

0031



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

Michael O. Leavitt
Governor

Kathleen Clarke
Executive Director

Lowell P. Braxton
Division Director

1594 West North Temple, Suite 1210

PO Box 145801

Salt Lake City, Utah 84114-5801

801-538-5340

801-359-3940 (Fax)

801-538-7223 (TDD)

December 18, 2001

TO: Internal File

THRU: Joe C. Helfrich, Sr. Reclamation Specialist/ Team Lead *Jeh*

FROM: Michael J. Suflita, Sr. Reclamation Specialist *MJK*

RE: Adit No. 1 Revised Reclamation Plan, Castle Gate Holding Company, Castle Gate Mine, C/007/004-AM01B-1

SUMMARY:

On May 1, 2001, the Division received amendment AM01B, a revised reclamation plan for the Adit No.1 mine at the Castle Gate mine. The Division sent a Technical Analysis on June 30, 2001. The Operator sent a second submittal that was received by the Division on October 12, 2001. This Technical Memo is a review of the Hydrologic aspects of that latest submittal. There are deficiencies.

TECHNICAL ANALYSIS:

RECLAMATION 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:

General

This amendment is to revise the reclamation plan for Adit No. 1, Castle Gate Mine. There are three significant Hydrologic changes from the previously approved Mining and

TECHNICAL MEMO

Reclamation Plan, MRP. The first is to revise the two reclamation channels from a riprap-lined channel to using erosion control mat lining in those channels. The second is to revise the riprap-lined channel below the large concrete box culvert and put the flow into a corrugated half-round plastic pipe. The third change is to remove the MRP commitment to using silt fences in the drainages adjacent to the channels during reclamation.

The Operator is advised to obtain the necessary permits and landowner permission before commencing reclamation activities. These may be necessary when working on or adjacent to the railroad tracks and over the river. The Operator has coordinated with the Utah Department of Transportation (UDOT) as evidenced by a letter from Mr. Dave Babcock, UDOT Price District, Area Maintenance Supervisor dated September 13, 2001. That letter indicates a preference for using an existing 30 or 36 inch metal culvert for drainage under the highway. It also indicates, if the 8' x10' box culvert is used, a rip-rap slope below the culvert is preferred to other methods of slope protection.

Ground-water monitoring

There are no ground-water monitoring points related to this amendment.

Surface-water monitoring

There are no surface-water monitoring points related to this amendment.

Discharges into an underground mine

There are no discharges into an underground mine as related to this amendment.

Gravity discharges

There will be a gravity discharge from this Adit No. 1 after reclamation is completed. According to the MRP, page 3.5-2, "The water was flowing from the spring prior to the advent of SMCRA and the Clean Water Act, and continues to flow today". This discharge is not a UPDES discharge point based on a determination by the Utah Division of Water Quality. It does not appear the mine has had or will have any impact on the spring's flow, which is the gravity discharge.

Page 3.5-11 indicates, "The water discharging from the portal, via a pipe, will be conveyed beneath the backfilled slopes by a pipe with a minimum diameter of 2 inches." While this will work for a time, eventually the pipe will corrode and become unable to carry the water. The Division requires that the pipe be enveloped in a free-draining material, such as graded gravel surrounded by filter fabric. The end result is that when the pipe corrodes, there will still remain a free-draining, and non-plugging, way for the water to drain out of the adit.

Water quality standards and effluent limitations

See Gravity Discharges above.

Diversions

The design event of a 10-year, 6-hour storm was used to design the channel protection. The small drainage area, about 27 acres, results in the stream being defined as "ephemeral" according to regulations; thus paragraph 742.333 applies, which calls for that design storm. The appropriate runoff curves were used for the calculations. Appendix 3.5C details the design of the channels and calculates the design flows.

The amendment proposes to use erosion control mat instead of a riprap-lined channel, as described in the original MRP. There is a commitment to strictly follow the manufacturer's installation instructions. The soils in the watershed have considerable rock content of various sizes from gravel to boulder size. The channel naturally armors itself and this can be seen in the field. As such, the erosion control mat can reasonably be expected to succeed in this situation and is an acceptable change.

