotextile was replaced over the limestone and large flat rocks were placed as scour protection. The limestone in basins 2A, 2B, and 3 did not appear impacted by staining or precipitates and no crust was observed. These drainages do not have the low pH water that basins 1A through 1F are exposed to.

The geomembrane liner that creates the water dam elevation in the sediment basins 1B and 1C was adjusted to help contain water and increase the depth of pooled water in the basin. Previously, water was finding its way around the edge or through seams in the liner dam. A smaller pool of water was present in these basins compared with the other basins. After the liner was adjusted, new geotextile cover was placed over the limestone and the cover rocks installed.

All required forms of erosion control measures were re-established, including silt fencing, straw wattles, straw, slash, and cleaned out water bar outlets. Best management practices (BMPs) were maintained to reduce the sediment load of stormwater runoff from the site. These BMPs include:

- Grading work areas to prevent stormwater from running from work areas to surface water
- Protecting stream crossings with silt fences and straw wattles

Log wattles and straw wattles at WRP-3 and WRP-4 were maintained by plugging any gaps or washouts under log wattles, and re-staking straw wattles that had pulled loose over the previous winter.

The reinforced fabric at the toe of WRP-4 was maintained by nailing down loose anchor nails. All anchor nails were hammered to verify they are well-seated.

An additional basin at the southeast edge of basin 1F was constructed under separate contract with the U.S. Environmental Protection Agency (USEPA) contractor ITSI to collect acid mine seepage at this location. This acid collection basin was constructed using riprap and lined with a geotextile cushion layer and two layers of 60 mil LLDPE geomembrane. The geomembrane was anchored to bedrock using stainless steel wedge anchors, and a roofing sealant that works under water was applied to seal the liner to the bedrock. Future installation and operation of a pilot treatment system for acid mine drainage is by ITSI and is not part of ERRG's scope of work. The basin was completed August 23, 2012 and the seep flow through the spillway was measured at 500 ml in 35 seconds.

Summary of Site Inspection

Following completion of the maintenance activities, ERRG inspected all reclamation areas during the August 2012 site inspection. The reclamation areas were observed to be intact and in good functioning condition. The BMPs to control erosion were in good condition. No additional erosion had occurred since the July 2012 inspection in all reclamation areas.

The repository had no additional erosion. No additional erosion was observed on the incoming Forest Road 1060 and haul roads. Overall, the roads were in very good shape, except for small areas noted during previous inspections that required maintenance and was completed during this work period. The stockpile areas and WRPs 1, 2, 3, and 4 were observed to have no new erosion. All sediment basins have no accumulated sediment.

The pH of water passing through the basins was not able to be tested due to a seasonally declining flow of surface water. The following table shows the pH for water in sediment treatment basin 1F. No water was observed flowing from WRP-1 through basins 1A through 1E, from WRP-2 through basins 2A and 2B, or from WRP-3 through basin 3, thus no samples were collected from these locations during this site inspection.

Table 1. pH of Sediment Treatment Basins

WRP-1		WRP-2		WRP-3	
1A	NS	2A-below	NS	3A-below	NS
1B	NS	2A-above	NS	3B-above	NS
1C	NS	2B-below	NS		
1D	NS	2B-above	NS		
1E	NS				
1F-below	5.5				
1F-above	4.5				

Notes:
NS = no sample was collected because water was not present in the treatment basin.

ERRG

The pH of the water in basin1F dropped 0.5 pH unit since the July 2012 inspection report. The pH is still above the pH reading of 3.74 measured during fall 2011 in the main drainage[5]. The acid seep previously entering the east side of basin 1F is being captured by the USEPA acid collection basin at the time of this inspection. Because of the sediment removal, limestone enhancement, reduced summer flows, and acid seep collection diverting part of the water flow, basin 1F has likely not begun to fully function at the time of this inspection.

Reclamation plants were inspected in all areas. The total number of dead plants was counted during this site inspection at all areas except the repository. The final determination of plant survival will not be made until late September 2012 at the end of the 1 year plant establishment period. Table 2 summarizes the count of dead plants in relation to the extra trees and shrubs planted in excess of the minimum number specified for each area. Based on this preliminary count, it appears there is nearly an adequate number of surviving plants at all areas except the repository. Plant mortality at all areas except the repository was random, with no large areas devoid of plants. Grasses are becoming established at all reclamation areas.

Table 2. Reclamation Planting Mortality Assessment

Location	Dead Plants[1]	Extra Trees and Shrubs Planted
Repository	3,000	148
Repository Stockpile Area	26	7
North Storage Area	165	172
South Storage Area	0	151
Rock Stockpile Area	4	2
WRP-1	23	49
WRP-2	1	0
WRP-3	150	370
WRP-4	92	420

Notes:
1 = The estimate of dead plants at the repository is approximate. All other dead plants were actually counted.

A large percentage of shrubs on the repository have died. All of the plants on the top deck and approximately 60 percent of the plantings on the side slope of the repository have died. Soil conditions under the bark mulch were drier than previously observed, but the soil was still moist. As noted in the June 2012 inspection report, saturated conditions on the top layer of soil are likely causing the high mortality rates of plants on the repository.

In June 2012, additional grass seed was broadcast (Enclosure 4) on the bare areas that existed primarily on the top of the repository (Enclosure 2). Areas on the repository where the grass seed was broadcast have shown increased growth.

Grass was broadcast at WRP-3 in June 2012 and has germinated.

