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TECHNICAL ANALYSIS

Field Adjustments for Willow Creek Refuse Removal Plan ACT/007/004-95G December 18, 1995

ANALYSIS

PLANS AND ENGINEERING DESIGNS

Regulatory Reference: R645-301-510

Analysis:

Impoundments

The only impoundments associated with the project will be sedimentation ponds and traps. Pond 013 at the Castle Gate Prep Plant and the proposed sedimentation ponds at the site were designed by a professional engineer using current, prudent, engineering practices. These designs were certified by a professional engineer experienced in the design and construction of impoundments. Details regarding the designs are discussed in Section 12.7

The Operator has modified the permit to include sediment traps in the description of the impoundments. Details regarding the designs are discussed in Section 12.7. The Division approves the change.

Findings:

The Operator has met the minimum regulatory requirements.

CROSS SECTIONS AND MAPS

Regulatory Reference: R645-301-521.100

Analysis:

Exhibit 12-5-1 depicts the following information:

All buildings within 1000 feet of the project area. The c

The location of major electric transmission lines within, the project area. No pipelines or agricultural drainage ti area. Likewise, no major electric transmission lines exi

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Findings:

The Operator has met the minimum regulatory requirements.

CROSS SECTIONS AND MAPS

Regulatory Reference: R645-301-521.100

Analysis:

Exhibit 12-5-1 depicts the following information:

All buildings within 1000 feet of the project area. The current uses of those buildings;

The location of major electric transmission lines within, passing through, or passing over the project area. No pipelines or agricultural drainage tile fields exist within the project area. Likewise, no major electric transmission lines exist within the area of the Refuse

Disposal Facility;

Each public road (i.e., Utah Highway 191) located in or within 100 feet of the project area;

The location of each sedimentation pond, trap, and containment berm within the project area.

For the location of the Refuse Disposal Facility (see Chapter 3, Exhibit 3.4-1) Exhibit 12-5-1 shows the location of the containment berms.

Findings:

The Operator has met the minimum regulatory requirements.

TRANSPORTATION FACILITIES

Regulatory Reference: R645-301-521.170; R645-301-527

Analysis:

Road Classification

Roads that will be used in conjunction with the project are shown on Exhibit 12-5-1. The topsoil access road is an existing jeep trail that will be upgraded to a gravel road for the construction period. If the Willow Creek Mine Permit is approved, this road will be left in place temporarily to handle the 1996 mine construction. If the permit is not approved, the road will be reclaimed as outlined in Section 12.7.6. A secondary loop road will be constructed to ease transportation handling in the area of the topsoil stockpile. The access road to the refuse area will also be upgraded. This upgrading will consist of road widening and extending the side-drainage culvert under the road.

The Operator proposes to upgrade the existing jeep road to the topsoil stockpile area and the refuse removal area. In addition a secondary loop road will be constructed in the topsoil area. Reclamation of the road is dependent on if the Willow Creek Mine permit is approved. If the permit is approved, the jeep trail will be left in place to handle the 1996 mine construction.

Upgrading the existing roads and constructing the loop is needed to handle the increased traffic. The Division can approve the road design and construction.

Road Specifications

The road within the site crosses Willow Creek at an existing culvert that was installed. This culvert will be replaced as part of the Refuse Removal Access Road construction. The new culvert will be an 8-foot diameter CMP culvert capable of handling the peak flow from the 100-year, 6-hour storm event. Design of the culvert is discussed in Section 12.7.

Drainage Way Alterations

No relocations of natural drainage ways are anticipated within the permit area to accommodate the needs of the project. Upgrading of the Willow Creek crossing will occur taking into consideration the planned stream alteration section. A short section of channel will be required to channel flow to the existing channel.

The Division approves the conceptual plan for replacing the culvert.

Findings:

The Operator has met the minimum regulatory requirements.

