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15 June 2012

EC file: 4709 012 001 090
MVEIRB file: EA0809-004

Richard Edjericon, Chairperson
Mackenzie Valley Environmental Impact Review Board
P.O. Box 938
Yellowknife, NT, X1A 2N7

Via Email

RE: Environment Canada's Technical Report – EA0809-004 – Fortune Minerals Limited – NICO Cobalt-Gold-Bismuth-Copper Project

Please find attached Environment Canada's (EC) Technical Report to the Mackenzie Valley Environmental Impact Review Board (MVEIRB) in respect to the scheduled Public Hearings concerning the Fortune Minerals Ltd proposed NICO Cobalt-Gold-Bismuth-Copper Project.

EC staff will be in attendance at the public hearings to make a formal presentation of this intervention, and will be available to respond to any questions which the MVEIRB members, the Proponent, or the public may have concerning the issues raised by EC in this submission.

If you wish clarification on any aspect of this submission prior to the public hearing, please contact Sarah-Lacey McMillan at (867) 669-4724 or by email at Sarah-Lacey.McMillan@ec.gc.ca.

Yours truly,

Susanne Forbrich
Manager, Environmental Assessment and Marine Programs
Environment Canada

cc: Carey Ogilvie (Head EA-North, Environment Canada, Yellowknife)
EC NICO Review Team

ENVIRONMENT CANADA'S

SUBMISSION TO THE

MACKENZIE VALLEY ENVIRONMENTAL IMPACT REVIEW BOARD

FOR THE PUBLIC HEARINGS ON THE NICO PROJECT

DEVELOPERS ASSESSMENT REPORT SUBMITTED BY FORTUNE MINERALS LTD. May 2011

June 15th, 2012

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NON-TECHNICAL EXECUTIVE SUMMARY

Environment Canada (EC) is a science-based Department whose business is to help Canadians live and prosper in an environment that needs to be conserved and protected. Contributing to making sustainable development a reality in Canada's North is a priority for EC. The Department focuses on provision of scientific expertise for use in decisions on developments, so that all parties working together can ensure there is minimal impact on the natural environment, and ecosystem integrity is maintained and protected.

Environment Canada staff have reviewed Fortune Mineral Limited's project and documentation submitted for the environmental assessment. EC's submission focuses on issues that fall within our mandated responsibilities for aquatic quality and water management, contaminants management, air quality, migratory birds, and species at risk. Comments and recommendations have been provided on the following topics:

Water and Effluent:
There have been discussions of appropriate receiving environment objectives, and the Proponent has proposed Site Specific Water Quality Objectives (SSWQO). Many SSWQOs are higher than EC feels is warranted, and do not necessarily represent objectives that best serve the protection and uses of the downstream receiving waters. EC does not agree with how all of the SSWQOs were derived by the Proponent (e.g. aluminum, ammonia, nitrate, chloride, sulphate). Environment Canada commends the Proponent on proactive planning with respect to mining waste management, and mitigation of potential effects. Specifically, the proposed use of a reverse osmosis treatment system will improve effluent quality significantly, such that further work on SSWQOs can reasonably be deferred to the regulatory stage.

Management Plans:
The Proponent has committed to develop Management Plans, and EC concurs that use of best management practices and/or adaptive management can represent effective mitigation and response. To formalize these commitments, EC requests that the Board either include the development and implementation of these Plans as a Board measure, or explicitly base the significance determination on the commitments made by the Proponent.

Species at Risk and Migratory Birds:
Eleven (11) Species at Risk may be encountered in the project area. EC recommends that avoidance of contact with or disturbance of each species should be the primary mitigation measure. Boreal caribou are listed as Threatened under Schedule 1 of SARA. EC recommends the Proponent consult with GNWT-ENR caribou experts to identify any plans to manage undisturbed caribou habitat in the project area, and to discuss how the project aligns with territorial management strategies and actions plans for boreal woodland caribou.

It is anticipated that construction of the Co-Disposal Facility will take place during the summer. EC generally recommends that project proponents avoid engaging in potentially destructive activities during the key migratory bird breeding period as primary mitigation to reduce the risk of nest destruction. EC recommends the Proponent implement best management practices to minimize bird collisions. EC encourages the Proponent to follow through on their commitment to monitor contaminant levels and the level of use of these areas by waterfowl and waterbirds. If monitoring indicates a potential health risk for birds, the Proponent should implement procedures to deter birds from making further use of water management ponds.

The Proponent has identified management procedures to reduce attraction of predators and scavengers to project facilities and measures to deter wildlife. EC recommends the Proponent implement the waste management and wildlife monitoring measures outlined in their draft Wildlife Effects Monitoring Program.

SECTION 1.0: INTRODUCTION

Contributing to the realization of sustainable development in Canada's North is a priority for Environment Canada (EC). The Department focuses on the provision of scientific expertise for incorporation into decisions on developments, such that all parties working together can ensure that there is minimal impact on the natural environment, and that ecosystem integrity is maintained and preserved. Toward these goals, the Department has reviewed the Fortune Minerals Limited's Developer's Assessment Report (DAR) and supporting documents for the proposed NICO Project that have been provided to the Mackenzie Valley Environmental Impact Review Board (MVEIRB).

Environment Canada's review focused on aspects that fall within EC's mandated responsibilities in the following areas: environmental effects on or related to aquatic quality and water management, migratory birds, species at risk, contaminants management, and emergency response planning.

Environment Canada would like to thank the MVEIRB for the opportunity to comment on the NICO Project, and we hope that these technical comments and recommendations are useful to the Board in their decision-making process. Should there be any new information brought forward at the hearings, Environment Canada respectfully requests the opportunity to submit additional written comments after the public hearings.

The document is divided into four main sections. Section One provides an overview of EC's mandate and regulatory responsibilities. Section Two provides an overview of the Project and the environmental assessment process to date. Section Three provides EC's technical comments and recommendations to the proponent in response to the DAR and supporting documents. Finally, a summary of the submission's recommendations is provided in Section Four.

1.1 Mandate of Environment Canada

The general mandate of EC is defined by the *Department of the Environment Act* and the legislation assigned to it by Parliament through the Minister. In delivering this mandate, the Department is also responsible for the development and implementation of policies, guidelines, codes of practice, federal, territorial, and international agreements, and related programs. The overall objective is to foster harmony between society and the environment for the economic, social and cultural benefit of present and future generations of Canadians. The Department shares this goal with other federal agencies, provinces, territories and First Nations. Environment Canada is also responsible for providing specialist or expert information and knowledge to federal government agencies and Boards and for the preservation and enhancement of environmental quality.

1.2 Regulatory Responsibilities

Environment Canada is participating in the review of the proposed NICO Project in order to provide specialist expertise, information and knowledge to the MVEIRB. Environment Canada will not be issuing permits or authorizations for the proposed Project, but has regulatory duties and responsibilities under the legislation outlined below.

1.3 Relevant Legislation, Regulations, Policies and Guidelines

The following relevant legislation administered or adhered to by EC influenced the content of this submission: *Department of the Environment Act*, *Canadian Environmental Assessment Act*, *Canadian Environmental Protection Act, 1999*, *Fisheries Act* – Pollution Prevention Provisions, *Migratory Birds Convention Act* and *Migratory Bird Regulations*, and the *Species at Risk Act*. Various regulations, policies and guidelines stem from these legislations. Details regarding the legislation, regulations, policies and guidelines are provided in Appendix A.

