



Environnement
Canada

Environnement
Canada

Environmental Protection Operations
5204-50th Avenue, Suite 301
Yellowknife, NT
X1A 1E2

July 10, 2007

Our File: 4703 001 030

Phyllis Beaulieu
Manager of Licensing
Nunavut Water Board
P.O. Box 119
Gjoa Haven, NU X0B 1J0

Tel: (867) 360-6338

Fax: (867) 360-6369

via email at: licensing@nunavutwaterboard.org

RE: NWB 2BE-FER0507- Ferguson Lake Project License Renewal – Starfield Resources Ltd.

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*.

It is the understanding of Environment Canada that Starfield Resources Ltd. (Starfield) is applying to renew their water license from the Nunavut Water Board (the Board) to use water or the deposit of waste into water associated with exploration drilling and camp operations for its Ferguson Lake Project. The Ferguson Lake Property is known to have nickel, copper, platinum, and palladium deposits. The proponent requires an amendment to its project's license because it wants to establish an exploration camp. This camp will accommodate 30 people seasonally from July 2007 to 2012, although Starfield has indicated their intent to increase capacity in the coming years to as many as 60 people. The camp is located at 62°53'33.66"N, 95°54'15.03"W, and will be serviced by fixed wing aircraft and helicopters from the nearby communities of Baker Lake and Rankin Inlet. In previous years the proponent has based its project activities from a fishing camp on Ferguson Island. The proposed location for its new camp is 3 km southeast of the former camp site.

Environment Canada maintains the recommendations made to the board last year for the same project continue, (*please see attached letter from David Abernathy, dated March 1, 2006*) and that the following additional conditions be applied throughout all stages of the project in addition to Mr. Abernathy's previous recommendations:

- The proponent has indicated that they intend to incinerate waste in a double barrel incinerator, including waste oil. Environment Canada recommends that waste oil should not be combusted in the incinerator. 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.

Environment Canada recognizes that timely disposal of camp waste - specifically food waste - is of critical importance to minimize safety risks associated with wildlife attraction. However, burning of waste products releases numerous contaminants to the air, many of them persistent, bioaccumulative 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 objective should be to ensure that only food waste and food-contaminated waste is burned
(*the use of paper, cardboard and clean wood as supplementary fuel is acceptable*).

- The proponent has indicated their intended use of an all-terrain vehicle (ATV) and snowmobile for general purposes. EC recommends that use of the ATV be limited during spring thaw in order to avoid rutting and

surface damage. A designated trail should be used in order to avoid the unnecessary destruction of vegetation. Stream crossings shall be located to minimize approach grades. Bank disturbance is to be avoided, and mechanized clearing should not be done immediately adjacent to any watercourse. Drip pans, or other similar preventative measures, should be used when refueling equipment on site.

The following comments are pursuant to the Species at Risk Act (SARA), which came into full effect on June 1, 2004. Section 79 (2) of SARA, states that during an assessment of effects of a project, the adverse effects of the project on listed wildlife species and its critical habitat must be identified, that measures are taken to avoid or lessen those effects, and that the effects need to be monitored. This section applies to all species listed on Schedule 1 of SARA. However, as a matter of best practice, EC asks that species listed on other Schedules of SARA and under consideration for listing also be included in this type of assessment.

Species at Risk that may be encountered	Category of Concern	Schedule of SARA	Government Organization with Expertise on Species
Barren ground caribou (<i>rangifer tarandus groenlandicus</i>)	Special Concern	Schedule 3	Government of Nunavut
Peregrine Falcon (subspecies <i>tundrius</i>)	Special Concern	Schedule 3	Government of Nunavut
Grizzly Bear	Special Concern	Pending	Government of Nunavut

Impacts could be disturbance and attraction to operations. The proponent has identified these and other species in the project description and in addition to the policies described in the Starfield "Wildlife Management Plan", Environment Canada recommends the following:

- If Species at Risk are encountered, the primary mitigation measure should be avoidance. The proponent should avoid contact with or disturbance to each species.
- The proponent should consult with the Government of the Nunavut and appropriate status reports, recovery strategies, action plans, and management plans to identify other appropriate mitigation measures to minimize effects to these species from the project.

If there are any changes in the proposed project, such as the commencement of drilling activities, 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 (780) 951-8942 or by email at jody.klassen@ec.gc.ca.

Yours truly,



Jody Klassen

cc: Carey Ogilvie (Head, Assessment and Monitoring, EPO)
Mike Fournier (Northern Environmental Assessment Coordinator, A&M, EPO)

Attachments: Environment Canada letter of recommendations to the Nunavut Water Board for the file "NWB2FER0507 Starfield Resources Inc. – Ferguson Lake Project – Amendment", from David. W. Abernethy, dated March 1, 2006



Environment Canada Environnement
Canada Canada

Environmental Protection Operations
Qimugjuk Building 969, P.O. Box 1870
Iqaluit, NU X0A 0H0
Tel: (867) 975-4631
Fax: (867) 975-4645

Our file: 4703 001 030

March 1, 2006

Phyllis Beaulieu
Manager of Licensing
Nunavut Water Board
P.O. Box 119
Gjoa Haven, NU X0B 1J0
Tel: (867) 360-6338
Fax: (867) 360-6369
Email: licensing@nwb.nunavut.ca

Via Email

RE: NWB2FER0507 – Starfield Resources Inc. – Ferguson Lake Project - Amendment

On behalf of Environment Canada (EC), I have reviewed 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*.

