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TECHNICAL MEMORANDUM

Utah Coal Regulatory Program

February 28, 2013

TO: Internal File

THRU: Ingrid Campbell, Team Lead *WMC*

FROM: Steve Christensen, Environmental Scientist *SCC*

RE: Lease Modification, West Ridge Resources, West Ridge Mine, C/007/0041, Task ID #4256

SUMMARY:

On December 3, 2012, the Division of Oil, Gas and Mining (the Division) received an amendment from West Ridge Resources, LLC (the Permittee) to add 480.2 acres to the West Ridge Mine permit boundary. The lease modification resulted in less than a 15% change in the total area of the permit boundary and was within the current CHIA and the same hydrologic basin as the rest of the permit area. The amendment was reviewed and returned deficient. During the review, it was determined that the revised maps did not show the entire lease modification (i.e. several portions were not depicted on the maps). The Permittee was advised to revise Map 7-3- Water Rights, Map 7-5- Spring/Seep Survey Map, Map 7-6- Hydrological Monitoring Map (Historical Monitoring Locations), Map 7-7- Operational Monitoring Locations and Map 7-8- Whitmore Canyon Watershed Map. Upon review of the revised legal descriptions, the following portions of the newly added acreage were not depicted on the maps:

1. Section 14: N2NWSW
2. Section 15: W2NE, E2SENE
3. Section 23: Lot 1, SWNE
4. Section 24: NWSW

The Permittee has revised the maps to accurately depict the full extent of the lease modification. The amendment is no longer deficient. Final approval is recommended.

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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.

GENERAL

Regulatory Reference: 30 CFR 783.12; R645-301-411, -301-521, -301-721.

Analysis:

The application meets the General Environmental Resource Information Requirements relative to hydrology.

The Permittee was directed to revise the following maps: Map 7-3- Water Rights, Map 7-5- Spring/Seep Survey Map, Map 7-6- Hydrological Monitoring Map (Historical Monitoring Locations), Map 7-7- Operational Monitoring Locations and Map 7-8- Whitmore Canyon Watershed Map. Upon review of the revised legal descriptions, the following portions of the newly added acreage were not depicted on the following maps:

1. Section 14: N2NWSW
2. Section 15: W2NE, E2SENE
3. Section 23: Lot 1, SWNE
4. Section 24: NWSW

The Permittee has revised the maps to accurately depict the full extent of the lease modification.

Findings:

The application meets the General Environmental Resource Information Requirements relative to hydrology.

HYDROLOGIC RESOURCE INFORMATION

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

Analysis:

Baseline Information

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

The proposed addition to Federal Lease SL-068754 includes portions of Sections of 14, 15, 23 and 24 of T 14 S, R 13E (lease modification area). The area is generally located directly adjacent to the south-west edge of the currently approved permit area.

Upon comparing the water right information located on the Division of Water Rights web-site with the water right information provided in the approved MRP, it appears that there are no potentially state appropriated water rights that could be potentially impacted by mining activity in the proposed lease modification area (i.e. springs, point to point diversions or groundwater wells).

GROUNDWATER

Groundwater information is provided in Chapter 7, Appendix 7-1 of the approved Mining and Reclamation Plan (MRP).

A spring and seep survey conducted in 1985 by the Kaiser Coal Company is provided in Appendix 7-6. Map 7-5, Seep/Spring Survey Map, depicts the area covered by the 1985 survey and includes the proposed lease modification area. Water quality and quantity information is also provided in Appendix 7-6. Based upon the 1985 survey, a very minimal number of seeps and springs are located in the proposed lease modification area. Two springs were identified within the proposed lease modification area: S-2 and F-25. The flow at S-2 was not of sufficient volume to even measure at the time of the survey. F-25 produced a flow of 1 gallon per minute and is utilized by wildlife. According to spring and seep information provided in Appendix 7-6 as well as Appendix 7-1, aquifers or recharge areas for aquifers do not exist within the permit and adjacent area (including the proposed lease modification area).

