Department of Fisheries and Oceans (DFO)

Deh Cho Bridge Project
Public Hearing Presentation
(EA03-008)
October 21, 2004
Fort Providence

Fisheries and Oceans Canada's Mandate, Role and Responsibilities

Mandate: conserve and protect fish and fish habitat

The *Fisheries Act*

Section 32
Prohibits destruction of fish by means other than fishing

Section 35 (1)
Prohibits works or undertakings that could result in the harmful alteration, disruption or destruction (HADD) of fish habitat.

Section 35(2)
Allows the Minister or designate to authorize the harmful alteration, disruption or destruction (HADD) of habitat.

Section 36(3)
Prohibits the deposit of a deleterious substance in water frequented by fish

Specific Issues

1.0 Footprint of Approaches, Detour and Bridge Piers

Issue:

- The proposed footprints of the road approaches, north traffic detour, and new bridge piers will result in the permanent destruction of fish habitat.

Developer's position:

Infilling:

- eight piers: 630 m^2 total
- south approach: 4,800 m^2
- north approach and detour: 4,800 m^2

= destruction of 10,230 m^2 of fish habitat.

Reclaimed:

North Ferry Landing: 4,300 m^2

- South Ferry Haul-out: 9,500 m^2

= reclamation of 13800 m^2 of fish habitat.

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- Project will result in gain of 3,570 m^2 of fish habitat
- The objective "no net loss of productive fish habitat" is met

DFO's position:

- HADD of 10,230 m^2 of important, high quality spawning and rearing fish habitat.
- DFO requires a ratio of gained to lost habitat of greater than 1:1 when
  - high quality habitat is impacted
  - to address interim losses
  - uncertainties with successful replacement of the lost habitats

DFO's position (cont.):

- DFO's position is that additional habitat gains are required to achieve the objective of no net loss of fish habitat.

Resolution:

- Tentative agreement to remove backfill material associated with the existing winter crossing approaches.
- The removal of these approaches would restore and preserve important shoreline spawning and rearing areas.
- Habitat gains associated with the habitat restoration works are anticipated to achieve the required compensation of impacted fish habitat.

Recommendation:

- The winter crossing is presently being operated by the GNWT and will be abandoned after commissioning of the Deh Cho Bridge.
- DFO recommends the approach backfill material should be removed beyond that which is removed by the developer under the agreed upon compensation plan.
- The approaches should be completely restored to productive fish habitat.

2.0 Installation of sheet pile cofferdams

Issue:

- Pile driving activities produce compressive shock waves which may be lethal to fish.
- The destruction of fish by means other than fishing is prohibited unless authorized pursuant to Section 32 of the *Fisheries Act*.

Resolution:

- Proponent has agreed to develop and implement a program which will monitor instantaneous pressure changes during pile driving activities.
- DFO will provide the proponent guidance in developing the monitoring plan.
- Upon monitoring, if overpressures generated may impact fish, the proponent will implement reasonable mitigation measures to minimize impacts.

Resolution (cont.):

- Proponent will cease operation until a Section 32 *Fisheries Act* Authorization for the destruction of fish.

Recommendation:

- Proponent to implement a monitoring program to determine overpressures.
- Mitigation measures should be implemented to minimize overpressures and impacts to fish.

3.0 Disposal of material excavated from the pier cofferdams

Issue:

- The deposit of excavated riverbed material directly into the river may result in the HADD of fish habitat.

Developer's position:

- Disposal of the excavated material off-site difficult and costly.
- Excavation of the material during winter months not feasible because the ice thickness.
- Only one cofferdam will be excavated at a time.
- One cofferdam will be excavated over a minimum period of 8 hours.

Developer's position (cont.):

- The proponent will implement a water quality sampling program with a "feedback monitoring" objective to maintain water quality standards for TSS/Turbidity according to CCME guidelines.

DFO's conclusion (cont.):

- After analysis of the predicted sediment load and discharge of the Mackenzie River, DFO is satisfied the proposed disposal of excavated material into the river will have minimal impacts on downstream fish habitats provided the monitoring plan and mitigation measures are implemented as proposed.

Recommendation:

- DFO recommends that the proponent achieves CCME water quality guidelines for TSS/Turbidity during all in-water activities.

DFO appreciates this opportunity to present our submission.

