

Indian and Northern Affairs Canada Intervention

Doris North Gold Mine

Miramar Hope Bay Ltd.
Type A Water Licence Application

July 30, 2007

Executive Summary	v
Naitumik Ukautait	viii
ᐃᓗᑦᑕᑦᑭᑦ ᐅᐃᓄᑦᑭᑦᑭᑦ	xi
1 Introduction.....	Error! Bookmark not defined.
2 Licence Application Review	Error! Bookmark not defined.
2.1 Overview	Error! Bookmark not defined.
2.2 Part A: Scope, Definitions and Enforcement	Error! Bookmark not defined.
2.3 Part B: General Conditions	Error! Bookmark not defined.
2.3.1 Annual Reporting related to Geotechnical / Permafrost Aspects	Error!
Bookmark not defined.	
2.3.2 Annual Water Balance / Water Quality Model Reporting .	Error! Bookmark not defined.
not defined.	
2.3.2. Annual Reporting of Geochemical Monitoring.....	Error! Bookmark not defined.
defined.	
2.4. Part C: Conditions Applying to Security.....	Error! Bookmark not defined.
2.5. Part D: Conditions Applying to Construction.	Error! Bookmark not defined.
2.5.1. Construction of North and South Dams	Error! Bookmark not defined.
2.5.2. Construction - Quarry Rock Monitoring and Management.....	Error!
Bookmark not defined.	
2.5.3. Roberts Bay Fuel Tank Facility	Error! Bookmark not defined.
2.5.4. All Weather Access Roads	Error! Bookmark not defined.
2.6. Part E: Conditions Applying to Water Use ...	Error! Bookmark not defined.
2.7. Part F: Conditions Applying to Water Management.....	Error! Bookmark not defined.
defined.	
2.7.1. Water Management Plan with Respect to Water Quantity	Error!
Bookmark not defined.	
2.7.2. Design Freeboard Criteria.....	Error! Bookmark not defined.
2.7.3. Monitoring Doris Creek Flow Below Tail Creek Inflow	Error! Bookmark not defined.
not defined.	
2.7.4. Tail Lake Shoreline – Geotechnical Inspection	Error! Bookmark not defined.
defined.	
2.8. Part G: Conditions Applying to Waste Management....	Error! Bookmark not defined.
defined.	
2.8.1. Seepage from Downstream Side of North and South Dams.....	Error!
Bookmark not defined.	
2.8.2. Annual Geotechnical Inspection	Error! Bookmark not defined.
2.8.3. Demolition Landfill	Error! Bookmark not defined.
2.8.4. Construction Discharge Standards	Error! Bookmark not defined.
2.8.5. Tundra Discharges	Error! Bookmark not defined.
2.8.6. Stormwater Discharge Standards	Error! Bookmark not defined.
2.8.7. Construction Sewage Discharge Standards	Error! Bookmark not defined.
defined.	

