ENVIRONMENT CANADA'S

Written Intervention for the

Nunavut Water Board Hearing on

Type A Water Licence Renewal Application 2AM-JER0410 for

Shear Diamond's Jericho Diamond Mine

November 30 – December 1, 2011
Kugluktuk, NU

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NON-TECHNICAL EXECUTIVE SUMMARY

Contributing to the realization of sustainable development in Canada's North is a priority for Environment Canada (EC). The Department focuses on the provision of scientific expertise for incorporation into decisions on developments, such that all parties working together can ensure that there is minimal impact on the natural environment, and that ecosystem integrity is maintained and preserved. Toward these goals, the Department has reviewed the Type A water licence application and associated supporting Plans submitted by Shear Diamonds for the Jericho Diamond Mine to the Nunavut Water Board (NWB).

EC's submission focuses on issues related to water quality, aquatic effects monitoring, management of contaminated soils, and closure and reclamation, that fall within EC's mandated responsibilities.

With respect to water quality, EC recommends lowering the discharge limits for nitrate and nitrite. In addition, EC recommends Total Extractable Hydrocarbons be regulated instead of Oil and Grease, because of past discharges of petroleum hydrocarbon-contaminated water to the Processed Kimberlite Containment Area (PKCA). Lastly, instead of setting discharge criteria for Total Dissolved Solids and chloride, EC recommends these be monitored until meaningful limits can be set, with work on this to be done during this licence term.

To identify potential harm to plants and animals in the water bodies, EC recommends that routine algal and water flea chronic toxicity testing of the effluent be added as a condition of Shear's renewed licence.

EC's review of Shear's Aquatic Effects Monitoring Plan (AEMP) determined there are gaps related to the plan, and Shear is working on these. In light of these ongoing efforts, EC recommends Shear submit a revised AEMP within 2 years of licence renewal.

To validate Shear's conclusion that aquatic thresholds will be met in Lake C3 given the expected effluent quality discharging from the PKCA, EC recommends a plume delineation study be undertaken in the discharge season which finds out where the effluent goes once it is released.

EC reviewed Shear's plans for the management and treatment of contaminated soils and identified some gaps in the information. EC recommends Shear provide a revised Plan that clearly lays out the management and treatment of hydrocarbon-contaminated soil, within 1 year of licence renewal.

With respect to Shear's Closure and Reclamation Plan, EC recommends Shear remodel how the pit will fill up, and what the groundwater will do. Remodeling should be done within a reasonable time, and should include pit water quality and overall site water balance and water quality.

Finally, considering the many changes anticipated for the renewed water licence, EC would appreciate if the NWB circulated a draft version of the new license for intervenor review prior to finalizing the terms and conditions of the license.

Environment Canada would like to thank the NWB for the opportunity to comment on Shear Diamond's water license renewal application and we hope that these technical comments and recommendations are useful to the Board in their decision making process. Environment Canada respectfully requests the opportunity to submit additional written comments after the public hearings to address any new information brought forward at the hearings.

SECTION 1.0: INTRODUCTION

Contributing to the realization of sustainable development in Canada's North is a priority for Environment Canada (EC). The Department focuses on the provision of scientific expertise for incorporation into decisions on developments, such that all parties working together can ensure that there is minimal impact on the natural environment, and that ecosystem integrity is maintained and preserved. Toward these goals, the Department has reviewed the Type A water licence application and associated supporting Plans submitted by Shear Diamonds for the Jericho Diamond Mine to the Nunavut Water Board (NWB).

Environment Canada's submission focuses on issues related to the environmental effects on or related to water and waste management, modifications, contingency planning, general and aquatic effects monitoring and closure and reclamation.

The document is divided into four main sections. Section One provides an overview of EC's mandate and regulatory responsibilities. Section Two provides an overview of the Project and the environmental assessment process to date. Section Three provides EC's initial technical comments and recommendations to the Proponent in response to the water license renewal application. Finally, a summary of the submission is provided in Section Four.

1.1 Mandate of Environment Canada

The general mandate of EC is defined by the *Department of the Environment Act*. This Act provides the Department with a general responsibility for environmental management and protection in terms of the need to foster harmony between society and the environment for the economic, social, and cultural benefit of present and future generations of Canadians. The Department shares this responsibility with the provinces and territories. Environment Canada is also responsible for providing specialist or expert information and knowledge to federal government agencies and for the preservation and enhancement of environmental quality.

