

TECHNICAL MEMORANDUM

Utah Coal Regulatory Program

May 24, 2005

TO: Internal File

THRU: Wayne Hedberg, Permit Supervisor

FROM: Peter H. Hess, Environmental Scientist III/Engineer, Team Lead
Wayne H. Western, Environmental Scientist III/Engineer, Bonding

RE: Drainage and Topsoil Stockpile Revision, Pace Canyon Fan Portal, Canyon Fuel Company, LLC, Dugout Canyon Mine, C/007/0039, Task ID #2248

SUMMARY:

The Pace Canyon fan portal Task ID #2193 application received Division approval on May 6, 2005. On May 13, 2005, the Permittee submitted an application to change several specifications relative to topsoil storage at the construction site. This memo will address the adequacy of that requested revision from an engineering aspect.

TECHNICAL ANALYSIS:

OPERATION PLAN

MAPS, PLANS, AND CROSS SECTIONS OF MINING OPERATIONS

Regulatory Reference: 30 CFR Sec. 784.23; R645-301-512, -301-521, -301-542, -301-632, -301-731, -302-323.

Analysis:

Affected Area Maps

The application contains Plate PC5-2, Pace Canyon Fan Surface Facilities and Cross Section Locations. The plate gives a plan view of the surface facilities depicting the acreage to be included within the disturbance. This is the affected area. The revision that was received on May 13, 2005 contains revised Plates PC5-2, Surface Facilities (plan view and cross sections);

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Plate PC5-5, Pace Canyon fan Reclamation Topography (and cross sections); and Plate PC5-6, Pace Canyon Fan Reclamation Treatment Map.

Plate PC5-2, Surface Facilities, shows the original location and the proposed (re-located) location of the Pace Canyon road. The revision received as Task ID #2248 to Plate PC5-2 depicts the addition of another one hundred and forty eight feet of culvert to PCUC-2, (24-inch diameter), which is an undisturbed bypass culvert. This additional length is necessary to create a pad that would provide the capability to increase the storage capacity of the proposed overlying topsoil pile (from the originally permitted 640 cubic yard capacity to a pile having a projected stored capacity of 3027 cubic yards). There are no other changes to Plate PC5-2.

Mining Facilities Maps

The application contains Plate PC5-2, Pace Canyon Fan Surface Facilities and Cross Section Locations. The plate gives a plan view of the surface facilities depicting the proposed location of the topsoil storage piles, air shaft/fan location, generator locations, mine portal, sediment containment, and realigned road surface.

Certification Requirements

The revised Plate received as part of the Task ID #2248 submittal (Plate PC5-2) received a P.E. certification from Mr. Layne Jensen, Utah registered professional engineer on May 13, 2005.

Findings:

The minimum regulatory requirements of this section have been met.

RECLAMATION PLAN

APPROXIMATE ORIGINAL CONTOUR RESTORATION

Regulatory Reference: 30 CFR Sec. 784.15, 785.16, 817.102, 817.107, 817.133; R645-301-234, -301-412, -301-413, -301-512, -301-531, -301-533, -301-553, -301-536, -301-542, -301-731, -301-732, -301-733, -301-764.

Analysis:

The Permittee submitted three revised plates on May 13, 2004 (Task ID #2248) to extend an undisturbed culvert at the southern end of the disturbance. These plates are designated as Plates PC5-2, PC5-5, and PC 5-6. As previously noted, there have been no changes to the cross sections depicted on Plates PC5-2 and PC5-5. Therefore, the following analysis remains true.

Chapter 5, page 5-75, section **553.100 Disturbed Area Backfilling and Grading**, Approximate Original Contour, indicates that due to extensive pre-SMCRA development of the Pace Canyon area for road development, logging and coal mining activities, there are no maps depicting pre-development surface topography. Plate PC5-2 depicts the surface topography of the area, as it exists today, including the road, and the current configuration of the Pace Creek drainage. The application indicates, "The reclamation plan has been prepared to achieve the assumed approximate original contour and eliminate any highwalls and cutslopes."

Plate PC5-5 depicts one lateral cross section, B-B', and two longitudinal cross sections. Longitudinal cross-section A-A' runs parallel through the center of the Pace Canyon fan portal intake entry on an approximate bearing of N 6 degrees 30 minutes E. Cross section C-C' similarly runs in a NE direction, and nearly parallels the configuration of the relocated, reclaimed BLM road. The approximate bearing of C-C' is N 20 degrees E.