2.8.8.	Tail Lake Discharge Standards.....	Error! Bookmark not defined.
2.9.	Part H: Conditions Applying to Waste Management Plans.	Error! Bookmark not defined.
2.9.1.	Quarry Rock Management.....	Error! Bookmark not defined.
2.9.2.	Quarry Rock Seepage Management	Error! Bookmark not defined.
2.9.3.	Waste Rock Management.....	Error! Bookmark not defined.
2.10.	Part I: Conditions Applying to Modifications .	Error! Bookmark not defined.
2.10.1.	As-built Drawings of North and South Dams.....	Error! Bookmark not defined.
2.10.2.	Expansion of Project Beyond Proposed Two-Year Mine Life.....	Error! Bookmark not defined.
2.11.	Part J: Conditions Applying to Contingency Planning..	Error! Bookmark not defined.
2.12.	Part K: Conditions Applying to General and Aquatics Effects Monitoring	Error! Bookmark not defined.
2.12.1.	Camp /Mill Pad Sedimentation Pond	Error! Bookmark not defined.
2.12.2.	Temporary Waste Rock Pollution Control Pond.....	Error! Bookmark not defined.
2.12.3.	Underground Water Quality Monitoring.....	Error! Bookmark not defined.
2.12.4.	Quarry Construction Rock Seepage Monitoring and Management....	Error! Bookmark not defined.
2.12.5.	Waste Rock Monitoring.....	Error! Bookmark not defined.
2.12.6.	Tailings Solids Monitoring	Error! Bookmark not defined.
2.12.7.	Tailings Supernatant Monitoring	Error! Bookmark not defined.
2.12.8.	Cyanide Leach Residue Monitoring	Error! Bookmark not defined.
2.12.9.	Cyanide Destruction Circuit Monitoring.....	Error! Bookmark not defined.
2.12.10.	Tail Lake Monitoring	Error! Bookmark not defined.
2.12.11.	Stormwater Discharge Monitoring.....	Error! Bookmark not defined.
2.12.12.	Construction Sewage Monitoring	Error! Bookmark not defined.
2.12.13.	Tundra Discharge Monitoring.....	Error! Bookmark not defined.
2.12.14.	Tail Lake Discharge Monitoring	Error! Bookmark not defined.
2.12.15.	Tail Lake Shoreline Erosion Monitoring	Error! Bookmark not defined.
2.12.16.	Geotechnical Monitoring	Error! Bookmark not defined.
2.12.17.	Thermal Monitoring	Error! Bookmark not defined.
2.12.18.	North and South Dam Seepage Monitoring	Error! Bookmark not defined.
2.13.	Part L: Conditions Applying to General and Aquatics Effects Monitoring Plans	Error! Bookmark not defined.
2.13.1.	Quality Assurance / Quality Control Plan ...	Error! Bookmark not defined.
2.14.	Part M: Conditions Applying to Closure and Reclamation ..	Error! Bookmark not defined.
2.14.1.	Mine Closure and Reclamation Plan.....	Error! Bookmark not defined.
2.14.2.	Disposal of Waste Rock.....	Error! Bookmark not defined.
2.14.3.	Security Pertaining to Shoreline Erosion....	Error! Bookmark not defined.
2.14.4.	Stability of Underground Mine Openings ...	Error! Bookmark not defined.

2.14.5.	Disposal of Contaminated Soils Underground	Error! Bookmark not defined.
2.14.6.	Demolition Landfill	Error! Bookmark not defined.
2.14.7.	Pore water	Error! Bookmark not defined.
3	Conclusion.....	Error! Bookmark not defined.
4	Appendix A – Indian and Northern Affairs Canada Review Team	Error! Bookmark not defined.

Executive Summary

Indian and Northern Affairs Canada's (INAC) review of Miramar Hope Bay Ltd.'s (MHBL) Type A licence application for the Doris North Project is focussed on those issues within its mandate, namely surface and permafrost disturbance, water quality and quantity assessment, waste management, and abandonment and reclamation cost estimates.

Many of the concerns identified by INAC throughout the technical review of MHBL's licence application have been addressed through information provided in MHBL's June 2007 Water Licence Pre-hearing Technical Meeting Information Support Document and subsequent information submissions. This intervention will discuss those issues that remain a concern for INAC and provides recommendations for the NWB's consideration when writing licence terms and conditions. Please be advised that the complete intervention will expand upon the summary provided below and discuss other issues of concern.

Indian and Northern Affairs Canada Recommendations

Indian and Northern Affairs recommends that the NWB water licence require MHBL to provide clarification on certain matters related to management of its proposed Doris North Project. The primary issues of concern are: (a) monitoring the geotechnical / permafrost stability of project structures, (b) monitoring the water balance and water quality model, (c) geochemical monitoring, (d) waste rock management, and (f) closure and reclamation conditions. Further discussion on these issues is provided below:

(a) Monitoring the Geotechnical / Permafrost Stability of Project Structures

The provision of monitoring and final design data for project structures is critical to understanding their geotechnical / permafrost stability and assessing their performance with respect to design predictions. Indian and Northern Affairs Canada recommends that additional geotechnical investigations and laboratory testing of foundations soils be undertaken, a comprehensive thermal analysis program be followed, a monitoring and follow-up program regarding thermal, deformation and seepage data be developed, and that the results of regular site inspection program be provided to the NWB for review on a regular basis.

(b) Monitoring of the Water Balance / Water Quality Model

Miramar Hope Bay Ltd. has developed a water balance / water quality model to manage the discharge of water within the tailings containment area, (i.e., Tail Lake). This model is designed to ensure that the quality of discharged water will not exceed Metal Mining Effluent Regulations criteria and that the Canadian Council of Ministers of the Environment water quality guidelines for the protection of freshwater aquatic life are met

downstream of the Doris Creek waterfall. Indian and Northern Affairs Canada understands that MHBL will collect climate and hydrological data as part of its ongoing monitoring program. It is recommended that MHBL notify the NWB of its intentions to incorporate collected data into the water balance / water quality model. Within the June 2007 information supplement, MHBL further clarified that "model recalibration would only be required if the model significantly underestimates solute concentrations in Tail Lake and it is shown to potentially have a significant impact on the water management strategy."