All other areas have low plant mortality, and no maintenance is required. No evidence of recent animal browsing was observed in any of the planted areas. Most surviving trees and shrubs appeared to be

[5] ERRG, 2012. Section 6, Removal Action Monitoring Activities, in "Remedial Action Completion Report, Non-Time-Critical Removal Action for Blue Ledge Mine Site, Siskiyou County, California." February.

ERRG

healthy. ERRG also performed routine maintenance during August 2012 (Enclosure 4). All items on the maintenance task list have been completed.

The August 23, 2012 repository sump water level rose 5 inches to 262 inches from the sump rim to the water level as compared to the July 1, 2012 reading of 267 inches. The bottom of the sump is 326 inches from the rim. The total water depth is 64 inches. The sump is 200 gallons capacity and 60 inches deep. Therefore there is approximately 200 gallons of water in the sump, plus the 6 inch drain pipe and swale that leads to the sump has 4 inches of water and contains approximately 250 gallons of water. The total estimated free water to collect from the sump is 450 gallons. The repository leachate sump water will be removed and disposed of at an approved facility in September 2012.

Site access gates and locks are in good condition, and no evidence of unauthorized access was observed during this site inspection. For a full list of elements inspected, please see the attached site inspection checklist (Enclosure 1), and photographic log (Enclosure 3).

If you have any questions or need additional information, please do not hesitate to contact me at (206) 512-3171 or brian.wetzsteon@errg.com.

Sincerely,

Timothy S. McCormack, LG
Regional Technical Manager

Brian Wetzsteon
Northwest Construction Manager

MH/kj

Encl.: Enclosure 1 – August 2012 Blue Ledge Mine Inspection Checklist
Enclosure 2 – Overall Site Plan
Enclosure 3 – August 2012 Inspection Photographic Log
Enclosure 4 – Maintenance Task List

cc: ERRG Project File

Enclosure 1. August 2012 Blue Ledge Mine Inspection Checklist

BLUE LEDGE MINE
INSPECTION CHECKLIST

MONTHLY INSPECTION
Month: August**, Year:** 2012

BLUE LEDGE MINE MONTHLY INSPECTION CHECKLIST
Month: August **Year:** 2012

Blue Ledge Mine Removal Project
Siskiyou County, California
Operation, Maintenance, and Monitoring Period

NOTE: All photographs associated with this checklist were taken on August 23 and 24, 2012; Refer to Enclosures 2, 3, and 4 in the inspection letter.

Repository

1. Inspect the silt fence, wattles, and other BMPs at the Repository and Repository Stockpile Area (see Enclosure 2). Do BMPs require repair or replacement? ☐ Yes* ☒ No

**If yes, repair or replace damaged components and make recommendations to reduce future damage. A listing of approved BMPs for implementation is shown in Appendix G of the SWPPP.*

Comments: SWPPP restored after maintenance was completed. Installed wattles on road and slopes, new water bar at repository entrance, cleaned out existing water bars.

2. Inspect repository cover soil. Is there evidence of excessive or preferential erosion (see Enclosure 2)? ☐ Yes* ☒ No

**If yes, notify project manager and place temporary BMPs to minimize further erosion until a solution can be found. A listing of approved BMPs for implementation is shown in Appendix G of the SWPPP.*

Comments: Previously stabilized bark rills below the access road are raked out to prevent preferential flow patterns.

3. Inspect the repository access road (see Enclosure 2). Are there any areas of excessive erosion or other areas where the road requires repair? ☐ Yes* ☒ No

**If yes, notify project manager of potential need for repair.*

Comments: _____

4. Inspect repository leachate sump tank and cap (see Enclosure 2). Is the sump and cap in good condition and locked? Is liquid present in the sump? ☒ Yes ☐ No*

**If no, take several pictures of damage and make repairs to fix or secure prior to leaving site (if possible). If liquid is in the sump, measure the depth (requires a minimum 30-foot tape measure). Collection of a liquid sample may be required for profiling and disposal.*

Comments: Depth to water is 262 inches, bottom of sump is 326 inches, total water depth 64 inches.

5. Inspect anchor trench drainage pipes and the repository underdrain where they daylight (see Enclosure 2). Is the screening damaged or is there evidence of the pipes being blocked? ☐ Yes* ☒ No

**If yes, unblock pipe and/or repair screen.*

Comments: All drains were clear, no damage to any screen.

6. Inspect the repository stormwater drain ditch (see Enclosure 2). Is the stormwater drain ditch damaged or is there evidence of any portion of the stormwater drain ditch being blocked? ☐Yes* ☒No

**If yes, unblock ditch.*

Comments: _____

7. Inspect plants in the repository and repository stockpile area (see Enclosure 2). Is there evidence that animals have browsed on the plants? ☐Yes* ☒No

**If yes, reapply Big Game Repellant to prevent further browsing. A listing of grass seeds, fertilizers, animal repellants, and other reclamation products is shown in Appendix G of the SWPPP.*

Comments: No new evidence of browsing after application of Big Game Repellant on May 5, 2012.

8. Have plants died in the Repository and Repository Stockpile Areas (see Enclosure 2)? ☒Yes* ☐No

**If yes, estimate number of plants and record it in the comments. The total number of plants installed at the repository and repository stockpile areas are shown in enclosure : Site Map.*

Comments: The top of the repository has been scarified for hydroseeding. Estimate 60% of plants on the slope of the repository are dead. Estimate 20% of plants below the road are dead.

