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 3
cc:	Dan Johnson and Greg Missal, Tahera Diamond Corporation		
Re:	Response to DFO – Long Lake Fish Salvage Protocol.		

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 the proposed Long lake Fish Salvage Program.

DFO Statement

Fish Salvage Program:

1. Any project that occurs in fish bearing waters will require fish be salvaged and moved to an appropriate area prior to construction as a condition of a s.35 Fisheries Act Authorization. With this in mind, and seeking the opportunity to test some basic assumptions about lake productivity in the North, the General Fish-Out Protocol for Lakes to be Lost due to Mining Development was developed. TDC has indicated they will modify this protocol to the extent necessary and implement it prior to the construction of the Processed Kimberlite Containment Area (PKCA) using Long Lake, which is fish-bearing.

Next Steps: Please provide an updated/modified General Fish-Out Protocol for Lakes to be lost due to Mining Development for fish salvage in constructing the Long Lake PKCA. Furthermore, please identify what consultation/work has been done by TDC to accommodate the needs/desires by the local communities in terms of the use of the fish salvaged from Long Lake.

Response

Tahera agreed to provide an updated protocol and to solicit local community input.

Fish Salvage Protocol

Introduction

The following describes the fish salvage protocol for Long Lake (Program), which will be completed as part of the Jericho Diamond Project prior to construction of the Processed Kimberlite Containment Area. The Program will be used to capture, process, and relocate slimy sculpin and burbot populations that are present in Long Lake and a small unnamed pond. This protocol follows the Fisheries and Oceans Canada "Draft general fish-out protocol for lakes lost due to mining development".

The goals of the Program as specified by DFO fish salvage protocol document are to:

1. Avoid the wasting of fish.
2. Determine the size, distribution, and density of fish in the lake.
3. Test lake production models that predict fish population density and production.

The Program will be designed to achieve these goals by minimizing fish mortality to the greatest extent possible and by collecting the appropriate data.

The protocol specified by DFO consists of three components as follows:

1. Fish Community
2. Aquatic Biology/Physical Limnology
3. Habitat Inventory

The Program will collect data for Point #1. Data collected during previous investigations in the Project area (RL&L 2000a, 200b) will be used to address Points #2 and 3.

Design

Fish collections will occur in 2005 immediately preceding and during the dewatering of Long Lake. The objective will be to achieve total removal of fish populations that reside in Long Lake and a small unnamed pond. Multiple fish capture techniques will be employed that include, trap net, small mesh gill net, minnow trap, and backpack electrofisher.

DFO recommends use of three fish density techniques: mark-recapture estimate, depletion-removal estimate, and total removal. The Program will use the latter two techniques. Use of the mark-recapture technique will not be attempted because very low numbers of fish and a low catchability severely limit the efficacy of this technique (Ricker 1975; Pattenden 2004).

The depletion-removal population estimate method is based on the assumption that fishing effort is sufficient to reduce the size of a closed population. In theory, a reduction in catch rate (CPUE) will be proportional to the number of fish present in the waterbody. To meet this assumption, sampling effort should be kept constant during the Program.

Total removal is the preferred technique to ascertain fish density because it provides a complete count of fish in a waterbody. The deletion-removal technique also will be employed as a contingency in the event that total removal is not possible.

Methods

Several methods will be used in a variety of habitats to maximize the probability of fish capture. Trap net, gill net, minnow trap, and backpack electrofisher locations will be recorded on a map. Date, time, water depth will be recorded at the start and finish of the sample event. All passive sampling sites (trap net, gill net, minnow trap, gill net) will be checked at least once a day.

Small mesh trap nets will be used to collect burbot and larger sculpins. Each trap consists of three metal hoops welded to form a frame totalling 60 cm in height. The hoop size diminishes from 96 cm at the base to 66 cm at the top. The hoops will be covered with 1.25 cm stretched mesh nylon netting, closed over the base with a drawstring. A throat in one side of the trap measures approximately 50 cm diameter, tapering to an opening inside the trap of 25 cm. Baited traps will be deployed overnight in a variety of habitats including deep and shallow water.

Gill nets sets consisting of 1.3 and 2.5 cm stretched mesh will be used to capture larger fish. Nets will be checked hourly and periodically moved so that all available habitats are sampled. Both mesh-sizes will be fished at all times to ensure consistency of effort.

Baited minnow traps will be set in shallow water habitats to collect smaller-sized fish. Backpack electrofisher also will be employed in shallow water habitats.

Biological Data Collection

Fish will be assigned a unique fish number, identified to species, weighed (0.2 g), and measured for total length (1 mm). Sex, maturity, and reproductive status also will be recorded when appropriate. Aging structures (otoliths) will be taken from fish that succumb during sampling.

Reporting

The data collected during the Program will be presented in a report. The report will include presentation and discussion of the data in relation to the objectives of the Program. In addition to the report, the following will be provided:

- Photocopies of all field data/notes
- Copies of photographs
- An electronic database in Microsoft Access of collected data.

Literature Cited

Pattenden, R. 2004. Use of fish population characteristics as a monitoring tool in a large river. Alberta Society of Professional Biologists, 2004 Conference Proceedings - Prediction to Practice: Environmental Assessment Follow-up. 5 pp.

Ricker, W.E. 1975. Computation and interpretation of biological statistics of fish populations. Bulletin of the Fisheries Research Board of Canada. Bulletin 191. 382 pp.

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