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DEPARTMENT OF NATURAL RESOURCES
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September 18, 1998

TO: File

THRU: Daron Haddock, Permit Supervisor

FROM: David Darby, Senior Reclamation Specialist

RE: Incidental Boundary Change, Genwal Resources Incorporated, Crandall Canyon Mine, ACT/015/038-98b, File #2, Emery County, Utah

Technical Analysis

SYNOPSIS

The Division received an application for an incidental boundary change (IBC) application from Genwal Resources Inc., on August 28, 1998. The IBC consists of 444 acres of federal property within the proposed lease boundary of LBA-11. The IBC lies south of the existing mine permit area. Entries will be developed southward via new portals on the south side of Crandall Canyon. The entries will then turn west across the IBC to connect to the South Mains which will provide access to coal reserves in State Lease of the existing permit. Rock slopes will branch off of the mains to access the Blind Canyon Seam. All activity proposed for this amendment is developmental so subsidence is not anticipated.

ENVIRONMENTAL RESOURCE INFORMATION

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

HYDROLOGIC RESOURCE INFORMATION

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

The applicant has supplied hydrologic information in the mine plan, and supplemental information collected in anticipation of acquiring leases south of the existing lease area. Plate 7-12 provided on August 17, 1998 identifies spring monitoring locations that were surveyed between 1985 to 1992. Springflow data has been presented to identify flow levels of some of the springs on and in the vicinity of the ICB. Spring locations are identified in Appendix 14-7. Some do not show related flows.

Water use information is presented in Table 14-2. The most notable use of spring flow

is for cattle and wildlife except for Little Bear Spring which lies down gradient of the ICB and is used for municipal purposes.

Water monitoring data was submitted in depict the flow and field parameters for Indian, Crandall Canyon, Mill Fork and Rilda Canyons. Surface water (stream) rights, which consist mostly of stock water rights for the existing permit and adjacent areas, are shown in Table 7-6.

Analysis:

Baseline information-Sampling and analysis

Surveys were establish to locate and quantify some springs and surface waters in the vicinity of the ICB. Flows and field parameters were taken. The applicant has not established seasonal variation on spring flows. Some springs exhibit characteristics that would make good monitoring sites such as Springs SP-64, LB-5 and LB-5a, as well as Little Bear Spring, which has water rights filed on it by Huntington-Cleveland Irrigation Company.

The mining that has been proposed for the ICB is consists of first mining (or development) to gain access to coal reserves in other sections of the mine. Besides access entries the applicant intends to use this area to access the Blind Canyon Seam by ramping up into the seam. Mining or subsiding the IBC potentially could influence the recharge potential of Little Bear Spring, since the current reported hydrologic gradient for the Star Point Sandstone and Blackhawk Formation dips from the ICB area to the spring.

The area in the vicinity of the IBC is a potential recharge sources to Little Bear Spring. Seasonal variation has been established in Little Bear Spring and adjacent streams. A study is currently being initiated with the water users, Forest Service and Genwal Resources, Inc. assess the conductivity of recharge sources to Little Bear Spring via magnetic flux analysis.

The applicant proposes to drill up to the Blind Canyon Seam while developing along the southern edge of the IBC. These drill holes could also identify water resources between the Hiawatha and Blind Canyon Seam.

No plans were mentioned to drill monitoring wells into the Star Point Sandstone below the IBC.

Since mining of the IBC is proposed for developmental only and some baseline information is supplied, it is feasible to proceed with the mining operations and conduct monitoring of springs and surface waters to establish seasonal variation in selected springs.

Groundwater already intercepted in the mine is being discharged. Any additional groundwater intercepted in the area of the IBC would likely be discharged out the portal of the

mine. The water users have filed on the water being discharged from the mine. If interception of recharge source does occur it is possible that no water loss to water users will take place.

Findings

The applicant should increase water monitoring frequency of selected springs, mentioned above, to establish seasonal variation of springflow.

