

**Deh Cho Bridge Proposal
Developer's Assessment Report**

Submission to the Mackenzie Valley Environmental Impact Review Board

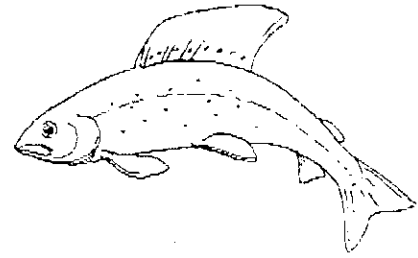
Appendix 2

**Key Correspondence Relating to
Environmental Screening Applications**
(May 1, 2003 to date)



Fisheries
and Oceans

Pêches
et Océans



Fish Habitat Management
Suite 101, 5204 – 50th Avenue
Yellowknife, Northwest Territories
X1A 1E2

TO/A:

Andrew Gamble
Project Manager
Deh Cho Bridge Corporation
14 Mitchell Drive
Yellowknife, NT
X1A 2H5
Fax (867) 669-2028

16 February, 2004

page 1 of 2

MESSAGE

Enclosed please find DFO-FHM comments on the following:

DFO File No. SC02159
MVLWB File No. MV2003L8-0007
MVEIRB File No. EA03-008

Deh Cho Bridge Corporation, Bridge, Mackenzie River at Fort Providence, NT

FROM/DE:

J. David Tyson
Area Habitat Biologist
Western Arctic Area

Telephone: (867) 669-4919
Facsimile: (867) 669-4940
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Canada

Fisheries
and OceansPêches
et OcéansFish Habitat Management
Suite 101, 5204-50th Avenue
Yellowknife, Northwest
Territories
X1A 1E2Your file / Votre référence:
EA03-008Our file / Notre référence:
SC02159

16 February, 2004

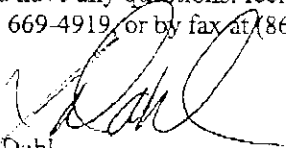
Mackenzie Valley Environmental Impact Review Board
Box 938
200 Scotia Centre, 5102-50th Ave
Yellowknife, NT
X1A 2N7Attention: Todd Burlingame**RE: Dch Cho Bridge Corporation, Bridge, Mackenzie River at Fort Providence, NT**

Dear Mr. Burlingame:

This is to advise you that the Department of Fisheries and Oceans, Fish Habitat Management – Western Arctic Area (DFO), received a letter on 4 February, 2004, from the NWT & Nunavut Chamber of Mines (Chamber) expressing a wish to withdraw its letter of concern dated 16 September, 2003. DFO had noted the Chamber's concerns in the DFO Preliminary Screening Report submitted to the Mackenzie Valley Environmental Review Board (MVEIRB) on 6 January 2004. The Chamber has now effectively withdrawn those concerns and has indicated that it has "...no objection if the (sic) DFO wishes to amend its Preliminary Screening Report dated 6 January, 2004 and withdraw its decision to refer the application to the MVEIRB..."

DFO has discharged its responsibilities as a Preliminary Screener as required by the *Mackenzie Valley Resource Management Act*. DFO will address any fish and fish habitat issues related to the Dch Cho Bridge in its authorization process. DFO will respect the decision of the MVEIRB, whether to continue with the Environmental Assessment of the project, given the position of the Chamber as set out above.

If you have any questions, feel free to contact me at (867) 669-4911 or Dave Tyson at (867) 669-4919, or by fax at (867) 669-4940.



Julie Dahl
Area Chief
Fish Habitat Management
Department of Fisheries and Oceans - Western Arctic Area

Copy: R. Allen, Area Director, DFO-WAA
B. Wooley, Executive Director, MVLWB
A. Gamble, DCBC



Andrew Gamble & Associates
14 Mitchell Drive, Yellowknife, NT, Canada X1A 2H5

Mr. Edward R. Hornby
District manager
South Mackenzie District
Indian & Northern Affairs Canada
#16 Yellowknife Airport
Yellowknife, NT, X1A 2P6

February 10, 2004

Dear Mr. Hornby;

Deh Cho Bridge Environmental Assessment

Our complete response to your letter of September 5th was being prepared when Fisheries and Oceans (DFO) referred this project to the Mackenzie Valley Environmental Impact Review Board (MVEIRB) for environmental assessment.

We are providing the following information, on the assumption that you would have the same questions and concerns under the assessment process. We will address your comments in the order presented in your letter:

Consultation

We understand that resource development projects usually involve a commercial developer seeking permission to exploit a mineral resource. In doing so, the developer may disturb or destroy habitat and expose the land and water to risk of contamination over a prolonged period.

This project is not a mine. It is a public infrastructure project, being implemented through a public-private partnership with the territorial and federal governments. As such, it is proceeding towards approval on the basis that it meets the tests of public interest. The significant questions raised are:

1. Is it technically feasible?

This question is being addressed through careful scrutiny and the due diligence of the design, schedule and estimates by the proponent, GNWT and TD Securities.

2. Does it provide net public benefit?

The GNWT has commissioned independent analysis of the benefits and is satisfied that public benefits exceed costs. This is borne out by broad public and business support of the proposal. The NWT Motor Transportation Association has provided advice on the tolling structure and supports the proposal. The GNWT, not the proponent, will set and

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e-mail: agamble@theedge.ca

manage tolls. Concerns have been addressed through legislation and agreement – The maximum toll will be limited to \$6 per tonne. The majority of user groups have indicated support on this basis. We understand that the mining industry has expressed reservations to the Minister and to the MVLWB about the net costs, but did not intervene in the hearings on the Act and have since formally withdrawn their letter of concern.

3. Is it environmentally acceptable?

The key issue is, of course, the river and potential effects on water quality and fish habitat. The view from Golder Associates and our consultation effort is that, subject to proper design and due care during construction, the bridge will result in reduced long-term contamination and risk to the river and a net benefit to the environment. This also appears to be the view expressed in the DFO preliminary screening report. Recommendations are being addressed through the design and plans to minimize, monitor and mitigate potential construction impacts. We believe that the result will be a net environmental benefit.

Public hearing

1. As noted previously, we do not see the need for a deposit, Both the GNWT and TD Securities will have significant interest in ensuring completion. TD securities will be financing the construction phase and will have some \$50 million at risk. They will have the right, resources and considerable incentive to step in, if necessary, to ensure completion.
2. Should the Board see the need for additional security deposit, we do not see how a public hearing would assist in determining an appropriate amount.
3. I note that the SMD has misunderstood my previous comment concerning project delay and interest rate impact. Once all conditions have been met (including permits, final design approval, final GNWT agreement, financing agreement, etc.) we anticipate a 'closing' or final approval to commence construction. Interest rates will be set at closing for the construction phase and for the full 35 year duration of the concession agreement, removing the risk of subsequent interest rate increases.

Our concern is that a delay in meeting the conditions for a closing will delay the fixing these interest rates. For example, if a final approval were delayed by a year and benchmark interest rates increase by 1 or 2% during that year, the project would become more costly to finance.

4. The letter notes that "*the Division is not in possession of sufficient information to adequately advise the Board of the risk of failure or delay*".

The Board may be assured that the proponent, the GNWT and TD securities are in possession of sufficient information and are exercising considerable care and diligence to minimize and manage any risk. We

would be pleased to provide additional information to respond to more specific concerns in this area.

Review Time

With the referral for assessment, the MVEIRB has now provided a draft schedule. It is our intention to meet or better the timelines proposed for the Corporation and we hope that reviewing agencies will already have most if not all information required for their analysis and responses.

Information Requests

The attached letter from Jivko Engineering provides our responses to these requests.

Please do not hesitate to contact Mr. Jivkov or myself for further information or clarification on these points. We would also be please to meet with you or your staff at any time.

Yours truly,



Andrew Gamble

Attachments

c Ms. Kimberley Cliffe-Phillips
Environmental Assessment Officer
Mackenzie Valley Environmental Impact Review Board

Mr. Stephen Mathyk,
Regulatory Officer
Mackenzie Valley Land & Water Board

Mr. Albert J. Lafferty
Chief Operating Officer
Deh Cho Bridge Corporation

- ✓ Geotechnical Site Investigation Report, completed in January 2004, prepared by the EBA Consulting Engineers of Yellowknife, NT
- ✓ Updated Hydrotechnical Information Report, completed in November 2003, prepared by Trillium Engineering and Hydrographics of Edmonton, AB

The EBA report is based on previously compiled information and nine new boreholes drilled on the abutment and pier location during spring and fall 2003. The results confirmed the presence of hard clay-till stratum underlying the riverbed at the bridge location, but indicated presence of occasional lenses of coarse sand entrapped in the till. The report provides sufficient information for completion of final foundation design and contains the requested riverbed cross-section illustrating the geo-mechanical characteristics of the substrata.

The Trillium report analyses and discusses in detail the potential for scour and bank erosion, and confirms that at the proposed bridge site the riverbed and the existing shoreline are stable. Given the proximity of Great Slave Lake the potential for significant general scour is ruled out. The report also identifies the potential for local scour and recommends measures for local scour control.

Enclosed for your reference are copies of the EBA Engineering and Trillium Engineering reports.

Water Quality Monitoring Program

Recognizing that the in-stream construction activities associated with the bridge construction have the potential to affect the water quality in the river, the Proponent has retained the environmental consultant Golder Associates of Edmonton, AB to collect baseline water quality data for the affected area. Golder will also carry out Monitoring Water Quality Program during the in-stream construction activities. The main objectives of the Program are:

- ✓ To monitor the Total Suspended Sediments (TSS), the ammonia concentration, and the pH level in the water during construction in the vicinity of the crossing. This includes but is not limited to pier-foundation construction, placing blasted rock in the river and excavation/removal part of the existing ferry facilities.
- ✓ To provide timely feedback of the test results to the construction managers, thus allowing adjustment of the construction activity.
- ✓ To establish the distance of downstream sediment and ammonia travel with reference to the loadings reaching aquatic habitats of high fishery value.
- ✓ To assess the impacts of suspended sediment and ammonia on fish populations and other aquatic fauna.

The Proposed Work Plan for the Monitoring Water Quality Program can be found in Appendix D enclosed - Fish Habitat Assessment Report prepared by Golder Associates of Edmonton AB.

Ice Forces

Detailed analysis of the ice forces acting on the bridge components is presented in the enclosed report prepared by Trillium Engineering. The analysis includes establishing of size and thickness of relevant floating ice sheets, direction of the ice flow, elevations and mechanics of the ice impact, etc.

Construction of pier foundations

The pier foundation design described in the original application was modified to accommodate the recently obtained geotechnical results. The large diameter concrete caissons installed to a depth in excess of 10 m below the riverbed were replaced with spread concrete footing installed to a depth of approximately 3.5 m below the riverbed. Consequently the steel pipe casing was replaced with a watertight sheet-pile cofferdam fully surrounding the area to be excavated.

The method of construction of the pier foundations was expanded to cover both "winter" and "summer" options. This is a result of consultation with major construction firms expressing interest to be invited to submit tenders and the probable delay in the schedule, pending necessary permits.

- ✓ According to the winter option, the sheet-pile driving equipment will be deployed on the ice. The sheet-piles for the cofferdam will be driven to a depth of approximately 4.5 m below the riverbed. Prior to excavation, the material within the cofferdam will be pre-drilled in a "Swiss cheese" fashion to the required depth. The excavated material will be stockpiled on the ice, and after freezing will be hauled away and disposed of in a designated gravel pit in the vicinity of the bridge site. After completion of the excavation, the cofferdam will be sealed with a "mud-slab" of tremie concrete placed on the bottom. The water contained in the cofferdam will be pumped out into the river. Prior to pumping out, the water will be tested for suspended solids and the levels of pH will be adjusted if required.
- ✓ According to the summer option, the equipment involved in the construction of the cofferdam will be deployed on barges. The excavated material will be loaded also on barges, and after draining will be hauled out and disposed of in a designated existing gravel pit. The water from the cofferdam will be pumped into the river after testing as described in the previous paragraph. In order to reduce the construction cost the Proponent is exploring the possibility of disposing of the excavated material into the river. For that purpose, samples of till and sand from the strata underlying the riverbed were lab tested for dissolvability in water. The results indicated that the tested material released less than 5% suspended fraction of fines in the water. Further investigation and assessment from our environmental consultant are exploring the applicability of this method. The results are included in the enclosed Fish Habitat Assessment Report.
- ✓ The quantities of the sheet piling, excavation and tremie concrete associated with pier foundation work can be found in the enclosed Project Description Updated January 2004.

It is recognized that construction of pier foundations may affect the water quality near the bridge site. Monitoring the water quality during this part of the work is included in the proposed Water Quality Monitoring Program.

Placing of blasted rock into the river

The modified pier foundation design described in the previous clause contemplates placing of aprons of selected blasted granite around the pier foundations. This is in addition to the rock for extension of the existing causeways and detour construction described in our original application. The type and quantities of rock as well its footprints on the riverbed are described in the enclosed Project Description Updated January 2004.

The question was raised whether placing of blasted rock into the river could potentially affect adversely the water quality by releasing ammonia residue and natural minerals harmful to the aquatic life. In order to assess these potential damages the proponent retained the EBA

Engineering of Yellowknife to carry out petrochemical analysis of samples of the limestone rock that will be used for placing into the river. Our environmental consultant, Golder Associates assessed the probability of releasing harmful minerals and the effect of the ammonia diluted in the water. The results of this assessment and a proposed method for mitigation control are included in the Appendix D, Monitoring Water Quality Program of the enclosed Fish Habitat Assessment Report.

Excavation & Removal of Material from the Ferry Facilities

Removal of the ferry haul-out on the south shore and the end portion of the north causeway is the same as described in our original application. The associated quantities can be found in the enclosed Project Description Updated January 2004.

Most of the material to be removed consists of sandy clay backfill. There are also steel, concrete and timber structures forming part of the ferry facilities. It is recognized that removing this material from the river could potentially affect the water quality by releasing suspended solids and other harmful substances into the water. The GNWT, DOT, in the capacity of owner of the ferry infrastructure, has retained Dillon Engineering to determine if the area subject to excavation contains hydrocarbons, creosote and/or other contaminants, and to develop a method for dealing with the contaminants if any. Dillon's report will be forwarded to the MVLWB as soon as it becomes available.

Land Use Permit, Quarry Permits and Disposal Permits

According to instruction received from the MVLWB, Land Use Permit, Quarry Permits, and Material Disposal Permits must be obtained for all areas involved in the bridge construction including:

- ✓ 60 m wide corridor along the bridge alignment including the detour and the realignment on the approaches
- ✓ the areas of the existing ferry facilities subject to removal and excavation
- ✓ areas for temporary storage and parking on both sides of the river
- ✓ area for temporary construction camp
- ✓ area for temporary concrete plant
- ✓ several existing and proposed quarries and borrow pits for rock, gravel and common backfill along the Mackenzie HWY #1 and the Yellowknife HWY #3

The Proponent has identified all the above areas and has verified the availability of the required materials. Soil and rock samples from all pits and quarries have been tested and the suitability of the materials confirmed. Presently the Proponent is compiling an application package that will be submitted to the MVLWB shortly.

Spill Contingency Plan

It is recognized that spills of fuel and lubricants used by the construction equipment would affect adversely the water quality in the river and would pose danger for the aquatic inhabitants. A schematic Spill Contingency Plan is enclosed with our original Application for Water Licence. The General Contractor selected for the bridge construction will expand this plan to further detail. The final plan will include refuelling and maintenance details of specific type of equipment that the contractor intends to use, spill containment equipment that will be available on site, details on documenting and reporting spill accidents, name and phone numbers of contacts in case of spill accident, etc. The detailed spill contingency plan will be submitted to the MVLWB for review and approval prior to commencement of the works.

For additional information, please contact the undersigned at Tel (867) 920-4455, Fax (867) 873-6090, or email: jivko@theedge.ca.

Sincerely,



Jivko I. Jivkov, P.Eng.
Principal,
Jivko Engineering

Enclosures

Cc Mr. John Spronken
 J. R. Spronken & Associates Ltd.

