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 DEPARTMENT OF NATURAL RESOURCES
 DIVISION OF OIL, GAS AND MINING

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October 22, 2002

TO: Internal File

FROM: Gregg A. Galecki, Reclamation Specialist III, Hydrology – Team Lead 

RE: Refuse Pile, Canyon Fuel Company, Dugout Canyon Mine, C/007/039-SR02D, Internal File

SUMMARY:

The following review addresses the hydrology section of a proposed amendment to address the addition of a refuse pile to the Dugout Canyon Mine facilities. The amendment document was submitted as a 'stand-alone' document, with the exception of the bond calculations that will be included in Appendix 5-6 of the M&RP upon approval. The submittal was originally received by the Division on April 22, 2002, and determined Administratively Complete on August 9, 2002. However, additional information was requested from the applicant prior to the commencement of the technical review, which was submitted on August 30, 2002. Deficiencies outlined below must be adequately addressed prior to amendment approval.

TECHNICAL ANALYSIS:

ENVIRONMENTAL RESOURCE INFORMATION

GEOLOGIC RESOURCE INFORMATION

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

Analysis:

Included in the current Refuse Pile amendment is a general surface geology map and borehole logs that adequately characterize the area surrounding the Refuse Pile storage area. However, the geologic map is missing a legend that identifies the geologic units cited on the map.

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Findings:

The information provided does not adequately address the minimum requirements of the Geologic Resource Information section of the regulations. The Applicant needs to address the following:

R645-624.100, On RA Figure 6-1, include a legend identifying the geologic units found on the map.

HYDROLOGIC RESOURCE INFORMATION

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

Analysis:

Sampling and Analysis

The sampling conducted and submitted for baseline information is adequate for initial characterization of the hydrologic system. No analysis of surface water or groundwater was conducted as part of baseline data; no flow was documented at the surface sites, and only depth was collected at the groundwater monitoring locations.

Baseline Information

A total of four years of quarterly data has been collected and submitted for surface-water monitoring sites SS-1 and SS-2, and groundwater wells DH-1, DH-2, and DH-3. This is considered adequate information for initial characterization of the hydrologic system.

A review of the baseline data submitted for groundwater wells DH-1, DH-2, and DH-3 does not appear to correspond with the information provided as the potentiometric surface illustrated on RA Figure 7-1. As an example, Figure 7-1 indicates the potentiometric head/elevation as being 5833.44 ft., while the baseline data (submitted on page 3 of RA Attachment 7-1, Baseline Data) indicates the average head/elevation at approximately 5849.00 ft.

Ground-water Information

Section 724.100 refers to groundwater samples collected from monitoring wells located approximately six miles north of the Refuse Pile storage area. These wells are located too far from the area they are proposed to be characterizing, located in different surface geologic units (Qal vs. Qg), and the well location map needs to be included in the Refuse Pile amendment or Dugout MRP and not referenced to a map located in a different MRP. In addition, drill logs for well DH-1 (found in RA Attachment 6-1) indicate the potentiometric surface of the groundwater

is located approximately 9-10 feet above the contact of the Mancos Shale and within Quaternary-aged alluvium.

Surface Water Information

Section 722.200 indicates Dugout Creek is located 1/8 to 1/4 mile from the Refuse Pile area. Information that needs to be included is a statement further defining the nature of Dugout Creek (i.e. intermittent but ephemeral in nature or truly intermittent), and a map indicating the distance overland flow has to travel to get to the creek. A recommendation would be to modify the scale on RA Plate 7-1 to indicate where surface flow would enter Dugout Creek.

Baseline Cumulative Impact area Information

Section 728.100 of the Refuse Pile Amendment identifies the potential impacts of storing refuse and other materials in the proposed area on the quality and quantity of surface-water and groundwater.

Modeling

No hydraulic modeling was conducted nor considered necessary for the Refuse Pile storage area.

Alternative Water Source Information

Identification of Alternative Water Source Information is not necessary. A query of the Utah Division of Water Rights database indicates no water rights exist within a 10,000 foot radius of the proposed Refuse Storage area.

Probable Hydrologic Consequences Determination

Section 728.300 of the Refuse Pile Amendment addresses mitigating measures that will be implemented to minimize potential impacts specifically from acid-or-toxic-forming materials, sediment yield, groundwater and surface water availability, potential hydrocarbon contamination, and road salting. Baseline information supporting the determination indicates the Refuse Pile storage area is located in the Mancos Shale which is not considered a to be a regional or local aquifer, is also considered to be relatively impermeable, and the refuse pile area is limited to only a few acres.

Findings:

The information provided does not adequately address the minimum requirements of the Hydrologic Resource Information section of the regulations. The Applicant needs to address the following:

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R645-724.310, The potentiometric surface illustrated on RA Figure 7-1 needs to correspond with baseline information, or information needs to be provided on how the potentiometric surface was determined.

