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Via Facsimile and Email

April 20, 2004

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Dear Stephanie and Hugh:
RE: Doris North Gold Mine - Information Requests

Environment Canada (EC) is working through its technical review of the Doris North Gold Mine Final Environmental Impact Statement. As part of our review process, we have identified several areas where additional information is required in order to complete our review. In the spirit of open dialogue between all concerned parties, EC is providing the following information requests to the Nunavut Impact Review Board (NIRB) and Miramar Hope Bay Ltd. (MHBL) prior to the public hearings and requests that the NIRB direct MHBL to respond to these information deficiencies at their earliest convenience.

**Issue: Air Monitoring Program**

**Proponent's Conclusions**
In section 6.2 of the EIS, the Proponent states that it will monitor total suspended particulate matter ambient concentrations throughout the operational life of the project. However, frequency of measurements will be reduced from every 3 days to every 6 days.

The Proponent concludes that the "results of the air quality assessment do not indicate that any additional monitoring is required at the site" (Section 6.2 of the EIS).

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**Environment Canada' Conclusions**
Collecting TSP samples every 6 days is insufficient for compliance monitoring. Environment Canada recommends the Proponent continue to collect TSP samples every 3 days.

After reviewing the air quality assessment, Environment Canada concludes that dust fall, PM10 and PM2.5 should be included in the air quality monitoring program. New air quality modeling using on-site meteorological data may be necessary to design the monitoring program.

**Rationale**
a) Dust fall collectors are relatively inexpensive to install and operate. The collectors can be used over large areas to monitor trends and effectiveness of dust suppression mitigation measures.

b) Air quality model predictions (Section 4.3 of EIS) for PM10 exceed the 24-hour ambient air quality standards in Newfoundland, Ontario and British Columbia. PM2.5 levels are predicted to exceed the 24-hour NWT ambient air quality standards.

c) By comparing the wind rose plots from the Doris North Project and the Boston Camp (Figure 3-6 of EIS), it is apparent that there are differences in the predominant wind direction. The comparison has only been completed for the summertime but if the differences between the sites are caused by local topography then the predominant winds in other seasons will likely also be different. The meteorology at Boston Camp may not be representative enough to use the modeling data, presented in the EIS, to design the monitoring program at the Doris North Project site. Please provide a wind rose analysis using the latest data available.

Recommendations
EC recommends the proponent develop and implement a monitoring program to assure that PM10 and PM2.5 do not exceed established ambient air quality standards. TSP and dust should also be measured to monitor trends over the lifetime of the mine and to evaluate the effectiveness of mitigation efforts. The proponent should develop a monitoring plan through consultation with Environment Canada air quality experts.

**Information Requests**
a) Please provide a new draft of the Doris North monitoring program incorporating the above recommendations.
b) Please provide a seasonal wind rose comparison between the Doris North Project and the Boston Camp using the most recent data available.

**MHBL Response**
MHBL will install and operate a single on-site air quality monitoring station during the operation of the Doris North Project consistent with comparable projects in Nunavut. This station will include equipment to monitor TSP, PM10, PM2.5 and dustfall at the Doris North Project site. The TSP, PM10 and PM2.5 samples will be collected for a 24-hour period every sixth day, as per the federally mandated National Air Pollution

Surveillance (NAPS) schedule. Dustfall samples will be collected over a nominal 30-day period and submitted monthly to a certified independent laboratory for analysis.

MHBL agrees with the reviewer's comment that monitoring station siting is best determined using on-site meteorology. Therefore, the final details of the monitoring program, including station location, will be provided in a detailed monitoring plan shortly after one year of on-site meteorological data is available from the Doris North site. One year of on-site meteorological data should be in-hand August 31, 2004.
It is important to clarify that while this monitoring program will provide information regarding air quality assessment predictions and the success of on-site dust management activities, it can not be considered compliance monitoring as we understand there are currently no legislated air quality objectives or standards applicable to industrial facilities in Nunavut.