January 29, 2004

Mr. Stephen Mathyk,
Regulatory Officer
Mackenzie Valley Land & Water Board
7th Floor – 4910, 50th Avenue
P.O. Box 2130
Yellowknife, NT X1A 2P6
Tel: 867 669-0506
E-mail: stephen@mvlwb.com

Dear Mr. Mathyk,

Water Licence Application MV2003L8-0007, Deh Cho Bridge Construction

Further to a memorandum from Environment Canada dated August 06, 2003 we met with Ms. Vanessa Charlwood and Mr. Mike Fournier and discussed the additional information required in relation with the issues of their concern. In the following we are discussing the requested information and are providing responses prepared by our environmental consultants. Although our Application for Water Licence now has been referred to the MVEIRB for assessment we believe the provided information would be valid for the continuation of the process.

Water Quality Monitoring Program

Recognising that the in-stream construction activities associated with the bridge construction have the potential to affect the water quality in the river, the Deh Cho Bridge Corporation (DCBC) has retained the environmental consultant Golder Associates of Edmonton to carry out Monitoring Water Quality Program during the in-stream construction activities. The main objectives of the Program are:

- ✓ To monitor the Total Suspended Sediments (TSS), the ammonia concentration, and the pH level in the water during construction in the vicinity of the crossing.
- ✓ To provide timely feedback of the test results to the construction managers, thus allowing adjustment of the construction activity.
- ✓ To establish the distance of downstream sediment and ammonia travel with reference to the loadings reaching aquatic habitats of high fishery value.
- ✓ To assess the impacts of suspended sediment and ammonia on fish populations on other aquatic fauna.

The Proposed Work Plan for the Monitoring Water Quality Program could be found in the Appendix D of the enclosed Fish Habitat Assessment Report Prepared by Golder Associates.

Prevention of deleterious substances entering the river

Construction activities disturbing the river bed with potential for entering deleterious materials include:

1. Construction of pier foundations
 - ✓ Geotechnical Investigation was conducted in April 2003. Boreholes were drilled and soil samples obtained from one abutment and six pier locations. The results confirmed the presence of hard clay-till stratum underlying the riverbed at the bridge location, but indicated presence of occasional lenses of coarse sand entrapped in

the till. Additional two holes drilled in October 2003 on the remaining locations confirmed similar geotechnical results.

- ✓ The pier foundation design described in the original application was modified to accommodate the recently obtained geotechnical results. The large diameter concrete caissons installed to a depth in excess of 10 m below the riverbed were replaced with spread concrete footing installed to a depth of approximately 3.5 m below the riverbed. Consequently the steel pipe casing was replaced with a watertight sheet-pile cofferdam fully surrounding the area to be excavated.
- ✓ The method of construction of the pier foundations was expanded to cover both "winter" and "summer" options. This is a result from a recent consultation with major construction firms expressing interest to be invited to submit tenders.

According to the winter option, the sheet-pile driving equipment will be deployed on the ice. The sheet-piles for the cofferdam will be driven to a depth of approximately 4.5 m below the riverbed. Prior to excavation, the material within the cofferdam will be pre-drilled in a "Swiss cheese" fashion to the required depth. The excavated material will be stockpiled on the ice, and after freezing will be hauled away and disposed of in a designated gravel pit in the vicinity of the bridge site. After completion of the excavation a "mud-slab" of tremie concrete will be placed on the cofferdam bottom. The water contained in the cofferdam will be pumped out into the river. Prior to pumping out, the water will be tested for suspended solids and the levels of pH will be adjusted if required.

According to the summer option, the equipment involved in the construction of the cofferdam will be deployed on barges. The excavated material will be loaded also on barges, and after draining will be hauled out and disposed of in a designated existing gravel pit. The water from the cofferdam will be pumped into the river after testing as described in the previous paragraph. In order to reduce the construction cost the DCBC is exploring the possibility of disposing of the excavated material into the river. For that purpose, samples of till and sand from the strata underlying the riverbed were lab tested for dissolvability in water. The results indicated that the tested material released less than 5% suspended fraction of fines in the water. Further investigation and assessment from our environmental consultant are exploring the applicability of this method. The results are included in the enclose Fish Habitat Assessment Report.

2. Placing of blasted rock into the river for extension of the existing causeway, for detour construction, and for scour control around the piers.

The question was raised whether that placing blasted rock into the river could potentially affect adversely the water quality by releasing ammonia residue and natural minerals harmful to the aquatic life. In order to assess these potential damages the DCBC retained the EBA Engineering of Yellowknife to carry out petrochemical analysis of samples of the limestone rock that will be used for placing into the river. Our environmental consultant assessed the probability of releasing harmful minerals and the effect of the ammonia diluted in the water. The results of this assessment and a proposed method for mitigation control are included in the Appendix D, Monitoring Water Quality Program of the enclosed Fish Habitat Assessment Report.

3. Excavation and removal of material from the ferry haul-out on the south shore and the end portion of the north causeway.

Most of the material to be removed consists of sandy clay backfill. There are also steel, concrete and timber structures forming part of the infrastructure associated with the ferry operation. It is recognised that removing this material from the river could potentially affect the water quality by releasing suspended solids and other harmful substances into the water. The GNWT, DOT, in the capacity of owner of the ferry infrastructure, has retained the consultant Dillon Engineering to determine if the area subject to excavation contains hydrocarbons, creosote and/or other contaminants, and to develop a method for dealing with the contaminants if any. Dillon's report will be made available to the MVLWB as soon as it becomes available.

Spill Contingency Plan

It is recognised that spills of fuel and lubricants used by the construction equipment would affect adversely the water quality in the river and would pose danger for the aquatic inhabitants. A schematic Spill Contingency Plan is enclosed to the application for water licence. This plan will be expanded to further detail by General Contractor selected for the bridge construction. The final plan will include refuelling and maintenance details of specific type of equipment that the contractor intends to use, spill containment equipment that will be available on site, details on documenting and reporting spill accidents, etc. The detailed spill contingency plan will be submitted to the MVLWB for review and approval.

Assessment of Impact on Migratory Birds

It is recognised that construction of a bridge of this magnitude may affect the nesting patterns of migratory birds. The bridge may attract and provide nesting habitat to some migratory species. Bridge inspection and maintenance activities subsequent to the construction may result in disruption during nesting period and destruction of nests. It is also recognised that Mackenzie River is a migration corridor for migratory birds, which may be attracted by the bridge lights and collide with the 28 m high bridge structure in foggy weather.

Assessment the impact of the bridge construction and operation on the migratory birds has been commissioned by the DCBC and has been prepared by Golder Associates. The assessment is included as a separate chapter in the enclosed Fish Habitat Assessment Report.


Regarding loss of wetland habitat resulting from backfilling existing ponds we would like to clarify that:

- ✓ Construction of the bridge involves excavation from the riverbed in excess of 35,000 cu m. This material includes approximately 15,000 cu m from the removal of part of the north ferry landing, 15,000 cu m from the removal of the ferry haul out and 5,000 cu m from excavation for pier foundations. DCBC plans to dispose of this material in borrow pits on both sides of the river.
- ✓ Construction of the bridge also involves placing of nearly 100,000 cu m backfill material that will be borrowed from gravel sources located within 500 m from the bridge site, on both sides of the river. Large borrow pits will result from the excavation. DCBC plans to dispose of the previously described excavated material in these gravel pits.

- ✓ There are several large ponds on both sides of the river resulting from previously developed borrow pits. These ponds are vegetated and are being used for feeding and nesting by waterfowl birds. DCBC does not intent to use these ponds for disposing of excavated material.

If you have any questions or wish additional information, please contact the undersigned at Tel (867) 920-4455, Fax (867) 873-6090, or email: jivko@theedge.ca.

Sincerely,



Jivko I. Jivkov, P.Eng.
Principal,
Jivko Engineering

Enclosure

Cc Mr. Mike Fournier, Environment Canada
Ms. Vanessa Charlwood, Environment Canada
Ms. Kimberley Cliffe-Phillips, MVEIRB
Mr. Jim O'Neil, Golder Associates
Mr. Andrew Gamble, Gamble & Associates



Environment Environnement
Canada Canada

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

August 6, 2003

Mackenzie Valley Land and Water Board
7th Floor, 4910 - 50th Avenue
P.O. Box 2130
Yellowknife, NT X1A 2P6

Attention: Stephen Mathyk

Re: Water Licence Application MV2003L8-0007 - Bridge Construction - Km 23 of Hwy #3 - Mackenzie River Crossing Near Fort Providence

Environment Canada (EC), has reviewed the information submitted with the above application and offers the following comments for your consideration. The following advice is provided pursuant to Section 22 of the Mackenzie Valley Resource Management Act. Environment Canada's contribution to your request for specialist advice is based primarily on the mandated responsibilities for Section 36(3) of the *Fisheries Act*, the *Canadian Environmental Protection Act*, the *Migratory Birds Convention Act* and *Migratory Birds Regulations*, and the *Species at Risk Act*.

Summary of activities:

The Deh Cho Bridge Corporation is proposing to build a nine-span, steel girder and concrete deck bridge across the Mackenzie River at the site of the existing ferry link. The bridge design is such that the piers, abutments and approaches will withstand ice action, and vessel-arresting devices will be constructed in front of piers to prevent vessel collision. The substructure will consist of 8 concrete caisson piers set 10 m below the streambed using metal casing to seal the hole, with excavated materials disposed on land. Abutments at each approach will be constructed of pilings and concrete. The existing approaches will be reconfigured with removal of some excess area at the north approach, and reclamation of the ferry haul-out area at the south approach. This will result in a net increase in riverbed area. Construction of the approaches will involve infilling with clean blast rock. During construction, it will be necessary to construct a 450 m detour road 25 m downstream of the existing access. This will require placing 6000 m³ of blast rock onto the river bed. Detour materials will be removed after bridge construction is complete.

Comments and Recommendations:

The proponent has provided a comprehensive application which describes the work to be undertaken, potential effects, and proposed mitigation measures. This has been reviewed with respect to potential effects of the construction, and no verification of design parameters or engineering aspects has been conducted by Environment Canada.

Mackenzie Valley Land
& Water Board

File

AUG - 6 2003

Application #

MV2003L8-0007

Copied To

PUYISM Reg 1
Dave Tyson - DFO

Fax: (867)873-6610

On the basis of the information provided, Environment Canada believes that the above noted project activities have the potential to affect fish pursuant to Section 36(3) of the *Fisheries Act*. Section 36(3) specifies that 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.

The advice provided herein does not absolve the proponent from their obligation to comply with Section 36(3) of the *Fisheries Act*. The proponent must ensure that any chemicals, fuel, wastes, or other deleterious substances associated with the proposed project do not enter waters frequented by fish.

The prevention of deleterious substances entering the river appears to be addressed in the application by such measures as: use of clean construction rock; capture of materials generated during caisson pier excavation; stabilization of the approaches with riprap; removal of debris from the ice surface; and spill contingency planning. Addition of fine sediment particles to the river should be minimized by use of best practices. For example, once the casing is sealed during caisson construction, the water to be pumped out should not be disposed to the river or the ice surface.

Monitoring of water quality will be required to confirm that proposed mitigation measures are effective. At a minimum, total suspended solids and turbidity should be measured upstream and downstream of activities, under ice as well as during the open water season. To identify duration of any impacts to water quality, sampling should be done before activities commence, and over a period of time during construction and following completion of the bridge. Environment Canada is available to discuss any questions on monitoring design.

The application includes a brief Spill Contingency Plan, which should be finalized for use as a field document. The document needs to outline a clear path of response (including a list of persons to be contacted in the event of a spill and assigned responsibilities of company staff), and should be specific on spill containment actions. For example, will there be an OSCAR unit on site? If not, how will floating booms and similar items be obtained? The section on preventative measures should note that operators should remain with their vehicle during refueling, and that drip pans should be utilized when refuelling equipment. The Spill Contingency Plan should identify where response equipment is to be found, and should include a copy of the Spill Report Form, noting that "all spills" are to be documented and reported to the NWT - 24 Hour Spill Line number (867) 920-8130. Environment Canada's contact persons and numbers should be changed to list David Tilden at 669-4728 and Magnus Bourque at 669-4729.

On the basis of the information provided, Environment Canada believes that the above noted project activities have the potential to affect migratory birds pursuant to Sections 6(a) and 35(1) of the *Migratory Birds Convention Act - Migratory Birds Regulations*. Section 6(a) of the *Migratory Birds Regulations* states that no person shall disturb, destroy or take a nest or egg of a migratory bird except under authority of a permit therefor. Section 35(1) of the *Migratory Birds Regulations* states "... no person shall deposit or permit to be deposited oil, oil wastes or any other substance harmful to migratory birds in any waters or any area frequented by migratory birds."

The advice provided herein does not ensure that the project will not result in the killing or taking of a migratory bird or its eggs, or nest and does not absolve project proponents from their obligations to comply with all provisions of the *Migratory Birds Convention Act* and *Migratory Birds Regulations*.

Man-made structures such as bridges may provide suitable nesting habitat and thus attract migratory birds including swallows, raptors, and other species. During construction, and maintenance following construction, if it becomes necessary to disturb or destroy the nests of migratory birds this may be done only under the authority of a permit issued by Environment Canada / Canadian Wildlife Service. As much as possible, maintenance activities should be scheduled so as not to occur during the nesting period of migratory birds. If nesting migratory birds are observed during construction and maintenance

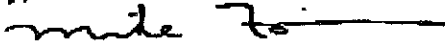
activities, Environment Canada / Canadian Wildlife Service personnel should be informed as soon as possible.

The Mackenzie River is an important migration corridor for significant numbers of migratory waterfowl and waterbirds. Therefore, there is the possibility for collisions of migratory birds with the bridge, especially during periods of reduced visibility (fog in spring or fall, or at night). The Project Description does not discuss plans for lighting the bridge. Environment Canada recommends that lighting be installed on the piers and superstructure of the bridge in such a way that it does not attract or become a hazard to migrating birds. For example, lighting should be focused on the bridge itself and not projected outwards as projected lighting is known to attract birds flying at night in some circumstances. The proponent should investigate thoroughly and use the best available technology to reduce or eliminate the possibility of collisions of migratory birds with the bridge.

EPB should be notified of changes in the proposed or permitted activities associated with this application.

If you have any questions or comments, please do not hesitate to contact me at (867) 669-4743 or mike.fournier@ec.gc.ca.

Sincerely,



Mike Fournier
Environmental Assessment Coordinator

cc: Steve Harbicht (Head, Assessment & Monitoring)
Anne Wilson (Water Pollution Specialist)
Vanessa Charlwood (EA Coordinator, Canadian Wildlife Service)
Paul Latour (Habitat Biologist, Canadian Wildlife Service)



Andrew Gamble & Associates
14 Mitchell Drive, Yellowknife, NT, Canada X1A 2H5

By Fax (3 pages)

Mr. Vern Christensen, Executive Director
Mackenzie Valley Environmental Impact Review Board
Fax: 766-7074

Mr. Bob Wooley, Executive Director
Mackenzie Valley Land & Water Board
Fax: 873-6610

Mr. J. David Tyson, Area Habitat Biologist
Department of Fisheries and Oceans
Fax: 669-4940

27 January, 2004

Dear Sirs;

Deh Cho Bridge Environmental Assessment

The Chamber of Mines letter of September 6th of 2003 to the MVLWB has been cited by The Department of Fisheries and Oceans (DFO) as the main reason for their decision to refer this to the Mackenzie Valley Environmental Review Board (MVEIRB) for environmental assessment.

As noted in the attached letter of January 26th, 2004, the Chamber now wishes to withdraw its letter of concern.

It would seem that there are two options for regulatory agencies:

1. To withdraw the referral by DFO and allow the proponent to complete its responses for additional information requested through the Land and Water Board. The project could then continue through screening by the MVLWB, DFO and CCG. The project may then be given the necessary approvals or it may still be referred to the MVEIRB for assessment. We note that DIAND-SMD has recommended public hearings. It may also be the view of regulatory agencies that the referral is irreversible and/or that the recent attention given to this project dictates an assessment.
2. To carry on with an environmental assessment – hopefully with a scope and schedule to match the apparent low level of concern.

As proponent, we do not want to encourage the first option, if it puts the project in some sort of 'limbo' while a decision is made on whether this option is viable, or if there is a chance that it would simply delay the start of an EA. In other words, we would rather get on with the EA, if we are not confident of a fairly quick approval without it.