R645-724.100, Groundwater information for the Refuse Pile storage area needs to be on site. The proposed groundwater monitoring wells are located too far from the work area. The Division recommends well DH-1 be used for characterization and monitoring of the groundwater at the Refuse Pile storage area.

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:

Monitoring Sampling Location Maps

RA Figure 7-1 adequately identifies the location of water monitoring sites.

Permit Area Boundary Maps

RA Figure 1-1A and 1-1B adequately locate the permit area relative to the entire mine plan on a regional scale, and RA Figure 7-1 identifies the area on a detailed scale (1-inch = 200').

Surface and Subsurface Ownership Maps

A landownership map is located as Plate 1-3 in the MRP.

Findings:

The information provided adequately addresses the minimum requirements of the Environmental Resource Information section of the regulations.

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:

Ground-water monitoring

The proposed groundwater monitoring outlined in the Refuse Pile amendment is adequate with one exception. Since DH-1 is screened within alluvial sediments, the Division is requesting a water quality sample be collected on an annual basis for two years, then be re-sampled at each permit renewal. Recommended analysis would follow baseline parameters outlined on Table 7-4 (pg. 7-56) of the currently approved MRP.

Surface-water monitoring

The proposed surface-water monitoring outlined in section 731.200 of the Refuse Pile amendment adequately addresses the surface drainage in the area.

Acid and toxic-forming materials

The encountering of Acid- or toxic forming materials is not anticipated at the mine. Routine sampling of the refuse will hopefully identify any such materials. If any acid- or toxic materials are identified, they will be placed in the lower level of the pile and covered with a minimum of 4-feet of cover.

Water quality standards and effluent limitations

The sedimentation pond is designed as a total containment structure. The applicant makes the commitment that all discharges of water will comply with all Utah and federal water quality laws and regulations (section 751).

Diversions

Diversion design was based on a 100-year, 6-hour precipitation event. The Division has been recommending diversions be designed to contain the runoff from a 10-year, 24-hour event; which in this case is essentially equivalent.

Section 742.300 provides a general discussion of the requirements and design of the diversions, and all diversion and culvert calculations area presented in RA Attachement 7-4 and

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RA Tables 7-3 and 7-4. However, the need for the lining of channels was apparently set at a peak velocity of 5 feet/second (fps). A discussion of the why 5 fps is used as the channel lining criteria needs to be included. It is assumed it is based on the material of the ditch, but that needs to be stated.

Sediment control measures

Forms of sediment control measures include silt fences, riprap, contemporaneous re-vegetation, vegetative sediment filters, a sediment pond, and other measures that reduce overland flow velocities, reduce runoff volumes or trap sediment. The applicant makes a commitment that these structures will be maintained to remain functional.

Siltation structures

The siltation structure within the permit area will be a sediment pond. Section 742.200, page 7-19 of the Refuse Pile amendment describes the sediment/clean out elevation of the pond, but it does not commit to installing a clean-out marker at the appropriate elevation.

Sedimentation ponds

All calculations and design maps for the proposed sediment pond are included in the amendment and are P.E. certified. The pond is designed as a total containment structure to fully contain the runoff from a 100-year, 24-hour precipitation event (2.8 inches).

Findings:

The information provided does not adequately addresses the minimum requirements of the Operational Plan – Hydrologic Information section of the regulations. The applicant needs to address the following:

R645-731.212, Include water quality analysis of Well DH-1 in the groundwater monitoring program.

R645-742.221.31, Provide a commitment to install clean-out markers in the sedimentation pond.

R645-742.312.1, Provide a discussion of the why 5 fps is used as the channel lining criteria.

RECLAMATION PLAN

GENERAL REQUIREMENTS

Regulatory Reference: PL 95-87 Sec. 515 and 516; 30 CFR Sec. 784.13, 784.14, 784.15, 784.16, 784.17, 784.18, 784.19, 784.20, 784.21, 784.22, 784.23, 784.24, 784.25, 784.26; R645-301-231, -301-233, -301-322, -301-323, -301-331, -301-333, -301-341, -301-342, -301-411, -301-412, -301-422, -301-512, -301-513, -301-521, -301-522, -301-525, -301-526, -301-527, -301-528, -301-529, -301-531, -301-533, -301-534, -301-536, -301-537, -301-542, -301-623, -301-624, -301-625, -301-626, -301-631, -301-632, -301-731, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-732, -301-733, -301-746, -301-764, -301-830.

Analysis:

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:

Discharge structures

Section 762.100 discusses the reclamation of channels RWS-1 and RWS-2, which includes portions of the channels that will have riprap installed as part of final reclamation. Identify on RA Plate 7-3 which portions of the channels will have riprap installed, and provide or refer to a cross section diagram illustrating the proposed riprap design.

Findings:

R645-301-761, Identify on RA Plate 7-3 which portions of the channels will have riprap installed, and provide or refer to a cross section diagram illustrating the proposed riprap design.

CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT

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

RECOMMENDATIONS:

The application should not be approved in its current form.