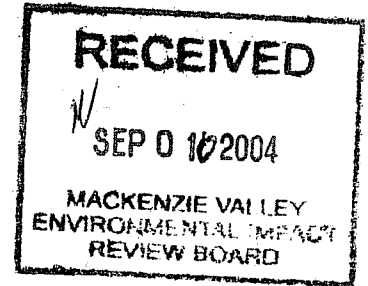




Environment Canada
Environnement Canada

Environment Canada
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Ph. (867) 669-4700



September 10, 2004

Our File: 4710 010

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

By Facsimile: (867) 920-4761

Re: Technical Review of the Deh Cho Bridge Project

Environment Canada (EC) has reviewed the environmental assessment documentation on the above project. Our review has focused on EC's mandated responsibilities for migratory birds, air quality, hydrology and water quality, and cumulative effects. Attached please find EC's technical comments and recommendations for this project.

Please do not hesitate to contact me at (867) 669-4733 with any questions or comments regarding the foregoing.

Yours truly,

Stephen Harbicht
Head, Assessment and Monitoring
Environmental Protection Branch

cc: Peter Blackall (Regional Director, EPB Edmonton)
Chuck Brumwell (Manager, Northern Division, EPB)
Mike Fournier (Coordinator, A&M, EPB)

Environment Canada

Technical Report - Deh Cho Bridge Project

Non-Technical Summary:

As a responsible minister Environment Canada (EC) has reviewed the Developer's Assessment Report prepared by the Deh Cho Bridge Corp., and the documents supporting it. The mandate of Environment Canada includes responsibilities under the *Canadian Environmental Protection Act (CEPA)*, the *Canada Water Act*, Section 36(3) of the *Fisheries Act*, the *Species at Risk Act*, and the *Migratory Birds Convention Act*. The EC review of this project has focused on topics related to migratory birds, wildlife, air quality, hydrology, water quality and cumulative effects. The issues listed below remained outstanding.

Migratory Birds:

The proposed bridge may cause disruption of bird migration, and mortality of migratory birds. This could happen due to birds striking the bridge, or being attracted by lights on the bridge. Environment Canada recommends a number of ways to prevent this happening, including ways to make birds avoid structures, and reducing lighting to a minimum.

Another concern is that the bridge structure will have birds nesting on it, and maintenance activities on the bridge will disturb or destroy nests and eggs or young. Maintenance activities will have to be done when nests are not active, or the Deh Cho Bridge Corp. will have to take steps to prevent nests from being built.

Species at Risk:

The Deh Cho Bridge Corp. has looked at only federally listed species at risk. Environment Canada recommends that potential effects also be examined for territorially-listed species which are shown as "sensitive" or "may be at risk".

Water Quality:

Steps must be taken to prevent sediments entering the river, and to prevent poor quality water being released into the river. Monitoring must be done to show that there are no problems with changes in pH in the river, or with suspended solids, ammonia, or road salts entering the water.

Cumulative Effects:

To reduce potential impacts on migratory birds and species at risk and their habitats, the Deh Cho Bridge Corp. is encouraged to combine adaptive management with better awareness of the species that could be at risk.

Introduction:

Environment Canada Mandate, Role, and Responsibilities

The mandate of Environment Canada (EC) is determined by the statutes and regulations assigned to it by Parliament through the Minister of the Environment. In delivering this mandate, the Department also develops and implements policies, guidelines, codes of practice, legislation, inter-jurisdictional and international agreements and related programs.

Sustainable Development

Sustainable development provides a framework for the integration of environmental policies and development strategies. It recognizes that economic development is essential to satisfy human needs and improve our standard of living, but that development must be based on the efficient and environmentally responsible use of all of society's scarce resources, which includes our natural, human and economic resources.

Environment Canada views the environmental assessment process as a critical component of sustainable development because it provides a defined opportunity for the consideration of environmental, social and economic impacts for any proposed development. The environmental principles of sustainable development are also reflected in the key strategies and policies developed and adhered to by Environment Canada.