1.2 Regulatory Responsibilities

Environment Canada is participating in the review of the Jericho Diamond Mine Type A water licence renewal in order to provide specialist expertise, information and knowledge to the NWB. Environment Canada will not be issuing any permits or authorizations for the proposed Project.

1.3 Relevant Legislation, Regulations, Policies and Guidelines

The following relevant legislation administered or adhered to by EC influenced the content of this submission: *Department of the Environment Act*, *Canadian Environmental Protection Act, 1999*, *Fisheries Act* – Pollution Prevention Provisions, *Migratory Birds Convention Act* and *Migratory Bird Regulations*, and the *Species at Risk Act*. Various regulations, policies and guidelines stem from these legislations. Details regarding the legislation, regulations, policies and guidelines are provided in Appendix A.

SECTION 2.0: BACKGROUND

The Jericho Diamond Mine, located approximately 260 km southeast of Kugluktuk and 30 km northwest of Lupin Mine, was operated for less than 2 years by Tahera Diamond Corporation under a Type A water license issued by the NWB (Term: Dec. 21/04 – Dec. 31/10). Before going into receivership in 2008, the mine produced 780,000 carats of gem-quality diamonds from 1.2 million tonnes of kimberlite.

In July 2010, Tahera's assets, including the Jericho mine, were approved for sale to Shear Minerals Limited. In November 2010, Shear applied for assignment of the existing license and a 60-day short-term renewal to Shear Diamonds (Nunavut) Corp, a wholly owned subsidiary of Shear Minerals Ltd. These requests were granted by the Minister in December 2010 which resulted in a license expiry of March 1, 2011. In January 2011, Shear requested that an amendment to extend the term of the water license by 1 year (i.e., March 1, 2011 to March 1, 2012) be processed without a public hearing on an emergency basis. This request was accompanied by a number of Plans, including a Care and Maintenance Plan, Site Water Management Plan, Processed Kimberlite Containment Area (PKCA) Management Plan, General Monitoring Plan, Aquatic Effects Monitoring Plan and Contingency Management Plan. The Minister approved the license amendment March 2011; as a result, Shear's water license is set to expire March 1, 2012.

Shear subsequently submitted a Type A water license renewal application in February 2011. In addition to the previously submitted Plans, Shear submitted another 13 Plans to support its renewal application including, C1 Diversion Construction Summary, Fuel Storage Containment Facility Design Plan, Preliminary Landfill Design Plan, Landfill Management Plan, Preliminary Landfarm Design Plan, Landfarm Management Plan, Wastewater Treatment Management Plan, Operations, Maintenance and Surveillance Manual- PKCA Dams, Emergency Preparedness and Response Plan for Dam Emergencies, Waste Management Plan, Waste Rock Management Plan, Interim Closure and Reclamation Plan, and 2011 Pit Dewatering Plan Addendum to the PKCA Management Plan. EC reviewed the renewal application and supporting Plans and provided written submissions to the Board on April 29 and June 10.

A technical meeting and pre-hearing conference (TM/PHC) was held June 20-21, 2011 in Cambridge Bay, NU to discuss any issues and points of clarification related to Shear's water license renewal application and associated supporting Plans. EC did not participate in the TM/PHC and let our written submission serve as our input to this process. Following the TM/PHC, a list of 24 commitments was tabled by the NWB that required resolution prior to or after the Hearing. Most of the commitments were required by Shear and were resolved through Technical Memoranda and/or correspondence issued by Shear to the Board in the intervening period between the TM/PHC and Sept 15, 2011.

Based on prior written stakeholder submissions and information exchanged at the TM/PHC, the following issues were identified by NWB to be addressed at the Hearing:

water use, water management (including discharge criteria), waste management and waste management plans, modifications, contingency planning, general and aquatic effects monitoring, closure and reclamation, security, water compensation and any other issues warranted for discussion by reviewing parties or the public.

This submission takes into consideration all of the documents submitted in support of Shear's water license renewal application, including the 18 Plans described above, Technical Memoranda A to J, correspondence and updates to previously submitted plans. Should new or additional relevant information be brought forward by the Proponent or be identified during the final public hearings, this submission will be re-examined. Within the context of the additional information, any changes in EC's recommendations and position will be brought to the attention of the NWB and the Proponent.