SECTION 2.0: BACKGROUND

Fortune Minerals Ltd is proposing to commission and operate the NICO Cobalt-Gold-Bismuth-Copper Project (NICO Project) 50 kilometers northeast of Whati within the Tlicho territory of the NWT. NICO is a proposed a cobalt-gold-bismuth mining and milling project. The project comprises a mine site with open pit and underground operations, ore processing mill facilities, tailings and mine rock management areas, a camp site, waste management facilities, an effluent treatment facility and roads within the mine site.

This submission takes into consideration all of the documents submitted with the DAR, as well as the IR responses. Should new or additional relevant information be brought forward by the proponent or be identified during the final public hearings, this submission will be re-examined. Within the context of the additional information, any changes in EC's recommendations and position will be brought to the attention of the MVEIRB and the proponent.

SECTION 3.0: TECHNICAL COMMENTS

Preface:
While several of EC's concerns regarding the project have been addressed during the technical meetings, ensuing discussions, and information requests leading up to the hearings, a number of outstanding issues remain. We note that the proponent was very responsive with providing information throughout the process.

Section 3.1: Water and Effluent

Issue 3.1.1: Receiving Environment Site Specific Water Quality Objectives (SSWQOs)

Reference(s):

1. DAR Appendix 7.VII Site Specific Water Quality Objectives;
2. NICO Cobalt Gold Bismuth Copper Project, Aquatic Risk Assessment, Golder Associates, April 2012;
3. NICO Project: Update of Receiving Water Quality Predictions for the Operations Period with Revised Effluent Treatment Facility Discharge Quality, Golder Associates, April 13 2012;
4. Response to IRs from EC
5. Undertaking #1 Effluent Treatment System Information Feb. 23, 2012
6. Update of receiving water quality predictions for the operations period with revised effluent treatment facility discharge design. April 13, 2012

Proponent's Conclusion:
The Aquatic Risk Assessment presents receiving water quality objectives for 11 metals (aluminum, antimony, arsenic, barium, cobalt, copper, iron, manganese, mercury, selenium and vanadium). Previous work (Appendix 7.VII) had evaluated these, plus ammonia, cadmium, chloride, lead, nitrate, sulphate, uranium and zinc. A toxicologically-based approach was taken, with the goal stated as follows:

> "…to be protective of the most sensitive species, in the most sensitive life stage, over an indefinite period of exposure."

Environment Canada's Conclusions
Many SSWQOs are higher than EC feels is warranted, and do not necessarily represent objectives that best serve the protection and uses of the downstream receiving waters.
EC does not agree with how all of the SSWQOs were derived by the Proponent (e.g. aluminum, ammonia, nitrate, chloride, sulphate). EC would like to note that regardless of the proposed objectives (and without providing a detailed analysis of them), the predicted effluent quality is excellent, and would not be expected to result in concentrations in the receiving environment being elevated above national guidelines.

Environment Canada commends the Proponent on proactive planning with respect to mining waste

management, and mitigation of potential effects. Specifically, the proposed use of a reverse osmosis treatment system will improve effluent quality significantly. Although Fortune Minerals Ltd. proposes to treat wastewater to a high standard, predicted receiving environment concentrations are elevated and may appear to warrant higher SSWQOs. These elevations appear, to a large extent, to be an artifact of conservative assumptions and modeling inputs, primarily for fugitive dust contributions. Contributions from dust are proposed to be addressed with use of best management practices, formalized in management plans, and followed up with monitoring. EC supports the use of this approach.

Environment Canada's Recommendations
EC does not agree with the proposed SSWQOs, and recommends that these not be used as a basis for assessing receiving water impacts nor for developing effluent quality criteria.

EC is of the opinion that deferring further discussion of the SSWQOs to the regulatory stage would not compromise the assessment of discharge-related potential impacts provided the proposed treatment system and mitigation commitments go forward.

Section 3.2: Management Plans
Issue 3.2.1: **Commitments for Management Plans**

Reference(s)*:* Fortune Minerals Limited NICO DAR Air Quality - Section: 10.0

Proponent's Conclusions:
In the NICO DAR - Air Quality Monitoring and Follow-up, Section 10.9, the Proponent has provided an outline for Monitoring and Management Plans. This section contains several components including the following: Monitoring Program and Mitigation and Adaptive Strategies (DAR 10.9.1), Best Management Practices Plan to Control Fugitive Dust and Metals Emissions (DAR 10.9.2), Incineration Management Plan (DAR 10.9.3).

Environment Canada's Conclusions:
EC supports the approach provided in the Air Quality Monitoring and Follow-up outline. These Monitoring Programs and Management Plans should be developed in consultation with EC and the GNWT.

The Proponent has committed to develop these Management Plans, and EC concurs that use of best management practices and/or adaptive management can represent effective mitigation and response. To formalize these commitments, EC requests that the Board either include the development and implementation of these Plans as a Board measure, or explicitly base the significance determination on the commitments made by the Proponent.

***Environment Canada's Recommendation*:**
EC supports the commitments made by the Proponent, and recommends the proponent provide a commitment table outlining all commitments to Management Plans including those relating to Air Quality.

Section 3.3: Wildlife

Preface:
The Canadian Wildlife Service (CWS) of EC administers and enforces the *Migratory Birds Convention Act* (MBCA) and *Migratory Bird Regulations* (MBR). Paragraph 6(a) of the MBR states that no one shall destroy or disturb the nests or eggs of migratory birds and Section 5.1 of the MBCA 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. Environment Canada also administers and enforces the *Species at Risk Act* (SARA). Section 32 (1) of SARA states that no person shall kill, harm, or harass an individual of a species listed as endangered or threatened, and Section 33 states that no person shall damage or destroy the residence of one or more individuals of a wildlife species listed as a endangered or threatened (a

"residence" being defined as a dwelling-place such as a den, nest or other similar area or place that is occupied during all or part of the species life-cycle).

CWS provides expert advice in environmental assessment review processes focusing primarily on identifying potential adverse effects to migratory bird populations, habitats, and species at risk, and appropriate measures to mitigate those effects. The advice provided in an environmental assessment process does not constitute an authorization for incidental take under the MBR or SARA, nor does it assure that the project will not result in the killing or taking of a migratory bird or its nest or a species at risk. Furthermore, the advice does not absolve project proponents from their obligation to comply with all provisions of the MBCA, MBR and SARA.