...2

In hindsight, we would likely have been farther ahead if the project had been referred for EA shortly after we submitted it for screening (8 months ago). We do not want to make that mistake again.

I would ask that you please advise us as soon as possible, what if any effect this letter will have on our applications. In the meantime we will continue to prepare for an environmental assessment.

Yours truly,



Andrew Gamble, Project Manager
Deh Cho Bridge Corporation

Attachment

C → Kimberley Cliffe-Phillips, Environmental Assessment Officer, MVEIRB
Fax: 766-7074

Russell Neudorf, A/DM, Department of Transportation, GNWT
Fax: 873-0363

Albert Lafferty, COO, Deh Cho Bridge Corporation
Fax: (867) 699-4899



**NWT & NUNAVUT
CHAMBER OF MINES**

January 26, 2004

Mackenzie Valley Land & Water Board
Box 2130
Yellowknife NT X1A 2P6
BY FAX 873 6610

Mackenzie Valley Environmental Impact Review Board
Box 938
Yellowknife NT X1A 2N7
BY FAX 766 7074

Department of Fisheries & Oceans
5204 50th Ave
Yellowknife NT XA 1E2
BY FAX 669 4940

Deh Cho Bridge Corporation
BY FAX (867) 699 4899

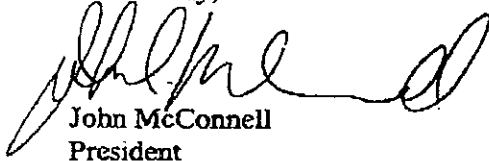
Deh Cho Bridge Application MV 200318-0007

The NWT & Nunavut Chamber of Mines wishes to withdraw its letter of concern dated September 16, 2003, regarding the Deh Cho Bridge.

It was never the intention of the Chamber to be the sole trigger for an environmental assessment of the bridge. Rather, we had expected our concerns to become a small part of an overall environmental review of the project. The Chamber's concerns are strictly economic.

We apologize for any misunderstanding that may have been caused by our letter.

Yours truly,



John McConnell
President



Andrew Gamble & Associates
14 Mitchell Drive, Yellowknife, NT, Canada X1A 2H5

By Fax (5 pages)

John McConnell, President
NWT & Nunavut Chamber of Mines
Fax: (867) 766-7348

24 January, 2004

Dear Mr. McConnell;

Deh Cho Bridge Environmental Assessment

In May of 2003 the Deh Cho Bridge Corporation (DCBC) submitted its application for environmental screening under the MVRMA, to the Mackenzie Valley Land and Water Board (MVLWB).

You may be aware that there have been no serious concerns expressed about the potential environmental impacts of this project by any affected community or other interested party. On the contrary, most reviewers appear satisfied that the project promises a net environmental benefit.

The DCBC was aware of the concern expressed by the Chamber of Mines about the potential economic impacts of this project and we were probably remiss in not making better efforts to respond directly.

However, we were also aware that you had expressed similar concern to the Minister of Transportation and that he had responded directly to you. We had met with your infrastructure committee and had offered to meet again with the Chamber. Finally, we were aware that neither the Chamber nor any of its members had made representations to the Legislative Committee in public hearings on the Deh Cho Bridge Act. It was our mistaken view that this latter process would serve as a forum for discussion of economic concerns, while the MVLWB screening would focus more on the environmental aspects.

Nevertheless, your letter of September 6th of 2003 to the MVLWB has been cited by The Department of Fisheries and Oceans (DFO) as the sole reason for their decision to refer this to the Mackenzie Valley Environmental Review Board (MVEIRB) for environmental assessment.

In speaking with Mr. Vaydik on January 8th of this year, I was encouraged to hear him assert that the Chamber would make its best efforts to ensure an expeditious review. You will soon have an opportunity to comment on the draft requirements and schedule, now being prepared by the MVEIRB. We trust that you will support our goal of an efficient and timely review.

I will respond to the concerns raised in the letter, hoping that this will allay some of your concerns and allow us to focus on those you may still have:

...2

1. You assert that the toll will add about \$1.5 million to annual operating costs for existing and proposed mines.

We believe that this overstates the cost and understates the benefit. Forecasts prepared for the GNWT estimate that the mine component of the commercial traffic will account for about 40% of total commercial traffic using this bridge. Our pro forma projections estimate total tolls of about \$3 million per year. Mine traffic would account for about 40% or \$1.2 million. Our discussions with carriers indicate that the bridge will save them money due to shorter trip times, fewer delays and improved scheduling and fleet utilization. In a competitive environment, we estimate that not more than half of the toll paid by truckers would be passed on to customers. This would suggest a net trucking cost increase to mine customers in the range of \$600,000. This does not consider any benefit to be derived from more timely and reliable access to the region.

Mine traffic, while accounting for about 40% of the commercial traffic on this route, would be contributing about 15% to the cost.

We recognize that the benefits may vary with the specific circumstances of users. We also recognize the seasonal nature of mine resupply operations. However, we believe there is some benefit to mines and other Chamber members. For example, we are aware that some oversize loads cannot be accommodated on the ferry and must wait for the ice bridge to reach full capacity. The bridge will also be of benefit to Chamber members with employees and operations based in Yellowknife.

We would be very interested in seeing the basis on which you estimate a \$1.5 million cost as well as any analysis you may have on potential benefits – not just for the operating mines, but for all Chamber members.

2. You suggest that this toll will discourage exploration.

It is difficult to imagine that the proposed toll will have a substantial impact. The bridge is expected to lower the cost of living in the region. In the worst case, it could increase the delivered cost of a litre of fuel by ¼ cent. At our presentation to the Chamber, largely attended by members in mining support service businesses, the reaction was quite positive.

3. You suggest that this will add \$6/tonne to virtually everything we eat, build and burn.

As noted above, our analysis suggests that the bridge will lower the overall cost of living in the region. This is also the conclusion of independent analysis undertaken on behalf of the GNWT. The Yellowknife Direct Charge Co-op has stated that a bridge would save this one business (and its members) an estimated \$300,000 per year, even if they paid the full toll on all their freight (including fuel, groceries and dry goods), which they won't.

4. Lower than expected tolls

The DCBC and GNWT are aware of and have factored in the traffic risks, including a downturn in mine traffic. These risks will not be passed on through increased tolls.

...3

5. Construction Cost Overruns

Again, the DCBC and its lenders, TD Securities, are conducting due diligence and have a solid risk management plan. The risk of cost overrun is being minimized and will be borne by these parties, not users.

6. The proponent has no track record.

I have attached for your information a list of firms providing support to the DCBC and due diligence review on behalf of the GNWT and TD Securities. Please advise us of any specific concerns you may have on the competence of this team.

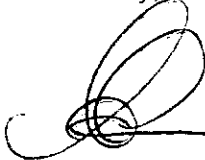
7. Fairness of Tolls

The DCBC and GNWT considered and rejected a toll on light vehicles. It was felt that the cost of collecting any reasonable toll from light vehicles would exceed the amounts collected.

While we may disagree on the potential risks and benefits, the Chamber and the DCBC appear to agree that the environmental review process should be fair and expeditious. To this end, we would be happy to discuss with the Chamber of Mines the data, assumptions and analysis that each of us has used to arrive at different conclusions.

At best, we would hope to convince the Chamber that this project is worthwhile. At the very least, we would hope that the Board will have timely and factual information on which to base their decision.

Yours truly,



Andrew Gamble, Project Manager
Deh Cho Bridge Corporation

Attachment

C Kimberley Cliffe-Phillips, Environmental Assessment Officer, MVEIRB
Fax: 766-7074

Russell Neudorf, A/DM, Department of Transportation, GNWT
Fax: 873-0363

Albert Lafferty, COO, Deh Cho Bridge Corporation
Fax: (867) 699- 4899

Mike Vaydik, General Manager, NWT & Nunavut Chamber of Mines
Fax: 920-2145

Deh Cho Bridge Corporation

Ownership

The Deh Cho Bridge Corporation Limited was incorporated in Yellowknife on November 28th, 2002. The Deh Cho Bridge Corporation currently has two shareholders; the Deh Gah Got'ie Dene Band and the Fort Providence Metis Council.

Corporate Structure

Board - There is a six member Board of Directors, consisting of three nominees of each of the two shareholders. All are Aboriginal residents of Ft. Providence. Current Board Members are:

Michael Vandell - President
Susan Christie – Secretary/ Treasurer
Clifford McLeod - Director
Wayne Vandell - Director
Irene Lafferty - Director
Berna Landry - Director

Chief Operating Officer - A Chief Operating Officer (COO) has been hired as the sole employee of the Corporation (on a one year secondment from the Hamlet):

Albert Lafferty (President Ft. Providence Metis Council and Senior Administrative Officer, Hamlet of Ft. Providence.)

Project Support Team

The following consultants are providing support to the Corporation:

Project Manager - provides overall coordination for the project and supports Board and Chief Operating Officer through advice and recommendations planning, strategies, public relations, negotiations and financial analysis.

✓ *Andrew Gamble, Andrew Gamble & Associates (Yellowknife)*

Design Engineers - the design team provides designs, estimates, construction logistics and schedule, tender documents and advice on contractor selection.

✓ *Jivko Jivkov, Jivko Engineering (Yellowknife)*
✓ *John Spronken, J.R. Spronken & Associates Ltd. (Calgary)*

Other Engineering Specialists - work has been supported by specialist consultants in surveys, geotechnical investigations, hydrology, ice engineering and navigation:

✓ *Trillium Engineering and Hydraulics Inc. (Edmonton)* - hydrology and ice engineering.
✓ *AMEC (Vancouver)*- navigation considerations
✓ *EBA Engineering Consultants Ltd. (Yellowknife)* – soils investigation, field and laboratory testing and analysis
✓ *Alan G. Davenport Wind Engineering Group, University of Western Ontario, Faculty of Engineering* – Wind testing and analysis.
✓ *KJ Technical Services (Yellowknife)* - topographic and ice surveys, earthworks and granular quantities, autocad.
✓ *Dewinton Consulting Services (Okotoks AB)* – Cost Estimation

Environmental Consultant - initial environmental scoping and studies required in support of the permit applications. Additional environmental support will be required for construction and post construction planning, monitoring and mitigation.

✓ *Golder Associates (Yellowknife)*

Financial Management - provides the Deh Cho Bridge Corporation with professional advice and management assistance in the areas of financial administration, banking, and board policies.

✓ *Dargo & Associates Ltd. (Yellowknife)*

Legal Counsel – provides general legal counsel to the Deh Cho Bridge Corporation.

✓ *Charles Thompson, Petersen Stang & Malakoe (Yellowknife)*

Legal Counsel (Structuring) - to provide expert advice and support to the primary legal counsel in structuring agreements for public-private partnerships

✓ *Thomas Barlow, Fasken Martineau, Barristers and Solicitors (Toronto)*

Structuring and Finance - to provide the Project Manager with support and advice in overall project structuring, negotiating agreements, identifying and instructing the lead financial institution and construction contractor(s).

✓ *Michael Cautillo, Deloitte and Touche Structured Finance Inc. (Toronto)*

Economic Consultant – benefit/Cost analysis for GNWT, Aboriginal Benefits analysis for the Deh Cho Bridge Corporation.

✓ *Nichols Applied Management (Edmonton)*

Traffic Analysis - The GNWT retained consultant to undertake an analysis and forecast of commercial traffic, as the basis for agreements

✓ *PROLOG Canada Inc. (Calgary)*

Lead Financing Agency – to provide recommendations on and arrange for debt placement.

✓ *TD Securities (Toronto)*

Tax Advisor - to provide specialty advice to the DCBC on taxation, GST, corporate structure tax implications, capital cost allowance and Tax Credit programs.

✓ *Deloitte and Touche LLP (Edmonton)*

Auditor - selected to meet corporate reporting requirements and the needs of the GNWT and lenders

✓ *KPMG (Edmonton)*

Insurance/Risk Management - to provide advice in \ insurance and risk management.

✓ *INTECH Risk Management Inc. (Toronto)* advice to DCBC in all areas of insurance and risk management.

✓ *Helyar & Associates (Toronto)* – Due diligence review on behalf of TD Securities

Independent Engineer - The GNWT has retained a qualified engineering firm to undertake an independent review of all design documents. This peer review will be made available to the DCBC, lenders and others as required for performing due diligence review of the project.

✓ *BP TEC Engineering Group Ltd. (Edmonton)*

✓ *Buckland & Taylor Ltd. (Vancouver)*

Construction Contractor – The general contractor (to be selected through a competitive process) will be subject to strict pre qualification criteria by DCBC, GNWT and TD Securities and will be required to meet stringent security requirements.

Deh Cho Bridge Corporation - Press Release

Deh Cho Bridge Delayed by Chamber of Mines

Fort Providence (January 22, 2004) – The Deh Cho Bridge Corporation confirmed today that the Department of Fisheries & Ocean (DFO) decision to refer the project to the Mackenzie Valley Environmental Impact Review Board (MVEIRB) for Environmental Assessment will likely delay the project by up to a year.

“This setback was unexpected, since all the signals from DFO were positive and we hadn’t completed the screening.”, said Michael Vandell, President of the Corporation proposing to build the bridge. “However, we are confident that we will get through the assessment with flying colours and the project will go ahead.”

“This project makes too much sense to let it fail”, he added, noting that it has support of the general public, business, the trucking industry and the federal, territorial and municipal governments.

Independent analysis by the territorial government confirms that there is a net economic benefit to the North.

Environmental work by Golder Associates also confirms that the bridge will provide a net benefit to the environment by increasing the fish habitat, by eliminating the ongoing disturbance and siltation caused by the current ice road and ferry operation, by reducing the risk of a major spill and by reducing fuel consumption.

“We are a little baffled by this decision” said Albert Lafferty, Chief Operating Officer for the Corporation. “We don’t understand why DFO would refer the project for assessment, based on a letter from the Chamber of Mines that has nothing to do with the environment.”

“As for the Mines”, added Vandell, “we’ll be happy to make in a year what the mines take out of the ground in a day. Their letter overstates their cost for the bridge and ignores the benefits. They are taking billions of dollars out of the North, but don’t want to pay their fair share for the infrastructure that allows them to do this. They already had a chance to be heard on the toll question during the public hearings on the Deh Cho Bridge Act. The real irony here is that they have chosen to stall this project based on economic concerns, by using an environmental process.”

Under the Mackenzie Valley Resource Management Act, permits could have been issued following screening by the Mackenzie Valley Land and Water Board, DFO and Coast Guard, if screening did not reveal any *significant adverse impact* on the environment or a *public concern*. The Corporation was anticipating approval by February.

With the referral by DFO for environmental assessment, the MVEIRB will set out the scope and schedule for the assessment. This will include a new application and a new round of consultations. The process will likely take at least six months.

“We’ll get through this”, concluded Vandell. “We have to. Fort Providence doesn’t have diamonds or a pipeline. This is our opportunity and it will benefit the whole region and the environment as well as our community. It will even benefit the mines.”

