



COLORADO
Division of Reclamation,
Mining and Safety
Department of Natural Resources

June 14, 2023

Lori Smith
Cripple Creek & Victor Gold Mining Company
P.O. Box 191
Victor, CO 80860

Dear Lori Smith,

On May 22, 2023, The Division received the request for a Technical Revision (TR137) for the Cresson Project, File No. M-1980-244, proposing to expand the TR133 clay borrow source on the northern perimeter of the WHEX pit from 4.7 to 12.9 acres of disturbance. During the review of the material submitted, the Division determined that the following items need to be adequately addressed before TR137 can be considered for approval. Please respond to this Adequacy Review with the requested information and summarize each response to the numbered items below, in a cover letter titled "Adequacy Review Responses TR137, M-1980-244".

1. TR 137 indicates reclamation for the WHEX clay borrow source will coincide with the current timeline for the WHEX/ECOSA reclamation which is anticipated to begin in 2032. The existing stormwater pond, EMP-18, will be partially mined through during this time; however, the entire stormwater pond will need to be recontoured to a final slope of 3H:1V, as shown on Figure 2A. Please update the reclamation cost estimate in Attachment 4 to include a line item for backfilling/grading EMP-18 to a 3H:1V slope.
2. Please update the legend in Attachment 1 Figure 1 and Attachment 2 Figure 2 to define the dashed line around the slopes and floor of the clay borrow source and EMP-18b. Is this the area of disturbance associated with this Technical Revision? If so, this boundary needs to be revised to include the existing EMP-18, EMP 18b, stormwater channels, and any disturbance related to the current excavation access road approved in TR133.

The DRMS engineering staff reviewed the hydrologic, hydraulic and erosion analyses associated with TR-137 predicated on the need to relocate the existing EMP-18 in order to make an additional clay borrow source available for the expansion of the Valley Leach Facility 2 (VLF2). Their review resulted in the following adequacy concerns:

3. Watershed Area Boundary: The third bullet under section 1.0 Sediment Pond EMP-18B (NewFields Technical Memorandum WHEX POND Design, dated 10 May 2023) references the watershed area. Figure 2 presents the watershed boundary for the area contributing runoff to the proposed EMP-18b pond. There are multiple locations where the watershed boundary is at or near a 45° angle to the contour lines (see image capture below). Overland

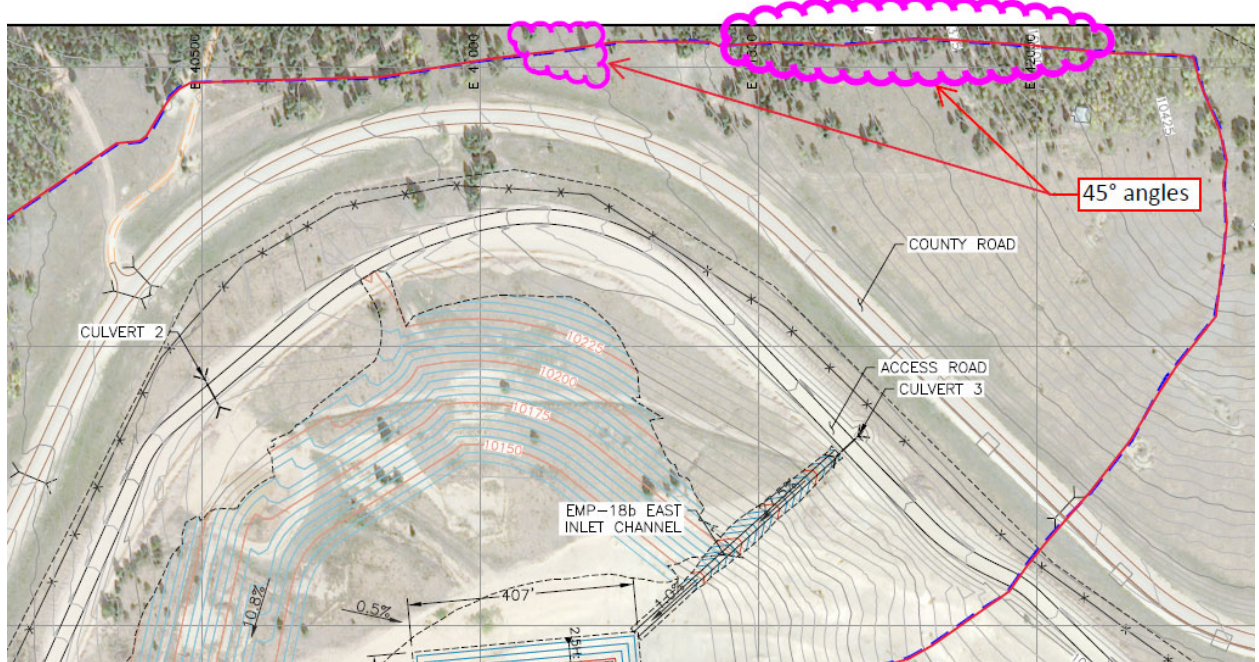
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flow runoff will flow perpendicular to contour lines. As the watershed map is cutoff north of the errant boundary, it is unclear what the magnitude of the error is. Please re-delineate the watershed boundary using accurate and accepted watershed delineation practice.