Issue 3.3.1: Disturbance to boreal woodland caribou habitat

Reference(s):

- DAR section 8.1.3.2
- Technical Sessions Undertaking #4 – Revised
- Boreal Caribou and Boreal Caribou Habitat in Wek'eezhii – Final Report May 2012

Proponent's Conclusion:

In response to Undertaking #4 of the NICO project technical sessions, the Proponent provided estimates of habitat loss due to the NICO mine project within the boreal woodland caribou range. Although only the south western portion of the NICO Project Access Road (NPAR) overlapped with the NWT South boreal woodland caribou range identified in Environment Canada's proposed "Recovery Strategy for the Woodland Caribou (*Rangifer tarandus caribou*), Boreal Population, in Canada" (2011), the Proponent conservatively assumed that the entire NICO project footprint and NPAR would overlap with the NWT South range when calculating the total amount of habitat disturbance associated with the project. The existing Tlicho Winter Road and the proposed all-weather Tlicho Road were also included in disturbance calculations. A 500 m buffer was added to the direct footprint of each feature to estimate areas of habitat disturbance. The mine site and the NPAR were expected to add 4255 ha of habitat disturbance to the NWT south range, or roughly 0.02% new disturbance in the range. The Developer calculated that the NICO mine footprint, the NPAR and the proposed Tlicho Road combined would add 24,825 ha of new disturbance to the NWT South range but expected that even with this additional disturbance, the total amount of disturbance in the NWT South range would remain close to 38%.

Environment Canada's Conclusions:

Boreal caribou are listed as Threatened under Schedule 1 of SARA. Consistent with SARA requirements, EC posted a proposed "Recovery Strategy for the Woodland Caribou (*Rangifer tarandus caribou*), Boreal Population, in Canada" on the Species at Risk Public Registry on August 26, 2011. As noted by the Proponent, the NPAR and proposed Tlicho Road overlap with the boundary of the NWT South range of Woodland Caribou (boreal population; hereafter referred to as boreal caribou) identified in the proposed recovery strategy.

As indicated in Figure 1 of Undertaking #4, both the NPAR and the proposed Tlicho Road overlap or lie within the eastern boundary of the NWT South population range. The NICO mine footprint lies just outside of the eastern range boundary. Based on the Proponent's calculations (Undertaking #4 - Table 1), the total buffered footprint for the NPAR and the proposed Tlicho Road will be 26,469 ha. Figure 1 identifies the existing footprint from fires <40 years old and buffered anthropogenic features in the project area based on geospatial files available with the proposed recovery strategy[1]. A comparison of Figure 1(below) and Figure 2 of the Developer's response to Undertaking #4

1 http://www.data.gc.ca/default.asp?lang=En&n=5175A6F0-1&xsl=datacataloguerecord&metaxsl=datacataloguerecord&formid=F34DCB32-4845-4E88-B125-5AC03C6E4A7F,%20F34DCB32-4845-4E88-B125-5AC03C6E4A7F

suggests that the buffered footprint for the NPAR and the proposed Tlicho Road will not overlap with any existing fires <40 years old, although some overlap may occur with the existing anthropogenic footprint in the region. Therefore, the buffered footprints for the NPAR and the proposed Tlicho Road could add roughly 26,469 ha of new disturbance to the NWT South range. Currently, total habitat disturbance in the NWT South range is at 38%. The NPAR and the proposed Tlicho Road will add 0.11% more disturbance to the range.

There is no indication that the location of the NPAR or the proposed Tlicho Road could be re-routed to avoid undisturbed habitat.

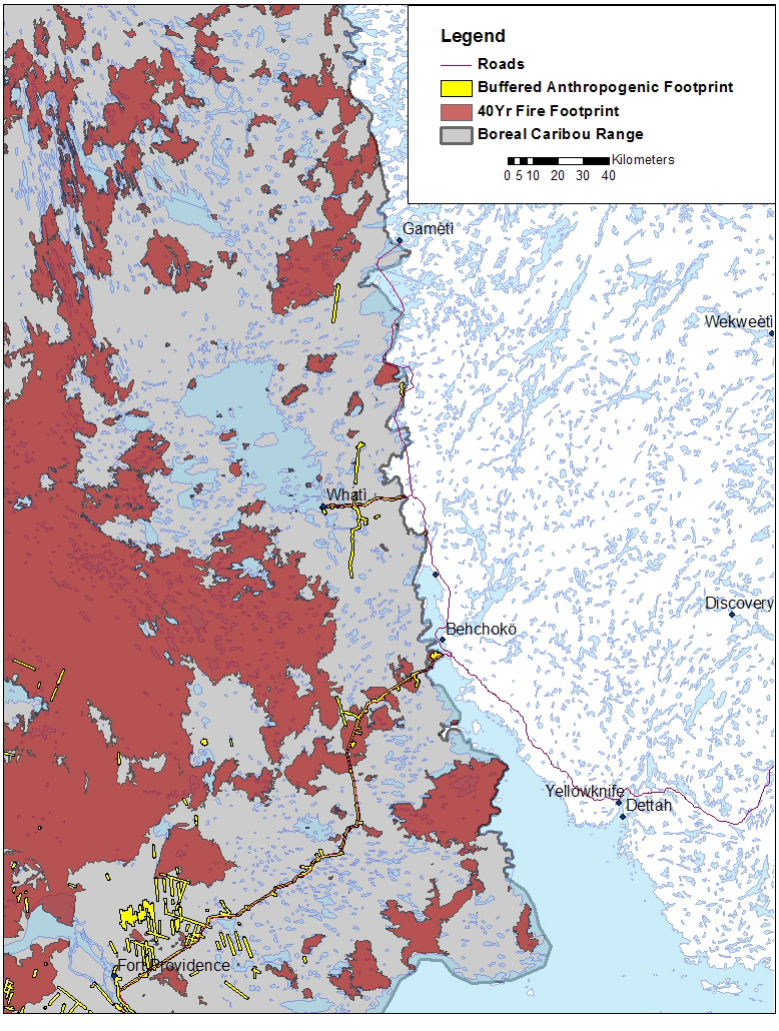

Figure 1. Existing fires <40 years old and buffered anthropogenic features within the NWT South boreal caribou range in the vicinity of the proposed NICO mine project based on disturbance shapefiles provided with EC's proposed recovery strategy for boreal caribou. The location of the proposed NICO mine site, NPAR and proposed Tlicho overland road can be seen on Figure 2 of the Developer's response to Undertaking #4.

Environment Canada's Recommendations
EC recommends the proponent consult with GNWT-ENR caribou experts to identify any plans to manage undisturbed caribou habitat in the project area, and to discuss how the project aligns with territorial management strategies and actions plans for boreal woodland caribou.

Literature Cited:
Environment Canada, 2011. Recovery Strategy for the Woodland Caribou (*Rangifer tarandus caribou*), Boreal Population, in Canada [Proposed]. Available at: http://www.sararegistry.gc.ca/document/default_e.cfm?documentID=2253

Issue 3.3.2: **Avoiding disturbance/destruction of nests and eggs of migratory birds**

References:
- DAR Appendix 1.III – Commitments - 15 – Subject of Note: Wildlife
- DAR Section 3.3.1.4 – Mine Rock and Tailings Co-Disposal Facility
- DAR Section 14.2.2.1 – Ecological Landscape Classification
- DAR – Annex D – Wildlife Baseline
- DAR Appendix 3.II – CDF Management Plan – section 3.II.5.6 – Co-disposal Facility Construction
- Developer responses to first round IRs # EC-3 and EC-4

Proponent's conclusion:
The Developer has committed to conducting all vegetation clearing outside of the migratory bird season where possible. It is stated that where construction activities must be completed during the migratory bird breeding season, vegetation and "Growth Media" will be removed prior to the nesting season. The Developer has also stated that the Co-Disposal Facility (CDF) for tailings and mine rock will be regularly monitored for wildlife activity and wildlife hazards.

