

# TECHNICAL MEMORANDUM

Utah Coal Regulatory Program

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October 11, 2004

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TO: Internal File

THRU: Jim Smith, Hydrologist and Team Lead *JS*

FROM: *B* Priscilla Burton, Environmental Scientist III, Soils

RE: Volume 11: North Rilda Area, Pacificorps, Deer Creek Mine, C/015/018, Task ID # 2032

## SUMMARY:

This application to develop Rilda Canyon surface facilities for men and materials (only) was received on September 2, 2004. The existing Rilda fan portals occupy 2.33 acres ( v 1, chap 1, appendix E). The proposed North Rilda facilities will add nine (9) acres, with an additional 3.1 acres for soil and subsoil storage down the canyon, bringing the total disturbed area for Rilda Canyon to 14.43 acres and for the Deer Creek Mine to 96.47 acres (Supplemental Volume, Appendix G). The total permit area remains unchanged at 22,769.06 acres.

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**TECHNICAL ANALYSIS:**

**GENERAL CONTENTS**

**RIGHT OF ENTRY**

Regulatory Reference: 30 CFR 778.15; R645-301-114

**Analysis:**

Documents included in Volume 11 – Appendix Volume Engineering Appendix B do not apply to this application. In every case, the consent letters are for the limited haulage of bulk materials to the Rilda fan portal. An explanatory cover page should precede these letters.

**Findings:**

Information provided in the application does not meet the minimum requirements of the Regulations. The Permittee must provide the following, prior to approval, in accordance with:

- **R645-301-114**, A cover page should precede the letters of consent found in Volume 11 – Appendix Volume Engineering Appendix B to indicate that they apply the existing fan portal only.

**PERMIT APPLICATION FORMAT AND CONTENTS**

Regulatory Reference: 30 CFR 777.11; R645-301-120.

**Analysis:**

- Soils chapter map units “bulleted” on page 3 of the application are incorrect. Refer to the soils map in Appendix B for correct designation of “Colluvial, Toeslopes, Bench” and “Rilda Canyon Road.”
- A discrepancy exists between the acreage figures provided with the application and those in the MRP. Volume 1, chap 1 appendix E, p iii indicates total permit acres are 18,8894.24 [sic] and the application indicates in Supplemental Volume Appendix G that there are 22,769.06 acres in the permit. However, this application does not increase permit area.

**Findings:**

Information provided in the application does not meet the minimum requirements of the Regulations. The Permittee must provide the following, prior to approval, in accordance with:

**R645-301-121.200, (1)** Soils chapter map units “bulleted” on page 3 of the application are incorrect. Refer to the soils map in Appendix B for correct designation of “Colluvial, Toeslopes, Bench” and “Rilda Canyon Road.” **(2)** A discrepancy exists between the acreage figures provided with the application and those in the MRP. Volume. 1, chap 1 appendix E, p iii indicates total permit acres are 18,8894.24 [sic] and the application indicates in Supplemental Volume Appendix G that there are 22,769.06 acres in the permit. However, this application does not increase permit area.

**REPORTING OF TECHNICAL DATA**

Regulatory Reference: 30 CFR 777.13; R645-301-130.

**Analysis:**

The methods and descriptions of the soil surveys and analytical work are in the reports provided by the Professional soil scientists who conducted the soil surveys of Rilda Canyon (Volume 11 Appendix – Soils A and B).

- Mr. James Nyenhuis, Certified Professional Soil Scientist, ARCPACS2573, conducted the soil survey of the proposed North Rilda facilities area in July 2004.
- Mr. Dan Larsen, Soil Scientist, Environmental Industrial Services, Inc. conducted the soil survey of the proposed topsoil and subsoil storage area in Rilda Canyon, in September 2003 and April 2004.
- Intermountain Laboratories – Sheridan reports include dates of analysis and confirmation of analytical methods.
- Colorado State University Soil Testing Laboratory – Ft. Collins reports include dates of analysis and confirmation of analytical methods.

**Findings:**

Information provided in the application meets the minimum technical reporting requirements of the Regulations.

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## ENVIRONMENTAL RESOURCE INFORMATION

Regulatory Reference: Pub. L 95-87 Sections 507(b), 508(a), and 516(b); 30 CFR 783., et. al.

