

# TECHNICAL MEMORANDUM

## Utah Coal Regulatory Program

August 5, 2005

TO: Internal File

THRU: Priscilla W. Burton, Environmental Scientist III/Soils, Team Lead

FROM: Wayne H. Western, Environmental Scientist III/Bonding and Engineering

RE: Refuse Pile Expansion, Canyon Fuel Company, LLC, Dugout Canyon Mine, C/007/0039, Task ID #2156

### **SUMMARY:**

On February 28, 2005, the Division received an amendment from Canyon Fuel Company in which they requested permission to expand and modify the existing refuse pile area. This memo covers the engineering and bonding issues. While the Division was reviewing the MRP as part of the review process, they found that information on the permit area was insufficient. While this memo has nothing to do with the permit area, the Division decided to address the permit area issues in this review.

### **TECHNICAL ANALYSIS:**

## ENVIRONMENTAL RESOURCE INFORMATION

### PERMIT AREA

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

#### **Analysis:**

The Permittee must describe the permit area as follows:

- Acreage must be broken out into federal, state, fee and other.
- The location must be given according to the Township, Range and Section down to the quarter-quarter section.

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**Findings:**

The information provided in the proposed amendment is not considered adequate to meet the requirements of this section. Before approval, the Permittee must provide the following in accordance with:

**R645-301-521.190**, The Permittee must give the Division 1) Acreage must be broken out into federal, state, fee and other and 2) The location must be given according to the Township, Range and Section down to the quarter-quarter section.

**MAPS, PLANS, AND CROSS SECTIONS OF RESOURCE INFORMATION**

Regulatory Reference: 30 CFR 783.24, 783.25; R645-301-323, -301-411, -301-521, -301-622, -301-722, -301-731.

**Analysis:**

**Existing Structures and Facilities Maps**

*Refuse Site Volume*

The Permittee met the requirements of the R645-Rules regarding the existing structures and facilities maps. Those requirements are that the Permittee must show the location and dimensions of existing areas of spoil, waste, coal development waste, and noncoal waste disposal, dams, embankments, other impoundments, and water treatment and air pollution control facilities within the proposed permit area.

In Section 521.100 of the Dugout Canyon Refuse Pile Amendment, the Permittee states that there are no existing surface or subsurface facilities or features.

**Existing Surface Configuration Maps**

*Refuse Site Volume*

The Permittee did not meet the requirements for the existing surface configuration maps. Those requirements are that the Permittee will show sufficient slope measurements to adequately represent the existing land surface configuration of the area affected by surface operations and facilities. They must be measured and recorded according to the following: each measurement

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shall consist of an angle of inclination along the prevailing slope extending 100 linear feet above and below or beyond the coal outcrop or the area to be disturbed (where this is impractical, at locations specified by the Division). Where the area has been previously mined, the measurements shall extend at least 100 feet beyond the limits of mining disturbances, or any other distance determined by the Division to be representative of the premining configuration of the land. Slope measurements shall take into account natural variations in slope, to provide accurate representation of the range of natural slopes and reflect geomorphic differences of the area to be disturbed.

RA Plate 5-1 shows the site with the pre-permitted contours superimposed on the operational contours. The Division needs to have the pre-permitted contours on a separate map.

On RA Plate 5-1 in the approved MRP, have the cross sections every 100 feet. On RA Plate 5-1 received by the Division on February 18, 2005, the cross sections are every 250 feet. The Division needs cross sections on 100-foot intervals. The 100-foot interval is needed in order to show important areas such as the sediment pond and assist the Division in evaluating the reclamation program.

### **Permit Area Boundary Maps**

#### *Refuse Site Volume*

The Permittee did not meet the requirements for the R645-Rules for the permit area boundary maps. Those rules require that the Permittee show the boundaries of land within the proposed permit area upon which the applicant has the legal right to enter and begin underground mining activities.

RA Plate 1-1 shows the permit area but is out of date. The map needs to show the permit area expansions, the leach field disturbed area and the Pace Canyon portal breakout disturbed area. Plate 1-4, Dugout Canyon Mine Permit Area and RA Plate 1-1 Dugout Canyon Mine Permit Area must be the same.

### **Surface and Subsurface Ownership Maps**

#### *Refuse Site Volume*

The Permittee did not meet requirements for this section of the R645 Rules. Those rules require that the Permittee provide all boundaries of lands and names of present owners of record of those lands, both surface and subsurface, included in or contiguous to the permit area.

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The Permittee shows the surface ownership for the refuse site on Plate 1-3 in the MRP. Plate 1-2 does not show the subsurface ownership for the refuse site.

