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NUNAVUT WATER BOARD

NUNAVUT IMALIRIYIN KATIMAYINGI

By Email and Regular Mail

File #: NWB1POL0311

July 04, 2003

Mr. John Knapp
Site Manager
Teck Cominco Ltd., Polaris Operations
P.O. Box 188
Resolute Bay, NU
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Subject: License NWB1POL0311
NWB/INAC Joint Approval of the Polaris Decommissioning and Reclamation Plan for Components Related to Garrow Lake, Frustration Lake and the Dock and Marine Foreshore Area

Dear Mr. Knapp,

On April 15, 2002, the Nunavut Water Board ("NWB") and Indian and Northern Affairs Canada ("INAC") gave joint approval of the Polaris Decommissioning and Reclamation Plan ("D&R Plan") as prepared by Gartner-Lee Limited ("GLL") for Teck Cominco Limited ("TCL"), with the exception of the decommissioning and reclamation of Garrow Lake, Frustration Lake and the dock and marine foreshore area. Those exempted areas were subject to *Fisheries Act* authorizations by Fisheries and Oceans Canada ("DFO"). The authorizations have been signed by DFO and TCL should now abide by its terms and conditions.

In its January 21, 2003 letter to the NWB, DFO stated that there would be no significant impacts on fish habitat associated with TCL's plans to leave the Frustration Lake jetty in place. DFO suggested that monitoring of the jetty for erosion should be included in the post-closure monitoring plan and that appropriate contingency measures to prevent elevated sedimentation adjacent to the jetty should be reflected in the terms and conditions of License NWB1POL0311. DFO's submission to the NWB, entitled "*Decommissioning of the dock, marine foreshore and Garrow Lake Dam at Polaris Mine*" cited environmental concerns and provided a list of mitigation measures that would prevent damaging fish habitat.

The NWB, in its April 24, 2003 *Reasons for Decision* for Licence NWB1POL0311, noted that although it had approved plans to decommission infrastructure at Garrow Lake and Frustration

Lake, the final approval of the D&R Plan would be coordinated with INAC, as in the previous April 15, 2002 joint approval, to ensure compatibility of requirements and to streamline the permitting process. Further coordination with DFO, to secure full regulatory approval of the D&R Plan was sought.

It is the decision of the NWB and INAC to approve the D&R Plan, provided that the conditions required by DFO under the terms of its *Fisheries Act Authorization* are met and provided that DFO's mitigation measures for the protection of fish habitat, as stated in DFO's submission the NWB are addressed.

In addition to measures proposed by TCL in the D&R Plan, the following requirements shall be met as conditions for this approval:

Part A: Garrow Lake

The Plan requires draining of the water from the surface layer of Garrow Lake, commencing in the spring of 2003 and being completed by the fall of 2003. The Garrow Lake dam will be decommissioned, before the spring thaw, by partial removal of the centre section of the dam in 2004. In general, the excavation of the Garrow Lake Dam shall follow the details as specified in Volume 2, Appendix 4 of the D&R Plan, "*Garrow Lake Dam Decommissioning, Polaris Mine Operations, Nunavut*", prepared by EBA Engineering Consultants Ltd., dated March 2001.

The following conditions will apply to decommissioning and reclamation work undertaken in and around Garrow Lake:

1. TCL shall provide the NWB and INAC with the final bathymetrics of Garrow Lake, which describes the existing bottom profile following the removal of the tailings pipeline. This information will be provided as an addendum to TCL's annual report for 2003 (*Part B, Item 6* of Licence NWB1POL0311).
2. TCL shall, in 2003, inspect the location of the potential wave break structure. If the structure interferes with the natural drainage of the lake, it should be removed after drawdown of the lake has been completed.
3. TCL shall, in 2003, inspect the creek channel after drawdown has been completed and initiate any minor creek channel repairs that may be identified.
4. TCL shall, in 2003, not work in Garrow Creek during the summer months when the creek is flowing. However, as a contingency, if upgrading or repairs to the creek channel are required when water is flowing, high flow periods will be avoided and sedimentation will be controlled by either diverting the creek flow around work areas, or through the creation of settlement ponds.
5. TCL shall, as required in *Part H* and *Table 1* of Licence NWB1POL0311 and as part of a long term monitoring program to be continued under Phase II of the D&R Plan, monitor the

water quality in Garrow Lake during and after drawdown to confirm that metal contamination has not affected the upper water layer.