SURFACE WATER

Surface water information is provided in Chapter 7 of the approved MRP as well as in Appendix 7-1. The proposed lease modification area is located within the A Canyon, B Canyon

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and C Canyon drainages (See Figure 15, Appendix 7-1). Based upon a review of the approved MRP hydrology information as well as numerous field visits to the West Mine area, the A, B and C Canyon drainages are the only significant water courses that could potentially be affected by mining activity in the proposed lease modification area.

The A Canyon drainage is located on the southern portion of the permit and adjacent area. The A Canyon drainage is comprised of a Left and Right Fork (872 acres and 597 acres respectively). The A Canyon drainage is an ephemeral drainage. Flow in this drainage is a result of precipitation/snow-melt events.

The B Canyon drainage is also located on the southern extent of the permit and adjacent area (west of A Canyon). Significant portions of the B Canyon drainage are devoid of vegetation with large expanses of bare bedrock. As with the A Canyon drainage, the B Canyon drainage has been characterized as an ephemeral drainage (i.e. flow noted during periods of precipitation/snow-melt).

The C Canyon drainage is located west of the B Canyon drainage and is the location of the mine surface facilities. The C Canyon drainage is also an ephemeral drainage.

The relative absence of riparian vegetation within these drainages provides additional support to the ephemeral characterization of these drainages. Riparian vegetation is noticeable in the C Canyon drainage; however, the vegetation is the result of the mine-water discharge (i.e. anthropogenic sources of water). Once mine dewatering activities have ceased, the riparian vegetation will die off. Based on the information contained within the approved MRP, instances of no flow have been observed historically within the A, B and C Canyon drainages. During the initial permitting of the West Ridge Mine, the A, B and C Canyon drainages did not produce a flow from April to December 1997.

Quarterly water monitoring has historically been conducted on the A, B and C Canyon drainages since 1997. Surface water monitoring site ST-7 was quarterly monitored beginning in 1997 on the A Canyon drainage below the permit and adjacent area. Since monitoring began at this site in 1997 up until it was approved for removal from the West Ridge mine's water monitoring program (2nd quarter of 2011), no observable flows were ever reported to the Division's electronic water-monitoring database over that 14 year period.

Quarterly water monitoring was also conducted at surface water monitoring site ST-5. ST-5 is located at the confluence of the B and C Canyon drainages. Monitoring at ST-5 began in 1997. No observable flows were reported until the 1st quarter of 2003 when the mine began to discharge water into the C Canyon drainage during the 1st quarter of 2003. Since that time, the mine-water discharge has increased as well as the flows recorded at site ST-5. ST-5 was approved for removal from the West Ridge Mine's water monitoring program during the 2nd quarter of 2011.

Given the lack of high flow springs that could support intermittent or perennial flow in the A, B and C Canyon drainages, the steep canyon walls that minimize infiltration recharge to area springs, the observed lack of flow in these drainages and the lack of riparian vegetation by Division staff, the Division accepts the ephemeral characterization of these drainages.

Probable Hydrologic Consequences Determination

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

The hydrologic resources and potential for impacts as a result of mining activity have been examined and discussed in the approved MRP. The three surface drainages that could potentially be impacted by mining activity in the proposed lease modification area include the A, B and C Canyon drainages. As discussed above, these drainages have been characterized by years of water monitoring as ephemeral drainages. Additionally, upon comparing the water right information located on the Division of Water Rights web-site with the water right information provided in the approved MRP, it appears that there are no state appropriated water rights that could be potentially impacted by mining activity in the proposed lease modification area (i.e. springs, point to point diversions or groundwater wells). In addition, the previously approved seep and spring survey (See Map 7-5) did not identify any significant hydrologic resources within the proposed lease modification area.