For further information contact:

Albert J. Lafferty
Deh Cho Bridge Corporation
(867) 699-4890

or

Andrew Gamble
Project Manager
(867) 873-4629

Deh Cho Bridge Backgrounder

The Permitting Process

- After considerable preliminary discussions with the various regulatory agencies on their respective processes and requirements, the Deh Cho Bridge Corporation submitted following applications for regulatory permits:
 1. **Department of Fisheries and Oceans (DFO):** Application for Authorization for Works Affecting Fish Habitat under Fisheries Act, s. 35(2) (submitted January 2003).
 2. **Canadian Coast Guard (CCG):** Application under Navigable Waters Protection Act, s 5(1)(a) (submitted March 2003).
 3. **Mackenzie valley Land and Water Board (MVLWB):** Application for a Water License under Mackenzie Valley Resource Management Act (submitted May, 2003).
- Under the Mackenzie Valley Resource Management Act, both DFO and MVLWB are considered 'Regulatory Authorities'. A regulatory authority may refer a project to the MVEIRB, if preliminary screening indicates that:
 1. The development proposal might have significant adverse impact on the environment, or;
 2. The development proposal might have a public concern.
- The MVLWB advised that they considered the project to be a Type B activity, not requiring referral for Environmental Assessment, unless significant concerns were raised during preliminary screening.
- In June of 2003, DFO advised that all three agencies, with MVLWB taking the lead, intended to conduct a joint preliminary screening and issue a joint screening report.
- In July of 2003, the MVLWB distributed copies of the application to all affected communities and a range of government agencies.
- Since that time, the DCBC has been receiving and responding to requests for additional technical information from DFO, DIAND - South Mackenzie District and Environment Canada. Some of the questions raised required additional follow-up and completion of the Golder fish habitat and baseline studies. This work has now been completed and was to be submitted to MVLWB within the week.
- There have been no serious environmental or community concerns raised and DFO appears satisfied that fisheries impacts are acceptable, with a net habitat gain.
- It was expected that permits would be considered and approved by the MVLWB by February of 2004.
- By letter of January 6, 2004, DFO has referred the Deh Cho bridge project to the Mackenzie Valley Environmental Impact Review Board (MVEIRB) for environmental assessment, citing 'public concerns' (Chamber of Mines). This action precludes further consideration by the MVLWB and requires the MVEIRB to undertake an Environmental Assessment.
- The MVEIRB will establish the scope of information and work required of the proponent and will develop a schedule for the process. This will include repeating the consultations and may include public hearings. The EA process typically takes a minimum of 6 to 12 months.

Deh Cho Bridge Backgrounder

Project Financing & Tolls

Capital Financing

The current capital cost estimate is \$57 million.

Financing is to include \$5 million in Deh Cho bridge Corporation (DCBC) equity and \$55 million in debt financing, to be arranged by TD Securities. The debt is to be paid down over the 35 year concession period, at which time the bridge will be handed over to the GNWT.

Operations Costs

Based on the current estimate and current interest rates, the estimated annual operating costs for the corporation will be approximately \$3.1 million for debt servicing and \$0.5 million for insurance and maintenance, in year 1. This would increase with inflation each year.

Operations Revenues

The GNWT will contribute its net annual savings from suspending operations of the ferry. This amounts to about \$1.5 million in year 1 and will increase with inflation.

The GNWT will also collect and remit to the Corporation a toll on northbound commercial vehicles. Based on current traffic forecasts and a toll rate of \$5.15 per tonne, this will result in estimated revenues of \$3 million in year 1. This would also vary from year to year with inflation and traffic volume.

Net Revenues

Under the above assumptions, the net revenues, after costs, would be about \$0.9 million. Of this the DCBC shareholders would have a pre-tax return on their equity of just under \$800,000, while the GNWT would get a share of just over \$100,000. Over the term of the agreement an overall pre-tax rate of return of 15% on shareholder equity is expected.

Toll Setting

It has been agreed that:

- The final toll will be set to produce a projected 15% return.
- This will be done once a firm construction price is obtained, final costs have been agreed and interest rates have been set (prevailing rates at time of closing).
- In no case can the final toll exceed \$6 per tonne.
- If costs exceed the agreed amount or traffic falls short of projections, this will not result in an increase in tolls. Risk is shared by DCBC and GNWT.

Traffic Projections

Traffic projections have been developed independently and accepted by the GNWT and DCBC. Over the life of the 35 year agreement it is projected that mine traffic will account for about 40% of the total commercial vehicle tolls (about \$1.2 million per year). Community resupply traffic will account for the remaining 60% (about \$1.8 million per year).

Deh Cho Bridge Backgrounder

Impact of Tolls

The toll paid by trucking companies will be in the range of \$5 to \$6 per tonne. (This equates to about ½ cent on a litre of fuel). However, this toll will be offset by savings to trucking companies due to shorter turn-around times, fewer delays and improved equipment scheduling and utilization. It is estimated that the 'net' cost trucking companies must pass on to their customers will be \$2 to \$3 per tonne, at most.

The additional trucking costs for customers will be offset by savings in that vary depending on their particular circumstances. Savings could include avoidance of air freight, reduced warehousing and demurrage costs, reduced inventory financing costs and reduced spoilage. Suppliers will have less risk of running out of inventory and builders will face less risk of shutdown when materials are not available.

Trucking Industry

RTL - Robison Enterprises is the North's largest trucking and heavy civil construction company. Based in Yellowknife, their equipment fleet includes over 180 trucks and 400 trailers. RTL provides trucking services including major freight and fuel re-supply contracts, LTL (less than truckload) service, equipment mobilization and specialized and oversize loads for business, mines and individual customers. RTL also specializes in construction and operation of winter roads. In 1997 this company moved over 100 million litres of fuel and 45,000 tonnes of freight in the N.W.T.

RTL notes several costs of the current ferry/ice bridge crossing:

- ✓ During 'normal' ferry/ice bridge operations, there is a delay/detour adding of 20-30 minutes at the crossing. This can extend to several hours during peak times, when trucks are forced to line up at the ferry.
- ✓ In the worst case, trucks can encounter unscheduled interruptions in service during freeze-up and wait several days for service to resume.
- ✓ Some oversized loads cannot be accommodated on the ferry and must wait for the ice bridge to reach full capacity.
- ✓ During periods of extended service interruption, the RTL fleet is idle. There is usually a rush just before spring break-up to get ahead and after break-up to catch up on demand. Interruptions in the freeze-up period are less predictable and can wreak havoc on schedules.

Business

The Yellowknife Direct Charge Co-op provides groceries, dry goods and gasoline to over 2,800 member families, representing approximately 9,000 people. With gross annual sales of \$23 million in 2001, the Co-op had about 40% of the Yellowknife retail grocery market.

That year, the Co-op sold about 10,000 tonnes of goods and 4.3 million litres of fuel. The total Co-op tonnage, including fuel, was about 14,000 tonnes. The Co-op spent about \$2.5 million on transportation, paying an average of 22 cents per kg for general freight and about 7 cents per litre for fuel. The bridge toll on all Co-op freight would amount to about \$70,000.

The General Manager identified potential savings in airfreight, inventory financing, the cost of renting and storing extra fuel tankers, the cost of renting and heating extra trailers and the losses due to handling and spoilage. He estimated that a bridge would result in savings to the Co-op of about \$300,000 per year.

Even if the full toll costs were passed on, Co-op net costs would decrease by about 230,000/year. This represents a net annual savings of at least \$80 per member family.

Deh Cho Bridge Backgrounder

Consultation

Consultation on stakeholder views and concerns relating to potential environmental, economic and social impacts of this project has been critical to developing and advancing the proposal. This has included almost three years of ongoing efforts to consult with all affected parties, by providing information and seeking views of stakeholders.

In addition to formal consultations, there have been numerous informal discussions and meetings with business owners, political leaders and members of the general public; meetings and correspondence with officials of the federal and territorial governments and regulatory agencies; numerous press interviews and resulting newspaper, radio and television reports, and; consultation with engineering, financial and legal advisors.

The NWT Legislative Assembly has also conducted its own consultations on the enabling legislation, the Deh Cho Bridge Act. The Legislature advertised for submissions and conducted public hearings in Yellowknife, Fort Providence and Rae-Edzo, in April, May and June of 2003. The Act was passed in June of 2003.

Most stakeholders believe the bridge will have positive environmental and socio-economic impacts. Key indicators include:

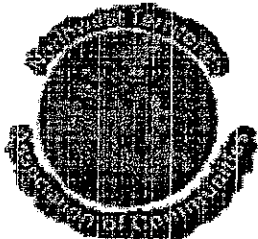
- NWT Association of Communities - Resolution of 2002 Annual General Meeting.
- Dene Nation - Unanimous resolution of Dene Nation Leaders at May 2003 meeting.
- Deh Cho First Nations Unanimous Resolution at 11th Annual Assembly, June 27, 2003
- NWT Motor Transport Association - Letter of support at NWT legislative Committee hearings
- NWT Legislature and Government - GNWT Memorandum of Intent, project financial support and passage of the Deh Cho Bridge Act.
- Government of Canada - Financial support from federal DIAND.

The NWT & Nunavut Chamber of Mines did not participate in the public hearings on the Act. On September 16th, Bernadette Stewart, President of the Chamber wrote to the Mackenzie Valley Land & Water Board, calling for an environmental assessment.

The letter contends that tolls would add about \$1.5 million to annual costs for three mines. The letter makes no mention of any potential benefit to these mines.

Independent traffic analysis indicates that total mine resupply traffic would account for about 40% of tolls, or about \$1.2 million. With savings to trucking companies, it is expected that less than half this amount (about ¼ cent per litre of fuel) would be passed on in increased trucking rates to mines. This indicates a net cost of less than 40% of the amount suggested by the Chamber of Mines, without factoring in any potential benefits from improved security of supply.

Association of Communities



Resolution from 2002 Annual general meeting of NWT Association of Communities

2002 – 09 DEH CHO (MacKENZIE RIVER) BRIDGE

WHEREAS a bridge crossing of the Deh Cho (MacKenzie) River) on the Yellowknife Highway would provide significant economic benefits throughout the Northwest Territories;

WHEREAS the Ft. Providence Combined Council Alliance, representing all residents of the community of Ft. Providence, has proposed to finance build and operate a bridge at this location;

WHEREAS this project would be financed by government savings and by user fees.

THEREFORE BE IT RESOLVED that the NWTAM supports the Ft. Providence Combined Council Alliance proposal to finance, to build and operate the Deh Cho Bridge, so long as the benefits to users can be shown to significantly exceed the costs.

**CATEGORY A
CARRIED**

Dene Leadership Meeting
Dettah, Denendeh
April 28 - May 2, 2003

Re: Deh Cho (Mackenzie River) Bridge

WHEREAS the Fort Providence Combined Council Alliance is proposing to build, own and operate a bridge over the Mackenzie River at Fort Providence; and

WHEREAS this represents a significant economic opportunity for the Deh Gah Got'ie First Nation and will provide a model for other First Nations proposals; and

WHEREAS a bridge crossing the Mackenzie River on the Yellowknife Highway would provide significant economic benefits throughout the Northwest Territories; and

WHEREAS it appears that the bridge will reduce the long term impacts and risks to the environment.

THEREFORE BE IT RESOLVED that the Dene Nation Leaders fully support the Fort Providence Combined Council Alliance's proposal to build, own and operate the Deh Cho Bridge.

MOVED BY: Fred Daniels, Smith Landing First Nation

SECONDED BY: Chief Dennis Deneron, Sambaa K'e First Nation

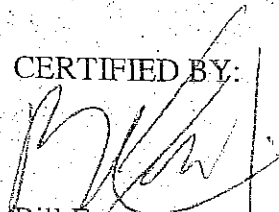
FOR: 19

AGAINST: -0-

ABSTENTIONS: -0-

MOTION IS CARRIED UNANIMOUSLY THIS 1ST DAY OF MAY, 2003.

CERTIFIED BY:


Bill Erasmus
Dene National Chief



N.W.T. MOTOR

TRANSPORT ASSOCIATION

BOX 574 YELLOWKNIFE NT X1A 2N4

TELEPHONE: (867) 873-2831 FAX: (867) 873-3470

Standing Committee of Governance and Economic Development

Bill 13 Deh Cho Bridge Act

Hon. Floyd Roland
Chairman

The NWT Motor Transport Association recently polled their membership on the proposed Deh Cho Bridge to be constructed at the Mackenzie River crossing near Fort Providence. Their response was positive and all members were in favor of a bridge. The membership did however request the following recommendations be considered.

- (1) Recommend a toll of \$30.00 per axel (including steering axel) be implemented for a period of 5 years and a consultation program is in place upon review of the toll.
- (2) Recommend vehicles rated 1 ton or less be exempt.
- (3) Recommend that in a preset time frame after the toll has been implemented. A driver that has not preformed due diligence in reporting his axel configuration to a designated authority be fined up to 5 times that of his original axel charge.

Thank you for allowing us this opportunity to bring forward these recommendations.

Yours truly,

John Johansen
President

May 16, 2003

Deh Cho Bridge Corporation Ltd.

General Delivery
Fort Providence, N.T. XOE OLO
Phone: (867) 699-3441 Fax: (867) 699-3210

June 30th, 2003

FAXED
07-02-03

Jivko Jivkov
Jivko Engineering
Yellowknife, N.T.

Environmental Permit Applications – Deh Cho Bridge Project:

Enclosed please find a certified copy of Resolution No. 11 which was passed at the Deh Cho Annual Assembly in Kakisa Lake. The resolution is in favour of the Deh Cho Bridge and supports the necessary permit applications related to advancing the project.

For clarification we specifically note that the following affected member communities were in attendance at the assembly in Kakisa.

- Deh Gah Gotie Dene Council – Fort Providence
- Fort Providence Metis Council – Local No. 57 – Fort Providence
- Jean Marie River Dene Band – Jean Marie River
- Liidlii Kue First Nation – Fort Simpson
- Fort Simpson Metis Nation – Local No. 52 – Fort Simpson
- Pehdeh Ki First Nation (Wrigley Dene Band) – Wrigley
- Kaa gee Tu First Nation (Kakisa Dene Band) – Kakisa Lake

We further advise that Resolution No. 11 was unanimously passed by all Deh Cho Chiefs, Leaders and registered delegates in assembly. For further information please contact the undersigned.

Yours truly,
Deh Cho Bridge Corporation Ltd.


Albert J. Lafferty
Chief Operating Officer

Attachment: Deh Cho First Nations – Resolution No. 11

- c. Andrew Gamble, Project Manager
- Michael Vandell, President



DEH CHO FIRST NATIONS
BRANCH OFFICE - BOX 89, FORT SIMPSON, N.W.T. X0E 0N0
TEL: (867) 695-2355 FAX: (867) 695-2038
E-Mail: dehchofn@cancom.net



11th Annual Deh Cho Assembly
Kakisa Lake, NT
June 23-27, 2003

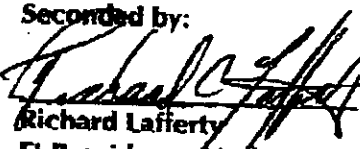
Resolution #11

Deh Cho (Mackenzie River) Bridge

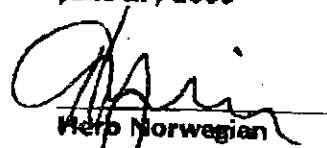
Moved by:


Chief Bobby Cayen
West Point First Nation

Seconded by:


Richard Lafferty
Ft. Providence Metis
Nation

Certified copy of
resolution made at
Ka'a'gee tu, NT dated
June 27, 2003


Herb Norwegian
Grand Chief

WHEREAS, the community of Ft. Providence is proposing to build, own and operate a bridge over the Mackenzie River at Ft. Providence and;

WHEREAS, this represents a significant economic opportunity for the Deh Gah Gotie Dene and Metis and whereas this project will serve as a model for other First Nations and;

WHEREAS, a bridge crossing the mackenzie River on the Yellowknife highway would provide significant economic benefits throughout the Northwest Territories and;

WHEREAS, it appears that the bridge will reduce the long-term impacts and risks to the environment

THEREFORE BE IT RESOLVED, that the Deh Cho First Nations Leadership and delegates in assembly support the community of Ft. Providence's proposal along with the necessary environmental permits required to build, own and operate the Deh Cho Bridge



Andrew Gamble & Associates

14 Mitchell Drive, Yellowknife, NT, Canada X1A 2H5

Fax

3 Pages incl. cover
14 January, 2004

To:

Fax

J. David Tyson, Area Habitat Biologist, DFO	669-4940
Vern Christensen, Executive Director, MVEIRB	766-7074
Bob Wooley, Executive Director, MVLWB	873-6610
Russell Neudorf, ADM, Department of Transportation, GNWT	873-0363
Albert Lafferty, COO, Deh Cho Bridge Corporation	699-4899
Ron Allen, Area Director, DFO-WAA	669-4941
Julie Dahl, Area Chief, Habitat, DFO-FHM	669-4940
Stephen Mathyk, Regulatory Officer, MVLWB	873-6610



Andrew Gamble & Associates
14 Mitchell Drive, Yellowknife, NT, Canada X1A 2H5

By Fax

Mr. J. David Tyson
Area Habitat Biologist
Fish Habitat Management
Department of Fisheries & Oceans – Western Arctic Area

January 14, 2004

Dear Mr. Tyson;

Deh Cho Bridge

I have reviewed your Preliminary Screening Report and letter of January 6th, referring this project to the MVEIRB for environmental assessment.