SECTION 3.0: TECHNICAL COMMENTS

Environment Canada would like to commend Shear and their consultants for the professional manner in which the renewal application has been undertaken. Environment Canada appreciates the cooperative approach taken by Shear in working with the various interveners to address outstanding issues.

While the majority of EC's concerns regarding the Jericho mine have been addressed from the responses Shear provided intervenors in their *Table of Submissions for the Technical Meeting*, EC requires clarification on some of the responses Shear provided, including some of the commitments made by Shear following the PHC/TM.

3.1 Water Quality

Issue 3.1.1: Effluent Quality Criteria (EQC)

Reference: Expiring water licence; Technical Memorandum G

Proponent's Conclusion:
Based on discharge and receiving environment collected during and following mine operation, Shear has not suggested any changes to the existing effluent quality criteria.

Environment Canada's Conclusions:
EC has reviewed the existing water licence criteria, along with the monitoring data for Lake C3. We note that there is the assumption that the mixing zone encompasses all of Lake C3, as dilution calculations are based on concentrations at the Lake C3 outlet (JER-AEM-08). This goes beyond the spatial extent that was originally assessed, which was that there should be no chronic effects beyond 200 m of the point where Stream C3 enters Lake C3. Discharge criteria in the expiring licence were back-calculated to achieve levels needed to maintain water quality objectives beyond the mixing zone, or were based on limits set for other diamond mines in the north. EC acknowledges that Shear will continue to monitor water quality at 200 m from Stream C3 during discharge, and supports use of the data from this site (JER-AEM-06) to validate and/or update

modelling.

EC agrees with the proposal to maintain existing licence limits with the exception of criteria for nitrate (NO_3-N), nitrite (NO_2-N), chloride, and total dissolved solids (TDS). We would also recommend the addition of Total Extractable Hydrocarbons as a regulated parameter. Suggested changes are shown in the table below (shaded cells).

With respect to nitrate, EC feels the limit in the expiring licence is higher than is warranted in the context of current work on nitrate toxicity and by the performance to date (maximum grab of 17.8 mg/L NO_3-N). The CCME guideline for nitrate is in the process of being reviewed, and, although not yet published, is expected to be approximately 3.6 mg/L NO_3-N for long-term exposure. Effects on salmonid eggs have been observed at levels as low as 2.23 mg/L NO_3-N. EC recommends that lower limits be set to provide better environmental protection.

Similarly, the NO_2-N criteria is higher than is desirable given the toxicity of nitrite, and noting that the highest observed concentration to date was below 0.2 mg/L NO_2-N. EC notes that in the original evaluation of nitrite, receiving water quality objectives were overstated by using different measures of nitrite when comparing guidelines to literature effects values. Specifically, the receiving water quality objective for nitrite should have been corrected to 0.075 from 0.25 mg N/L. The lower objective would be better served by reducing the nitrite EQC in the renewal licence.

The addition of Total Extractable Hydrocarbons (TEH) is recommended based on information from the INAC Inspection Report dated Dec. 18, 2008 that the previous owners disposed of petroleum hydrocarbon-contaminated waters to the processed kimberlite containment area from all on-site secondary containment areas, including the waste transfer area. Using the TEH analysis would pick up the mineral hydrocarbons, rather than the total oil and grease which includes biological lipids, which would be of lower concern.

Environment Canada does not recommend setting effluent quality criteria for TDS and chloride at this time; there are no CCME guidelines for chloride or TDS for the protection of freshwater aquatic life. It is suggested that these parameters be monitored during the first part of the next licence term, and water quality objectives set that are environmentally relevant and operationally appropriate. These objectives would then be used for adaptive management, i.e. to determine thresholds for management response if effluent concentrations are resulting in receiving water concentrations increasing beyond site-specific objectives. This should be done within 24 months of resuming production.