### **Findings:**

The information provided in the proposed amendment is not considered adequate to meet the requirements of this section. Before approval, the Permittee must provide the following in accordance with:

**R645-301-521.150 and R645-301-521.190**, The Permittee must show the pre-permitted contours on a separate map. The Division needs a map that shows the surface configuration before the site was permitted. RA Plate 5-1 shows the pre-permitted contours with the operational contours superimposed. The map appears to be from an AutoCAD file. On such a map, the pre-permitted contours could be shown along by turning off the operational contour layers. In addition, the cross sections must be on 100-foot intervals and cover the entire refuse site.

**R645-301-521.141 and R645-301-521.190**, The Permittee must update RA Plate 1-1 to show the changes in the permit area, the leach field disturbed area and the Pace Canyon portal breakout disturbed area.

**R645-301-521.131**, The Permittee must show the subsurface ownership for refuse site.

## **OPERATION PLAN**

### **MINING OPERATIONS AND FACILITIES**

Regulatory Reference: 30 CFR 784.2, 784.11; R645-301-231, -301-526, -301-528.

#### **Analysis:**

##### **Facilities and Structures**

##### *Refuse Site Volume*

The Permittee met the objectives of this section, which is to ensure that the Division is provided with comprehensive and reliable information on the mining activities, and to ensure that those activities are allowed to be conducted only in compliance with the regulatory program.

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In addition, the Permittee must provide a general description of the mining operations proposed to be conducted during the life of the mine within the proposed permit area. Including (at a minimum) the following: a narrative description of the type and method of coal mining procedures and proposed engineering techniques; anticipated annual and total production of coal, by tonnage; the major equipment to be used for all aspects of those operations; and, a narrative explaining the construction, modification, use, maintenance, and removal of the following facilities (unless retention of such facility is necessary for postmining land use is specified). The following facilities must be described: dams, embankments, and other impoundments; overburden and topsoil handling and storage areas and structures; coal removal, handling, storage, cleaning, and transportation areas and structures; spoil, coal processing waste, mine development waste, and noncoal waste removal, handling, storage, transportation, and disposal areas and structures; mine facilities; and, water pollution control facilities.

The general information about the refuse site is in Section 521 of the refuse site volume of the MRP.

### **Findings:**

The information provided in the proposed amendment is considered adequate to meet the requirements of this section.

## **EXISTING STRUCTURES**

Regulatory Reference: 30 CFR 784.12; R645-301-526.

### **Analysis:**

#### *Refuse Site Volume*

The Permittee met the minimum requirements for describing the existing structures at the refuse site by stating in Section 521.100 of the refuse site volume of the MRP that there are no existing structures at the refuse site. The term existing structure means a structure or facility used in connection with or to facilitate coal mining and reclamation operations for which construction began before January 21, 1981.

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**Findings:**

The information provided in the proposed amendment is considered adequate to meet the requirements of this section.

**ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES**

Regulatory Reference: 30 CFR Sec. 784.24, 817.150, 817.151; R645-301-521, -301-527, -301-534, -301-732.

**Analysis:**

**Road Classification System**

*Refuse Site Volume*

The Permittee met the R645 Rules by classifying each road at the refuse site as primary. The R645 Rules require that each road be classified as either a primary road or an ancillary road. A primary road is any road which is: used for transporting coal or spoil; frequently used for access or other purposes for a period in excess of six months; or, to be retained for an approved postmining land use. An ancillary road is any road not classified as a primary road.

In Section 527.100 of the refuse site volume of the MRP, the Permittee classifies the access road and site road as primary roads. The Division supports those classifications because the roads will be used frequently for access for a period in excess of six months.

**Plans and Drawings**

*Refuse Site Volume*

Each road must contain the following design information:

- *Include a map, appropriate cross sections, design drawings, and specifications for road widths, gradients, surfacing materials, cuts, fill embankments, culverts, bridges, drainage ditches, low-water crossings, and drainage structures.* The Permittee did not meet all of those requirements. On RA Plate 5-1, the Permittee identifies the access road but not the site road. The Division needs each road identified on RA Plate 5-1.

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In Section 527.200 of the refuse site volume, the Permittee gives the general design description of the road: length, width, average and maximum grade. Culvert design is in attachment 7-4 of the refuse site volume of the MRP.

The Permittee did not include cross sections for the road designs. The Division needs generalized cross sections for each road and where appropriate cross sections for areas of special interest.