Three separate applications were submitted to DFO, CCG and the MVLWB between January and May of 2003. Your letter of June 18th, 2003 states that there would be a joint screening by these three agencies, with the MVLWB leading in the consultation. It also states that there would be a joint screening report.

As noted in your screening, the MVLWB distributed our application for comment to a range of stakeholders. Several government agencies requested further information to assist in their review. DIAND-SMD in particular, had several unanticipated requests for information that required further field work and analysis to address. This work has now been completed and our response is pending.

However, your unilateral decision to issue a screening and your referral to the MVEIRB has precluded the completion of a joint screening. The MVLWB, advise me that the matter is now 'out of their hands'. The MVEIRB advise that the assessment starts 'at square one', including restarting consultation, and could take at least six to twelve months.

As you know, we had expected that this project would be approved by the MVLWB in January or February. Now that it has been referred to the MVEIRB for an assessment, we are hoping for a focused and efficient review. I wonder if you could help me with answers to several questions that may assist us in this process.

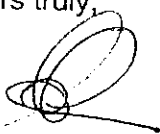
Your screening report notes no concerns under the Fisheries Act (DFO mandate) and acknowledges that the MVLWB was awaiting further information from the proponent on questions raised by other reviewers. It appears to have referred the matter to the MVEIRB based solely on a letter from the Chamber of Mines.

1. What factors changed to cause DFO to issue a unilateral rather than joint screening report, as previously agreed?

2. Did DFO discuss this decision with and have the support of the other screeners to refer the project to the MVEIRB.?
3. Why would DFO issue its report when it acknowledges that the proponent is still gathering the requested information for submission to the lead agency, the MVLWB?
4. Why would DFO refer this to an EA based solely on a letter from the Chamber of Mines, without providing the proponent or the lead screening agency the opportunity to respond, assess or comment on the issues raised? (For example, we would have noted that similar letters were sent by the mining industry to the Minister of Transport, and we would have directed you to the Minister's response to these concerns)
5. Does DFO use in-house expertise to assess the validity of these economic concerns or did it seek advice from outside expertise? If so, from whom?
6. You stated in our conversation on January 7th that you were not aware of the public hearings and eventual passage of the enabling legislation by the NWT Legislature (the Deh Cho Bridge Act). As I am sure you now know, the legislative process included extensive public consultations, providing stakeholders with ample opportunity to question the economic impacts of the proposal. Now that you are aware of it, would you agree that this public process was the proper place to deal with public and industry concerns about the proposed non-environmental policy and tolling issues raised by the Chamber of Mines?
7. Do you think it appropriate that the MVEIRB even consider review of the tolling issue, thereby second-guessing the validity an Act passed under Territorial legislative authority?

Your response will assist us in preparing for the environmental assessment process under the MVRMA.

Yours truly,



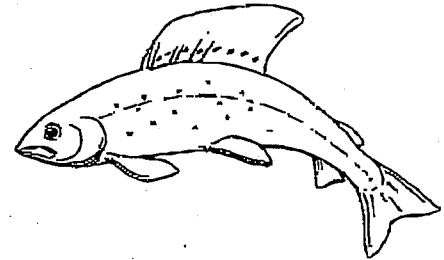
Andrew Gamble

- C Vern Christensen, Executive Director, MVEIRB
Bob Wooley, Executive Director, MVLWB
Russell Neudorf, A/DM, Department of Transportation, GNWT
Albert Lafferty, COO, Deh Cho Bridge Corporation
Ron Allen, Area Director, DFO-WAA
Julie Dahl, Area Chief, Habitat, DFO-FHM
Stephen Mathyk, Regulatory Officer, MVLWB



Fisheries
and Oceans

Pêches
et Océans



Fish Habitat Management
Suite 101, 5204 - 50th Avenue
Yellowknife, Northwest Territories
X1A 1E2

TO/A:

Mr. Alan Ehrlich
Senior Environmental Assessment Officer
Mackenzie Valley Environmental Impact Review Board
Box 938
200 Scotia Centre, 5102-50th Ave
Yellowknife, NT X1A 2N7
Fax (867) 920-4761

6 January, 2004

page 1 of 12

MESSAGE

Enclosed please find DFO-FHM Preliminary Screening Report and referral to EA for the following:

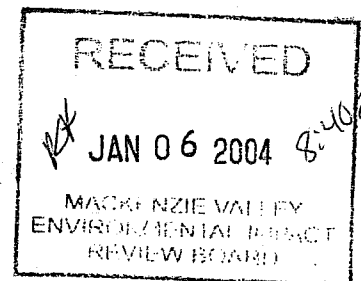
DFO File No. SC02159
MVLWB File No. MV2003L8-0007

Deh Cho Bridge Corporation, Bridge, Mackenzie River at Fort Providence, NT

FROM/DE:

J. David Tyson
Area Habitat Biologist
Western Arctic Area

Telephone: (867) 669-4919
Facsimile: (867) 669-4940
Email: tysond@dfo-mpo.gc.ca



Canada



Fisheries
and Oceans

Pêches
et Océans

Fish Habitat Management
Suite 101, 5204-50th Avenue
Yellowknife, Northwest
Territories
X1A 1E2

Your file *Votre référence*

Our file *Notre référence*
SC02159

6 January, 2004

Mackenzie Valley Environmental Impact Review Board
Box 938
200 Scotia Centre, 5102-50th Ave
Yellowknife, NT
X1A 2N7

Attention: Todd Burlingame

RE: Deh Cho Bridge Corporation, Bridge, Mackenzie River at Fort Providence, NT

Dear Mr. Burlingame:

The Department of Fisheries and Oceans, Fish Habitat Management – Western Arctic Area (DFO) has conducted a Preliminary Screening for the proposed Deh Cho Bridge Corporation Mackenzie River Bridge project at Fort Providence, NT, in accordance with Section 124(1) of the *Mackenzie Valley Resource Management Act (MVRMA)*. Please find the Preliminary Screening Report attached.

Based on comments received during the screening, DFO has determined the project might be a cause of public concern, as per Section 125(1)(a) of the *MVRMA*. DFO therefore refers the Deh Cho Bridge Corporation Mackenzie River Bridge project to the Mackenzie Valley Environmental Impact Review Board for Environmental Assessment, pursuant to Section 125(1)(b) of the *MVRMA*.

If you have any questions, feel free to contact me at (867) 669-4919, or by fax at (867) 669-4940.

J. David Tyson
Area Habitat Biologist
Fish Habitat Management
Department of Fisheries and Oceans- Western Arctic Area

Copy: Ron Allen, Area Director, DFO-WAA
Julie Dahl, Area Chief, Habitat, DFO-FHM
Stephen Mathyk, Regulatory Officer, MVLWB
Andrew Gamble, Manager, DCBC

Canada

PRELIMINARY SCREENING REPORT FORM

PRELIMINARY SCREENER: DFO REFERENCE / FILE NUMBER: SC02159 TITLE: Bridge Construction, Km 23 of Hwy#3, Near Fort Providence ORGANIZATION: Deh Cho Bridge Corporation	EIRB REFERENCE NUMBER:
---	---

Type of Development:
(CHECK ALL THAT APPLY)

- New
- Amend, EIRB Ref. #
- Requires permit, license or authorization
- Does not require permit, license or authorization

Project Summary

- Proposed two-lane bridge to be built at current ferry crossing located at Km 23 of Hwy #3, near Fort Providence.
- Length of the bridge is 1,045 meters constructed of 9 continuous spans made of steel girders and concrete decking.
- The superstructure will be supported on eight piers constructed in the watercourse and two abutments constructed on the approach berms.
- The piers will be concrete filled steel caissons, the superstructure will be made up of steel girders, and the decking will be made up of concrete panels.
- The dimensions of the main span will be 185 metres long with 22.5 metres of clearance above the river.

Project Scope

- Physical construction, including: placement of piers, bridge abutments, and approaches
- Fish habitat compensation plan

Principal Activities (related to scoping)
(CHECK ALL THAT APPLY)

- | | | |
|--|---|--|
| <input checked="" type="checkbox"/> Construction | <input type="checkbox"/> Exploration | <input type="checkbox"/> Decommissioning |
| <input checked="" type="checkbox"/> Installation | <input type="checkbox"/> Industrial | <input type="checkbox"/> Abandonment |
| <input type="checkbox"/> Maintenance | <input type="checkbox"/> Recreation | <input type="checkbox"/> Aerial |
| <input type="checkbox"/> Expansion | <input type="checkbox"/> Municipal | <input type="checkbox"/> Harvesting |
| <input type="checkbox"/> Operation | <input checked="" type="checkbox"/> Quarry | <input type="checkbox"/> Camp |
| <input type="checkbox"/> Repair | <input checked="" type="checkbox"/> Linear / Corridor | <input type="checkbox"/> Scientific/ |
| <input type="checkbox"/> Research | <input type="checkbox"/> Sewage | <input type="checkbox"/> Solid Waste |
| <input type="checkbox"/> Water Intake | | |
| <input type="checkbox"/> Other: | | |

Principal Development Components (related to scoping)

- | | |
|--|--|
| <input type="checkbox"/> Access Road | <input type="checkbox"/> Waste Management |
| <input checked="" type="checkbox"/> construction | <input type="checkbox"/> disposal of hazardous waste |
| <input type="checkbox"/> abandonment/removal | <input type="checkbox"/> waste generation |
| <input checked="" type="checkbox"/> modification e.g., widening, straightening | <input type="checkbox"/> Sewage |
| <input checked="" type="checkbox"/> Automobile, Aircraft or Vessel Movement | <input type="checkbox"/> disposal of sewage |
| <input type="checkbox"/> Blasting | <input type="checkbox"/> Geoscientific Sampling |
| <input checked="" type="checkbox"/> Building | <input type="checkbox"/> trenching |
| <input type="checkbox"/> Burning | <input type="checkbox"/> diamond drill |
| <input type="checkbox"/> Burying | <input type="checkbox"/> borehole core sampling |

- Channeling
- Cut and Fill
- Cutting of Trees or Removal of Vegetation
- Dams and Impoundments
 - construction
 - abandonment/removal
 - modification
- Ditch Construction
- Drainage Alteration
- Drilling other than Geo-scientific
- Ecological Surveys
- Excavation
- Explosive Storage
- Fuel Storage
- Topsoil, Overburden or Soil
 - fill
 - disposal
 - removal
 - storage

- bulk soil sampling
- Gravel
- Hydrological Testing
- Site Restoration
 - fertilization
 - grubbing
 - planting/seedling
 - reforestation
 - scarify
 - spraying
 - re-contouring
- Slashing and removal of vegetation
- Soil Testing
- Stream Crossing/Bridging
- Tunnelling/Underground
- Other (describe):

NTS Topographic Map Sheet Numbers
85 F/5

Latitude / Longitude and UTM System:
61° 15' 45"; 117° 31' 30"

Nearest Community and Water Body:
Fort Providence; Mackenzie River

Land Status (consultation Information)

- Free Hold / Private
- Commissioners Land
- Federal Crown Land
- Municipal Land

Transboundary Implications

- British Columbia
- Alberta
- Saskatchewan
- Yukon
- Nunavut
- Wood Buffalo National Park
- Inuvialuit Settlement Region

Type of Transboundary Implication: Impact / Effect Development

Public Concern: NWT Chamber of Mines

NWT Chamber of Mines concerned with the proposed operation and economics of the bridge. NWT Chamber of Mines concerned that the planned tolls on freight to recover the cost of the bridge construction will increase the operating costs of existing and future mines and mineral exploration. NWT Chamber of Mines is also concerned that the application of tolls to commercial freight only and not to the general public is an unfair burden to commercial traffic.

PHYSICAL - CHEMICAL EFFECTS

IMPACT

1. Ground Water

- water table alteration
- water quality changes
- infiltration changes
- other
- N/A

IMPACT

2. Surface Water

- flow or level changes
- water quality changes

- water quantity changes
- Drainage pattern changes
- temperature
- wetland changes / loss
- other: ice action changes
- N/A

MITIGATION

MITIGATION

- No Mitigation – Piers will may increase scour (<0.3m). These effects are projected to be minimal.
- Clean blast rock to be used for in-stream activities.
- No equipment will be deployed in the water during approach construction. All materials to be removed from river bed after construction activities requiring in-stream work.
- Auger excavation to be confined within metal casings.
- Excavated material from foundation construction to be scrapped from ice surface and deposited off-site.
- Water monitoring to take place upstream and downstream of work area during construction.
- All construction materials, fuel and miscellaneous equipment will be stored above the high water mark.
- Continuous inspection of equipment and vehicles to take place for on-ice work.
- Contingency Plans in place with the NWT 24-Hour Spill Line to be contacted at (867) 920-8130 in case of spills.
- Piers, abutments and approaches designed for calculated ice force according to the Canadian Bridge Code CSA-S6-00.
- Approaches are to be set at 2.0 m above calculated ice jam to avoid flooding.

IMPACT

3. Noise

- noise in/near water
- other: noise increase
- N/A

MITIGATION

- No Mitigation – Vehicle movement and construction.
- No Mitigation – Vehicle movement and construction.

IMPACT

4. Land

- geologic structure changes
- soil contamination
- buffer zone loss
- soil compaction & settling
- Destabilization / erosion
- permafrost regime alteration
- other: explosives/scarring
- N/A

MITIGATION

- Approach construction to take place between October and December to ensure frozen conditions and decrease damage to highway pavement.

IMPACT

5. Non Renewable Natural Resources

- resource depletion
- other:
- N/A

MITIGATION

IMPACT

6. Air/Climate/ Atmosphere

- Other: air quality
- N/A

MITIGATION

- No Mitigation – Air quality will be affected by increased vehicle and equipment use (eg: Hydrocarbon Combustion).

BIOLOGICAL ENVIRONMENT

IMPACT

1. Vegetation

- species composition
- species introduction
- toxin / heavy accumulation
- other:
- N/A

IMPACT

2. Wildlife & Fish

- effects on rare, threatened or endangered species
- fish population changes
- waterfowl population changes
- breeding disturbance
- population reduction
- species diversity change
- health changes (Identify)
- behavioural changes (Identify)
- habitat changes / effects
- game species effects
- toxins / heavy metals
- forestry changes
- agricultural changes
- other: waterfowl disturbance
- N/A

MITIGATION

MITIGATION

- Maintenance activities should be scheduled so as not to occur during the nesting period of migratory Birds.
- Habitat losses will occur within the footprint of the bridge abutments and approaches. A Fisheries Act Section 35(2) Authorization will be required from DFO. The planned alignment places the bridge approaches and abutments over the existing ferry landing causeways, minimizing habitat losses. Reclamation of the ferry slipway and the north ferry landing will provide like-for-like fish habitat compensation. Habitat compensation and monitoring requirements, as well as proponent designed compensation plans and commitments will be included in the Authorization.
- Lighting should be installed on the piers and superstructure of the bridge in such a way that it does not attract or become a hazard to migratory birds.

INTERACTING ENVIRONMENT

IMPACT

1. Habitat and Communities

- predator-prey
- wildlife habitat / ecosystem
Composition changes
- reduction / removal of
keystone or endangered
species
- removal of wildlife corridor or
buffer zone
- other:
- N/A

MITIGATION

IMPACT

2. Social and Economic

- planning / zoning changes or
conflicts
- increase in urban facilities or
services use
- rental house
- airport operations / capacity
changes
- human health hazard
- impair the recreational use of
water or aesthetic quality
- affect water use for other
purposes
- affect other land use
operations
- quality of life changes
- public concern
- other: public safety hazards
- other: Navigation
- N/A

MITIGATION

- Access to ferry landings will be kept clear and a route for the ferryboat will be maintained without interruption. Both the south and north approach will undergo a detour of 250m and 450m respectively.
- Agreements are in place or being negotiated with Northern Transportation Company Limited and NWT Motor Transport Association.
- Bridge dimensions to have vertical and horizontal clearances that should not limit oversized loads.
- Substructure designed to resist impact of colliding stray vessels.
- Will require a permit under Section 5 (1) (a) of the *Navigable Waters Protection Act*. As required within the *NWPA*, a separate, concurrent review is being conducted by Fisheries and Oceans Canada, Canadian Coast Guard – Navigable Waters Protection.