Environment Canada's Recommendations
Recommended Effluent Quality Criteria:

Parameter (mg/L except pH)	Expiring Licence		Recommended by EC	
	Grab	MAC	Grab	MAC
pH	6-8.8	6-8.8	6-8.8	6-8.8
Total Dissolved Solids	4000	2000	*	*
Total Suspended Solids	25	15	25	15
Chloride	1000	500	*	*
Ammonia-N	12	6	12	6
Nitrate-N	56	28	40	20
Nitrite-N	5	2.5	2	1
Total Phosphorus	0.4	0.2	0.4	0.2
Total Aluminum	3.0	1.5	3.0	1.5
Dissolved Aluminum	2.0	1.0	2.0	1.0
Total Arsenic	0.1	0.05	0.1	0.05
Total Cadmium	0.0024	0.0012	0.0024	0.0012
Total Chromium	0.17	0.087	0.17	0.087
Total Copper	0.04	0.02	0.04	0.02
Total Lead	0.02	0.01	0.02	0.01
Total Molybdenum	1.5	0.73	1.5	0.73
Total Nickel	0.10	0.05	0.10	0.05
Total Uranium	1.0	0.5	1.0	0.5
Total Zinc	0.50	0.25	0.50	0.25
Oil and Grease	5.0	3.0	**	**
Total Extractable Hydrocarbons	-	-		3
BOD_5	25	15	25	15
Faecal Coliforms (CFU/dL)	20	10	20	10

*Monitor rather than regulate; set receiving water quality objectives to be maintained..
** Include if camp wastes are directed to the PKCA

Issue 3.1.2: Chronic Toxicity Testing
Document Name(s): Water licence, Part G, Section 7 and Schedule L 4(d) (iv)

Proponent's Conclusion:
As per the condition outlined in Schedule L 4(d) (iv) of the existing Jericho license and confirmed via telephone communications with Shear's representatives, Shear has been conducting chronic toxicity testing on *Ceriodaphnia dubia* at the edge of the Lake C3 mixing zone once per month and just before freeze up. Shear also indicated it has commenced algal chronic testing as per our recommendation on samples at the edge of Lake C3 mixing zone.

Environment Canada's Conclusions:
Prior to the TM/PHC, EC recommended the following chronic toxicity tests be performed on discharge water from the PKCA:

1) Chronic toxicity to the cladoceran crustacean *Ceriodaphnia dubia* (as per Environment Canada's Environmental Protection Series Biological Test method (EPS/1/RM/21); and

2) Chronic toxicity to the alga *Pseudokirchneriella subcapitata* (as per Environment Canada's Environmental Protection Series Biological Test method EPS/1/RM/25).

EC would like to clarify that we support chronic testing on the PCKA discharge effluent as opposed to the receiving environment, since testing 100% strength effluent will be more useful for determining whether receiving environment impacts are potentially of concern. This position is further supported by the fact that modelling has not been undertaken to characterize the fate of the plume from the PKCA nor delineate a mixing zone within Lake C3. As a result, EC recommends the chronic tests be added as an additional requirement to Part G of the water license and the chronic test outlined in Schedule L (d) (iv) be removed. EC recommends chronic effluent testing be conducted once prior to discharge and a second time prior to completion of discharge and requests the terms and conditions of Part G be written to reflect this sampling frequency. For clarity, we would like to state that the chronic test results (unlike the acute bioassay tests using rainbow trout and daphnia) would not be appropriate as regulated conditions, as there are no clear pass/fail criteria. These tests are used to track the potential for sublethal effects in the receiving environment.

Environment Canada's Recommendation
EC recommends Part G of the water licence be modified to require *Ceriodaphnia* and algal chronic toxicity be conducted on 100% strength PKCA effluent once prior to discharge and a second time prior to completion of discharge. Further, the condition described in Schedule L 4(d) (iv) should be removed from the water licence.

3.2 Monitoring

Issue 3.2.1: Aquatic Effects Monitoring Program (AEMP)
Reference: Technical Memorandum C

Proponent's Conclusion:
Shear proposes to modify the plan for the AEMP which had been submitted with the renewal application (AMEC and Mainstream, 2005) to address concerns with reference sites, sampling locations, aquatic biota, and other aspects of the sampling program.

Environment Canada's Conclusions:
The proposed changes to the AEMP are logical and will improve the AEMP. EC would like to see an integrated plan which includes details of the sampling program and explicitly describes the study design, statistical tests which will be used, and QA/QC protocols. EC acknowledges that there are gaps in the information which Shear is filling,

and suggests it would be reasonable to include submission of an updated comprehensive AEMP 24 months following licence issuance.

The question of sediment data comparability is still outstanding, and should be addressed.

Environment Canada's Recommendation
EC recommends that Shear conduct sampling and reference site investigations as proposed, with the goal to refine the AEMP and submit a revised study design document within two years of licence issuance.

