

# TECHNICAL MEMORANDUM

Utah Coal Regulatory Program

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October 19, 2006

TO: Internal File

THRU: D. Wayne Hedberg, Permit Supervisor

FROM: Dana Dean, P.E., Senior Reclamation Hydrologist

RE: New Sedimentation Pond at Waste Rock Site, Canyon Fuel Company, Skyline Mine, C/007/0005, Task #2634

## SUMMARY:

Canyon Fuel Company (the Permittee) would like to move the sedimentation pond at its waste-rock disposal site. The current pond is in an area that can be filled in order to extend the life of the facility for 5-6 years. The new pond is directly north of the old pond and is designed to capture runoff from the same watershed. The pond does not fall under 30 CFR Section 77.216(a).

The application does not meet the requirements of the relevant hydrology regulations. The Division should not approve it until the deficiencies listed below are resolved. Where references have been required, it is so that any member of the public, whether familiar with the approved plan or not, may be able to find all appropriate information regarding this sedimentation pond in the easiest manner possible.

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**TECHNICAL ANALYSIS:**

**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:**

**Diversions: Perennial and Intermittent Streams**

The Permittee has met the requirements of R645-301-742.320 *et seq.* Reference is made to the design information for DD-16, or DD-17 in Section 3.2 of the application (p. 3-56(a)) The designs are in Volume 5, Section 14.

**Sediment Control Measures**

The Permittee has not met the requirements of R645-301-532, or R645-301-742.120. No discussion of how sediment from the disturbed area will be controlled during the construction of the sedimentation pond is included in the application.

**Siltation Structures: General**

The Permittee has not met the requirements of R645-301-732.100, R645-301-742.213. The specific regulations for Impoundments, sedimentation ponds, and embankments have not been met, as described in detail below.

The Permittee has not met the requirements of R645-301-742.212. There is no mention of professional certification after the pond is constructed.

**Siltation Structures: Sedimentation Ponds**

The Permittee has not met the requirements of R645-301-711.300. The application does not include all methods and calculations as required. The missing information includes:

- Reference and method for curve number selection
- A reference for the design-storm rainfall amount (P)

- Method for determining sediment volume expected in the design storm (why is it only considered for the disturbed area? The entire watershed reporting to the pond will contribute some amount of sediment.)
- Q (cfs) for the storm event, to compare against the design Q for the spillway
- Manning's roughness coefficient and reference for the spillway calculation
- Spillway material
- Decant pipe size, and calculations

The Permittee has not met the requirements of R645-301-742.221.31. Since the method for determining sediment volumes has not been fully explained and justified in the application, it is unclear whether the pond has adequate sediment storage volume.

The Permittee has not met the requirements of R645-301-742.221.32. No demonstration that the pond will provide adequate detention time to meet state and Federal effluent limitations (in the event of a discharge) is included in the application.

The Permittee has not met the requirements of R645-301-742.221.34. No demonstration that there will be a non-clogging dewatering device adequate to meet the required settling time (in the event of a discharge) is included in the application.

The Permittee has not met the requirements of R645-301-742.221.35. No demonstration that short-circuiting will be minimized (in the event of a discharge) is included in the application.

The Permittee has not met the requirements of R645-301-742.221.36. There is no reference to clean-out volumes or schedules for the pond in the application.

The Permittee has not met the requirements of R645-301-742.221.37. There is no discussion of how excessive settlement will be avoided in the application.

The Permittee has not met the requirements of R645-301-742.221.38. There is no discussion of the pond being free of sod, large roots, frozen soil, and acid- or toxic-forming coal processing waste in the application.

The Permittee has not met the requirements of R645-301-742.221.39. There is no discussion of the pond being compacted properly in the application.

The Permittee has not met the requirements of R645-301-742.223. The spillway design does not include the 25-year 6-hour storm flow data. This should be the maximum flow shown by the hydrograph.

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An exception to the requirements of R645-301-742.223.1, R645-301-742.223.2, and R645-301-742.224 is allowed, since the pond is based on a 100-year, 6-hour storm in accordance with R645-301-742.225.2.

The Permittee has met the requirements of R645-301-742.221.33 by demonstrating that the pond will contain or treat the 10-year 24-hour precipitation event.

### **Discharge Structures**

The Permittee has not met the requirements of R645-301-744. There is no discussion of how the discharge from the sedimentation pond will be controlled to reduce erosion and to minimize disturbance to the hydrologic balance. Riprap is shown on the map, but the application contains no reference or designs for the riprap.

### **Impoundments**

The Permittee has not met the requirements of R645-301-512.240 or 743.120. Because the sedimentation pond falls under the definition of an impoundment (see R645-100-200, *Impoundments*, and *Sedimentation Ponds*), a registered professional engineer must certify the impoundment designs and plans. The qualified, registered professional engineer must be experienced in the design and construction of impoundments.