Environment Canada's Conclusions:
It is anticipated that construction of the CDF will take place during the summer. Based on Figure 14.2-2a of the DAR, the main habitat types found within the CDF footprint include Bedrock-Open Conifer, Coniferous Spruce, Deciduous Aspen – Paper Birch, Treed Fen and Treed Bog. Two small lakes (Grid Pond and Little Grid Pond) are also found within the CDF footprint. Table 3.10-1 of Annex D of the DAR and the Developer's response to IR # EC-3 and EC-4 indicate that several species of upland bird, shorebird, waterfowl and waterbird (e.g. scaup and Hooded Merganser) currently use the terrestrial and aquatic habitat within the CDF. Although the Developer will remove trees within the CDF footprint, retention of the organic layer could mean that this area continues to provide suitable nesting habitat for migratory birds.

Activities that physically disturb terrestrial habitat during the breeding season can result in the inadvertent disturbance or destruction of nests and eggs of migratory birds. This "incidental take" of migratory bird nests and eggs is prohibited under section 6(a) of the federal *Migratory Birds Regulations*. Under the legislation, Environment Canada cannot issue a permit to authorize the disturbance or destruction of a nest in circumstances of incidental take. As a result, the Developer is responsible for taking appropriate measures to ensure that they comply with the legislation and regulations and minimize risks to migratory birds.

Construction of the CDF perimeter dyke could result in incidental take because of gradual flooding within the anticipated CDF footprint. Gradual deposition of waste rock and tailings into the CDF could also result in incidental take because it will occur year-round and at times tailings and waste rock will be deposited onto previously undisturbed habitat. The Developer has not yet indicated how they intend to avoid incidental take of nests and eggs during construction and operation of the CDF.

EC generally recommends that project proponents avoid engaging in potentially destructive activities during the key migratory bird breeding period as primary mitigation to reduce the risk of nest

destruction. In the boreal region of the Northwest Territories, migratory birds may be found incubating eggs from May 7 until July 21, and young birds can be present in the nest until August 10. Crossbills (medium-sized finch-like birds) may nest at any time of year if there are sufficient numbers of seeds from conifer cones for food.

If habitat destruction must proceed during the migratory bird breeding season, areas should be thoroughly surveyed for active nests within 4 days of destruction/clearing. The survey should be carried out by an avian biologist or naturalist with experience with migratory birds and migratory bird behaviour indicative of nesting (e.g. aggression or distraction behaviour; carrying nesting material or food). Nest surveys should be carried out using a scientifically sound approach.

If nests containing eggs or young of migratory birds are located or discovered, all activities in the nesting area should be halted until nesting is completed (i.e. the young have left the vicinity of the nest). Any nest found should be protected with a buffer zone appropriate for the species and the surrounding habitat until the young have left the nest.

Alternatively, the Developer may wish to consider means to deter birds from nesting within the CDF once construction of the perimeter dyke begins and during operations as the valley floor is gradually covered over with mine rock and tailings. This could involve the use of auditory and visual deterrents, or site preparation of the CDF footprint conducted outside the breeding season to make the area unattractive to nesting birds.

Environment Canada's Recommendations:
EC recommends that:

- The Developer consult the fact sheet "Planning Ahead to Reduce Risks to Migratory Bird Nests" available at: http://www.ec.gc.ca/paom-itmb/
- The Developer avoid habitat disturbance and vegetation clearing during the migratory bird breeding season
- Areas that cannot be cleared or disturbed outside of the nesting season should be thoroughly surveyed for active nests using a scientifically sound approach a maximum of 4 days before destruction/clearing. Surveys should be carried out by an avian biologist or naturalist with experience with migratory birds and migratory bird behaviour indicative of nesting (e.g. aggression or distraction behaviour; carrying nesting material or food)
- Any nests found should be protected within an appropriately sized buffer zone
- The Developer design and implement a plan to avoid incidental take of migratory bird nests and eggs during construction and operation of the CDF

Issue 3.3.3: **Bird collision risk with communication towers and transmission lines**

References:

- Developer response to IR # EC-1

Proponent's conclusion:
The Developer is proposing to install a 46 meter high communication tower and assumes that the structure will have guy wires and will be illuminated according to relevant legislation. Transmission lines at the mine site will be within a forested valley and the collision risk for waterfowl was expected to be low.

Environment Canada's Conclusions:
Communication towers are responsible for the mortality of an estimated 6.8 million birds per year in Canada and the United States (Longcore et al. 2012). The risk of bird collisions with towers can be reduced by avoiding the use of guy wires where practicable and by using flashing instead of steady burning lights on towers.

EC expects that the location of power transmission lines will reduce the risk of bird collisions.

Environment Canada's Recommendations:
EC recommends the Developer implement best management practices to minimize bird collisions with the communications tower. Specifically, EC recommends that:

- If guy wires must be used on the communications tower they should be fitted with bird diverters.
- Flashing red, red strobe or white strobe lights be used on the communications tower.
- Flood lights and other light sources at the base of the tower should not be left on all night during the spring and fall migration period.

Literature Cited:
Longcore, T., C. Rich, et al. 2012. An Estimate of Avian Mortality at Communication Towers in the United States and Canada. PLoS ONE 7(4): e34025.

Issue 3.3.4: **Monitoring waterfowl/waterbird use of water management ponds and levels of contaminants**

References:

- Developer response to first round IR # EC-3
- DAR – Appendix 18-II – Wildlife Effects Monitoring Program
- DAR Section 15.3.2.1- Pathways with No Linkage
- DAR Appendix 7-II – Site Water Quality Predictions

Proponent's conclusion:
The Developer has acknowledged that waterfowl may be at increased risk of mortality if they land in the CDF and ingest contaminated water, sediment or invertebrates, especially if the CDF contains the only open waterbody in the region. The DAR also acknowledged that wildlife drinking from the Seepage Collection Ponds or associated containment ditches may result in negative changes to wildlife health. However, it was concluded that these were pathways with "no linkage" based on the results of a wildlife health risk assessment which suggested there would be negligible risk to wildlife. In their response to first round IR #EC-4, the Developer stated that experience from existing mines (Snap Lake, Diavik, Giant, Con Mines) indicates that waterbirds do not often use seepage collection ponds and ditches, likely because these waterbodies are small, in areas of high activity, and have little forage, unless such waterbodies are the first to thaw in spring.
The Developer has indicated they will monitor the use of all water management ponds or other mine-related waterbodies (including the CDF) by waterbirds at least twice per week during the open-water season (May-November) from construction through to closure. The Developer intends to initiate adaptive management should monitoring indicate that water quality and the frequency of use of these areas by waterbirds poses health risks to birds that exceed existing levels. The Developer intends to notify EC if any birds are observed to be unhealthy or dead.

Environment Canada's Conclusions:
Monitoring data from other operating mines in the NWT suggests that waterfowl and waterbirds can make extensive use of water management ponds, especially if these areas are subject to earlier thaw than natural waterbodies. For example, monitoring at the Diavik Diamond mine reported that 47% of waterbird observations occurred on mine-altered waterbodies (engineered lined ponds to collect site runoff water) (DDMI, 2011). Table 7.II.3-1 of Appendix 7-II indicates that levels of aluminum, arsenic, antimony, cadmium, cobalt, copper, iron, lead, selenium, uranium and zinc within seepage collection ponds, sumps and the surge pond could be above site-specific water quality guidelines.

