Memorandum

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Project:	Jericho Project Advisory	**File No.:**	04006
From:	Rick Pattenden	**Date:**	22 November 2004
To:	Derrick Moggy, Fisheries and Oceans Canada	**Page:**	1 of 2
cc:	Dan Johnson and Greg Missal, Tahera Diamond Corporation		
Re:	Response to DFO – Monitoring the Stream C1 Fish Community.		

In a letter dated 4 November 2004, DFO outlined concerns with the Jericho Diamond Project that remained following NWB technical session held on 28 October 2004. This was followed by discussions on 10 and 12 November between Tahera Diamond Corporation, its fisheries consultant, and DFO. The intent of the discussions was to provide information to DFO in order to address the concerns or come to an agreement on how to resolve remaining issues. This memo provides information regarding monitoring the fish community in Stream C1.

DFO Statement

Stream C1

3. Water flow in Stream C1 during operation – As a result of water quality from the pit and surrounding waste rock and ore piles which is not likely to meet Canadian Council of Ministers of the Environment (CCME) guidelines, a portion of the watershed will be redirected to the pit through the construction of diversion ditches and subsequently sent to the PKCA for treatment. Furthermore, should Total Suspended Solids (TSS) become a water quality issue, then Ponds A, B, and C will be constructed and water quality will be monitored. In the event, water quality in the ponds meets appropriate water quality guidelines; the water in the ponds will be directed to Stream C1 or Carat Lake via a constructed ditch. If water quality does not meet appropriate water quality guidelines, it will be diverted to the PKCA. While DFO supports a centralized location for water treatment, we would prefer that any water not requiring treatment be directed back to Stream C1 to maintain normal flows to the extent possible. As a result, it is not clear whether the ponds can be constructed at the beginning of operations to ensure that any water meeting appropriate water quality guidelines can be directed to Stream C1 to maintain flows. Although sufficient data was not collected in Stream C1 prior to the construction of the berm across the channel, it is predicted that the change in water flows will not be significantly different then existing conditions. However, the section of Stream C1 where the water reconvenes, upstream of the mouth, is still the same as prior to the berm construction. Therefore the change in fisheries needs to be monitored to verify TDC's predictions, along with the provision of an adaptive management plan to ensure no further impacts to fish habitat.

Next Steps: Please provide the rationale for not constructing Ponds A, B and C at the beginning of operations to ensure water flows in Stream C1 will be maintained to the extent possible. **Furthermore, please provide an outline of the monitoring proposed at the mouth of Stream C1 and upstream, to ensure changes in fish communities and the use of fish habitat to support TDC's predictions.**

Tahera's Response

Tahera agrees to monitor Stream C1 from its outlet in Carat Lake upstream to the upper end of the fish-friendly section of the diversion channel. The purpose of Stream C1 monitoring program will be to ascertain whether Project activities affect habitat availability and fish use of the stream. Monitoring will compliment current tasks being completed as part of the Aquatic Effects Monitoring Program.

Parameters measured will include discharge, temperature, habitat characteristics, fish abundance, fish distribution, and fish population characteristics. The latter will include measurement of fish species composition and size distribution.

Discharge

Discharge will be measured using the protocol described in Appendix X – SRK Memorandum W. Stream water level will be calibrated to discharge to develop a stage discharge curve. Monitoring will be continuous during the open water period commencing in 2005. Prior to mine development, the station will be located in Stream C1 near the proposed location of the diversion outlet (Pond 2). The station will be located in Pond 2 of the Stream C1 diversion channel once it is operational (Year 2).

Temperature

Water temperature will be monitored continuously during the open water period on an annual basis commencing in 2005. An Onset Optic StowAway Temp TM thermograph will be deployed in the lower section of Stream C1. The thermograph will record water temperatures at hourly intervals.

Habitat Characteristics

Detailed measurements of the physical characteristics of Stream C1 were collected in 1999 (see RLL 1999 *in* NWB Appendix BB Supplemental Information to the Final EIS Oct 2003). Similar methodologies will be used to reassess the physical characteristics of the lower section of Stream C1 in 2005. This will involve detailed surveys of channel morphology, mapping of fish habitat types, and quantifying the characteristics of those habitats (e.g., length, width, depth, water velocity). These pre-development data will be compared to data collected during mine operation to ascertain whether there is a change in habitat characteristics. In addition, habitat characteristics of the fish-friendly section of the diversion channel will be quantified so that potential changes in the channel features can be monitored. Habitat characteristics will be quantified every third year during the operation of the mine.

Fish Community Characteristics

Fish community characteristics will be monitored annually during spring and summer. The purpose of this component will be to ascertain fish use of the stream and to characterize the community. Spring and summer sampling will encompass two major components of the fish community life strategies: spring spawning and summer rearing. The primary method used will be backpack electrofishing.

The data will be used to ascertain the upper extent of fish distribution in the stream and diversion channel, as well as the abundance and size distribution of fish populations that use the system. Estimates of fish density will be developed using the removal-depletion method described by VanDeventer and Platts (1983).

Literature Cited

R.L. & L. Environmental Services Ltd. 2000. Jericho Diamond Project Aquatic Studies Program (1999). Report prepared for Tahera Corporation. R.L. & L. Report No. 738F: 93 pp. + 5 appendices.

VanDeventer, J.S. and W.S. Platts. 1983. Sampling and estimating fish populations from streams. Transactions of the North American Wildlife and Natural Resources Conference 48: 349-354.