Section A-A' (PC5-5) depicts both the operational surface contour (red line) and the reclamation surface contour (blue line). With the exception of the fill that will be necessary to backfill the portal, the final reclamation surface contour will nearly parallel the operational surface. A shallow cut approximately 135 feet in length at the southern end of A-A' will provide most of the fill for the portal area. The portal fill will taper from zero depth to about sixteen feet (maximum depth) at the face-up (location of coal outcrop/surface interface). A very shallow cut approximately seventy feet in length (above the backfilled portal) will provide the remaining fill for this cross-section. The reclamation cross section depicted very nearly parallels the pre-SMCRA/post mining configuration which existed in this area prior to the Pace Canyon fan portal development.

Section B-B' is the lateral cross section which bisects the fan portal pad. Its location is depicted 105 feet SSW of the airshaft location. B-B' depicts one cut and one fill to reclaim the operational pad. At B-B', the cut will relocate the road approximately thirty feet to the west. The final surface configuration of the cut will be at a 2.4H:1V slope. The fill which is required to reclaim the cut bank in the section will be reclaimed at a 3.47 H:1V grade. The crest of this fill is about forty feet east of the disturbed area perimeter. The undisturbed slope between the crest of the fill and the disturbed area boundary rises at a 1.34 H:1V slope. Although the grades which will be established in the reclaim area are much more gentle than the slope of the

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undisturbed area, the transition depicted by cross-section B-B' is aesthetically pleasing, and appears to be capable of exceeding the required minimum long-term static safety factor of 1.3.

Section C-C' is, as noted above, a longitudinal cross section which nearly parallels the relocated/reclaimed Pace Canyon road (section of BLM road through the disturbed area). As depicted on Plate PC5-5, two small cuts, and two small fills will be utilized in the reclamation of the fan portal pad through this section. The overall slope of the pad through section C-C' between the disturbed area perimeter markers is 12.8 H:1V. The two cuts that will be made are shallow (7 foot maximum depth). The larger of the two fill areas will have a maximum depth of ten feet, over a 140-foot length.

All cuts and fills will conform to the existing shape of the area, and will be aesthetically pleasing. All fills are on a gentle slope. As noted in Appendix 2-9, Topsoil Calculations, General, "the angle of repose for soils in this area are in excess of 50 degrees", (or these soils will remain static on slopes steeper than 1H:1V (45 degrees)). As noted above, the meeting of the angle of repose/long-term static safety factor of 1.3 requirement is likely.

Findings:

The minimum requirements of this section have been adequately addressed.

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 Permittee submitted three revised plates on May 13, 2004 (Task ID #2248) to extend an undisturbed culvert at the southern end of the disturbance in order to increase the storage capacity of the southern storage pile. These plates are designated as Plates PC5-2, PC5-5, and PC 5-6. As previously noted, there have been no changes to the cross sections depicted on Plates PC5-2 and PC5-5. Therefore, the following analysis remains true.

Chapter 5, section 553.100 Disturbed Area Backfilling and Grading, page 5-75, paragraph five discusses the general backfilling and grading criteria that will be implemented in the reclamation of the Pace Canyon fan portal area. "In Pace Canyon reclaimed slopes will be at a 2H:1V slope or less over most of the site. However, there will be some small areas where the

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slope may be up to 1.6H:1V. This will only occur in areas where the reclaimed surface ties into an undisturbed area with a slope greater than 2H:1V.”

Analysis of PLATE PC5-5, (See Appendix 5-10), sections A-A’, B-B’, and C-C’ reveals that only small amounts of fill material will be utilized to return the Pace Canyon fan portal area disturbance to approximate original contour. Coal mining activities were initiated in both Dugout Canyon and Pace Canyon long before the passage of SMCRA. Hence, there are no pre-mining surface contour maps of these areas. As noted within the application, the Snow Mine was known to report coal extraction as early as 1906. The Pace Canyon fan portal facility is inside the area of pre-law disturbance created by the Snow Mine. Chapter 5, page 5-3 states that “the pre-mining (post SMCRA) topography for the Pace Canyon Fan Portal site can be seen on Plate PC5-4 in Appendix 5-10”.