- *Contain the drawings and specifications of each proposed road that is located in the channel of an intermittent or perennial stream, as necessary for approval of the road by the Division.* In Section 527.200 of the refuse site volume of the MRP, the Permittee states that the road does not cross natural drainages.
- *Contain the drawings and specifications for each proposed ford of perennial or intermittent streams that are used as a temporary route, as necessary for approval of the ford by the Division.* Those conditions are not to exist at the refuse site.
- *Contain a description of measures to be taken to obtain approval of the Division for alteration or relocation of a natural stream channel.* Those conditions are not to exist at the refuse site.
- *Contain the drawings and specifications for each low-water crossing of perennial or intermittent stream channels so that the Division can maximize the protection of the stream.* Those conditions are not to exist at the refuse site.
- *Describe the plans to remove and reclaim each road that would not be retained under an approved postmining land use, and the schedule for this removal and reclamation.* The Permittee met the requirement of the R645 Rules by providing a reclamation plan for the roads in Section 542.600 of the refuse site volume of MRP.

### **Performance Standards**

All roads road shall be located, designed, constructed, reconstructed, used, maintained, and reclaimed so as to:

- *Control or prevent erosion, siltation, and the air pollution attendant to erosion, including road dust and dust occurring on other exposed surfaces, by measures such as vegetating, watering, using chemical or other dust suppressants, or otherwise stabilizing all exposed surfaces in accordance with current, prudent engineering practices.* The Division

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considers those requirements have been met if the hydrology and air quality requirements are met.

- *Control or prevent damage to fish, wildlife, or other habitat and related environmental values.* The Division considers those conditions met if the biology requirements have been fulfilled.
- *Control or prevent additional contributions of suspended solids to streamflow or runoff outside the permit area.* The Division considers those requirements have been met if the hydrology requirements are met.
- *Neither cause nor contribute to, directly or indirectly, the violation of State or Federal water quality standard applicable to receiving waters.* The Division considers those requirements have been met if the hydrology requirements are met.
- *Refrain from seriously altering the normal flow of water in streambeds or drainage channels.* The Division considers those requirements have been met if the hydrology requirements are met.
- *Not locate any road in the channel of an intermittent or perennial stream unless specifically approved by the Division. Roads shall be located to minimize downstream sedimentation and flooding.* Those conditions are not to exist at the site.
- *Prevent or control damage to public or private property, including the prevention or mitigation of adverse effects on lands within the boundaries of units of the National Park System, the National Wildlife Refuge System, the National System of Trails, the National Wilderness Preservation System, the Wild and Scenic Rivers System, including designated study rivers, and National Recreation Areas designated by Act of Congress.* The Division considers that those conditions have been met if the hydrology and biology requirements have been met.
- *Use nonacid- and nontoxic-forming substances in road surfacing.* The Permittee did not meet those requirements. They need to describe the type of road surfacing material and if it will be nonacid- and nontoxic-forming.
- *Maintain all roads to meet the performance standards of this part and any additional criteria specified by the Division. A road damaged by a catastrophic event, such as a flood or earthquake, shall be repaired as soon as is practicable after the damage has occurred.* The Division will conduct regular inspections to insure that the roads are kept in good repair.

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In addition to the above, primary roads shall meet the following requirements:

- *The construction or reconstruction of primary roads shall be certified in a report to the Division by a qualified registered professional engineer, or in any State that authorizes land surveyors to certify the construction or reconstruction of primary roads, a qualified registered professional land surveyor, with experience in the design and construction of roads. The report shall indicate that the primary road has been constructed or reconstructed as designed and in accordance with the approved plan. The Permittee did not give the Division road designs.*
- *Each primary road embankment shall have a minimum static factor of 1.3. The Division may establish engineering design standards for primary roads through the State program approval process, in lieu of engineering tests, to establish compliance with the minimum static safety factor of 1.3 for all embankments. The Permittee must include information about the safety factors for the road embankments.*
- *Primary roads shall be located to minimize erosion, insofar as is practicable, on the most stable available surface. The Division considers this requirement met if all of the hydrology requirements have been met.*
- *Fords of perennial or intermittent streams by primary roads are prohibited unless they are specifically approved by the Division as temporary routes during periods of road construction. Those conditions do not exist at the site.*
- *Each primary road shall be constructed or reconstructed, and maintained to have adequate drainage control, using structures such as, but not limited to bridges, ditches, cross drains, and ditch relief drains. The drainage control system shall be designed to safely pass the peak runoff from a 10-year, 6-hour precipitation event, or greater event as specified by the Division. Drainage pipes and culverts shall be installed as designed, and maintained in a free and operating condition and to prevent or control erosion at inlets and outlets. Drainage ditches shall be constructed and maintained to prevent uncontrolled drainage over the road surface and embankment. Culverts shall be installed and maintained to sustain the vertical soil pressure, the passive resistance of the foundation, and the weight of vehicles using the road. Natural stream channels shall not be altered or relocated without the prior approval of the Division. Except as specifically approved by the Division, structures for perennial or intermittent stream channel crossings shall be made using bridges, culverts, low-water crossings, or other structures designed, constructed, and maintained using current, prudent engineering practices. The Division shall ensure that low-water crossings are designed, constructed, and maintained to prevent erosion of the structure or streambed and additional contributions of*

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*suspended solids to streamflow.* The Division considers that those requirements are met if the hydrology requirements have been met.