Presently, MHBL proposes that the model be rerun when there is a more than 20 percent deviation above the predicted concentrations for any of the critical or significant parameters. Indian and Northern Affairs Canada recommends that MHBL be required to submit a water balance and water quality modelling report every three (3) months for the two (2) years of mine operation. The model would be re-calibrated as necessary at the end of each three (3) month period. This will allow for confidence in the water quality modelling results and the eventual release of water. Following the two (2) years of mine operations, water balance and quality monitoring can become an annual occurrence.

(c) Geochemical Monitoring

Indian and Northern Affairs Canada recommends that a Geochemical Monitoring and Waste Rock Storage Report be provided to the NWB on an annual basis. This Report would present and interpret data associated with tailings solids, tailings supernatant, cyanide leach residue, bleed from the cyanide destruction process, and waste rock. This Report is needed to assess the quality and quantity of leachate produced within the project area and to determine its effects on the receiving environment.

(d) Waste Rock Management

As proposed, MHBL does not plan to use underground waste rock for the construction of project infrastructure (e.g., roads, building pads, laydown areas, and dams) to ensure that only non-acid generating rock is used. All waste rock will be brought to surface, delivered to a bermed Temporary Waste Rock Pile Pad, and returned underground as space becomes available.

Indian and Northern Affairs Canada recommends that MHBL identify all waste rock by general lithology and underground location relative to its placement in the Temporary Waste Rock Pile Pad. The location of waste rock should then be tracked as it is placed back underground. This will allow for MHBL and the NWB to understand the type of backfilled waste rock and provide a basis for investigating the cause of underground acid rock drainage should this occur. Furthermore, all waste rock should be placed underground and not be used for construction or left on surface either subaerially or subaqueously at closure. Waste rock remaining on surface after two (2) years of

operations should be characterized for acid rock drainage and metal leaching to assess outstanding risks.

(E) Closure and Reclamation Conditions

Given the short life of the Doris North Project, it is recommended that MHL submit an Interim Mine Closure and Reclamation Plan not later than 6 months after the start of mining (once all constructed facilities are in place) and a Final Mine Closure and Reclamation Plan no later than 18 months after the start of mining (6 months before the expected end of mining) to the NWB for review and approval. Both the Interim and Final Plans are to incorporate revisions that reflect the current status of mine development.

Conclusion

Indian and Northern Affairs Canada appreciates the cooperation that MHL has provided throughout the environmental assessment and regulatory review of the Doris North Project. The Department is confident that the concerns brought forward by all interveners will be fully addressed by the Nunavut Water Board at the upcoming Final Hearing from August 13 to 15, 2007 in Cambridge Bay, Nunavut. Indian and Northern Affairs Canada looks forward to participating in these hearings.

Naitumik Ukautait

Kanatami Inuligiyyit (INAC) ihivgiukhimayait Miramar Hope Bay Ltd (MHBL) Atuktait "A" laisinsiit uktugutikhait Doris North Hanayakhami kungiakhugit tahapkoa ihumagiyaayut iluani maligutikhainik, ilaa kaagani ovalo hikut ataani ihuinaalaagutait, imat naamagutikhait ovalo nakuutjutikhainik ihivgiugutikhainik, igitukhat munagitjutikhainik ovalo kimagutikhainik ovalo utiktitjutikhait akiit naunaiyautainik.

Amigaitut ihumaalugiyaayut naunaiyakhimayait INACkut hamani ihivgiugutainik MHBLkut laisinsiit uktugutikhait ukakhimayaagani tamaat tuhagutikhainik tunihimayait MHBLkut Junemi 2007 Imat Laisinsiit Naalagutikhaini Katimatinagit Tuhaktitjutikhait Makpigaat ovalo tuhagutikhait tunihimayukhat. Hamna naalagutikhait ukaniaktut tahapkoa ihumagiyaayut ihumaalugiyait INACkut ovalo tunihimayut pitkutiyakhainik NWBkut ihumagiyaakhainik titigaligumik laisinsiit maliktakhait ovalo maligutikhait. Nalungilutit inihimayut naalagutikhait angililaaktut ukautainik hamani ovalo ukakhimayut ihumagiyaainik ihumaalugiyait.

