

TECHNICAL MEMORANDUM

Utah Coal Regulatory Program

September 19, 2006

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TO: Internal File

THRU: Wayne Hedberg, Permit Supervisor 

FROM: David Darby, Senior Environmental Specialist/Hydrology 

RE: Reconstruction of Refuse Pile Channel (#31), UtahAmerican Energy, Inc., Horse Canyon Mine, C/007/0013, Task ID #2642

SUMMARY:

The Division received plans on September 15, 2006 from UtahAmerican Energy, Inc. (UtahAmerican) for the reconstruction of the refuse pile channel at the Horse Canyon Mine. The channel was damaged from an extensive rainstorm in September 2005. The damage was identified in May 2006.

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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, -300-148, -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:

General

UtahAmerican Energy, Inc. (UEI) resubmitted plans on September 15, 2006 to reconstruct the Refuse Pile channel. A review of the reconstruction designs (Task 2611) submitted on August 31, 2006 identified an undisturbed area above the railroad tracks that had not been factored into the drainage equations.

The refuse channel (Channel #31) is part of the reclaimed area. A large storm on September 2005 eroded the channel, and repairs need to be made. There is a ten-year liability period on the channel that began in February 2002.

The Permittee has provided design calculations to for a 100 yr-6 hr precipitation event. The flow volume comes from three contributing drainages (A1, A2 and A3, shown on Figure 1) and is calculated to be 20.3 cfs. Plans include cross-sections of the trapezoidal channel and reconstruction length. Cross-sections in Figure 2 and Plate VI-3 show 1.5 feet of riprap on a gravel filter. The riprap will be keyed into the channel sides, which are designed with 2:1 side slopes to match the existing embankments and channel gradient. Two grades of riprap will be used. A graded riprap with a D50 of 1.5 feet will be used where the designed channel is steeper (8:1) at the planned drop structure, and a D50 of 0.75 feet (9 inches) above and below the drop structure.

The riprap will be keyed in at the base of the channel to prevent it from being washed away during storms. Velocities have been calculated at 8.28 ft/sec at the drop structure and 5.8 ft/sec below the drop structure. These velocities are a little high, but should be controlled with the riprap. The riprap will be installed so it is two feet (vertical) above the base of the channel, providing a 1 ft freeboard for channel protection. The slope height of the channel is 2.25 feet. The riprap will be graded (rock of various size, between a D15 and D85) so it interlocks for a stable channel surface.

Surface-Water Monitoring

HC-1 is located in the main channel upstream of the mine and RF-1 is located in the Right Fork above the mine. RF-1 often measures the flow from RS-2 as it trickles down the stream channel. Monitoring site B-1 measures flows in the main channel of Horse Canyon Creek below the minesite.

No monitoring sites exist on the Refuse Pile channel.

Findings:

Information provided in the amendment meets the minimum regulatory requirements of Hydrologic Information Section of the regulations.

MAPS, PLANS, AND CROSS SECTIONS OF RECLAMATION OPERATIONS

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

Analysis:

Affected Area Boundary Maps

Drawing III-1A submitted for the amendment shows the area of reconstruction for the Refuse Pile culvert. The Permittee has submitted Figure 1 showing the drainage area for the Refuse Pile channel.

Reclamation Backfilling and Grading Maps

Drawing VI-3 and Figure 2 submitted in the amendment shows the cross-sectional area of the rebuilt channel. The proposed channel is trapezoidal in shape. Riprap will be placed on a gravel filter. Channel detail is illustrated in Table 1 and Plate VI-3 showing a channel depth of one foot (1'), a base width of five feet (5') and 2:1 side slopes. The D50 riprap value is stated as 9" for the.

Findings:

Information provided in the amendment meets the minimum regulatory requirements of the Maps, Plans, and Cross Sections of Reclamation Operations section of the regulations.

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RECOMMENDATIONS:

This amendment is recommended for approval with stipulations. DOGM stipulates that measurements be taken of the channel after construction to insure that minimum channel designs are met. At least three as-built cross-sections should be submitted of the repaired channel. The as-built drawing should be formatted to fit into the MRP. Also, it is a reminder that the Permittee must follow the vegetation standards as outlined in the MRP for those sections of the channel embankment that are reconstructed.

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