- *Primary roads shall be surfaced with material approved by the Division as being sufficiently durable for the anticipated volume of traffic and the weight and speed of vehicles using the road.* The Division will conduct monthly inspections to insure that the roads are kept in good repair.

**Primary Road Certification**

*Refuse Site Volume*

The Permittee was unable to evaluate this requirement because the Permittee did not include detailed road designs.

**Other Transportation Facilities**

*Refuse Site Volume*

There are no other transportation facilities at the site.

**Findings:**

Information provided in the proposed amendment is not considered adequate to meet the requirements of this section. Before approval, the Permittee must provide the following in accordance with:

**R645-301-534.120,** The Permittee must use nonacid- and nontoxic-forming substances for road surfaces and discuss those characteristics in the amendment.

**R645-301-534.130,** The Permittee must show/discuss that all road embankments have a static safety factor of 1.3 or greater.

**R645-301-527 and R645-301-534,** The Permittee must include detailed plans and cross sections for each primary road. At a minimum, the Permittee must 1) also show/label the site road on RA Plate 5-1, 2) show generalized cross sections for each road, 3) the designs must be certified by a registered professional engineer, and 4) discuss how the sediment pond will be accessed.

In Section 512 and Section 527.100, the Permittee refers to the primary roads as access road and temporary access road. In Section 527.200, the Permittee refers to the roads as the access road and the site road. The Permittee needs to use the same names for the roads.

## **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**

##### *Refuse Site Volume*

Coal mine waste shall be placed in a controlled manner to:

- *Minimize adverse effects of leachate and surface-water runoff on surface- and ground-water quality and quantity.* The Division considers this requirement met if the hydrology requirements have been met.
- *Ensure mass stability and prevent mass movement during and after construction.* The Permittee did not meet the requirements of the R645 Rules. In Section 536.200 of the MRP, the Permittee describes the construction of the refuse pile. The vegetation and soil will be removed from the refuse pile area before placement of coal mine waste. The lifts will be limited to 2 feet or less in thickness and compaction equipment. The Permittee refers to achieving the proper compaction but does not state what the compaction amount will be. The Permittee committed to additional compaction as needed with haul trucks. The Permittee must show that haul trucks can compact 2-foot lifts or modify the compaction commitment.
- *Ensure that the final disposal facility is suitable for reclamation and revegetation compatible with the natural surroundings and the approved postmining land use.* The Division considers those requirements met if the biology and land use regulations are met.

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- *Not create a public hazard.* The Permittee met the requirement by placing the refuse in an area not frequented by the public and designing, operating and reclaiming the site according to standard engineering methods.
- *Prevent combustion.* Placing the coal mine waste in lifts and spreading the material is a generally acceptable method to prevent combustion.

The Permittee did not meet the requirements for having coal mine waste materials from activities located outside the permit area disposed of at the refuse site. In Section 536.100 of the refuse site volume (page 5-17), the Permittee makes a general comment about the potential for disposing of coal processing waste from other Canyon Fuel mines. R645-301-536.510 states:

Coal mine waste materials from activities located outside a permit area may be disposed of in the permit area only if approved by the Division.

To avoid any confusion the Permittee must state that the Division must approve the placement of coal mine waste in the Dugout refuse pile from any other facility.

The Permittee met the requirements that the disposal facility be designed using current, prudent engineering practices and shall meet any design criteria established by the Division. A qualified registered professional engineer, experienced in the design of similar earth and waste structures, shall certify the design of the disposal facility. The disposal facility shall be designed to attain a minimum long-term static safety factor of 1.5. The foundation and abutments must be stable under all conditions of construction. Sufficient foundation investigations, as well as any necessary laboratory testing of foundation material, shall be performed in order to determine the design requirements for foundation stability. The analyses of the foundation conditions shall take into consideration the effect of underground mine workings, if any, upon the stability of the disposal facility.

The designs for the refuse site are shown on Plate 5-1, which was certified by a professional engineer. In Section 536.100 of the refuse site volume, the Permittee states that the minimum static safety factor for the site is 1.59 and the slope stability analysis is in the Chapter 5 attachment. In Section 536.100 of the refuse site volume, the Permittee describes the process for preparing the foundation. The area has not been undermined.

