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

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August 1, 2002

TO: Internal File

THRU: Daron R. Haddock, Permit Supervisor

FROM: Gregg A. Galecki, Reclamation Hydrologist

RE: Response to Informal Conference – Updating of Chapter 7, Hiawatha Coal Company, Hiawatha Complex, C/007/011-AM02B, Carbon County, Utah, Internal File

SUMMARY:

The following review addresses changes made within Chapter 7 of the approved Mine Reclamation Plan (MRP) for the Hiawatha Complex mine. The changes were in response to a Division Order issued May 1, 2002. Changes have been made primarily to update the Probable Hydrologic Consequence (PHC) section of the MRP to assess impacts of future coal mining in the Hiawatha area. The primary focus of this review is to evaluate the effects on groundwater associated with the Bear Canyon Fault as water is encountered during mining. To fully evaluate the hydrologic impacts, Chapter 6 (Geology) of the MRP was also reviewed. The submittal was received at the Division on June 10, 2002. The deficiencies outlined below will need to be adequately addressed within approximately 30 days to meet the deadline outlined by the May 1, 2002 Division Order (September 19, 2002).

TECHNICAL ANAYLSIS:

GENERAL CONTENTS

COMPLETENESS

Regulatory Reference: 30 CFR 777.15; R645-301-150.

Analysis:

In Table 7-4 and throughout Chapter 7, numerous references are made as U.S. Fuel being the mine operator, and commitments being made by U.S. Fuel. It is assumed that all references to U.S. Fuel, with the exception of past-tense examples, needs to be changed to the current mine operator (Hiawatha Coal Company).

The referenced 'Mayo 2001' report that is located in Appendix 7-J of the Bear Canyon Mine MRP is missing Figure 15 – Stiff diagrams of the mean solute concentrations of creeks, springs, and in-mine sources.

Findings:

Information in the proposal is not adequate to meet the requirements of the General Contents section of the regulations. Prior to final approval, the applicant must supply the following information in accordance with:

R645-300-133.100, references to U.S. Fuel being the mine operator/applicant need to be replaced with Hiawatha Coal Company.

R645-301-122, Provide a Figure 15 – Stiff diagrams of the mean solute concentrations of creeks springs, and in-mine sources from the 'Mayo 2001' report.

ENVIRONMENTAL RESOURCE INFORMATION

GEOLOGIC RESOURCE INFORMATION

Regulatory Reference: 30 CFR 784.22; R645-301-623, -301-724.

Analysis:

To fulfill the requirements of the May 1, 2002, Division Order, additional geologic information is requested to better understand the relationship between mining in the Hiawatha area and impacts to Big Bear Spring. Provide a north-south cross section from the north end of the Hiawatha mine permit extending through Big Bear Spring. Of particular interest is the elevation relationship between the coal beds to be mined and Big Bear Spring, vertical offset due to the fault, permit boundary, and possibly any springs emitting from the Starpoint Sandstone.

Findings:

Information in the proposal is not adequate to meet the requirements of the Environmental Resource Information – Geologic Resource Information section of the regulations. Prior to final approval, the applicant must supply the following information in accordance with:

R645-301-624.100, Provide a north-south cross section from the north end of the Hiawatha mine permit extending through Big Bear Spring.

HYDROLOGIC RESOURCE INFORMATION

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

Analysis:

Ground-water Information

The section R645-301-724.100 – Subsurface Water of Chapter 7 needs updating for support of the 'Probable Hydrologic Consequence Determination' (section R645-301-728 of the MRP). Using available historic information, provide a written discussion/chronologic history of where the current discharge from the Mohrland portal originates.

Baseline Cumulative Impact area Information

Since at least 1983, the Mohrland portal has produced an average discharge of approximately 400 gpm. An age-dating survey conducted by Mayo and Associates in 2001(a reference that needs to be accurately referenced in the MRP) indicates the age of the water discharged at the Morhland portal to be 9,000 years old. Referencing the Mayo 2001 report, section R645-301-724.100 (pg 7-7) indicates 'groundwater flow is predominantly horizontal with very little vertical movement'. It goes on to say 'vertical movement of groundwater is limited to 100 to 200 feet'. In addition, the report indicates 'fracture-flow groundwater systems...are of limited lateral extent and do not convey large quantities of water over long distances'. The last paragraph of page 7-7 also indicates 'Gentry Mountain is hydraulically isolated from other areas of the Wasatch Plateau. Provide a general graphic illustration of the Gentry Mountain hydraulics and the source of the approximately 400 gpm that has consistently reported to the Mohrland portal since 1983. Prior to additional mining taking place, the Division wants a better understanding of the source of the water and how much mixing of Bear Canyon fault water and other interstitial water is taking place.

