

STATE OF COLORADO

DIVISION OF RECLAMATION, MINING AND SAFETY

Department of Natural Resources

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MEMORANDUM

John W. Hickenlooper
Governor

Mike King
Executive Director

Loretta Piñeda
Director

To: Dustin Czapla

From: Tim Cazier, P.E. 

Date: April 16, 2013

**Re: SR-13A Mine Drainage Design Plan – Second General Stormwater
Comments, Permit No. M-1977-311 / AM-01**

The Division of Reclamation, Mining and Safety (DRMS) engineering staff has reviewed the Response to Adequacy Review #2 for the SR-13A Mine prepared by O'Connor Design Group, Inc., dated February 1, 2013. The following comments are posed to ensure adequate engineering analyses and design practices are implemented to eliminate or reduce to the extent practical the disturbance to the hydrologic balance expected by the mining operation with respect to water quality and quantity in accordance with Rules 3.1.6(1), 6.4.21(10) and 7.3.1. Please note, as this site is a designated mining operation (DMO), compliance with Rule 7.3.1 is applicable, thus requiring certified designs and specifications for engineered elements associated with the environmental protection plan (EPP). The original comment numbers have been retained for the purpose of tracking responses.

1. Page ESWMP-3, first paragraph. The response to this comment is adequate.
2. Page ESWMP-3, third paragraph. The response to this comment is adequate.
3. Page ESWMP-5, section 7.2. The response to this comment is adequate.
4. Page ESWMP-5, section 7.3, second paragraph. The response to this comment is adequate.
5. Page ESWMP-6, second paragraph and FlowMaster output pages. The response to may be adequate with some clarification. The FlowMaster output pages (Attachment 4, pp. 19 – 23) address Channel B-B/Section 10-1. Attachment #4, page 21 and Drawing 2 of 5 (Attachment #6, p. 32) indicate the maximum slope is 12 percent. Pages 22 and 23 (which are identical, save the page number) indicate that a 7 percent slope is the minimum for which rock armor is not required for erosion protection. There is no output for the 12 percent slope with the minimum expected Manning's roughness coefficient, which would be expected for sizing the riprap protection. Drawing 5 of 5 (Attachment #6, p. 35) indicates a 12-inch thick riprap blanket with a $D_{50} = 8$ inches is adequate erosion protection.

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- a. Please confirm Channel B-B and Section 10-1 are the same channel.
 - b. Please provide some discussion as to how the selected 8-inch D_{50} riprap was determined (include methodology) to be adequate and confirm the condition representing the 12 percent maximum slope and the minimum roughness coefficient ($n = 0.035$) was used for riprap sizing.
6. Page ESWMP-6, section 7.4 paragraph and Retention Pond Drainage Design Plan (Sheet 5 of 5). The response to this comment is adequate.
7. Page ESWMP-7, last paragraph. The DRMS appreciates the decision to breach the embankment upon the cessation of mining. In order to further reduce the potential for erosion and sediment problems, please commit to the following:
 - a. Provide a maximum slope for the channel through the embankment to avoid the 3H:1V drop from contour 5616 to the daylight line at ~ 5614.
 - b. Provide a cross-section of the channel through the breach indicating a minimum bottom width for the purpose of construction.
 - c. Flatten the inlet channel to competent rock or armor it to prevent it head cutting to the east towards the toe of the reclaimed waste dump
 - d. Commit to delaying the breaching of the embankment to after reclamation of the area contributing runoff to Pond 30 is complete in order to minimize the discharge of sediment below the pond.
8. Pages ESWMP-8 – 10, hydrographs. The response to this comment is adequate.
9. Pages ESWMP-11 – 13, weighted CNs. The response to this comment is adequate.
10. Page ESWMP-18, pond volume, Drawing E-6 and ESWMP Drawings 2 and 3. The response to this comment is adequate.

Drawings:

11. Sheet 2. The response to this comment is adequate.
12. Sheet 3 and hydraulic analysis. The analysis and design for the spillway are adequate. However, no design or analysis is provided for the spillway chute (between the weir and the toe of the embankment). The spillway chute in the revised Drawing 3 appears to be at a 3H:1V slope.
 - a. Please provide an analysis addressing the spillway chute hydraulics and riprap sizing. The riprap sizing methodology should be consistent with the steep slope.
 - b. Please provide a design that reflects the material necessitated by the analysis and dissipates the energy at the toe of the embankment.
13. Sheet 5. The response to this comment is adequate.

General Comments:

14. Page ESWMP-5, second paragraph. The response to this comment is adequate.

If either you or the applicants have any questions regarding the comments above, please call me at (303) 866-3567, extension 8169.