Issue 3.2.2: Data Outliers
Reference: Aquatic Environmental Monitoring Plan, section 3.8; Technical Memorandum C, Attachment B

Proponent's Conclusion:
In response to an earlier request, Shear provided clarification on how outliers will be determined and excluded from the data set when analyzing aquatic environmental monitoring (AEM) results as per Attachment B of Memorandum C.

Environment Canada's Conclusion:
The response Shear provided was adequate. EC would like to remind the Proponent that before using the cited parametric tests for determining outliers, the data must meet the assumptions of normality.

Environment Canada's Recommendation:
When reporting on AEM results, EC recommends the Proponent provide results with the outliers in and out, an explanation for the cause of the outlier, justification for why the outliers were excluded, including statistical tests used, and how the outliers impact the analysis and interpretation of the results. The Proponent should also demonstrate normality assumptions have been met before applying any parametric statistical tests whose purpose is to remove outliers.

Issue 3.2.3: Delineation of Mixing Zone
Reference: Technical Memorandum G

Proponent's Conclusion:
Shear has reviewed the dilution model using historical data for two conservative parameters, and has concluded that aquatic thresholds in Lake C3 will be met given the expected effluent quality.

Environment Canada's Conclusions:
EC has reviewed the water chemistry data for the three monitoring sites related to Lake C3 (JER-AEM-06, -07 and -08). Results do not identify clear differences in water quality for some of the conservative parameters, and EC would like to gain a clear understanding of the effluent behaviour in the receiving environment. For example, how does the conductivity change with depth, and where are water quality objectives being met? The

Environmental Assessment was based on meeting objectives 200 m from the inflow of Stream C3.

Environment Canada's Recommendation
EC recommends that a plume delineation study be done late in the discharge season, which examines the extent and behaviour of the plume in 3 dimensions. Water quality objectives should be stated, and comparisons drawn for where they are expected to be met in Lake C3 (based on tracer concentrations).

3.3 Hydrocarbon Contamination

Issue 3.3.1: Treatment of Contaminated Soils / Landfarming
Reference: Preliminary Landfarm Management Plan, Preliminary Landfarm Design Plan; Technical Memorandum D.

Proponent's Conclusion:
Shear has presented preliminary plans for the management and treatment of contaminated soils and materials. Technical Memorandum D responds to concerns raised with respect to the two plans.

Environment Canada's Conclusions:
EC identified a number of comments and concerns with the plans, and some of these have been addressed in Technical Memorandum D. Further clarification will be needed in the next iteration of the plan on:

- If not using a sump to segregate contaminated snow and ice, treatment of contaminated liquids as meltwater in the landfarm;
- How birds will be deterred from landing on water ponded in the landfarm;
- Disposal of recovered hydrocarbons.

Environment Canada's Recommendation
EC recommends that a revised plan for the management and disposal of hydrocarbon-contaminated materials be submitted within 12 months of licence issuance.

3.4 Closure and Reclamation

Issue 3.4.1: Open Pit Fill Rate
Reference: Interim Closure and Reclamation Plan

Proponent's Conclusion:
The Plan suggests the estimated fill rate for the open pit is 20 years based on natural flooding.

Environment Canada's Conclusions:
A reference to the open pit being flooded naturally (p. 44) is assumed to mean that the sources are limited to precipitation and runoff from the waste dumps, and that given the

local permafrost it is believed there will be no groundwater seepage into the pit (p. 15). If this is the case, the estimated fill time of 20 years is questionable. In addition, the fact that the pit water is already 20 m deep after 3 years in care and maintenance may challenge the assumption that groundwater is not seeping into the open pit.

Environment Canada's Recommendation
Environment Canada acknowledges Shear's commitment to re-evaluate the pit fill rate by April 2012 and looks forward to reviewing the revised Plan and pit fill rate when available.

Issue 3.4.2: Open Pit Water Quality
Reference: Interim Closure and Reclamation Plan

Proponent's Conclusion:
Shear does not anticipate any pit water quality concerns post-closure. As a contingency, if nitrate proves to be problematic (i.e. nitrate is the only chemical of concern they have identified to date in the pit water), Shear plans to trial in-pit biological treatment which accelerates the biological uptake of nitrate through promotion of the growth of phytoplankton.

