



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

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December 27, 1996

TO: Folder #2

THRU: Joe Helfrich, Permit Supervisor 

FROM: Steven M. Johnson, Reclamation Hydrologist 

RE: Hardscrabble Reclamation, Castle Gate Mine, Amax Coal Company,  
ACT/007/004-96F, Folder #2, Carbon County, Utah

**SUMMARY:**

In the summer of 1996 Amax Coal Company has plans to reclaim or begin reclamation of Hardscrabble Canyon. This memorandum is the technical analysis of an amendment to the plan's hydrologic design portion. This supersedes the memorandum dated June 13, 1996, under the same title.

**RECLAMATION 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:**

**Diversions**

Reclamation diversion designs are found in Appendix 3.3C, Reclamation Hydrologic Structures. Discussion is found on page 3.3-29, Section 3.3-4(2). Table 3.3-9, 9A, and 10 are summaries of diversion designs. Exhibit 3.3-4A and 3.3-16 show the location of the drainages and Exhibit 3.3-8C shows the profile of the main diversion (HCRD-7 and 8).

The intermittent drainages HCRD-7 and 8 are designed to convey the 100-year, 24-hour storm event. The smaller diversions are designed for the 10-year, 24-hour storm

event. Riprap has been designed for all diversions for protection from erosion and stabilization. Granular filters are proposed where riprap size is much larger than base material.

### **Stream Buffer Zones**

The stream buffer zones information is given in Section 3.3-7, page 3.3-37. No stream buffer zone is included in the permit application because all channels were altered prior to the enactment of the law.

### **Sediment Control Measures**

Sediment control measures are covered in Section 3.3-4(3) beginning on page 3.3-32 and in Appendix 3.3E. All areas are intended to be alternate sediment control areas. Treatment will be consistent throughout the reclaimed area, consisting of practicing contour plowing, deep gouging, mulching, applying a tackifier for the mulch, and revegetation.

The sequence of effectiveness from these measures insures that sediment will be consistently controlled from the point of reclamation to the establishment of vegetation. These are considered sediment control areas rather than exemption from sediment control because the measures used will be subject to maintenance. If any of these measures fail to a point that the Division does not think sediment control is adequately met, the permittee will be required to either re-implement the designed practices (i.e.-reseed and re-mulch), or they must design new sediment control measures that will treat areas where failure is discovered and the Division does not think the existing designs will work.

The operational sediment ponds are not sized properly for reclamation, therefore, the alternate sediment control measures are best technology currently available (BTCA) for treating sediment in runoff.

### **Siltation Structures**

There are no plans for siltation structures in reclamation. All sediment control will be fulfilled by alternate sediment control measures.

### **Sedimentation Ponds**

There are no plans for siltation structures in reclamation. All sediment control will be fulfilled by alternate sediment control measures. The operational sediment ponds are not sized properly for reclamation, therefore, the alternate sediment control measures are BTCA for treating sediment in runoff.

### **Exemptions for Siltation Structures**

All reclaimed areas will be treated by alternate sediment control measures. While no sediment ponds will be used, these areas will not be exempt from sediment control.

### **Discharge Structures**

There are no plans for siltation structures in reclamation. Without siltation structures there is no need for discharge structures.

### **Structure Removal**

The removal of structures is listed in Section 3.3-4(1), under the grading subheading. Section 3.3-5 has a timetable for the removal of structures. The timetable on page 3.3-27 is specific to the timing of sediment pond removal and alternate sediment control measures construction.

### **Findings:**

The hydrologic reclamation plan is complete and accurate.

### **RECOMMENDATION:**

This amendment should be approved as part of the Castle Gate Mine reclamation plan. The operational sediment ponds are not sized properly for reclamation, therefore, it is important that the alternate sediment control measures be installed as quickly as possible.

blb  
cc: Daron Haddock, Permit Supervisor  
Paul Baker, Reclamation Specialist  
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