



State of Utah

DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

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TO: Internal File

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

FROM: Wayne H. Western, Sr. Reclamation Specialist *W.H.W.*

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

SUMMARY:

The Division received amendment AM01B-1, a revised reclamation plan for the Adit No.1 mine at the Castle Gate mine. The main changes to the reclamation plan include removal of the sediment pond and modifying the reclaimed channel design. All the engineering issues have been satisfied.

TECHNICAL ANALYSIS

OPERATION PLAN

SPOIL AND WASTE MATERIALS

Regulatory Reference: 30 CFR Sec. 701.5, 784.19, 784.25, 817.71, 817.72, 817.73, 817.74, 817.81, 817.83, 817.84, 817.87, 817.89; R645-100-200, -301-210, -301-211, -301-212, -301-412, -301-512, -301-513, -301-514, -301-521, -301-526, -301-528, -301-535, -301-536, -301-542, -301-553, -301-745, -301-746, -301-747.

Analysis:

Disposal of noncoal waste

In Section 3.5-4 of the MRP, the permittee states that materials such as concrete, and steel reinforced concrete will be used as backfill. These materials will be incorporated into the backfill in a manner that will not create voids within the backfill or reduce the effective compaction necessary for backfilling.

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The permittee later states that those materials will be covered with four feet of fill to ensure adequate root depth and soil moisture retention for vegetation.

Findings:

The permittee met the minimum requirements of this section.

RECLAMATION PLAN

APPROXIMATE ORIGINAL CONTOUR RESTORATION

Regulatory Reference: 30 CFR Sec. 784.15, 785.16, 817.102, 817.107, 817.133; R645-301-234, -301-270, -301-271, -301-412, -301-413, -301-512, -301-531, -301-533, -301-553, -301-536, -301-542, -301-731, -301-732, -301-733, -301-764.

Analysis:

The requirements for restoring a site to the approximate original contour (AOC) are couched in the backfilling and grading regulations. The only regulation that specifically mentions AOC requirements is R645-301-553.110 that states the following:

Achieve the approximate original contour (AOC), except as provided in R645-301-553.500 through R645-301-553.540 (previously mined areas (PMA's), continuously mined areas (CMA's) and areas subject to the AOC provisions), R645-301-553.600 through R645-301-553.612 (PMA's and CMA's), R645-302-270 (non-mountaintop removal on steep slopes), R645-302-220 (mountaintop removal mining), R645-301-553.700 (thin overburden) and R645-301-553.800 (thick overburden);

The Division's technical memo Tech-002 gives additional AOC guidelines. That guideline was also used to evaluate the Adit No. 1 for AOC compliance.

Except as specifically exempted, all disturbed areas shall be returned to the approximate original contour. The final surface configuration shall closely resemble the general surface configuration of the land prior to mining. To evaluate compliance with this requirement, the term "surface configuration" must be clarified. Surface configuration refers to the premining and postmining topography of the mine site and surrounding area.

The term AOC does not mean that the land is restored to the original contours. Elevation should be considered as a factor in evaluation of compliance with this requirement only when a deviation between the premining and postmining elevations would result in an adverse effect on one of the reclamation performance standards. The main criteria for compliance with this regulation will be, "Does the postmining topography, excluding elevation, closely resemble the premining configuration?" The Division evaluates premining and postmining topography on

slope length and angle, and whether restoring the site to the original contours would violate other rules.

In some cases the permittee cannot restore the site to the premining contours without violating other regulations, such as slope stability and erosion. Many of the natural slopes in the area are at the angle-of-repose. By definition when a slope is at its angle-of-repose the safety factor is 1.0. The minimum safety factor for reclaimed slopes is 1.3. If all slopes were returned to the premining conditions, the safety factor requirement could not be met.

When the natural slope has a safety factor less than 1.3, the permittee usually opts to reduce the slope angle by either extending the toe or decreasing the height. Extending the slope's toe may block the drainage which violates other regulations. If the permittee decreases the slope height then a cut slope will be left.

The postmining topography and cross sections for the Adit No. 1 mine are shown Exhibit 3.5-3 and Exhibit 3.5-3B respectively. The Adit No. 1 site is a preSMCRA underground site, with mining dating to 1888. Therefore, detailed maps and cross sections of the premining topography are not available. At a preSMCRA site the Division usually only requires the permittee to reclaim with on site materials.

The portal faceup (highwall) that was constructed to access the coal was developed at a cliff face. Therefore, the highwall is approximately 20 feet wide and 6 feet high. The portal structure was constructed in 1888 and is a historic structure. The Permittee proposes to reclaim the highwall as follows:

Backfilling of the pre-SMCRA portal face-ups will be accomplished, as presented on Exhibit 3.5-3, by placing available fill material to the height of the portals and blending into the surrounding slopes. Thereby creating a final surface configuration compatible with the postmining land use of wildlife habitat.