Department of Fisheries and Ocean's
Deh Cho Bridge Project (EA03-008)
Public Hearing Presentation
October 21, 2004 Fort Providence

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Fisheries and Oceans Canada Mandate, Role and Responsibilities

The mandate of Fisheries and Oceans Canada (DFO) is to conserve and protect fish and fish habitat to ensure sustainable fisheries for Canadians. The *Fisheries Act* provides the legal basis for this responsibility.

The *Fisheries Act* is a federal legislation established to manage and protect Canada's fisheries resources. It contains specific sections designed to protect fish and fish habitat:

Section 32: This section prohibits the destruction of fish by means other than fishing without prior approval. This section is often used to regulate the use of explosives in construction and seismic operations.

Section 35: Subsection 35(1) of the *Fisheries Act* states that no person shall carry on any work or undertaking that results in the harmful alteration, disruption or destruction (HADD) of fish habitat. However, where it cannot be avoided or mitigated, the Minister of Fisheries and Oceans may authorize the HADD of fish habitat pursuant to subsection 35(2). This provides the means and conditions for allowing development projects to take place.

In accordance with DFO's *Policy for the Management of Fish Habitat* and its guiding principle of *No Net Loss* of productive fish habitat, authorizations are generally issued on the condition that acceptable measures to compensate for any unavoidable habitat loss are developed and implemented by the proponent.

Section 36: Subsection 36(3) prohibits the deposit of deleterious substances into waters frequented by fish. Sediment is considered a deleterious substance under that *Fisheries Act*, therefore sediment released as a result of construction activities must be controlled to ensure compliance with subsection 36(3).

Although DFO is legally responsible for the administration and enforcement of all sections of the *Fisheries Act*, Environment Canada currently administers and enforces the pollution prevention provisions, including subsection 36(3), of the *Fisheries Act* under a Memorandum of Understanding (1985).

DFO's review of the Deh Cho Bridge Project (EA03-008) is limited to potential impacts of the project pursuant to the responsibilities of DFO under the fish and fish habitat

protection provisions of the *Fisheries Act*. As proposed, the project will result in a HADD of fish habitat requiring authorization pursuant to subsection 35(2) of the *Fisheries Act*. The project may also require a section 32 authorization for destruction of fish by means other than fishing. As such, DFO is a regulatory authority for this development as defined in the *Mackenzie Valley Resource Management Act*.

Specific Issues

The main issues of concern arising from DFO's review of the Project are as follows:

1.0 Footprint of Approaches, Detour and Bridge Piers

Issue:
The proposed footprints of the road approaches, north traffic detour, and new bridge piers will result in the permanent destruction of fish habitat.

Developer's position:
The superstructure of the proposed bridge will require the support of eight piers which will be constructed in the watercourse. To avoid potential flooding and ice accumulations, the proposed bridge approaches require an increase in elevation. The required extension and widening of the existing bridge approaches will exceed the footprints of the existing causeways. To ensure uninterrupted public and commercial vehicle access to the north ferry landing a 450 m detour road will be constructed 10 m downstream of the existing one. The eight piers (630 m^2), south approach (4,800 m^2) and north approach and traffic detour (4,800 m^2) will result in the destruction of 10,230 m^2 of fish habitat.

The infrastructure related to the ferry operation will not be needed after completion of the bridge. In agreement with the Government of the Northwest Territories (GNWT), the proponent is proposing to reclaim those facilities associated with two areas which are part of the exiting ferry infrastructure and within the limits of the Mackenzie River. The existing North Ferry Landing which projects into the Mackenzie River 80 m beyond the proposed bridge approach, and the South Ferry Landing and ferry haul-out located downstream of the south bridge approach will be removed. The area of the reclaimed North Ferry Landing and South Ferry Haul-out will be 4,300 m^2 and 9,500 m^2 respectively, for a total of 13,800 m^2. It is anticipated that the reclaimed areas will attract aquatic life within one to two years.

When evaluated on the basis of habitat lost and gained, the construction of the bridge supports and approaches is anticipated to result in a net gain of 3,570 m^2 of fish habitat. In addition, the decommissioning of the current ferry operation and ice crossing will result in discontinuing the practice of placing 1,000 m^2 of silt-laden gravel into the Mackenzie River annually and reduced contamination of the ice with silt and oil deposited by traveling vehicles.

