

TECHNICAL MEMORANDUM

Utah Coal Regulatory Program

June 29, 2009

TO: Internal File

THRU: Daron Haddock, Permit Supervisor *DH*
Ingrid Wieser, Lead *IW*

FROM: Steve Christensen, Hydrologist *SKC*

RE: Permit Change to Include Lease Modification, West Ridge Resources, Inc., West Ridge Mine, C/007/0041 and Task ID #3294

SUMMARY:

On May 14th, 2009, the Division of Oil, Gas and Mining (the Division) received an amendment to the West Ridge Mine's Mining and Reclamation Plan (MRP) by West Ridge Resources, Inc. (the Permittee). The amendment proposes to add approximately 603 acres to the existing permit area. The amendment proposes the modification of State Lease ML-47711 and Federal Lease UTU-78562. The amendment contains the lease modification approvals from both the Bureau of Land Management (BLM) and the School and Industrial Trust Lands Administration (SITLA).

The proposed lease modification and subsequent mining activity does will not involve additional surface disturbance. The mining will occur under approximately 2,500'-3,000' of overburden.

As no surface disturbance is planned with the proposed lease expansion, many elements/requirements of the hydrologic regulations do not apply. However, upon review of the currently approved baseline data as well as historic and current ground and surface water monitoring plans, it was determined that the information within the approved MRP adequately characterizes the ground and surface water systems within the proposed lease expansion areas.

The application meets the State of Utah R645-Coal Mining Rules relative to hydrology and should be approved.

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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.

HYDROLOGIC RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 701.5, 784.14; R645-100-200, -301-724.

Analysis:

Sampling and Analysis

The application meets the Sampling and Analysis requirements of the State of Utah R645-Coal Mining Rules.

Map 7-7, *Operational Monitoring Locations* has been modified to depict the proposed lease expansion areas. As no surface disturbance is associated with this lease modification, additional sampling and analysis beyond the currently approved hydrologic monitoring plan is not warranted.

Surface water monitoring site ST-10 is located north of the previously approved permit boundary and within the proposed lease expansion of Federal Lease UTU-78562. The site has been monitored quarterly since 2002.

Baseline Information

The application meets the Baseline Information requirements of the State of Utah R645-Coal Mining Rules.

Appendix 7-1 and 7-1A provide extensive ground and surface water information that includes the areas of the proposed lease expansion.

Appendix 7-1, *Investigation of Surface-Water and Groundwater Systems in the West Ridge Area, Carbon County, Utah, 1998* (the '98 Mayo Report) was compiled by Mayo and Associates, LC in 1998. The report was produced for the existing permit area. However, the information presented in Appendix 7-1 includes the areas of the proposed lease expansion (identified in the report as the adjacent area). An extensive spring and seep survey was

conducted as part of the hydrologic investigation presented in the 1998 Mayo Report. Map 7-5, *Seep/Spring Survey Map* provides the locations and identifies the springs that were monitored in the preparation of the '98 Mayo Report.

Appendix 7-1A, *Investigation of Surface-Water and Groundwater Systems in the Whitmore LBA Area, Carbon County, Utah* was incorporated into the approved MRP in February of 2002. The report was prepared by Mayo and Associates LC. The hydrologic analysis presented in Appendix 7-1A was for the Whitmore Lease Boundary Adjustment (LBA) that was permitted in early 2002.

Map 7-3, Water Rights has been revised to show the additional lease area. The water right information depicted has not changed. The approved Map 7-3 already depicted the water right information within the proposed lease additions.

Baseline Cumulative Impact Area Information

The application meets the Baseline Cumulative Impact Area Information requirements of the State of Utah R645-Coal Mining Rules.

The proposed lease expansion areas are contained within the existing CHIA. The baseline information and the on-going water monitoring data collected, as part of the operation of the mine, is adequate to revise the CHIA relative to the lease expansion.

Probable Hydrologic Consequences Determination

The application meets the Probable Hydrologic Consequences (PHC) Determination requirements of the State of Utah R645-Coal Mining Rules.

The PHC is discussed in the approved MRP beginning on page 7-19 with further discussion provided in Appendix 7-1 and 7-1A. Longwall mining in the proposed lease expansion areas could produce land subsidence and bedrock fracturing that could potentially impact the hydrologic balance if fracturing increases the vertical hydraulic conductivity of overburden rock. Additional impacts could be the interception of near-surface groundwater systems with a resulting increase recharge rate to deeper groundwater systems.

However, based upon the extensive overburden thickness in the proposed lease expansion areas that range from 2,500' to 3,000', it is unlikely that such subsidence induced fracturing would produce hydrologic impacts. Additionally, the vast majority of the springs throughout the existing permit area and proposed lease expansion areas discharge from near-surface groundwater systems in alluvial materials contained in the Colton and North Horn Formations. The thick inter-burden between the coal seam and these near-surface groundwater systems coupled with the presence of swelling clay materials found in the North Horn Formation will

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likely prevent fracturing and subsidence from impacting the springs within and adjacent to the proposed lease expansion area.

