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Prairie & Northern Region  
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**RE: Environment Canada's Closing Argument  
De Beers Canada Inc. - Gahcho Kué Diamond Mine Project**

Please find below Environment Canada's (EC) closing comments regarding the Environmental Impact Review (EIR) for the Gahcho Kué Diamond Mine Project proposed by De Beers Canada Incorporated (the Proponent).

Following the public hearings held from November 30 to December 7, 2012, parties to the EIR were given the opportunity to submit in writing closing comments and additional clarifications, as well as any outstanding responses to questions raised during the hearings.

EC participated in the review of the proposed Gahcho Kué Diamond Mine Project in order to provide specialist expertise within our mandate to the Gahcho Kué Panel. EC will not be issuing permits or authorizations for the proposed Project; however, the Department has regulatory duties and responsibilities under applicable legislation as follows: *Department of the Environment Act*, *Canadian Environmental Protection Act, 1999*, the pollution prevention provisions of the *Fisheries Act*, the *Migratory Birds Convention Act*, and the *Species at Risk Act* (SARA). Various regulations, policies and guidelines stem from these statutes.

EC provided ten main recommendations in its Technical Report dated October 22, 2012. Eight of the ten recommendations were accepted by De Beers Canada Inc. (the Proponent), which were committed to before the hearings were held. EC would like to reinforce the recommendations below related to the freshwater environment.

**Issue EC-3.2: Water and Sediment Quality Objectives**

EC recommended that for substances predicted to be above the Aquatic Effects Monitoring Program (AEMP) Benchmarks, the 95<sup>th</sup> percentile baseline concentrations be used as the benchmark, as opposed to the maximum value as proposed by the Proponent. The 95<sup>th</sup> percentile was recommended to guard against the possibility of

outliers or anomalous values being used to set water quality objectives (WQO) which may not be representative of site specific conditions. For example, total phosphorus concentrations in local lakes range from <1 to 120 ug/L. Total phosphorus concentrations in Kennady Lake (between 1995-2005) have ranged from 3 to 30 ug/L, with a median concentration of 6 ug/L. The maximum baseline value from regional lakes (120 ug/L) is considerably higher than the range of values reported for Kennady Lake and may not be an appropriate WQO for that system.

Both EC and Aboriginal Affairs and Northern Development Canada (AANDC) seek to ensure protective water quality objectives are set. EC has recommended using the 95<sup>th</sup> percentile rather than the maximum baseline value to set WQOs. AANDC recommends using specific baseline values, rather than regional baseline values. Both approaches are aimed at reducing the potential influence of anomalous baseline values and achieving relevant site-specific WQOs.

Furthermore, EC also recommended that monitoring to track water quality changes in Kennedy Lake during closure should include measurements of deeper areas and water column profiles, as well as the waters overlying the mine pits. Assessment of the lake water quality (suitability for reconnection) should be based on individual maxima rather than whole lake mixed averages.

### **Issue EC-3.3: Water Quality During Dewatering and at Closure, Treatment Contingency Planning**

EC recommended that the Proponent plan for the need to actively minimize levels of contaminants in the system. A treatment contingency plan which identifies feasible treatment methods for the operational and closure stages should be developed. EC also noted that dewatering and closure activities will be subject to the pollution prevention provisions of the Fisheries Act. The Proponent has committed to this recommendation. Furthermore, EC believes that the focus should be on attaining the best possible water quality in the water management pond, and that improvements to water quality could be achieved through implementation of treatment of process water and other in-lake areas that represent sources of contaminants. This could include treatment discharges to Areas 2, 3, and 5 of Kennady Lake to minimize closure liabilities and maintain improved conditions in remnant areas of the lake during operations.

Throughout this EIR process, EC questioned the Proponent on their approach to water management and treatment at the site. Examples of this included questioning during the Technical Session held May 23, 2012 (refer to page 92 of the transcripts), DFO/EC IR#66, and EC-3.3 recommendation of the Technical Report (referred to above), which specifically recommended that the Proponent develop a treatment contingency plan which identifies feasible treatment methods for operational and closure stages. In their response, the Proponent committed to continuing to develop contingency plans for the operational and closure stages such that they could be implemented, should they be needed. EC's recommendations on this topic are designed to address protection of water quality by ensuring that any potential project-related effects can be detected through monitoring and mitigated through adaptive management.



