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Canada Canada

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June 10, 2011

Our File: 4702 025 050 010

Nunavut Water Board  
P.O. Box 119,  
Gjoa Haven, NT X0B 1J0

Attention: Phyllis Beaulieu

By email

**Re: Shear Diamonds Ltd. – Renewal of Water License 2AM-JER0410 – Review  
of Application and Plans**

Environment Canada (EC) staff have reviewed the above application and updated plans which fall under our purview. Environment Canada's contribution to your request for specialist advice is based primarily on EC's mandated responsibilities under Section 36(3) of the *Fisheries Act*, the *Canadian Environmental Protection Act*, the *Species at Risk Act* and the *Migratory Birds Convention Act*.

Prior to the NWB's May 11, 2011 correspondence which requested interested parties complete a thorough technical assessment of the plans associated with this renewal, EC had already undertaken such a review for most of the plans related to Shear's application. As such, EC's April 29, 2011 submission serves as a basis for the majority of our comments related to this renewal. For your convenience, our April 29 submission has been attached for your records. The additional review period provided us an opportunity to complete technical reviews for the plans not covered in our last review, including the Contingency Management Plan, Emergency Preparedness and Response Plan for Dam Emergencies, Operations Maintenance and Surveillance Manual PKCA Dams and the 2011 Pit Dewatering Addendum to Processed Kimberlite Management Plan. Similar to our last correspondence, EC was very pleased with the detail and clarity presented in the submissions, and commends the proponent for a thorough submission. Specific comments on the content of the plans are provided in the attached table.

EC anticipates that any new information affecting the plans and proposed activities would be provided for review.

Please do not hesitate to contact me at (867) 975-4639 with any questions or comments regarding the foregoing.

Yours truly,

Canada

Allison Dunn

cc: Carey Ogilvie (Head, EA-North, EPOD)  
Anne Wilson (Water Pollution Specialist, EPOD)

Table 1: Recommendations related to various plans associated with Shear Diamonds water license renewal application for its Jericho Project

Reference	Comment	Recommendation/Request
<b>Contingency Management Plan</b>		
Table 3, Page 9	The listed number provided for EC in this Table (i.e., 867-766-3737) is no longer in service. Please revise the table with the following number: 867-669-4730.	Minor edit flagged for next version.
<b>Emergency Preparedness and Emergency Response Plan for Dam Emergencies</b>		
Page A10, 12.1 External Emergency Contact Numbers  Page A17, Imminent Flood Emergency	This listed number provided for EC in these two sections (i.e., 867-766-3737) is no longer in service. Please revise this table with the following number: 867-669-4730.	Minor edit flagged for next version.
<b>2011 Pit Dewatering Addendum to Processed Kimberlite Management Plan</b>		
Section 2.3, Open Pit	EC noted that Shear took 16 water samples from three locations in the pit ranging from 1.5 m to 17.5 m below the ice surface to characterize its water quality. Considering the depth of the pit is 85 m and the potential for pit water contact with connate water, EC is concerned that the water quality of the pit may not be uniform across depth.	EC recommends Shear sample the pit periodically for the full suite of water quality parameters while the pit is being dewatered to ensure water quality is not deteriorating with increasing depth.
Section 5.3, On-site Analysis	EC notes that Shear plans to undertake its own on-site nitrate and total suspended solids (TSS) testing of PKCA water after purchase of equipment capable of measuring these parameters.	EC would like details regarding the specifications of the purchased instruments, including the manufacturer and make of the instruments, that will be used for on-site monitoring of nitrate and TSS. EC is especially interested in the instrument that will be used to measure TSS since we are not familiar with technology that can do accurate field measurements of TSS.  Further, EC understands that such equipment will likely require

Reference	Comment	Recommendation/Request
		calibration to ensure the instruments are providing accurate estimates of TSS and nitrate. To that end, EC recommends this Plan be revised to include QA/QC procedures for instrument maintenance, including details on how often the instruments will be calibrated and how calibration records will be maintained.
<b>Operation, Maintenance and Surveillance manual – PKCA Dams</b>		
Section 2.3, General Flood Operation Procedures	This part of the Plan outlines contingencies for ensuring the PKMP does not exceed its 1 m freeboard limit. This will be achieved by discharging water into stream C3, including exceeding the maximum allowable discharge rate if necessary. However, there is no mention in the contingency plan of how Shear will ensure it respects the discharge limits required by its water license	EC would like clarification on how Shear will ensure discharge limits will be respected during flood conditions.
<b>Water license condition</b>		
Part G, 7		In addition to undertaking acute toxicity testing once prior to discharge and monthly thereafter until freeze up on rainbow trout and <i>Daphnia magna</i> , EC recommends the following additional chronic tests be performed on discharge water from the PKCA: 1) Chronic toxicity to the cladoceran crustacean <i>Ceriodaphnia dubia</i> (as per Environment Canada's Environmental Protection Series Biological Test method EPS/1/RM/21); and 2) Chronic toxicity to the alga <i>Pseudokirchneriella subcapitata</i> (as per Environment Canada's Environmental Protection Series Biological Test method EPS/1/RM/25). These additional tests are recommended to provide indication

Reference	Comment	Recommendation/Request
		of the likelihood and extent of sublethal effects in the receiving environment, and to be consistent with water license requirements for diamond mines in the NWT.