9. Inspect Flexterra and grass seeded areas on the repository (see Enclosure 2). Are any repairs needed or invasive species present? ☐Yes* ☒No

**If yes, identify areas for repair or pull weeds and dispose of properly.*

Comments: The top deck will be hydroseeded per the specifications and the slope will be hydroseeded with a light application to enhance existing grass as recommended by the Forest Service on 8/14/12.

North Storage Area

1. Inspect road leading to the Repository and North Storage Area (see Enclosure 2). Is there evidence of excessive erosion? Are the water bars damaged? ☐Yes* ☒No

**If yes, apply temporary BMPs and make recommendations for repair. A listing of approved BMPs for implementation is shown in Appendix G of the SWPPP.*

Comments: The access road was seeded, fertilized, strawed, and slashed at the end of the summer maintenance activities. The water bars are restored after maintenance work.

2. Inspect the silt fence, wattles, and other BMPs at the North Storage Area (see Enclosure 2). Do BMPs require repair or replacement? ☐Yes* ☒No

**If yes, repair or replace damaged components and make recommendations to reduce future damage. A listing of approved BMPs for implementation is shown in Appendix G of the SWPPP.*

Comments: The log deck and rock stockpile area were seeded, fertilized, and strawed.

3. Inspect Flexterra and grass seeded areas on the North Storage Area (see Enclosure 2). Are any repairs needed or any invasive species present? ☐Yes* ☒No

**If yes, identify areas for repair or pull weeds and dispose of properly.*

Comments: One area of rills near the center of the south slope was stabilized with rocks and slash.

4. Inspect plants in the North Storage Area (see Enclosure 2). Have animals browsed on the plants? ☐Yes* ☒No

**If yes, reapply Big Game Repellant to prevent further browsing. A listing of grass seeds, fertilizers, animal repellents, and other reclamation products is shown in Appendix G of the SWPPP.*

Comments: No new evidence of browsing after application of Big Game Repellant on May 5, 2012.

5. Have any plants died in the North Storage Area (see Enclosure 2)? ☒Yes* ☐No

**If yes, estimate number of plants and record it in the comments. The total number of plants installed at the North Storage Area is shown on Enclosure 2.*

Comments: Counted 165 dead plants out of 1,366 plants.

South Storage Area

1. Inspect the silt fence, wattles, and other BMPs at the South Storage Area (see Enclosure 2). Do BMPs require repair or replacement? ☐Yes* ☒No

**If yes, repair or replace damaged components and make recommendations to reduce future damage. A listing of approved BMPs for implementation is shown in Appendix G of the SWPPP.*

Comments: Accumulated sediment was removed from behind the logs and silt fence at the entrance.

2. Inspect plants in the South Storage Area. Have animals browsed on plants? ☐Yes* ☒No

**If yes, reapply Big Game Repellent to prevent further browsing. A listing of grass seeds, fertilizers, animal repellents, and other reclamation products is shown in Appendix G of the SWPPP.*

Comments: No new evidence of browsing after application of Big Game Repellant on May 5, 2012

3. Have any plants died in the South Storage Area (see Figure P-5)? ☐Yes* ☒No

**If yes, estimate number of plants and record it in the comments. The total number of plants installed at the South Storage Area is shown on Figure P-5.*

Comments: All plants appear healthy. No dead plants noted out of 490 plants.

4. Inspect Flexterra and grass seeded areas along Joe Creek (see Figure P-5). Are any repairs needed or any invasive species present? ☐Yes* ☒No

**If yes, identify areas for repair or pull weeds and dispose of properly.*

Comments: _____

Rock Stockpile Area

1. Inspect the silt fence, wattles, and other BMPs at the Rock Stockpile Area (see Figure P-6). Do BMPs require repair or replacement? ☐Yes* ☒No

**If yes, repair or replace damaged components and make recommendations to reduce future damage. A listing of approved BMPs for implementation is shown in Appendix H of the SWPPP.*

Comments: _____

2. Inspect plants in the Rock Stockpile Area (see Figure P-6). Have animals browsed on the plants? ☐Yes* ☒No

**If yes, reapply Big Game Repellent to prevent further browsing. A listing of grass seeds, fertilizers, animal repellents, and other reclamation products is shown in Appendix G of the SWPPP.*

Comments: No browsing evident after application of Big Game Repellant on May 5, 2012.

3. Have any plants died in the Rock Stockpile Area (see Figure P-6)? ☒Yes* ☐No

**If yes, estimate number of plants and record it in the comments. The total number of plants installed at the south storage area is shown on Figure P-6.*

Comments: Counted 4 dead plants out of 237 plants.

4. Inspect Flexterra and grass seeded areas (see Figure P-6). Are any repairs needed or any invasive species present? ☐Yes* ☒No

**If yes, identify areas for repair or pull weeds and dispose of properly.*

Comments: Very good grass growth in this area.

Forest Service Roads and Haul Roads

1. Are there areas of Forest Service Road 1060 that have experienced excessive erosion? ☐Yes* ☒ No

**If yes, document road condition with photographs and install temporary BMPs to help minimize further erosion. A listing of approved BMPs for implementation is shown in Appendix G of the SWPPP.*

Comments: Ditches were cleaned out where needed and rills have been graded.

2. Are culverts along Forest Service Road 1060 marked and draining properly? ☒Yes ☐No*

**If no, perform necessary maintenance or repair to culvert to return to good working condition.*

Comments: The culverts have been cleared for drainage.