The areas along the IBC has been identified a one of the potential recharge areas that could also identify any water resources following the gradient in the potential recharge area. The applicant should drill and characterize any groundwater and its flow in the Star Point Sandstone Members below the IBC.

MAPS, PLANS, AND CROSS-SECTIONS OF RESOURCE INFORMATION

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

The affected area of the IBC is located south of the current mine plan area. The mine expanded surface operations in Crandall Canyon in anticipation to access additional coal reserves. The reserves will be accessed through portals and entries on property owned by Genwal Resource, Inc.. The entries will extend through the IBC to reach reserves in the permitted area and later in the coal lease area, LBA-11, if Genwal Resources acquires the lease.

The applicant is required to submit maps and plans identifying areas of development and potential areas of impact. Maps and cross-sections need to depict all areas of mining, existing structures, geologic features and other resource information which could incur impacts from mining.

Analysis:

The applicant has submitted Plate 4-4 identifying affected areas and showing the boundary of the IBC. Plate 5-2 identifies the mining projections, drill holes and rock slopes planned for development in the IBC.

Coal resource and geologic information maps illustrating the nature, depth and thickness of coal seams to be mined are provided in Volume 2 of the MRP.

The applicant has provided maps identifying all surface features and gradients. The IBC area is located in rugged mountainous terrain away from man made structures that could

be affected by subsidence. Locations of spring monitoring locations are indicated on Plate 7-12 with associated flows

The applicant has provided hydrologic maps identifying springs, streams and monitoring sites. The applicant has provided cross-sections of geologic features and well information.

Mine working are shown in Plate 5-2 for the for existing permit area and the IBC. Plate 4-4 shows the existing surface configuration and land ownership areas and permit area boundaries.

Findings:

The applicant has submitted the required information for this section.

OPERATION PLAN

MINING OPERATIONS AND FACILITIES

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

Activities taking place during operational operations include development mining, surface and groundwater monitoring, subsidence monitoring and secondary mining.

Analysis:

The applicant will develop entries from the portal areas in the ICB to access coal reserves in State Lease ML-21568 and the Blind Canyon seam. There are no proposals currently to develop more than the entries shown on Plate 5-2. This will be accomplished by continuous miners excavating a room and pillar design.

The applicant is in the process of designing a water monitoring plan for the lease ICB. Some baseline water monitoring information has been collected. Little Bear Spring lies down gradient from the ICB. The spring is used for municipal water sources. It is currently being monitored and contains a historic record of measured flows. There are spring located between Little Bear Spring and the highest elevation which have been considered for the monitoring plan. Since only developmental mining has been proposed it is unlikely that subsidence will occur. The applicant will submit a monitoring plan in the near future for the federal lease (LBA-11), they intend to acquire. A minimum of two years of seasonal variation data (already collected at Little Bear Spring) will be required.

A subsidence monitoring plan has been proposed for the existing permit area using

aerial photography. Subsidence control points already exist in the vicinity of the IBC. The applicant committed to comply with all provisions of the monitoring plan. It is likely that subsidence will not take place with the conditions, first mining only, of the amendment. monitoring

Findings:

The applicant complies with this section.

HYDROLOGIC RESOURCE INFORMATION

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

Minimum Regulatory Requirements:

There are no existing structures on the IBC that will sustain adverse impacts from mining. There is a potential that mining could intercept the natural flow of some groundwater. Previous groundwater reviews have theorized that some of the groundwater supplying spring in the vicinity of Little Bear Canyon could follow the geologic gradient. More information is needed to prove the theory.

Analysis:

There are no manmade structures in the IBC. With regard to the theories of groundwater movement and potential recharge to springs. Studies should be conducted to detect and evaluate if groundwater is moving through any members of the Star Point Sandstone to Little Bear Canyon springs.

Findings:

The applicant should evaluate the potential of groundwater recharge to Little Bear Canyon by installing a monitoring well into the Star Point Sandstone in the vicinity of the IBC.