Given the concentration of several chemicals of potential concern within water management ponds will likely exceed site-specific water quality guidelines, EC encourages the Developer to follow through on their commitment to monitor contaminant levels and the level of use of these areas by waterfowl and waterbirds. If monitoring indicates a potential health risk for birds, the Developer should implement procedures to deter birds from making further use of water management ponds.

The results of water quality and bird monitoring in these areas should be included in annual wildlife monitoring reports.

Environment Canada's Recommendations:
EC recommends:

- The Developer monitor water quality in seepage collection ponds, the open pit sump, the surge pond and the CDF as well as the use of these areas by waterfowl and waterbirds, as outlined in the draft Wildlife Effects Monitoring Program.
- Results of water quality and bird monitoring should be included in annual wildlife monitoring reports.
- If monitoring suggests a potential health risk to waterfowl and waterbirds, adaptive management should be implemented to deter birds from using these areas.

Literature Cited
Diavik Diamond Mines Inc. (DDMI) 2011. Wildlife Monitoring Program Report – 2010. 115 pp.

Issue 3.3.5: **Impact assessment for species at risk**

References:

- DAR Section 15.2.1
- Developer response to Technical Sessions Undertaking #5

Proponent's conclusion:
The Developer identified 7 species at risk as potentially occurring within the assessment boundaries for the project: Wolverine, Horned Grebe, Peregrine Falcon (*anatum*) subspecies, Short-eared Owl, Common Nighthawk, Olive-sided Flycatcher, and Rusty Blackbird. The Developer later provided an assessment of habitat disturbance from the project for Woodland Caribou (boreal population) in response to Technical Sessions Undertaking #4.
In response to Technical Sessions Undertaking #5, the Developer provided further information on potential habitat loss for Common Nighthawk, Olive-sided Flycatcher and Rusty Blackbird. The amount of direct habitat loss for the 6 habitat types in which these species were found ranged from 0.3% to 5.5% of the amount available in the RSA. Based on the observed densities for these species in these habitat types, the Developer predicted that the carrying capacity of the RSA could decrease by a total of 5 Common Nighthawks, 12 Olive-sided Flycatchers and 3 Rusty Blackbirds. After accounting for potential indirect effects on habitat within a 1 km Zone of Influence around the project footprint, decreases in abundance of Common Nighthawk were predicted to be 6.1%, 2.1% for Rusty Blackbird and 4.1% for Olive-Sided Flycatcher. The Developer concluded that direct and indirect effects from habitat alteration would not have significant adverse impacts on upland species at risk bird populations.

Environment Canada's Conclusions:
The species listed in Table 1 below are those that have been designated at risk by COSEWIC and are either on a Schedule of SARA or are being considered for addition to Schedule 1 of SARA which may be found within the assessment boundaries for the NICO Mine site and NPAR. This list is based on the most current range boundaries for each species. Species with ranges that overlap the proposed Tlicho Road (Wood Bison, Little Brown Myotis and Barn Swallow), but not the NICO project assessment boundaries, have also been included since transportation of ore and supplies for the project along this road may affect these species. Although the current range boundary for the *anatum* subspecies of Peregrine Falcon does not overlap with the project area, this species was included because the Developer recorded two active nests within the RSA. Current range maps for each of the species listed in Table 1 are available in "Species at Risk in the Northwest Territories" (2012 edition) available at: http://nwtspeciesatrisk.ca/pdf/SpeciesatriskintheNWT_English.pdf

Table 1. Species at risk with ranges that overlap with the assessment boundaries for the NICO mine project and NPAR, or that overlap with the proposed Tlicho Road.

Terrestrial Species at Risk [1]	COSEWIC Designation	Schedule of SARA	Government Organization with Lead Management Responsibility [2]
Common Nighthawk	Threatened	Schedule 1	EC
Olive-sided Flycatcher	Threatened	Schedule 1	EC
Barn Swallow	Threatened	Pending	EC
Horned Grebe (Western population)	Special Concern	Pending	EC
Woodland Caribou (Boreal population)	Threatened	Schedule 1	GNWT
Wood Bison	Threatened	Schedule 1	GNWT
Peregrine Falcon	Special Concern (*anatum-tundrius* complex[3])	Schedule 1 - Threatened (*anatum*)	GNWT
Short-eared Owl	Special Concern	Schedule 3	GNWT
Rusty Blackbird	Special Concern	Schedule 1	GNWT
Wolverine (Western population)	Special Concern	Pending	GNWT
Little Brown Myotis	Endangered	Pending	GNWT

[1] The Department of Fisheries and Oceans has responsibility for aquatic species.
[2] Environment Canada (EC) 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. Populations that exist in National Parks are also managed under the authority of the Parks Canada Agency.
[3] The *anatum* subspecies of Peregrine Falcon is listed on Schedule 1 of SARA as threatened. The *anatum* and *tundrius* 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.

EC's comments focus on species at risk for which EC has the lead management responsibility. EC anticipates that the Government of Northwest Territories – Environment and Natural Resources (GNWT-ENR) will provide expertise as to the adequacy of the information provided, and the mitigation and monitoring measures proposed for territorially-managed species: Woodland Caribou (Boreal population), Wolverine, Wood Bison, Peregrine Falcon, and Short-eared Owl.
The following prohibitions apply to species listed on Schedule 1 of SARA:
Sections 32-36 of SARA make it an offence to:

- kill, harm, harass, capture or take an individual of a wildlife species that is listed as an extirpated species, an endangered species or a threatened species;
- possess, collect, sell, buy or trade an individual of a wildlife species that is listed as an extirpated species, an endangered species or a threatened species, or any part or derivative of such an individual; and
- damage or destroy the residence of one or more individuals of a wildlife species that is listed as an endangered species or a threatened species, or that is listed as an extirpated species if a recovery strategy has recommended the reintroduction of that species into the wild in Canada.

Sections 56–64 of SARA outline prohibitions against destroying critical habitat of an extirpated, threatened or endangered species, as defined in a recovery strategy or action plan.
The Developer's commitment to conduct vegetation clearing outside of the migratory bird season where possible and to remove vegetation and "Growth Media" prior to the nesting season should help to reduce the risk of contravening SARA prohibitions for migratory birds listed as threatened or endangered on Schedule 1 of SARA (Common Nighthawk, Olive-sided Flycatcher). Additional

recommendations made by EC in Issue 3.4.2 for avoiding disturbance/destruction of the nests or eggs of migratory birds may help to further minimize adverse impacts to avian species at risk.

For clarification, all migratory birds identified by the *Migratory Birds Convention Act* and their nests and eggs are subject to the prohibitions identified in the *Migratory Birds Convention Act* and the *Migratory Birds Regulations,* irrespective of their COSEWIC designation or listing on Schedules 1-3 of SARA.

If nests containing eggs or young of a species at risk are located or discovered, all activities in the nesting area should be halted until nesting is completed (i.e. the young have left the vicinity of the nest). The Developer should contact EC-CWS and/or GNWT-ENR for advice on appropriate buffer zones to protect nest and eggs of species at risk and the surrounding habitat until the young have left the nest.