As no surface disturbance is associated with the proposed lease expansions, the potential for increased sedimentation to area drainages is negligent.

Findings:

The application meets the Hydrologic Resource Information requirements of the State of Utah R645-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:

Monitoring and Sampling Location Maps

The application meets the Monitoring and Sampling Location Map requirements of the State of Utah R645-Coal Mining Rules.

Map 7-6, *Hydrologic Monitoring Map (Historical Monitoring Locations)* and Map 7-7, *Operational Monitoring Locations* have been revised to depict the additional lease expansion areas

Findings:

The application meets the Monitoring and Sampling Location Map requirements of the State of Utah R645-Coal Mining Rules.

OPERATION PLAN

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:

Performance Standards

The application meets the Performance Standard requirements of the State of Utah R645-Coal Mining Rules.

No surface disturbance is planned with the proposed lease expansion area. As a result, no access roads or haul roads will be constructed.

Findings:

The application meets the Performance Standard requirements of the State of Utah R645-Coal Mining Rules.

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Regulatory Reference: 30 CFR Sec. 773.17, 774.13, 784.14, 784.16, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-300-140, -300-141, -300-142, -300-143, -300-144, -300-145, -300-146, -300-147, -300-147, -300-148, -301-512, -301-514, -301-521, -301-531, -301-532, -301-533, -301-536, -301-542, -301-720, -301-731, -301-732, -301-733, -301-742, -301-743, -301-750, -301-761, -301-764.

Analysis:

General

The application meets the General Hydrologic Information requirements of the State of Utah R645-Coal Mining Rules.

The approved MRP contains adequate ground and surface water baseline information for the proposed lease expansion areas. Historical monitoring data obtained from spring and seep survey's cover the areas of the proposed lease expansion. In addition, the on-going ground and surface water monitoring plans continue to collect data from ground and surface water resources located within and adjacent to the proposed lease expansion areas.

The characterization of the surface and ground water systems in the proposed lease expansion area were provided during previous reviews/submittals.

As the proposed lease expansion does not include additional surface disturbance, many of the hydrologic regulations relative to diversions, performance standards, stream buffer zones, sediment control measures etc. are not applicable.

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Groundwater Monitoring

The application meets the Groundwater Monitoring requirements of the State of Utah R645-Coal Mining Rules.

The operational monitoring plan currently approved provides for adequate groundwater monitoring relative to the proposed lease expansion. The Permittee currently monitors several springs (See Map 7-7, *Operational Monitoring Locations*) adjacent to the proposed lease expansion areas. Ground water monitoring sites SP-12, SP-13, SP-101 and SP-102 are monitored on a quarterly basis with the resulting analysis submitted to the Division via the electronic water-monitoring database.

Surface Water Monitoring

The application meets the Groundwater Monitoring requirements of the State of Utah R645-Coal Mining Rules.

The operational monitoring plan currently approved provides for adequate surface water monitoring relative to the proposed lease expansion (See Map 7-7, *Operational Monitoring Locations*). The northern portion of the expansion in Federal Lease UTU-78562 effectively extends the mining activity in Whitmore Canyon and Grassy Trail creek. The Permittee has established four surface water-monitoring sites on Grassy Trail Creek (ST-3, ST-9, ST-10 and ST-15). These sites are monitored on a quarterly basis with the results submitted electronically to the Division.

Findings:

The application meets the hydrologic information requirements of the State of Utah R645-Coal Mining Rules.

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:

Certification Requirements

The application meets the Certification Requirements of the State of Utah R645-Coal Mining Rules.

The hydrologic maps that were revised (Map 7-3 Water Rights, Map 7-5 Seep/Spring Survey Map, Map 7-6 Hydrologic Monitoring Map (Historical Monitoring Locations) and Map 7-7 Operational Monitoring Locations) were stamped and signed by David W. Hibbs a Utah registered professional engineer.

Findings:

The application meets the Certification Requirements of the State of Utah R645-Coal Mining Rules.

RECLAMATION PLAN

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Regulatory Reference: 30 CFR Sec. 784.14, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-301-512, -301-513, -301-514, -301-515, -301-532, -301-533, -301-542, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-733, -301-742, -301-743, -301-750, -301-751, -301-760, -301-761.

Analysis:

Hydrologic Reclamation Plan

The application meets the Hydrologic Reclamation requirements of the State of Utah R645-Coal Mining Rules.

The hydrologic elements of the approved reclamation plan are discussed in the approved MRP beginning on page 7-62. As no surface disturbance is planned with the proposed lease expansion, the reclamation requirements relative to hydrology are not applicable.

Impacts from the proposed mining activity in the lease expansion areas are covered under the Subsidence Control plan. In the event that mining in the proposed lease expansion area

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produces hydrologic impacts, the Permittee is required to mitigate the impacts and restore the hydrologic function that was impaired.

Findings:

The application meets the Hydrologic Reclamation requirements of the State of Utah R645-Coal Mining Rules.

RECOMMENDATIONS:

The application meets the Hydrologic Requirements of the State of Utah R645-Coal Mining Rules and should be approved.

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