The Permittee committed to notifying the Division in the event that a problem with the refuse pile is discovered in Section 536.200 of the refuse site volume of the MRP.

## Refuse Piles

### *Refuse Site Volume*

The Division considers that the refuse pile design meets the requirements of 30 CFR Sections 77.214 and 77.215 if MSHA approve the designs.

*Since the refuse disposal site does not contain springs, natural or manmade water courses, or wet-weather seeps, the designs do not need to contain under drains.*

The Division considers that the following requirements of the hydrology regulations have been met:

- *Uncontrolled surface drainage may not be diverted over the outslope of the refuse pile.*
- *In addition, runoff from areas above the refuse pile and runoff from the surface of the refuse pile shall be diverted into stabilized diversion channels designed to safely pass the runoff from a 100-year, 6-hour precipitation event.*
- *Runoff diverted from undisturbed areas need not be commingled with runoff from the surface of the refuse pile.*
- *Slope protection shall be provided to minimize surface erosion at the site. All disturbed areas, including diversion channels that are not riprapped or otherwise protected, shall be revegetated upon completion of construction.*

All vegetative and organic materials were removed from the disposal area before placement of coal mine waste. Because the site was used as a borrow pit no topsoil is at the site. Subsoil was removed, segregated and stored.

The Permittee will not incorporate terraces into the design of the refuse pile.

No permanent impoundments are located on the refuse pile. Small depressions (pocking) on the outslopes may be allowed by the Division if they are needed to retain moisture, minimize erosion, create and enhance wildlife habitat, or assist revegetation, and if they are not incompatible with the stability of the refuse pile.

The Permittee met the requirements the final configuration of the refuse pile shall be suitable for the approved postmining land use. The approved postmining land use is for grazing and wildlife habitat. The Permittee insured that the postmining land use could be achieved by:

- The outslopes will be pocked to control of erosion, conserve soil moisture.
- The grade of the outslope between terrace benches will be 2h: 1v (50 percent).

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In Section 424 of the refuse site volume, the Permittee committed to place 48 inches (4 feet) of material over the refuse pile at reclamation. For information on the physical and chemical characteristics of the cover material, see the information in the soil section of the TA.

Following final grading of the refuse pile, the coal mine waste will be covered with a minimum of 4 feet of the best available, nontoxic and noncombustible material. The Permittee will conduct tests to determine if the cover requirement can be reduced.

During the monthly inspections, the Division will examine the Permittee's records to determine if the proper inspections were conducted during construction and operations of the refuse pile.

**Impounding Structures**

*Refuse Site Volume*

The Permittee will not construct any impounding structures from coal mine waste.

**Burning And Burned Waste Utilization**

*Refuse Site Volume*

The plan to handle burning and burned waste is spread throughout the MRP, see Section 513.800, 528 and 536.200 and MRP. The plan is for the Permittee to:

- Remove any burning material from the refuse pile.
- Spread the burning material on the ground and mix soil with the burning material.
- When the fire is extinguished, return the material to the refuse pile.

The fire-extinguishing plan meets the requirements of the Division and is similar to the plans used by AML to fight coal waste fires.

**Findings:**

Information provided in the proposed amendment is not considered adequate to meet the requirements of this section. Before approval, the Permittee must provide the following in accordance with:

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**R645-301-536.200**, The Permittee must clarify the compaction procedure. In Section 536.200, the Permittee states that the refuse will be spread in thin lifts using compaction equipment. Later, the Permittee states that the lifts will be a maximum of two feet thick and that the proper compaction will be achieved. The Caterpillar Handbook lists the maximum lift thickness of an 825G Series II as 10 inches and states that a vibrating drum must be used to compact rock material. Unless the Permittee has compaction equipment with a vibrating drum or other device for compacting rock material, they will be in violation of not following the approved mining and reclamation plan. The Permittee committed to compacting the material to the desired density but they do not define what that density is. The Permittee also states that trucks will be used to compact the refuse material as needed; however, truck cannot compact 2 foot thick rock lifts. The compaction specification listed by the Permittee must be achievable.

**R645-301-536.510**, The Permittee must clarify statement in Section 536.200 about having material from other sites being placed at the Dugout refuse site. The rules state that the Division must approve the disposal from other sites. While the statement that material from the other site may be brought in is good because it gives the Division a heads up as to future activities, a statement that a modification to the MRP is needed, will clarify what is needed.

## SUPPORT FACILITIES AND UTILITY INSTALLATIONS

Regulatory Reference: 30 CFR Sec. 784.30, 817.180, 817.181; R645-301-526.

### Analysis:

#### *Refuse Site Volume*

The Permittee states in Section 526.100 of the refuse site volume that no buildings are planned for the refuse site.

