



November 13, 2012

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Mackenzie Valley Environmental Impact Review Board  
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Dear Mr. Hubert:

**Technical Report Responses – Deninu Kue First Nation**

De Beers is pleased to provide the Mackenzie Valley Environmental Review Board with Responses to the Technical Submission from the Deninu Kue First Nation dated October 22, 2012.

Should you have any questions regarding this submission, please contact our office.

Regards,

Veronica Chisholm  
Permitting Manager

Attachment

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DE BEERS

CANADA

GAHCHO KUÉ PROJECT

**Deninu Kue First Nation**  
**Technical Report Responses**

**November**  
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# **1 INTRODUCTION**

On October 22, 2012 Deninu Kue First Nation (DKFN) submitted their technical report to the Mackenzie Valley Environmental Impact Review Board (MVEIRB) for the De Beers Canada Inc. (De Beers) proposed Gahcho Kué Project (Project). This report provides responses to those recommendations outlined in the DKFN technical report (DKFN 2012).

## **2 DENINU K'UE FIRST NATION RECOMMENDATION AND RESPONSE**

### **2.1 FISH POPULATION IN KENNADY LAKE AND HYDORACOUSTIC SURVEYS**

#### **2.1.1 Recommendation 1**

We therefore requested the following additional baseline work to be completed in 2012 in an information request:

- **Timing Recommendation:** The new moon phase (which ensures a dark night) and a long dark period from 9:35PM to 5:49AM and from 8:00PM to 7:05AM in the Gahcho Kue Project area can be expected in the time periods around August 17, 2012 and September 15, 2012. We recommend carrying out the surveys during either one of these periods.
- **Survey Frequency Recommendation:** We recommend carrying out at least three night time surveys to reduce the confidence bounds of the calculated fish estimates.
- **Data Analysis Recommendation:** De Beers mentioned that they had difficulties to analyze the number of hydroacoustic targets <18cm length because of signal to noise ratios. We therefore recommend to send the hydroacoustic raw data to Don Degan at Aquacoustics Inc. (<http://www.aquacoustics.com/>) to be analyzed using his extraordinary experience+D132 with hydroacoustic data and the "Echoview" software that specifically sorts targets from noise.

In summary, we conclude that no solid estimate for the whole fish population and particularly the fish population <180 mm in Kennady Lake has been carried out up to date and that DeBeers Canada should provide a solid fish population estimate for Kennady Lake to provide adequate base line information.

#### **2.1.2 Response**

As stated in the response to DKFN Round 2 Information Request DKFN 4 (De Beers 2012a), De Beers is confident with the reported abundance of fish (larger than 7 cm) in Kennady Lake for the environmental impact assessment for the Project. This is based on side- and down-looking sonar, in conjunction with other methods of baseline sampling. As noted, in Annex J of the 2010 EIS (De Beers 2010), De Beers has not relied on one method to assess the fish population and community structure in Kennady Lake, but rather numerous

baseline sampling efforts employed since 1996. Specifically, the baseline sampling efforts to determine estimates of fish population and relative abundance of species included the hydroacoustic, mark-recapture/fish tagging studies, as well as Catch-Per-Unit Effort (CPUE) data obtained from gill netting, electrofishing, angling, and minnow trapping (Table 2.1-1). For example, since 1996, over 1,000 hours of gill netting, 300 hours of electrofishing, 550 hours of angling, and 1,200 hours of minnow trapping have been conducted in Kennady Lake. These baseline studies are independent of those obtained from the hydroacoustic work and provide additional information on fish populations.

**Table 2.1-1 Seasonal Fish Sampling Methods in Kennady Lake (Areas 2 to 8) between 1996 and 2010**

Year	Season			
	Winter	Spring	Summer	Fall
2010	-	-	gill netting, hydroacoustic survey	-
2005	-	fish fence	backpack electrofishing	-
2004	angling	-	angling, backpack electrofishing, boat electrofishing, gill netting, minnow trapping	angling, backpack electrofishing, gill netting
1999	-	-	gill netting, minnow trapping	-
1996	-	-	angling, gill netting, minnow trapping	angling, gill netting

Note: - not sampled.

Based on the collective sampling effort, including the hydroacoustic survey, the total fish population in Kennady Lake was estimated to be approximately 19,000 fish (larger than 7 cm). Based on the size of the lake, this estimate is also consistent with fish abundances reported at waterbodies in the central Canadian Arctic where fish-outs counted actual fish numbers for a given area or volume of water (e.g., McEchern et al. 2003; Mainstream 2006; Azimuth 2009). Similarly, for the Meadowbank Gold Project, population estimates generated in the first phase of the fish-out were used to validate actual abundance data in the fish-out of the lake (Azimuth 2009). As a result, De Beers is confident that the estimate of the fish population in Kennady Lake is realistic and appropriate for the purposes of the impact assessment; in addition, the proposed fish-out program will validate the fish population estimate, as has been done with other recent mining developments in the North.

Nevertheless, the DKFN recommendation for additional studies on fish population estimation has been captured in Section 9 of the Gahcho Kué Draft Fish-Out Plan, which was submitted to the MVEIRB registry October 4, 2012 (De Beers 2012b), as well as in Section 7 of the 2012 Draft No Net Loss Plan (NNLP), which was submitted to the MVEIRB registry November 13, 2012 (Golder 2012). One of the research options proposed in the Draft NNLP is for

De Beers to support research that contrasts and validates multiple methods of fish population estimation. Since a fish-out is proposed for Areas 2 to 7 of Kennady Lake, there is an opportunity to learn about northern lakes and to validate population estimation methods. De Beers is currently considering this option and will refine research projects with direction from DFO following the Environmental Impact Review phase of the Project.

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### 3 REFERENCES

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McEchern, L.J., M. G. Kennedy, and E. Madsen. 2003. Fish Salvage Activities Related to Diamond Mine Construction in the NWT. In: Mining and The Environment - Proceedings of the 28th Annual Meeting of the Canadian Land Reclamation Association - May 2003, Sudbury, Ontario. 1121 p

## **4 ACRONYMS AND ABBREVIATIONS**

CPUE	Catch-Per-Unit Effort
De Beers	De Beers Canada Inc.
DKFN	Deninu Kue First Nation
MVEIRB	Mackenzie Valley Environmental Impact Review Board
NNLP	No Net Loss Plan
Project	Gahcho Kué Project