3. Inspect haul roads 1, 2, 3, and 4; the miner's trail parking area; and the decommissioned haul roads 2 and 4 (see Enclosure 2). Are there areas of excessive erosion? Are water bars damaged? ☐Yes* ☒No

**If yes, place temporary BMPs and repair damaged water bars. A listing of approved BMPs for implementation is shown in Appendix G of the SWPPP.*

Comments: Two erosion rills were repaired on the side bank of Haul Road 4. Additional berms, water bars, straw, slash were installed during the August 2012 maintenance event to reduce further erosion.

4. Inspect BMPs along Haul Roads 1, 2, 3, and 4; the miner's trail parking area; and the decommissioned Haul Roads 2 and 4 (see Enclosure 2). Are BMPs in good condition? ☒Yes ☐ No*

**If no, repair and/or replace BMPs as necessary. A listing of approved BMPs for implementation is shown in Appendix G of the SWPPP.*

Comments: Repairs were made to silt fences at creek crossings (up-righting & re-staking as necessary).

5. Inspect areas of Haul Roads 1, 2, 3, and 4; the miner's trail parking area; and the decommissioned Haul Roads 2 and 4 (see Enclosure 2). Record grass growth progress. Are there bare areas that require reseeding? ☐Yes* ☒No

**If yes, reseed bare areas. A listing of grass seeds, fertilizers, animal repellents, and other reclamation products is shown in Appendix G of the SWPPP.*

Comments: Side slopes have good grass growth.

Waste Rock Pile 1

1. Inspect log wattles, straw wattles, and other BMPs at the reclamation areas on WRP-1 (See Enclosure 2). Are all BMPs in good condition? ☒Yes ☐No*

**If no, repair and/or replace BMPs as necessary. A listing of approved BMPs for implementation is shown in Appendix G of the SWPPP.*

Comments: No repairs are needed.

2. Inspect Flexterra and grass seeded areas at the reclamation areas on WRP-1 (see Enclosure 2). Are any repairs needed or any invasive species present? ☐Yes* ☒No

**If yes, identify areas for repair or pull weeds and dispose of properly.*

Comments: _____

3. Inspect plants at the reclamation areas on WRP-1 (see Enclosure 2). Have animals browsed on the plants? ☐Yes* ☒No

**If yes, reapply Big Game Repellent to prevent further browsing. A listing of grass seeds, fertilizers, animal repellents, and other reclamation products is shown in Appendix G of the SWPPP.*

Comments: No new evidence of browsing after application of Big Game Repellant on May 5, 2012.

4. Have any plants at the reclamation areas died on WRP-1 (see Enclosure 2)? ☐Yes* ☒No

**If yes, estimate number of plants and record it in the comments. The total number of plants installed at WRP-1 is shown on Enclosure 2.*

Comments: Counted 23 dead plants out of 241 plants. All others are healthy. Repaired sheet mulch anchors (pins and rocks) around the plants.

5. Are there areas of excessive erosion on WRP-1 (see Enclosure 2)? ☐Yes* ☒No

**If yes, apply temporary BMPs. A listing of grass seeds, fertilizers, animal repellents, and other reclamation products is shown in Appendix G of the SWPPP.*

Comments: _____

6. Inspect each sediment treatment basin at WRP-1 (see Enclosure 2). For each basin, record the volume of sediment accumulated (as a percentage of capacity), the amount of fouled limestone (in inches), and the pH of water as listed below (if any). Record and photograph any excessive erosion in or around the sediment basin.

   Sediment Treatment Basin 1A (closest to the Joe Creek):

   Accumulated sediment: 0%

   Fouled limestone: none

   pH below basin 1A: N/A

   Water depth: none

   Excessive erosion around the basin? ☐Yes* ☒No

   Sediment Treatment Basin 1B:

   Accumulated sediment: 0%

   Fouled limestone: none

   pH below basin 1B: N/A

   Water depth: none

   Excessive erosion around the basin? ☐Yes* ☒No

   Sediment Treatment Basin 1C:

   Accumulated sediment: 0%

   Fouled limestone: none

   pH below basin 1C: N/A

   Water depth: none

   Excessive erosion around the basin? ☐Yes* ☒No

Sediment Treatment Basin 1D:

Accumulated sediment: 0%

Fouled limestone: none

pH below basin 1D: N/A

Water depth: none

Excessive erosion around the basin? ☐Yes* ☒No

Sediment Treatment Basin 1E:

Accumulated sediment: 0%

Fouled limestone: none

pH below basin 1E: N/A

Water depth: none

Excessive erosion around the basin? ☐Yes* ☒No

Sediment Treatment Basin 1F:

Accumulated sediment: 0%

Fouled limestone: none

pH below basin 1F: 5.5

pH above basin 1F: 4.5

Water depth: Only a trickle of water on the bedrock is present in the channel.

Excessive erosion around the basin? ☐Yes* ☒No

Waste Rock Pile 2

1. Inspect wattles, silt fence, and other BMPs at the reclamation areas on WRP-2 (see Enclosure 2). Are all BMPs in good condition? ☒Yes ☐No*

**If no, repair and/or replace BMPs as necessary. A listing of approved BMPs for implementation is shown in Appendix G of the SWPPP.*

Comments: _____

2. Inspect plants at the reclamation areas on WRP-2 (see Enclosure 2). Have animals browsed on the plants? ☐Yes* ☒No

**If yes, reapply Big Game Repellent to prevent further browsing. A listing of grass seeds, fertilizers, animal repellents, and other reclamation products is shown in Appendix G of the SWPPP.*

Comments: _____

3. Have any plants at the reclamation areas died on WRP-2 (see Enclosure 2)? ☐Yes* ☒No

**If yes, estimate number of plants and record it in the comments. The total number of plants installed at WRP-2 is shown on Enclosure 2.*

Comments: Counted 1 dead plant out of 24 plants. All others are healthy.