Starfield Resources Inc. is applying for a licence amendment for water use and waste disposal associated with exploration drilling and camp operations for its Ferguson Lake Project. The Ferguson Lake Property is known to have nickel, copper, platinum, and palladium deposits. The proponent requires an amendment to its project's licence because it wants to establish an exploration camp. This camp will accommodate 30 people and be positioned in an area nearby Ferguson Lake's southwest shore, having a coordinate of 62°53'33.66"N, 95°54'15.03"W. The communities closest to the project area are Baker Lake, 160 km north, and Rankin Inlet, 240 km east. In previous years the proponent has based its project activities from a fishing camp on Ferguson Island. The proposed location for its new camp is 3 km southeast of the former camp site.

The proponent has requested that its licence allow the use of 97.7 m³ of freshwater on a daily basis to support project operations. Domestic needs will require 7.7 m³ of water which will be acquired from Ferguson Lake and be stored in 450 gallon tanks at the camp. Drilling operations will obtain freshwater from local water sources and not exceed 90 m³. Drill cuttings will be bagged and removed from the project area for proper disposal and 'poor quality' drill water will be directed to a sump that is at least 30 m above the high water mark of nearby water bodies.

Camp sewage and gray water will be treated in a rotating biological contactor (RBC) unit prior to being discharged into a sump which is positioned at least 100 m from the high water mark of any water body. In the event that the RBC unit has a temporary breakdown, effluent will be directly discharged into the sump. Sludge will be collected every 6 months, air dried, and incinerated. Prior to the operation of an RBC unit, sewage will be incinerated and gray water will be treated in a sump.



Combustible wastes and waste oil will be incinerated on-site and non-combustible wastes will be brought to the Rankin Inlet municipal landfill. Empty fuel drums will be removed from the project area and returned to their vendors. Any hazardous wastes associated with the Ferguson Lake Project will receive treatment at an approved facility.

The proponent will continue to use the Ferguson Island airstrip to access its project area. A main fuel cache will be established on this island and a monthly supply of fuel will be stored at the new camp site. Liquid fuel products will be contained in 205 L steel drums. The monthly supply of fuel to be maintained at the new camp will consist of 37,515 L of diesel (183 drums), 24,600 L of Jet B fuel (120 drums), 1,435 L of gasoline (7 drums), and one 100 lb propane tank.

All fuel products will be stored in locations that are at least 100 m above the high water mark of nearby water bodies. A Spill Contingency Plan has been prepared for this project. This Plan provides a chain of command for responding to spills, response procedures for spills on land, water, snow, and ice, a list of contacts for reporting spills, and an inventory of spill response equipment. Spill response kits will be made available at the camp site, fuel storage and transfer areas, generator shack, and helicopter landing area.

Regular maintenance, temporary closure, and final abandonment procedures are provided in the project's Abandonment and Restoration Plan.

Environment Canada recommends that all drill water be placed within sumps or receive another form of treatment (e.g., containment troughs) that separates sediment and other deleterious substances from water before it is released into the surrounding environment.

Environment Canada recommends that erosion control measures be implemented at the point of discharge for treated gray water and drill water.

Environment Canada requests that its Enforcement Officer in Iqaluit, Jimmy Noble, be included in the Spill Contingency Plan's Contact List. Noble can be reached by office telephone at (867) 975-4644, cell phone at (867) 975-1925, and by secure fax-line at (867) 975-4594. Please note that the Environment Canada phone number indicated in the Contact List is incorrect (i.e., 867-975-.4464).

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

GENERAL

- 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 35 of the *Migratory Bird Regulations* states that **no person shall deposit nor permit to be deposited, oil, oil wastes or any other substance harmful to migratory birds in any waters or any area frequented by migratory birds.** Therefore, Environment Canada recommends that sumps be backfilled or made otherwise inaccessible to migratory birds prior to their arrival in spring and that the proponent ensure that all spills are thoroughly cleaned-up.



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 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 of 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 should be disposed of in a sump such that the contents do not enter any water body.

CAMPS

- The proponent shall not store materials on the surface ice of lakes or streams, except that which is for immediate use.
- 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.

FUEL STORAGE / SPILL CONTINGENCY / HAZARDOUS MATERIALS

- Environment Canada recommends the use of secondary containment, such as self-supporting insta-berms, when storing barreled fuel on location rather than relying on natural depressions.
- Drip pans, or other similar preventative measures, shall be used when refueling equipment on site.

MIGRATORY BIRDS

- Environment Canada recommends that all activities be conducted outside the migratory bird breeding season, which extends from approximately 15 May to 1 August. These dates are approximate, and if active nests (i.e., nests containing eggs or young) are encountered outside of these dates, the proponent should avoid the area until nesting is complete (i.e., the young have left the nest). Paragraph 6(a) of the *Migratory Bird Regulations* states that **no one shall disturb or destroy the nests of migratory birds.**
- In order to mitigate potential effects and minimize disturbance, any aircraft used in conducting project activities should maintain a horizontal distance of 2 km and a vertical distance of 610 m from any observed groups (colonies) of migratory birds.



Environment Environnement
Canada Canada

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.

Sincerely,

David W. Abernethy
Environmental Assessment Technician

CC. Colette Spagnuolo – Environmental Assessment / Contaminated Sites Specialist, Environment Canada, Iqaluit