Department of the Environment Act

The *Department of the Environment Act (DOE Act)* provides EC with general responsibility for environmental management and protection. Its 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 as related to:

- Preservation and enhancement of the quality of the natural environment (e.g. water, air, soil)
- Renewable resources including migratory birds and other non-domestic flora and fauna
- Water
- Meteorology
- Coordination of policies and programs respecting preservation and enhancement of the quality of the natural environment.

The *DOE Act* states that Environment Canada 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, this mandate is extremely broad.

Canadian Environmental Protection Act

Proclaimed on March 31, 2000, the new *Canadian Environmental Protection Act* (*CEPA* 1999, referred to hereinafter as *CEPA99*) is an Act respecting pollution prevention and the protection of the environment and human health in order to contribute to sustainable development. *CEPA99* shifts the focus away from managing pollution after it has been created to preventing pollution. The Act provides the federal government with new 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.

For substances that are declared "toxic" under *CEPA99* and are added to the List of Toxic Substances in Schedule 1 of the Act, instruments will be proposed to establish preventive or control actions for managing the substance and thereby reduce or eliminate its release into the environment. These tools may be used to control any aspect of the substance's life cycle, from the design and development stage to its manufacture, use, storage, transport and ultimate disposal.

Examples of preventive and control instruments include:

- regulations;
- pollution prevention plans;
- environmental emergency plans;
- environmental codes of practice; and
- environmental release guidelines.

Authority to require emergency plans for toxic or other hazardous substances is provided in Part 8 of *CEPA99*. Environmental emergency plans for such a substance(s) must cover prevention, preparedness, response and recovery.

Canada Water Act

The *Canada Water Act* enables Environment Canada to enter into agreements with other jurisdictions and to carry out research and surveys regarding water quantity and quality issues. This also enables Environment Canada to support the implementation of the Federal Water Policy (1987) and Canadian Council of Ministers of the Environment (CCME) Canadian Water Quality Guidelines.

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), Environment Canada administers and enforces those aspects of the Act dealing with the prevention and control of pollutants affecting fish. In this context, Environment Canada 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 main pollution prevention provision is found in subsection 36(3) of the Act, and is commonly referred to as the "general prohibition". This subsection prohibits the deposit, into fish-bearing waters, of substances that are deleterious to fish. The legal definition of "deleterious substance" provided in subsection 34(1) of the Act, in conjunction with court rulings, provides a very broad interpretation of deleterious and includes any substance with a potentially harmful chemical, physical or biological effect on fish or fish habitat. One measure of a deleterious substance (such as a liquid discharge) is acute lethality as measured by the standard 96 hour fish bioassay test.

Migratory Birds Convention Act

The purpose of the *Migratory Birds Convention* (1916, amended by Protocol in 1999) is to ensure the conservation of migratory birds, as defined in the Act, and prohibit the take of migratory birds except for scientific, educational, avicultural, or other specific purposes consistent with the principles of the Convention. The *Migratory Birds Convention Act (MBCA)*, based upon the Convention, provides the authority for the *Migratory Bird Regulations (MBR)*, which establishes specific prohibitions and defines activities which may be permitted, and the circumstances under which such permitted activities may take place.

The Canadian Wildlife Service (CWS) of Environment Canada administers and enforces the *MBCA* and *MBR*. CWS provides expert advice in environmental assessment review processes. CWS focuses primarily on identifying potential adverse effects to migratory bird populations and habitats, 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*, nor does it assure that the project will not result in the killing or taking of a migratory bird or its nest. Furthermore, the advice does not absolve project proponents from their obligation to comply with all provisions of the *MBCA* and *MBR*.

Migratory Birds Regulations

The *Migratory Birds Regulations* outline the activities (in relation to migratory birds and their habitats) that are prohibited throughout Canada, within National Wildlife Areas, and in Migratory Bird Sanctuaries.

The Species at Risk Act

The *Species at Risk Act (SARA)* provides a framework for actions across Canada to ensure the survival of wildlife species and the protection of our natural heritage. It sets out how to decide which species are a priority for action and what to do to protect a species. Three federal Ministers have responsibilities under *SARA*; the Minister of Fisheries and Oceans is responsible for aquatic species at risk, the Minister of Heritage (through Parks Canada Agency) is responsible for species at risk found in national parks, national historic sites or other protected heritage areas, and the Minister of the Environment is responsible for all other species at risk, and is also responsible for the administration of the *Act*.