### Findings:

Information provided in the proposed amendment is considered adequate to meet the requirements of this section.

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### **SIGNS AND MARKERS**

Regulatory Reference: 30 CFR Sec. 817.11; R645-301-521.

#### **Analysis:**

##### *Refuse Site Volume*

The Permittee addressed this portion of the R645-301 Coal Rules. An identification sign will be displayed at the refuse pile. This sign will have all the required information.

#### **Findings:**

The information provided adequately addresses the minimum requirement of the Operation Plan – Signs and Markers section of the regulations.

### **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:**

##### **Mining Facilities Maps**

##### *Refuse Site Volume*

The Permittee met the requirements for the mine facilities maps. The maps must show the location of each facility used in conjunction with mining operations. Such structures and facilities shall include, but not be limited to:

- RA Plate 5-1 shows the location of the roads. There are no buildings or other major facilities at the site.
- RA Plate 5-1 shows the location of each topsoil/subsoil storage area and refuse pile.
- RA Plate 5-1 shows the location each diversion ditch, culvert, and sediment pond.
- RA Plate 5-1 shows the location refuse pile.

- RA Plate 5-1 shows the plan or profile, at cross sections specified by the Division, of the anticipated surface configuration to be achieved for the affected areas during mining operations.

### **Certification Requirements**

The Permittee met the requirements for have maps and plans certified.

### **Findings:**

The information provided adequately addresses the minimum requirement of this section of the R645 Rules.

## **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 definitions of Approximate Original Contour (AOC) are contained in SMCRA and the UCMR. The objectives of postmining backfilling and grading is to return the site to a configuration resembling the topography of the land prior to mining, and to blend the site into the drainage pattern of the surrounding terrain. The Division found that the reclamation designs are inadequate to meet AOC because:

- The reclaimed slopes are straight. When sheet flow occurs over straight slopes rills and gullies are likely to form. The Division recommends that the Permittee construct concave slopes.
- The top of the refuse pile is graded in one direction that concentrates sheet flow on one slope. The concentrations of sheet flow increases the chances of rill and gully formation. The Division recommends grading the top of the refuse pile so that water flows onto each slope.
- The reclaimed slopes do not blend into the surrounding area because they lack the undulations of the surrounding area.

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*Final Surface Configuration*

The Permittee did not request a variance from AOC. The Division reviewed all the pre-mining and postmining topographic maps and cross sections to determine if the postmining topography, excluding elevation, closely resembles its pre-mining configuration. The Division's findings are as follows:

- Because the site contains a refuse pile the pre- and postmining contours will be significantly different.
- The slope lengths and grades will be similar to those in the surrounding area.
- The Division cannot complete the finding until the Permittee provides adequate operational and reclamation maps.

*All Highwalls to be Eliminated*

There are no highwalls at the refuse site.

*Hydrology*

The main concerns with hydrology are that the Permittee restore drainages, control sediment, and prevent hazardous and toxic discharges. The Division considers that the Permittee will meet those conditions when they meet the hydrologic reclamation requirements.

**Findings:**

Information provided in the proposed amendment is not considered adequate to meet the requirements of this section. Before approval, the Permittee must provide the following in accordance with:

**R645-301-542.200**, The Permittee must include final reclamation maps and cross sections. In the February 18, 2005 submittal, the Permittee requested the RA Plate 5-3 and RA Plate 5-4 (reclamation map and cross sections) be removed from the MRP. The Division needs reclamation maps and cross sections in order to evaluate the reclamation plan. The reclamation maps and cross sections contain information not shown on the operational map (even though the configuration of the refuse pile at the end of the operational phase will be the same at the refuse pile after final reclamation.) The reclamation maps and cross sections showed how the site will look after the topsoil and subsoil storage areas, roads and sediment pond have been reclaimed.

**R645-301-553.110**, The Permittee must design the reclaimed slopes so that they are not susceptible to the formation of rills and gullies. The Division recommends that the Permittee use concave slopes with some slope breaks, slope the top of the pile so that water flows over each of the outslopes. The reclaimed slopes must also have a similar shape (undulations) to slopes in the surrounding area.

## **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**

##### *Refuse Site Volume*

The Permittee did not meet the general backfilling and grading requirements. Because the disturbed areas shall be backfilled and graded to:

- Achieve the approximate original contour. See the AOC section of the TA for details.
- Eliminate all highwalls, spoil piles, and depressions. There are no highwalls or spoil piles at the site. Since the site was a borrow pit, a depression existed before the area was permitted. All pre-existing depressions will be filled.
- Achieve a postmining slope that does not exceed either the angle of repose or such lesser slope as is necessary to achieve a minimum long term static safety factor of 1.3. The Permittee showed in the stability attachment in Chapter 5 of the refuse site volume of the MRP that the slopes will have a static safety factor of 1.3.
- Prevent slides; minimize erosion and water pollution both on and off the site; and, support the approved postmining land use.

