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

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March 31, 1997

TO: File #2

THRU: Daron Haddock, Permit Supervisor

FROM: Steven M. Johnson, Reclamation Hydrologist

RE: Alkali Tract, Soldier Canyon Mine, Soldier Creek Coal Company, ACT/007/018-96I, File #2, Carbon County, Utah.

SUMMARY:

Soldier Creek Coal Company (SC3) applied for addition to their permit in the Summer of 1996. The first version was found deficient by a Division review; therefore Canyon Fuel, the new owners of the Soldier Canyon Mine, submitted a subsequent version on March 4, 1997.

HYDROLOGIC RESOURCE INFORMATION

Regulatory Reference: R645-100-200, -301-720.

Sampling and analysis

Analysis:

Sampling and analysis is addressed on page 7-2, Section 7.23. This section states that analysis will be completed based on either "Standard Methods for the Examination of Water and Wastewater" or 40 CFR parts 136 and 434.

Findings:

The applicant has met the minimum requirements for surface-water sampling and analysis.

Surface-water information

Analysis:

Surface-water baseline information is addressed in Section 7.24.2 on pages 7-43 to 7-51. This section is predominantly information for the original permit application but has been revised as part of the Alkali Lease amendment. The revision includes addition information provided in the 1995 Mayo Report.

The regional hydrology report begins on page 7-44. In this section SC3 discusses waters in the Book Cliffs to the Price River down to its confluence with the Green River. Much of the water data reported in this section comes from Waddell, et. al, 1981. The head water of the Price River and Green River tend to have excellent water quality but deteriorate rapidly down stream. Geologically, shale areas contribute the greatest amount of sediment to the stream flow.

The life-of-mine (LOM) surface water hydrology is found beginning on page 7-46. Exhibit 7-46 shows the LOM area. The LOM area delineated on Exhibit 7-46 and the area of data collection by the Mayo and Associates report (Appendix 7M, Plate 1) are different. The Addendum to the Mayo Report includes probable consequences from mining under the Coal Creek watershed. Mining will only be under minor tributaries. Mayo does not expect the data collected from these areas will identify any affects of mining because of the ephemeral nature of these streams.

Anderson Reservoir is located near the LOM area but no mining is proposed under or close to the reservoir. This is the only significant water body in the area. The average precipitation in the LOM area is 12 to 16 inches.

Soldier Creek is address beginning on page 7-47; and Pine Creek on page 7-48. Data for Soldier Creek comes from a U.S. Geological Survey station (09-3139.75) located just down stream from the mine's surface facilities, and from a station establish by SC3 (G-1) upstream from the LOM area. The records for the USGS station found in Appendix 7-I, Table I-2. Soldier Creek between these two stations is perennial. Stations G-2 and G-3 were established by SC3 on Pine Creek to monitor water quantity and quality. The characteristic of this stream is intermittent to perennial. Data is included in Appendix 7-I, Table I-3.

Springs in the LOM area including the Alkali Tract are addressed beginning on page 7-50. A total of 24 spring have been identified within the LOM area. Three of which are in that area of the new Alkali lease. Location and information about the springs can be found on Exhibit 7.21-1 and in Table 7.24-1. Six of the springs will be monitored under the permit, including two that will be part of the Alkali tract. Sections 7.28 and 7.31.2 provide details about the monitoring plan.

Findings:

The surface water information is complete and accurate.

Climatological information

Analysis:

According to Section 7.24.4 climatological data are summarized on page 7-64.

Findings:

The climatological information is complete and accurate.

Baseline cumulative impact area information

Analysis:

Section 7.25, page 7-74 provides information about the baseline cumulative impact area. The Division write and update the cumulative hydrologic impact assessment for the area.

Findings:

The baseline cumulative impact area information is complete and accurate.

Modeling

Analysis:

Modeling discussion is presented in Section 7.24.1. A numeric simulation model, GWSIM-II was used to model groundwater movement.

Findings:

The applicant has met the minimum requirements for surface-water modeling.

Alternative water source information

Analysis:

Alternative water source information is found in Section 7.27 on pages 7-74 and 7-75. This section states that there is little potential for harm to other water users. Most water users in the area are supplying stock water with the exception of an irrigation diversion on Soldier Creek

downstream from the mine. No surface coal mining has occurred of is propose as part of the Soldier Canyon Mine therefore the alternative water source regulation does not directly apply to this mine.