The *Species at Risk Act*, including the *SARA* prohibitions, critical habitat protection, and enforcement of the law, came into full effect on June 1, 2004. With the implementation of *SARA*, any projects requiring an environmental assessment under federal law that are likely to affect a listed species or its critical habitat need to identify the adverse effects, and, if the project proceeds, steps must be taken to avoid or lessen those effects and monitor them. The project plan must respect recovery strategies and action plans.

Legislation:

Copies of pertinent legislation and regulations can be found at the following website:

<http://laws.justice.gc.ca/en/index.html>

Environment Canada's review of this project has been focused on migratory birds, wildlife, vegetation, air quality, hydrology and related bridge design considerations, water quality, and cumulative effects. In the course of meetings and the two rounds of information requests many questions and concerns were addressed. The main issues of concern are described in our specific comments. Environment Canada has conducted this review and provides comments in our capacity as a responsible minister as defined by the *Mackenzie Valley Resource Management Act*.

Environment Canada Contact Information:

Environment Canada utilizes a "one-window" approach to project reviews in order to facilitate communication between the proponent and regulators. The first point of contact at Environment Canada, Yellowknife, for information regarding environmental assessments is:

Mike Fournier
Environmental Assessment Coordinator
Environment Canada
5204-50th Ave., Suite 301
Yellowknife, NT X1A 1E2

Phone: (867) 669-4743
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Specific Comments:**Migratory Birds****Issue:**

The proposed bridge may result in disruption of bird migration and mortality of migratory birds.

Developer's Conclusion:

The proponent's consultant states: "The proposed Deh Cho bridge may affect aerial wildlife (e.g. waterfowl, raptors, songbirds and bats) by impeding flight patterns resulting in strikes, and by associated lighting which may act as an attractant during migration periods. Structures such as bridges, towers, poles, associated overhead power lines and other vertical towers may lead to bird or bat strikes, especially during migration under adverse weather conditions such as fog, and during night feeding." (Report on fisheries assessment of the Mackenzie River at Ft. Providence, NT. Appendix F, Wildlife Issues Memorandum. Golder Associates, 2004)

Environment Canada's Conclusion:

The report cited above adequately assesses the situation and suggests some appropriate mitigation measures. Environment Canada would like to see a commitment from the proponents to adopt and implement the mitigation measures listed on page 118 of the Developer's Assessment Report (24 May, 2004) and any other mitigation measures suggested herein (i.e. in this document). The comments and mitigation measures outlined in Table J11, page 135, of the revised Developer's Assessment Report suggest that the proponents still do not fully understand the nature or seriousness of the concern.

Rationale:

Light coming from man-made structures, including bridges, can cause a bright and highly visible glow during moonless or overcast nights and this glow attracts birds that navigate by celestial lights. The birds may fly around the structure, disoriented until morning, or collapse from exhaustion, or may circle the structure until they crash into it.

Recommendations:

Environment Canada recommends that the proponent commit to the following mitigation measures (revised version of Golder 2004):

- markers such as aviation spheres should be used to mark suspension lines, guy wires or any other appropriate infrastructure, coloured balls and flappers that warn birds of the presence of wires can reduce bird collisions
- the use of solid red or pulsating red lights should be **avoided**, current information suggests that white strobe lighting is much less attractive to birds
- the bridge should have the minimum number of lights required to meet safety and regulatory requirements
- lights should have solid backing or be down-shielded to keep light within the boundaries of the bridge deck
- lights should be directed downwards toward the bridge deck
- lamps should be the minimum intensity necessary to meet lighting objectives and safety and regulatory requirements
- do not use any "vanity lighting" i.e. lighting for which the sole purpose is to "show-off" the bridge structure
- navigation safety lights should be the minimum required by Transport Canada, and be white strobes set for shortest pulse and longest interval allowed

Issue:

The proposed bridge will attract, and provide nesting habitat for, migratory birds (e.g. raven, swallows) and raptors. Maintenance activities may threaten to disturb or destroy the nests, eggs or young of these migratory birds resulting in a potential for the proponents or their agents to be in contravention of Section 6 of the *Migratory Birds Regulations* under the *Migratory Birds Convention Act*.

