# DRAFT LIST OF COMMITMENTS FOR DORIS FEIS

## Assessment of Alternatives to the use of Tail Lake for Tailings Disposal

1. Document the conclusion that the concerns of Site 5 would be the same as Site 2 to provide clarity on the alternatives choice. Proper evaluation of this in FEIS. (DFO)

2. Document the environmental (especially birds and wildlife, other VECs) considerations and social aspects as part of the alternatives assessment for Tailings, augmenting the engineering and economic considerations in SD A3. Provide a summary table emphasizing all considerations in a format similar to the decision table in 2004 Doris EIS

3. Include the potential for dusting in the wintertime for land-based options in the alternatives for Tailings.

4. Provide a more descriptive explanation of what the vision for Tail Lake is with respect to future mining activity in the Hope Bay Belt including a discussion on the capacity, depositional strategy, anticipated dam height etc. It is understood that this decision will be conceptual but should describe the likely approaches.

5. Provide discussion of the no dam option of SATD in Tail Lake.

## Tail Lake Water Quality and Management Strategy

1. Identify in concordance table where information from these commitments can be found in FEIS.

**Water Quality**

2. Include information on settling tests which have been completed. (EC)

3. Examine the effects of nutrient loadings on downstream environment. (EC)

4. Provide discussion on how tailings deposition will take place. (INAC)

5. Provide a justification for using only the 2004 water quality results in the water quality model including a discussion of the variability within all other applicable data.

6. Provide a summary table in FEIS of solute loadings in from the water quality model. Also include full tables in Appendix (INAC)

7. Provide sensitivity analysis of the loadings from the mill to Tail Lake, and the downstream effects on Doris Creek. Describe how this will affect the discharge strategy. Run the results of the downstream effects through risk assessment model. (INAC)

8. Provide TSS wave resuspension calculations. (KIA)

9. Explain in detail and justify why MHBL has not done 3D numerical simulation for wave resuspension (KIA clarify tailings or sediment).

10. Provide a clear non-technical summary of why MHBL feels there will be no metal leaching from the tailings placed in Tail Lake. (KIA)

11. Present yearly water balance and Copper load balance into tablular and/or graphical form (ie. flowchart) for the proposed discharge scenario under average conditions. (Acres)

12. Describe in detail how water will be discharged to Doris Creek from Tail Lake. Show discharge line in drawing. (Acres)

13. Provide results of 2005 settling tests from soil samples collected along the shoreline of Tail Lake. (Acres)

14. Include description in FEIS of tailings properties. (DOE)

15. Run TSS through water quality model to illustrate sensitivity analysis.(INAC)

16. Correct pg 56 of SD A2 – Typo regarding predicted TSS concentrations. (INAC)

17. Provide summary table in FEIS identifying maximum predicted concentration for the proposed discharge scenario in Tail Lake. (INAC)

18. Determine total mass of sediment material from shoreline erosion that could settle over the tailings. Include monitoring for and measuring depth of sediment deposition on top of tailings in monitoring program. (INAC)

19. Greater discussion and detail of all-encompassing adaptive management plan (incorporating water quality management plan and shoreline erosion adaptive management plan) with discussion of triggers. Discuss trigger threshold levels within the adaptive management plan. Provide statement that final plan will be completed before mine operation. (INAC)

20. Provide sample calculations to show how MHBL determined the TSS concentration of 10.3 mg/L from the estimated rate of erosion rate of 0.3 m3/m. (Acres)

21. Incorporate information from risk assessment report into water quality section of FEIS to show impacts of predicted concentrations in Doris Creek.