4. Flow Path and Lag Time: The third bullet under section 1.0 also references the average slope and longest flow path of the watershed. The flow path is not illustrated on Figure 2. Given this watershed has both a paved road and a dirt road, as well as nine culverts diverting flows from natural or unaltered flow paths, the flow path used to determine lag time should be presented. Furthermore, the hydrologic analyses use the SCS lag equation to calculate basin lag time. This equation is based on agricultural watershed data and tends to overestimate in mixed areas such as this (Chow, Maidment & Mays, "*Applied Hydrology*", 1988). Given the extent this watershed is altered, the SCS/NRCS upland flow (using sheet, shallow concentrated and channel flow (USDA "*Urban Hydrology for Small Watersheds*TR-55", 1986) would be more appropriate for this watershed. HEC-HMS requires either basin lag or time of concentration (tc) depending on the modeling methodology used. Basin lag and tc are different calculations where $tc = 1.67 \times \text{basin lag}$. It is not clear having no model generated input or output which is appropriate. Please revise and clarify the modeling approach as discussed in this Comment B.
5. Sediment Loading: The last paragraph on p. 1 of the NewFields Technical Memorandum states the "Universal Soil Loss Equation to calculate the total sediment" contributing to EMP-18b. This paragraph also states "soil and cover inputs used were the average values from Teller County". Finally, the second paragraph on p. 2 states the final pond has "27 years of storage". There are several papers and texts (e.g., Haan, Barfield & Hayes, "*Design*

Hydrology and Sedimentology for Small Catchments", 1994; and Office of Surface Mining, "Guidelines for the Use of the Revised Universal Soil Loss Equation (RUSLE) Version 1.06 on Mined Lands, Construction Sites and Reclaimed Lands", 1998) stating the RUSLE is a better tool than the USLE for predicting sediment erosion as the revised version accounts for rilling, freeze/thaw effects; has a cover subfactor; and improves the slope/length factor. Please address the following:

- i. Justify the use of the USLE over using the RUSLE.
 - ii. Why were "average" values for all of Teller County used instead of values specific to the area being analyzed?
 - iii. What is meant and intended by 27 years of storage?
6. Culvert 2: The first sentence on p. 3 states "No channel was designed at the outlet of Culvert 2."; and provides a gentle sloping road to convey the culvert discharge to EMP-18b as justification. *Please note a 10% grade is not considered a gentle slope when applied to open channel hydraulics.* There is no road shown at the outlet of Culvert 2 on Figure 2. Furthermore, if the road is intended to convey flows, it should be designed and analyzed to demonstrate it is adequate to convey flows for closure. Please show the road at the Culvert 2 outlet and provide a demonstration it will be adequate to convey runoff flows.
7. Attachment A: Review of Attachment A found two concerns: i) apparent lack of consideration of the paved (impervious) CR 82 when estimating curve numbers (CN); and ii) inattention to units in the summary tables. The DRMS estimates CR 82 makes up roughly five acres of the watershed as delineated in Figure 2. This impervious area (CN = 98) should not be summarily dismissed in estimating the composite curve number for the watershed. Both the tables (first table for "Area 1"; second table for "West WHEX Pond Channel" and "East WHEX Pond Channel" showing lag time calculations indicate the units are in square miles. The values are in the millions, which is of course ridiculous. If the units are supposed to be square feet, then they appear to be correct (based on the watershed delineation on Figure 2. Please:
 - i. Re-evaluate the composite CN to include CR 82.
 - ii. Clarify the areas shown in the two lag time calculation should be square feet.

This concludes the Division's adequacy review of TR137. This letter shall not be interpreted to mean that there are no other technical inadequacies in your revision as other issues may arise when additional information is supplied. Please be advised TR137 may be deemed inadequate, and the request may be denied on June 21, 2023, unless the above-mentioned adequacy review item is addressed to the satisfaction of the Division. If more time is needed to respond, the Division can grant an extension of the decision date following a request to do so by the Operator.

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Sincerely,

Nikie Gagnon

Nikie Gagnon
Environmental Protection Specialist

Cc: Katie Blake, CC&V
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