

TECHNICAL MEMORANDUM

Utah Coal Regulatory Program

October 28, 2005

TO: Internal File

THRU: D. Wayne Hedberg, Permit Supervisor

THRU: Wayne Western, Team Lead

FROM: David Darby, Reclamation Hydrogeologist

RE: Mining of Panel 7, West Ridge Resources, Inc., West Ridge Mine, C/007/0041, Task ID #2328

SUMMARY:

The Division of Oil, Gas and Mining (the Division) received an amendment on October 21, 2005 to mine Panel 7. This Technical Memorandum evaluates the geological Geology information provided in the MRP and Amendment Application

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TECHNICAL ANALYSIS:

ENVIRONMENTAL RESOURCE INFORMATION

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

GEOLOGIC RESOURCE INFORMATION

Regulatory Reference: 30 CFR 784.22; R645-301-623, -301-724.

The West Ridge Mine is located in the Book Cliffs, northeast of Price Utah, Map 1-1. The surface geology is shown in Map 6-1. The exposed surface over the leases consists of late Cretaceous and early Tertiary sediments of the North Horn Formation, Colton Formation and Flagstaff Limestone. The permit expansion will provide access to develop new longwall panels. The panels will run northwest to south east and have an over burden thickness of 500 feet in Lease ML 49287 to about 3100 feet in Lease ML 47711 (Map 5-7). The dip of the formations is approximately 13 degrees, north 25 degrees east.

Analysis:

Acid- and Toxic-forming Materials

The permittee supplied overburden and coal chemical analyses in Appendix 6-1. The applicant states in Section 623.100 that analyses have been performed on strata above and below the coal seam to be mined. The analyses indicate a minimal potential for acid and toxic forming material to exist. Any roof and floor material will be stored underground and not stockpiled on the surface.

Drill Holes

The permittee supplied drill hole information in Appendix 6-2.

Stratigraphy

Star Point Sandstone

The Star Point Sandstone is the oldest stratigraphic unit exposed in the lease areas. It is the basal unit of the Mesaverde Group and is approximately 440 feet thick. The formation contains the Panther, Storrs, and Spring Canyon Sandstone Members which consist of coarsening upward littoral sequences of white to light gray, fine to medium grained, tight, quartzose sandstone (Blanchard 1981). The Star Point Formation overlies and intertongues with the marine

Mancos Shale. The Star Point is the lowest cliff-forming unit over most of the east side of the Wasatch Plateau.

Blackhawk Formation

The Blackhawk Formation measures approximately 900 feet thick in the West Ridge area and consists of interbedded fluvial and marine sandstone, siltstone, and shale. The formation conformably overlies the Star Point Sandstone and the boundary between the two formations is sharp. In the lease area, the Blackhawk Formation is the principal surficial bedrock unit. The Blackhawk is disconformably overlain by the massive coarse grained, fluvial Castlegate Sandstone.

In the West Ridge area there are six coal seams that have been identified, however the four lowest seams are thin, of limited extent and not minable. The Kenilworth coal seam is the lowest seam in the area. This seam rests on the Kenilworth Sandstone member of the Blackhawk Formation. Sometimes they are separated by several feet of shale. The operator has plans to mine the lower Sunnyside coal seam.

Castlegate Sandstone

The Castlegate Sandstone is exposed in the central and northeastern portion of the lease block (Plate 6-1). The formations consist of a white to gray, coarse grained to conglomeratic fluvial sandstone. Exposures of the Castlegate Sandstone typically form cliffs to steep slopes. The Castlegate Sandstone is approximately 300 feet thick in the West Ridge area.

Price River Formation

The Price River Formation occurs in the northeastern portion of the lease block (Plate 6-1). The Price River is also a fluvial deposit and contains gray to white silty sandstones with interbedded subordinate shale and conglomerate. The formation typically forms ledges and slopes. The Price River formation ranges from 600 to 1,000 feet in thickness.

Unconsolidated Deposits

Unconsolidated deposits composed of silt and fine grained sand, alluvial sediments and talus debris occur along valley floors and at the base of steep slopes. The thickness of these sediments is variable. In the West Ridge Mine area, the thickest alluvial deposits occur along Grassy Trail Creek. Based on field observations, the alluvial sediments appear to exceed 10 feet in thickness.

