Environment Canada Environnement Canada

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9 November 2011

EC file: 4703 001 094
NWB file: 2BE-GRA----

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

Via email: licensing@nunavutwaterboard.org

RE: 111026 2BE-GRA---- Additional Review Requested – Indicator Minerals Kitikmeot Region

Environment Canada (EC) has reviewed the information submitted with the above-mentioned water license 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*.

Indicator Minerals Inc. is applying to the NWB for a Type B water license to support exploration activities on the Boothia Peninsula, north of the community of Taloyoak. Proposed project activities include prospecting, staking, geological mapping, rock sampling, airborne and ground geophysics, helicopter support diamond drilling, construction of an exploration camp to support crews, and fuel transport and storage. The project is proposal to occur through April 2015, with drilling operations proposed to occur between June and September. The original application was distributed by the NWB for review on 7 January 2010.

As there are no new supporting documents to review at this time associated with this application, comments previously submitted on behalf of EC on 5 February 2010 would still apply (see attached). Regarding Indicator Minerals Inc.'s response to EC's previously submitted comments, specifically regarding incineration, EC would like provide the following comments for the NWB's consideration:

- The burning of waste products releases numerous contaminants to the air, many of them persistent, bio-accumulative and toxic (e.g. polycyclic aromatic hydrocarbons - PAH's - heavy metals, chlorinated organics – dioxins and furans). These contaminants can result in harmful impacts to human and wildlife health through direct inhalation and they can also be deposited to land and water, where they bio-accumulate through food chains affecting wildlife and country foods. Therefore, burning should only be considered after all other alternatives for waste disposal have been explored and the devices used for incineration meet the emission limits established under the CCME Canada-wide Standards (CWS) for Dioxins and Furans and the CWS for Mercury Emissions. The Government of Canada, the Governments of the Northwest Territories, Nunavut and the Yukon are

signatories to these standards and are required to implement them according to their respective jurisdictional responsibilities.

- EC recommends the use of an approved incinerator for the disposal of combustible camp wastes. EC has developed a Technical Document for Batch Waste Incineration, and is available at the following web link:
  http://www.ec.gc.ca/gdd-mw/default.asp?lang=En&n=F53EDE13-1
  The technical document provides information on appropriate incineration technologies, best management and operational practices, monitoring and reporting. This information should be incorporated into an incineration management plan for the camp. EC would like the opportunity to review this plan prior to implementation.

If there are any changes to the project, EC should be notified, as further review may be necessary. Please do not hesitate to contact the undersigned with any questions or comments with regards to the foregoing at (867) 975-4631 or by email at Paula.C.Smith@ec.gc.ca.

Yours truly,

Paula C. Smith
Environmental Assessment Coordinator

cc: Carey Ogilvie (Head, Environmental Assessment-North, EPO, Yellowknife, NT)
Ron Bujold (Environmental Assessment Technician, EPO, Yellowknife, NT)
Allison Dunn (Sr. Environmental Assessment Coordinator, EPO, Iqaluit, NU)

Environment Canada **Environnement Canada**

Northern Division
Environmental Protection Operations
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February 5, 2010

Our file: 4703 001 094
NWB file: 2BE-GRA

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Via email at: licensing@nunavutwaterboard.org

Re: NWB 2BE-GRA- Indicator Minerals Inc. - Grail Project – New Application – Type "B" Water License

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 the *Canadian Environmental Protection Act*, Section 36(3) of the *Fisheries Act*, the *Migratory Birds Convention Act*, and the *Species at Risk Act*.

The purpose of this project is to evaluate the potential for diamonds in the project area. The Grail Property is located north of the community of Taloyoak. Project activities will include prospecting, staking, geological mapping, rock sampling, airborne and ground geophysics, helicopter supported diamond drilling and fuel transport and storage. The project is proposed to occur from April 2010 to April 2015, with drilling operations expected to occur June through to September. A camp will be located at 70°03'00"N, 94°17'50", and will include a fuel cache, sleep tents, office tent, core tent, first aid station, kitchen, mess, outhouse facility, generator building, helicopter landing area, and an incineration area.

Comments and recommendations submitted for the project on December 15, 2009 in response to the NIRB Part 4 Screening and the amendment would apply to this water license application (see attached).

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 carrie.spavor@ec.gc.ca.

Yours truly,

Original signed by

Carrie Spavor
Environmental Assessment Coordinator

c.c: Carey Ogilvie (Head, Environmental Assessment-North, EPO, Yellowknife, NT)
Ron Bujold (Environmental Assessment Technician, EPO, Yellowknife, NT)

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December 15, 2009

Our file: 4703 001 094
NIRB file: 09EN070

George Taptuna
Assistant Technical Advisor
Nunavut Water Board
P.O. Box 2379
Cambridge Bay, NU X0B 0C0

Via Email info@nirb.ca

RE: NIRB 09EN070- Notice of Part 4 Screening for Indicator Minerals Inc.'s "Grail Property" Project Proposal

Thank you for the opportunity to provide input into the Nunavut Impact Review Board's (NIRB) Part 4 screening decision for Indicator Minerals Inc.'s "Grail Property" Project Proposal. The following specialist advice has been provided pursuant the Canadian Environmental Protection Act, Section 36(3) of the Fisheries Act, the Migratory Birds Convention Act, and the Species at Risk Act.

