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18 November 2011

EC file: 4704 004 005
NWB file: 2BE-CHI0813

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Via email: licensing@nunavutwaterboard.org

**RE: 2BE-CHI0813 Peregrine Diamonds Ltd. Type B Qikiqtani Region Distribution
Review Letter Notice to Local Public Notice**

Environment Canada (EC) has reviewed the information submitted with the above-mentioned amendment application as submitted to the Nunavut Water Board (NWB). The following specialist advice has been provided pursuant to the *Canadian Environmental Protection Act 1999*, Section 36(3) of the *Fisheries Act*, the *Migratory Birds Convention Act*, and the *Species at Risk Act*.

Peregrine Diamonds Ltd. is requesting from the NWB an amendment to Type B water license for the Chidliak Project. The amendment would allow activities associated with four new components associated with a multi-phase, 600 tonne bulk sample program to be added to the water license to commence in 2012. The proposed components are the addition of equipment; the expansion of the existing Discovery camp from 24 to 40 people; establishment of a new 30-person camp; and the expansion of the existing winter-trail network to link camps to bulk sample sites, water sources, and cuttings-deposition locations. The bulk sample program is proposed to occur between February and May 2012 and there would be no increase in water allotment under this licence amendment.

Upon review of the supporting documents, EC provides the following comments and recommendations for the NWB's consideration:

General

- The proponent shall not deposit, nor permit the deposit of chemicals, sediment, wastes, or fuels associated with the project into any water body. According to the *Fisheries Act*, Section 36 (3), the deposition of deleterious substances of any type in water frequented by fish, or in any place under any conditions where the deleterious substance, or any deleterious substance that results from the deposit of the deleterious substance, may enter any such water, is prohibited.

Drilling

- Land-based drilling should not occur within 30 m of the high water mark of any water body.

- All drilling effluent should be directed to a sump that is properly constructed and adequately sized to ensure there is no runoff and that water bodies downstream of drilling activities are not affected. All efforts shall be made to prevent drill mud, drill additives, return water and cuttings from migrating from the drill site.
- EC notes that ~200 tonnes of drill waste will be generated from the bulk sampling program. The *Bulk Sampling Monitoring Plan* suggests 3 possible disposal locations for drill waste (i.e. CH-6 basin, CH-7 basin, flat plateau). Given the lack of permanent containment offered by the flat plateau, EC does not recommend disposal of drill cuttings in this area. Consistent with our standard advice, EC recommends the Proponent limit drill cutting disposal to properly constructed sumps or containment areas.
- The addition of lime to the sumps or the use of other suitable treatment measures to neutralize acids and precipitate metals should be considered where appropriate.
- The proponent shall not erect camps or store materials on the surface ice of lakes or streams, except that which is for immediate use.
- Chemical additives or drilling muds used in connection with this drilling program shall be disposed of such that they do not enter any water body either by surface or ground water flows.
- Regardless of the type of drilling conducted, the following conditions will apply:
 - Drilling wastes from land-based drilling should be disposed of in a sump such that they do not enter any body of water.
 - For lake-based winter drilling the proponent may refer to the Interim Guidelines for On-Ice drilling. Return water released to the lake must be non-toxic. Return water release must not result in an increase in total suspended solids (TSS) in the waters of the lake that exceeds Canadian Council of Ministers of the Environment (CCME) Guidelines for the Protection of Freshwater Aquatic Life (i.e. 10 mg/L for lakes with background levels under 100 mg/L, or 10% above background for those lakes with TSS background levels above 100 mg/L).
 - Drilling additives or mud shall not be used in connection with holes drilled through lake ice unless they are re-circulated, contained such that they do not enter the water, or are demonstrated to be non-toxic.
 - If artesian flow is encountered, core-drill holes shall be plugged and permanently sealed immediately. EC requests that, if encountered, coordinates and depth of artesian flows be provided to the NWB.
- EC assessed inorganic chloride salts and concluded that these salts in high concentrations are harmful to the environment. As a result, the proponent should ensure that when using calcium chloride (CaCl_2) for drilling purposes that return water is contained in a properly constructed sump and located in such a manner as to ensure that the contents do not migrate out from the sump. Please note that the proponent should not rely on permafrost integrity to contain and isolate drilling wastes and all sumps are to be located a sufficient distance from the high water mark of any water body and are constructed such that the contents do not migrate out from the sump.

