



STATE OF
COLORADO

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DRMS review of the Geotechnical Stability Exhibit

1 message

Zuber - DNR, Rob <rob.zuber@state.co.us>

Tue, Nov 14, 2023 at 4:14 PM

To: Andy Carpenter <acarpenter@ihcscott.com>, JC York <jcyork@j-tconsulting.com>

Andy and J.C. -

Please see the attached memorandum from one of the other DRMS engineers in my office.

You can include your responses to this memo with a stand-alone response or include in your comprehensive response to DRMS adequacy items.

Thank you,
Rob

Rob Zuber, P.E.
Environmental Protection Specialist
Active Mines Regulatory Program



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

I am working remotely and can be reached by cell at 720.601.2276.

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M-23-025_Exh6.5 PAR_Mem2023-11-14.pdf
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MEMORANDUM

To: Rob Zuber

From: Tim Cazier, P.E. 

Date: November 14, 2023

**Re: Bernhardt Sand and Gravel Pit – Permit No. M-2023-025;
 6.5 – Preliminary Adequacy Review**

The Division of Reclamation, Mining and Safety engineering staff (DRMS) have reviewed the Bernhardt Sand and Gravel Pit Rule 6.5 Geotechnical Stability Exhibit, provided with the application and prepared by J&T Consulting.

The review consisted of comparing the contents of these two exhibits with specific requirements of Rule 6.5 of the Minerals Rules and Regulations of the Colorado Mined Land Reclamation Board for the Extraction of Construction Materials. Any inadequacies are identified under the respective exhibit heading along with suggested actions to correct them.

The following items must be addressed by the applicant in order to satisfy the requirements of C.R.S. 34-32.5-101 et seq. and the Mineral Rules and Regulations of the Mined Land Reclamation Board:

Rule 6.5 EXHIBIT G – Geotechnical Stability Exhibit

1. Soil Properties – On p. 1 of the Slope Stability Report, under “Geotechnical Data” it states, “estimated soil strength parameters based on the information from the boring and monitor well logs and other stability analyses that have been performed on gravel mining operations along the Front Range.” When comparing the soil properties in Table 1 with standard references (e.g., Houk and Bray 1977), the selected properties differ significantly in some cases. Please provide rationale for the selected soil properties consistent with the boring logs in Appendix D.
2. Slurry Wall Properties – Please provide rationale for the slurry wall soil parameters listed in Table 1.



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3. Bedrock Properties – The Galena models use “weathered bedrock” and “stable bedrock”. Whereas the borehole logs reference either sandstone or claystone. Please provide rationale for the different bedrock properties and explain whether there is any correlation between the selected bedrock properties and whether the bedrock encountered was sandstone or claystone.
4. Reclamation Phreatic Surface – The phreatic surface shown on the Galena graphic for Case SS-5, Reclamation shows a slight drop across the slurry wall and a near horizontal phreatic surface in the sand and gravel layer on the left side of the slurry wall, then sloping down to the toe of the backfill zone of clay. If the slurry wall is effective, the groundwater elevation on either side should be independent of one another. Please explain what post reclamation condition this phreatic surface represents.

If either you or the applicants have any questions regarding the comments above, please call me at (303) 328-5229 [mobile #].