### 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 2004 Order I soil survey for the expansion area is found in Volume 11 Appendix Volume – Soils Appendix B, and includes a soils map (with a scale of 1" = 100') of the proposed portal facilities area.

The 2003 soil survey for the sediment pond area is found in Volume 11 Appendix Volume – Soils Appendix A, and includes a soils map (with a scale of 1" = 100') of the proposed soil storage area.

Both of the above surveys build upon earlier investigations of the site found in Volume 1 Part 2 Environmental Resources, pp 2-181.1 through 2-181.39 and Volume 11 Appendix Volume – Soils: Appendix A. There is no survey or description in the plan for the topsoil and subsoil storage site.

The 2003/2004 surveys describe alluvial soils straddling the stream (Rilda Creek) on the south side of the existing county road. North Rilda site development will occur north of the county road, avoiding the alluvial soils.

North Rilda facilities development will occur in Map Unit E described as "colluvial toeslopes; bench," and located on the south facing slope, between the Star Point sandstone outcrop to the north and the alluvial soils of Rilda Creek to the south, at an elevation of 7,600 to 7,730 ft. MSL. This family name indicates that the soil has a rich, brown surface layer (A horizon, 9 – 16 inches). The name also implies an accumulation of calcium carbonate, verified by the soil description as a yellow brown horizon at a depth of 20 – 38 inches. Laboratory analyses of the three soil pedons are found in Volume 11 Appendix Volume – Soils Appendix A of Appendix B. The soil calcium carbonate equivalent percentage increases with depth to 18% at location RC1 (20 – 40 inches) and is constant at about 32% in pedons RC3 and RC4 from the surface to two feet in depth. This carbonate content is high, but manageable. All other parameters (texture, pH, EC, SAR, etc.) indicate good suitability for salvage. The existing

vegetation is of the pinyon/juniper and grass/shrub types (see Environmental Resource - Vegetation section for more detail).

The sediment pond will be constructed on toeslopes with Strych series (Map Unit C) and previously disturbed soils (Map Unit D) and both are described in Volume 11 Appendix Volume – Soils: Appendix A. Disturbed soils are less than two feet deep over buried coal waste. There was no pedon description or sampling of soils within Map Unit C. Soil characteristics of Map Unit C are assumed to be equivalent to Map Unit E described in the Order I soil survey of the North Rilda area (discussed above). The surface twelve to eighteen inches within Map Unit D is suitable for salvage as topsoil according to the laboratory data and field notes in Volume 11 Appendix Volume – Soils Appendix 6.2 and 6.4 of Appendix A).

Soils of the topsoil and subsoil storage area were not described.

### **Findings**

The information provided does not meet the requirements of the Environmental Resource-Topsoil requirements of the Regulations. Prior to approval, the Permittee must provide the following, in accordance with:

**R645-301-222**, The permit application must include a qualified soil scientist's opinion on the soil identification and description of the soils within the 3.1 acre topsoil and subsoil storage area, since these three acres were inadvertently omitted from the two soil surveys conducted in 2003 and 2004.

## **ALLUVIAL VALLEY FLOORS**

Regulatory Reference: 30 CFR 785.19; 30 CFR 822; R645-302-320.

### **Analysis:**

Section 645-301-724.700 of the plan indicates that alluvial valley floor information can be found in Volume 9 of the MRP. Much about the character of the alluvium in Rilda Canyon can be ascertained from reading the geotechnical, soils, and vegetation surveys in Volume 11 Appendices. The application should refer the reader to these appendices for information. The April 2004 Geotechnical investigation is missing from Volume 11 – Engineering Appendix F. A 1998 ground stability analysis discusses the sub-surface hydrologic alluvial system and associated surface riparian vegetation zone. This report was not included in its entirety. Missing are attachments DRW # DS1633D [HM10] and # DU 1687E [HM-11] that are referenced on the first page of the report (Volume 11 – Appendix Volume- Engineering Appendix A).

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The reports of interest that were included in the application are discussed below.