22. Clearly state commitment to meet CCME in receiving environment with the exception of Nitrite.

23. Evaluate information on the coastal shoreline erosion studies as a site-specific analog for comparison studies in Tail Lake. (INAC)

24. Provide succinct list of predicted constituents in Tail Lake.

**Hydrology**

25. Incorporate into FEIS the information from MHBL presentation on flow velocities and depth in Doris outflow. (DFO)

26. Provide qualitative description on the manual method of measuring Doris Lake outflows to determine spring discharge rates. Provide a detailed description of the methods for analyzing water samples on ice. (INAC)

27. Provide characterization of the ice in Doris Creek including the timing and mechanisms for ice clearing. (INAC)

28. Provide information on the continuance of snowcourse surveys undertaken by MHBL as part of on-going water management strategy. Include as part of decant discussion. (INAC)

**Dam Design**

29. State justification and assumptions on the settlement estimate in relation to the determination of the crest of the core of the dam. (Acres)

30. Provide information on how the number 33.5m was determined for the dam FSL. Explain how inflows vs outflows, tail lake capacity, and operational schedule lead to this determination. (INAC)

31. Rationalize the GCL height in the dam design with the maximum design wave height to avoid the potential for overtopping and thermal degradation. (INAC)

32. Provide a descriptive checklist of all fieldwork, analysis, monitoring, etc that would be done to support the dam design prior to the licensing stage. Include a conceptual thermosyphon design that supports the permafrost prediction model for the FEIS (INAC)

33. Discuss how the above information will ensure that the integrity of the dam core is maintained throughout the operation and post closure period. (INAC)

34. Discuss in FEIS the decision for timing of spillway construction and provide a trigger for initiating a “developed” construction. (INAC)

35. MHBL will provide data on addition fieldwork as it becomes available.

**Surface Infrastructure**

36. Clarification of runoff water management for the mill site. (INAC)

37. Clarify sewage and sludge disposal strategy during construction season – look at Windy Camp results to determine impact on the environment during construction phase. (GN-DOE)

**Groundwater**

38. Verification needed on the absence of hydraulic connection in the Doris vein structure and explanation of measures that will be taken if water is encountered. Provide description of how the talik will be avoided.

39. Need for future monitoring via thermistors between the Doris Lake and Tail Lake to ensure no movement of groundwater is taking place. (GN-DOE Explanation of how geothermal model determines the depth of permafrost)

40. Provide statement on the applicability of SD B5 (Groundwater Inflow Study) for Doris North. (Acres)

41. Explain in FEIS the assessment of potential groundwater contaminant movement. (GN-DOE)

**ARD**

42. Provide data and discussion on Franklin Diabase sample from the portal and provide Quarry 4 data and discussion.

43. Identify and explain variations in Quarry NPR values and fizz test results listed in Tables 3.1, 3.2 and 3.3 of SDB2. Confirm whether the relatively large variation is a result of sampling the materials. Explain how the variation effects the quarry material characterization (Acres and INAC)

44. Provide a graphical presentation of how kinetic test samples fit in the range of geological and geochemical properties of ore and waste rock.

45. Clearly state in FEIS that Iron Tholeiites Basalt rock will be stockpiled temporarily near the portal and then placed back underground and that this material will not be used in construction.

46. Determine the percentage of iron carbonate and/or ineffective NP in kinetic test sample on tailings. Incorporate result into the tailings characterization.

47. Provide schedule, logistics and location for waste rock removed from underground and ramp decline.

48. Confirm the source of kinetic test data in Table 3.2 of SD A2. Justify use of Boston data if applicable. Provide rationale for why the values were averaged.

49. Provide a description of how the geochemical characterization data supports the use of selected classification criteria (DIAND) for suitable for mine construction considering both ABA and metal leaching potential materials.

50. Provide rationale for why leach extraction tests from quarries is representative of the ramp construction rock.

51. Confirm that runoff from ore and waste rock stockpile will be collected and pumped to Tail Lake.

52. Provide explanation and justification for the reason why small scale field trials of crushed run of mine rock from the development adit has not been done.

53. Provide explanation why overburden materials that may be disturbed as a result of mine development has not been characterized.

54. Provide Final Humidity Cell Report in FEIS.

55. Provide a table compiling description of past sample classifications into the current classifications as best as possible, and sort ABA data in a manner consistent with current classifications, highlighting samples from the immediate project area and those from outside the project area but thought to be representative of project materials.