Findings:

Information in the proposal is not adequate to meet the requirements of the Environmental Resource Information – Hydrologic Resource Information section of the regulations. Prior to final approval, the applicant must supply the following information in accordance with:

R645-301-724.100, Using available historic information, provide a written discussion/chronologic history of where the current discharge from the Mohrland portal originates.

R645-300-133.100, When referring to the 'Mayo 2001' report, make a complete and accurate citation of the reference (including page number or page range).

R645-301-725.300, -728.334, 728.335, Provide a general graphic illustration of the Gentry Mountain hydraulics and the source of the approximately 400 gpm that has consistently reported to the Mohrland portal since 1983.

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:

Coal resource and Geologic Information Maps

The current plan provides cross-sections VI-2 (cross-sections A-A', B-B', C-C') that show a distinct break in slope/dip to the west. This break in slope begins west of drill holes DH 75-1 and DH 70-5, respectively. To better understand the possible direction of water flow in future mining, provide a east-west cross section through the proposed future mined areas extending from (including) the Bear Canyon fault proceeding through the eastern limit of the mineable area. Also include in the cross section the coal seams, known sandstone units (potential water-bearing zones) down to and including the Starpoint Sandstone, and any other known geologic features (see figure 13b, Mayo 2001 for example).

Mine Workings Maps

An updated Mine Workings map is requested. The most recent map that could be found at the Division is from the 1994 annual report. The map located in the report does not show the all the mine workings, and many portions of the map are not legible. From existing data, illustrate the years areas were mined, proposed areas of future mining, and which areas of the mine are abandoned or inaccessible. In areas of future proposed mining, identify which seams are to be mined, and identify any and all areas of multiple seam extraction.

Monitoring Sampling Location Maps

Exhibit VII-1 – General Surface and Subsurface Water Hydrology Map illustrates the water monitoring sites, but does not clearly identify UPDES sites 003 through 013. The map does not also indicate whether they are active, inactive, or proposed sites. As directed in the May 1, 2002, this map requires updating.

Subsurface Water Resource Maps

The Hydrology section (pg. 7-43) describes an in-mine seepage survey conducted in the King 4, King 5 and King 6 mines. Generally, King 5 and King 6 were not surveyed due to low-yield drippers in King 5 and the combination of hazardous conditions and sealed mine workings in King 6. Provide a map showing all known in-flows indicating flow, whether roof or floor

source, and clearly identify sealed or currently hazardous workings that prohibit locating in-flows.

Contour Maps

The 1994 Mine Workings map illustrates the bedding plane striking NW-SE with a dip of 30 percent SW. This is contradictory to statements made in the Geology section (pg. 4) and the Hydrology section (pg. 7-71). Using existing data from mine workings map, produce a contour map of the in-mine floor elevations. This will provide a better indication of in-mine gravity flow.

Findings:

Information in the proposal is not adequate to meet the requirements of the Environmental Resource Information – Map, Plans, and Cross Sections of Resource Information section of the regulations. Prior to final approval, the applicant must supply the following information in accordance with:

R645-301-622, -722, Provide a east-west cross section through the proposed future mined areas extending from (including) the Bear Canyon fault proceeding through the eastern limit of the mineable area. Also include in the cross section the coal seams, known sandstone units (potential water-bearing zones) down to and including the Starpoint Sandstone, and any other known geologic features (see figure 13b, Mayo 2001 for example).

R645-301-622, -722, From existing data, illustrate the years areas were mined, proposed areas of future mining, and which areas of the mine are abandoned or inaccessible. In areas of future proposed mining, identify which seams are to be mined, and identify any and all areas of multiple seam extraction.