4. Are there areas of excessive erosion on WRP-2? ☐Yes* ☒No

**If yes, apply temporary BMPs. A listing of grass seeds, fertilizers, animal repellants, and other reclamation products is shown in Appendix G of the SWPPP.*

Comments: The drainage crossing on Haul Road 1 above basin 2A and the channel into 2A is repaired with geotextile and rip rap.

5. Inspect each sediment treatment basin at WRP-2 (see Enclosure 2). For each basin, record the volume of sediment accumulated (as a percentage of capacity), the amount of fouled limestone (in inches), and the pH of the water as listed below (if any). Record and photograph any excessive erosion in or around the sediment basin.

   Sediment Treatment Basin 2A:

   Accumulated sediment: 0%

   Fouled limestone: none

   pH below basin 2A: N/A

   pH above basin 2A: N/A

   Water depth: none

   Excessive erosion around the basin? ☐Yes* ☒No

   Sediment Treatment Basin 2B:

   Accumulated sediment: 0%

   Fouled limestone: none

   pH below basin 2B: N/A

   pH above basin 2B: N/A

   Water depth: none

   Excessive erosion around the basin? ☐Yes* ☒No

Waste Rock Pile 3

1. Inspect log wattles, straw wattles, and other BMPs at the reclamation areas on WRP-3 (see Enclosure 2). Are all BMPs in good condition? ☒Yes ☐No*

**If no, repair and/or replace BMPs as necessary. A listing of approved BMPs for implementation is shown in Appendix G of the SWPPP.*

Comments: Straw and log wattles were repaired during the Summer maintenance event.

2. Inspect plants at the reclamation areas on WRP-3 (see Enclosure 2). Have animals browsed on the plants? ☐Yes* ☒No

**If yes, reapply Big Game Repellent to prevent further browsing. A listing of grass seeds, fertilizers, animal repellents, and other reclamation products is shown in Appendix G of the SWPPP.*

Comments: No new evidence of browsing on plants was observed.

3. Have any plants at the reclamation areas died on WRP-3 (see Enclosure 2)? ☒ Yes* ☐No

**If yes, estimate number of plants and record it in the comments. The total number of plants installed at WRP-3 is shown on Enclosure 2.*

Comments: Counted 132 dead plants and assume 150 total dead plants due to debris burial out of 1,067 plants.

4. Are there areas of excessive erosion on WRP-3? ☐Yes* ☒No

**If yes, apply temporary BMPs. A listing of grass seeds, fertilizers, animal repellants, and other reclamation products is shown in Appendix G of the SWPPP.*

Comments: Loose straw wattles were restaked and log wattles with gaps were plugged with rock and soil.

5. Inspect each sediment treatment basin at WRP-3 (see Enclosure 2). For each basin, record the volume of sediment accumulated (as a percentage of capacity), the amount of fouled limestone (in inches), and the pH of the water as listed below (if any). Record and photograph any excessive erosion in or around the sediment basin.

   Sediment Treatment Basin 3:

   Accumulated sediment: 0%

   Fouled limestone: none

   pH below basin 3: N/A

   pH above basin 3: N/A

   Water depth: none

   Excessive erosion around the basin? ☐Yes* ☒No

Waste Rock Pile 4

1. Inspect log wattles, straw wattles, and other BMPs at the reclamation areas on WRP-4 (see Enclosure 2). Are all BMPs in good condition? ☒Yes ☐No*

**If no, repair and/or replace BMPs as necessary. A listing of approved BMPs for implementation is shown in Appendix G of the SWPPP.*

Comments: _____

2. Inspect plants at the reclamation areas on WRP-4 (see Enclosure 2). Have animals browsed on the plants? ☐Yes* ☒No

**If yes, reapply Big Game Repellent to prevent further browsing. A listing of grass seeds, fertilizers, animal repellents, and other reclamation products is shown in Appendix G of the SWPPP.*

Comments: No browsing has occurred since application of Big Game Repellant on May 5, 2012.

3. Have any plants at the reclamation areas died on WRP-4 (see Enclosure 2)? ☒Yes* ☐No

**If yes, estimate number of plants and record it in the comments. The total number of plants installed at WRP-4 is shown on Enclosure 2.*

Comments: Counted 92 dead plants out of 768 plants. Most plants look healthy.

4. Are there areas of excessive erosion on WRP-4? ☐Yes* ☒No

**If yes, apply temporary BMPs. A listing of grass seeds, fertilizers, animal repellants, and other reclamation products is shown in Appendix G of the SWPPP.*

Comments: _____

5. Inspect the reinforced slope stability fabric area at WRP-4 (see Enclosure 2). Is the fabric in good condition? ☒Yes ☐No*

**If no, perform maintenance or repair.*

Comments: Nailed down all anchor nails. The fabric is well anchored and in good condition.

Additional Notes (Time, temperature, wind direction, evidence of unauthorized access, condition of green gate, locks, and other observations)

8/23/12 - The weather was clear and sunny, temperature 70°F, light wind. The gates and locks were in good condition with no unauthorized access noted. The site is generally in very good condition.

8/24/12 – Final winterization of north stockpile, access road, repository road, repository bark, 1060 road ditches, and final photos.