The purpose of this project is to evaluate the potential for diamonds in the project area. The Grail Property is located north of the community of Taloyoak. Project activities will include prospecting, staking, geological mapping, rock sampling, airborne and ground geophysics, helicopter supported diamond drilling and fuel transport and storage. The project is proposed to occur from April 2009 to September 2015, with drilling operations expected to occur June through to September. A camp will be located at 450550E, 7772000N UTM 15W, and will include a fuel cache, sleep tents, office tent, core tent, first aid station, kitchen, mess, outhouse facility, generator building, helicopter landing area, and an incineration area.

After reviewing the project proposal and supporting documents, Environment Canada (EC) is of the opinion that the proposed project is of a type where the potential adverse effects are highly predictable and mitigable with known technology.

Recommendations

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

- All sumps, spill basins, and fuel caches should be located in such a manner as to ensure that their contents do not enter any water body, are to backfilled, and re-contoured to match the surrounding landscape when they are no longer required.
- No disturbance of the stream bed or banks of any definable watercourse should be permitted.
- Suitable erosion control measures should be implemented at all stream/lake crossings.

Drilling:

- Chemical additives or drilling muds used in connection with this drilling program shall be disposed of such that they do not enter any waterbody 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 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% for those 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.
- The proponent should be aware that the Canadian Environmental Protection Act lists calcium chloride (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.

Waste Disposal

- The proponent shall ensure that all hazardous wastes, including waste oil, receive proper treatment and disposal at an approved facility.
- 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.
- In the Indian and Northern Affairs *Application for Land Use Permit*, document states that "sewage will be removed from site," however, in the NIRB Part II it is stated that "pacto toilets/bagged waste will be incinerated in the incinerator."

  Raw sewage has high moisture content and low heat content that will increase operating costs dramatically and lead to poor incinerator performance. It is unlikely that the sewage will be completely combusted and could lead to the release of pathogens into the environment. The high moisture materials can leak from the incinerator hearth and lead to equipment damage and present health hazards to workers.

  Raw sewage should not be burned in batch incinerators that are typically used in the north. Raw sewage should only be burned in incineration equipment designed for this type of waste. If Indicator decides to pursue sewage sludge incineration, it should provide the Board with the design specifications of the incinerator and a letter from the manufacturer stating that this equipment is suitable for burning this type of waste.

- Environment Canada recommends the use of an approved incinerator for the disposal of combustible camp wastes. The proponent is considering onsite incineration as another waste disposal option. EC has developed a Technical Document for Batch Waste Incineration, and is available at the following web link: http://www.ec.gc.ca/drgd-wrmd/default.asp?lang=En&n=82401EC7-1. The technical document provides information on appropriate incineration technologies, best management and operational practices, monitoring and reporting. This information should be incorporated into an incineration management plan for the camp. EC would like the opportunity to review this plan prior to implementation.

Abandonment and Reclamation Plan

- Please note that the number listed for the Environment Canada 24hr Emergency Pager is no longer in service.

Fuel/Spill Contingency

- When storing barreled fuel on location, EC recommends the use of secondary containment, such as self-supporting insta-berms, rather than using natural depressions. Further, all fuel caches 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.
- Decanting of snow or water from the berm area should proceed only if the appropriate chemical analysis has determined that the contents will not violate the requirements of Section 36.3 of the *Fisheries Act*, such as contact with hydrocarbons.
- Fuel containers, including barrels, should be marked with the responsible party's name, product type, and year purchased or filled.

Wildlife

- Section 6 (a) of the *Migratory Birds Regulations* states that no one shall disturb or destroy the nests or eggs of migratory birds. Therefore, Environment Canada recommends that all activities in which there is a risk of disturbing or destroying nests or eggs be conducted outside the migratory bird breeding season, which extends from approximately May 15 to July 31. These dates are approximate, and if 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 vicinity of the nest).
- For activities permitted to occur during the breeding season, Environment Canada recommends that the proponent confirm there are no active nests (i.e., nests containing eggs or young) in the vicinity of their operations before activities commence. If active nests of migratory birds are discovered, the proponent should halt all activities in the nesting area until nesting is completed (i.e., the young have left the vicinity of the nest).
- Environment Canada recommends that food, domestic wastes, and petroleum-based chemicals (e.g., greases, gasoline, glycol-based antifreeze) be made inaccessible to wildlife at all times. Such items can attract predators of migratory birds such as foxes, ravens, gulls, and bears. Although these animals may initially be attracted to the novel food sources, they often will also eat eggs and young birds in the area. These predators can have significant negative effects on the local bird populations.
- Section 5.1 of the *Migratory Birds Convention Act* prohibits persons from depositing substances harmful to migratory birds in waters or areas frequented by migratory birds or in a place from which the substance may enter such waters or such an area.
- In order to reduce aircraft disturbance to migratory birds, Environment Canada recommends the following:
    - Fly at times when few birds are present (e.g., early spring, late fall, winter)