The issue of monitoring frequency was discussed in the MHBL March 15 & 24, 2004 response to Health Canada's January 29, 2004 conformity review. This response (repeated here in its entirety) stated: "The federally mandated National Air Pollution Surveillance (NAPS) monitoring program operates on a fixed schedule with samples being taken every sixth day. For TSP, this means that samples should be collected for a full 24-hour period every sixth day. As part of the MHBL commitment to collect as much data as possible in preparing the FEIS, this schedule was advanced for a short period to include an additional sample collected every third day. The increased sampling frequency was intended only to collect the maximum amount of data during a limited window of opportunity prior to submitting the FEIS."

For clarification, the EC reviewer suggested that the 24-hour PM2.5 concentrations predicted in the FEIS were in excess of the Northwest Territories (NWT) standard of 30 µg/m³. The "Guideline for Ambient Air Quality Standards in the Northwest Territories" (GNWT 2002) states that compliance with the PM2.5 standards is based on averaging periods as outlined in the Canadian Council of Ministers of the Environment (CCME) document titled "Canada-wide Standards Guidance Document on Achievement Determination" (CCME 2004). The CCME document indicates that compliance with the 24-hour PM2.5 standard of 30 µg/m³ is based on "...the 98th percentile annual ambient measurement, averaged over 3 consecutive years." This approach was presented in Section 4.3.5, page 48 (FEIS CD#/#) of the air quality assessment and was applied to develop the results presented in the fourth row of Table 4-7 of the air quality assessment (FEIS CD#/#). The resulting 98th percentile 24-hour PM2.5 concentration averaged over three consecutive years was 26.5 µg/m³, which is below the NWT standard of 30 µg/m³. Therefore, the predicted 24-hour PM2.5 concentrations are not in excess of the NWT standard, as stated by the reviewer.

**References**

GNWT (Government of the Northwest Territories). 2002. Guideline for Ambient Air Quality Standards in the Northwest Territories. Environmental Protection Service, Department of Resources, Wildlife and Economic Development.

CCME (Canadian Council of Ministers of the Environment). 2004. Guidance Document on Achievement Determination. Canada-Wide Standards for Particulate Matter and Ozone. http://www.ccme.ca/publications/index.html#173. Last accessed April 22, 2004.

**Issue: Solute Loadings to Tail Lake from Mine Water and Waste Rock Pile Runoff**

**Proponents Conclusion**

In Supporting Document F8, Sections 2.2.3 and 2.2.7, Tables 2.7 and 2.11, in order to estimate the rate of solute release to the mine water for the predictive water quality modeling, MHBL assumes that 115, 000 tonnes of waste rock in the underground will contribute to solute release from day one. The same quantity of waste rock is assumed to contribute to solute release in runoff from the waste rock pile on the surface. Although the quantities of waste rock in the mine and the waste rock pile are the same for the purpose of estimating solute release, the average annual loading associated with the mine water is considerably less than the runoff from the waste rock pile.

**Information Request**

(a) Could MHBL provide additional information on how loadings to Tail Lake from the mine water and the waste rock pile runoff were determined in the predictive water quality modeling?

(b) What mitigative measures will MHBL implement if mine water loadings are greater than predicted?

MHBL Response

The units in Table 2.11 have been incorrectly reported. The units are kg/month and not kg/year. In the water and load balance, the annual loading from mine water is 12 times the values shown in Table 2.11. For example, the annual sulphate loading is 12 * 109 = 1,314 kg/year. The waste rock loading (676 kg/year) is lower because seepage is expected to occur only for 5 months of the year. The waste rock storage piles are expected to be frozen for the remainder of the year.