IMPACT

MITIGATION

3. Cultural and Heritage

- effects to historic property
- increased economic pressure on historic properties
- change to or loss of historic resources
- change to or loss of archaeological resources
- increased pressure on archaeological sites
- change to or loss of aesthetically important site
- effects to aboriginal lifestyle
- other:
- N/A

NOTES:

The Preliminary Screening was initiated as a joint screening with the Mackenzie Valley Land and Water Board. However, DFO and MVLWB later agreed to submit separate screening reports.

**PRELIMINARY SCREENER / REFERRING BODY INFORMATION
(CHECK ALL THAT APPLY)**

	RA or DRA	ADVICE	PERMIT REQUIRED
<u>Federal</u>			
CANADIAN HERITAGE (PARKS CANADA)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CANADIAN NUCLEAR SAFETY COMMISSION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CANADIAN TRANSPORTATION AGENCY	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ENVIRONMENT CANADA	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
FISHERIES & OCEANS CANADA	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
INDIAN AFFAIRS & NORTHERN DEVELOPMENT	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
INDUSTRY CANADA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NATIONAL DEFENSE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NATIONAL ENERGY BOARD	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NATURAL RESOURCES CANADA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PUBLIC WORKS & GOVERNMENT SERVICES	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TRANSPORT CANADA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NOGD	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<u>Territorial</u>			

RESOURCES, WILDLIFE AND ECONOMIC DEVELOPMENT	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
MUNICIPAL AND COMMUNITY AFFAIRS	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
TRANSPORTATION	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
HEALTH BOARD	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
PRINCE OF WALES HERITAGE	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Aboriginal / First Nation

DEH GAH GOT'IE DENE COUNCIL	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
FORT PROVIDENCE METIS COUNCIL	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
LIIDLI KUE FIRST NATION	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
METIS LOCAL #52	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
JEAN MARIE RIVER FIRST NATION	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
KA'A'GEE TU FIRST NATION	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
PEHDZEH KI DENE COUNCIL	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
DEH CHO FIRST NATION	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Local Government

	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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Communities

HAMLET OF FORT PROVIDENCE	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
VILLAGE OF FORT SIMPSON	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Other

FORT PROVIDENCE RESOURCE MANAGEMENT BOARD	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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REASONS FOR DECISION

Issued pursuant to Section 121 of the *Mackenzie Valley Resource Management Act (MVRMA)*.

APPLICATION:

- The application was submitted to DFO pursuant to Section 35(2) of the *Fisheries Act* and DFO conditionally accepted that the habitat compensation plan presented by the proponent would provide the necessary compensation in compliance with the DFO No Net Loss Policy.
- A Preliminary Screening was conducted in accordance with Section 124(1) of the *MVRMA*.
- There was no public hearing held in association with this application.

DECISION:

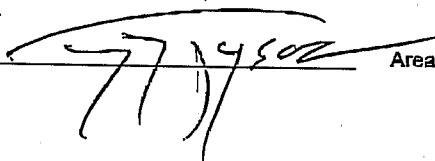
DFO is satisfied that the project has been screened pursuant to the *MVRMA* and that the proposed compensation plan would compensate for habitat losses in a manner consistent with the DFO No Net Loss Policy with respect to Section 35 of the *Fisheries Act*. However:

- The Deh Cho Bridge Corporation has yet to provide all the information requested by reviewers and as such the MVLWB has decided to place their Preliminary Screening on hold.

- During the Preliminary Screening, the proponent altered the project such that additional permits will be required for components. Specifically, some quarrying will be conducted outside of the GNWT-DoT right-of-way.
- During the review process, the Northwest Territories Chamber of Mines expressed concern regarding the effects of bridge tolls on the costs of mining and exploration in the NWT and requested that the project be referred to the Mackenzie Valley Environmental Impact Review Board (MVEIRB) for Environmental Assessment.

As a result of comments received during the Preliminary Screening, DFO has determined that the Deh Cho Bridge Corporation Mackenzie Bridge project might be a cause of public concern, as per Section 125(1)(a) of the *MVRMA*. Pursuant to Section 125(1)(b) of the *MVRMA*, DFO therefore refers the Deh Cho Bridge Corporation Mackenzie Bridge project to the MVEIRB for Environmental Assessment.

Fisheries and Oceans Canada
Fish Habitat Management – Western Arctic Area

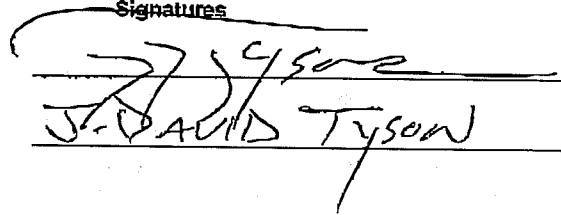
6 JAN 04  Area Habitat Biologist
Date

PRELIMINARY SCREENING DECISION	
<input type="checkbox"/>	Outside Local Government Boundaries
<input type="checkbox"/>	The development proposal might have a significant adverse impact on the environment, <i>refer it to the EIRB.</i>
<input type="checkbox"/>	<i>Proceed with regulatory process and/or implementation.</i>
<input type="checkbox"/>	The development proposal might have public concern, <i>refer it to the EIRB.</i>
<input type="checkbox"/>	<i>Proceed with regulatory process and/or implementation.</i>
<input type="checkbox"/>	Wholly within Local Government Boundaries
<input type="checkbox"/>	The development proposal is likely to have a significant adverse impact on air, water or renewable resources, <i>refer it to the EIRB.</i>
<input type="checkbox"/>	<i>Proceed with regulatory process and/or implementation.</i>
<input checked="" type="checkbox"/>	The development proposal might have public concern, <i>refer it to the EIRB.</i>
<input type="checkbox"/>	<i>Proceed with regulatory process and/or implementation.</i>

Preliminary Screening Organization

Fisheries and Oceans Canada

Signatures



J. DAVID TYSON



Mackenzie Valley Land and Water Board
7th Floor - 4910 50th Avenue • P.O. Box 2130
YELLOWKNIFE, NT X1A 2P6
Phone (867) 669-0506 • FAX (867) 873-6610

December 15, 2003

File: MV2003L8-0007

Mr. Andrew Gamble
Deh Cho Bridge Corporation
14 Mitchell Drive,
YELLOWKNIFE, NT X1A 2H5

Fax: (867) 669-2028

Dear Mr. Gamble:

FAXED
Dec 15/03

Water License Application MV2003L8-0007 – On Hold
Bridge Construction; Km 23 of Hwy #3, Near Fort Providence

Please take this as notice from the Mackenzie Valley Land and Water Board (MVLWB) that Water License Application MV2003L1-0007 has been put on hold pending the submission of a full and complete application package.

The MVLWB received a complete water license application from the Deh Cho Bridge Corporation on July 3, 2003. During the review of this application the Department of Indian and Northern Affairs Canada – South Mackenzie District (SMD) found the application to be lacking the information necessary to provide the MVLWB with a recommendation on operating conditions for the water license. It is our understanding that there has been ongoing discussion between you and the SMD in an effort to clarify these information deficiencies. Although the MVLWB acknowledges your efforts to accommodate the SMD in their information requests, we still have a concern that not all aspects of your proposed development are being screened together as one undertaking. The MVLWB is therefore placing the above captioned water licence on hold until the remainder of any outstanding permit or license applications associated with this development are submitted. The MVLWB looks forward to the receipt of the outstanding information that has been put together for the SMD in relation to this water license, but will not proceed with any further screening of this project until all permit and license applications related to the development are submitted for review.

If you have any questions, contact me at (867) 669-0506 or email mvlwbpermit@mvlwb.com.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'Bob Wooley', with a stylized flourish at the end.

Bob Wooley
Executive Director

Copied to: Stephen Mathyk, MVLWB
Ed Hornby, South Mackenzie District, DIAND
David Milburn, Water Resources Division, DIAND
J. David Tyson, Fish Habitat Management, DFO



Fisheries and Oceans
Canada

Pêches et Océans
Canada

Coast Guard

Garde côtière

Central & Arctic Region
201 N. Front Street, Suite 703
Sarnia, Ontario
N7T 8B1

Région du Centre et de l'Arctique

Your file Votre référence

Our file Notre référence
8200-02-6669

December 9, 2003

Fort Providence Bridge Alliance
c/o Jivko Engineering
5610 50A Avenue
Yellowknife, NT X1A 1G3

Attention: Jivko Jivkov, P. Eng.

Dear Sir:

Re: Application for approval of the Deh Cho Bridge, Mackenzie River, Highway 3, km 23, Fort Providence, Northwest Territories.

This office has recently completed a review of parties who may potentially be impacted by the construction of the above noted bridge across the Mackenzie River. You are advised that, in addition to past consultation with the Northern Transportation Company Limited that you must also contact the following companies to advise of the proposed construction.

1. Cooper Barging
2. Cruise ship Norweta
3. Gruben's Transport

You are reminded that this office must be provided written confirmation of acceptance of the proposed reduced clearances by these and any other party that may be affected. In addition, once this office has received final drawings you will be advised to deposit said plans and complete advertisement as per section 9 (3) of the Navigable Waters Protection Act which states:

(3) The local authority, company or person referred to in subsection (1) shall give one month's notice of the deposit of plans and application by advertisement in the Canada Gazette, and in two newspapers published in or near the locality where the work is to be constructed.

Should you have any further questions concerning the above, please contact the undersigned at (519) 383-1863.

Yours truly,

Barry Putt
A/Inspection Supervisor
Navigable Waters Protection

BP/kab

Canada

October 28, 2003

Mr. Stephen Mathyk,
Regulatory Officer
Mackenzie Valley Land & Water Board
7th Floor – 4910, 50th Avenue
P.O. Box 2130
Yellowknife, NT X1A 2P6
Tel: 867 669-0506
E-mail: stephen@mvlwb.com

Dear Mr. Mathyk,

Water Licence Application MV2003L8-0007, Deh Cho Bridge Construction

Further to a memorandum from Environment Canada dated August 06, 2003 we met with Ms. Vanessa Charwood and Mr. Mike Fournier and discussed the additional information required in relation with the issues of their concern. In the following we are confirming the information provided on the meeting and are outlining method and timeframe for acquiring the outstanding information:

Water Quality Monitoring Program

Recognising that the in-stream construction activities associated with the bridge construction have the potential to affect the water quality in the river, the Deh Cho Bridge Corporation (DCBC) has retained the environmental consultant Golder Associates of Edmonton to carry out Monitoring Water Quality Program during the in-stream construction activities. The main objectives of the Program are:

- ✓ To monitor the Total Suspended Sediments (TSS), the ammonia concentration, and the pH level in the water during construction in the vicinity of the crossing.
- ✓ To provide timely feedback of the test results to the construction managers, thus allowing adjustment of the construction activity.
- ✓ To establish the distance of downstream sediment and ammonia travel with reference to the loadings reaching aquatic habitats of high fishery value.
- ✓ To assess the impacts of suspended sediment and ammonia on fish populations on other aquatic fauna.

The Proposed Work Plan for the Monitoring Water Quality Program is enclosed.

Prevention of deleterious substances entering the river

Construction activities disturbing the river bed with potential for entering deleterious materials include:

1. Construction of pier foundations
 - ✓ Geotechnical Investigation was conducted in April 2003. Boreholes were drilled and soil samples obtained from one abutment and six pier locations. The results confirmed the presence of hard clay-till stratum underlying the riverbed at the bridge location, but indicated presence of occasional lenses of coarse sand entrapped in

the till. Additional two holes drilled in October 2003 on the remaining locations confirmed similar geotechnical results.

- ✓ The pier foundation design described in the original application was slightly modified to accommodate the recently obtained geotechnical results. The large diameter concrete caissons installed to a depth in excess of 10 m below the riverbed were replaced with spread concrete footing installed to a depth of approximately 3.5 m below the riverbed. Consequently the steel pipe casing was replaced with a watertight sheet-pile cofferdam fully surrounding the area to be excavated.
- ✓ The method of construction of the pier foundations was expanded to cover both "winter" and "summer" options. This is a result from a recent consultation with major construction firms expressing interest to be invited to submit tenders.

According to the winter option, the sheet-pile driving equipment will be deployed on the ice. The sheet-piles for the cofferdam will be driven to a depth of approximately 4.5 m below the riverbed. Prior to excavation, the material within the cofferdam will be pre-drilled in a "Swiss cheese" fashion to the required depth. The excavated material will be stockpiled on the ice, and after freezing will be hauled away and disposed of in a designated gravel pit in the vicinity of the bridge site. After completion of the excavation a "mud-slab" of tremie concrete will be placed on the cofferdam bottom. The water contained in the cofferdam will be pumped out into the river. Prior to pumping out, the water will be tested for suspended solids and the levels of pH will be adjusted if required.

According to the summer option, the equipment involved in the construction of the cofferdam will be deployed on barges. The excavated material will be loaded on barges, and after draining will be hauled out and disposed of in a designated old gravel pit. The water from the cofferdam will be pumped into the river after testing as described in the previous paragraph. In order to reduce the construction cost the DCBC is exploring the possibility of disposing of the excavated material into the river. For that purpose, samples of till and sand from the strata underlying the riverbed were lab tested for dissolvability in water. The results indicated that the tested material released less than 5% suspended fraction of fines in the water. Further investigation and assessment from environmental consultant will explore the applicability of this method.

2. Placing of blasted rock into the river for extension of the existing causeway and for detour construction.

It is recognised that placing blasted rock into the ^{material} river could potentially affect the water quality by releasing ammonia residue and other harmful to the aquatic life substances. Presently EBA Engineering of Yellowknife are conducting petrochemical analysis of the rock and are testing the rate of dilution of ammonia residue and other contaminating minerals in the water. The test results will be used by Golder Associates in preparation of the Monitoring Water Quality Program.

3. Excavation and removal of material from the ferry haul-out on the south shore and the end portion of the north causeway.

Most of the material to be removed consists of sandy clay backfill. There are also steel, concrete and timber structures forming part of the infrastructure associated with the ferry operation. It is recognised that removing this material from the river could potentially

affect the water quality by releasing suspended solids and other harmful substances into the water. The GNWT, DOT, in the capacity of owner of the ferry infrastructure, has retained the consultant Dillon Engineering to determine if the area subject to excavation contains hydrocarbons, creosote and/or other contaminants, and to develop a method for dealing with the contaminants if any. Dillon's report will be made available to the MVLWB as soon as it becomes available.

Spill Contingency Plan

It is recognised that spills of fuel and lubricants used by the construction equipment would affect adversely the water quality in the river and would pose danger for the aquatic inhabitants. A schematic Spill Contingency Plan is enclosed to the application for water licence. This plan will be expanded to further detail by General Contractor selected for the bridge construction. The final plan will include refuelling and maintenance details of specific type of equipment that the contractor intends to use, spill containment equipment that will be available on site, details on documenting and reporting spill accidents, etc. The detailed spill contingency plan will be submitted to the MVLWB for review and approval.

Assessment of Impact on Migratory Birds

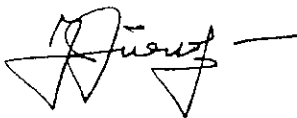
It is recognised that construction of a bridge of this magnitude may affect the nesting patterns of migratory birds. The bridge may attract and provide nesting habitat to some migratory species. Bridge inspection and maintenance activities subsequent to the construction may result in disruption during nesting period and destruction of nests. It is also recognised that Mackenzie River is a migration corridor for migratory birds, which may collide with the 28 m high bridge structure in foggy weather.

Assessment the impact of the bridge construction on the migratory birds has been included in the contract of Golder Associates and their report is expected by mid November 2003.

Regarding the potential hazard that bridge lights might become for migrating birds, we will consult and share experience with other jurisdictions in Canada that operate and maintain large bridge structures. We will also conduct a market research and select and will use the best available technology to reduce the possibility of collisions of migratory birds with the bridge.

If you have any questions or wish additional information, please contact the undersigned at Tel (867) 920-4455, Fax (867) 873-6090, or email: jivko@theedge.ca.

