



Nunavut Regional Office
P.O. Box 100
Iqaluit, NU, X0A 0H0

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July 30, 2004

Manager of Licensing
Nunavut Water Board
P.O. Box 119
Gjoa Haven, NU, X0E 1J0

Via electronic mail to:
licensing@nwb.nunavut.ca

Re: NWB1POL - Polaris Mine Landfill Cover Cap design for Little Red Dog Quarry

On behalf of Indian and Northern Affairs Canada Water Resources (INAC Waters), I would like to thank the Nunavut Water Board (NWB) for the opportunity to provide comment on the Little Red Dog Quarry Landfill Cover Cap Design (LRD Cap Design), submitted by Teck Cominco Limited (the Proponent).

In undertaking INAC Waters' technical review of the LRD Cap Design, the following documents were considered:

- BGC Engineering Inc. *Polaris LRD Landfill Cover* (March, 2004)
- Gartner Lee Ltd. (GLL) *LRD Quarry specifications for landfill final cover* (May, 2004)
- Teck Cominco Ltd. cover letter to INAC Land Administration and the NWB (June, 2004)
- AMEC Earth & Environmental *Technical review of Polaris LRD landfill cover provided in BGC memorandum* (July, 2004)
- BGC Engineering Inc. *Submission on landfill cover cap design for Little Red Dog Quarry* (July, 2004)

In the course of our review, it became apparent that a few areas of uncertainty existed in the applicability of the BGC geothermal analysis, GLL cover design, and current or anticipated site conditions. These included:

- The thermal conductivity modeling and analysis, including the bedrock, fill, and cover type, moisture content, role of convection, and the means by which laboratory and onsite measurements led to the final 1.8 m cap cover determination.
- The means by which the predicted thermal behavior of the GLL cap design was extrapolated from a model with different soil layering strata.
- The degree of conservatism in cover depth, beyond the 1.3 safety multiplier

applied in the March, 2004, BGC geothermal analysis, that would be reasonable to compensate for the deviations and extrapolations from the initial geothermal model.

INAC Waters will therefore not provide comment on the acceptability of the LRD Cap Design until such time as these uncertainties are clearly addressed by the Proponent. With respect to the LRD Cap Design submission, INAC Waters recommends that:

- The Proponent, at the earliest available opportunity, provide a document that clearly illustrates how the final cover depth was derived, accounting for the alterations and extrapolations from the initial geothermal analysis.
- The Proponent extend thermistor monitoring throughout the depth of LRD to ensure that the thermal regime is as predicted or otherwise acceptable.
- The Proponent provide the ASTM (or equivalent) to the plate load tests.

Please do not hesitate to contact me if there are any questions or concerns.

Best regards,

Original signed by:

Stephanie Hawkins
Qikiqtani Regional Coordinator
Water Resources
Phone: (867) 975-4555
Fax: (867) 975-4585
Email: hawkinss@inac-ainc.gc.ca