56. Provide explanation and justification for the reason why small scale field trials of crushed run-of-mine rock taken from the development adit has not been done. (Acres)

57. Provide explanation why overburden material that may be disturbed as a result of mine development has not been characterised. (Acres)

## The design of the Jetty and Related Issues

1. Describe Fish Compensation Monitoring Program details. (DFO)

2. Provide justification and rationale regarding the chosen length of the 103m jetty, and indicate the commitment to look at 60m jetty in the detailed design stage based on optimization results. (DFO)

3. Provide specifications for the geogrid used under the rock fill and describe and assess any potential impacts to fish habitat. (DFO)

4. Provide case studies where geogrid has been used in arctic environment. (Acres)

5. Indicate the monitoring plan for potential accumulation of sediment deposits around/ near jetty and the adaptive management plan to deal with potential impacts. (Acres)

6. Provide explanation on the 50cm settlement shown in the figure of the Jetty Structure. (Acres)

7. Provide further explanation on the char run along the jetty area and the potential impacts to the char from seal predation. (Attima)

8. Indicate the commitment that community members may use the jetty (when safe to do so) during operation of the mine. (Joseph)

9. Provide clarifications made in Technical Meeting (August 23-25, 2005) presentations. Ensure they are clearly stated in FEIS. (KIA)

10. Provide a better explanation on the predicted life of the jetty, and the potential effects from frost heave, traffic-ability, etc. (NRCan)

11. Quantify the load from the blasting residues on the quarried rock used for the jetty, and describe the potential aquatic effects on Roberts Bay. (NIRB)

## Wildlife Mitigation and Monitoring and Cumulative Effects Assessment

1. Verify impact area for waterfowl in Supporting Document D5. (EC)

2. Verify that the table containing habitat classes for the Habitat Suitability Model is included in the impact assessment and clarify this point in the FEIS. (EC)

3. Provide a map of different habitats overlayed by project footprint. (EC)

4. With respect to the monitoring program, provide more information on study design and triggers for mitigation measures. (EC)

5. Revise the CEA to include migratory bird within the HBB. (EC)

6. Revise the site infrastructure diagram with appropriate scale for distance from mine site to the mesa. (EC)

7. Provide rational for species based study areas in the monitoring program, based on ZOI data collected from other mines including Ekati and Diavik, for the purpose of the WMMP.

8. Due to the short mine life, provide both long and short term monitoring objectives. (GN)

9. Incorporate local scale monitoring of muskoxen distribution and abundance and provide potential mitigation measures. (GN)

10. Provide information and results from other studies undertaken in the Arctic on the establishment of Zones of Influence (ZOIs).

11. Air photo imagery with improved resolution (1 x 1m) is to be used for monitoring vegetation.

12. Monitoring of natural revegetation process will be undertaken and details of the monitoring will be stated in the FEIS WMMP.

13. The timing for the commencement of caribou monitoring surveys will be refined and established according to baseline information.

14. Raptors will be included in the CEA for the HBB area.

15. Contingency measures for incinerator malfunction will be established and described in the FEIS.

16. Discuss applicability of using information from the Northern Contaminants Program to establish baseline contaminants levels in caribou.

17. Discuss how tissue from animals killed on-site, or found dead on site will be analyzed for contaminants. Define what is considered “on-site”.

18. Continue to collect baseline data in 2005 and 2006 for all breeding birds. (EC)

19. Strengthen the monitoring program for all breeding birds due to the lack of baseline data. (EC)

20. Incorporate findings from the breeding bird publication in the Journal entitled “Arctic” into the monitoring and mitigation plan. (EC)

21. Examine EC-CWS protocols for waterfowl survey methodology (eg. PRISM). (EC)

22. Discuss how the Tail Lake outflow will be monitored for impacts to wetlands due to decreased flow and discuss the significance of its loss for the HBB region.

23. Discuss how Elders or other community members will contribute collecting monitoring data.

24. Assure that sampling is established to be able to detect biologically significant changes in population sizes.

25. Identify threshold levels at which adaptive management and mitigation will be triggered.

26. Monitor the effects of air traffic and provide all flight information including those scheduled for the winter airstrip. Discuss how a record book of all flights (landings and take-offs of all aircraft in the region) will be kept and corresponding wildlife reactions.