Specific backfilling and grading requirements are:

- *Variance from approximate original contour requirements.* The Permittee requests a variance from the approximate original contour requirements. The Division cannot grant a variance from the approximate original contour requirements because the Permittee did not address the requirements of R645-301-302-270. Note: the Division believes that the restored site can meet the AOC requirements.
- *Regrading of settled and revegetated fills.* There are no revegetated fills at the site.

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- *Spoil.* There is no spoil at the site.
- *Exposed coal seams, acid- and toxic-forming materials, and combustible materials exposed.* There are not exposed coal seams, acid- and toxic-forming materials or exposed combustible materials at the refuse site.
- *Cut-and-fill terraces.* The Permittee does not propose to use any cut-and-fill terraces.

### Findings:

Information provided in the proposed amendment is not considered adequate to meet the requirements of this section. Before approval, the Permittee must provide the following in accordance with:

**R645-301-302-270**, The Division cannot grant a variance from the approximate original contour requirements because the Permittee showed that they could comply with the requirements of R645-301-302-270. Note: AOC does not require that the site be restored to the premining condition rather that the site blends into the surrounding area.

## ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES

Regulatory Reference: 30 CFR Sec. 701.5, 784.24, 817.150, 817.151; R645-100-200, -301-513, -301-521, -301-527, -301-534, -301-537, -301-732.

### Analysis:

#### Reclamation

##### *Refuse Site Volume*

The Permittee did meet the requirements of this section which are that a road not to be retained under an approved postmining land use shall be reclaimed in accordance with the approved reclamation plan as soon as practicable after it is no longer needed for mining and reclamation operations. The specific reclamation requirements are:

- While not explicitly stated, the Permittee has control of the area. The public does not use the road.
- The Permittee will remove all culverts.
- The Permittee will remove all road-surfacing materials from the site.

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- The Permittee will rip the roadbed. The area was disturbed before mining and topsoil from the road areas was not salvaged.
- The Permittee will reseed the roads.

### **Retention**

The Permittee will not retain any roads at the refuse site.

### **Findings:**

The information provided adequately addresses the minimum requirement of this section of the R645 Rules.

## **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:**

#### **Bonded Area Map**

#### *Refuse Site Volume*

The Permittee met the requirements of this section of the R645 Rules. Those rules require that the Permittee identify the initial and successive areas or increments for bonding on the permit application map and shall specify the bond amount to be provided for each area or increment. The bond or bonds shall cover the entire permit area, or an identified increment of land within the permit area upon which the operator will initiate and conduct surface coal mining and reclamation operations during the initial term of the permit. As surface coal mining and reclamation operations on succeeding increments are initiated and conducted within the permit area, the permittee shall file with the Division an additional bond or bonds to cover such increments. Independent increments shall be of sufficient size and configuration to provide for efficient reclamation operations should reclamation by the Division become necessary.

Several maps including RA Plate 5-1 show the disturbed area boundary and permit area associated with the refuse site.

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**Reclamation Backfilling and Grading Maps**

*Refuse Site Volume*

The Permittee did not meet the requirements for the R645 Rules for this section. Those requirements are that the contour maps and cross sections to adequately show detail and design for backfilling and grading operations during reclamation. Where possible, cross sections shall include profiles of the pre-mining, operations, and post-reclamation topography. Contour maps shall be at a suitable scale and contour interval so as to adequately detail the final surface configuration. When used in the formulation of mass balance calculations, cross sections shall be at adequate scale and intervals to support the mass balance calculations. Mass balance calculations derived from contour information must demonstrate that map scale and contour accuracy are adequate to support the methods used in such earthwork calculations. Detailed cross sections shall be provided when required to accurately depict reclamation designs which include, but are not limited to: terracing and benching, retained roads, highwall remnants, slopes requiring geotechnical analysis, and embankments of permanent impoundments.

The reclamation backfilling and grading map is RA Plate 5-2 is inadequate because it does not have adequate cross section intervals and the cross sections do not show the pre-permitted topography. The Permittee also needs to include cut and fill quantities for all reclamation activities such as reclamation of the sediment pond.

**Reclamation Facilities Maps**

*Refuse Site Volume*

The Permittee met the requirements of this section of the R645 Rules by stating that there will be reclamation facilities associated with the site.