Environment Canada's Conclusions:
In our earlier submission, EC raised some concerns related to the lack of consideration of the impacts of pit wall weathering and the introduction of blast residues and poor quality water from the PKCA on pit water quality. EC submits that the above processes and sources of contaminants need to be considered when modeling pit water quality. Further, EC is also concerned about the lack of discussion of other possible pit treatment options, should other parameters of concern be identified other than nitrogen. As per commitment #84 in the *Table of Submissions for the Technical Meeting*, EC acknowledges Shear's commitment to re-model the pit water quality and expects that some of our concerns may be alleviated by pit water quality re-modeling.

Environment Canada's Recommendation
EC recommends the Proponent consider the impacts of pit wall weathering and the introduction of blast residue and poor quality PKCA water when re-modeling pit water quality. Further, if the remodeling identifies new contaminants of concern, EC recommends the Proponent revise their Closure Plan to include other treatment options for treating these contaminants. Lastly, since commitment #84 was not captured in *the List of Commitments* circulated following the Technical Meeting, EC requests the Proponent commit to a timeline for delivering its pit water quality re-modeling.

3.5: Draft Water License

In light of the fact that some parts of the existing water license no longer apply, the revised station names for General and Aquatic Effects Monitoring, the removal and addition of new sampling stations, EC would appreciate if the NWB circulated a draft version of the new license for intervenor review prior to finalizing the terms and

conditions of the license.

SECTION 4.0: SUMMARY OF RECOMMENDATIONS

3.1 Water Quality

Issue 3.1.1: Effluent Quality Criteria (EQC)
EC recommends reductions in the EQC limits for nitrate-nitrogen and nitrate-nitrogen and the addition of Total Extractable Hydrocarbons to the new water licence. Since there are no CCME guidelines for Total dissolved solids (TDS) and chloride, EC does not recommend setting EQC for these parameters at this time. EC recommends the Proponent continue monitoring TDS and chloride for the purpose of determining operationally-relevant limits for these parameters.

Issue 3.1.2: Chronic Toxicity Testing
EC recommends chronic *Ceriodaphnia dubia* and algal testing be added as terms and conditions to Part G of the water license.

3.2 Monitoring

Issue 3.2.1: Aquatic Effects Monitoring Program (AEMP)
EC recommends that Shear conduct sampling and reference site investigations as proposed, with the goal to refine the AEMP and submit a revised study design document within two years of licence issuance.

Issue 3.2.2: Data Outliers
EC recommends Shear provide transparent accounting of how outliers were handled when reporting on AEM results.

Issue 3.2.3: Delineation of Mixing Zone
EC recommends that a plume delineation study be done late in the discharge season, which examines the extent and behaviour of the plume in 3 dimensions. Water quality objectives should be stated, and comparisons drawn for where they are expected to be met in Lake C3 (based on tracer concentrations).

3.3 Fuel Storage and Hydrocarbon Contamination

Issue 3.3.1: Treatment of Contaminated Soils / Landfarming
EC recommends that a revised plan for the management and disposal of hydrocarbon-contaminated materials be submitted within 12 months of licence issuance.

3.4 Closure and Reclamation

Issues 3.4.1: Open Pit Fill Rate
Environment Canada acknowledges Shear's commitment to re-evaluate the pit fill rate by April 2012 and looks forward to reviewing the revised Plan and pit fill rate when

available.

Issue 3.4.2: Open Pit Water Quality

EC recommends the Proponent consider the impacts of pit wall weathering and the introduction of blast residue and poor quality PKCA water when remodeling pit water quality. Further, if the remodeling identifies new contaminants of concern, EC recommends the Proponent revise their Closure Plan to include other treatment options for diminishing these contaminants. Lastly, since commitment #84 was not captured in the *List of Commitments* circulated following the Technical Meeting, EC requests the Proponent commit to a timeline for delivering its pit water quality remodeling.

3.5 Draft Water License

EC recommends NWB provide a draft of the new water license for intervenor review prior to finalizing the terms and conditions of the license.

Closure:

Environment Canada would like to thank the NWB for the opportunity to comment on the Shear Diamonds Water Licence Application, and we hope that these technical comments and recommendations are useful to the NWB in their decision making process. Environment Canada respectfully requests the opportunity to submit additional written comments after the public hearings to address any new information brought forward at the hearings.