- If flights cannot be scheduled when few birds are present, plan flight paths that minimize flights over habitat likely to have birds and maintain a minimum flight altitude of 650 m (2100 feet).
- Minimize flights during periods when birds are particularly sensitive to disturbance such as migration, nesting, and moulting.
- Plan flight paths to avoid known concentrations of birds (e.g., bird colonies, moulting areas) by a lateral distance of at least 1.5 km. If avoidance is not possible, maintain a minimum flight altitude of 1100 m (3500 feet) over areas where birds are known to concentrate.
- Avoid the seaward side of seabird colonies and areas used by flocks of migrating waterfowl by 3 km.
- Avoid excessive hovering or circling over areas likely to have birds.
- Inform pilots of these recommendations and areas known to have birds.

- 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, Environment Canada suggests that species on other Schedules of SARA and under consideration for listing on SARA, including those designated as at risk by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), be considered during an environmental assessment in a similar manner.

Terrestrial Species at Risk [1]	COSEWIC Designation	Schedule of SARA	Government Organization with Primary Management Responsibility [2]
Peregrine Falcon (*anatum-tundrius* complex[3])	Special Concern	Schedule 1 (*anatum*) Schedule 3 (*tundrius)*	Government of Nunavut
Peary Caribou	Endangered	Pending	Government of Nunavut
Red Knot (*rufa* subspecies)	Endangered	Pending	EC
Grizzly Bear	Special Concern	Pending	Government of Nunavut
Polar Bear	Special Concern	Pending	Government of Nunavut
Wolverine (Western Population)	Special Concern	Pending	Government of Nunavut

[1] The Department of Fisheries and Oceans has responsibility for aquatic species.

[2] Environment Canada has a national role to play in the conservation and recovery of Species at Risk in Canada, as well as responsibility for management of birds described in the *Migratory Birds Convention Act* (MBCA). Day-to-day management of terrestrial species not covered in the MBCA is the responsibility of the Territorial Government. Thus, for species within their responsibility, the Territorial Government is best suited to provide detailed advice and information on potential adverse effects, mitigation measures, and monitoring.

[3] The *anatum* subspecies of Peregrine Falcon is listed on Schedule 1 of SARA as threatened. The *anatum* and *tundruis* subspecies of Peregrine Falcon were reassessed by COSEWIC in 2007 and combined into one subpopulation complex. This subpopulation complex was assessed by COSEWIC as Special Concern.

Impacts could be disturbance and attraction to operations.

Environment Canada recommends:

    - Species at Risk that could be encountered or affected by the project should be identified and any potential adverse effects of the project to the species, its habitat, and/or its residence noted. All direct, indirect, and cumulative effects should be considered. Refer to species status reports and other information on the Species at Risk registry at www.sararegistry.gc.ca for information on specific species.
    - If Species at Risk are encountered or affected, the primary mitigation measure should be avoidance. The proponent should avoid contact with or disturbance to each species, its habitat and/or its residence.
    - Monitoring should be undertaken by the proponent to determine the effectiveness of mitigation and/or identify where further mitigation is required. As a minimum, this monitoring should include recording the locations and dates of any observations of Species at Risk, behaviour or actions taken by the animals when project activities were encountered, and any actions taken by the proponent to avoid contact or disturbance to the species, its habitat, and/or its residence. This information should be submitted to the appropriate regulators and organizations with management responsibility for that species, as requested
    - For species primarily managed by the Territorial Government, the Territorial Government should be consulted to identify other appropriate mitigation and/or monitoring measures to minimize effects to these species from the project.
    - Mitigation and monitoring measures must be taken in a way that is consistent with applicable recovery strategies and action/management plans.
- All mitigation measures identified by the proponent, and the additional measures suggested herein, should be strictly adhered to in conducting project activities. This will require awareness on the part of the proponents' representatives (including contractors) conducting operations in the field. Environment Canada recommends that all field operations staff be made aware of the proponents' commitments to these mitigation measures and provided with appropriate advice / training on how to implement these measures.
- Implementation of these measures may help to reduce or eliminate some effects of the project on migratory birds and Species at Risk, but will not necessarily ensure that the proponent remains in compliance with the *Migratory Birds Convention Act*, *Migratory Birds Regulations,* and the *Species at Risk Act*. The proponent must ensure they remain in compliance during all phases and in all undertakings related to the project.

If there are any changes in the proposed project, EC should be notified, as further review may be necessary. If you should have any questions regarding the foregoing please contact Environment Canada via email at EC.EA.NU@ec.gc.ca.

Yours truly,

Original signed by

Carrie Spavor
Environmental Assessment Coordinator

c.c: Carey Ogilvie (Head, Environmental Assessment-North, EPO, Yellowknife, NT)
Ron Bujold (Environmental Assessment Technician, EPO, Yellowknife, NT)
Myra Robertson (EA Coordinator, Canadian Wildlife Service, EPO, Yellowknife, NT)