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24 November 2014

Bralorne Gold Mines Ltd.
Suite 900, 570 Granville St
Vancouver, BC V6C 3P1

Attn: Dr. Matt Ball
President and COO

Re: Bralorne Mine
Independent Third Party Review of Dam Safety Inspection

Dear Dr. Ball:

1. INTRODUCTION

This letter presents the observations and conclusions of a third party review of the dam safety inspection (DSI) of the Bralorne Gold Mine. The review was carried out in accordance with your e-mail authorization of 18 November, 2014. The third party review was mandated by the British Columbia Ministry of Energy and Mines, Chief Inspector's Orders, dated August 18, 2014, which stipulated that a DSI be carried out to cover all dam structures for all tailings storage facilities in British Columbia, and that the DSI must be reviewed by an independent qualified engineer from a firm that has not been associated with the tailings dam. The Independent Third Party Review must include a review of the dam consequence classification.

The DSI of the Bralorne tailings dam was carried out by Tetra Tech EBA, dated 21 November 2014. This third party review is based on that DSI, other relevant reports listed in the References, and discussion with Dr. Ball of Bralorne Mines to clarify some aspects of the operation. No site visit was made for the third party review.

2. BACKGROUND

Bralorne Gold Mine is situated approximately 160 km north of Vancouver in the valley of Cadwallader Creek, a tributary of Hurley River, which is in turn a tributary of Bridge River, which joins the Fraser River at Lillooet.

The TSF embankment was constructed in 2003 and completed to its present nominal crest elevation of 3459 ft (1054.3m) in 2005. Survey data indicates that the crest elevation varies and is as much as 2 ft. low in places. The embankment includes a wide central core of glacial till, with upstream and downstream shells of general fill. The upstream and downstream slopes are 1.75H:1V and 2H:1V, respectively. A sand and gravel drainage blanket downstream of the core provides embankment drainage. The embankment has a wide crest of about 55 ft. The embankment is L-shaped. The North Embankment has a maximum height of about 24 ft. (7.3m) and the South Embankment about 30 ft.

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(9m), with the two sections joined by a low embankment ranging in height from 3 to 15 ft. The total embankment length is about 380m. The embankment forms a TSF with an area of about 4 ha.

The TSF was used for a minor amount of tailings storage in 2004 and 2005, and was used primarily for water storage until Bralorne Mine began full time production in 2011. The TSF has been in continuous use for tailings discharge since then. The Bralorne mill has a current daily ore throughout of about 90 tpd. Tailings are discharged along the crest of a dam via a single point discharge which is periodically moved to create a beach upstream of the embankment, separating the water pond from the beach.

The tailings pond water balance (Tetra Tech EBA 2014a) indicates that, on an annual basis, there is a net negative water balance. This negative water balance is primarily a result of significant unrecovered seepage from the TMF. In spite of the negative water balance, however, there are times when excess water accumulates in the pond. In spring, there is normally more mine water than required for mill operation. This excess was directed to the TMF until 2013, when Bralorne implemented a treatment system to treat the excess mine drainage during spring. In addition, there is likely inflow of groundwater to the TSF in spring. The excess water is removed during summer by seepage and evaporation. Bralorne also treats excess TSF water for discharge, but does not currently have a permit for discharge. The company is currently awaiting a discharge permit for continued use of the water treatment system. As a result of the annual spring water accumulation, Bralorne has at times not maintained its minimum required freeboard of 1.0m.

An embankment crest raise of 10 ft. (3m) is planned for the TMF. The wide crest of the existing embankments will allow this raise to be accomplished without the need to add to the downstream sections. Tetra Tech EBA (2014b) has reviewed the stability of the raise and found it to be adequate.

3. **2014 DAM SAFETY INSPECTION**

Mr. Chris Johns, P.Eng. of Tetra Tech EBA visited the site on September 9, 2014 to undertake the Dam Safety Inspection. Previous DSIs were completed in 2011 and 2012 by Tetra Tech EBA and by PK Read Engineering in 2008 and 2009.