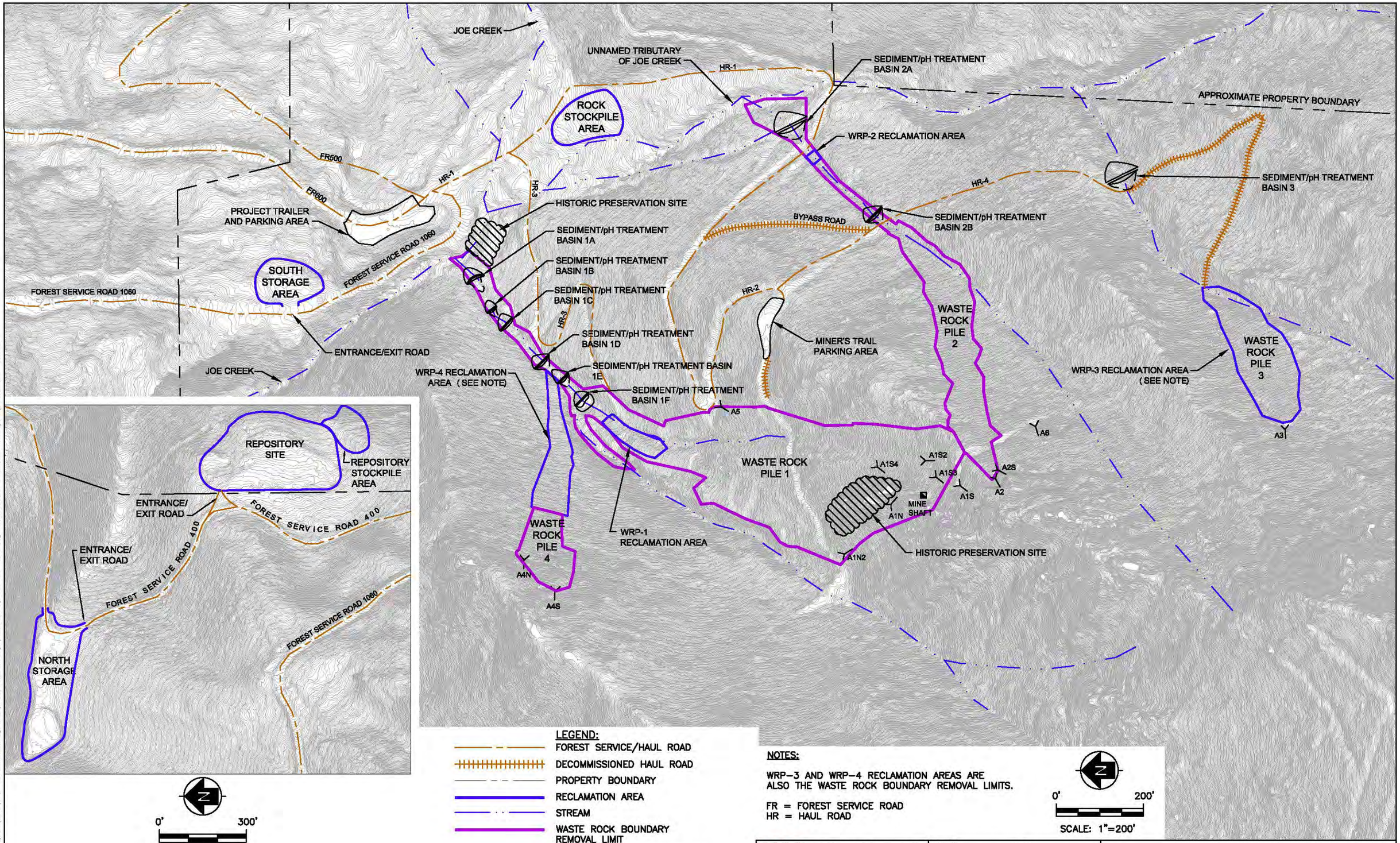
Brian Wetzsteon
Name of Inspector(s)

Engineering/Remediation Resources Group, Inc. (ERRG)
Company

Signature of Inspector

August 23 and 24, 2012
Date of Inspection

Enclosure 2. Overall Site Plan



SOURCE: URS BLUE LEDGE MINE REMOVAL ACTION, DRAWING NO. 101, SHEET 7 OF 60, CAD FILE NO. 101, DATED: 2/2010.

ERRG Engineering/Remediation Resources Group, Inc. 4585 Pacheco Blvd, Suite 200 Martinez, California 94553 (925) 969-0750	CLIENT: USDA FOREST SERVICE	OVERALL SITE PLAN		
	LOCATION: BLUE LEDGE MINE REMOVAL ACTION	DRAWN BY: RDB 11/18/11	CHECKED BY: JGS 11/21/11	PROJECT NO. 2010-084	ENCLOSURE 2

Enclosure 3. August 2012 Inspection Photographic Log

Photograph 1: Top of Repository looking south after scarified, with extra wattles.
Blue Ledge Mine, Rogue River-Siskiyou National Forest, CA
Photographed by: Brian Wetzsteon (ERRG) Date: August 23, 2012

Photograph 2: Repository slope with extra wattles. Note grass growth.
Blue Ledge Mine, Rogue River-Siskiyou National Forest, CA
Photographed by: Brian Wetzsteon (ERRG) Date: August 24, 2012

Photograph 3: Repository stockpile looking south. Good plant and grass growth.
Blue Ledge Mine, Rogue River-Siskiyou National Forest, CA
Photographed by: Brian Wetzsteon (ERRG) Date: August 24, 2012

Photograph 4: Repository slope below access road. Raked rills and new straw wattle.
Blue Ledge Mine, Rogue River-Siskiyou National Forest, CA
Photographed by: Brian Wetzsteon (ERRG) Date: August 24, 2012

