

TECHNICAL MEMORANDUM

Utah Coal Regulatory Program

September 29, 2006

TO: Internal File

THRU: Wayne Hedberg, Permit Supervisor

FROM: Priscilla Burton, Environmental Scientist/Soils, Team Lead

RE: Refuse Pile Expansion, Canyon Fuel Company, LLC., Dugout Canyon Mine, C/007/039, Task ID #2550

SUMMARY:

The third revision of this application was received on June 12, 2006. The application has previously been reviewed under Tasks 2156, and 2418. The application describes a 19.8 acre substitute topsoil borrow area located $\frac{3}{4}$ mile southeast of the refuse pile in T. 14 S., R.12 E., E1/2 NE $\frac{1}{4}$ SW $\frac{1}{4}$, W1/2 SE $\frac{1}{4}$ of Sec 17.

The borrow area will be the source of 41,448 yd³ of substitute topsoil and subsoil cover for the waste rock site. A variable plan of removal is described; however, two feet removed from 15 acres will achieve this volume. The surface twelve inches of the borrow area will be stockpiled and replaced on the borrow area.

TECHNICAL ANALYSIS:

GENERAL CONTENTS

IDENTIFICATION OF INTERESTS

Regulatory Reference: 30 CFR 773.22; 30 CFR 778.13; R645-301-112

Analysis:

Legal and financial information for Arch Coal mining is found in General Chapter 1. This information was updated in February 2006 and reviewed and approved by the Division in March 2006 under Task ID #2425. There are no changes to the Technical Analysis.

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Findings:

The information provided meets the regulatory requirements for legal and financial information.

VIOLATION INFORMATION

Regulatory Reference: 30 CFR 773.15(b); 30 CFR 773.23; 30 CFR 778.14; R645-300-132; R645-301-113

Analysis:

General Chapter 1 provides a three-year violation history in Table 1-2 for mines related by corporate structure (listed in Table 1-1). This information was updated in February 2006 and reviewed and approved by the Division in March 2006 under Task ID #2425. There are no changes to the Technical Analysis.

Findings:

The information provided meets the requirements of the regulations.

RIGHT OF ENTRY

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

Analysis:

Right of Entry information is found in the Dugout MRP, Chapter 1, Section 114 and in Appendices 1-1, 1-3, and 1-4. Canyon Fuel Company, LLC, owns the refuse pile and proposed borrow area property (RA Vol., p. 1-4). Plate 1-3, Surface Ownership Along County Road shows Canyon Fuel Co., LLC as the owner of the refuse and borrow areas in T14 S R 12 E, N1/2NE ¼ Sec. 18 and all but the NE1/4 and the SW1/4SW1/4 Sec 17.

Findings:

The information provided meets the minimum requirements of the General Contents – Right of Entry section of the regulations.

LEGAL DESCRIPTION AND STATUS OF UNSUITABILITY CLAIMS

Regulatory Reference: 30 CFR 778.16; 30 CFR 779.12(a); 30 CFR 779.24(a)(b)(c); R645-300-121.120; R645-301-112.800; R645-300-141; R645-301-115.

Analysis:

The legal description of the state and federal lease areas, fee coal, private land (refuse site), BLM land, and BLM right of way are provided in section 114 of the MRP. The legal description of the BLM land disturbed for the Pace Canyon fan portal and shaft is found in Appendix 1-4. Authorization to operate the refuse site within 100 ft of a county road was provided by letter from the Carbon County Road Commissioner (RA Vol. Attachment 1-1.).

Findings:

Information provided in the application meets the requirements of this section of the regulations.

PUBLIC NOTICE AND COMMENT

Regulatory References: 30 CFR 778.21; 30 CFR 773.13; R645-300-120; R645-301-117.200.

Analysis:

Public notice for the refuse site is found in (RA Vol. Attachment 1-1). In accordance with R645-303-227, this permit amendment does not require public notice, since there is no increase in disturbed area or post mining land use change.

Findings:

Information provided in the application meets the requirements of this section of the regulations.

ENVIRONMENTAL RESOURCE INFORMATION

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

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PERMIT AREA

Regulatory Requirements: 30 CFR 783.12; R645-301-521.

Analysis:

The permit area encompasses 9,611 acres (Sec. 114, Plate 1-4). The permit area and adjacent lands are shown on Figure 1-1 and other maps in the MRP. A legal description of the permit area is given in Sec. 114 of the MRP.

The disturbed areas are also described in Sec. 114 and App. 1-4 and illustrated on Plate 1.4. As stated on p. 1-9 of the MRP, the disturbed area is currently 64.5 acres and divided are follows:

- Mine facility area including the Gilson pad and small substation 20.31 areas.
- Degas wells (G-2 through G-12) 12.85 acres.
- Leach field/pipeline area 1.8 acres.
- Pace Canyon Fan Portal 2.7 acres.
- Refuse pile 26.8 acres.

