



State of Utah
 DEPARTMENT OF NATURAL RESOURCES
 DIVISION OF OIL, GAS AND MINING

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March 22, 1999

TO: File

THRU: Daron Haddock, Permit Supervisor

FROM: David Darby, Senior Reclamation Specialist 

RE: Incidental Boundary Change, Genwal Resources Incorporated, Crandall Canyon Mine, ACT/015/032-98-1, File #2, Emery County, Utah

SYNOPSIS

The Division received an application for an incidental boundary change (IBC) application from Genwal Resources Inc., on August 28, 1998. A technical review of the application was conducted which found four areas of deficiencies. A deficiency letter was sent to the applicant on September 24, 1998. The applicant resubmitted the IBC proposal on November 9, 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.

TECHNICAL ANALYSIS

HYDROLOGIC RESOURCE INFORMATION

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

Analysis:

Sampling and analysis.

The applicant identifies that all water samples are collected and analyzed according to

methods in either the "Standard Methods for the Examination of Water and Waste Water" or the 40 CFR parts 136 and 434.

Baseline information.

The applicant has conducted a survey of surface and ground waters in and adjacent to the IBC. Locations and ownership of surface water and ground water sources are presented in Appendix 7-51. The appendix is a report by Mayo and Associates that describe the recommended Water monitoring program. Monitoring has already begun on and adjacent to the IBC and will continue throughout mining operations.

Ground-water information.

The applicant has proposed a groundwater monitoring program for the IBC which incorporates four springs (Figure 1, Appendix 7-51) adjacent to the IBC the springs on the IBC discharge at low rates. The applicant also presents a comprehensive description of the groundwater monitoring program for the complete mine site in Chapter 7 revised November 1998. The ground water monitoring program will monitor and analyze water quality and flow from in-mine wells and springs.

An earlier deficiency summary identified that an in-mine groundwater monitoring well should be established in the vicinity of the IBC do to the proximal location of the mining activities to the synclinal trough that dips into Little Bear Canyon. Information was presented on Page 7-9 of the revised amendment which identifies the existence of two wells in the South Mains of the mine. The existence of these wells can facilitate the collection of groundwater information necessary to define groundwater in the vicinity of the synclinal trough and Star Point Sandstone, however more information is needed about the wells and data collected from them.

Surface-water information.

The applicant proposes to measure flows of streams that collect runoff from the IBC, Figure 1, Appendix 7-51.

Baseline cumulative impact area information.

The applicant has collected baseline information which is reported Table 1, Appendix 7-51. Other data has been supplied which reports on spring and stream flow on sites adjacent to the IBC.

Probable hydrologic consequences determination.

The applicant provides a probable hydrologic consequences (PHC) determination in Appendix 7-15, Volume 4 of the MRP. The PHC describes possible impacts from the mine. Any impacts from mining the IBC would likely be noticed as a change in surface flow from the area or to Little Bear Spring. With the interest of protecting flow to Little Bear Spring, the applicant has identified the potential for interception of groundwater or surface water due to subsidence which may affect shallow overlying groundwater systems.

The applicant contends that mine development is not intercepting regionally continuous aquifers, rather, the mine is dewatering localized pockets of water. The applicant, using tritium dating techniques, has analyzed the age of water emanating from Little Bear Spring at less than 50 years. The high rate of fluctuation of the spring indicates that flow comes from a younger recharge source near the surface.

The applicant describes plans to monitor surface flows to detect changes in flow patterns.

A groundwater survey was conducted by Hydro Geoscience Inc. during the autumn of 1998. They identified two sources of groundwater recharging the spring. Approximately 60 to 70 percent of the flow is derived from a fault that trends N. 57° E., whereas 30 to 40 percent comes from an undefined source that flows S. 26° E..

One theory for partial recharge to Little Bear Spring is that groundwater flows down the synclinal trough via the Star Point Sandstone. For this reason, the applicant was asked to install an in-mine monitoring well in the vicinity of the IBC that could detect groundwater parameters.

Findings:

With the latest submittal, the applicant described, page 7-9, the existence of wells MW-6 and MW-6a that were drilled in the South Mains which could supply the necessary groundwater information. Data have been collected and a report prepared by Mayo and Associates. This information should be incorporated in the MRP. Acceptance of this information could stand in lieu of the need to establish a monitoring well in the vicinity of the IBC, since the wells are located in the synclinal trough that dips toward down Little Bear Canyon. Maps well maps and water monitoring maps supporting this information should also be submitted.

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.

Analysis:

Affected Area Boundary Maps

The applicant submitted Map 1-1 depicting the extent of the IBC.

Coal Resource and Geologic Information Maps

The applicant has submitted a complete set of maps depicting the geologic setting and processes. The geologic maps are provided in Chapter 6 of the MRP.

Existing Surface Configuration Maps

Topographic features are identified in several maps, however Map 7-12 identifies all springs and streams on and adjacent to the IBC.

Mine Workings Maps

A mine workings map (Plate 5-2) in the MRP illustrates where mining will take place under the IBC. 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.

Monitoring Sampling Location Maps

Water sampling sites for springs and streams are identified on Figure 1 in the IBC submittal. On page 7-9 the applicant anticipates adding an additional in-mine water monitoring well. The location of the anticipated in-mine well is not depicted on any map.

Permit Area Boundary Maps

The permit boundary is identified on several maps in the MRP. Plate 1-1 shows the boundaries of state, private and federal leases. The area and boundary is also shown.

HYDROLOGIC INFORMATION

Ground-water monitoring.

The applicant describes the regional groundwater system beginning on page 7-3 and 7-27. The plan describes the relationship of groundwater to the geologic formations. Earlier geologic reports determined that most groundwater in the region is derived from snowmelt. Seep and spring inventories have been conducted over and adjacent to the IBC. Only four small springs were identified on the IBC, whereas several springs are identified on areas adjacent to the IBC.

Surface-water monitoring.

The applicant has submitted a surface water monitoring plan which will continue throughout the operational phase and into the reclamation phase. A plan to monitor springs, considered groundwater sources, has been submitted will be conducted over the minesite and adjacent areas. Because of low yields of springs on the IBC, the applicant will monitor surface water sources which include intermittent and perennial streams that flow from the IBC. Baseline information has already been presented.

Acid and toxic-forming materials.

Acid and toxic information is presented on page 7-38. Samples indicate that no acid/toxic forming minerals are present.

Transfer of wells.

Wells will be sealed.

Discharges into an underground mine.

Applicant intends to seek approval from the regulatory authority prior to and discharges into underground workings.

Gravity discharges.

The applicant anticipates no gravity discharges due to the dip of the coal seam.

Water quality standards and effluent limitations.

The applicant proposes a water monitoring plan for operational and reclamation operations which contains water quality assessment of surface and groundwater. Effluent

limitation for UPDES discharge sites are established by the Utah Division of Water Quality. All samples from UPDES sites will be checked with effluent limits. Any exceedances will be reported to the regulatory authority.

Water quality sampling over time will establish trends to establish changes and impacts from mining operations

Diversions.

There will be no diversions on the IBC.

Impoundments.

There will be no impoundments on the IBC.

Casing and sealing of wells.

The applicant will seal all wells in accordance with regulatory requirements.

Findings:

The applicant has submitted information to define the baseline characteristics and potential of mining impacts. The applicant should submit the requested information as outlined under Resource Information Findings..

RECOMMENDATIONS

The applicant should submit information describing the in-mine monitoring wells and present applicable maps to be included into the MRP.