Developer's Conclusion:

The proponent's consultant states: "The proposed bridge, once constructed, will provide potential nesting habitat for ... raptors and in particular swallows. Although the provision of nesting habitat as a result of the construction of the bridge is not an issue, **nesting birds may hinder maintenance operations during breeding months (May-July)**, particularly for communal nesters such as swallows. Visual maintenance operations are likely unobtrusive, and will not require detailed mitigation strategies. It is anticipated that with effective mitigation

strategies, the effects of intensive maintenance operations on nesting birds will be minimized." (Report on fisheries assessment of the Mackenzie River at Ft. Providence, NT. Appendix F, Wildlife Issues Memorandum. Golder Associates, 2004)

Environment Canada's Conclusion:

There is no doubt that the bridge will be used by nesting migratory birds, particularly swallows. The level of use may be quite extensive and will likely involve more than one species (or group) of migratory birds (although pigeons are very unlikely, in contrast to information in Golder 2004). In order for the proponent to remain in compliance with the *Migratory Birds Convention Act*, mitigation measures must be in place to avoid disturbing or destroying the nests, eggs or young of migratory birds during operation and maintenance of the bridge.

Rationale:

Section 6 of the *Migratory Birds Regulations* states that no person shall disturb or destroy the nests or eggs of migratory birds.

Recommendations:

Environment Canada recommends that the proponent commit to the following mitigation measures (modified from Golder 2004):

- ensure visual inspections are as unobtrusive as possible, particularly during the breeding season
- restrict any obtrusive mechanical inspections and maintenance until after the breeding season which is approximately May 15 to July 15
- if active nests (i.e. nests containing eggs or young) are encountered outside of these dates the proponent should avoid the nests until nesting is complete (i.e. the young have left the nest)
- during years of intensive maintenance, when activities are necessary during the breeding season, the proponent should prevent nesting by using strategies such as visual or auditory deterrents or surface gels

Species at Risk

Issue:

Identification of species at risk that may be affected by the project, identification of measures to avoid, minimize, and mitigate potential effects on these species or their habitat, and a proposed approach to monitoring of these effects.

Developer's Conclusion:

VEC's considered included all potentially affected, COSEWIC listed, species as per Schedules 1-3 of the *Species at Risk Act*. Of these species, only the wood bison was considered likely to be affected by the project, and mitigation measures were proposed to address those effects.

Environment Canada's Conclusion:

Environment Canada generally agrees with the proponent's assessment of the potential effects of the project on species at risk. However, there are some further considerations that should be noted. First, although the proponent states that the Peregrine Falcon has not been reported in the area, the data used to support this contention is somewhat preliminary in nature and not exhaustive. It is highly probable that peregrine falcons occur in the area during migration and possible that this species could be attracted to nest on the bridge superstructure at some time. The proponent should be aware of this possibility. Second, the proponents have provided no assessment of the potential effects of the project on species of special concern listed by the territorial government. This is not best practice. To fully understand the potential impacts of a proposed project, it is important to consider the effects on all species at risk and not just those that are legally listed.

Rationale:

Rare species and species not yet designated but showing early signs of trouble are still of concern from an environmental assessment perspective. Environmental assessment can contribute to maintaining biodiversity in two ways: by contributing to the protection and recovery of designated species and by preventing species from becoming "at risk". By looking at species identified as being rare or imperiled regionally or within a province or territory, environmental assessments can consider conservation efforts to address issues such as habitat and residence needs early on and perhaps avoid increasingly difficult and expensive recovery efforts in the future (Environmental assessment best practice guide for wildlife at risk in Canada. Canadian Wildlife Service. February 2004).

Recommendations:

The proponent should examine the potential effects of the project on species listed as "sensitive" or "may be at risk" under the "General status ranks of wild species in the NWT".