Soils on the south side of Rilda Creek (Map Unit A) were described as alluvial bottom land soils, having a periodic high water table at a depth of 18 – 30 inches, as evidenced by soil mottling. (Volume 11 Appendix Volume – Soils Appendix A appendix 6-4 and Appendix B pp 5,7). Brycan soils are dominant in Map Unit A. Schupert soils occupy the drainage channel bottom (Furst. 1991 soil survey of the Rilda fan portal area). These soils will not be affected by the proposed North Rilda Development.

A 1991 geotechnical investigation of Rilda Canyon in the vicinity of the proposed development indicated that a bench of unconsolidated colluvial material grades into a thick deposit of fine grained alluvium (Volume 11 – Appendix Volume – Soils Appendix A , p9 and Volume 11 – Appendix Volume – Engineering Appendix F , p3). The alluvial floor is described in Appendix F (p 4) as “moderately compacted sandy gravel with boulders along with varying proportions of silt and clay.” Drilling to a depth of 50 ft did not encounter bedrock at drill hole 10. Highly permeable sandy gravel was encountered at a depth of 15 to 18 ft at drill holes 5 & 6.

1991 Seismic refraction of Rilda Canyon in the vicinity of the proposed development did not reveal a distinct layer of alluvium, although at Line 7, a layer of fine grained alluvium overlying the colluvial deposit in the base of the drainage was encountered (Volume 11 – Appendix Volume – Soils Appendix A , p9 and Volume 11 – Appendix Volume – Engineering Appendix F , p 7).

**Alluvial Valley Floor Determination**

No final determination at this time.

**Applicability of Statutory Exclusions**

**Findings:**

Information provided in the application does not meet the minimum requirements of the Regulations. The Permittee must provide the following, prior to approval, in accordance with:

**R645-302-320**, (1) The application should reference site specific investigations of the alluvium. (2) The April 2004 Geotechnical investigation is missing from Volume 11 – Engineering Appendix F. (3) Include the missing attachments DRW # DS1633D [HM10] and # DU 1687E [HM-11] that are referenced on the first page of the 1998 ground stability analysis of Volume 11 – Appendix Volume- Engineering Appendix A.

## **PRIME FARMLAND**

Regulatory Reference: 30 CFR 785.16, 823; R645-301-221, -302-270.

### **Analysis:**

Volume 11 refers the reader to the location of previous non- prime farmland determinations made by the Soil Conservation Service for Rilda Canyon above the left and right forks of Rilda Canyon (vol. 1 Part 2, pp 2-218.1 – 2-218.3). The Division also came to the same conclusion for this location.

Expansion of disturbance below the forks of Rilda Canyon and Coal Rules R645-301-221 and R645-302-313 require the Division to consult with the Natural Resources Conservation Service (NRCS) concerning the potential for prime farmland again. The matter was discussed with Leland Sasser of the NRCS Price Field Office in October 2004. The Division is in agreement with the NRCS that there are no prime farmlands in Rilda Canyon due to slope and rockiness of the soils.

### **Findings:**

Information provided in the application does not meet the minimum requirements of the Regulations. The Permittee must provide the following, prior to approval, in accordance with:

**R645-301-221**, Volume 11 should refer the reader to the location in the MRP where prime farmland determination letters are found and should include the NRCS decision for the proposed disturbance immediately below the left and right forks of Rilda Canyon.

## **OPERATION PLAN**

### **TOPSOIL AND SUBSOIL**

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

### **Analysis:**

#### **Topsoil Removal and Storage**

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The plan describes removing the A and B horizon (to a depth of 24 inches) in one step and salvaging this material as topsoil (R645-301-233). Map 200-1 illustrates the area of topsoil salvage and shows the 3.1-acre stockpile site. There are no plans to salvage topsoil from beneath the stockpiles.

Section R645-301-232 indicates that as much soil material as possible will be removed from the AML site prior to removal of the coal mine waste buried in the location of the proposed sediment pond. This material must be kept segregated from the undisturbed topsoil salvaged from the site.

Soil stripping depths for the site will vary based upon the depth of topsoil up to two feet. The Division recommends that the Permittee have a qualified person (who is familiar with the soil survey and salvage plan) on site to monitor the soil salvage operations. In addition, the Division soil scientist would appreciate advance notice of the soil salvage and will plan to be present.

