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TECHNICAL MEMORANDUM

Utah Coal Regulatory Program

March 1, 2011

TO: Internal File *POH*

THRU: Ingrid Campbell, Biologist and Team Lead *IC*

FROM: James Owen, Engineer *JO*

RE: Penta Creek Lease Extension, West Ridge Resources, Inc., West Ridge Mine, C/007/0041, Task # 3733

SUMMARY:

On February 01, 2001, the Utah Division of Oil Gas & Mining received an application for an amendment to the MRP of West Ridge Resource's West Ridge Mine. The purpose of the amendment is to allow the company to longwall mine within the newly acquired Penta Creek Fee Lease Extension and federal lease UTU-78562 north of the Grassy Trail reservoir. The amendment will also allow for developmental mining within SITLA lease ML-51744.

The applicant states that with the amendment, the permit area would expand from 6761.29 acres to 7316.62 acres, increasing the permit area by 555.33 acres, or 8%. The Bureau of Land Management recently approved a Resource Recovery & Protection Plan for longwall mining within the extension, and has stated that there will be no expected adverse effects on the Grassy Trail reservoir dam structure. The closest longwall mining of the new panels would be more than 3000' away from the Grassy Trail dam, and stratigraphically 2200' lower than the reservoir. The applicant states that this is more than three times further away from the dam than mining associated with the extraction of longwall panel #7, which was approved by the Division on November 8, 2005 and was mined during 2006. The applicant states that all longwall mining in the extension will be done using a panel-barrier design. This design has proven to reduce the amount and intensity of mining-induced seismicity and subsidence associated with longwall mining. The applicant states that there will be no surface disturbance associated with the projected mining within the extension. All mining within the extension will be under more than 2000' of overburden, The average expected overburden depth is 2800', within a maximum overburden depth of 3200'.

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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.

PERMIT AREA

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

Analysis:

The permit area will expand from 6761.29 acres to 7316.62 acres, increasing the permit area by 555.33 acres, or 8%. The applicant holds 7797.7 acres from federal, state, and fee coal leases.

Findings:

Contents and information provided are sufficient enough to meet the minimum requirements of this section of the Utah Coal Mining Rules.

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:

An updated version of Map 1-0, 1-1 was included with the application. The map depicts the Permit Area and Location. The Penta Creek Expansion (555.33 acres) is clearly shown on the updated map.

Findings:

Contents and information provided are sufficient enough to meet the minimum requirements of this section of the Utah Coal Mining Rules.

OPERATION PLAN

SUBSIDENCE CONTROL PLAN

Regulatory Reference: 30 CFR 784.20, 817.121, 817.122; R645-301-521, -301-525, -301-724.

Analysis:

In its subsidence control plan (pg 5-26), the applicant commits to adopt measures which are technologically and economically feasible to prevent subsidence under areas to be protected and to provide for planned controlled subsidence in all other areas. All material damage will be corrected to the extent technologically and economically feasible.

The Grassy Trail Reservoir, which impounds more than 20 acre-feet of water, is located within and adjacent to the permit area. Plans are in place to the reservoir to be moved and reconstructed so as to allow for mining to take place within the Penta Creek Extension. A previously mined panel, 7, is the closest longwall panel to Grassy Trail Reservoir, located approximately 995' from the reservoir measured horizontally. The panel is also 1664' below the reservoir.

West Ridge Resources contracted with RB&G Engineering to prepare a study of the risk to Grassy Trail reservoir from seismicity and subsidence associated with longwall mining in the West Ridge Mine. The study involved the collection of additional data from newly-installed accelerometers, subsidence monitoring stations, and piezometers in the area around the dam. Another phase of the study was done for compliance with the regulatory requirements of the Utah Division of Dam Safety. Appendix 5-11 of the application is the Grassy Trail Dam & Reservoir Mining – Induced Seismicity Report. Appendix 5-12 is the Grassy Trail Dam & Reservoir, Phase II Dam Safety Study.

The seismicity report addressed the issues of dam stability analysis, subsidence, internal erosion potential, reservoir seepage and landslide potential. The report concluded that it is unlikely that the anticipated mining induced seismicity will impact the performance of the dam and reservoir.

Based on the approval of the mine plan concerning the full extraction of panel #7, the panel was extracted in December of 2005. Extraction closest to the Grassy Trail Reservoir occurred in March of 2006. Based on recommendation from the RB&G Study, a monitoring program was put in place and flowed throughout the process of mining panel #7. The monitoring system included:

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- Bi-weekly site inspection to observe embankment crest and slope stability. Cracking, ground deformation, and seepage were also monitored.
- Monthly measurements of ground and water motion devices.
- Annual surveys of control points on the embankment and landslide areas
- Daily monitoring of the UUSS list of recent seismic events. Daily records were to be maintained. Events of interest would be properly reported within 24 hours of the event.
- Site inspection reports must be submitted to RB&G Engineering and the Utah Division of Dam Safety within 24 hours. Daily monitoring reports submitted monthly.

Monitoring, as described above, was conducted during the mining of panel #7. As expected, there was no mining related damage to the dam, although some "slumpage" of an adjacent hillside was observed, which resulted in minor movement of the west abutment of the dam. The applicant states that there was no loss of integrity of the earthen structure of the dam.

The applicant commits to a similar but more complete and more frequent monitoring will be conducted for Block 18-20.

In January of 2008, RB&G prepared a post mining Summary Report of the mining induced seismicity. This report is included within the Appendix 5-16 of the application. Monitoring of the dam continued after mining of panel #7 was complete. In September 2010, RB&G Engineering prepared a summary report of the subsequent mining induced seismicity. The report is included with the application in Appendix 5-17.

As part of the mining process, the applicant has implemented a panel-barrier mining design that leaves a 400' wide barrier between each longwall panel. This design was not in place during the mining of panel #7. This system will be used during the mining of panels 18, 19, and 20 (the extension panels). The closest mining from Block 18-20 will be more than 3000' feet away from the dam horizontally and will be 2200' feet below the dam.

The Subsidence Control Map (5-7) shows a future subsidence monitoring station between Block 18-10 and the Grassy Trail Reservoir.

Findings:

Contents and information provided are sufficient to meet the minimum requirements of this section of the Utah Coal Mining Rules.

MAPS, PLANS, AND CROSS SECTIONS OF MINING OPERATIONS

Analysis:

The application included maps that need to be updated within the MRP. The maps include: Permit Area (1-0), Location (1-1), Regional Soil (2-1), Vegetation (3-1), Wildlife-Raptor (3-4A), Wildlife-Deer (3-4B), Wildlife-Elk (3-4C), Wildlife-Antelope (3-4D), Existing Land Use (4-1), Surface Ownership (5-2), Sub-surface ownership (5-3), Mining Projections (5-4A), Extended Projections (5-4B), Subsidence (5-7), Regional Geology (6-1), Coal Seam Structure (6-2), Coal Seam Isopach (6-3), Water Rights (7-3), Seeps/Springs (7-5), Hydrologic Monitoring (7-6), Operational Monitoring (7-7).

All applicable maps were properly certified.

Findings:

Contents and information provided are sufficient to meet the minimum requirements of this section of the Utah Coal Mining Rules.

RECOMMENDATIONS:

The application is recommended for approval.