First, it should be noted that the mine inflow rate used in the water and load balance was estimated in the event that the Doris Central and Doris Connector deposits are developed, i.e. the mine development extends beneath Doris Lake. MHBL no longer intends to mine beneath Doris Lake and inflows of the magnitude assumed in the water balance are no longer indicated. Second, the mine water will be pumped to Tail Lake and will be contained. MBHL have no mitigative measures specifically directed at the mine water outflow because of the low flows indicated. Rather, mitigative measures are directed at management of water in Tail Lake. The mitigative measures include containment of the water in Tail Lake until an acceptable reduction in contaminant concentrations is achieved through a combination of in-situ treatment by permitting phytoplankton growth (resulting in metal sorption) and dilution that will occur within Tail Lake. In the event that metal loadings are higher than indicated in the water and load balance, enhanced natural removal by actively promoting phytoplankton growth would be assessed. Enhanced natural removal would be implemented If acceptable metal removals can be achieved within the available/planned containment period. In the event that acceptable concentrations are not achieved within the containment period, active treatment of Tail Lake water would be undertaken. The specific treatment process would be tailored to the contaminants of concern at the time, and therefore cannot be identified at present.

**Issue: Spill Contingency Planning**

**Preamble**
Miramar Hope Bay Ltd. (MHBL) presents their Environmental Management Plan in Section 8.0 of the Final Environmental Impact Statement, and further information is provided in Section 4.6 "Environmental Management and Mitigation Plan" of the Supplementary Information. MHBL comments that "The Environmental Management System as presented in the supporting document F6 is a "work in progress". The details on the overall "errors and omissions" indicated above will be addressed as the specific elements are finalized for submission during the permitting phase, or in the negotiations for leases with KIA, or GN-DSD on a wildlife mitigation and monitoring protocol".

If a release of fuel or other contaminant occurs after taking all reasonable care and precautions to prevent such a spill, MHBL must be prepared to provide an initial response capability. This requires that staff be trained and equipped for spill response by having the skills and the knowledge to asses the level of risk in terms of safety, property, and the environment and respond quickly and effectively.

**Information Request**
Environment Canada asks Miramar Hope Bay Ltd. to provide the following information:
a) Planning is critical for preparedness and response activities in the event that an emergency does occur. Describe how a "work in progress" approach achieves this objective?
b) A Spill Contingency Plan should be prepared and implemented prior to the transportation, storage or use of fuel or hazardous materials. Please provide for review, a Spill Contingency Plan which addresses the key elements of prevention, preparedness, response and recovery.

MHBL Response

a) Supporting Document F 6, Doris North Environmental Management System, is termed a "work in progress" in that all the details required for a fully operational plan are not yet available; for example, it should include a detailed site plan showing the locations of spill response kits. This level of detail will be incorporated into the Doris North Environmental Management System before site development is initiated and it will address environmental management and contingency issues for both the construction and operations phases of the Doris North Project.

   For the purposes of the project review by NIRB, Supporting Document (SD) F 6 demonstrates that MHBL will execute an environmental management system that addresses and can respond effectively to contingencies in all aspects of the Project's interactions with the environment.

b) Environment Canada is right in drawing our attention to the cornerstones of contingency planning: prevention, preparedness, and response and recovery.

   Prevention is addressed in design, training, and documentation. Project design includes industry standards that have proven effective for primary containment of

hazardous materials in storage and secondary containment in the event of spills and releases (ie. berms in the tank farm; metal containers for explosives and reagents).

Awareness and training are essential elements of preparedness. SD F6 Sections 1.5 and 1.6 provide the project's commitment to employee training (1.5) and MHBL employee awareness program (1.6).

SD F6 Section 8 outlines a spill response sequence, spill response priorities, and the Appendices enumerate product properties of hazardous goods likely to be on site. These will be reviewed and revised (by product and volume) as the details of project construction and operations are finalized. Also, an omission identified that will be added in the final EMS is the response and recovery in the event of a sewage spill on site.

Environment Canada would like to thank Miramar Hope Bay Ltd. in advance for their timely reply to these information requests. We look forward to continuing with our technical review and working with MHBL through the Nunavut Impact Review Board process.

Sincerely,

Original signed by

Colette Meloche
Environmental Assessment Specialist

cc: (Mike Fournier, Northern Environmental Assessment Coordinator, Environment Canada, Yellowknife)
(Janice Traynor, Indian and Northern Affairs Canada)
(John Ramsey, Natural Resources Canada)
(Angala Puvananathan, Health Canada)
(Tanya Gordanier, Fisheries and Oceans Canada)
(Doug Soloway, Transport Canada)