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State of Utah
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

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December 14, 1994

Lonnie Mills
AMAX Coal Company
C/O Cyprus Plateau Mining Corporation
P. O. Drawer PMC
Price, Utah 84501

Re: Coal Seam Cover Amendment, AMAX Coal Company, Castle Gate Mine,
ACT/007/004-94G, Folder #3, Carbon County, Utah

Dear Mr. Mills:

The Division has completed a review of the permit change application received on November 18, 1994, which was intended to revise the reclamation plan for covering an exposed coal seam in #4 canyon. Due to a number of deficiencies, your application cannot be approved at this time. Please examine the enclosed review document, making particular note of the requirement sections. In order to receive approval for this amendment, AMAX must complete the requirements as indicated. Please provide a response by no later than January 27, 1995.

If you have any questions, please don't hesitate to call.

Sincerely,

A handwritten signature in black ink that reads "Daron R. Haddock".

Daron R. Haddock
Permit Supervisor

Enclosure

cc: P. Grubaugh-Littig
P. Baker
S. Johnson
W. Western

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TECHNICAL REVIEW
COAL COVER AMENDMENT

AMAX COAL COMPANY
ACT/007/004-94G

December 14, 1994

RECLAMATION PLAN

Biology

R645-301-341.250

Revegetation Success Standards

Analysis:

On November 18, 1994, the Division received an amendment proposing to cover the exposed coal seam in the No. 4 Mine canyon in Hardscrabble Canyon. The amendment contains the following statement:

"Although the slopes will be seeded and mulched along with the adjacent reclaimed areas, establishment of the vegetation is not expected (nor is it necessary) to meet the standards delineated in Chapter 9."

The slopes to which this statement refers would be steeper than 2h:1v and would be covered primarily with rock.

R645-301-353 requires that the Permittee establish on regraded areas and on all other disturbed areas, except water areas and surface areas of roads that are approved as part of the postmining land use, a vegetative cover that is in accordance with the approved permit and reclamation plan. The area in question is not a road and is not a water area; therefore, AMAX must establish vegetation in accordance with the approved plan.

The approved revegetation success standards in Chapter 9 for previously disturbed areas are:

1. The reestablished vegetation must be adequate to control erosion. (R645-301-356.250)
2. Diversity, seasonal characteristics, permanence, and utility for the postmining land use will be measured by comparing reclaimed areas to specified reference areas using the Motyka Index. The Motyka Index will be calculated using absolute cover. The index standard for comparison between the reclaimed and reference areas will be the percent similarity calculated between samples within the reference area, or 70%, whichever is less. (R645-301-353 and

R645-301-356.100)

It may be very difficult to establish vegetation on very steep or rocky areas. However, these areas must still be included in bond release vegetation sampling. Since adjacent, undisturbed areas also contain steep slopes and escarpments with little or no vegetation on them, it would be appropriate for the Permittee to propose a separate revegetation standard for success for comparable reclaimed areas. In this scenario, the standard might be very low, but there would still be a standard.

Under the current mining and reclamation plan, vegetative cover on very steep slopes would need to be averaged with the cover in other areas for comparison with the reference area. Because the areal extent of very steep slopes is relatively small, including measurements of vegetative cover from these areas with measurements from other areas would not decrease the average very much. This is a previously mined area where R645-301-356.250 applies, and the standard for success is not vegetative cover itself. The standards are erosion control, utility for the postmining land use, diversity, and the other requirements of R645-301-353. It is unlikely that averaging vegetative cover measurements from very steep areas with measurements from other areas would adversely affect the comparison.

Findings:

Except water areas and surface areas of roads that are approved as part of the postmining land use, vegetation must be established on all areas in accordance with the approved mining and reclamation plan. The statement on pages 3.3-24 and 25 of this amendment indicating that it is not expected or necessary to establish vegetation on certain slopes steeper than 2h:1v needs to be modified or removed.

Requirements:

- 1) AMAX must modify or remove the statement on pages 3.3-24 and 25 of the amendment to the reclamation plan for Hardscrabble Canyon that indicates vegetation establishment is not expected or necessary in some areas to meet the standards in Chapter 9 of the Mining and Reclamation Plan.

R645-301-500

Engineering

Analysis:

Reclamation work on the side canyon that leads to the No. 4 Mine portal was done in

1993. The primary coal seam was not covered then because the contract called for all readily available native soil. Unfortunately, there was insufficient readily available material to backfill the exposed coal seams completely. Since R645-301-553.300 requires that exposed coal seams be adequately covered or treated to control the impact on surface water and groundwater, to prevent sustained combustion, and to minimize adverse effects on plant growth and the postmining land use, additional efforts will be made to cover the exposed coal seams.

The proposed plan calls for covering both the exposed primary coal seam and the rider seams near the existing plunge pool. Blasting the pre-SMCRA road that reaches the safety ledge above the No. 4 Mine portal will be done to create the fill material. The volume of the material is approximately 2,000 cubic yards.

All blasting will be done according to the requirements of R645-301-524. Specifically, a blasting plan and a blast design will be submitted to the Division no less than 14 days prior to the start of blasting.