The plan indicates that an underlying stratum of subsoil will be removed as required by R645-301-234. This rule only requires removal of the B or C horizon when there is a deficit of A horizon topsoil. This rule does not apply when the main consideration for removal of the subsoil is for ease of construction (R645-301-521.150). If the subsoil below the depth of two feet is removed and stockpiled, there must either be (1) removal of the topsoil resource in the location of the surplus cut stockpile or (2) protection of the topsoil resource upon which the surplus cut stockpile will be laid. Stockpiling the surplus cut on topsoil is an Experimental Practice and the appropriate regulatory requirements should be addressed.

The topsoil stockpile will be protected from erosion according to the best technology currently available (BTCA) described for Alternate Sediment Control Areas (ASCA) in Volume 11 Appendix Volume Hydrology (section 700) Appendix B, sec.2.11. The BTCA is to use vegetation on the stockpile with silt fences and berms around the stockpile. The stockpile will be vegetated with the sagebrush/grass seed mix described in Table 300-4 of R645-301-341.

The Division recommends placing the grubbed vegetation on the surface of the stockpile to protect the stockpile from wind and water erosion and discourage livestock access.

**Findings:**

Information provided in the application does not meet the minimum requirements of the Regulations. The Permittee must provide the following, prior to approval, in accordance with:

**R645-301-230, (1)** The plan must include (on a map or in the narrative) a description of the stockpile height and slope and approximate dimensions and volume as well as methods to be used to quickly establish vegetative cover as well as a method of

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protecting the stockpile from grazing. (2) After construction, the an accurate accounting of the volume of topsoil stockpiled as well as any changes to the specified dimensions of the topsoil stockpile must be provided to the Division. (3) The Division recommends placing the grubbed vegetation on the surface of the stockpile to protect the stockpile from wind and water erosion and discourage livestock access. (4) In section R645-301-232.500, the plan inaccurately references R645-301-234 as requiring removal and stockpiling of subsoils. The Division has not imposed this requirement upon the Permittee. However, if construction plans require a cut below the depth of two feet, then the plan must include protection of the topsoil in the location of the storage area for the cut soils. Stockpiling construction fill on topsoil is an Experimental Practice and the appropriate regulatory requirements must be addressed.

**R645-301-232.200**, The soil cover to be salvaged from the AML site must be kept segregated, in a separate stockpile from the undisturbed topsoil salvaged from the site.

**R645-301-251**, The plan must indicate that the Permittee will have a qualified person on site, who is familiar with the soil survey to ensure that the topsoil is removed according to plan.

## **SPOIL AND WASTE MATERIALS**

Regulatory Reference: 30 CFR Sec. 701.5, 784.19, 784.25, 817.71, 817.72, 817.73, 817.74, 817.81, 817.83, 817.84, 817.87, 817.89; R645-100-200, -301-210, -301-211, -301-212, -301-412, -301-512, -301-513, -301-514, -301-521, -301-526, -301-528, -301-535, -301-536, -301-542, -301-553, -301-745, -301-746, -301-747.

### **Analysis:**

#### **Coal Mine Waste**

Coal mine waste will be remined from a 0.7 acre previously reclaimed site (the LeRoy Mine AML site). The volume of this coal mine waste is estimated at 3,600 tons based on an average depth of 4 ft and a particle density of 60 lbs/ft<sup>3</sup> (Section R645-301-528). Samples of this coal mine waste could not be found in Volume 11 Appendix –Geology Appendix B. Please provide a discussion and analytical reports for samples taken of the LeRoy Mine coal mine waste.

Small quantities of coal mine waste will be brought to the surface from the portal development and stored in locations shown on Map 500 – 2. Final disposal of coal mine waste will be at the permitted Deer Creek Waste Rock Site. Representative samples of the mine

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development waste are found in Volume 11 Appendix –Geology Appendix B, samples from cross cuts #6 and #10.

**Findings:**

Information provided in the application does not meet the minimum requirements of the Regulations. The Permittee must provide the following, prior to approval, in accordance with:

**R645-301-553**, Samples of the LeRoy Mine coal mine waste could not be found in Volume 11 Appendix –Geology Appendix B or in Appendix-Soils Appendix A. Please provide discussion and analytical reports for samples taken of the LeRoy Mine coal mine waste.

