

STATE OF COLORADO

DIVISION OF RECLAMATION, MINING AND SAFETY

Department of Natural Resources

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August 16, 2013

Shannon P. Murphy
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100 W. Bennett Ave.
P.O. Box 661
Cripple Creek, CO 80813

John W. Hickenlooper
Governor

Mike King
Executive Director

Loretta E. Pineda
Director

**Re: Providence Mine, Permit No. M-2012-052,
Second Adequacy Review – Environmental Protection Plan**

Mr. Murphy:

The Division of Reclamation, Mining and Safety (DRMS) engineering staff has reviewed the “Response to June 26, 2013 Preliminary Adequacy Review – Environmental Protection Plan” prepared by C. A. Braun, dated July 25, 2013 and received by the DRMS on July 26, 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.

General Comments:

1. *The EPP discusses “unoxidized vein material ...* The response references TP-40 and NOAA Atlas II for precipitation data. The most current precipitation data for Colorado is NOAA Atlas 14, Point Precipitation Frequency Estimates (<http://hdsc.nws.noaa.gov/hdsc/pfds/>). The DRMS design standards are for the 24-hour storm (10-year for storage and 100-year for conveyance, 2.48 and 4.20 inches, respectively from NOAA Atlas 14). Precipitation values for runoff analyses should be obtained from this reference.
 - a. *A discussion on potentially impacted water ...* The DRMS is satisfied with the approach to containing potentially impacted water (based on direct precipitation) on the dump bench. However, the DRMS is concerned about runoff from upgradient of the portal and dump bench also becoming potentially impacted water. A hydrologic analysis, hydraulic analyses and stamped engineering drawings are required for all DMOs to ensure stormwater is adequately controlled. Specifics are discussed in Comments #3a, b, c and 4b below.
 - i. The response to 1a indicates no sulfide rock or ore has been found to date. Please provide the DRMS with the analysis/test results to demonstrate this condition.

- b. *Ore pad design drawings* ... the approach is adequate, but the DRMS requires a stamped drawing showing the showing the proposed encircling berm construction dimensions, basic specifications, etc. Specifics are discussed in Comments #3d and 4a below. At this point in time a liner will not be required, but may in the future depending on rock chemical characterization.
2. *Proposed permit boundary and existing stormwater pond.* The response to this comment is adequate.
3. *Stormwater runoff estimates or analyses* ... Based on the response to the original Comment #1 a stormwater management plan is required to demonstrate adequate run-on control to prevent upgradient runoff from becoming potentially impacted water in the vicinity of the dump bench stockpile(s). Please provide the following:
 - a. Maps delineating contributing subbasins, diversion and/or collection channels, and sediment pond.
 - b. Rationale for runoff estimation parameters (typically SCS/NRCS curve numbers, Hydrologic Soil Groups, and land use). This should include ground cover rationale, and weighted area calculations as well.
 - c. Peak flow calculations/analyses for each diversion and/or collection channel and/or pond spillway. Note: the design storm for this site is the 100-year, 24-hour event.
 - d. Stockpile containmernt berm sizing (volume) calculations/analyses. Note: the design storm for this site is the 10-year, 24-hour runoff for the stockpile direct precipitation containment.
4. *Stormwater hydraulic analyses and design drawings*... Based on the response to Comment #4, specifically the SCS curve number discussion, the DRMS believes a method such as the rational method may be better suited to predicting runoff peak flows for diversion channels. In order for the DRMS to fully evaluate the engineering designs for diversion channels and stockpile containmernt berm, please provide the following:
 - a. Stockpile containmernt berm:
 - i. Estimated direct precipitation runoff volume.
 - ii. Drawing(s) (to scale) and specifications demonstrating adequate capacity.
 - b. Diversion Channels:
 - i. Drawing(s) (to scale) showing diversion channel locations, cross-section geometry for construction (minimum design depth included).
 - ii. Hydraulic analyses evaluating the design capacity and stability of each diversion and/or collection ditch to pass the 100-year, 24-hour design storm peak discharge. This should consider rationale for the selected roughness coefficients. Because channel roughness is seldom uniform, the DRMS requires channels be evaluated for both stability and capacity, i.e., minimum and maximum expected roughness. For example, an excavated earth channel, after weathering would be expected to have a minimum $n =$

0.018 (use to evaluate stability or maximum expected velocity); and a maximum $n = 0.025$ (use to evaluate capacity). In addition, the DRMS requires channel freeboard be evaluated for all engineered channels: channels shall be designed with a minimum of 0.5 feet of freeboard unless the velocity head ($v^2/2g$) is significant, then the minimum required freeboard is half the velocity head, or $v^2/4g$.

iii. Erosion/scour protection details and analyses if needed.

The DRMS recommends the Operator submit a drainage design plan, to include the required analyses, certified designs and specifications for the engineered elements associated with the environmental protection plan (EPP). The cover page, all drawings and specifications should be stamped and signed by the responsible engineer.

The DRMS is continuing to review the “Responses to July 3, 2013 Preliminary Adequacy Review – Environmental Protection Plan” received by the DRMS on July 26, 2013. You will be notified of any other inadequacies related to these other portions of the application under separate cover.

Please be advised the Providence Mine Application may be deemed inadequate and the application may be denied on **August 16, 2013** unless the abovementioned adequacy review items are addressed to the satisfaction of the Division. If you feel more time is needed to complete your reply, the Division can grant an extension to the decision date. This will be done upon receipt of a written waiver of your right to a decision by August 16, 2013 and request for additional time. This must be received no later than the deadline date.

If you have any questions, please contact me at (303) 866-3567, ext. 8169.

Sincerely,



Timothy A. Cazier, P.E.
Environmental Protection Specialist

cc: Tony Waldron, DRMS
Tom Kaldenbach, DRMS
DRMS file
Art Braun, Braun Environmental, Inc.