APPENDIX 1: RELEVENT LEGISLATION, POLICIES AND GUIDELINES

Department of the Environment Act

The *Department of the Environment Act* (*DOE Act*) provides EC with general responsibility for environmental management and protection. Its obligations extend to and include all matters over which Parliament has jurisdiction, and have not by law been assigned to any other department, board, or agency of the Government of Canada as related to:

- Preservation and enhancement of the quality of the natural environment (e.g. water, air, soil)
- Renewable resources including migratory birds and other non-domestic flora and fauna
- Water
- Meteorology
- Coordination of policies and programs respecting preservation and enhancement of the quality of the natural environment.

The *DOE Act* states that EC has a mandated responsibility to advise heads of federal departments, boards and agencies on matters pertaining to the preservation and enhancement of the quality of the natural environment. As such, this mandate is extremely broad.

Canadian Environmental Protection Act, 1999

Proclaimed on March 31, 2000, the new *Canadian Environmental Protection Act, 1999* (CEPA 1999, referred to hereinafter as *CEPA*) is an Act respecting pollution prevention and the protection of the environment and human health in order to contribute to sustainable development. *CEPA* shifts the focus away from managing pollution after it has been created to preventing pollution. The Act provides the federal government with new tools to protect the environment and human health, establishes strict deadlines for controlling certain toxic substances, and requires the virtual elimination of toxic substances which are bioaccumulative, persistent and result primarily from human activity.

For substances that are declared "toxic" under *CEPA* and are added to the List of Toxic Substances in Schedule 1 of the Act, instruments will be proposed to establish preventive or control actions for managing the substance and thereby reduce or eliminate its release into the environment. These tools may be used to control any aspect of the substance's life cycle, from the design and development stage to its manufacture, use, storage, transport and ultimate disposal.

Examples of preventive and control instruments include:

- regulations;
- pollution prevention plans;
- environmental emergency plans;
- environmental codes of practice;
- environmental release guidelines; and
- pre-notification and assessment of new substances (chemicals, biochemicals, polymers, biopolymers, and animate products of biotechnology).

Authority to require emergency plans for toxic or other hazardous substances is provided in Part 8 of *CEPA*. Environmental emergency plans for such a substance(s) must cover prevention, preparedness, response and recovery.

Fisheries Act - Pollution Prevention Provisions

The Minister of Fisheries and Oceans is legally responsible to Parliament for administration and enforcement of all sections of the *Fisheries Act*. However, under a Prime Ministerial Instruction (1978) and a Memorandum of Understanding (1985), EC administers and enforces those aspects of the Act dealing with the prevention and control of pollutants affecting fish. In this context, EC works to:

- advance pollution prevention technologies;
- promote the development of preventative solutions; and
- work with the provinces, territories, industry, other government departments and the public on issues relating to the pollution provisions of the *Fisheries Act*.

The main pollution prevention provision is found in subsection 36(3) of the Act, and is commonly referred to as the "general prohibition". This subsection prohibits the deposit, into fish-bearing waters, of substances that are deleterious to fish. The legal definition of “deleterious substance” provided in subsection 34(1) of the Act, in conjunction with court rulings, provides a very broad interpretation of deleterious and includes any substance with a potentially harmful chemical, physical or biological effect on fish or fish habitat. One measure of a deleterious substance (such as a liquid discharge) is acute lethality as measured by the standard 96 hour fish bioassay test.

Migratory Birds Convention Act

The purpose of the *Migratory Birds Convention* (1916, amended by Protocol in 1999) is to ensure the conservation of migratory birds, as defined in the *Act*, and prohibit the take of migratory birds except for scientific, educational, avicultural, or other specific purposes consistent with the principles of the Convention. The *Migratory Birds Convention Act* (*MBCA*), based upon the Convention, provides the authority for the *Migratory Bird Regulations* (*MBR*), which establishes specific prohibitions and defines activities which may be permitted, and the circumstances under which such permitted activities may take place.

The Canadian Wildlife Service (CWS) of Environment Canada administers and enforces the *MBCA* and *MBR*. CWS provides expert advice in environmental assessment review processes. CWS focuses primarily on identifying potential adverse effects to migratory bird populations and habitats, and appropriate measures to mitigate those effects. The advice provided in an environmental assessment process does not constitute an authorization for incidental take under the MBR's, nor does it assure that the project will not result in the killing or taking of a migratory bird or its nest. Furthermore, the advice does not absolve project proponents from their obligation to comply with all provisions of the MBCA and MBR.