The amendment proposes to install a polyethylene half-pipe below the 10 by 8 foot concrete box culvert to convey the runoff down to the Price River. The justification is the riprap would be difficult to construct on an 80% slope and the work would involve less disturbance using the polyethylene pipe. Originally, the MRP committed to design and construction of riprap lining, including a filter blanket.

Regulations require the removal of all culverts as part of the Reclamation Plan. See paragraph 301.542. Since the regulations are specific on culvert removal during reclamation, it is not possible to approve culvert installation for reclamation. Such culverts present ongoing maintenance issues. Steep slopes are a routine part of mine reclamation in Utah. This mine, and others, has such steep drainages today. In addition, there is an old road on a slope leading from the highway down to the channel below the box culvert, which can accommodate access to the site. This can be seen on Exhibit 3.5-3. Lastly, the ground slopes immediately up- and down-canyon from the culvert have natural channels that have "self armored" with native rock similar to rip-rap. These natural channels demonstrate the likelihood of success using riprap. The Operator will need to design and install a riprap-lined channel when reclaiming below the box culvert.

As part of the culvert and stream channel design, it is worth noting that there is an existing corrugated metal culvert just east of the box culvert. It is about 36 inches in diameter and its outfall can be seen in the field. The outfall location can also be seen on Exhibit 3.5-3. It is possible that culvert might more easily accommodate the spring flows and, possibly, the stream flows. The outlet is further from the Price River (250 feet versus 125 feet) and may provide a lesser slope from the outlet to the river. Although this smaller culvert is now plugged

TECHNICAL MEMO

with debris and the inlet cannot be seen, it may provide a better option than the box culvert. On page 3.5-10 the Operator commits to attempt to locate this culvert inlet and use that to convey waters from the reclamation channels under the highway. As discussed in the preceding paragraph, a riprap channel will need to be used to convey the water from the culvert to the Price River.

The plan described in this amendment, page 3.5-10, calls for the water discharging from the adit to be conveyed into one of the two culverts that crosses under the highway and from there into the Price River. Discussion with the Operator showed the adit is sufficiently above the highway that the water can flow into the reclaimed stream channel. This will benefit wildlife.

When comparing the original MRP Exhibit 3.5-2 to the amendment Exhibit 3.5-3 it was noted that there is a diversion ditch, designated ACD-1, which takes flows around the adit site. That ditch could not be found on the amendment map. However, from page 3.5-11 it's clear that temporary diversions, ACD-1 and ACD-2, will be removed as part of the reclamation of the adit site.

Stream buffer zones

The regulations, paragraph 731.600, do not allow disturbance within 100 feet of a stream, unless the Division finds that the activity will not violate applicable laws or adversely affect water quality. The proposed reclamation activities will occur in the streambed itself and the area within 100 feet of the ephemeral stream. These activities include transporting soil, grading, roughening, mulching, and planting. All of these are an integral part of the reclamation and necessary to achieve reclamation of the area. They will be temporary during construction only. They are expected not to violate laws or adversely affect the water quality.

Sediment control measures

Regulations call for the minimization of erosion to the extent possible, including retaining sediment within the disturbed area and using methods that trap sediment. The plan calls for reclamation work to begin at the highest elevations and proceed down, making the sediment pond the last structure to be removed. There is also a commitment to use concave slopes that do not exceed a 2:1 slope. These are good construction sequences and designs, which will reduce sediment generation.

The revised plan calls for "deep gouging to a depth of 12 to 18 inches". This is the accepted standard practice in reclamation of Utah coal mines. Seeding and mulch follow the gouging. These practices are expected to lead to successful revegetation.

Findings:

Information provided in the proposed amendment is not considered adequate to meet the requirements of this section. Prior to approval, the Permittee must provide the following in accordance with:

R645-301-742, 1) Provide a free-draining, and non-plugging, way for the water to drain out of the adit when the pipe corrodes away. **2)** Install a riprap-lined channel when reclaiming below the concrete box culvert or metal culvert, as indicated in the original MRP.

RECOMMENDATIONS:

The amendment should not be approved in its present form.