27. Identify in the WMMP the responsible person from MHBL and their contact information.

28. Discuss timing of monitoring for each species and identify sensitive periods to limit the disturbance during monitoring. Present overview in a table.

29. Monitor the population demographic for caribou during ground surveys or explain the rational for not being able to do so.

30. Check wording for the duration of time grizzlies spend in dens.

31. Provide more information on whether mine site will attract or deter bears.

32. Remove mention of relocation for bears and other problem wildlife.

33. Update information on the defence kill which occurred at the Windy camp exploration drill site.

34. Verify existence/location of grizzly den photo located in appendix to the baseline vegetation study undertaken by Outcrop.

35. For the monitoring program, provide rational for sample plot sizes, number of plots, and timing for surveys.

36. Provide map a plots sampled during vegetation baseline study.

37. Provide mitigation measures for wolverine avoidance of site.

38. Review data from other mine sites which have used Hair Snags for wolverine counts.

39. Reword mitigation measures for raptors who have taken up nests on mine infrastructure.

40. Revise wildlife health monitoring program using human health triggers as the priority mitigative thresholds.

41. Acknowledge the potential confusion between island caribou and mainland caribou during aerial surveys due to overlapping home ranges.

42. Clarify from a cost/benefit standpoint the applicability of weekly aerial surveys.

43. Clarify the new methodology for all bird surveys for the WMMP.

44. Evaluate from a cost/benefit standpoint undertaking sediment sampling/monitoring in Tail Lake as a justification for not requiring wildlife deterrent measures for the TIA.

45. Discuss mitigation measures for seas birds.

46. Provide a full page map showing all activities for the CEA.

47. Review dispersal information for wolverines.

48. Undertake CEA based on seasonal ranges of caribou during the following stages: calving/post calving; migration; winter range.

49. For CEA during winter range, include projects which are seasonally shutdown but still maintain infrastructure on-site.

50. Indicate limitation of the HSI and RSF and explain that it was the best available model at the time of application.

51. Explain the HSI values for different classes.

52. Replace reference to Iqaluit with Kugluktuk.

53. Rework CEA study boundaries for grizzlies.

54. Fix Mathieu's name.

**The Socio-economic impact of the Project on affected residents and communities of Nunavut**

1. Identify in concordance table where information from these commitments can be found in FEIS

2. MHBL commits to include in the FEIS a framework for a VEC socioeconomic monitoring program. (MHBL-from presentation)

3. MHBL commits to working with the participating Hamlets and the KIA to continue dialogue on the draft Community Relations Plan (MHBL – from presentation)

4. MHBL commits to participating in training initiatives and will outline same in FEIS. (MHBL – from presentation) (document better)

5. MHBL commits to continue its work on the Community Investment Policy and will outline details of same in FEIS. (MHBL – from presentation) (document better)

6. MHBL commits to continue working on relationships with various training groups in the Region (i.e., Nunavut Mine Training Group; Multiple Graduations Options Pilot Project; Drilling Assistants Training Program at Windy Camp; Kitikmeot Employment and Training Partnership and will outline details of same in FEIS. (MHBL – from presentation)

7. MHBL to indicate in FEIS any community consultations with technical experts in attendance, to take place prior to FEIS (MHBL – from presentation)

8. MHBL commits to the development of a Wellness Strategy for MHBL employees

9. MHBL commits to outlining in the FEIS how MHBL proposes to work with the Kitikmeot businesses in the area of capacity building

10. MHBL will provide a draft Kitikmeot Employment Strategy for the FEIS

11. MHBL will provide a document titled “Socio-Economic Impact Assessment, Doris North Project”. (MHBL-from presentation)

12. MHBL will provide a document titled “Appendix A – Concerns and SEIA Addendum Response Matrix”. (MHBL-from presentation) Presented August 24, 2005

13. MHBL will provide a document titled “Socio-Economic Assessment Methodology”. (MHBL – from presentation) Presented August 24, 2005