Kanatami Inuligiyyit Pitkuhimayait

Kanatami Inuligiyyit pitkuhimayut NWBkut imat laisinsiit piyumayait MHBLkut tunilutik ukautautikhainik ilangit himagiyaait mikhaanut munagitjutikhait uktugumayainik Doris North Hanayakhami. Ihuviliit ihumaalugiyait hapkoa: a) kungiagutikhait ataani hikuit nunaligiyyit naamagutikhait hanayakhat havakvikhainik, b) kungiagutikhait imat naamagutikhainik ovalo nakuutjutikhainik atugutikhainik, c) nunani atugutikhait kungigutikhait, d) igitukhat uyakat munagitjutikhait, ovalo f) umiktigutikhait ovalo utiktitjutikhait maligutikhainik. Ovalo ukafaakhimayut hamani hapkoa ihumagiyaait:

(a) Kungiagutikhait ataani hikuit ovalo nunaligiyyit naamagutikhait hanayakat havagutikhainik

Ilangit kungiagutikhait ovalo inikhimayut katitigutait hanayakhat havakvikhait ikpinaktut nalungiyaagani nunani atugutikhait/ataani hikuit naamagutikhait ovalo ihivgiugutikhait havagutainik mikhaanut hanayakhimayait nalungitakhainik. Kanatami Inuligiyyit pitkuhimayut ilalugit nunat atugutikhait ihivgiugutikhainik ovalo ihivgiuvikhait tunngaviit nunat pilutik, inikpiakhimayut unaligutait ihivgiugutainik pilihimayut pilutik, kungialugit ovalo ihivgiufaalgutit pilihimayut mikhaanut unaligutait, aalanguligutait ovalo kuvitjutait katitigutainik hanalutik ovalo iniktigutait nunaini ihivgiugutait pilihimayut tunilugit NWBkunut ihivgiugukatagiagani.

(b) Kungiagutikhait Imat Naamagutikhainik/Nakuutjutikhainik Atugutikhait

Miramar Hope Bay Ltd. Hanahimayut imat naamgutikhainik/imat nakuutjutikhainik atugutikhait munagiyaagani kuvitigutikhait imat kuviviinut tutkuktuivianut, (ilaa Kuviviit Tahik). Hamna atuktait hanahimayut piyaagani naamagutikhainik kuvihimayut imat

avataanulaitut Haviit Uyagakhiuktut Kuviviit Maligaliugutikhainut maligutikhainik ovalo Kanatami Katimayit Ministat Hilakyualigiit imat naamagutikhait maligutikhainik munagiyaagani imani umayut kugaani Doris Creek. Kanatami Inuligiit nalungitut MHBLkut katitiniaktut hilat ovalo kuganik katitigutainik ilaulugit kungigutikhait pilihimayuinut. Pitkuhimayut MHBLkunut tuhaktitilugit NWBkut pinahuaktainik ilauniagutikhainik katitigutikhait katitiktukhat imat naamagutikhainik/imat nakuutjutikhainik atugutikhait. Iluani Junemi 2007 tuhagutikhait tunihimayut, MHBLkut tuhaktitiaktakhait "atugutikhait ihivgiufaagutikhainik piyukhat atugutikhainik akhut mikiyaagiagani katitigutikhainik Kuviviit Tahinut ovalo takupkailutik pilaaktakhainik angiyut ikpinagutikhait imat munagitjutikhainik uktugutikhaini."

Ublumi, MHBLkut uktugumayut atugutikhainik pifaalugit avataanungakat 20% mik aalanguligutikhaini kaangani pilaaktakhait katitigutikhainik ikpinaktut ovalo angiyut atugutikhainik. Kanatami Inuligiit pitkuhimayut NHBLkut pilutik tunilutik imat naamagutikhait ovalo imat nakuutjutikhait atugutikhait tuhaktakhainik tamaat pingahuni tatikhiutini malguni ukiuni uyagakhiukviit havakiini. Atugutikhait ihivgiufaalaaktut inikata pingahut tatikhiutini. Hamna pipkalaaktut ihumaalugingiyaagani imat naamagutikhait atugutikhait iniktigutikhainik ovalo kuvitjutait imat. Malilugit malguni ukiuni uyagkahiukviit havakviini, imat naamagutikhait ovalo nakuutjutikhait kungigutikhait pikatalilugit ukiuk tamaat.

