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TO: Internal File

THRU: Jim Smith, Team Lead JDS

FROM: Robert Davidson, Senior Reclamation Specialist (Soils) RAD

RE: Phase I Bond Release for Cottonwood Fan Portal, PacifiCorp, Cottonwood Wilberg Mine, ACT/015/019-BR00D

SUMMARY:

The Phase 1 bond release application includes a letter detailing reclamation of the Cottonwood Fan Portal area. The package includes Attachments A through E for amending the Mine Reclamation Plan. Although the package includes a letter detailing reclamation of the fan portal, it does not include amended sections for the MRP detailing the specifics of reclamation activities.

TECHNICAL ANALYSIS:

ENVIRONMENTAL RESOURCE INFORMATION

SOILS RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 783.21, 817.200(c); R645-301-220, -301-411.

Analysis:

Soil Characterization

1997 Soil Samples Cottonwood Fan Portal Area. During June 1997, six soil samples were taken from the topsoil (CTW0697), subsoil (CTW0597), 1981 re-vegetated slope (CTW0797 & 0897), bench-level terrace 1 (CTW0997), and a composite sample for terraces 2, 3 and 4A (CTW1097). Sample results are contained in Attachment D, Soil Sampling Analysis Report. Sample locations are presented on Plate 5-5, Drawing KS1710D. As reported by the

laboratory results, sample materials meet the criteria of the Division's guidelines for topsoil and overburden[1] and show no toxic or acid forming characteristics. Soil pH values range from 7.6 to 7.9 which are indicative of calcareous conditions. In fact, CaCO3 values range from 33.7% to 56.2%. EC values range from 0.5 mmhos/cm to 1.51 mmhos/cm which are well below the saline soil limit of 4 mmhos/cm. Based on the SAR values (0.82 to 3.31), no sodium problem is present. Adjusted SAR could not be calculated because the data sets did not contain bicarbonate values. Soil textures are predominantly loam, sandy loam and silt loam with the silty loam textures found on the stripped terraces. Negligible amounts of Selenium and Boron were analyzed in the samples.

Findings:

Information provided in the application is adequate to meet the requirements of this section of the regulations.

RECLAMATION PLAN

TOPSOIL AND SUBSOIL

Regulatory Reference: 30 CFR Sec. 817.22; R645-301-240.

Analysis:

The five acre Cottonwood Fan Portal site was initially disturbed under an exploration permit in anticipation of constructing a major portal facility. However, construction of an actual fan portal installation was initially postponed, and finally abandoned, after mining emphasis and needs changed shifting mining emphasis to the South Cottonwood lease. Final reclamation of the Cottonwood fan portal area was initiated and completed in November of 1998. When the fan portal site was initially disturbed, the cast-off material below the site was contemporaneously reclaimed in 1981. This area was not re-disturbed in the 1998 reclamation activities, but remained as final reclamation.

A historical abandoned mine (Old Johnson Mine) is located within the Cottonwood fan portal reclamation area. Historical remnants include an old wagon road and two sealed portals. The old wagon road was upgraded and utilized for hauling topsoil during reclamation of the fan portal area in 1998. Afterwards, the roadway was reclaimed, leaving an access trail to the two old historical portals. The MRP contained reclamation plans to completed backfill and remove all traces of this old roadway.

[1] Leatherwood, J., and Duce, D., 1988. Guidelines for Management of Topsoil and Overburden for Underground and Surface Coal Mining. State of Utah Department of Natural Resources, Division of Oil, Gas and Mining.

Soil Redistribution

The application letter describes that backfilling and grading essentially consisted of placing topsoil on each of the five terraces and the access road to the Old Johnson Mine site. The topsoil was taken from both the subsoil and topsoil stockpiles, with complete removal of the topsoil stockpile. As-built topography is provided on Plates 5-3, Plate 5-5, and Plate 5-7. Plate 5-5, Drawing KS1710D, shows and depicts where topsoil and subsoil will be used in the reclamation of the terraces of the Cottonwood Fan Portal and the Old Johnson Mine Site road. Plates 3-3 and Plate 5-7 illustrate cross-sectional views for soil placement on the reclaimed terraces and the Old Johnson portal access road.