## Other Issues

### Fish

1. Verify area (ha) of Tail Lake. (DFO)

2. Provide data on wetland at Doris Lake and Tail Lake outflows pertaining to fish and fish habitat. (DFO)

3. Confirm in AEMP that ammonia will be monitored and at what locations. (DFO)

4. Cumulative effects from Roberts Bay and Ida Bay contaminated sites to be included in cumulative effects assessment for FEIS (MHBL)

5. Summarize the concern of contamination of fish in Roberts lake and the expected Risk to fish compensation program (DFO)

6. Bridge – correct discrepancy between bridge length and watercourse full bank width (14 m) (DFO)

7. MHBL to work with DFO on monitoring framework issues (DFO)

8. Stream enhancement – provide map of stream E14 at larger scale to see sections of stream to be enhanced. (NIRB)

### Health

Provide more detail on the following (9-14) as per MHBL presentation:

9. Human use of study area will be provided in FEIS (MHBL)

10. Show exposure ratios for each exposure media (MHBL)

11. Include section on monitoring for human health (MHBL)

12. Mercury and monitoring of fish tissue (MHBL)

13. Description of project components which could affect environmental components (MHBL)

14. Clarify that there will be noise monitoring in mill area for occupational health and safety. (NIRB)

**Air Quality**

15. More detail in FEIS with respect to mitigation of dust and how mitigation measures were incorporated into calculations of particulate matter in air (MHBL)

16. Differences in wind rose plots between Doris North site and Boston sites, assess over longer period to assess if it is a result of local topography? (EC) Will be brought back (MHBL)

17. Under CCME there are standards for dioxins and furans with respect to incineration. Nunavut will be including these in its EPA. Look into that standard for any incinerator to be used on site. (CCME website) (GN DOE)

18. Guidelines for dust suppression under Nunavut EPA, update FEIS to include (GN DOE)

19. Clarify in SD B3 that chemical dust suppressants will not be used, and that dust control efficiency will remain at 80% using water for dust control. (NIRB)

**Hazardous Waste Issues**

20. More detail on what hazardous wastes will be generated (MHBL)

21. More detail on how hazardous waste will be managed (MHBL)

22. More detail in hazardous waste plan for FEIS (MHBL)

23. Incorporate GN regulations and guidelines into hazardous waste management plan (MHBL)

**Closure and Reclamation Issues**

24. Encourage natural re-vegetation at site, will look at current research (MHBL)

25. Include some detail in FEIS on how further mining in area will affect closure plan (EC)

26. Clarify whether mine workings will be flooded upon closure (EC)

27. Will provide plan drawing and description of site after closure. (MHBL)

28. Include sufficient detail on landfarm in FEIS for environmental impact assessment, include location, case studies (NIRB)

29. More detail in post-closure monitoring plan in FEIS (GN DOE)

30. Include landfill monitoring in post-closure monitoring plan (NIRB)

31. Clarify that permafrost encapsulation is not necessary to prevent leaching of contaminants from non-hazardous landfill. (NIRB)

32. Specify criteria to be used for clean-up of contaminated soil in closure plan. (NIRB)

**Emergency Response Plan**

33. Further detail and clarification in emergency response plan as per Environment Canada's tech report comments.

34. Look at tech comments as submitted (GN DOE)

35. Note that Emergency Action Plan for dam failure will be completed before operations begin. (NIRB)

**Infrastructure**

36. Thickness of pad to maintain permafrost – details of thermal modeling for pads will be included in FEIS (Acres)

37. Add to drawing of detailed mine layout in FEIS, - consideration for control of runoff water in the area of waste rock stockpile (berm on uphill side of pile) (INAC)

38. Avoid close contact between accommodations and explosives transport in mill site design (NRCan)

39. Include temporary explosives area in closure plan (NIRB)

40. Include anticipated volume of rock for mitigation of shoreline in FEIS table (NIRB)

41. Need to discuss with elders what would be the appropriate means for deterring animals from Tailings area.(MHBL)