## **RECLAMATION PLAN**

### **BACKFILLING AND GRADING**

Regulatory Reference: 30 CFR Sec. 785.15, 817.102, 817.107; R645-301-234, -301-537, -301-552, -301-553, -302-230, -302-231, -302-232, -302-233.

**Analysis:**

**General**

The plan indicates in Section R645-301-232.500 that 97,259.65 yd<sup>3</sup> subsoil will be salvaged for replacement to approximate original contour at final reclamation.

Due to the very permeable sandy gravel below the surface soils, the importation of clay or use of a liner for construction of a sediment pond was suggested in the geotechnical reports included in Appendix F of Volume 11- Appendix – Engineering. The construction of a sediment pond is briefly mentioned in Sections 645-301-521.180, 645-301-526, and 645-301-732.200, 645-301-742.220. More detail is provided in Volume 11 Appendix – Hydrology Appendix B section 3. Section 3 indicates that native fill will be used where possible. What is the likelihood of importation of clay and how will the material be handled during reclamation?

**Previously Mined Areas**

The final reclamation design provides for an excess of 5,809 yd<sup>3</sup> of subsoil that will remain at the stockpile site to be used as fill in the remined LeRoy Mine AML site (R645-301-

242). Final surface roughness of the remined LeRoy Mine will depend upon the availability of surplus spoil.

**Findings:**

Information provided in the application does not meet the minimum requirements of the Regulations. The Permittee must provide the following, prior to approval, in accordance with:

**R645-301-537**, What is the likelihood of importation of clay for construction of the sediment pond and how will the material be handled during reclamation?

**TOPSOIL AND SUBSOIL**

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

**Analysis:**

**Redistribution**

Topsoil will be hauled to the surface facilities area using the county road. The topsoil will then be redistributed by rubber tired backhoes, trackhoes, dozers and front-end loaders. Travel over the redistributed topsoil will be minimized.

What is the projected replacement depth? Area?  
How will the topsoil storage site be reclaimed?

**Findings:**

Information provided in the application does not meet the minimum requirements of the Regulations. The Permittee must provide the following, prior to approval, in accordance with:

**R645-301-240**, (1)The plan should indicate the approximate topsoil replacement depth and the replacement area. (2) The plan should outline reclamation steps to be taken at the topsoil storage site and construction fill stockpile site.

**STABILIZATION OF SURFACE AREAS**

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

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**Analysis:**

Small depressions will be constructed for the purpose of retaining moisture and minimizing erosion (Section R645-301-552). Pocks will measure 1.5 ft wide and 3 ft deep. This depth of pocks may be too extreme for the reclaimed slopes less than 2h:1v. The Division recommends 18 inches by 24 inches in the 2000 Reclamation Manual.

Boulders larger than 1 ft in diameter will be segregated for use in final reclamation (R645-301-232.500) to enhance the reclamation surface (R645-301-244).

On slopes greater than 20%, a soil tackifier will be used (R645-301-244).

Rills and gullies will be reworked if they affect the post mining land use (wildlife and grazing and recreation) or if they affect water quality standards in Rilda Creek (R645-301-244). The performance standard indicates that the topsoil will be maintained and redistributed according to plan. However, The plan should establish which water quality parameter will be monitored, turbidity? Specific conductivity? Total Settleable Solids (TSS)?

**Findings:**

Information provided in the application does not meet the minimum requirements of the Regulations. The Permittee must provide the following, prior to approval, in accordance with:

**R645-301-244**, (1) The pocks to be constructed may be too exaggerated for the slopes less than 2h:1v. Pocks on the order of 18" X 24" are recommended in the Division's 2000 Reclamation Manual. (2) The performance standard indicates that the topsoil will be maintained and redistributed according to plan. The plan should establish which water quality parameter will be monitored, turbidity? Specific conductivity? Total Settleable Solids (TSS)?

## **REQUIREMENTS FOR PERMITS FOR SPECIAL CATEGORIES OF MINING**

### **OPERATIONS IN ALLUVIAL VALLEY FLOORS**

Regulatory Reference: 30 CFR Sec. 822; R645-302-324.

**Findings:**

No determination has been made at this time. The Division is waiting for the April 2004 Geotechnical report and other missing information from the plan.

**RECOMMENDATIONS:**

The application is not recommended for approval at this time.