Soil distribution quantities for backfilling and reclaiming each of the 5 terraces are provided on Plate 5-3, sheet 2 of 2, Cottonwood Fan Portal Reclamation Slope Cross Sections. A total of 3121.7 cubic yards of topsoil was used for terraces 1, 2, 3, 4 and 4a. Plate 5-7 shows cross-sectional views for reclaiming the Old Johnson access road. A quantity table on Plate 5-7 shows that 351.2 cubic yards of soil was used to backfill this area. A grand total of 3472.9 cubic yards of soil was actually used to reclaim the fan portal area. This amount of actual soil used is approximately 1000 cubic yards of soil greater than projected in the approved MRP. The approved MRP states that 1030 cubic yards of topsoil and 1550 cubic yards of subsoil for a grand total of 2580 cubic yards would be needed for reclaiming the Cottonwood fan portal area.

Soil Stabilization and Erosion Control

The Phase 1 bond release application letter does not state anything about rock placement and it is assumed that rock placement occurred as outlined in the approved MRP. The approved MRP states the following:

- Soil will be compacted in lifts while rock and boulders will be positioned along the front face of the benches to help control slope sloughing. In addition, the approved MRP states that mid-sized rocks and boulders will be placed on the prepared slopes and nested into the soil with rock distribution and placement from the stockpiles and existing slope will be positioned to help provide slope containment and natural esthetic appearance.

The Phase 1 bond release application letter states that subsoil and topsoil were not placed sequentially because both soil types were similar in physical and chemical properties. In addition, soil replacement depths vary between 0 and approximately 10 feet because of the slope gradient. The approved MRP states the following:

- Slopes will be between 1½:1 to 2:1. A minimum 1.0 foot topsoil placement will occur on the bench area beyond the fill slope. Six inches of topsoil will be place on the 1½:1 slopes. Subsoil placement is shown on Plate 5-3. Subsoil is used to backfill against the cut slopes and highball with subsoil placement depth varying depending on location.

The reclaimed slopes were deep gouged at time of soil replacement to protect against erosion. The approved MRP states the following:

- An erosion control blanket will be used to cover all slopes and benches that receive redistributed soils.

Slope Beneath Fan Portal Area

The contemporaneously reclaimed slope at the base of the fan portal area remained as final reclamation. This slope was disturbed during the reclamation of the Cottonwood Fan Portal terraces and will therefore remain as final reclamation.

Remaining Subsoil Topsoil Piles

Both the topsoil and subsoil piles are shown with soil volumes calculated using baseline cross-section stations as shown on the MRP Plate 5-4. The salvaged topsoil pile contained approximately 1,061 cubic yards while the subsoil pile contained approximately 8,733 cubic yards of soil. Based on these volumes, approximately 6321 cubic yards of soil remains in the subsoil stockpile after reclaiming the Cottonwood fan portal area.

Accordingly, the topsoil stockpile area should have been graded to approximate original contour. Likewise, the disturbed portion of the subsoil stockpile should have been contoured and revegetated. The remaining subsoil will be used to reclaim Trail Mountain.

Findings:

Information provided in the application is not adequate to meet the requirements of this section of the regulations. Prior to final approval, the applicant must supply the following in accordance with:

R645-300-142 and -143, and R645-301-120, The Phase 1 bond release application package needs to include applicable amended MRP sections explaining activities as they actually occurred during reclamation of the Cottonwood fan portal site. Amended sections need to explain variations to the approved MRP and justify why the approved procedures where changed during actual reclamation.

RECOMMENDATIONS/CONCLUSIONS:

Prior to approval, in addition to Attachments A through E, the Phase 1 bond release application package needs to include amended sections detailing reclamation activities and changes as they actually occurred during reclaiming the Cottonwood fan portal area.

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