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TECHNICAL MEMORANDUM

Utah Coal Regulatory Program

May 30, 2013

TO: Internal File *DRF*

THRU: Ingrid Campbell, Team Lead *IC*

FROM: Priscilla Burton, Environmental Scientist III *PWB by sas*

RE: Update to Volume 10, Pacificorp, Cottonwood/Wilberg Mine, Permit #C/015/0019 and Project # 4329

SUMMARY:

The Cottonwood Waste Rock site was developed in 1999. On April 25, 2013, the Division received Energy West Mining Company's revision of Volume 10 of the MRP which describes the operation and reclamation plan for the Cottonwood Mine Waste Rock Site. Volume 10 was updated to follow the organization sequence of the Utah Coal regulations. The update also removes some sampling requirements from the MRP. I have reviewed both the currently approved plan and the revision of the Soils Chapter. There are a few deficiencies with the revised Soils Chapter, as follows:

R645-301-121.200, 1) For clarity, please include the date of initial construction and the status of the site at the present time. Please provide a map showing the reclaimed and active sections of this site. **2)** A cover sheet for Appendix A and Appendix B is requested and the Appendices should be included in the Table of Contents.

R645-301-231.300, Please include the interim monitoring and reporting described on page 3-11 of the approved plan

R645-301-234, 1) Please include the salvage of topsoil along the roadway and its storage on the road embankment, see existing plan pages 3-3 and 3-4. **2)** Plates 4-4 shows the topsoil and subsoil stockpile locations and topography. No volume estimates are provided. Please provide volume estimates for soil stored in stockpiles. If contemporaneous reclamation has reduced the volumes significantly, please indicate the remaining volumes of topsoil and subsoil in stockpiles. **3)** Plate 4-5 points to the location of the soil stockpiles, but does not outline them. Soil stockpiles should be outlined on Plate 4-5. **4)** Section 301-526 Topsoil states that access road

topsoil was temporarily stockpiled in locations along the road. What is the status of these soil stockpiles. Have they been treated with interim reclamation? They should also be shown on the map.5) Please delete the words "if found to be needed" from the interim fertilizer application which is item 3 of the interim revegetation methodology.

R645-301-243, Please include the interim soil monitoring described on page 3-11 of the approved plan.

R645-301-220, In Section R645-301-231.100, please refer to Map 7-2 topsoil stripping map, which provides historical information.

R645-301-242, 1) Please include the collection of topsoil from the 5 acre roadway outsoles and its redistribution in this discussion. 2) Please state the reclamation of the entire site will require 39,000 yd³ of topsoil and 26,000 yd³ of subsoil as currently stated on page 4-3.

R645-301-243, Step 3 in the final reclamation plan (Section 341.200) states that fertilizer application will be determined by soil analysis. Interim monitoring of reclaimed soils are described on page 3-11 of the approved plan and monitoring of the waste for acid toxic characteristics is described on pages 2-12.1 and 2-12.2, please include soil sampling and analysis in Section 243 or Section 242 of the revision.

R645-301-553.252, 1) Sampling of the waste is described using the Division Overburden and Topsoil, Table 9, Jan 2003. The Division Overburden and Topsoil Handling Guideline was finalized in 2008. The Correct tables to cite for this sampling would be Tables 3 and 7.
2) Sampling of graded waste is described in the revision Section 536. The approved plan describes operational sampling on pages 2.12.1 and 2-12.2 for pH, texture, EC, SAR, Se, B and color of 2 grab samples/acre/lift and 1 sample per 200 linear ft. of berm, and final sampling of 2 grab samples/acre four feet below the final graded surface. The final sampling would include the above analyses and also selenium, CaCO₃, pyritic sulfur, acid/base accounting and organic carbon. Page 2.13 states that all sampling would be reported in the Annual Report. Please include the sampling method and number of samples per acre and sampling locations as described in the revised MRP.