UTILITY INSTALLATION AND SUPPORT FACILITIES

Regulatory Reference: R645-301-526.200

Analysis:

Support Facilities

A dust suppression water pumping station is proposed to be located behind the office trailer. This structure will consist of a pumping station with a suction line being placed into Willow Creek. Drainage from this area will be collected in Pond WC-002, as discussed in Section 12.7.

Water Pollution Control Facilities

Water pollution control facilities associated with the project will consist of sediment ponds, trap and the containment berm surrounding the topsoil stockpile. All water pollution control facilities will be retained following project activities for use in either future mining operations or reclamation operations at the site.

The dust suppression and sediment control systems are needed to minimize disturbances outside the permit area.

Findings:

The Operator has met the minimum regulatory requirements.

IMPOUNDMENTS; SLOPE STABILITY

Regulatory Reference: R645-301-533

Appendix 12-5-4 contains the slope stability calculations for the sediment ponds and traps under a rapid drawdown conditions. All ponds except WC 002 are incised and constructed in such a manner as to prevent slope failure in the event of a rapid draw down. Pond WC 002 has been designed to be stable under a rapid drawdown conditions.

The Operator has demonstrated that the ponds will be stable under a rapid drawdown conditions.

Findings:

The Operator has met the minimum regulatory requirements.

HYDROLOGIC INFORMATION

Regulatory Reference: R645-301-730, 740, 750

Analysis:

Diversions: Perennial and Intermittent Flows

The culvert for Willow Creek will be replaced with a larger culvert. The new culvert has been designed to convey the 100-year, 6-hour storm event (Appendix 12-7-4). It will be 8 feet in diameter and 190 feet in length. The gradient will allow velocities which are slow enough that fish can safely travel through the culvert. Additionally, two sky lights will provide light for the fish. There is no stream alteration permit at this time.

Diversions: Miscellaneous Flows

Water collected from the road will be routed into sediment traps by swales in the road. The swales are shown on Exhibit 12-5-1. The designs for each swale are included in Appendix 12-7-2. UD-4 routes water out of Sediment Trap 3 and runoff from undisturbed areas past the topsoil pile containment berm. The designed diversion ends at the disturbed area boundary and flow goes into a small natural drainage. Since UD-4 conveys only a very small amount of runoff there should not be any erosional effects in the natural drainage.

Stream Buffer Zones

The stream buffer zones are shown on Exhibit 12-5-1. The new 190-foot long culvert for Willow Creek extends outside of the delineated buffer zone.

Sediment Control

The topsoil pile is afforded sediment control by a containment berm design to protect the topsoil pile from losses due to water erosion. The topsoil containment berm is designed for both the 100-year, 6-hour.

Siltation Structures: Sedimentation Ponds

Section 12.7.3.2.2 says that there are two sediment ponds, four sediment traps and a containment berm around the topsoil pile designed as sediment ponds. This is a change from the previous plan. One of the sediment ponds was called a sediment trap and the berm around the topsoil pile was added to the sediment pond design list.

Designs for the Sediment Pond 1 and traps are located in Appendix 12-7-2. Sediment Pond 2 designs are in Appendix 12-7-4. Pond 1 is designed to contain the 25-year, 24-hour storm event with no spillway. Pond 2 and Sediment Trap 3 contain the 10-year, 24-hour storm runoff and passes the 25-year, 6-hour storm event through an open spillway. Sediment Traps 1, 2 and 4 contain the 25-year, 24-hour runoff with no spillways.

Discharge Structures

Discharge spillways are designed for Sediment Pond 2 and Sediment Trap 3. These have both been designed for the 25-year, 6-hour storm events. The designs are found in Appendix 12-7-4 and Appendix 12-7-2, respectively. The remaining sediment control facilities are designed as total containment structures.

Findings:

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Exhibit 12-5-1 shows the 190-foot culvert for Willow Creek blanketed by the stream buffer zone. All mining related work and facilities will be excluded from the stream buffer zone.

Amax Coal and the Division of Water Right are in the process of permitting the culvert work. Amax must have this permit before the new culvert can be installed.

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