(c) Nunani Atugutikhait Kungiagutikhait

Kanatami Inuligiit pitkuhimayut Nunani Atugutikhait Kungiagutikhait ovalo Igitigutikhait Uyakat Tutkuvikhait Tuhaktakhat tunilutik NWBmut ukiuk tamaat. Hamna tuhaktakhat tuniniaktut ovalo ukalugit katitikhimayut ilaayut kuviviit naptuyunik, kuviviit imanik, cyanide ahiguktigutait ovalo igitukhat uyakat. Hamna tuhaktakhat piyukhat ihivgiukatagiagani naamagutikhait ovalo nakuutjutikhait kuviyut iluani hanayakhat ovalo naunaiyagiagani ikpinagutikhait nunamut.

(d) Igitukhat Uyakat Munagitjutikhait

Uktugumayut MHBLkut paknaiyakhimaitut atugutikhainik ataani nunat igitukhat uyakat hanatiglugit hanayakhait havaktigiigutikhainik (ilaa; apkotit, iklut hanavikhait, uhiyakvikhait ovalo imanik nutkatugikhait) piyaagani aninaktut kuvivaktut uyakat atuktainik. Tamamik igitukhat uyakat kaaganunganiaktut nunanmut, ililugit hanahimayunik nutkavikhainut Igitukhat Uyakat ovalo utiktilugit ataani nunamut inikhakalikata utiktikvikhainut.

Kanatami Inuligiit pitkuhimayut MHBLkut naunaiyaklugit igitukhat uyakat kanugitjutainik ovalo ataani naunaiyautainik kanugitut utiktivikhait Atuniaktait Igitukhat Uyakat ilivikhainut. Naniiniaktut igitukhat uyakat nalungitakhait utiktikhimayut ataani nunamut. Hamna pipkalaaktait MHBLkut ovalo NWBkut nalungiyaagani kanugitut utiktikhimayut igitukhat uyakat ovalo atulaagutikhainik ihivgiugutikhait pipkaitjutait ataani nunat uyagait

kuviviit pihakpata. Ovalo, tamamik igitukhat uyakat iliyukhat ataani nunamut ovalo atungilugit hanatjutikhainik ovaluniit kimaklugit kaagani nunat umiktilikata. Igitukhat uyakat kimakhimayut kaagani malgunik ukiuni havaktitlugit ihumagiyauyukhat uyakat kuviviit ovalo haviit kuviviit ihivgiugiagani ikpinagutikhait.

(E) Umiktigutait ovalo Utiktitjutikhait Maligutikhainik

Naituuniamat havagutikhait Doris North Hanayakhami, pitkuhimayut MHBLkut tunilutik naitumik Uyagakhiukviit Umiktigutikhait ovalo Utiktitjutikhait Paknaiyautikhainik siksini tatikhiutini uyagakhiukvik hanalikata (tamamik hanayakhait inikata) ovalo Iniktigutikhait Uyagakhiukviit Umiktigutikhait ovalo Utiktitjutikhait Paknaiyautikhait 18ni tatikhiutini uyagakhiukvik havalikata (siksini tatikhiutini umiktititagit uyagakhiukviit) NWBKunut ihivgiugiagani ovalo angigiagani. Tamamik Naitut ovalo Inikhimayut Paknaiyautikhait ilauniaktut ihuakhagutikhainut takuyaagani ublumi kanugitjutikhainik uyagakhiukviit hanatiligiit.

Iniktigutait Ukautait

Kanatami Inuligiit aliahuktut ilaukatauyunut MHBLkut tunihimayut tamaat hilakyuat ihivgiugutainik ovalo maligaliuligiit ihivgiugutainik Doris North Hanayakhami. Munagiit nalungitut ihumaalugutait tunihimayut tuhaktitunit tamaat ihivgiuktauniaktut Nunavumi Imaligiit Katimayit Iniktigutait Naalugutait August 13mit 15mut, 2007, Ikaluktutiami, Nunavut. Kanatami Inuligiit ilaukatauyumayut hamani naalaktilikata.

page xii

[illegible][illegible]

