

STATE OF COLORADO

DIVISION OF RECLAMATION, MINING AND SAFETY

Department of Natural Resources

1313 Sherman St., Room 215
Denver, Colorado 80203
Phone: (303) 866-3567
FAX: (303) 832-8106



MEMORANDUM

John W. Hickenlooper
Governor

Mike King
Executive Director

Loretta Piñeda
Director

To: Tony Waldron, TC Wait (DRMS)
Randy DiLuzio, (Tezak Heavy Equipment Co. Inc.)
Ken Klco (Azurite, Inc.)
Stephanie Carter (BLM)
(all via email)

From: Tim Cazier, P.E.

Date: June 26, 2013

Re: T.H.E. Aggregate Source – June 20, 2013 Meeting Summary,
Permit No. M-1977-193 / AM-05

Tim Cazier, Tony Waldron and TC Wait with the Division of Reclamation, Mining and Safety (DRMS) met with Randy DiLuzio and Ken Klco (representing Tezak Heavy Equipment Co. Inc. – T.H.E.), and Stephanie Carter (Bureau of Land Management) at the T.H.E. Aggregate Source mine on June 20, 2013 to discuss the following:

- Amendment 5 (AM-05) mine plan and reclamation plan,
- Highwall stability and monitoring,
- Phased bonding,
- AM-05 schedule.

Mine Plan and Reclamation Plan – the DRMS and BLM explained that the mine plan dictates the reclamation plan, which in turn guides the reclamation liability bond estimate. The BLM and DRMS explained that the mine plan does not necessarily need to distinguish between mining operations on private vs. public land, but that it should illustrate the current plan the Operator intends to follow with respect to the progression of material extraction. This is particularly important when the Operator intends a phased approach to the reclamation bond. All parties agreed the existing disturbance should be considered Phase 1, and future phases should begin with Phase 2. The Operator should provide the DRMS and BLM with a map clearly defining the limits of each phase and the direction of mining to complete each phase. All phases to the completion of mining as proposed in the AM-05 application should be shown conceptually with a more detailed approach shown for Phase 2. The reclamation should also be shown for each phase, but again with more detail for Phase 2, so that a reclamation bond can be estimated. The DRMS will use the Phase 2 mine plan limit to determine at what point in the future, bonding should be re-evaluated to ensure adequate bonding prior to the beginning of Phase 3 mining.

Highwall Stability and Monitoring – T.H.E. explained their mine highwalls are developed from the top down. A road is pioneered to the top of the slope to be mined where a typical drill grid pattern of 15' x 15' is laid down to blast an area between 80 and 200 feet wide and 40 feet deep. It is vital to the bond estimate that the DRMS understand the bench development approach. This understanding is needed in order to develop appropriate volumes required to be blasted and mucked to transform an active/operational highwall with 20 foot benches to the final reclamation bench width of 30 feet. Although these blast area dimensions are an average, they will vary depending on several key factors related to existing terrain, scheduling, access, market volumes and strategic locations of mining. T.H.E. indicated they will reach the permitted limit at the crest of the highwall prior to reaching the limit of the toe necessary to achieve the 30-foot wide final reclamation bench width.

The meeting proceeded to the north end of the existing highwall to discuss the complex site geology and stability analyses.

The current highwall exposure shows complex and varied geologic structure with multiple foliations, joint sets, intrusions, and fracture zones. All parties agreed that the best approach to evaluate long-term stability of the final highwall is to evaluate the geologic conditions and stability as the mining phases progress. Final highwall geometry may need to be adjusted depending on phase-specific conditions. As each phase approaches the final configuration for the highwall, the local and global stability should be closely analyzed by a qualified person to ensure that slope failure or raveling erosion will not move beyond the permit boundary. Additionally, care should be given to leave the final highwall in a condition that will minimize local failures and rockfall from the highwall face. The contact between the Precambrian gneisses and the sedimentary strata to the east is of particular concern, since this contact is known to be a weak zone prone to failure both along the contact strike, and also across the bedding plane as evident in the failure in Cañon Dolomite Quarry to the north of the site, and the smaller-scale failure onsite north of the area currently being mined. The final highwall design along areas where this contact will be exposed will need to include more conservative evaluation and design.

On-going slope stability monitoring of the highwall should be conducted following the final configuration for each mine phase. The monitoring should continue until there is reasonable evidence that the section of highwall is in a stable configuration, which will depend on the geology, topography, highwall orientation, and observed conditions in the monitoring data, likely a minimum of 5 years.

The discussion on monitoring centered on techniques, coverage area and schedule. The DRMS and BLM agreed that the method used to determine production volumes for the BLM would be adequate in combination with planned highwall survey to be used as monitoring data. The DRMS encouraged frequent monitoring, as more data may be helpful in future planning phases. Frequent monitoring will also assist the ongoing assessment of stability conditions during active mining operations, which is an aspect BLM evaluates. The DRMS determined that as a minimum, highwall monitoring should be performed beginning with the second to last slice taken prior to the final configuration for each highwall segment in the privately owned mining areas. The BLM may require more frequent highwall monitoring on the Federal lands.

Phased Bonding – T.H.E. indicated they would prefer a phased bond approach. This would limit their bond to what the current phase reclamation liability might be expected, thereby keeping the bond lower and providing more flexibility in future mine plan phases with respect to stability evaluation and reclamation. The DRMS and BLM also favor this approach.

AM-05 Schedule – the meeting wrapped up with a discussion summarizing the schedule for proceeding with the review/approval process for AM-05, as follows:

- Mr. Klco will begin working on the phased mine and reclamation plan required by the DRMS for the reclamation liability bond estimate by July 3, 2013.
- Mr. Cazier will begin preliminary final highwall blasting/mucking volume estimates based on the existing mine plan, and finalize after the revised phased mine plan is provided by the Operator.
- The Operator will request an extension to the AM-05 decision date to July 19, 2013.

If there are any questions regarding the path forward, please call me at (303) 866-3567, extension 8169.