**Final Surface Configuration Maps**

*Refuse Site Volume*

The Permittee met the minimum requirements of this section of the R645-301 rules. Those rules require that the Permittee provide sufficient slope measurements to adequately delineate the final surface configuration of the area affected by surface operations and facilities, measured and recorded according to the following: each measurement shall consist of an angle of inclination along the prevailing slope extending 100 linear feet above and below or beyond the coal outcrop or the area disturbed or, where this is impractical, at locations specified by the

Division; where the area has been previously mined, the measurements shall extend at least 100 feet beyond the limits of mining disturbances, or any other distance determined by the Division to be representative of the post-reclamation configuration of the land; and, slope measurements shall take into account variations in slope, to provide accurate representation of the range of slopes and reflect geomorphic differences of the area disturbed through reclamation activities.

RA Plate 5-2 shows the reclamation topography at one-foot contour intervals. The contour lines extend at least 100 feet outside the disturbed area boundary.

### **Reclamation Surface And Subsurface Manmade Features Maps**

#### *Refuse Site Volume*

The Permittee met the minimum requirements of the R645 Rules for this section by stating that there will be no surface or subsurface manmade features at final reclamation.

### **Certification Requirements**

#### *Refuse Site Volume*

The Permittee met the minimum requirements of the R645 Rules for this section of the regulations. Those requirements are that cross sections, maps, and plans required to show the design, location, elevation, or horizontal or vertical extent of the land surface or of a structure or facility used to conduct mining and reclamation operations shall be prepared by, or under the direction of, and certified by a qualified, registered, professional engineer, a professional geologist, or in any State which authorizes land surveyors to prepare and certify such cross sections, maps, and plans, a qualified, registered, professional land surveyor, with assistance from experts in related fields such as landscape architecture.

Each detailed design plan for an impounding structure that meets or exceeds the size or other criteria of the Mine Safety and Health Administration, 30 CFR Section 77.216(a) shall: be prepared by, or under the direction of, and certified by a qualified registered professional engineer with assistance from experts in related fields such as geology, land surveying, and landscape architecture; include any geotechnical investigation, design, and construction requirements for the structure; describe the operation and maintenance requirements for each structure; and, describe the timetable and plans to remove each structure, if appropriate.

Each detailed design plan for an impounding structure that does not meet the size or other criteria of 30 CFR Section 77.216(a) shall: be prepared by, or under the direction of, and

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certified by a qualified, registered, professional engineer, or in any State which authorizes land surveyors to prepare and certify such plans, a qualified, registered, professional land surveyor, except that all coal processing waste dams and embankments shall be certified by a qualified, registered, professional engineer; include any design and construction requirements for the structure, including any required geotechnical information; describe the operation and maintenance requirements for each structure; and, describe the timetable and plans to remove each structure, if appropriate.

All maps and cross sections that need to be certified have been.

### Findings:

Information provided in the proposed amendment is not considered adequate to meet the requirements of this section. Before approval, the Permittee must provide the following in accordance with:

**R645-301-542.300**, The Permittee must provide the Division with cross sections on 100-foot intervals. In addition, the cross-sections must show the pre-permitted, operational and reclamation topography.

**R645-301-542.200**, The Permittee must provide volumes for the anticipated earthwork that will be done at final reclamation. Such items include but are not limited to reclamation of the sediment pond area and the roads.

## BONDING AND INSURANCE REQUIREMENTS

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

### Analysis:

#### Determination of Bond Amount

The Permittee did not meet the minimum requirements for this section of the R645 Rules. Those rules require that the amount of the bond required for each bonded area shall: be determined by the Division; depend upon the requirements of the approved permit and reclamation plan; reflect the probable difficulty of reclamation, giving consideration to such factors as topography, geology, hydrology, and revegetation potential; and, be based on, but not limited to, the estimated cost submitted by the permit applicant.

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The amount of the bond shall be sufficient to assure the completion of the reclamation plan if the work has to be performed by the Division in the event of forfeiture, and in no case shall the total bond initially posted for the entire area under one permit be less than \$10,000.

An operator's financial responsibility for repairing material damage resulting from subsidence may be satisfied by the liability insurance policy required in this section.

The Permittee did not include detailed reclamation costs for the refuse site. The information needed includes but is not limited to:

- Cost to haul road surface material off site for disposal.
- Volume of topsoil and subsoil must be updated.
- Ripping costs.

### **Findings:**

Information provided in the proposed amendment is not considered adequate to meet the requirements of this section. Before approval, the Permittee must provide the following in accordance with:

**R645-301-830.140**, The Permittee must include detained reclamation cost estimates for the refuse site. Items that are needed include but are not limited to: • cost to haul road surface material off site for disposal, • volume of topsoil and subsoil must be updated and • ripping costs.

### **RECOMMENDATIONS:**

The Division should deny the amendment until the above-mentioned deficiencies have been addressed.