Environment Canada's Recommendations:
EC recommends that:

- If species at risk or their nests and eggs are encountered during project activities or monitoring programs the primary mitigation measure for each species should be avoidance. The Developer should contact EC-CWS and/or GNWT-ENR for advice on appropriate buffer zones to protect nest and eggs of species at risk and the surrounding habitat until the young have left the nest.
- 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 Developer to avoid contact or disturbance to the species, its habitat, and/or its residence. The results of monitoring should be provided to the relevant agency with management responsibility for each species.
- The Developer should ensure that mitigation and monitoring strategies are consistent with any applicable status reports, recovery strategies, action plans and management plans that are currently available or may become available during the duration of the project. The GNWT-ENR and Environment Canada should be consulted on the development of adaptive management strategies should they be required.

Issue 3.3.6: **Attraction of predators and scavengers to project facilities**

References:

- DAR Appendix 1.III – Commitments
- DAR – Appendix 18-II – Wildlife Effects Monitoring Program

Proponent's conclusion:
The Developer has acknowledged the potential for wildlife to be attracted to food wastes, petroleum-based chemicals, and structures that provide opportunities for shelter, denning or nesting. The draft Wildlife Effects Monitoring Program also acknowledges that attraction of predators can increase the risk of mortality to prey populations.
The Developer has committed to implementing a number of waste management practices, building design features and monitoring programs to mitigate the attraction of predators and scavengers to project facilities. These include:

- No littering or feeding wildlife
- Providing contained areas for lunch and coffee breaks with waste containers for food waste
- Segregating food and non-food wastes at source and clearly identifying food waste containers
- Housing the incinerator in an enclosed structure to reduce availability of attractants while garbage awaits incineration
- Skirting buildings to the ground to limit opportunities for animals to find suitable shelter

- Surveying for wildlife presence within and around the NICO project at least twice per week
- Reporting all relevant observations of wildlife (particularly of caribou, fox, wolverine, and black bear) to environment staff
- Identifying and monitoring birds nesting on NICO Project infrastructure
- Evaluating every deterrent action to determine the reason for the animal's presence and the method it used to gain access to a hazardous area
- Inspections of waste storage, transfer, incineration, landfills, landfarms, and grey and sewage water treatment facilities for signs of wildlife and any non-compliance with the Waste Management Plan at least twice per week.

Environment Canada's Conclusions:
Predation of eggs and chicks is a key factor that limits the productivity of many species of birds. Although predation is a natural process, artificial increases in predator/scavenger abundance from human activities can readily alter any existing balance between predators and nesting birds. Attraction of scavengers and predators to project sites also increases the potential for dangerous human-wildlife interactions.
The Developer has identified waste management practices and monitoring measures that should help to limit the attraction of predator and scavengers to the site.

Environment Canada's Recommendations:
EC recommends that:
- Food, domestic wastes, and petroleum-based chemicals (e.g., greases, gasoline, glycol-based antifreeze) be made inaccessible to wildlife at all times.
- The Developer implement the waste management and wildlife monitoring measures outlined in their draft Wildlife Effects Monitoring Program.

Issue 3.3.7: **Wildlife Mitigation and Monitoring Plan**

References:
- DAR Appendix 1.III – Commitments
- DAR – Appendix 18-II – Wildlife Effects Monitoring Program

Proponent's conclusion:
The Developer has outlined general wildlife monitoring measures for the project but has not proposed a specific monitoring program for upland breeding migratory birds or species at risk. The Developer has indicated that they are open to suggestions for contributions to regional monitoring programs.

Environment Canada's Conclusions:
EC would like to meet with the Developer to discuss opportunities for contributing to regional migratory bird monitoring programs such as establishing and carrying out a North American Breeding Bird Survey route along the NICO Project Access Road and proposed Tlicho Road. Similar initiatives have been established at other northern mine sites and can provide a valuable contribution to regional cumulative effects monitoring.

Environment Canada's Recommendations:
EC recommends the Developer contribute to regional monitoring programs for migratory birds.

SECTION 4.0: SUMMARY OF RECOMMENDATIONS

The following recommendations have been made by Environment Canada:

1. EC does not agree with the proposed SSWQOs, and recommends that these not be used as a basis for assessing receiving water impacts nor for developing effluent quality criteria. EC is of the opinion that deferring further discussion of the SSWQOs to the regulatory stage would not compromise the assessment of discharge-related potential impacts provided the proposed treatment system and mitigation commitments go forward.

2. Provide a commitment table outlining all commitments to Management Plans including those relating to Air Quality.

3. Consult with GNWT-ENR caribou experts to identify any plans to manage undisturbed caribou habitat in the project area, and to discuss how the project aligns with territorial management strategies and actions plans for boreal woodland caribou.

4. To avoiding disturbance/destruction of nests and eggs of migratory birds, EC recommends that:

- The Developer consult the fact sheet "Planning Ahead to Reduce Risks to Migratory Bird Nests" available at: http://www.ec.gc.ca/paom-itmb/
- The Developer avoid habitat disturbance and vegetation clearing during the migratory bird breeding season
- Areas that cannot be cleared or disturbed outside of the nesting season should be thoroughly surveyed for active nests using a scientifically sound approach a maximum of 4 days before destruction/clearing. Surveys should be carried out by an avian biologist or naturalist with experience with migratory birds and migratory bird behaviour indicative of nesting (e.g. aggression or distraction behaviour; carrying nesting material or food)
- Any nests found should be protected within an appropriately sized buffer zone
- The Developer design and implement a plan to avoid incidental take of migratory bird nests and eggs during construction and operation of the CDF

5. Implement best management practices to minimize bird collisions with the communications tower. Specifically, EC recommends that:

- If guy wires must be used on the communications tower they should be fitted with bird diverters.
- Flashing red, red strobe or white strobe lights be used on the communications tower.
- Flood lights and other light sources at the base of the tower should not be left on all night during the spring and fall migration period.

6. Monitoring waterfowl/waterbird use of water management ponds and levels of contaminants, EC specifically recommends:

- The Developer monitor water quality in seepage collection ponds, the open pit sump, the surge pond and the CDF as well as the use of these areas by waterfowl and waterbirds, as outlined in the draft Wildlife Effects Monitoring Program.
- Results of water quality and bird monitoring should be included in annual wildlife monitoring reports.
- If monitoring suggests a potential health risk to waterfowl and waterbirds, adaptive management should be implemented to deter birds from using these areas.

7. Impact assessment for species at risk, EC recommends that:

- If species at risk or their nests and eggs are encountered during project activities or monitoring programs the primary mitigation measure for each species should be avoidance. The Developer should contact EC-CWS and/or GNWT-ENR for advice on appropriate buffer

zones to protect nest and eggs of species at risk and the surrounding habitat until the young have left the nest.

- 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 Developer to avoid contact or disturbance to the species, its habitat, and/or its residence. The results of monitoring should be provided to the relevant agency with management responsibility for each species.
- The Developer should ensure that mitigation and monitoring strategies are consistent with any applicable status reports, recovery strategies, action plans and management plans that are currently available or may become available during the duration of the project. The GNWT-ENR and Environment Canada should be consulted on the development of adaptive management strategies should they be required.