### **Issue EC-3.4: Mercury Methylation Due to Flooding of Shoreline Areas (i.e. Lakes D2, D3, and E1) and Kennady Lake**

EC recommended that the Proponent identify what specific management response actions would be feasible in the event mercury concentrations approach benchmarks or predicted levels in water, fish, and sediments. EC acknowledges that De Beers has committed to looking at mercury in fish tissue; however, not in water and sediments. EC recommends the Proponent also monitor for mercury increases in water and sediments as an earlier indicator for implementing mitigation measures before mercury levels in fish get too high.

Monitoring methyl mercury concentrations in the water and sediment of flooded lakes would enable the Proponent to more quickly establish whether or not the inundated soils were contributing methyl mercury to the system and allow for earlier mitigation. Methyl mercury concentrations in water have been shown to increase within weeks of flooding, whereas fish mercury concentrations may respond more slowly. The proposed AEMP benchmark of 90 ng/L in water relates to the maximum regional baseline concentration. One approach for monitoring mercury in lakes subject to flooding (or rewatering) would be to establish baseline concentrations of methyl mercury in water, sediment and fish for comparison to post-flooding concentrations. Concurrent monitoring of suitable reference systems would also be useful.

In addition to informing management responses, monitoring environmental mercury concentrations over time will provide information that can be compared and validated to predictions and also be used to refine predictions for closure rewatering of Kennady Lake.

#### **Area 7:**

During Round 2 IRs (EC-02), EC requested that the Proponent provide a rationale for dewatering Area 7 that included consideration of the benefits of preserving that basin of the lake as a viable ecosystem. Within the Proponent's response, they did commit to explore opportunities to restore Area 7 sooner by minimizing drawdown during construction and/or supplemental refilling of Area 7 from water sources within, and outside of, the controlled area. In addition to these options, EC also supports DFO's recommendation to further evaluate options which would allow Area 7 to be retained.

#### **Mixing Zone and Compliance at End of Pipe:**

The Proponent has proposed a 200m mixing zone in Lake 11 based on modeled data, which predicted that WQOs would be met at this distance from the effluent discharge. EC had initial discussions with the Proponent with respect to the general approach under the AEMP design on Nov. 2<sup>nd</sup>, 2012; however, further discussions related to AEMP with respect to the establishment and extent of a proposed mixing zone needs to take place. Furthermore, EC evaluates Subsection 36(3) of the *Fisheries Act* compliance at the end of pipe (i.e. effluent outfall) and does not take into account the mixing zone within the receiving environment. In addition, EC also recommended at closure, modeling predictions for lake quality be supplemented with bioassay testing (i.e. chronic and acute) prior to re-connection of Kennady Lake with Area 8. The Proponent committed to this recommendation.

## **Ni Hadi Yati – A Commitment Between De Beers & Aboriginal Parties:**

EC was pleased to listen to the presentation on the proposed Ni Hadi Yati by De Beers, Lutsel K'e Dene First Nation, Yellowknives Dene First Nation, Deninu Kue First Nation and the Tlicho Government, during the EIR public hearing. The initiative taken by these parties to develop a mutually acceptable framework for Ni Hadi Yati is commendable.

Wherever possible, EC prefers that mitigation, monitoring, and environmental management measures be incorporated into regulatory authorizations, permits and licences. Given the nature of the proposed arrangement between De Beers and the Aboriginal parties, EC submits that the development of the Ni Hadi Yati be captured as a commitment between the Proponent and the Aboriginal parties who wish to participate.

EC is of the understanding that Ni Hadi Yati is seeking to align its process with the responsibilities of the existing regulatory authorities, and would be requesting government departments to review relevant materials, attend meetings, and provide upon request, peer review of materials. Subsequently, the Aboriginal groups may each use the technical review materials and learnings to request potential changes to the monitoring programs and management actions from De Beers directly and/or through regulatory processes. Depending on available resources, and as long as duplication with other regulatory mechanisms are avoided, EC commits to continue in discussions regarding its potential role in the Ni Hadi Yati.

In closing, as stated at the public hearing, EC maintains its view with respect to the need for a precautionary approach and a rigorous and comprehensive monitoring program that can address gaps in baseline knowledge, detect project-related impacts in the face of substantial natural variation and inform adaptive management to minimize further impacts as the project proceeds.

EC would like to thank the Panel for giving the Department the opportunity to provide these closing arguments and EC will continue its participation in this process moving forward. If you wish clarification on any aspect of this closing argument submission, please contact Lisa Lowman at (867) 669-4721 or via email at [Lisa.Lowman@ec.gc.ca](mailto:Lisa.Lowman@ec.gc.ca).

Sincerely,



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