



Fisheries and Oceans
Canada

Pêches et Océans
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May 31, 2005

Your file *Votre référence*

NWB1JER0410/TR/D15

Our file *Notre référence*

NU-00-0068

Ms. Phyllis Beaulieu
Manager of Licensing
Nunavut Water Board
P.O. Box 119
Gjoa Haven, NU X0B 1J0

Via Electronic Mail
licensing@nwb.nunavut.ca

Dear Ms. Beaulieu:

Subject: Jericho Diamond Mine – Mine Plan

Fisheries and Oceans Canada (DFO) would like to thank the Nunavut Water Board for the opportunity to review the mine plan for the Jericho Diamond mine.

Based on a review of the Mine Plan, as submitted by Tahera Diamond Corporation (TDC), dated February 23 2005, DFO offers the following comments/recommendations related to the protection of fish and fish habitat:

General Comments:

- The detonation of explosives in or adjacent to fish habitat has been demonstrated to cause disturbance, injury and/or death to fish, due to post-detonation compressive shock waves characterized by a rapid rise to a high peak pressure followed by a rapid decay to below ambient hydrostatic pressure (referred to as Instantaneous Pressure Change (IPC)). The latter pressure deficit causes most impacts on fish, particularly to the swimbladder of finfish, such as those found in Carat Lake. Studies show that an overpressure in excess of 100 kPa will result in these effects. The degree of damage is related to type of explosive, size and pattern of the charge(s), method of detonation, distance from the point of detonation, water depth, and species, size and life stage of fish. More recent study has shown that ice conditions create even more unpredictable conditions, and as a result, a threshold of 50 kPa has been adopted in Arctic environments. Peak Particle Velocity (PPV) refers to the vibrations from the detonation of explosives may also cause damage to incubating eggs.

Specific Comments:

- Section 7. 2 refer to Blast design, outlining the size and patterns. The impacts associated with blasting were discussed with TDC during the regulatory review. Mitigation measures, involving size, pattern, distance and timing were developed,

with the intent of ensuring no impacts to fish species in Carat Lake and Stream C1. This was outlined in the Memorandum entitled “Response to DFO concerns – Blasting Analysis”, dated November 22, 2004 from Mainstream Aquatics, as part of the NWB submission and referenced in the *Fisheries Act* Authorization. These measures need to be incorporated into the Mine plan and any subsequent blast design reports, to ensure impacts associated with the use of explosives is not in contravention of section 32 of the *Fisheries Act*, which states that:

“No person shall destroy fish by any means other than fishing except as authorized by the Minister or under regulations made by the Governor in Council under this Act.”

- Section 7.5 refers to materials and water management. The re-direction of water from Stream C1 will reduce flows, which will impact fish habitat. Provided water quality meets criteria outlined in the water license, opportunities to maintain flows in Stream C1 (or the subsequent diversion channel) should be strongly considered.

Please be advised that a contravention of subsection 35(1) of the *Fisheries Act* could result from any change to the proposed plan or from failure to properly implement the conditions of the *Fisheries Act* Authorization. If these plans have changed, we should be consulted to determine if further review is required.

If there are any questions concerning the above, or if my understanding of the proposal is either incorrect, incomplete, or if there are changes to the proposed works or undertakings, please contact me directly by telephone at 867-979-8011, or by fax at 867-979-8039.

Yours sincerely,

Original Signed By:

Derrick Moggy
Habitat Management Biologist
Fisheries and Oceans Canada – Eastern Arctic Area

c.c.: Greg Missal – Benachee Resources Inc./Tahera Diamond Corporation