Water Quality**Issue:**

Release of sediments and/or discharge of water of unacceptable quality into the Mackenzie River (1) during the excavation of the south haul-out and north ferry landing; (2) during the pumpout of water from within the cofferdams; and (3) due to use of road salts.

Developer's Conclusion:

(1) The proponent acknowledges that excavation of backfill from within the north causeway and south haul-out area will result in some materials being washed downstream. TSS release rates are proposed to be controlled, and silt curtains used where possible (IR 2.1.5).

(2) The proponent proposes to use timing to minimize exposure to migrating fish species, and to use water sampling to determine the rate of release of sediments to the river, and ensure CCME guidelines are met (p. 54, and Appendix D, Golder Report).

(3) The proponent will apply calcium chloride to the detour roads to suppress dust, and will include monitoring to confirm it is not affecting adjacent waters (IR 2.1.16).

Environment Canada's Conclusion:

(1) EC concurs with the proposed mitigation measures to reduce the movement of fines into the Mackenzie River during removal of instream fill materials. (2) EC has concerns with respect to the release from cofferdams of water containing high levels of suspended sediments and/or with elevated pH and possibly ammonia levels, as these may be considered deleterious, and as such, have an unacceptable impact on receiving waters.

(3) EC agrees that the frequency and amounts of road salts proposed to be applied are unlikely to affect adjacent waters, but recommends that monitoring be done to confirm this.

Rationale:

The Mackenzie River supports a diverse fish population, which is the basis for a domestic fishery, as well as providing an important migration route for several species. This warrants timing of construction to minimize sediment release during spawning and migration periods, as well as monitoring to ensure CCME guidelines for suspended sediments are not exceeded. Water discharged from within the cofferdams will have to be of a quality that is acceptable for release to the Mackenzie River, i.e. be non-deleterious. The main parameters of concern will be suspended solids, pH, and possibly ammonia.

Recommendations:

Environment Canada recommends that the proponent commit to the following mitigation measures and monitoring, as proposed in the Golder Fisheries Assessment report and in IRs 2.1.5, 2.1.16 and 2.1.20:

- use of silt curtain and other appropriate field measures to minimize migration of suspended solids into the river
- use of field monitoring of turbidity and/or TSS to determine appropriate excavation and discharge rates for removal of fill materials and dewatering of pier cofferdams, respectively, such that CCME guidelines are not exceeded in the receiving environment
- field monitoring of water quality for salinity and conductivity to confirm calcium chloride is not migrating from the detour roads into the river.

Any water to be discharged must be confirmed to be non-deleterious prior to release. Alternative disposal means and locations should be identified in the event water quality is not acceptable for release (i.e. does not meet the provisions of Section 36(3) of the *Fisheries Act*).

Cumulative Effects

Issue:

The proponent was requested to provide a broader review of and more definitive conclusions of the potential cumulative environmental effects (EC Information request – IR 2.1.21).

Developer's Conclusion:

The focus of the analysis was on those valued components (VCs) of the human and physical / biological environment for which the development has potential significant adverse impacts and on the cumulative effects of the development combined with past, present and future developments that affect these parts of the environment within the same spatial and temporal boundaries.

The proponent concluded that most potential adverse project impacts would be local and short-term and there were few other projects identified that would contribute significantly to potential cumulative adverse impacts within the noted VCs and boundaries.

Environment Canada's Conclusion:

Environment Canada generally accepts the proponent's conclusions regarding cumulative effects. However, we do question somewhat the selection of VCs, particularly the exclusion of migratory birds and (perhaps) species at risk.

Rationale:

See Environment Canada's "Conclusions" and "Rationale" under the headings "Migratory Birds" and "Species at Risk".

Recommendations:

Environment Canada recommends that the proponent commit to an adaptive management approach with regard to potential impacts (both short and long term) of the project on migratory birds and species at risk and their habitats. This would involve awareness of the wildlife resources potentially at risk, monitoring for unforeseen adverse impacts, and development of appropriate mitigation measures in consultation with Environment Canada or other Federal or Territorial Government Departments (as appropriate) in the event that adverse impacts occur.