



Independent Environmental Monitoring Agency

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June 23rd, 2004

Melody J. McLeod, Chair
Mackenzie Valley Land and Water Board
7th Floor – 4910 50th Avenue
Yellowknife, NT X1A 2P6

Dear Ms. McLeod

Re: BHP-Billiton's 2003 Waste Rock Storage Area Seepage & Waste Rock Survey Report

The Independent Environmental Monitoring Agency has commissioned an independent review by reclamation specialist, Bill Price, of the above report, submitted by BHPB in accordance with requirement of Part F (3)b of Water Licence N7L2-1616. Attached for your information are the reviewer's comments and *curriculum vitae*.

The Agency concurs generally with the findings of the independent review. In our view, there is significant uncertainty yet remaining about the long-term chemical stability of some waste rock types on site, and how well post-closure conditions for acceptable water quality can be met. The geochemistry work, as well as a discussion of the results, needs to be made more robust in the near future to narrow the uncertainties identified in the independent review.

In submitting the independent review to the MVLWB, we wish to highlight several of the key findings, namely that:

1. the 2003 seepage report does not adequately address the management implications of the monitoring results;
2. there is significant uncertainty regarding future performance of some of the wastes and the ability of present mitigation measures to achieve the post-closure environmental protection and reclamation objectives;
3. drainage from the coarse kimberlite rejects may present an environmental concern after mine closure;
4. the cause of the acidity observed at some waste rock seeps is still uncertain;
5. tundra water may exacerbate potential acidity and metal leaching processes;
6. the leaching of nickel from kimberlite and black clay may be a potential concern in the long-term;

7. heat produced from sulphide oxidation in some of the dumps may interfere with the adopted strategy of relying on freezing of the waste rock material to prevent ARD.

The independent review recommends a number of “proposed actions” to deal with the above the issues, as well as a number of other, more specific problems identified. The main ones can be summarized as follows:

1. the terms of reference for future survey reports should be expanded to include:
 - a discussion of management implications of the monitoring data;
 - a discussion of the implications of past placement of waste rock materials that may be interacting with tundra water, and that may present operational or post-closure issues for site water management;
 - an analysis of the long-term effectiveness of freezing as an ARD mitigation measure (the 2003 did not discuss the thermal monitoring results or implications for management);
 - completion of kimberlite mineralogical characterization (using quantitative x-ray diffraction techniques) to identify source materials for observed metals and ARD;
2. the operator needs to demonstrate that drainage from the coarse kimberlite rejects can meet receiving environmental objectives after the mine closes;
3. additional controlled studies are required to better understand the mechanisms of acid generation, the potential magnitude and location of future acid generation and metal loadings, whether additional mitigation measures or refinements to the mine plan are required, and whether there is a potential for long-term nickel leaching from kimberlitic wastes.

We hope the Board finds this submission helpful in refining the waste rock seepage survey in the future.

Respectfully,

-ORIGINAL SIGNED BY-

William A. Ross
Chairperson

Cc: Society Members

Attachments:

1. Bill Price’s Review June 17, 2004
2. Bill Price’s Resume