TECHNICAL ANALYSIS:

SOILS RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.21; 30 CFR 817.22; 30 CFR 817.200(c); 30 CFR 823; R645-301-220; R645-301-411.

Analysis:

The Introduction describes a 17.44 acre disturbance for waste rock site. The permit boundary is shown on Map 4-1. The elevation is between 6,700 and 7,000 ft. (Section R645-30-300). Appendix A contains the soil survey was conducted in 1989 by T.H. Furst. No changes have been made to this survey. Five pedons are discussed in the narrative, but only three pedons were excavated and described in Appendix 1 of the survey and only three are marked on Soils Map 7-1 (dated 1989). Soils Map 7-1 is unchanged, but replaced in electronic format with this amendment. The predominant soil type is Lithic Ustic Torriorthents with slopes between 0 – 5%, and 5 – 30% corresponding to Carbon 1988 soil map unit of Badland/Rubbleland/Rock Outcrop complex. This shallow soil is only 4- 6 inches deep over shale. T.H. Furst concludes his report with the recommendation of crushing lower horizons (10 – 65 cm depth) to create suitable substitute topsoil.

Plate 8-1 outlines three vegetation types: pinyon-juniper, black sagebrush, and Gardner saltbush. Section R645-301-341.200 refers to Appendix B for the productivity analysis performed by George Cook, Soil Conservation Service (now NRCS) in 1990. Mr. Cook estimated the saltbrush ecological site was in good condition at 125 lbs/ac with the potential for 150 lbs/ac. The black sagebrush sites were in fair condition at 250 – 300 lbs/ac production and the potential for 500 lbs/ac. The pinyon-juniper sites were in fair condition with 400 lbs/ac production and the potential for 1,200 lbs/ac.

Findings:

R645-301-121.200, A cover sheet for Appendix A and Appendix B is requested and the Appendices should be listed in the Table of Contents.

OPERATION PLAN

TOPSOIL AND SUBSOIL

Regulatory Reference: 30 CFR Sec. 817.22; R645-301-230.

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Analysis:

Topsoil Removal and Storage

Six inches was salvaged from the roadway construction and stored on the road embankments (pp. 3-3 and 3-4 of the currently approved plan). Ten inches of soil was to be salvaged from the northern and western slopes as the waste pile grew (p. 2-7 of the currently approved plan.) Depth of soil salvage is not included in the narrative revision, however Plate 7-2 shows stripping depths from the site. No soil is shown as salvageable from the north and west slopes of the site on Map 7-2. However, Map 4-4 shows an area along the west slope of the site that will be salvaged and Section 526, p 13 describes the salvage of 10 inches of soil from this slope as the pile grows. The material will be used for live haul to the berms or will be placed in the subsoil stockpile.

Map 4-4 shows the topsoil and subsoil stockpile locations and topography. The soil stockpiles are ASCA's, and the downhill slopes of the piles are protected by a silt fence (Section R645-301-234 and Section 526, pg 11). No volume estimates are provided. Please provide volume estimates for soil stored in stockpiles. Plate 4-5 points to the location of the soil stockpiles, but does not outline them.

Section 301-526 Topsoil states that access road topsoil was temporarily stockpiled in locations along the road. What is the status of these soil stockpiles. Have they been treated with interim reclamation? They should also be shown on the map.

Interim reclamation of topsoil stockpiles, sediment pond embankments and road outslopes is described in Section 341.200. Table 300-5 provides the interim seed mix of grasses, forbs and shrubs. Interim reclamation includes seeding, raking seed, application of fertilizer and 2T/ac mulch as described on pages 11 and 12 of Section 341.200. The revision includes the language "if found to be needed" on the fertilizer recommendation. It is the Division's understanding that the interim reclamation has already taken place on the road embankments and the soil stockpiles. Therefore, the change in this language is misleading.