Water Quality

- EC understands from the supporting information for the proposal that the Proponent plans to undertake baseline water quality sampling this summer. Given the advanced stage of this project (i.e., 2nd bulk sampling program), EC recommends the Proponent consider selecting some reference sites for this project and include reference site sampling as part of their freshwater sampling plan for the upcoming field season. Collection of such information early in the process will allow for a more robust study design for detecting project-related impacts going forward, should the project proceed to development. EC would be pleased to discuss sampling program details and provide feedback to the proponent.

Abandonment & Restoration Plan

- In the Plan the proponent states that there is a potential for on-site burning of non-reusable items. In principal, EC does not encourage the open burning of combustible waste as a means of disposal. Before employing open burning for disposal of any wastes EC recommends the proponent heed the following guidance:
 - Solid wastes that are conditionally suitable for open burning are paper products, paperboard packaging and untreated wood. Plywood, painted wood or other treated wood should not be disposed of in this manner. For reference, below is a link to the Nunavut Municipal Open Burning Policy:
<http://www.gov.nu.ca/env/Open%20burning.pdf>
and below is a link to information from EC regarding open burning:
 - http://www.ec.gc.ca/gdd-mw/684B44DD-5780-4F73-BC58-A97E31A19EDC/COM1170_Open_Burning_Brochure_e_v6_for%20web.pdf

Spill Contingency Planning/Fuel Management

- Under Contact List – Spill Response/Assistance, EC's contact information should be updated to: EC Inspector, (867)975-4644.
- Refuelling shall not take place below the high water mark of any water body and shall be done in such a manner as to prevent any hydrocarbons from entering any water body frequented by fish. EC recommends that drip pans, or other similar preventative measures, should be used when refuelling equipment.
- Spills are to be documented and reported to the NWT/NU 24 hour Spill Line at (867)920-8130. EC recommends that all releases of harmful substances, regardless of quantity, are immediately reported where the release:
 - is near or into a water body;
 - is near or into a designated sensitive environment or sensitive wildlife habitat;
 - poses an imminent threat to human health or safety; or,
 - poses an imminent threat to a listed species at risk or its critical habitat.
- Please note the new *CEPA Storage Tank System for Petroleum Products and Allied Petroleum Products Regulations* that came into force on June 12, 2008. These regulations apply to both outside, aboveground and underground storage tank systems (including the piping and other tank associated equipment) under federal jurisdiction containing petroleum and allied petroleum products that have a capacity greater than 230 litres. This includes tanks located on federal or Aboriginal lands. Exceptions are pressurized tanks, mobile tanks, tanks regulated by the National Energy Board, and outdoor, aboveground storage tank systems that have a total combined capacity of 2500 litres or less and are connected to a heating appliance or emergency generator. All storage tank system owners must identify their tank systems to EC and installation of new systems must comply with the regulation's design requirements. Further information on these regulations can be found at www.ec.gc.ca/st-rs.

Transportation

- The proponent states that transportation surrounding the core-drilling programmes will be via equipment travelling over snow-covered and groomed winter trails rather than helicopters. EC recommends that travel should only be conducted on frozen, snow packed ground. Transport to drill sites should cease if early warming occurs, and/or if the program has not been completed by spring. Travel via tracked vehicles on soft ground may disturb the vegetative mat, compact and rut the soils and damage the permafrost areas. Off-road traffic activity should not occur outside of winter months. The duration of drilling activity should be kept as short as possible to minimize overall impact.
- In order to lessen the overall footprint of project activities, EC strongly urges the proponent and Boards to look at minimizing the width of transportation corridors in association with drilling activity. The creation of trails and access roads and camps impact the arctic and

subarctic environment: the vegetative mat may be damaged, soils may be compacted and permafrost may melt, resulting in subsidence and erosion.

EC does not have any additional comments at this time regarding this amendment, beyond those noted above, so long as the proponent is in compliance with the conditions of the existing water license. Terms and conditions applied to the existing water licence should be carried forward to the amendment. Previous comments and recommendations submitted by EC staff relating to the Chidliak project and water license 2BE-CHI would still apply. If there are any changes in the proposed project, EC should be notified, as further review may be necessary. Please do not hesitate to contact me with any questions or comments with regards to the foregoing by email at Paula.C.Smith@ec.gc.ca.

Yours truly,



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Environmental Assessment Coordinator

cc: Carey Ogilvie (Head, Environmental Assessment-North, EPO, Yellowknife, NT)
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