Sincerely,



Jivko I. Jivkov, P.Eng.
Principal,
Jivko Engineering

Enclosure

Cc Mr. Mike Fournier, Environment Canada
Ms. Vanessa Charlwood, Environment Canada
Mr. Jim O'Neil, Golder Associates
Mr. Andrew Gamble, Gamble & Associates

Monitoring Water Quality in the Mackenzie River During Construction of the Deh Cho Bridge – Proposed Work Plan

Introduction

The Deh Cho Bridge Corporation Ltd. (DCBC) of Fort Providence, NT, is currently investigating the construction and operation of a bridge across the Mackenzie River at Km 23 of Highway #3 (Latitude: 61° 15' 45", Longitude: 117° 31' 30"). The proposed bridge would replace the existing ferry and ice bridge crossings, making Highway #3 an all-weather corridor, and creating an uninterrupted link between the City of Yellowknife and southern Canada. The proposed bridge is 1045 m in length and will consist of nine continuous spans, steel girder-concrete deck composite construction. The superstructure will be supported on eight piers constructed in the watercourse and two abutments constructed on approach causeways.

On behalf of the Mackenzie Valley Land and Water Board, the federal Department of Indian and Northern Affairs, South Mackenzie District (DIAND-SMD) reviewed the water license application for the proposed bridge. As a result of this review, the DCBC was requested to provide a document outlining their approach to monitoring water quality (particularly suspended possible sediment and ammonia loadings into the Mackenzie River) during construction phases with instream components. The major instream activities and associated water quality concerns include:

- Installation of eight instream bridge piers which involves excavation and removal of riverbed materials. Drilled and excavated riverbed materials will be temporarily stored (on the ice during winter, and in a barge during the open-water season). The stored materials will then be disposed of off-site or returned to the river (controlled release into the main channel). Installation of the caissons, construction of concrete piers, release of sediment-laden water from dredged spoils, and controlled disposal of spoils into the river will introduce sediments into the river.
- The bridge approaches will utilize existing ferry causeways, although some modifications will be required (north and south causeways widened, south causeway extended, north causeway shortened). Blasted rock will be placed into the river to accommodate the modifications. Excavation and subsequent placement of materials will result in the release of suspended sediment into the channel. In addition, ammonia may enter the watercourse as a result of the leaching of explosive residue from the blasted rock.
- Other sediment producing activities include the construction and subsequent removal of a detour access road on the perimeter of the north causeway, as well as the removal of the present ferry haul-out area on the south side of the river. Blasted rock material will be placed into the river to construct the road detour will release sediment and possibly ammonia into the river; its removal and the removal of the ferry haul-out area will release sediments.

In developing a work plan for construction monitoring it is important to point out that monitoring can be applied at a wide range of levels (i.e., synoptic to detailed). The level of effort selected for implementation depends on the desired results (comprehensiveness, reliability of data, etc.) and the level of funding available. In the present work, we have focused our efforts largely at monitoring the effects on specific areas and sites that have been identified as, or are suspected to be, important fish habitats. Because the majority of these habitats are located in nearshore areas

we would recommend that most effort be focused monitoring the effects of construction on these habitats. Given the high flow volume and the relatively deep/high velocity conditions in much of the main channel (which will result in a rapid flushing and dilution of sediment and ammonia) we would recommend a synoptic level program in this zone (e.g., sampling of selected instream pier construction events). In order to capture a wide range of construction activities and events while keeping costs reasonable, the sampling strategy would incorporate a stratified sampling regime.

OBJECTIVES

The main objectives of the water quality monitoring program are as follows:

- To monitor total suspended sediment (TSS) and ammonia concentrations in the vicinity of the crossing according to a spatially (crossing, upstream and downstream) and temporally (sampling periods during major construction events and different seasons) stratified sampling regime.
- To provide timely feedback on sediment and ammonia concentrations to construction managers, thus allowing adjustment to construction activity (i.e., to minimize/mitigate potential effect on the aquatic environment).
- To establish the distance of downstream sediment and ammonia travel with particular reference to the loadings reaching aquatic habitats of known or potentially high fisheries value.
- To assess the impacts of suspended sediment and ammonia on fish populations, benthic macroinvertebrates, and aquatic habitat based on concentrations recorded and a summary of key published scientific literature.

APPROACH

Due to the large size of the river and the requirement for representative sampling at widely spaced locations, the monitoring program would be most effectively conducted using two, 2-person crews (i.e., four individuals including two specifically trained and two local assistants). Two boats (18' Lunds with minimum 25 hp outboards) would be utilized during the open-water season, whereas four snow machines and ice augers will be required during the winter. One of the crew members would be a project biologist who would be responsible for overall coordination of the monitoring program. Specific duties of the project biologist, however, include a Safety Watch role (i.e., in constant site to site communication with the boat crews, implementation of a rescue program if necessary), providing a liaison between the construction supervisors and the monitoring team (i.e., provide advice and feedback as required, logging construction activities for correlation to the sediment and ammonia data), and participating in the sampling program.

Due to the extended duration of the construction period, field sampling effort will be stratified. This will involve representative sampling in the major construction phases: excavation and infilling of causeway approaches, dredging and backfilling of pier caissons, etc. Representative sampling also will be required during critical fisheries periods (e.g., spring and fall spawning periods) or when construction activity occurs in close proximity to valued fish habitats. Close contact will be maintained with DCBC field personnel and construction contractors to optimize the timing of the sampling/monitoring events.

RATIONALE

Preliminary habitat surveys indicate that the Mackenzie River in the vicinity of the existing ferry crossing can be characterized, on a gross level, as rapidly flowing run habitat in the main channel bracketed by nearshore, backwater habitats that receive protection from natural spur-like structures (peninsulas) and the ferry causeways, and discrete riffle/run habitats positioned off the tip of the peninsulas. As a consequence, instream construction activities that are nearshore (e.g., modification of causeway approaches) are likely to have a greater influence on fish and habitat resources than main channel (e.g., instream piers) construction. This is partly due to fish being able to utilize nearshore habitats for holding, rearing, and spawning and the fact that any materials entering the mainstem thalweg are expected to be quickly dispersed downstream and diluted. As such, monitoring pier construction activities is anticipated to result in sediment loadings that will be difficult to detect, with the possible exception of the piers located nearest the north and south shore lines.

The Mackenzie River is used by residents of Fort Providence for domestic fishing. Furthermore, the town's drinking water is drawn from the river; the intake pipe is approximately 11 km downstream of the proposed bridge. To address concerns that citizens of Fort Providence and DIAND-SMD will likely have, it is recommended that the monitoring program include important fishing areas and Fort Providence's water intake.

Based on the above, the monitoring program would include the following sampling locations and construction events:

- The program would focus on the construction of the two outside piers (i.e., the northern and southern-most piers). These piers are situated nearest to valued fisheries habitat (the nearshore backwater areas and riffle-run complexes which may be used for spawning and rearing by key species such as northern pike and lake whitefish).
- A sub-set of the remaining pier structures (i.e., one or two) will be monitored. Should results indicate negligible effects to the aquatic environment, monitoring during construction of the remaining piers will not be carried out. However, if monitoring proves to be useful (i.e., detectable sediment loads and ability to provide feedback to construction crews), a decision could be made (based on preliminary data, and following discussions with the DCBC and the regulatory authorities) as to continue or suspend main channel monitoring.
- Pier construction will be monitored for sediments only; ammonia is not anticipated to be an issue with construction phase (i.e., blasted rock is not involved with pier construction).
- Habitats in the vicinity of the approach causeways will be monitored during all construction phases (for suspended sediments and ammonia) due to their high fisheries value and depositional nature (i.e., tendency to collect and store sediment).
- The sampling design will include upstream reference areas (e.g., 100 to 500 m upstream of construction zones) and appropriate downstream reaches and locations, as follows:
 - *Piers* - downstream sampling locations will be established based on site-specific channel and flow features and observations by field crew members, but will

likely involve sampling within observed or anticipated sediment plumes at 100 m, 500 m, and 1000 m downstream.

- *Approach Causeways* – on both the north and south sides, upstream reference samples should be collected from a typical backwater habitat and riffle-run complex; downstream sites should include at least two backwater and two riffle-run habitats.
- *Fort Providence Water Intake* – one monitoring location should be established immediately upstream of the town's water intake manifold.
- *Areas of Domestic Fisheries* – monitoring sites should be established in known domestic fishing areas.

METHODOLOGY

Coordination (DCBC, Contractors, and Field Staff)

The importance of effective and timely communication between the fisheries consultant, DCBC (office and on-site), and construction supervisors is recognized. This will ensure that monitoring is completed in a professional and safe manner and the data collected meets the requirements of the client and regulatory agencies. The monitoring contractor is expected to providing the following services:

- Pre-construction meetings at the crossing site with the DCBC field supervisor and the contractor to discuss the day-to-day operations at the site and establishment of a meeting schedule (e.g., daily tail-gate meetings to discuss progress, problems, and safety concerns).
- The monitoring field crew will be equipped with a satellite telephone and site-to-site communications systems (two-way radios). As such, they will be in close communication with the DCBC staff (office/field), construction contractors, and the monitoring contractor's home office.
- An experienced Project Biologist, with bridge construction and sediment monitoring experience, should be on-site at the bridge location during major construction events (e.g., pier and approach causeway construction) to record a detailed log of construction activities as they pertain to the downstream sediment and ammonia monitoring and to advise the contractor/client on fisheries mitigation issues as required.

Field Sampling

It should be stressed that the actual locations of monitoring sites will be adjusted in the field as necessary and will take into consideration stream and habitat configuration, water depth, current velocity and turbulence, site access, and worker safety. An attempt will be made to determine the maximum linear extent of sediment and ammonia transport; however, since fine particles such as silt and clay can travel substantial distances, particularly if entrained in the main channel thalweg, this may not be practical. In this case, downstream sample sites should be established at areas of greatest impact on aquatic resources or of human interest (e.g., high quality holding, potential spawning, and rearing habitats; immediately upstream of Fort Providence's water intake).

Initially, a turbidity/TSS relationship (turbidity is positively correlated to TSS concentrations for a given waterbody and is typically used as a surrogate during field monitoring programs; see below) will be developed for the bridge project area by and will be used to calculate TSS values from turbidity data and aid in locating (e.g., distance downstream at which the sediment guidelines of above federal guidelines are no longer exceeded). This relationship will be derived from data collected at the present crossing area; however, the time of year will differ (July and September 2003) from that proposed for the entire bridge project, which may have an effect on the calculated relationship. Thus, a sufficient number and range of TSS samples will need to be collected during the proposed monitoring program for further refinement of the turbidity/TSS relationship.

Frequency of Sampling

As outlined in above, sampling events will be stratified and will cover the main instream construction events at the crossing. Sampling has been based on a 12 h day for four crew members. During each sampling event, the frequency of sampling will depend on such factors as instream activity at the crossing and the linear spread of the sediment and ammonia plumes. Sampling at one-hour intervals is expected at most locations; however, the first downstream locations will be sampled more frequently since sediment and ammonia increases will presumably be greatest at such locations and the duration of the sediment episode will be more rapid than at downstream sites. At minimum, the upstream control (reference) sites will be sampled three times per day (morning, mid-day, evening).

Suspended Sediment Sampling

Turbidity will be recorded to provide a surrogate measurement of TSS, since turbidity is more readily measured in the field. A relationship between the two variables will be derived (e.g., linear regression) using data from a subset of samples sent to a commercial lab for analysis of suspended solids. This relationship will then be used to predict TSS values on-site given the turbidity values. Samples will be analyzed using a portable turbidity meter.

Water samples for turbidity analysis will be collected using either a hand-held (shallow water habitats) or a hand line/winch operated, depth-integrated sediment sampler (deep water areas or areas of greater velocity). Depth-integrated sediment sampling is method used by the Water Survey of Canada.

For quality assurance/quality control (QA/QC) purposes, replicate sampling will be undertaken and will consist of two components. Triplicate turbidity measurements will be taken from 10% of all samples collected. Triplicate water samples will also be taken for 10% of each sampling event and turbidity will be measured for each sample.

Turbidity values will be determined for each vertical haul and will be reported as a mean for each transect. Total Suspended Sediment will generally be reported as a mean value; however, the use of weighted averages will be investigated.

Bridge construction may be during any part of the year and instream activities will occur at any time, except for periods in the early spring and early winter when ice flows are considerable. Close communication will be maintained with the construction crew and DCBC personnel prior to the commencement of the sampling program, to obtain updates on ice conditions. In the event that ice cover is still present at the time of initiation of sampling a modified program will be implemented. If ice cover permits, an ice auger will be used to drill transect holes for collection

of water samples. Access to sampling sites will be made with the use of snow machines. Due to safety concerns, should monitoring programs be required during ice break-up or early winter ice flow periods, sampling would be limited to near shore areas (i.e., grab samples) and locations.

Ammonia Sampling

It is not known whether or not the ammonia content of blasted rock will be high enough to considerably affect aquatic habitats of the Mackenzie River (see Potential Impacts section). To evaluate this situation, representative rock samples from existing rock in the ferry approaches and from blasted rock imported to the construction sites should be collected and submitted to an analytical laboratory for ammonia analyses. The laboratory would test for the presence of ammonia leachate (shake flask extraction test) in the rock samples. Should the laboratory results and the initial field monitoring results indicate that ammonia levels are negligible or of no concern to aquatic life, a decision would be made to suspend or significantly reduce the scope of the ammonia sampling program. This decision would be made only after a thorough review of the preliminary data and following discussions with the DCBC and the regulatory authorities.

Initially, the sampling program for ammonia will be similar to that described above for TSS; however, ammonia will be analysed only when blasted rock materials are disturbed or introduced into the Mackenzie River. In the field, ammonia concentrations will be determined with the use of portable single-parameter test kits. A representative number of samples from both the river and the blasted rock material will be collected and submitted to an analytical laboratory to verify: a) the presence of ammonia in blasted rock, and b) field data collections. A field QA/QC program for ammonia will be developed similar to that described above for TSS.

Total Suspended Solids (TSS) and Ammonia Determination and Relevant Guidelines

Analysis of TSS and ammonia will be conducted at a commercial laboratory. To obtain an accurate relationship between TSS and turbidity, samples that span the entire range of measured turbidities will be collected and analyzed (minimum of 30 samples per season).

Current federal TSS water quality guidelines for the protection of aquatic (freshwater) life (CCME 1999) are as follows:

- maximum increase in TSS not to exceed 25 mg/L above background in 24 hours, when background levels are less than or equal to 25 mg/L;
- a mean increase of no more than 5 mg/L TSS in 30 days allowed when background levels are less than or equal to 25 mg/L;
- maximum increase in TSS not to exceed 25 mg/L above background when background concentrations are between 25 and 250 mg/L; and,
- where background concentrations are greater than 250 mg/L, an increase of not more than 10% of background is recommended.

Current federal ammonia water quality guidelines for the protection of aquatic (freshwater) life are fairly complex, in comparison to TSS guidelines. Although ammonia guideline concentrations are dependent on ambient pH and water temperature, recommended maximum concentrations generally vary between 1.0 and 25 mg/L for most surface waters (CCME 1999). The maximum

ammonia concentration for the Deh Cho Bridge will be established based upon a review of background water quality data and site-specific pH and temperature levels during monitoring periods. For example, total ammonia concentrations should not exceed 0.499 mg/L at a temperature of 20°C and pH of 8.0 and should not exceed 7.32 mg/L at a temperature of 0°C and pH of 7.5 (i.e., conditions expected in the Mackenzie River).

These guidelines will be used to track the sediment and ammonia loading events for reporting purposes (i.e., post-field data collections) and to comment on the linear and areal extent downstream of various bridge construction phases that the existing guidelines are exceeded. Comparisons of TSS data collected at the bridge crossing and guideline values will be based on calculated values for TSS (i.e., the majority of TSS values will be derived from the turbidity/TSS relationship).

Sediment Deposition Monitoring (Optional)

Measurement of sediment deposition can be achieved using a variety of methods including substrate sampling, sediment traps, and visual analyses. The technique used will depend on the site conditions as determined in the field and a preliminary evaluation of major substrate components (i.e., using existing data on particle size analysis provided by DCBC). The methods which will be considered are outlined below.

