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RE: NWB2KIM – True North Gems Inc. – Kimmirut Beluga Sapphire Project – New – Type 'B'

On behalf of Environment Canada (EC), I have reviewed the information submitted with the above-mentioned application. The following specialist advice has been provided pursuant to Environment Canada's mandated responsibilities for the enforcement of the *Canadian Environmental Protection Act*, Section 36(3) of the *Fisheries Act,* the *Migratory Birds Convention Act*, and the *Species at Risk Act*.

True North Gems Inc. (True North) is applying for a type 'B' water licence for water use and waste disposal associated with exploration activities in their Kimmirut Beluga Sapphire Project. It wants to perform exploratory diamond drilling, mini-bulk sampling, and road upgrades with a proposed time schedule of 1 July 2005 to 31 December 2006. The Hamlet of Kimmirut will serve as a base of operations for this project seeing as the worksite is approximately 2.7 km away from the community and is accessible by an ATV trail. The work area is within latitudes of 62° 48' N to 62° 50' 31" N and longitudes of 69° 51' 40" W to 69° 54' 31" W.

The proponent received access to two claim blocks on Crown Lands in 2004 on which the project now operates. In the project's initial year, a 5-tonne mini-bulk sample was taken to analyze the quality of a known sapphire deposit. Positive results prompted the expansion of exploration activities for 2005 and 2006. True North intends to extract a 100-500 tonne bulk sample which will require the use of heavy equipment (i.e., excavators and trucks). Furthermore, diamond drilling will be conducted at 45 locations, resulting in a total coring distance of 2,700 m.

True North wants to upgrade a portion of the ATV trail which connects its project worksite to Kimmirut. To accomplish this task, culverts will be installed at two stream crossings. These streams originate from Lake Fundo, the source of fresh water for Kimmirut residents. The June 2005 culvert/stream crossings report provided by FSC

Architects and Engineers (FSC) states that the project's work site is within an 8.6 km^2 watershed. True North retained the services of FSC to design its culvert/stream crossings and help attain project approvals from the Nunavut Water Board and the Nunavut Impact Review Board. FSC determined that the culverts should have a minimum diameter of 1.893 m. However, the proposed culvert design calls for the installation of two 1 m diameter pipes at each stream crossing. The culvert/stream crossing report recommends that culverts have grades less than 0.5% and notes that Fisheries and Ocean's Canada requires all culverts to have at least 40% of their diameters embedded in streambeds. The culvert design suggests that the pipes have a length of 13 m (based on a 5 m road width), a 3:1 side-slope, a minimum top cover of 50 cm, and 50 cm of rip-rap on pipe end-points. The Hamlet of Kimmirut operates a carbonate rock borrow-pit/municipal quarry from which road mettle will be exploited for the construction of culvert/stream crossings and the access road.

It is anticipated that 40,000 L of fresh water will be consumed on a daily basis for drilling purposes. When performing land based diamond drilling, the proponent will recycle its drill water so as to reduce the cost of adding CaCl to fresh water. Drill water will pass through a two-stage settling tank for the removal of solid materials. This waste water will then be discharged toward a small lake used to supply the drill units with fresh water. A geotechnical filter will be placed below the discharge point so as to remove any remaining solids. All extracted core and project equipment will be stored in a Kimmirut warehouse.

An outhouse will be set-up for the use of project team members.

The extraction of a 100-500 tonne mini-bulk sample of bedrock will not require the use of water, nor will it produce waste material. All extracted materials will be removed from the worksite.

True North has submitted a spill contingency plan which outlines a chain of command, basic spill response procedures, and the fuel products that will be made available for 2005 – 2006 exploration activities. Should a fuel spill occur the proponent will contact the 24 Hour Spill Line at (867) 920-8130. At all times, a spill kit will be kept at drill sites and with other sources of fuel.

The fuel products that will be made available at any given time and their corresponding volumes are as follows:

GASOLINE: 5 x 5 gallon jerry cans
DIESEL: 2 x 45 gallon drums
HYDRAULIC FLUIDS: 5 gallons

Environment Canada is concerned with certain aspects of this project's 2005-2006 mineral exploration seasons.

- Firstly, Environment Canada understands that when the proponent conducts diamond drilling activities the waste water will not enter a sump after passing through a series of settling tanks. Rather, it will be discharged overland and make its way back to a small lake which serves as the source of fresh water for the drilling units. Without the use of sumps this waste water will erode earth and transfer deleterious substances from the selected drilling locations into a fresh water body. Environment Canada requests that the proponent provide an explanation to the Nunavut Water Board as to why it will not use drill-water sumps. Furthermore, Environment Canada would like to know if any measures will be taken to mitigate drill additive pollution (i.e., calcium chloride) in the receiving environment.

- Secondly, Environment Canada understands that FSC has stated that the diameter of all culvert/stream crossings must have a diameter of at least 1.893 m. It is requested that the proponent notify both the Nunavut Water Board and Environment Canada if it will implement the culvert design which allocates two 1 m diameter culverts at each stream crossing and provide an explanation for its decision (i.e., reasoning for culvert diameter lengths).

- Thirdly, the spill contingency plan does not provide detailed response procedures for fuel/hazardous material spills on land, water, snow, and ice. In addition, the number of spill kits or their contents was not provided in the water licence application. Environment Canada requests that the proponent revise its spill contingency plan in such a manner that these issues are addressed.

Environment Canada recommends that the following conditions be applied throughout all stages of the project:

<u>GENERAL</u>

- The proponent shall not deposit, nor permit the deposit of any fuel, drill cuttings, chemicals, wastes, or sediment 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 other deleterious substance that results from the deposit of the deleterious substance may enter any such water is prohibited.
- EC reminds the proponent that all permits and approvals are required prior to the commencement of any work.

DRILLING

- EC would like to inform the proponent that the *Canadian Environmental Assessment Agency* lists CaCl as a toxic substance. The proponent shall therefore ensure that if CaCl is used as a drill additive, all sumps containing CaCl are properly constructed and located in such a manner as to ensure that the contents will not enter any water body.
- Drilling additives or muds shall not be used in connection with holes drilled through lake ice unless they are re-circulated or contained such that they do not enter the water, or demonstrated to be non-toxic.
- For 'on-ice' drilling, return water released must be non-toxic, and not result in an increase in total suspended solids in the immediate receiving waters above the Canadian Council of Ministers for the Environment Guidelines for the Protection of Freshwater Aquatic Life (i.e., 10 mg/L for lakes with background levels under 100 mg/L, or 10% for those above 100 mg/L).
- Land based drilling should not occur within 30 m of the high water mark of any water body. Drilling wastes from land based drilling shall be disposed of in a sump such that the contents do not enter any water body.
- If an artesian flow is encountered, the drill hole shall be immediately plugged and permanently sealed.

FUEL STORAGE / SPILL CONTINGENCY / HAZARDOUS MATERIALS

- The proponent shall ensure that any hazardous materials, including waste oil, receive proper treatment and disposal at an approved facility.
- Drip pans, or other similar preventative measures, shall be used when refueling equipment on site.

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 if you have any questions or comments with regards to the foregoing at (867) 975-4631 or by email via david.abernethy@ec.gc.ca.

Regards,

David W. Abernethy
Environmental Assessment Technician