Significant findings of the 2014 DSI included:

- Geotechnical stability of the dams appeared to be satisfactory. Piezometers installed in the core of the North and South Embankments indicated stable piezometric levels consistent with those used for previous stability analyses. There were no signs of deformation, confirmed by survey of fixed monuments on the dams.
- Seepage flows downstream of the dams were consistent with past measured flow rates, and have declined slightly, likely as a result of increased tailings blanketing of the TSF.
- Available storage for tailings and water is minimal, as Bralorne was unable to complete its scheduled crest raise in 2014 due to permitting issues. Storage capacity for tailings and water

are becoming limited. A raise will be required as soon as possible to allow tailings disposal to continue in the TSF.

There are Operation, Maintenance and Surveillance (OMS) and Emergency Preparedness Plan (EPP) in place for the TMF. It is understood from Bralorne that these are being updated for December 1, 2014.

Tetra Tech EBA's review of the dam consequence category recommends a classification of High under CDA Dam Safety Guidelines, based on potential impacts of a release on Cadwallader Creek and Hurley River.

Recommendations of the 2014 DSI included:

1. It is recommended that the proposed embankment raise be constructed at earliest opportunity to create adequate capacity for tailings, process water, and design storm event storage.
2. Pond water elevations should continue to be collected and reviewed as per the plan outlined below.
   a) >1 m of freeboard = as per OMS.
   b) 1.0 to 0.5 m of freeboard = daily monitoring
   c) 0.5 m to 0.3 m of freeboard = twice daily monitoring
   d) <0.3 m = hourly monitoring.
3. Water from in the supernatant pond should be managed to ensure that the minimum freeboard is maintained. If the recommended minimum freeboard of 1.0 m is impinged upon, Bralorne should notify the Ministry of Environment and, should freeboard reach 0.5 m, Bralorne will seek approval for an emergency bypass. If an emergency bypass is required, Bralorne will install a pump and water would be pumped to an unlined settling pond on site where it would seep into the substrate. We understand that this plan is consistent with what occurred in 2012 before the treatment system was in place.
4. The risk classification of the dam and the tailings storage facility capacity should be reviewed after completion of the hydrotechnical assessments currently in progress.
5. The EPP and OMS Manual should be updated to reflect the requirements of the CDA DSG.
6. Monitoring and review of the survey hubs should continue as per the OMS Manual.
7. Tailings deposition should continue to be managed to maintain a tailings beach against the upstream face of the embankment and maintain the pond away from the embankment, thereby reducing the potential for erosion and seepage through the dam.
8. Seepage quality and quantity measurements should continue to be collected and reviewed.
9. It is noted that Bralorne now use a flume at Seepage 3 to monitor flow rate as approved by the Ministry of Environment. Measurements using the 5 gallon pail at the outlet pipe further downstream at SP3 should be continued to provide reference with historical measurements.

10. During routine inspections, the mine should monitor for evidence of 'run-on' surface water flow and consider further improvements to surface water diversion around the dam if this is observed. In addition, the slurry and water pipe lines should be visually assessed during these inspections.

4. CONCLUSIONS AND RECOMMENDATIONS OF 3RD PARTY REVIEW

4.1 The 2014 DSI appears to provide a good summary of the status of the Bralorne Mine TSF and to have addressed the key issues as per the Ministry of Energy and Mines Guidelines for Annual Dam Safety Inspection Reports. Recommendations provided in the 2014 DSI are considered appropriate and should be followed.

4.2 In the writer's opinion, the CDA consequence category of High is a conservative classification for this relatively small TSF, with no downstream infrastructure or population at risk. A classification of Significant could be considered.

4.3 The embankments as described by Tetra Tech EBA are apparently in adequate condition, with no deformation noted and seepage running clear.

4.4 From a dam safety viewpoint, an emergency spillway should be included in the design of the embankment raise.

5. CLOSURE

Thank you for the opportunity to undertake this 3rd party review of the Bralorne Mine tailings dam DSI. I would be pleased to provide any additional information or clarification you may require.

Yours truly,

November 24, 2014

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