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DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF OIL, GAS AND MINING

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March 21, 2001

TO: **Internal File**

FROM: William. J. Malencik, Senior Reclamation Specialist *SM for WJM*

RE: Midterm Review, Genwal Resources Company, Crandall Canyon Mine, C/015/032-MT00-1

**SUMMARY:**

On March 1, 2001, the Division reviewed the information submitted by the Crandall Canyon Mine on three items: 1) reclamation agreement/disturbed areas, 2) diversions, and 3) sediment pond.

As related to item #1, the only issue is a 0.05 acres difference between the MRP and the reclamation agreement. The operator checked the records and concluded that the MRP was not correct. This submission now corrects this problem by updating page 2 of the MRP.

The midterm on diversions pointed out that part of the culvert is buried and part is uncovered. Furthermore, the length of the culvert was not correct. This has been corrected on plate 7-5.

The sediment pond has been increased in size at the request of the US Forest Service. The enlarged capacity of the pond is 3.572 acre feet. The coal rules require ponds to be designed for a 10 year/24 hour storm event. The calculations are as follows:

<u>Storm Event</u>	<u>Pond Volume Required</u>	<u>Pond Capacity Provided</u>
10 yr./24 hr.	2.06 acre ft.	173%
100 yr./6 hr.	1.93 acre ft.	185%
50 yr./24 hr.	3.53 acre ft.	101%
100 yr./24 hr.	4.51 acre ft.	79%

Refer to the following pages on the nine mandatory items that need to be addressed in the Technical Analysis.

TECHNICAL MEMO

**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:**

**Diversions**

The diversion drainage map, Plate 7-5 has been corrected. Plate 7-5 shows diversion DD-1 in its current configuration. The culvert had to be extended. It was extended and shown on Plate 7-5. In addition, part of the culvert is buried and part lies on the surface. New symbols have been included to differentiate between buried and unburied culverts.

**Sedimentation ponds**

Sediment ponds, when used, shall be located as near as possible to the disturbed area and out of the perennial stream. The sediment pond is located at the bottom of the mine site adjoining the undisturbed area. The reconstructed sediment pond was designed, constructed, and supervised by a registered professional engineer. The coal rules requires that nine items be discussed.

- 1) Provide adequate sediment storage volume.

The sediment pond located in Crandall Canyon has been redesigned to control additional storm runoff from the pad extension and from the undisturbed drainage area above the pad extension.

The universal soil equation was used to determine sediment loss that would be delivered to and deposited to the sediment pond. The areas involved include the disturbed, reclaimed, and undisturbed areas. The total sediment yield is as follows:

Total Sediment, one year	0.112 acre feet
Total Sediment, three years	0.336 acre feet

The pond life, in terms of sediment yield, is three years.

- 2) The detention time is 24 hours. The pond has a culvert as the principal spillway and an open-channel emergency spillway. Any discharge from the pond will be in accordance with the UPDES permit. The pond will be decanted as needed by a portable pump that is readily available at the mine site.

- 3) The sediment pond located in Crandall Canyon has been redesigned and constructed to control additional storm runoff from the pad, and undisturbed drainage above the pad. The pond will meet the detention time of a 10 year, 24 hour storm event. The outgoing components include the As-constructed topography and cross-section of the pond design are shown on Plate 7-3.

The designed storm calculations are shown on Table 4 of this appendix. These calculations address the storm runoff from the pad and the undisturbed drainage that goes into the sediment pond.

The determination of the adequacy of the spillway was based on a precipitation event from the 25 year, 6 hour storm event which is 1.9 inches (Miller et. al 1973). The 25 year, 6 hour flow is calculated at 9.07 cfs. The spillway is more than adequate.

The volumes shown in Table 11 are from the volumes calculated from the precipitation, runoff, and sediment yield for a 10 year, 24 hour precipitation event. The volumes as shown on 3.3 herein were calculated based on the disturbed area, the undisturbed area that drains into the pond, runoff values, and developed using the design parameters described in this section.

The sediment pond reconstructed volumes are shown on Table 11, Table 12, and Figure 6 all represent the "As-constructed" pond. Please refer to the aforementioned Tables and Figure 6.

- 4) The mine proposes to utilize a pump to decant the pond. The detention time required is 24 hours. The mine has a pump on site to decant whenever it is necessary to decant the pond.
- 5) The pond has been in place since the fall of 1997. There is no evidence of short circuiting. Furthermore, bentonite was placed in the bottom of the pond as a short circuiting preventative measure.
- 6) The mine is required to submit an annual report on the amount of sediment that has accumulated in the pond. This will be the basis for a determination by the Division Hydrologist on the need to clean the pond in order to have adequate sediment capacity. The theoretical cleaning time is every three years.
- 7) The pond has been in place since the fall of 1997. There are no tension crack or other indication of improper settling.
- 8) The construction eliminated all sod and large roots in the construction.
- 9) It has been compacted correctly.

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**TECHNICAL MEMO**

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**Findings:**

The items addressed in the Diversions section meet the requirements of the coal rules.

On item 1) under the heading Sedimentation Ponds, the sediment yield is 0.336 acre feet for three years. This meets the requirements of the coal rules.

Items 2) through 9), under the heading Sedimentation Ponds, meet the requirements of the coal rules.

**BONDING AND INSURANCE REQUIREMENTS**

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

**Analysis:**

**Determination of bond amount**

The disturbed area in the MRP was in disagreement with the reclamation plan. The MRP had 10.2 acres and the reclamation plan had 10.7 acres of disturbance. A difference of 0.5 of an acre.

The permittee recalculated the total disturbed area and found out the correct figure was 10.66 acres which he rounded to 10.7 acres.

**Findings:**

This analysis meets the requirements of the coal rules.

**RECOMMENDATION:**

The permittee has met the minimum requirements of this section.