Since the existing highwall was developed in a cliff the only requirement is for the permittee to close and backfill the portal. Placing fill material against the highwall will help the site blend into the existing area.

In the approved MRP, the permittee states the following about cutslopes:

Furthermore, cutslopes will remain where complete backfilling would result in slopes whose steepness would be unstable or where the cutslope backfill would impinge upon the reclamation channels. Slope stability analyses conducted on similar fill material is provided in Section 3.3, Appendices 3.3D and 3.3H.

The Division does not have standards or regulations that deal with retention of cut slopes. The Division does allow cut slopes to be left after reclamation if they are stable and do

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not substantially increase the potential for safety or environmental problems. The reclaimed slopes will have safety factors of 1.3 or greater.

The Permittee will restore the site to the approximate original contours by using all reasonably available spoil material. The slopes will have static safety factors of 1.3 or greater. See Appendices 3.3D and 3.3H for details.

The AOC guidelines require that the restored drainages complement the surrounding natural drainages. The Division considers this requirement to be met if all the hydrologic regulations have been satisfied.

The AOC guidelines require that the reclaimed topography be compatible with the postmining land use, alternative postmining land use or a variance from the AOC requirements is granted. The permittee did not ask for an AOC variance. The Division considers the compatibility with the postmining land use to be adequate if the general postmining land use requirements have been met.

Findings:

The information provided in the proposed amendment is considered adequate to meet the minimum requirements of this section.

BACKFILLING AND GRADING

Regulatory Reference: 30 CFR Sec. 785.15, 817.102, 817.107; R645-301-234, -301-537, -301-552, -301-553, -302-230, -302-231, -302-232, -302-233.

Analysis:

The general backfilling and grading requirements are as follows:

- Disturbed areas shall be backfilled and graded to: achieve the approximate original contour.
- Eliminate all highwalls, spoil piles, and depressions
- Achieve a minimum long-term static safety factor of 1.3 and to prevent slides.
- Minimize erosion and water pollution both on and off the site.
- Support the approved postmining land use.
- Exposed coal seams, acid- and toxic-forming materials, and combustible materials exposed, used, or produced during mining shall be adequately covered with nontoxic and noncombustible materials, or treated, to control the impact on surface and ground water, to prevent sustained combustion, and to minimize

adverse effects on plant growth and the approved postmining land use.

The permittee addressed the following issues:

- The Division addresses the AOC and highwall issues in the AOC section of this TA.
- The Permittee will use all reasonably available spoil in backfilling and grading. In Table 3.5-7, the permittee shows that a slight fill shortage exists. No depressions other than those for erosion control will be left.
- The permittee stated that coal debris and acid- and/or toxic-forming material exposed or excavated during reclamation grading will be removed, if possible, and used as backfill against cut slopes, or as backfill in depressions caused by removal of facilities. These materials will be covered by a minimum of four feet of the best available, nonacid- and nontoxic-forming and noncombustible material. The requirements of R645-301-553.300 require that exposed coal seams, acid- and toxic-forming materials and combustible materials be covered with nonacid- and nontoxic-forming and noncombustible material. The permittee committed to meet those requirements. For additional information on acid- and/or toxic-forming material see the soil section of the TA.
- How the permittee will minimize erosion and water pollution is addressed in the hydrology section of the TA. The Division usually considers these requirements met if the general hydrology requirements are met.
- The postmining land use requirements are addressed in the postmining land use section of the TA.

Findings:

The information provided in the proposed amendment is considered adequate to meet the requirements of this section

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:

Reclamation backfilling and grading maps

Exhibit 3.5-3 and Exhibit 3.5-3B show the reclaimed topography and cross section for the Adit No. 1 mine. The information on the maps and cross sections is adequate for the Division to determine if the backfilling and grading plan is adequate.

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Final surface configuration maps

Exhibit 3.5-3 and Exhibit 3.5-3B show the reclaimed topography and cross-sections for the Adit No. 1 mine. The information on the maps and cross sections is adequate for the Division to determine if the reclamation plan is adequate.

Findings:

The permittee met the minimum requirements of this section.

BONDING AND INSURANCE REQUIREMENTS

Regulatory Reference: 30 CFR Sec. 800; R645-301-800, et seq.

Analysis:

Determination of bond amount

The changes to the reclamation plan do not significantly change the bond. The Division is in the process of reviewing all bonds and converting them to a standard format, including the entire Castle Gate complex. If any minor changes are needed the Division will address them at that time.

Terms and conditions for liability insurance

The permittee does not need to adjust the insurance amounts for this project.

Findings:

The information provided in the proposed amendment is considered adequate to meet the requirements of this section.

RECOMMENDATIONS:

The Division should approve amendment AM01B-1