DFO's position:
The construction of the bridge supports and approaches will result in the HADD of important, high quality fish habitat. The long term value of the reclaimed areas as fish habitat is unknown. There is also a temporal disturbance of at least two years post-construction when the reclaimed areas will likely not be fully functioning as fish habitat. Although discontinuing the practice of placing silt-laden gravel into the Mackenzie River and eliminating oil and grease inputs from vehicular traffic are beneficial to the fish and fish habitat in the Mackenzie River, these can not be considered as compensation for the HADD of fish habitat.

Typically, DFO requires a ratio of gained to lost habitat of greater than 1:1 when high quality habitat is being impacted and to address interim losses (time lag between establishing replacement habitat and it becoming functional as productive habitat) and uncertainties with successful replacement of the lost habitats. It is DFO's position that additional habitat gains are required to achieve the objective of no net loss of fish habitat.

Resolution:
The developer and DFO have reached a tentative agreement to provide further habitat gains in the form of removing the backfill associated with the approaches for the existing winter crossing approximately 13 km upstream of the proposed bridge site. The crossing is presently being operated by the GNWT and will be abandoned after commissioning of the Deh Cho Bridge. The removal of these causeway fingers will restore and preserve approximately 5,000 m^2 of important shoreline spawning and rearing areas. The total habitat gains associated with the habitat restoration works are anticipated to achieve the required compensation of impacted fish habitat.

Recommendation:
The winter crossing is presently being operated by the GNWT and will be abandoned after commissioning of the Deh Cho Bridge. DFO recommends that the approach backfill material, beyond that which will be removed as part of the habitat restoration works, also be removed by the developer. The approaches for the winter road crossing should not be abandoned but be completely restored to productive fish habitat.

2.0 Installation of sheet pile cofferdams

Issue:
The use of pile driving to install sheet piles for the cofferdams around the areas to be excavated for the piers has the potential to negatively impact on fish due to the creation of shockwaves in the water.

Developer's position:
The use of pile driving is required to set the sheet piles for the cofferdams around each area to be excavated. The sheet piling will be driven to approximately 5.0 m below the riverbed using a diesel hammer mounted on a barge-based 150 tonne crane.

DFO's position:
Research has shown that pile driving activities produce compressive shock waves similar to those generated by the detonation of explosives. These shock waves can be lethal to fish. The transmission of shock waves from pile driving may lead to the destruction of fish by means other than fishing, which is prohibited unless authorized pursuant to Section 32 of the *Fisheries Act*. .

Resolution:
The developer has agreed to develop and implement a program which will monitor instantaneous pressure changes during pile driving activities. The developer will also develop mitigation measures to be implemented as needed. DFO will provide the proponent guidance in developing the monitoring plan and mitigation measures. Upon implementing the monitoring program, should it be determining that overpressures generated by pile driving are at levels that may impact fish, the proponent will immediately implement all reasonable mitigation measures to minimize overpressure and minimize the potential for impacts to fish. If after implementing these measures further monitoring indicates overpressures generated by pile diving are at levels which may impact fish, a Section 32 *Fisheries Act* authorization for the destruction of fish by means other than fishing may be required for the pile driving activities. Pile driving activities would cease until such time as the Section 32 authorization was issued by DFO.

Recommendation:
DFO recommends that the proponent implement a monitoring program to determine instantaneous pressure changes during pile driving activities. Mitigation measures should be implemented to minimize overpressures and impacts to fish.

3.0 Disposal of material excavated from the pier cofferdams

Issue:
After installation of the pier cofferdams a 4.0 m thick layer of riverbed material (850 m per cofferdam) will be excavated and disposed of directly into the river. This may result in the HADD of fish habitat due to suspended particles in the water column and deposit of those sediments downstream.

Developer's position:
Disposal of the excavated material off-site during open water would be logistically difficult and costly. Excavation of the material during winter months was preferred but rejected because the ice thickness at the site may not be sufficient to support pile driving and excavation operations. Only one cofferdam will be excavated at a time. Excavation will occur at a rate of one cofferdam over a minimum period of 8 hours. The proponent will implement a water quality sampling program with a "feedback monitoring" objective to maintain water quality standards for TSS/Turbidity according to CCME guidelines.

DFO's position:
After conducting an analysis of the predicted sediment load and discharge rate of the Mackenzie River, DFO is satisfied the proposed disposal of excavated material into the river will have minimal impacts on downstream fish habitats provided the monitoring plan and mitigation measures are implemented as proposed.

Recommendation:
DFO recommends that the proponent achieves CCME water quality guideline for TSS/Turbidity during any in-water activities.