The Permittee’s response to the March 8, 2005 deficiency document (Task ID #2193 submittal) contains mass balance calculations for the reclamation cuts and fills (See Appendix 5-6, Reclamation Bond Estimate, Pages 3, 4, and 5, EARTHWORK, Material Handling Assumptions, and Productivity Calculations. This information is necessary for determining an accurate reclamation bond for the proposed disturbance.

Please refer to the analysis in the previous section, **APPROXIMATE ORIGINAL CONTOUR RESTORATION**. These comments are also applicable to this section, and assist in meeting the minimum regulatory requirements for backfilling and grading.

Findings:

The minimum regulatory requirements of this section have been adequately addressed.

MAPS, PLANS, AND CROSS SECTIONS OF RECLAMATION OPERATIONS

Regulatory Reference: 30 CFR Sec. 784.23; R645-301-323, -301-512, -301-521, -301-542, -301-632, -301-731.

Analysis:

Affected Area Boundary Maps

Plate PC5-5, **Pace Canyon Fan Reclamation Topography and Cross Sections** depicts the plan or aerial view reclamation topography of the Pace Canyon fan portal area, with the designated disturbed area. The disturbed area is the affected area.

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Bonded Area Map

Plate PC5-5, **Pace Canyon Fan Reclamation Topography and Cross Sections** depicts the plan or aerial view reclamation topography of the Pace Canyon fan portal area, with the designated disturbed area. The disturbed area and its associated reclamation will be bonded for in the final reclamation costs.

Reclamation Backfilling And Grading Maps

The revised Plate PC5-5 submitted with the Task ID #2248 submittal (May 13, 2005) depicts one hundred and thirty feet of additional riprap that will be placed in this channel as part of the reclamation upon the removal of PCUC-2. The road location after the reclamation of the fan portal pad area has been completed is also depicted. There are no other changes to this map relative to cross-sections A-A', B-B', and C-C'. Thus there are no text changes necessary in this memo relative to backfilling and grading and/or approximate original contour restoration.

Plate PC5-6 (Pace Canyon Fan, Reclamation Treatment Map) depicts the area of the Pace Canyon Fan Portal reclamation that will utilize various methods of treatment to minimize erosion and prevent additional contributions of sediment to Pace Creek, and its subsequent drainages. A revised Plate PC5-6 was received with the Task ID #2248 submittal on May 13, 2005. There are two revisions made to the PC5-6 plate, those being the additions of a treatment method (gouging, mulching and seeding) of the acreage beneath the two areas that served as topsoil storage locations for the operational period of the fan facility. There are no other changes made to this Plate.

Final Surface Configuration Maps

Plate PC5-5, **Pace Canyon Fan Reclamation Topography and Cross Sections** depicts the plan or aerial view topography; this is the "proposed" final surface configuration. The revised Plate PC5-5 submitted with the Task ID #2248 submittal (May 13, 2005) depicts one hundred and thirty feet of additional riprap that will be placed in this channel as part of the reclamation upon culvert removal in this undisturbed channel. The road location after the reclamation of the fan portal pad area has been completed is also depicted. There are no other changes to this map relative to cross-sections A-A', B-B', and C-C'. Thus there are no text changes necessary in this memo relative to backfilling and grading and/or approximate original contour restoration.

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“As-builts” of the final surface configuration will be required following reclamation of the site.

Certification Requirements

The reclamation plates submitted as part of the Task ID #2248 submittal (PC5-5, and PC 5-6) have received new P.E. certifications from Mr. Layne Jensen, Utah registered professional engineer.

BONDING AND INSURANCE REQUIREMENTS

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

Analysis:

Determination of Bond Amount

During the analysis of Task ID #2248, Pace Canyon fan portal, the Division evaluated the reclamation cost estimate. The Division determined that the reclamation for the entire permit area would cost \$2,400,000 in 2007 dollars. The current bond amount is \$2,400,000 so no change to the bond is needed.

Direct reclamation costs for the Pace Canyon Portal are as follows:

- Demolition\$55,231
- Earthwork.....\$19,979
- Revegetation\$7,358
- Total\$82,568

Findings:

The information in the bonding section of the MRP is adequate to meet the minimum requirements of this section.

RECOMMENDATIONS:

This amendment is recommended for approval.