Findings:

R645-301-234, 1) Please include the salvage of topsoil along the roadway and its storage on the road embankment in this discussion, see existing plan pages 3-3 and 3-4. **2)** Plates 4-4 shows the topsoil and subsoil stockpile locations and topography. No volume estimates are provided. Please provide volume estimates for soil stored in stockpiles. If contemporaneous reclamation has reduced the volumes significantly, please indicate the remaining volumes of topsoil and subsoil in stockpiles. **3)** Plate 4-5 points to the location of the soil stockpiles, but does not outline them. Soil stockpiles should be outlined on Plate 4-5. **4)** Section 301-526 Topsoil

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RECLAMATION PLAN

TOPSOIL AND SUBSOIL

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

Analysis:

Redistribution

Map 4-3 shows the pre-disturbance contours. Map 4-4 is shows the initial construction. Exhibit XXI is a figure showing the typical berm and terrace construction and overall slope of 2.5h:1v for the waste pile. Section 242, Section 526 p. 12 and Sec 541 describe contemporaneous reclamation of the berms with 18 inches of subsoil and 6 inches of topsoil.

Graded waste and berms will be sampled and analyzed according to the Overburden and Topsoil Guidelines Table 9 (Sections 536 and 553). Acid/Toxic waste will be covered with four feet of material. Non-toxic waste will be covered with eighteen inches of subsoil and six inches of topsoil (Sec 541). After grading, Step 3 in the final reclamation plan (Section 341.200) states that fertilizer application will be determined by soil analysis. Interim monitoring of reclaimed soils are described on page 3-11 of the approved plan and monitoring of the waste for acid toxic characteristics is described on pages 2-12.1 and 2-12.2, but soil sampling and analysis is not described in the revised Section 243 or Section 242.

Section 553 describes the replacement of subsoil and topsoil along the 5 acre access road.

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Findings:

R645-301-242, 1) Please include the collection of topsoil from the 5 acre roadway outsoles and its redistribution in this discussion. 2) Please state the reclamation of the entire site will require 39,000 yd³ of topsoil and 26,000 yd³ of subsoil as currently stated on page 4-3 of the approved plan.

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CONTEMPORANEOUS RECLAMATION

Regulatory Reference: 30 CFR Sec. 785.18, 817.100; R645-301-352, -301-553, -302-280, -302-281, -302-282, -302-283, -302-284.

Analysis:

General

Section 541 describes contemporaneous reclamation practices for the waste rock site. Rollins, Brown and Gunnell's 1989 stability report produced Figure XXI which illustrates the construction of bermed terraces to be reclaimed. Surface roughening will be used to control erosion (Section 552). Pocks will measure 1.5 ft deep by 3 ft. in diameter.

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Interim monitoring of soils on contemporaneously reclaimed slopes is described in the approved plan on page 3-11, which was not found in the revision.

Findings:

R645-301-121.200, 1) For clarity, please include the date of initial construction and the status of the site at the present time. Please provide a map showing the reclaimed and active sections of this site.

R645-301-231.300, Please include the interim monitoring and reporting described on page 3-11 of the approved plan

STABILIZATION OF SURFACE AREAS

Regulatory Reference: 30 CFR Sec. 817.95; R645-301-244.

Analysis:

Section 341.200 describes interim reclamation of topsoil, road outslopes and the pond embankments, and describes the interim vegetation mix (Table 300-5).

Final reclamation treatments are described in Section 341.200 and include soil roughening (hand or mechanical breaking a soil crust, if any), seeding, fertilizer application based upon soil analysis, hand or mechanical raking, and application of 2T/ac mulch or an erosion control mulch blanket. The final seed mix is described in Table 300-6.

Terraces and berms (Section 553.140), and surface roughening (Section 552) will provide sediment control as vegetation becomes established. An annual inspection for rills and gullies and their repair is described in Section 301-350.

Findings:

The information provided meets the requirements of the R645 Coal Rules for Soil Stabilization.

RECOMMENDATIONS:

Not recommended for approval at this time.