Photograph 5: Excess logs placed at public access for firewood.
Blue Ledge Mine, Rogue River-Siskiyou National Forest, CA
Photographed by: Brian Wetzsteon (ERRG) Date: August 24, 2012

Photograph 6: Typical temporary bridge on Haul Road 1 across Joe Creek.
Blue Ledge Mine, Rogue River-Siskiyou National Forest, CA
Photographed by: Brian Wetzsteon (ERRG) Date: August 23, 2012

Photograph 7: Closed North Stockpile Access Road.
Blue Ledge Mine, Rogue River-Siskiyou National Forest, CA
Photographed by: Brian Wetzsteon (ERRG) Date: August 24, 2012

Photograph 8: North Storage Area looking west.
Blue Ledge Mine, Rogue River-Siskiyou National Forest, CA
Photographed by: Brian Wetzsteon (ERRG) Date: August 23, 2012

Photograph 9: South Stockpile Area looking east.
Blue Ledge Mine, Rogue River-Siskiyou National Forest, CA
Photographed by: Brian Wetzsteon (ERRG) Date: August 23, 2012

Photograph 10: Typical sediment removal and limestone inspection at Basin 1C.
Blue Ledge Mine, Rogue River-Siskiyou National Forest, CA
Photographed by: Brian Wetzsteon (ERRG) Date: August 7, 2012

Photograph 11: Sediment/pH Treatment Basin 1A after maintenance.
Blue Ledge Mine, Rogue River-Siskiyou National Forest, CA
Photographed by: Brian Wetzsteon (ERRG) Date: August 23, 2012

Photograph 12: Sediment/pH Treatment Basin 1B after maintenance.
Blue Ledge Mine, Rogue River-Siskiyou National Forest, CA
Photographed by: Brian Wetzsteon (ERRG) Date: August 23, 2012

Photograph 13: Sediment/pH Treatment Basin 1C after maintenance.
Blue Ledge Mine, Rogue River-Siskiyou National Forest, CA
Photographed by: Brian Wetzsteon (ERRG) Date: August 23, 2012

Photograph 14: Sediment/pH Treatment Basin 1D after maintenance.
Blue Ledge Mine, Rogue River-Siskiyou National Forest, CA
Photographed by: Brian Wetzsteon (ERRG) Date: August 23, 2012

Photograph 15: Sediment/pH Treatment Basin 1E after maintenance.
Blue Ledge Mine, Rogue River-Siskiyou National Forest, CA
Photographed by: Brian Wetzsteon (ERRG) Date: August 23, 2012

Photograph 16: Sediment/pH Treatment Basin 1F after maintenance.
Blue Ledge Mine, Rogue River-Siskiyou National Forest, CA
Photographed by: Brian Wetzsteon (ERRG) Date: August 23, 2012

Photograph 17: Sediment/pH Treatment Basin 2A after maintenance. Sediment buried under soil and slash in upper left of photo.
Blue Ledge Mine, Rogue River-Siskiyou National Forest, CA
Photographed by: Brian Wetzsteon (ERRG) Date: August 23, 2012

Photograph 18: Sediment/pH Treatment Basin 2B after maintenance. Sediment buried under soil and slash on slope adjacent to basin.
Blue Ledge Mine, Rogue River-Siskiyou National Forest, CA
Photographed by: Brian Wetzsteon (ERRG) Date: August 23, 2012

Photograph 19: Sediment/pH Treatment Basin 3 after maintenance. Sediment buried under soil and slash in upper left of photo.
Blue Ledge Mine, Rogue River-Siskiyou National Forest, CA
Photographed by: Brian Wetzsteon (ERRG) Date: August 23, 2012

Photograph 20: WRP-1 reclamation area plants and grass.
Blue Ledge Mine, Rogue River-Siskiyou National Forest, CA
Photographed by: Brian Wetzsteon (ERRG) Date: August 23, 2012

Photograph 21: WRP-2 reclamation area in left of photo, and drainage crossing for Haul Road 1 above basin 2A.
Blue Ledge Mine, Rogue River-Siskiyou National Forest, CA
Photographed by: Brian Wetzsteon (ERRG) Date: August 23, 2012

Photograph 22: WRP-3.
Blue Ledge Mine, Rogue River-Siskiyou National Forest, CA
Photographed by: Brian Wetzsteon (ERRG) Date: August 23, 2012

Photograph 23: WRP-4 reclamation plants and grass.
Blue Ledge Mine, Rogue River-Siskiyou National Forest, CA
Photographed by: Brian Wetzsteon (ERRG) Date: August 23, 2012

Photograph 24: Repaired erosion rill above basin 3, in Haul Road 4 fill slope.
Blue Ledge Mine, Rogue River-Siskiyou National Forest, CA
Photographed by: Brian Wetzsteon (ERRG) Date: August 23, 2012

Photograph 25: Sediment from basins 1A to 1F buried under soil at Haul Road 3 upper switchback.
Blue Ledge Mine, Rogue River-Siskiyou National Forest, CA
Photographed by: Brian Wetzsteon (ERRG) Date: August 23, 2012

Photograph 26: Water bar at Adit 5 to direct hillside runoff away from road.
Blue Ledge Mine, Rogue River-Siskiyou National Forest, CA
Photographed by: Brian Wetzsteon (ERRG) Date: August 23, 2012

Photograph 27: Reinforced slope stability fabric at WRP-4.
Blue Ledge Mine, Rogue River-Siskiyou National Forest, CA
Photographed by: Brian Wetzsteon (ERRG) Date: August 23, 2012