There is no change to the disturbed area or permit area with this amendment. There is a 19.8 acre area designated as a borrow site to provide cover at the waste rock site. The borrow site is owned and controlled by Canyon Fuel Co.

Findings:

The information provided meets the requirements of the Regulations.

PRIME FARMLAND

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

Analysis:

The land used for the topsoil storage area is owned by Soldier Canyon Mine and prior to development of the topsoil stockpiles, was leased for grazing. Soldier Canyon Mine owns the water flowing in the irrigation ditch south of the Soldier Canyon stockpiles. This water flows downstream to Anderson Reservoir. Soils in the location of the topsoil storage site are in the map unit 53, Hernandez family, moist, 1 to 6 percent slopes. This map unit is listed as capability class IIIe-2 and is considered prime farmland when irrigated. Appendix 2B contains letters from

the State Soil Scientist in March 1997 stating that, after site investigation, land immediately south of the irrigation ditch in the W1/2 of the SE1/4 of Section 25, T. 13 S. R. 11 E. was prime farmland, if a developed source of irrigation water were available.

Findings:

The Division in concurrence with the NRCS has determined that there is no prime farmland in the permit area.

OPERATION PLAN

TOPSOIL AND SUBSOIL

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

Analysis:

Refuse Site

The triangular shaped permit area covers 26.8 acres (Sec. 114, p. 1-24). Refuse will be permanently placed on 12.25 acres. The rest of the site (14.55 acres) will either be dedicated for topsoil storage, access roads, or general storage.

Location of topsoil and subsoil stockpiles is shown on Plates 5-1 and 7-1. Table 2-2 in RA Attachment 2-2 provides the estimated topsoil and subsoil volumes as 22,809 yd³. [This is considerably less than the anticipated salvage volume of 44,317 yd³.] The least rocky soils and most of the suitable substitute topsoil at the refuse site were those soils in map units D, E, and F. However, half of the soil salvaged came from areas B, C and E described in RA Table 2-1 as gravelly, loam and gravelly, clay loam. Soils from areas D, E, F, K, and G were stored in the topsoil stockpile (Sec. 231.100) and soils in map units B and C were stored in the subsoil stockpile described in Sec. 231.100 and Sec. 3.4 of Attachment 2-1. The boulders (unit K) will be handled separately (Sec. 234.100). Most of the piled gravel (unit L) was moved from the site.

Soil stockpiles shown on Plate 2-2 may be moved to facilitate expansion of the Waste Rock site, if so, Sec. 234.100 indicates that Plate 2-2 will be revised with as-built topsoil stockpile information within 6 months.

Topsoil Substitutes and Supplements

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Refuse Site

Available cover material is described in Section 242.100 as follows:

7,298 yd ³	topsoil stockpiled.
6,508 yd ³	subsoil stockpile.
6,317 yd ³	additional subsoil stripped and segregated.
5,400 yd ³	subsoil to be salvaged from beneath stockpiles during transfer to new storage location.
2,686 yd ³	subsoil in berms around stockpiles.
<u>2,947 yd³</u>	subsoil in perimeter berms/ditches and sed. pond embankment.
31,156 yd ³	total topsoil and subsoil available.

The plan indicates in that when the refuse is constructed as described in Plate 5-2, the refuse pile surface will measure 13.19 acres and require 82,976 yd³ of cover (4 ft deep, section 242.100 and Attachment 2-2). The remainder of the site will receive a six-inch topsoil layer (Sec. 242.100). The 31,156 yd³ available soil material (described above) will cover 13.19 acres to a depth approximately six inches deep. Therefore, the Permittee has proposed a borrow area to provide four feet of cover. No test plots for lesser cover are proposed; however, the Permittee has proposed to incorporate the first six inches of soil into the refuse, thereby amending the surface six inches of refuse for use as cover material. In this manner, the Permittee will require six inches less of imported material. In as much as the Division would like to minimize the disturbance to the adjacent borrow area, the use of amended refuse is reasonable, based upon the waste rock analysis received to date. The plan specifies in RA-Attachment 2-2 that this reduced cover allowance is contingent upon continued evidence (through sampling and analysis) of the waste non-toxic and non-acidic nature of the waste rock. Should future testing of the waste rock require maximum cover, four feet will be required.

Findings:

The information provided meets the regulatory requirements of this section.

HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR Sec. 773.17, 774.13, 784.14, 784.16, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-300-140, -300-141, -300-142, -300-143, -300-144, -300-145, -300-146, -300-147, -300-147, -300-148, -301-512, -301-514, -301-521, -301-531, -301-532, -301-533, -301-536, -301-542, -301-720, -301-731, -301-732, -301-733, -301-742, -301-743, -301-750, -301-761, -301-764.

Analysis:

Acid- and Toxic-Forming Materials and Underground Development Waste

Refuse Site

The plan indicates that one grab sample will be taken for every ton (5,000 yd³) hauled to the waste rock site. The analytical parameters are described in section 536.200 of the Waste Rock Amendment Volume.