Structure

Figure 6-1 shows the state leases in relationship to the topography and geology of the Book Cliffs. Part of ML-49287 lies over the escarpment whereas the northern portion of the lease lies over the dip slope of the Book Cliffs escarpment. Most of Lease ML-47711 is on the dip slope of the Book Cliffs escarpment, called West Ridge, the southwest slope of Whitmore Canyon. Map 6-1 shows the valley contains quaternary alluvium and pediment deposits. The Canyon hosts Grassy Trail Creek, a perennial stream.

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Faults

The area of the permit is not heavily faulted according to Plate 6-1.

Findings:

The applicant has submitted sufficient Geologic Resource Information to meet the minimum requirements if the regulations.

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:

Coal Resource and Geologic Information Maps

Map 6-1 identifies the general regional geology. Map 6-2 shows the coal seam structure, which dips northeast at about 13 degrees. Map 6-3 shows the seam isopach for the lower Sunnyside Coal seam. The coal ranges from 6 feet to 7.5 feet over the proposed leases.

Well Maps

Figure 8, Chapter 7 identifies the wells and drill holes on and adjacent to the permit area.

Findings:

The applicant has submitted sufficient Maps, Plans and Cross-section information to meet the minimum requirements if the regulations

OPERATION PLAN

COAL RECOVERY

Regulatory Reference: 30 CFR 817.59; R645-301-522.

Analysis:

The Permittee has submitted several maps showing the mine projection in the lower Sunnyside Coal Seam. Map 6-3 shows the Lower Sunnyside coal seam isopach. The Permittee explains in Chapter 6 of the MRP the reason plans have been set to mine only in the lower Sunnyside Coal Seam. This submittal also includes a report from Agapito Associates that provides a detailed description of the stratigraphy and lithology on and adjacent to the mined area.

Type and Method of Mining Operations

The permittee explains in Chapter 5 the planned mining method. Both continuous mining and longwall mining will be employed to maximize coal recovery.

Findings:

The applicant has submitted sufficient Coal Recovery information to meet the minimum requirements if the regulations.

RECLAMATION PLAN

GENERAL REQUIREMENTS

Regulatory Reference: PL 95-87 Sec. 515 and 516; 30 CFR Sec. 784.13, 784.14, 784.15, 784.16, 784.17, 784.18, 784.19, 784.20, 784.21, 784.22, 784.23, 784.24, 784.25, 784.26; R645-301-231, -301-233, -301-322, -301-323, -301-331, -301-333, -301-341, -301-342, -301-411, -301-412, -301-422, -301-512, -301-513, -301-521, -301-522, -301-525, -301-526, -301-527, -301-528, -301-529, -301-531, -301-533, -301-534, -301-536, -301-537, -301-542, -301-623, -301-624, -301-625, -301-626, -301-631, -301-632, -301-731, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-732, -301-733, -301-746, -301-764, -301-830.

Analysis:

The applicant has provided information in the MRP to show they will conduct reclamation activities on the minesite at completion of mining. Drill will be plugged and abandoned following State approved methods.

Reclamation of the mine site following completion of the mining operations as required by state regulations R645-301 and R645-302 will be accomplished. The reclamation plan is discussed in detail in Chapter 3 of the MRP. No surface disturbance is planned for the SITLA leases.

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When no longer needed for monitoring each well or boring will be capped, sealed, backfilled, or otherwise properly managed, as required by UDOGM. Permanent closure measures will be designed to prevent access to the borings or monitoring wells.

No oil and gas exploration or production wells are located in the permit area.

Subsidence of the sediments overlying the mining area will be monitored. A detailed description of the subsidence monitoring plan, including a map illustrating the location of monitoring stations, is presented in Section 3.4.8.

Findings:

The applicant has submitted sufficient Reclamation Plan information to meet the minimum requirements if the regulations.

RECOMMENDATIONS:

Hydrologic information provided is sufficient to meet the requirements of the Coal Mining Rules. The proposed amendment should be approved.