8. Relating to the attraction of predators and scavengers to project facilities, EC recommends that:
    - Food, domestic wastes, and petroleum-based chemicals (e.g., greases, gasoline, glycol-based antifreeze) be made inaccessible to wildlife at all times.
    - The Developer implement the waste management and wildlife monitoring measures outlined in their draft Wildlife Effects Monitoring Program.

9. EC recommends the Developer contribute to regional monitoring programs for migratory birds.

APPENDIX 1: RELEVENT LEGISLATION, POLICIES AND GUIDELINES

1. Introduction

The mandate of EC is determined by the statutes and regulations assigned to it by Parliament through the Minister of Environment. In delivering this mandate, the Department is also responsible for the development and implementation of policies, guidelines, codes of practice, inter-jurisdictional and international agreements and related programs. The following lists specific legislation and national environmental policies and programs administered or adhered to by EC that influenced the content of this submission.

Legislation

Department of the Environment Act Canadian Environmental Protection Act, 1999 Fisheries Act – Pollution Prevention Provisions *Migratory Birds Convention Act, 1994 Species at Risk Act*

Other

Canadian Environmental Quality Guidelines
Environmental Code of Practice for Metal Mines
2009

2. *Department of Environment Act*

The mandate of EC is defined by the *Department of Environment Act* (DOE Act) which provides EC with general responsibility for environmental management and protection. The Department's obligations extend to and include all matters over which Parliament has jurisdiction and have not, by law, been assigned to any other department, board, or agency of the Government of Canada. The DOE Act delegates responsibility to the Minister of the Environment for:

- Preservation and enhancement of the quality of the natural environment, including water, air, and soil quality
- Renewable resources including migratory birds and other non-domestic flora and fauna
- Water
- Meteorology
- Enforcement of any rules or regulations made by the International Joint Commission relating to boundary waters and questions arising between the United States and Canada, as they relate to the preservation and enhancement of the quality of the natural environment
- Coordination of policies and programs respecting preservation and enhancement of the quality of the natural environment.

The DOE Act states that EC has a mandated responsibility to advise heads of federal departments, boards and agencies on matters pertaining to the preservation and enhancement of the quality of the natural environment. As such, EC's mandate is broad.

3. *Canadian Environmental Protection Act, 1999*

Proclaimed on March 31, 2000, the goal of the updated *Canadian Environmental Protection Act*, *1999* (CEPA) is to contribute to sustainable development through pollution prevention and the protection of the environment, human life and health from the risks associated with toxic substances. CEPA shifts the focus from managing pollution after it has been created to preventing pollution before it happens. CEPA provides the federal government with tools to protect the environment and human health, establishes strict deadlines for controlling certain toxic substances, and requires the virtual elimination of toxic substances which are bioaccumulative, persistent and result primarily from human activity. CEPA also manages environmental and human health impacts of products of biotechnology, marine pollution, disposal at sea, vehicle engine and equipment emissions, fuels,

hazardous wastes, environmental emergencies, and other sources of pollution. Substances that are declared "toxic" under CEPA are added to the List of Toxic Substances in Schedule 1 of the Act.

CEPA 1999 Guiding Principles

Work under CEPA 1999 is guided by principles that contribute to and reinforce the importance of: Sustainable development -- development that meets the needs of the present without compromising the ability of future generations to meet their own needs. Pollution prevention -- the use of processes, practices, materials, products, substances or energy that avoid or minimize the creation of pollutants or waste and reduce the overall risk to the environment and human health. Virtual elimination -- ensuring that releases into the environment of non-naturally occurring, persistent (meaning they take a long time to break down) and bioaccumulative substances (meaning they collect in living organisms) resulting from human activity are reduced to extremely low levels. Ecosystem approach -- reflecting the dynamic interrelationships between living organisms (plant, animal and microorganism communities) and their non-living environment. Precautionary principle -- where there are threats of serious or irreversible damage, lack of full scientific certainty will not postpone cost-effective measures to prevent environmental degradation. Intergovernmental cooperation -- recognition that all governments in Canada face environmental problems that can benefit from cooperative resolution. Polluter-pays principle -- producers and users of harmful substances, pollutants and wastes have a responsibility for bearing the costs associated with the safe use and disposal of these substances and wastes. Science-based decision making -- decisions based on scientific information and traditional Aboriginal knowledge (where available), using a weight of evidence approach along with the application of the precautionary principle, where necessary.

Regulations

CEPA establishes authority for Canada to enact regulations or other control instruments to manage toxic substances to reduce or eliminate their release into the environment. Examples of preventive and control instruments include:

- Regulations;
- Pollution prevention plans;
- Environmental emergency plans;
- Environmental codes of practice; and
- Environmental release guidelines.

4. *Fisheries Act* – Pollution Prevention Provisions

The Minister of Fisheries and Oceans is legally responsible to Parliament for administration and enforcement of all sections of the *Fisheries Act*. However, under a Prime Ministerial Instruction (1978) and a Memorandum of Understanding (1985), EC administers and enforces those aspects of the Act dealing with the prevention and control of pollutants affecting fish and fish habitat. In this context, EC works to:

- Advance pollution prevention technologies;
- Promote the development of preventative solutions; and
- Work with the provinces, territories, industry, other government departments and the public on issues relating to the pollution provisions of the *Fisheries Act*.

The Compliance and Enforcement Policy[1] for the Habitat Protection and Pollution Prevention Provisions of the *Fisheries Act* states that compliance with the federal *Fisheries Act* is mandatory. Subsection 36(3) of the *Fisheries Act* specifies that, unless authorized by federal regulation, no person shall deposit or permit the deposit 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. Proponents should note that only a federal regulation under the *Fisheries Act* or another Act of Parliament can authorize a discharge of a deleterious substance; no federal permit, provincial, territorial or municipal regulatory permit or approval allows for exemption from the *Fisheries Act*.

In the application of the *Fisheries Act*, court cases have accepted that a discharge or effluent that is acutely lethal to fish is deleterious. In other words, results of tests designed to determine whether fish will die in an effluent or discharge within a specified time period will determine one aspect of deleteriousness. However, any substance with a potentially harmful chemical, physical or biological effect on fish or fish habitat is also deleterious. For example, substances (such as sediment) that smother nesting areas or spawning grounds, or interfere with reproduction, feeding or respiration of fish at any point in their life cycle are also considered deleterious. In general, any substance with a potentially harmful chemical, physical or biological effect on fish or fish habitat may be considered deleterious. Heated discharges are also considered deleterious as the definition of deleterious (*Fisheries Act* section 34) also includes water that has been so changed by heat that it can be deleterious to fish and fish habitat.

The act of depositing a deleterious substance is a violation of the *Fisheries Act*, regardless of whether the water itself is made deleterious by the deposit. Subsection 36(3) of the *Fisheries Act* makes no allowance for a mixing or dilution zone. Any measurements or tests to determine whether something is deleterious should be done where the substance is at its highest concentration, typically at the point of discharge to the receiving water.