The Division finds that the potential consequences to hydrologic resources within the proposed lease modification area as a result of mining activity are minimal. Generally speaking the proposed lease modification area is characterized by ephemeral drainages that respond to precipitation/snow-melt events. Given the lack of documented seeps/springs and state appropriated water rights, there is a minimal amount of hydrologic resources that could even be impacted by mining activity in the proposed lease modification area. The approved MRP provides a detailed discussion and supporting data to characterize the groundwater systems in the West Ridge Mining area, including the proposed lease modification area.

No perennial or intermittent streams are located within the proposed lease modification area. Surface flows from the A, B and C Canyon drainages are ephemeral and as such, unpredictable and short-lived. Numerous observations have been made by Division staff that the surface flow in these drainages often times disappears long before reaching a perennial drainage due to the alluvial material that comprises the stream beds of these canyons.

Findings:

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

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OPERATION PLAN

SUBSIDENCE CONTROL PLAN

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

Analysis:

Renewable Resources Survey

The application meets the Renewable Resources Survey requirements of the State of Utah R645-Coal Mining Rules.

Based upon the baseline information provided in the approved MRP, an aquifer or aquifer recharge area is not located within the proposed lease modification area. Therefore, additional renewable resources survey work is not required for approval of the proposed lease modification area.

Findings:

The application meets the Renewable Resources Survey requirements of the State of Utah R645-Coal Mining Rules.

HYDROLOGIC INFORMATION

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:

Water Monitoring

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

The A, B and C Canyon drainages have been established as ephemeral drainages. Stream monitoring site ST-7 (located at the mouth of the A Canyon drainage) was monitored from 1997 to 2011. During that time-frame, no observable flows were recorded/sampled.

Quarterly water monitoring was also conducted at surface water monitoring site ST-5. ST-5 is located at the confluence of the B and C Canyon drainages. Monitoring at ST-5 began in 1997. No observable flows were reported until the 1st quarter of 2003 when the mine began to discharge water into the C Canyon drainage during the 1st quarter of 2003. Since that time, the mine-water discharge has increased as well as the flows recorded at site ST-5. ST-5 was approved for removal from the West Ridge Mine's water monitoring program during the 2nd quarter of 2011.

The C Canyon drainage is currently being monitored at site ST-6. Water monitoring will continue at this monitoring location.

Given the absence of seeps/springs in the proposed lease modification area, monitoring is not required for groundwater.

Diversions: General

The application meets the Diversion requirements of the State of Utah R645-Coal Mining Rules. No additional surface disturbance is proposed with the lease modification. As a result, there will be no need to construct a diversion of any type of drainage.

Stream Buffer Zones

The application meets the Stream Buffer Zone requirements of the State of Utah R645-Coal Mining Rules. The proposed lease modification does not include any additional surface disturbance to the bonded area for the West Ridge Mine. Additionally, the application does not propose the construction of any additional surface facilities (i.e. roads, structures, ventilation portals etc.). The proposed mine workings does not include the undermining of a perennial or intermittent stream. The A, B and C Canyon drainages have been well established as ephemeral streams.

Sediment Control Measures/Siltation Structures:

The application meets the Sediment Control and Siltation Structure requirements of the State of Utah R645-Coal Mining Rules.

The mining activity within the proposed lease modification area will not require any additional surface disturbance. As such, there is no need for sediment control/siltation structures.

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Findings:

The application meets the Sediment Control and Siltation Structure requirements of the State of Utah R645-Coal Mining Rules.

RECLAMATION PLAN

HYDROLOGIC INFORMATION

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 Plan requirements of the State of Utah R645-Coal Mining Rules.

The proposed lease modification does not include any additional surface disturbance to the bonded area for the West Ridge Mine. The application does not propose the construction of any additional surface facilities (i.e. roads, structures, ventilation portals etc.). As a result, the currently approved reclamation plan does not a revision for the proposed lease expansion.

Findings:

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

RECOMMENDATIONS:

The application does meet the requirements of the State of Utah R645-Coal Mining Rules.