Information from previous grab samples (taken from every 2,000 yd³ from December 2004 through March 2005) was included in RA Attachment 5-4. According to this information, the refuse is sandy in texture, about 50 - 70% carbon with a neutral pH, low EC values (less than 3.0 mmhos/cm) low SAR (less than 2) and very little carbonate content. Approximately one third of the samples were acid forming. Waste hauled from Pace Canyon (Appendix 2-4) is also acid forming, with a portion of the waste represented by Pyritic Sulfur Acid Base Potential (P.S. ABP) value of -25.1. There are no concerns about boron or selenium. In contrast, the subsoil is loamy, pH 7.4 with an SAR of 10 and ample neutralizing carbonates, see lab analysis of subsoil received in January 2005.

Findings:

The information provided meets the regulatory requirements of this section.

RECLAMATION PLAN

TOPSOIL AND SUBSOIL

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

Analysis:

Refuse Site

Soil Redistribution

The refuse site will receive four feet of cover (Section 242.100).

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Soil Nutrients and Amendments

Soil nutrients and amendments will be applied to the redistributed soils based on analyses of samples collected from the stockpiled topsoil (Section 243).

Soil Stabilization

Soil stabilization techniques include ripping the subsoil into the refuse, and gouging all slopes after topsoil application (section 242.200); 1-Ton/ac hay will be worked into the surface with gouging and the seeded surface will receive hydromulch (Section 341.200).

Borrow Area Soils

The borrow area is a 19.8 acre parcel, located $\frac{3}{4}$ mile southeast of the refuse pile in T. 14 S., R.12 E., E1/2 NE $\frac{1}{4}$ SW $\frac{1}{4}$, W1/2 SE $\frac{1}{4}$ of Sec 17. The plan for salvage is described in Sec 224 and 233 and the soil pit photographs and soils analyses are provided in RA Attach. 2-3. The soil survey description was received April 6, 2006.

Section 242.100 states that 82,976 yd³ will be required to cover the waste rock site to a depth of four feet. There is 31,156 yd³ available at the refuse site, leaving 41,448 yd³ to be recovered from the borrow area. The Division calculates that salvage of two feet from 15 acres would yield 48,400 yd³, enough to meet the required four-foot depth of cover.

Section 224 indicates that a variable amount of substitute topsoil will be salvaged from the borrow area depending upon the final capacity of the waste rock site. The borrow site is divided into quarter sections, with one quarter being developed at a time. The surface 12 inches will be removed and placed in a berm around the salvage site. The sub-surface layer from 12 – 56 inches will then be removed for use as cover at the waste rock site. A qualified individual will be on site to supervise the salvage (Sec.232.100).

Although the bond (App. 5-6) describes the use of 51,820 yd³, Attachment 2-2 projects the use of 41,448 yd³. The difference amounts to six inches of cover that will be replaced by six inches of waste mixed with soil. This will ameliorate the waste rock and prevent a zone of compaction or an abrupt capillary barrier between the cover material and the waste rock. The Permittee further describes the method of mixing the cover material and the surface six inches of refuse in RA Attachment 2-2. As stated in RA Attachment 2-2, the amelioration of the waste rock is contingent upon continued evidence (through sampling and analysis) of the non-toxic and non-acidic nature of the waste rock.

Findings:

The information provided meets the requirements of the Regulations.

STABILIZATION OF SURFACE AREAS

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

Analysis:

Refuse Site

The steepness of the refuse slopes is reduced at their base, providing a concave slope (Sec. 553.100 and RA Plate 5-2).

The refuse will be ripped prior to soil placement and the soil will be left rough as described in Section 242.200. Basins 18 inches deep will be gouged into the surface to trap moisture and seed. Locations of gouging, mulching and seeding are shown on RA Plate 5-2.

Extreme roughening is listed as one possible treatment for final reclamation on p 2-40. Also it is shown on RA Plate 5-2 as a main treatment for contemporaneous reclamation of the site during operations. Final reclamation treatments: topsoil depths, hay, gouged, mulched and seeded areas are described in Chapter 2. The extents of the reclaimed area are illustrated on Plate 5-6.

Findings:

The information provided meets the requirements for Soil Stabilization at the Refuse site.

BONDING AND INSURANCE REQUIREMENTS

Regulatory Reference: 30 CFR Sec. 800; R645-301-800, et seq.

Analysis:

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Determination of Bond Amount

Appendix 5-6 of the MRP indicates that 31,156 CY of onsite topsoil/subsoil and 51,820 CY of borrow area soils will be moved to cover the refuse pile. The bond is based upon four feet of cover for the waste as described in Sec 242.100.

Findings:

Information provided in the proposed amendment meets the requirements of this section.

RECOMMENDATIONS:

Approval is recommended.