All slopes have a static safety factor of at least 1.3. The stability analysis is contained in Appendix 3.4H.

Although the slopes will be seeded and mulched along with the adjacent reclaimed areas, establishment of the vegetation may not meet the standards delineated in Chapter 9.

Although the entire primary coal seam will be covered where it is exposed, several rider coal seams along the north-facing slope between station 4+60 and 6+00 will remain exposed. They will not sustain combustion; since, by definition, they are not contiguous with the primary coal seam.

A second concern associated with exposed coal seam is that water coming in contact with the coal will form an acidic leachate detrimental to water quality and plant life. However, groundwater is well below the bottom of the exposed rider seams, and there are no known seeps up gradient of the exposed coal. In addition, the near-vertical face of the coal offers very little exposure to precipitation. Therefore, the potential for acid leachate being generated from the face of the exposed rider seams is insignificant.

Exhibit 3.3-4A shows the cross-section profile and topographic map of the site. The map does not have a north arrow to show direction. The exposed coal seam on the topographic map does not correspond to the primary coal seam on the cross-sections. The cross-section show primary coal seam to be flat while the topographic map show the seam dipping to the north.

The profile does not show the location of any coal seams. The information on the topographic map suggests that the cut slope above the pond will expose a rider seam.

The Operator does not state how much material will be placed over the primary coal seam. In a telephone conversation with Bill Hendrickson, a consultant, he states they wanted a minimum of four feet of cover over the primary seam and enough material over the rider seams to prevent air contact. To avoid confusion and help determine performance standards cover requirements should be stated.

According to R645-301-524.230, the Division may allow the Operator to submit the blasting plan at any time. The Operator requested that they be allowed to submit the blasting plan not less than 14 days before blasting. There is no reason for the Division to deny the Operator request. An inadequate blasting plan would require the Division suspend the operation until the deficiencies have been corrected.

Findings:

- 1) The profile does not show the location of any coal seam. The elevation of the coal seam on the cross-section is not consistent with elevation on the topographic map. This information is important because the Division is concerned that the rider seam may be exposed in some cut areas.
- 2) The exact location of the coal seams may not be known until the cuts are made. If the Operator discovers that the current plans would require that additional coal be exposed then the plans must be modified. Any modifications to the plans will be shown on the as-built drawings.
- 3) All blasting will be done according to the requirements of R645-301-524. Specifically, a blasting plan and a blast design will be submitted to the Division no less than 14 days prior to the start of blasting. The Operator has already agreed to this.

Requirements:

1. The cross-sections, profile and topographic map must be revised to show the correct location of the coal seams.
2. The Operator must commit to not exposing any additional coal seams. If the Operator discovers that the current plans would require that additional coal be exposed then the plans must be modified. Any modifications to the plans will be shown on the as-built drawings.

3. The Operator must submit a blasting plan to the Division not later than 14 days before blasting. The Division must approve the plan before blasting can begin.
4. The Operator must state how much cover will be placed over the exposed coal and demonstrate that the amount is adequate to meet the performance standards.

HYDROLOGIC INFORMATION

R645-301-742, R645-301-760

Analysis:

This plan includes changed information on construction of the main channel, riprap and sediment control in Hardscrabble Canyon. Design information for the channel is in Section 3.3-4(2), Reclamation Hydrology. Information on sediment control measures is located in Section 3.3-4(3), Alternative Sediment Control Measures.

Changes on channel design say that the filter blanket designs will be based on the native soil and potential filter material available. Both granular and fabric materials will be considered in construction designs. Detailed riprap designs will be made after the rough grading has been completed and surveys are made of the channel grade. These surveys will be used to better design the size of riprap needed. Final riprap and filter blanket designs will be submitted to the Division in as-built certifications.

The alternate sediment control plan was changed by adding contour furrowing as a possible method, and adding information that says measures that protect the surface from erosion or sediment production will be used over methods that filter sediment from runoff. There is no sediment pond treating this reclaimed area so all treatment will come from alternate sediment control measures. AMAX Coal Company commits to minimize contribution of suspended solids to the stream channel below the disturbed area by using the alternate sediment control measures. Upon successful revegetation temporary silt fences will be removed.

Findings:

AMAX Coal should reconsider using fabric filter blankets in final reclamation channel designs. Granular filters are more natural and if channel failure were to occur, they do not pose as many problems. The Division has in the past approved filter fabric for final

reclamation channels based on stability designs, but prefers the use of granular filters when stability can be achieved without synthetic products.

Alternate sediment control measures are appropriate for this reclaimed site. AMAX Coal has left the specific measure that they will use open at this point which should not cause any problems as long as they are diligent about implementing sediment control. They should also commit to soliciting approval from the Division prior to implementation.

The part of this amendment addressing the new culvert in School House Canyon was complete. The culvert was designed using prudent engineering practices and this section can be approved as submitted.

Requirements:

- 1) AMAX Coal must commit to using fabric filter blankets only in the case that channel stability would be compromised with a granular filter.
- 2) AMAX Coal must commit to obtain Division approval and provide quick implementation of all alternate sediment control measures used in reclaiming Hardscrabble Canyon.

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