5. *Migratory Birds Convention Act, 1994*

The purpose of the *Migratory Birds Convention Act, 1994* (MBCA) is to implement the *Convention for the Protection of Migratory Birds in Canada and the United States* by protecting and conserving migratory birds, as populations and individual birds, their habitat and nests. The *Migratory Birds Regulations* provide for the conservation of migratory birds and for the protection of their nests and eggs. Subsection 5.1(1) of the MBCA prohibits depositing or permitting the deposit of a substance that is harmful to migratory birds in waters or an area frequented by migratory birds or in a place from which the substance may enter such waters or such an area. A prohibition against the disturbance, destruction, or taking of a nest, egg or nest shelter of a migratory bird without a permit is set out in subsection 6(a) of the Regulations. Possession of a migratory bird, nest or egg without a permit is also prohibited.

“Incidental take” is the killing or harming of migratory birds due to actions, such as economic development, which are not primarily focused on taking migratory birds. At present, no permit can be issued for the incidental take of migratory birds or their nests as a result of economic activities.

6. *Species at Risk Act*

The *Species at Risk Act* (SARA) is intended to prevent species from becoming extirpated or extinct; to provide for the recovery of extirpated, endangered or threatened species; and to manage species of special concern. The Act applies to all of Canada; all wildlife species listed as being at risk; their residences and their critical habitat.

6.1 Risk Categories

The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) is an independent, expert committee that assesses the level of risk to wildlife species. Assessments are based on the best available science, Aboriginal traditional knowledge, and community knowledge. Species may be assigned to the following categories:

- *Special Concern* (SC) species may become threatened or endangered because of a combination of biological characteristics and identified threats;
- *Threatened* (THR) species are likely to become endangered if nothing is done to reverse the factors leading to extirpation or extinction;
- *Endangered* (END) species face imminent extirpation or extinction from the wild in Canada;
- *Extirpated* species no longer exist in the wild in Canada, but do exist elsewhere in the world;
- E*xtinct* species no longer exist in the world;
- *Not at Risk* means a species that has been evaluated and found to be not at risk of extinction

given the current circumstances; and

- *Data Deficient* applies when the available information is insufficient to resolve a wildlife species' eligibility for assessment or to permit an assessment of the wildlife species' risk of extinction.

6.2 SARA Listing

In 1999, COSEWIC adopted new assessment criteria based on World Conservation Union criteria. The relevant Minister (the Minister of the Environment and/or the Minister of Fisheries and Oceans, depending on the species), after receiving the COSEWIC assessment, consults the affected parties with respect to the proposed listing (as appropriate). After consultation, the Minister can recommend one of three things: accept the assessment and recommend that the species be added to Schedule 1; decide not to list the species; or refer the matter back to COSEWIC for more information. In cases where the species was already listed, the Minister of the Environment can also recommend that the species be reclassified or removed from Schedule 1.

6.3 Recovery Actions

Once listed, the relevant Minister must complete, and post on the public registry, recovery strategies and action plans for endangered, threatened or extirpated species and management plans for species of special concern. Recovery strategies are planning documents that identify actions that need to be taken to conserve the species such as stopping or reversing the decline of a species. Action plans outline the specific projects or activities required to meet the goals and objectives outlined in the recovery strategy. Recovery strategies must be completed within one year of listing for endangered species and two years of listing for threatened or extirpated species. Action plans are to be completed within the timelines set out within the recovery strategies.

Management plans set goals and objectives for maintaining sustainable population levels of species that are particularly sensitive to environmental factors, but not in danger of becoming extinct. Management plans must be completed within three years for species of special concern.

6.4 General Prohibitions

The prohibitions under sections 32 and 33 of SARA, which came into force in June 2004, make it an offence to:

- Kill, harm, harass, capture or take an individual of a wildlife species that is listed as an extirpated species, an endangered species or a threatened species;
- Possess, collect, buy, sell or trade an individual of a wildlife species that is listed as an extirpated species, an endangered species, or a threatened species, or any part or derivative; or
- Damage or destroy the residence of one or more individuals of a wildlife species that is listed as an endangered or threatened species or that is listed as an extirpated species if a recovery strategy has recommended its reintroduction into the wild in Canada.

The application of these prohibitions will vary depending upon the circumstances:

- These prohibitions apply to all migratory birds, as protected by MBCA and all listed aquatic species, as defined in SARA, on all federal, territorial, provincial and private lands.
- These prohibitions also apply to all species on federal lands in the provinces and on lands in the territories under the authority of the Minister of the Environment (i.e. National Wildlife Areas, Migratory Bird Sanctuaries, and National Parks).
- These prohibitions may apply with respect to species (that are not migratory birds or aquatic species) on the remaining lands within a province or a territory by order of the Governor in Council if they are not protected effectively by a province or territory.

6.5 Critical Habitat Prohibitions

Under SARA, it is prohibited to destroy any part of the critical habitat, as identified within a recovery strategy or action plan, of an endangered or threatened species. It is also prohibited to destroy any part of the critical habitat of an extirpated species if a recovery strategy has recommended that the species be reintroduced to Canada. These prohibitions apply anywhere in Canada, with respect to listed aquatic species as defined in SARA and listed migratory birds protected under MBCA. The application of these prohibitions to other species depends upon the land involved:

- The prohibition applies to critical habitat identified within a National Park, Migratory Bird Sanctuary, or a National Wildlife Area within 90 days after the description of the critical habitat is published in the Canada Gazette.
- With respect to critical habitat on other federal lands that is not already protected by provisions in, or measures under SARA or another Act of Parliament, the prohibition applies once a Ministerial Order has been made by the appropriate competent minister.
- With respect to critical habitat on non-federal lands (provincial or private lands), the prohibition applies once an Order in Council has been made by the Governor in Council.

6.6 Environmental Assessment and Species at Risk

SARA requires that certain considerations are addressed during the environmental assessment phase of a project. Specifically, it requires that:

- Adverse effects of the project on listed wildlife species and their critical habitat be identified and that the competent minister(s) be notified of these effects without delay;
- All measures have been taken to avoid or lessen those adverse effects in a way that is consistent with any applicable recovery strategy or action plan; and
- Monitoring be undertaken in respect of those adverse effects.

7. Canadian Environmental Quality Guidelines

The guidelines provide nationally endorsed science based goals for the quality of atmospheric, aquatic, and terrestrial ecosystems. The guidelines provide chemical-specific fact sheets that summarize the key scientific information and rationale for each substance, detailed summary tables of recommended guidelines for the different media and resource uses, and the protocols used in developing the guidelines, along with their associated implementation guidance. Indices of Water Quality, Soil Quality and Sediment Quality are also included.
More information can be found at: http://www.ccme.ca/publications/ceqg_rcqe.html

8. Environmental Code of Practice for Metal Mines 2009

The Environmental Code of Practice for Metal Mines describes operational activities and associated environmental concerns of this industrial sector. The document applies to the complete life cycle of mining, from exploration to mine closure, and environmental management practices are recommended to mitigate the identified environmental concerns. The recommended practices in the Code include the development and implementation of environmental management tools, the management of wastewater and mining wastes, and the prevention and control of environmental releases to air, water and land. The Code of Practice will be adopted by Environment Canada and others as a guidance document that recommends environmental protection practices for the mine life cycle.

The Environmental Code of Practice for Metal Mines is designed to support the *Metal Mining Effluent Regulations* (MMER) under the Fisheries Act and includes other subjects that are not dealt with in the MMER that may have an influence on the environmental impact of mining operations.