Findings:

The applicant has met the minimum requirements for alternative water source information.

Probable hydrologic consequences determination

Analysis:

The PHC begins on page 7-75. A report by Mayo and Associates can be found in Appendix 7M. It is the study prepared for the PHC. Pages 7-84 to 7-142 are dedicated to groundwater systems while pages 7-143 and 7-144 cover stream flows. Acid and toxic forming materials are discussed in Section 7.28.32 on page 7-145. A discussion of impacts of mining and reclamation operations begin on page 7-145, Section 7.28.33. Conclusions are drawn on page 7-152, Section 7.28.34.

An addendum to the PHC explains that increase flow caused by pump mine water into Soldier Creek should not have negative effects on sedimentation in the channel and should have positive effects on the wetland vegetation. This section describes a sandstone armored stream bottom that will protect the channel from excess erosion.

Findings:

The applicant has met the minimum requirements for probable hydrologic consequences.

OPERATIONAL HYDROLOGIC INFORMATION

Regulatory Reference: 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.

Surface-water monitoring

Analysis:

The surface-water monitoring plan begins on page 7-165 of the application. Stream monitoring locations are found on Drawing 7.21-1. Three stations are monitored on Soldier Creek, but SC3 proposes to drop monitoring at station G-1, north of the permit area, after

collecting two years of data at site G-6, because it is located too far upstream to allow evaluations of the mine water discharge. They will also request removal of G-2, to the East, after mining is complete in Pine Canyon. New up-steam monitoring sites will be developed.

Findings:

The applicant have adequately met the minimum requirements for surface-water monitoring during mine operations.

Discharges into an underground mine

Analysis:

Pages 7-167 and 168 state that there will not be any discharges into the mine unless approved by the Division.

Findings:

The applicant has met the minimum requirements for discharges into an underground mine.

Gravity discharges

Analysis:

Pages 7-167 and 168 state that there will not be any discharges into the mine unless approved by the Division.

Findings:

The applicant has met the minimum requirements for gravity discharges.

Water-quality standards and effluent limitations

Analysis:

Water Quality standards and effluent limits are addressed in Section 7.52, page 7-206. The permittee states that effluent limits are established by the NPDES permit.

Findings:

The applicant has met the minimum requirements for water-quality standards and effluent limitations.

Stream buffer zones

Analysis:

Stream buffer zones are addressed in the application on page 7-168 and shown on Exhibit 5.21-1. The stream buffer zones are designated with signs. Much of the stream buffer zone lies is the area of a stream alteration for which the permit can be found in Appendix 10.

Findings:

The applicant has met the minimum requirements for stream buffer zones.

RECLAMATION HYDROLOGIC INFORMATION

Regulatory Reference: 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.

Surface-water monitoring

Analysis:

The surface-water monitoring plan begins on 7-165 of the application. The reclamation monitoring plan is an extension of the operational monitoring plan.

Findings:

The applicant has met the minimum requirements for surface-water monitoring during mine reclamation.

Discharges into an underground mine

Analysis:

Pages 7-167 and 168 state that there will not be any discharges into the mine unless approved by the Division.

Findings:

The applicant has met the minimum requirements for discharges into an underground mine.

Gravity discharges

Analysis:

Pages 7-167 and 168 state that there will not be any discharges into the mine unless approved by the Division.

Findings:

The applicant has met the minimum requirements for gravity discharges.

Water quality standards and effluent limitations

Analysis:

Water Quality standards and effluent limits are addressed in Section 7.52, page 7-206. The permittee states that effluent limits are established by the NPDES permit.

Findings:

The applicant has met the minimum requirements for water-quality standards and effluent limitations.

Stream buffer zones

Analysis:

Stream buffer zones are addressed in the application on page 7-168 and shown on Exhibit 5.21-1. The stream buffer zones are designated with signs. Much of the stream buffer zone lies is the area of a stream alteration for which the permit can be found in Appendix 10.

Findings:

The applicant has met the minimum requirements for stream buffer zones.

RECOMMENDATION:

The Alkali lease amendment is complete and should be approved.