R645-301-622, -722, On Exhibit VII-1, clearly identify UPDES sites 003-013 and indicate whether they are active, inactive, or proposed sites.

R645-301-622, -724, Provide a map showing all known in-flows indicating flow, whether roof or floor source, and clearly identify sealed or currently hazardous workings that prohibit locating in-flows.

R645-301-622, -724.500, Using existing data from mine workings map, produce a contour map of the in-mine floor elevations.

OPERATION PLAN

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:

Sampling and Analysis

The 'Mayo 2001' report indicates a more comprehensive water quality analysis (than the required UPDES parameters) of the discharge from Mohrland portal was conducted from 1994 through 1997. A total of three (3) age-dating analysis was also conducted in 1996 and 1998. The Division would like the existing water analysis be submitted electronically to the Division database, and also continue this sampling analysis on an annual basis.

In addition, the Division also requests the same analysis be conducted at UG-1, and any other in-mine flows encountered during future mining. The criteria (frequency, minimum flow, etc.) for conducting the in-mine flow analysis will be conducted as outlined in Section R645-731.200 (modifications of in-mine flow monitoring requested below).

Ground-water monitoring

Section R645-731.200 – Groundwater Monitoring Plan of Chapter 7 needs the following modifications: provide an easy-to-read table that clearly outlines what springs are currently being monitored; clearly identify Table 7-13 as the 'Operational' Groundwater parameter list; within Table 7-13 clearly identify calcium, magnesium, manganese, potassium, and sodium as being dissolved analysis; within Table 7-13 clearly identify iron and manganese as being analyzed for both total and dissolved; and also within Table 7-13, include ionic balance (cations/anions) analysis.

The Groundwater Monitoring Plan of Chapter 7 (R645-731.200) also commits to monitor in-mine flow at UG-1. Sample site UG-1 is the only proposed in-mine water monitoring location. This site does not separate flows coming from the area of the Bear Canyon fault and the northeast portions of the mine. It also does not account for flows diverted down from 11th-East or the Main Annex. The last documented flow from UG-1 was approximately 22 gpm, this accounts for only 6 percent of the approximately 400 gpm currently reporting to the Mohrland portal. Assuming no other in-mine flows are currently accessible, provide a detailed monitoring plan that clearly outlines where and when additional in-mine monitoring sites will be initiated.

Water quality standards and effluent limitations

In Section R645-301-731.100 of Chapter 7 of the MRP (pg7-86), the operator makes a commitment to comply with the conditions of the UPDES permit. However, to fulfill the requirements of the Division Order, a Section R645-301-750 – Performance Standards needs to be added to Chapter 7. Within Section R645-301-750, either outline the current frequency for sampling, reporting requirements, and recipients of the UPDES permit, or clearly reference where this information (specifically) can be found in Appendix VII-5 of the MRP.

Findings:

Information in the proposal is not adequate to meet the requirements of the Operation Plan – Hydrologic Information section of the regulations. Prior to final approval, the applicant must supply the following information in accordance with:

R645-301-731.210, Submit existing water quality analysis for the Mohrland portal to the Division database (from 'Mayo 2001' report).

R645-301-731.210, Continue water quality analysis for the Mohrland portal outlined in 'Mayo 2001' report.

R645-301-731.210, Provide commitment to conduct additional water analysis of future in-mine flows.

R645-301-731.210, Make requisite modifications to Table 7-13 as outlined above.

R645-301-731.210, Provide a detailed monitoring plan that clearly outlines where and when additional in-mine monitoring sites will be initiated.

R645-301-731.210, Section R645-301-750 – Performance Standards needs to be added to Chapter 7. Within Section R645-301-750, either outline the current frequency for sampling, reporting requirements, and recipients of the UPDES permit, or clearly reference where this information (specifically) can be found in Appendix VII-5 of the MRP.

CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT

Regulatory Reference: 30 CFR Sec. 784.14; R645-301-730.

Prior to making modifications to the current Gentry Mountain Cumulative Hydrologic Impact Assessment (CHIA) area, the Division requests the information cited above. The Hiawatha Complex mine makes up a significant portion of the CHIA.

RECOMENDATIONS:

Approval of the application by the Division is not recommended until the requisite deficiencies, cited above, are adequately addressed.

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