Photograph 28: EPA acid seep collection basin. Basin 1F at right edge of photo.
Blue Ledge Mine, Rogue River-Siskiyou National Forest, CA
Photographed by: Brian Wetzsteon (ERRG) Date: August 23, 2012

Enclosure 4. Maintenance Task List

Maintenance Task List

Task (by area)	*Maintenance Date*	*Notes*	*Picture (y/n)*	*Intials*
Roads				
1060 Road - remove soil and debris from ditch where water crosses road in about 5 places from the green gate to the repository.	8-24-12 5/5/12	FIXED REMAINING DITCHES W/SPIDER there were three spots I was able to fix	N Y	BLW RW
Clean culvert inlet at south stockpile and at HR1 entry near trailer area.	5/5/12		Y	RW
Move rocks to allow ponded water at HR1 entry to run into culvert inlet.	5/5/12		Y	RW
Fill in rill at big rolling water bar.	5/5/12		Y	RW
Clean culvert inlet at south stockpile and at HR1 entry near trailer area.	5/6/12		Y	RW
Move rocks to allow ponded water at HR1 entry to run into culvert inlet.	5/6/12		Y	RW
Repository				
Expose toe drain outlets. Fix damaged screen.	5/5/12		Y	RW
Clean up liner scrap and other geotextile trash.	5/5/12		N	RW
Regrade rills in bark below repository road. Lop branches to lay flat on/in bark.	8-24-12		Y	BLW

Put grass seed + fertilizer on the bare slopes below the sump.	5/6/12		N	RW
Try putting more grass seed and fertilizer on the thin grass spots to see if that helps. Priority is the slope.	6/2/12		N	RW

North Stockpile				
Put slash on rills in the slope west of the rock stockpile. Use existing slash and cut it to lay flat or embed into dirt.	5/11/12		Y	RW
South Stockpile				
Add more straw, slash, regrade bark to cover rills and iron staining.	5/11/12		Y	RW
Re-direct water into drain pipe to stop rills from growing and heal.	5/11/12		n	RW
Cleanout sediment behind log and silt fence at entrance.	8-23-12		Y	BLW
Cleanout culvert inlet and fix sediment wattles.	5/11/12		Y	RW
Trailer area				
Place geoxtextile and rip rap over erosion on bank at haul road entrance.	8-14-12		Y	BLW
Repair silt fence at creek crossings	6/1/12		Y	RW

Sediment Basins #1A-F				
Restore liner dam to raise water elevation at basins 1B and 1C. Water currently leaks around the edge or seam of liner.	8-17-12		N	BLW
Clean out sediments and debris.	8-17-12		Y	BLW
WRP#4				
Repair any straw wattles that have come loose.	6/8/12		Y	RW
Haul Roads				
Culvert inlet and outlet cleanout on HR1 just below #2 creek crossing.	6/2/12		Y	RW
Repair silt fence at creek crossings	6/2/12		Y	RW
Spread out dirt sluff at bypass road intersection and put grass seed on it.	NA PER PETE - VEGETATION HAS STARTED TO GROW ON IT.		Y	BLW RW
Fix water bars that have sediment or have been overtopped and created rills. Fix rocks at outlets. Clean out sediment as needed to maintain function.	6/2/12		Y	RW
Install new water bar near toe of slope beyond sluff at Adit 5 so it drains to WRP1.	8-20-12		Y	BLW

Slash-in the large downslope rills above Sediment basin 2B and above basin 3. Use bushy brush from above road. Add rocks and logs to anchor and stabilize slash so the rill doesn't get wider.	8-23-12 6/1/12		Y N	BLW RW
Plug the rill above basin 3 where it goes under the logs. Use brush, logs, and rocks.	8-23-12 6/2/12		Y N	BLW RW
Install a couple of new water bars at intermediate locations that wont erode down the slope, and that will reduce the amount of water flowing down the already eroded slope.	8-23-12		Y	BLW
Install a dirt berm/log/water bar at the switchback above basin 3 to cut off water from the upslope and direct it to the corner slope of the switchback, similar to the work at Adit 5.	8-23-12		Y	BLW
Put grass seed and fertilizer on the slopes/rills to help stabilize them.	8-23-12		N	BLW
Sediment Basin #2A and 2B				
Clean out sediments and debris	8-17-12		Y	BLW
Restore road crossing into a rolling creek crossing that is made of rock with geotextile underneath to prevent soil scouring. (OK to have duders create a check dam at upper and lower sides of crossing to slow down the water and prevent scouring. Don't disturb reclamation plants on slopes at #2)	8-22-12		Y	BLW

Bypass Road				
Install a berm/water bar on bypass road where a rill has developed down to bedrock.	8-22-12		N	BLW
Creek Crossing Bridges				
Measure the span of a bridge for each creek crossing. (12'?)				
Measure straight logs in the North Stockpile to see how many logs are 12 inch minimum diameter, straight, and over 16 feet long. Mark the ends with paint. Need 18 total logs. Look for other good logs along repository road we can trade out with crooked logs from the North Stockpile.	6/2/12	there apears to be about 15 logs some fit the 12" diameter but exact length is unknown because they are near the bottom of the stack		
WRP3				
Repair straw wattles that have come loose.	8-22-12		Y	BLW
Check for grass growth. If no grass sprouts, how much native seed do we have left to try to get something going this spring?	6/1/12	growth is still minimal	Y	RW
Additional Maintenance Performed				
Apply Big Game Repellant to all plants	6/2/12		N	RW