Environment Canada **Environnement Canada**

Environmental Protection Operations
Qimugjuk Building 969
P.O. Box 1870
Iqaluit, NU X0A 0H0
Tel: (867) 975-4639
Fax: (867) 975-4645

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Richard Dwyer
Licensing Trainee
Nunavut Water Board
Gjoa Haven, NU via e-mail
X0B 1J0

RE: Advanced Explorations Inc. Roche Bay Project – NWB 2BE-RBP

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*.

The Roche Bay Magnetite Project is operated by Advanced Explorations Incorporated (AEI) near Hall Beach, Nunavut, approximately latitude 68º26' North and longitude 82º46' West. The purpose of the exploration drilling program is to delineate the magnetic banded iron formation deposit and ultimately develop a world class iron ore mine. The proponent plans to drill approximately 75 to 90 holes to an average depth of approximately 300 meters with the aim of extracting 20,000 to 30,000 meters of core samples for process testing.

Spill Contingency Plan/Fuel Storage

- Environment Canada requires clarification on the method and quantity of fuel storage at Roche Bay. Given the large volume of fuel the proponent is proposing to store on-site, EC recommends that this information become available prior to licensing in order for EC to make a proper assessment of the potential impacts associated with fuel storage and make the appropriate recommendations. Section 25 Spill Contingency Planning; Remote Camp Questionnaire mentions the use of both barreled fuel and fuel bladders. However, the Spill Contingency Plan (SCP) only mentions barreled fuel will be stored on-site. Please clarify which method of storage will be used during the exploration project. A map of all storage locations and there proximity to water bodies should be included.

- The SCP indicates that all fuel caches greater than 20 barrels will be inspected daily. EC strongly recommends that the Board direct the proponent to act with due diligence and inspect all fuel caches, regardless of size, on a daily basis.

- All fuel caches shall be located at least 31 m above the high water mark of any water body. Given the size of the fuel cache at Roche Bay EC believes that placing barreled fuel on metasorb pads will not be sufficient to protect the environment in the event of a spill. EC strongly recommends the use of secondary containment, such as self-supporting insta-berms, when storing fuel on location. Secondary containment or a surface liner (drip pans, fold-a-tanks, etc) should be placed under all container or vehicle fuel tank inlet and outlet points, hose connections and hose ends during fuel or hazardous substance transfers. Secondary containment should be of adequate size and volume (110% of volume) to contain and hold fluids for the purpose of preventing spills.

- Appropriate spill response equipment and clean-up materials (absorbents, containment devices, etc) must be on hand during any transfer of fuel or hazardous substances and at vehicle-

maintenance areas. In addition, EC has noted that a skimmer was not included in the spill kit inventory. This should be included in order to facilitate clean-up of spills in water and to be consistent with the proponents spill response plan.

- Transfer operations should be attended by trained personnel at all times.

- Decanting of snow or water from the berm area should proceed only if the appropriate chemical analysis has determined the contents meet the requirements of Section 36(3) of the *Fisheries Act.*

- All releases of harmful substances, regardless of quantity, are immediately reportable 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: EC does not encourage the use of bladders as a method of fuel storage. Given the fact bladder systems do not have a code of practice or design standards they are more susceptible and have a higher probability of spills than an aboveground storage tank system. If the proponent has long-term goals for the project, storage tanks which have Canadian Council of Ministers of the Environment (CCME) guidelines should be considered.

Drilling

- Environment Canada would like to inform the proponent that the Canadian Environmental Protection Act has listed 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 mud 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. 10mg/L for lakes with background levels under 100 mg/L, or 10% for those above 100mg/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 properly constructed sump such that the contents do not enter any water body.

- Any sumps, including those created for the disposal of drill cuttings, shall be located above the high water mark of any water body and in such a manner as to prevent the contents from entering any water body frequented by fish. Further, all sumps shall be backfilled upon completion of the field season and contoured to match the surrounding landscape. Sumps should be inspected regularly to ensure there is no erosion or leaching.

- If an artesian flow is encountered, the drill hole shall be immediately plugged and permanently sealed.

Waste Disposal

Section 32 Waste Treatment and disposal; Remote Camp Questionnaire states that grey water will be run into a pond?

- Environment Canada recommends that camp grey water be disposed of into a properly constructed sump located at least 30 m of the high water mark of any water body. In addition, 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.

Section 33 Incineration; Remote Camp Questionnaire states that only grey water will be incinerated however there is no mention of how the proponent plans on handling additional combustible camp waste such as food waste?

- Waste should be placed in sealed containers so that it is inaccessible to wildlife, and transported off-site to be disposed of in an approved disposal facility. If burning is used as an alternative method of waste disposal, the proponent should ensure that the waste is burned in a device that promotes efficient combustion and reduction of emissions, and that the amount of waste burned is reduced as much as possible. EC recommends an approved dual-chambered incineration device.

- Burning of waste products releases numerous contaminants to the air, many of them persistent, bioaccummulative and toxic (e.g. polycyclic aromatic hydrocarbons - PAH's - heavy metals, chlorinated organics – dioxins and furans). These contaminants can result in serious impacts to human and wildlife health through direct inhalation and they can also be deposited to land and water, where they bioaccumulate through food chains affecting wildlife and country foods. Therefore, burning should only be considered after all other alternatives for waste disposal have been explored. The installation of an incineration device capable of meeting the emission limits established under the Canada-wide Standards (CWS) for Dioxins and Furans and the CWS for Mercury Emissions is required (both the Government of Canada and the Government of the Nunavut are signatories to these Standards and are required to implement them according to their respective jurisdictional responsibility).

- The use of appropriate waste incineration technology should be combined with a comprehensive waste management strategy (especially waste segregation) that is designed to reduce and control the volumes of wastes produced, transported, and disposed of. The **Waste Management Plan** should consider and include:
    - Purchasing policies that focus on reduced packaging,
    - On-site diversion and segregation programs (i.e. the separation of non-food waste items suitable for storage and subsequent transport and disposal or recycling).
    - Diligent operation and maintenance of the incineration device and ensure appropriate training is provided to the personnel operating and maintaining the incinerator.

The objective should be to ensure that only food waste and food-contaminated waste is burned. Only clean wood should be considered. Wood that has been painted or coated with protective chemicals should not be burnt.

- Used absorbent materials, oily or greasy rags, and equipment servicing wastes (such as used engine oil, antifreeze, hydraulic oil, lead acid batteries, brake fluid and other lubricants) should be safely stored and transported in sealed containers (odour free to prevent animal attraction) and safely transported to a facility that is authorized for the treatment and disposal of industrial hazardous wastes.

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 at (867) 975-4631 or by email at cindy.parker@ec.gc.ca.

Yours truly,

Original signed by

Cindy Parker
Environmental Assessment Specialist

Cc: Carey Ogilvie (EA North-Head, Environment Canada, Yellowknife, NWT)