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Nunavut Water  
Board

001 03 2003

Public Registry

Nunavut Water Board  
P.O. Box 119  
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**Attention:** Ms. Dionne Filiatrault, P.Eng.,  
Manager of Technical Services

Dear Dionne:

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**Lupin Gold Mine  
Review of 2002  
Annual Geotechnical Inspection**

At the request of Nunavut Water Board (NWB), Acres International Limited (Acres) has reviewed the 2002 Annual Geotechnical Inspection Report for the Lupin Gold Mine. The inspection report was prepared by BGC Engineering Inc.(BGC) for The Echo Bay Mines Ltd. (Echo Bay Mines) in October 2002. It was prepared as a partial fulfilment of Part D, Item 6(g) of the Water Licence No. NWB1LUP0008, issued by NWB for the Lupin Mine in Nunavut.

**Background**

As part of the Water Licence obligation, Echo Bay Mines, the operator for the Lupin Gold Mine must conduct an annual inspection of the Tailing Containment Area (TCA) of the mine. The inspection and report must be carried by a qualified Geotechnical Engineer.

Mr. James Cassie, P.Eng of BGC conducted the inspection on August 12 and 13, 2002. An on-site project memorandum, containing the initial findings of the inspection and some comments on the required maintenance work to be completed by the Mine was issued by BGC on August 13, 2003. The final report, titled "Echo Bay Mines Ltd - 2002 Geotechnical Inspection of Perimeter Tailings Dams", was issued on October 9, 2002.

**Tailings Dams within Lupin Mine TCA**

The Lupin mine utilizes a number of low embankment dams which form five containment cells for solid accumulation of tailings deposits, Pond 1 which acts as the supernatant storage accumulation, and the adjacent Pond 2 which holds and conditions the water prior to its discharge to the environment.

The perimeter dams at Lupin's TCA consists of Dams 1A, 1B and 1C to the west of Pond 2, Dam 2 to the north of Pond 2, Dam 3 on the east end of the tailings area, bordering with Boomerang Lake, and Dams 4, 5 and 6 to the south of the TCA. Dams 1A, 2 and 4 have a heights of 8, 5.5 and 6 m above the surrounding tundra at its downstream end, respectively. The remaining perimeter dams vary between 1.5 and 2.5 m in maximum height. BGC inspected all of the above dams and a summary report and photographs were prepared for each of the dams.

The internal dams within the TCA consist of a J Dam which separates Pond 1 and 2, K Dam to the south of Pond 2, and M Dam to the east of Pond 2. These dams were briefly reported by BGC, but no summary report nor photographs were presented in the report for each of the dam.

There are also other internal dams within the TCA: N Dam to the north of the M Dam, Dam 3D which is located between Pond 1 and Cells 1 and 2, and Dams 3C and 3E which are partition dams between the Cell 1 and 2. None of these dams were discussed in the report.

### **Review and Comments on BGC Inspection Report**

We generally concur with the finding and recommendations indicated in BGC's inspection report. Based on the field observations and photographs presented in the report, there are no significant concerns related to the performance of the perimeter dams.

We also want to bring the attention that the recommendations which are presented in the report should be carried out by the Mine, to ensure that any sign of early distress on these dams can be detected immediately and actions can be taken appropriately. In particular, recommended actions with respect to the presence of minor sinkholes (such as reported in Dam 1A and 6), seepage (Dam 2), eroded sections of the dams (Dams 2, 3, 6 J-Dam and K-Dam), and any repair work to reduce the expansion and widening of some cracks and slump areas (Dams 1A, 3 and M-Dam).

It was also noted in the report that minor sinkholes were reported previously in Dam 1A. It was not known whether this sinkhole area had been previously repaired, and whether a new one has formed at approximately the same location. Inspections by the mine personnel, which can be scheduled as part of the routine and periodic inspection for the various mine facilities should be carried out to check the condition of the sinkhole. Such inspections, as well as any remedial work performed on other parts of the dam shall be kept on record, and be made available during the subsequent annual geotechnical inspection.

The crest elevation of the dams should be checked against the as-built elevation. This would help to determine whether settlement has occurred and if remedial work to top up the crest of the dam will be required. GPS kinematic survey elevations were established on most of the dams and reported in the 2000 Annual geotechnical inspection. Similar surveys may be carried out to compare the new elevations to this survey data. As indicated in the inspection report and in the water licence, a minimum freeboard of 1 m shall be maintained for the crest of the dam at all times.

The inspection report emphasizes only the perimeter dams. Limited or cursory information was made in regards to the internal dams. It is understood that the internal dams only act as partition dams and may not affect the overall stability of the TCA. As a minimum, however, we believe that some background information should be presented in the report to explain or support why these internal dams need not be inspected.

Ms. D. Filiatrault - 3

September 25, 2003

We hope that the above review and comments are suitable for your purpose. Should you have any further questions or concerns regarding the above, please do not hesitate to contact me.

Yours very truly,

A handwritten signature in black ink, appearing to read 'R. A. Halim', with a long horizontal stroke extending to the right.

RAH:sep

R. A. Halim, P.Eng.  
Senior Geotechnical Engineer

cc P. Duxbury,  
(Nunavut Water Board)

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