6. TCL shall, during and after drawdown, initiate appropriate mitigation measures to control long-term release of total suspended solids or if water quality deteriorates due to release of metals contaminated sediment.
7. TCL shall, upon completion of the draining of Garrow Lake in 2003, provide the NWB and INAC with a drawing showing the as-constructed outline of the Garrow Lake Dam and the final details of the proposed breach, erosion protection measures and in-stream work areas for review. The submission must be received by the NWB and INAC 90 days before the commencement of decommissioning activities for partial removal of Garrow Dam.
8. TCL shall, in accordance with *Part H, Item 6* of Licence NWB1POL0311, carry out an annual geotechnical inspection of the decommissioned Garrow Lake Dam.
9. TCL shall, in 2004, excavate the dam prior to the start of spring break-up and ensure that silt and loose fines be removed from the construction area prior to spring break-up.
10. TCL shall, in 2004, conduct any blasting in accordance with the “*Guidelines for the use of explosives in or near Canadian fisheries waters*”. If monitoring of peak pressures in Garrow Lake indicates that pressures are approaching 100 kPa, then blasting patterns and delays will be adjusted to reduce the peak pulse.
11. TCL shall, in 2004, remove all accumulations of sediment adjacent to the creek channel, to prevent deposition of sediment in Garrow Creek.
12. TCL shall, in 2004, excavate the slopes of the dam at 4H:1V or flatter to minimize erosion.
13. TCL shall, in 2004, place rock rip rap along the banks of the stream channel adjacent to the dam to prevent erosion and sedimentation.
14. TCL shall implement additional mitigation measures and contingency plans to protect fish habitat, as indicated in the “*Polaris Fish Habitat Restoration Plan*” as approved by DFO in accordance with its authorization.

Part B: Frustration Lake

GLL provided options for the reclamation of the jetty area at Frustration Lake in a letter dated October 15, 2002. Leaving the jetty in place and removing the pump house, pipes and other loose surface materials was cited as the best reclamation option. The jetty has remained stable during the last 22 years, however over the long term, incidental erosion through ice plucking or unusual storm events may temporarily mobilize material from the jetty, leading to gradual erosion and distribution of jetty materials over the bottom of Frustration Lake. However, the sediment release is expected to be gradual and not result in a significant increase in total suspended sediment or turbidity levels in Frustration Lake.

The following conditions will apply to decommissioning and reclamation work undertaken in and around Frustration Lake:

1. TCL shall include the Frustration Lake jetty as one of the structures to be inspected annually by a Geotechnical Engineer, as required under *Part H, Item 6* of Licence NWB1POL0311.
2. TCL shall, during the open water season, annually sample and test one (1) water sample in close proximity to the Jetty to ensure that CCME guidelines set for the protection of aquatic life for Total Suspended Solids (5 mg/L above suspended levels) and Turbidity (2 NTU above background) are not exceeded. The results and discussion of this sampling will be provided as an addendum to TCL's annual report for 2003 (*Part B, Item 6* of Licence NWB1POL0311).
3. TCL shall be prepared to undertake appropriate contingency measures to prevent elevated suspended sediment or turbidity in Frustration Lake as a result of erosion of the jetty. This may involve lowering the level of the jetty to approximately 2.5 to 3.0 m below average lake surface level.

Part C: Dock and Marine Foreshore Area

The preferred alternative for decommissioning the dock is to cut the sheet piles off 3.0 metres below the lowest low water level, as shown in the Westmar drawings, included in Appendix 12 of the D&R Plan (Sections- Sheet 3 Drawing 00282-01-104, dated May 17, 2002). This will involve about 92 m of dock face along the shoreline. The shoreline 300 m north and 600 m south of the dock will be contoured to a slope of about 17.5H : 1V, or less.