Species at Risk Act

The *Species at Risk Act* (*SARA*) provides a framework for actions across Canada to ensure the survival of wildlife species and the protection of our natural heritage. It sets out how to decide which species are a priority for action and what to do to protect a species. Three federal Ministers have responsibilities under *SARA*; the Minister of Fisheries and Oceans is responsible for aquatic species at risk, the Minister of Heritage (through Parks Canada Agency) is responsible for species at risk found in national parks, national historic sites or other protected heritage areas, and the Minister of the Environment is responsible for all other species at risk, and is also responsible for the administration of the *Act.*

The *Species at Risk Act* is being brought into force through a phased approach. Phase 1 came into force March 24, 2003 and set out amendments to other related federal laws including the *Canada Wildlife Act*, *Migratory Birds Convention Act* (1994), and the *Wild Animal and Plant Regulation of International and Inter-provincial Trade Act*. As of June 5, 2003, Phase 2 of the Act emphasizing consultation, stewardship, cooperation and information about the law came into effect. The remaining sections of SARA (Phase 3), the SARA prohibitions, critical habitat protection, and enforcement of the law, came into effect on June 1, 2004.

SARA applies on all federal lands, and on those territorial lands where the territorial government does not have its own specific legislation to protect species at risk (the "safety net" clause). All species included on the List of Wildlife Species at Risk (i.e. endangered, threatened, extirpated and special concern) will require the development of either recovery strategies or management plans. Further, projects that require an environmental assessment under an Act of Parliament will have to take into account the project's effects on listed wildlife species and their critical habitat. The assessment must include recommendations for measures to avoid or reduce adverse effects and plans to monitor the impact of the project, if it goes ahead. The project plan must respect recovery strategies and action plans. All other SARA prohibitions will still apply.

The Canadian Biodiversity Strategy

In 1992, more than 160 countries, including Canada, signed the United Nations Convention on Biological Diversity (the Convention) at the United Nations Conference on Environment and Development (the Earth Summit), held in Rio de Janeiro. The goals of the Convention are to conserve the ecosystem, species and genetic diversity, to ensure that the Earth's biological resources are used wisely and to ensure that the economic benefits from using these resources are shared fairly and equitably. Conservation of biodiversity and sustainable use of biological resources are necessary to ensure that the economic, societal and environmental benefits can be available to current and future generations.

One of the key obligations for parties that ratified the Convention was to prepare a national biodiversity strategy. The Canadian Biodiversity Strategy (the Strategy) was prepared as a response to this obligation and has been developed as a guide to the implementation of the Biodiversity Convention in Canada. According to the Strategy, federal, provincial and territorial governments, in cooperation with stakeholders and members of the public, will pursue implementation of the directions contained in the Strategy according to their policies, priorities and fiscal capabilities.

Environment Canada in collaboration with other federal agencies, provincial and territorial environmental and resource management agencies, industry and a range of non-governmental organizations completed the Strategy in 1995, based in part on the principles of the *Canada Wildlife Act* and "A Wildlife Policy for Canada". The Strategy supports wildlife biodiversity and conservation and increases the focus on integrated and ecosystem-based approaches to conservation based on Canada's existing legislation.

While the Strategy does not deal with the mining sector specifically, it does provide a framework for jurisdictions to consider biodiversity when addressing environmental issues. The goals of the Strategy are to:

- Conserve biological biodiversity and sustainable use of biological resources.
- Improve our understanding of ecosystems and increase our resource management capacity.
- Promote an understanding of the need to conserve biodiversity and sustainably use biological resources.
- Maintain or develop incentives and legislation that support biodiversity conservation and sustainable use.
- Work with other countries to meet the objectives of the Convention.

The Federal Policy on Wetland Conservation

In 1991, The Federal Policy on Wetland Conservation was adopted by the Government of Canada. This policy promotes the wise use of wetlands and elevates concerns for wetland conservation to a national level. The policy promotes the concepts of cooperative approaches to wetland conservation, the need for linkages between wetlands conservation

and other related initiatives (e.g. water policy, wildlife conservation, etc.), promotion of the concept of no net loss of wetland functions for federal lands and the promotion of wetland protection through adequate consideration of wetland concerns in environmental assessments of new development projects.

The federal policy holds No Net Loss of wetland functions as its target for conservation of wetlands. Similarly, this guideline emphasizes the need for environmental assessment to ensure every effort has been made on the part of the proponent to prevent loss of wetland functions.