The Permittee has not met the requirements of R645-301-514.300. Plans for a registered professional engineer to inspect the impoundment during construction, upon completion of construction, and quarterly should be included, or referenced.

The Permittee has not met the requirements of R645-301-515.200. Plans for notification of hazard should be included, or referenced.

The Permittee has not met the requirements of R645-301-533.110, or R645-301-733.210. Demonstration of a minimum static safety factor of 1.3 under normal pool conditions must be included in the application.

The Permittee has not met the requirements of R645-301-533.210. The application must demonstrate that "Foundations and abutments for an impounding structure are stable during all phases of construction and operation and are designed based on adequate and accurate information on the foundation conditions."

The Permittee has not met the requirements of R645-301-533.220. The application must include a commitment to remove all vegetative and organic materials and excavate the foundation. The plan must include cutoff trenches if necessary to ensure stability.

The Permittee has not met the requirements of R645-301-533.300. Slope protection must be discussed in the application.

The Permittee has not met the requirements of R645-301-533.400. Stabilization of embankment faces must be discussed in the application.

The Permittee has not met the requirements of R645-301-533.500. The Permittee has not discussed the location or lack of highwalls in the area of the sedimentation pond.

The Permittee has not met the requirements for permanent impoundments (R645-301-413.100 through R645-301-413.334; R645-301-533.100 through R645-301-533.600; R645-301-542.400; 733.220 through 226; R645-301-743; R645-302-270 through R645-302-271.400; R645-302-271.600, R645-302-271.800; or R645-302-271.900). Because the impoundment may be left in place, the Permittee must meet each of the regulations pertaining to permanent impoundments.

#### **Ponds, Impoundments, Banks, Dams, and Embankments**

The Permittee has not met the requirements of R645-301-533.711. A registered professional engineer has not certified the plans for the sedimentation pond, neither are detailed construction and stability plans for the pond embankment included in the plan.

The Permittee has not met the requirements of R645-301-533.712. No design and construction information is included in the plan, including geotechnical information. The Permittee has not met the requirements of R645-301-733.120. A map (3.2.8-4A), and cross-sections (3.2.8-4B) are provided, but there is no description in the text. There is only a mention that a sedimentation pond will be constructed. In addition to general information about the pond (e.g. size), particular attention should be paid to the embankment, its construction, stability, etc.

The Permittee has not met the requirements of R645-301-533.713. The plan does not contain any operation or maintenance requirements for the pond.

The Permittee has not met the requirements of R645-301-531, or R645-301-733.150. There is no reference to the geologic and hydrologic information required to assess the hydrologic impact of the structure. If this information is already in the MRP it should be referenced such that a member of the public, unfamiliar with the plan, could locate the information.

The Permittee has not met the requirements of R645-301-733.140. No explanation or reference is made to the extent or absence of underground mining and subsidence in the area of the structure.

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The Permittee has not met the requirements of R645-301-733.160. The plan is not certified, nor detailed enough for the Division to approve it. Particular information needs to be paid to the construction and stability of the embankment.

**Findings:**

The Permittee has not complied with the Hydrology requirements of the Regulations. They must adequately respond to each of the deficiencies listed above.

**MAPS, PLANS, AND CROSS SECTIONS OF MINING OPERATIONS**

Regulatory Reference: 30 CFR Sec. 784.23; R645-301-512, -301-521, -301-542, -301-632, -301-731, -302-323.

**Analysis:**

**Mining Facilities Maps**

The Permittee has met the requirements of R645-301-521.125, and 731.740 by providing the location of the new sedimentation pond on map 3.2.8-4A, and cross-sections of the pond on map 3.2.8-4B.

**Certification Requirements**

The Permittee has met the requirements of R645-301-712, and R645-301-733.210. A registered professional engineer has properly certified maps 3.2.8-4A, 3.2.8-4B, 4.16.1-1B, and 4.16.1-1C.

**Findings:**

The Permittee has complied with the Maps, Plans, and Cross-Sections requirements of the Regulations.

**RECLAMATION PLAN**

**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:**

**Hydrologic Reclamation Plan**

The Permittee has not met the requirements of R645-301-533.714, R645-301-542.400, or R645-301-764. The application does not include a timetable or any plans for removal of the structure.

The Permittee has not met the requirements of R645-301-356.300, or R645-301-763.100-200. The plan does not contain a commitment, or reference to a commitment to leave the sedimentation pond in-place for at least two years after the last augmented seeding.

**Findings:**

The Permittee has not complied with the Hydrology requirements of the Regulations. They must adequately respond to each of the deficiencies listed above.

**RECOMMENDATIONS:**

The Division should not approve this application until all deficiencies listed above are resolved.