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

October 9, 2023

Jerald Schnabel
Riverbend Industries Inc.
549 E Cucharras Street
Colorado Springs, CO 80903

**RE: Pikeview Quarry, Permit No. M-1977-211;**
**Preliminary Adequacy Review for Technical Revision (TR-22)**

Dear Mr. Schnabel:

The Division of Reclamation, Mining and Safety (DRMS) received a request for a Technical Revision (TR-22) addressing the following:

*Updates to reclamation drainage design, reclamation seed/plant species list, and weed management plan based on detailed design, seed/plant availability, and recently identified weeds.*

The submittal was called complete for the purpose of filing on September 19, 2023. **The decision date for TR-22 is October 19, 2023.** Please be advised that if you are unable to satisfactorily address any concerns identified in this review before the decision date, **it will be your responsibility to request an extension of the review period**. If there are outstanding issues that have not been adequately addressed prior to the end of the review period, and no extension has been requested, the Division may deny this Technical Revision.

The following comments are based on the DRMS review of the request for TR-22:

1. Seed Mix: The TR includes smooth brome as a possible addition to the seed mix. Smooth brome, like crested wheatgrass, tends to establish quickly and form monocultures. The DRMS suggests the use of these species in the seed mix be limited.
2. North Channel: Based on review of the "HEC-HMS Model Results" using as a basis the three unnumbered figures following Table 1: "HEC-HMS Model Reports, Watershed Map and Terrace Channels", "Major Channels" and "HEC-HMS Model"; The DRMS believes the Middle North Channel, Lower Middle North Channel and Lower North Channel may be undersized as discussed below:

- The Lower North Channel should include runoff from subbasin F2 (as it gradually contributes along the north side), which using the peak flow from J-F1 does not. However, using J-OUT would include runoff from subbasin F4, which does not appear to contribute flow to the Lower North Channel (only to the existing drainage, ref. Drawing 100-006). It appears appropriate to add another junction to add F2 flow before combining it with flow from F4 and use that flow for sizing the Lower North Channel.
- The Lower Middle North Channel should include runoff from subbasin F1, which using the peak flow from J-C2 does not. However, using the peak flow at JF-1 would also include peak flow from subbasin F3 and the south channel, leading it to be oversized. It appears appropriate to add another junction to add F1 flow before combining it with flow from F3 and use that flow for sizing the Lower Middle North Channel.
- The Middle North Channel should include runoff from subbasin C3, which using the peak flow from J-B does not. It appears using the peak flow from J-C2 (507 cfs) would be more appropriate to size the Middle North Channel.

Please make these changes to the HEC-HMS model and re-evaluate the three segments of the North Channel or explain how the DRMS has misinterpreted the model.

3. <u>Terrace Channels</u>:

    a. Table 1 uses 40 cfs as a basis for evaluating the hydraulic performance of the terrace channels. Based on the HEC-HMS Model Results, the flow from the combined basin B2 is 125 cfs, which appears to include three terrace channels. Assuming equal peak flows in the three terrace channels, the minimum peak flow would be slightly greater at nearly 42 cfs. However, based on the subbasin delineations on the unnumbered figure following Table 1: "HEC-HMS Model Reports, Watershed Map and Terrace Channels"; it appears subbasin B2-2 is somewhat larger than subbasin B2-1, and subbasin B2-3 is larger still. As such, 40 cfs appears to be a low estimate for the maximum peak flow expected in a terrace channel. Please provide rationale for how the terrace channel design flow was obtained and revise if appropriate.

    b. No terrace channel is shown on Drawing 200-004 on the north side of the North Channel opposite where a south terrace channel combines with the North Channel at ~Sta. 18+00 (see Figure 1). Please revise the design or explain why a terrace channel was not included in this area.

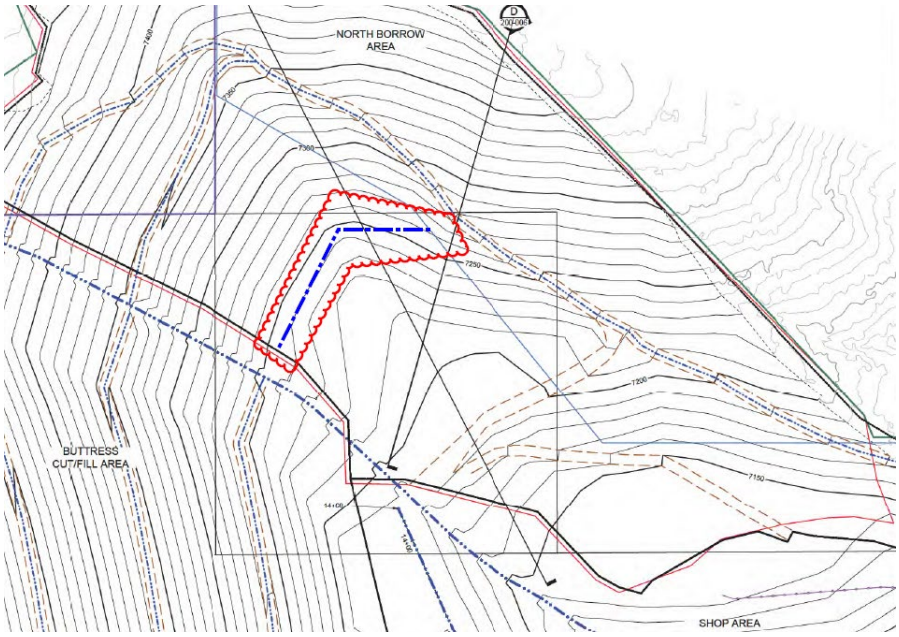


Figure 1. North Terrace Channel Markup Suggestion

4. Upper South Channel, Riprap Quarry: Table 1 indicates this channel will be cut two feet into bedrock (which should make potential scour issues a lesser concern). However, channel capacity is not apparently assessed as the minimum and maximum slopes are listed as not applicable ("N/A"). Drawings 200-010 and 200-011 show steep pitches (0.5H:1V) on the highwalls terminating on flat benches. Please provide rationale for how the two-foot channel depth was determined and provide some discussion as to why plunge pools to dissipate the energy on each of the flat receiving benches were not included.

5. Weed Control Plan: The DRMS the addition of the recently observed Noxious Wee List A Myrtle spurge species to the weed control plan. As List A species require eradication, please include a commitment to and a means of documenting observed locations (mapping perhaps) and treated/removed Myrtle spurge in order to track success in dealing with a List A noxious weed.

Please contact Tim Cazier (303) 328-5229 or by email at tim.cazier@state.co.us if you have any questions.

Sincerely,

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

ec: DRMS file
Paul Kos, Stantec
Amy Titterington, USFS
David Deitemeyer, Colorado Springs