The following conditions will apply to decommissioning and reclamation work undertaken in and around the dock and marine foreshore area:

1. TCL shall include the dock and marine foreshore area as structures to be inspected annually by a Geotechnical Engineer, as required under *Part H, Item 6* of Licence NWB1POL0311.
2. TCL shall, once refrigerants have been removed from the freezing pipes, commence excavation of the surface layer of the dock and/or adjacent shoreline.
3. TCL shall ensure that the refrigerants will be obtained and properly stored and disposed of to prevent release into fish bearing waters.
4. TCL shall, during the removal of soils when the grade of the dock and shoreline areas is being established, conduct an evaluation for the presence of glycol-contaminated soils.
5. TCL shall establish a protocol for dealing with the removal and disposal of refrigerant contaminated materials. The protocol will be received by the NWB and INAC 60 days before the commencement of excavation.
6. TCL shall, as described in the D&R Plan, place metal and hydrocarbon contaminated soil into designated underground disposal areas, following approved protocols, to prevent release of deleterious substances into fish bearing waters.
7. TCL shall, following excavation operations, conduct soil sampling to ensure that metal contaminated soils are removed from the vicinity of the dock and marine foreshore area.
8. TCL shall place silt fences and a floating silt curtain along the perimeter of the marine foreshore area to minimize erosion and input of fine sediments into fish bearing waters.

9. TCL shall conduct daily water quality sampling for turbidity during the course of the work. It shall also ensure that TSS levels do not increase 10 mg/L above background levels. This information will be provided as an addendum to TCL's annual report for 2003 (*Part B, Item 6* of Licence NWB1POL0311).
10. TCL shall, when undertaking excavation work, implement appropriate mitigation measure to prevent sedimentation.
11. TCL shall maintain a soil berm between the ocean ice and upslope excavation operations to prevent sedimentation during construction. Prior to ice break-up, the outer soil berm will be removed and soil and other deleterious substances will be removed from the surface.
12. TCL shall grade the beach area slope (less than 17.5H:1V) as shown in the Westmar drawings, included in the Plan, to prevent erosion.
13. TCL shall attempt to ensure that the median grain size of the exposed beach material is approximately 10 mm in diameter.
14. TCL shall ensure that equipment working near the water is clean and free of hydrocarbon leaks and that appropriate spill containment equipment and materials are present in case of emergency.
15. TCL shall implement additional mitigation measures and contingency plans to protect fish habitat, as indicated in the "*Polaris Fish Habitat Restoration Plan*" as approved by DFO in accordance with its authorization.

Conclusion

As has been emphasized in INAC's Mine Reclamation Policy, TCL should strive to return the site as much as possible to its original state. During Phase I of the D&R Plan, TCL will conduct monitoring to ensure that mitigation measures to prevent environmental damage have been successfully implemented as is outlined in the Post-Closure Monitoring Plan, prepared by GLL (2002). This includes a contingency plan to address potential significant residual environmental effects associated with decommissioning operations. A summary of specific monitoring requirements was given in Table 1 of the Licence NWB1POL0311.

It should be mentioned here that the long term monitoring regime that comprises Phase II of the D&R Plan has not been approved by either NWB or INAC. The regulators will approach this outstanding issue when the active reclamation at Polaris draws to a close in late 2004.

Finally, this NWB-DIAND joint approval does not release TCL from the obligation to obtain other authorizations, permits, licences, or approvals as required generally under applicable territorial or federal legislation, and more specifically under the *Fisheries Act*, that may be required before undertaking any of the reclamation activities approved pursuant to this NWB-DIAND joint approval.

We trust that the above will satisfy your requirements. If you have any questions or require any additional information, please do not hesitate to contact the undersigned, at your convenience.

Sincerely,

Original signed by:

Philippe di Pizzo
Executive Director
Nunavut Water Board

c.c. Polaris Distribution List

Original signed by:

Carl McLean
Manager, Land Administration
Indian and Northern Affairs Canada

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