To assess substrate composition for size distribution and percent of fine material, a core sampler may be used. The sediments and water collected are strained through a series of sieves to determine the particle size distribution and percent fines.

A second option to assess sediment deposition involves the use of sediment traps which would be placed in valued fish habitats (e.g. riffle-run areas potentially used for spawning by lake whitefish), including the upstream control (minimum of five per transect). Each trap would be buried flush with the surface of the stream bed. Traps would be installed prior to instream construction activities and would be removed at the end of the sampling program for particle-size analysis and determination of fine material accumulation. While this technique works well in many situations, it is thought that its applicability to the present crossing may be limited due to the large size of the river (i.e., deep, high velocity channel) and high percentage of fine materials in the substrate. Use of this method will be evaluated further following a more detailed review of the construction plans and a field test.

Visual analyses such as embeddedness rates the degree that the larger particles (e.g., gravel, cobble) are surrounded or covered by fine sediment. The rating is a measurement of how much of the surface and interstitial area of the larger size particles is covered by fine sediment. Embeddedness ratings would be taken at several locations before and after construction activities.

Other Parameters

Water velocity (mean column velocity) will be measured during the sampling periods at the various monitoring sites established. Discharge data will be obtained from Water Survey of Canada. Water temperature will be recorded continuously with a thermograph; the data can then be correlated to potential spawning activity by key fish species in the area. In addition, daily water temperatures will be measured with a pocket thermometer and recorded (particularly required for establishment of ammonia criteria). Conductivity, pH, dissolved oxygen will be measured daily at monitoring locations both upstream and downstream of the crossing; measurements also will be taken in the thalweg and at several points across the channel.

Potential Impacts on Aquatic Life and Habitat

TSS

The effects of introduced suspended sediment on fish are many and varied, ranging from direct mortality (in extreme cases) to various sub-lethal effects including: habitat avoidance and redistribution, reduced feeding and growth, respiratory impairment, and reduced tolerance to disease (Waters 1995). Deposited sediment has the potential to alter the diversity and density of benthic macroinvertebrates (a major food source for stream-dwelling fish populations) and reduce habitat suitability for a range of critical life-requisite functions (e.g. spawning, incubation of eggs, rearing, overwintering). It is generally accepted that the severity of effects of suspended sediment pollution on fish increases as a function of sediment concentration and duration of exposure, or dose (the product of concentration and exposure time).

Since a determination of the potential impacts on aquatic life and habitat are objectives of the monitoring program, an assessment will be provided using the turbidity/TSS data collected and through a review of the scientific literature. It is recommended that the results of previous investigations regarding fish species presence and abundance in the Deh Cho Bridge study area be consulted when using assessing potential effects of sediment loading.

Ammonia

It was determined from reviewing toxicity and exposure data that freshwater organisms are most at risk from releases of ammonia in the aquatic environment. Rainbow trout, freshwater shrimp, walleye, mountain whitefish and fingernail clams were identified as species with higher sensitivity to ammonia. Of these organisms, freshwater shrimp, walleye, and several whitefish species are present in the study area. Aquatic insects and micro-crustaceans are more resistant to ammonia, although there is a large variation in sensitivity within aquatic insects (Environment Canada and Health Canada 2001).

The ecological impact of ammonia in aquatic ecosystems is likely to occur through chronic toxicity to fish and benthic invertebrate populations as a result of reduced reproductive capacity and reduced growth of young. These are subtle impacts that will likely not be noticed for some distance below an outfall. The zone of impact varies greatly with discharge conditions, river flow rate, temperature and pH. Under estimated average conditions, some municipal wastewater discharges could be harmful for 10 to 20 km. Severe disruption of the benthic flora and fauna has been noted below municipal wastewater discharges. Recovery may not occur for many (20 to 100) kilometres. It is not clear whether these impacts are solely from ammonia or from a combination of factors, but ammonia is a major, potentially harmful constituent of municipal wastewater effluents (Environment Canada and Health Canada 2001).

The issue of ammonia residue from blasted rock is likely not to be of concern in relation to the construction of the Deh Cho Bridge in the Mackenzie River. Although ammonia can be toxic, it is unlikely to be a problem in this situation. While Environment Canada and Health Canada (2001) clearly states that freshwater may be potentially affected, the toxicity concerns are focused primarily on the municipal sewage treatment facilities that produce ammonia in substantial quantities and on a continual basis. The report also mentioned that they had concerns with some of the industrial operations (e.g., intensive livestock operations). There was no mention in the synopsis report of concerns associated with ammonia residues in riprap or other rock material. The report also noted that the degree of toxicity is strongly dependent on several key factors in the receiving water body, including:

- dilutional capacity (the greater the flows the lower the concern);
- water temperature (the lower the water temperature the lower the concern);
- pH (lower concern at basic pH values); and,
- dissolved oxygen (higher Dissolved Oxygen results in rapid decline in ammonia values).

Environment Canada and Health Canada (2001) also indicated that ammonia toxicity was more of a problem in southern regions of Canada (presumably due to higher prevailing water temperatures). In the end, it is unlikely that ammonia will be a problem in the Deh Cho Bridge study area, for a number of reasons: high flow through (dilutional capacity), generally low water temperatures, high dissolved oxygen content of the river and the potential inputs associated with bridge construction represents a one time exposure.

REPORTING

The report will summarize (in tabular form) the turbidity, ammonia, and velocity data for the various monitoring locations. The site-specific relationship between turbidity and TSS for the Mackenzie River will be determined using linear regression. This relationship (and its associated mathematical equation) will be represented graphically. The equation will be used to calculate TSS values for recorded turbidity measurements.

Data on TSS and ammonia concentrations at the various locations over the duration of the study period will be presented both in tabular and graphic form and a linkage of the TSS regime to individual construction events will be described. Comparison of the data collected with federal water quality guidelines will be conducted. The downstream extent of sediment and ammonia transport will be determined to the extent feasible (i.e., for TSS it will be based on travel of larger particle sizes; not washload component).

A literature review of potential effects of the bridge crossing due to suspended sediment and sediment deposition, and ammonia loadings on aquatic biota will be conducted. It will concentrate on key sport fish species (e.g., whitefish species, Arctic grayling, northern pike, and walleye). The potential effects of TSS will take into consideration sediment concentration and duration. The potential effects of ammonia will include a review of the scientific literature in comparison with results obtained.

LITERATURE CITED

- CCME (Canadian Council of Ministers of the Environment). 1999. Canadian water quality guidelines. Prepared by the Task Force on Water Quality Guidelines of the Canadian Council of Ministers of the Environment, Inland Water Directorate, Ottawa, Ontario. + updates through to 2002.
- Environment Canada and Health Canada. 2001. Priority substances list assessment report – ammonia in the environment. *Canadian Environmental Protection Act, 1999*. 96 p.
- Waters, T.F. 1995. Sediment in streams: Sources, biological effects, and control. American Fisheries Society. Bethesda, Maryland. AFS Monograph 7. 251 p.

Andrew Gamble

From: "Stephen Mathyk" <stephen@mvlwb.com>
To: "'Andrew Gamble'" <agamble@theedge.ca>
Cc: "David Tyson" <TysonD@df0-mpo.gc.ca>; "Brenda Backen" <brenda@mvlwb.com>; "Peter Lennie-Misgeld" <peter@mvlwb.com>
Sent: October 6, 2003 9:00 AM
Subject: RE: Deh Cho Bridge Information Status

Andrew, as stated by the SMD, they cannot provide comments (eg: recommendations on conditions for Licenses, etc.) until they have received your information. We generally require SMD comments to put together a meaningful and appropriate license as they are our "eyes and ears" on the ground. In light of this, the answer to your question is yes, we are waiting for you to respond to the SMD. The EC comments will also need some kind of response. This will show the Board that reviewer comments are being incorporated, and mitigated for, in the project design. The Board will be interested in how the EC concerns are being addressed.

Dave Tyson has a copy of the DRAFT Joint Preliminary Screening, and is reviewing it on behalf of DFO right now. Essentially we are waiting to satisfy the requests of the SMD, get the screening signed off by DFO, then bring the license application to the Board. I was hoping to get this matter before the Board by late October (28th-29th), depending on if the ducks have lined up.

One more question Andrew; any word on the land use permit applications?

I will be out of the office starting tomorrow, and will be gone the rest of the week. If there any pressing questions, please contact Peter at the MVLWB office.

Regards,

Stephen Mathyk
 Regulatory Officer
 MVLWB
 (867) 669-0506

-----Original Message-----

From: Andrew Gamble [mailto:agamble@theedge.ca]
Sent: Thursday, October 02, 2003 9:37 PM
To: Stephen Mathyk
Cc: Jivko Jivkov
Subject: Re: Deh Cho Bridge Information Status

Stephen;

On EC I will follow up asap.
 We met with SMD and will also provide written response shortly.
 Any sense of when you anticipate going to Board, or are you waiting for us to respond to above.

Andrew

----- Original Message -----

From: Stephen Mathyk
To: agamble@theedge.ca
Cc: 'Jivko Jivkov'
Sent: Wednesday, October 01, 2003 2:04 PM
Subject: Deh Cho Bridge Information Status

Andrew, I was wondering if you were going to submit a brief response to the Environment Canada

comments that I sent you on the 6th of August via fax. It would be helpful to have a brief reply to the concerns and comments that EC had in relation to the bridge, including any mitigative measures you may be planning. Any progress with the DIAND – SMD information requests?

Regards,

Stephen Mathyk
Regulatory Officer
MVLWB
(867) 669-0506

Andrew Gamble

From: "Andrew Gamble" <agamble@theedge.ca>
To: "Stephen Mathyk" <stephen@mvlwb.com>
Cc: "Jivko Jivkov" <jivko@theedge.ca>
Sent: October 2, 2003 9:36 PM
Subject: Re: Deh Cho Bridge Information Status

Stephen;

On EC I will follow up asap.
We met with SMD and will also provide written response shortly.
Any sense of when you anticipate going to Board, or are you waiting for us to respond to above.

Andrew

----- Original Message -----

From: Stephen Mathyk
To: agamble@theedge.ca
Cc: 'Jivko Jivkov'
Sent: Wednesday, October 01, 2003 2:04 PM
Subject: Deh Cho Bridge Information Status

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Regards,

Stephen Mathyk
Regulatory Officer
MVLWB
(867) 669-0506



Mackenzie Valley Land and Water Board
7th Floor - 4910 50th Avenue
P.O. Box 2130
YELLOWKNIFE NT X1A 2P6
Phone (867) 669-0506
FAX (867) 873-6610

FILE NO: MV2003L8-0007

DATE: 26/09/03

TO: **Andrew Gamble** – Deh Cho Bridge Corp.
J. David Tyson – Department of Fisheries and Oceans

FAX NUMER: (867) 669-2028
(867) 669-4940

FROM: Stephen Mathyk – Regulatory Officer

Number of pages including cover: 3

Please find comments from the NWT & Nunavut Chamber of Mines attached. These comments are for your information and record. Let me know if you require anything further.

Regards,

A handwritten signature in black ink, appearing to be "S. Mathyk".

NOTE: The document accompanying this transmission contains confidential information intended for a specific individual and purpose. The information is private, and is legally protected by law. If you are not the intended recipient, you are hereby notified that any disclosure, copying, distribution, or the taking of any action in reference to the contents of this telecopied information is strictly prohibited. If you have received this communication in error, please notify the above person immediately by telephone and return the original to by regular mail to address above.



**NWT & NUNAVUT
CHAMBER OF MINES**

September 16, 2003

Mackenzie Valley Land & Water Board
Box 2130
Yellowknife NT X1A 2P6

Deh Cho Bridge Application MV 2003L8-0007

On behalf of over 600 members of the NWT & Nunavut Chamber of Mines, we wish to express concern about the economic impact of the proposed Deh Cho Bridge toll. Our membership includes companies and individuals who work in the mining and exploration industry and the suppliers of goods and services that rely on the industry for part of their business. According to the latest GNWT statistics, mining represents 25% of the NWT Gross Domestic Product.

The Chamber fully supports improvement of transportation infrastructure and has participated with other business groups on the NWT Business Coalition in an effort to secure increased federal funding for it. However, we believe that the proposed toll structure, as explained to us by officials of the Department of Transportation, will have a negative effect on our industry and on the economy of the North Slave region.

Our operating mines are price takers in the marketplace. This means that any increased operating cost cannot be passed on to a competitive international marketplace and therefore shows up directly on the bottom line as reduced profit. As primary producers, our mines face a myriad of cost increases that must be managed. To have an additional cost imposed by government to solve a problem of such limited annual duration and effect is not beneficial to our industry, which is the major driver of economic activity in the Northwest Territories.

We are concerned that the full impact of the bridge toll on the northern economy has not been examined. We estimate that it will add about \$600,000 in capital cost to the next proposed diamond mine at Snap Lake. In aggregate, it will add about \$1.5 million to annual operating costs at three existing and proposed diamond mines and one producing gold mine. We have recently learned of the impending closure of two northern gold mines (Con and Lupin), not because they have run out of gold but because costs have increased to the point that it is no longer profitable to operate.

We are particularly concerned about the effect of the proposed toll on mineral properties that have not yet reached the production stage. Several of these are in pre-feasibility or feasibility stage or are undergoing permitting processes in both the NWT and western Nunavut. All have the potential to bring further benefits to NWT residents through increased employment and business opportunities and tax revenues to government.

Box 2818, Yellowknife, NT Canada X1A 2R1 Phone: (867) 873-5281 Fax: (867) 920-2145
Email: nwtmines@ssimicro.com Website: miningnorth.com

Mackenzie Valley Land
& Water Board

File

SEP 22 2003

Application # MU2003L8-0007
Copied To PUM/Sm/Reg

To be sustainable, our industry requires continuous exploration effort. Exploration companies often list high cost as a major impediment to investment in the north. The same companies also list lack of basic transportation infrastructure, so we do appreciate the dilemma faced by the Northwest Territories in dealing with infrastructure issues. We believe, though, that the best strategy to deal with the issue is to continue to lobby the federal government to live up to its residual provincial-type responsibilities rather than to impose a toll on the movement of goods to the north and thus further disadvantage the north as a place to invest.

We believe that the short seasonal benefits of the bridge will be far outweighed by the increased costs of doing business in the North Slave region. Adding \$6/tonne to the cost of virtually everything we eat, build with and burn in our vehicles, aircraft and furnaces will have tremendous impacts that are difficult to quantify but it must be done if your Board is to fully understand the effects of this proposal. Exploration expenditures are already down in the NWT. We feel that the proposal to institute this toll has the potential to act as a further disincentive to investment in the NWT.

We are further concerned that the proposal does not fully examine possible effects of lower than expected revenues from the toll. Several factors, some of them driven by the GNWT, may decrease expected revenues from the toll. Possible use of hydroelectric power by the mines in future will greatly reduce the volume of diesel fuel trucked to the mines. Recently announced mine closures referenced above will affect the long - term revenue flows from the bridge.

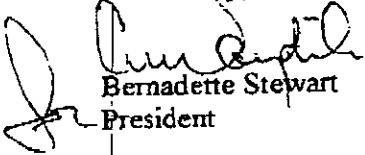
We are also concerned with the very real prospect of construction cost overruns. Environmental assessment and fisheries authorizations have the potential to involve significant delays and additional costs. The bridge's proponent, the Deh Cho Bridge Corporation, has no track record of planning, estimating or delivering projects of any size, let alone one of this magnitude. Were alternative river crossing approaches considered?

We also question the fairness of the toll, which would be levied only on commercial vehicles. This effectively grants personal vehicles tax free status and places the burden for payment on commercial users. We believe it misses the opportunity to collect additional revenues from the traveling public and thereby retire the debt in a more timely fashion. We believe that this is inconsistent with sound tax policy.

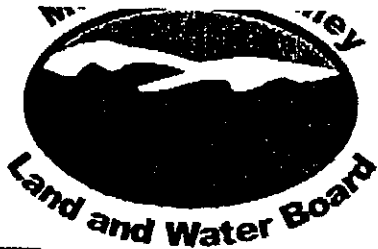
In summary, the NWT & Nunavut Chamber of Mines does not support the construction of the bridge and imposition of a toll as currently planned. We believe that the negative effect on the economy of the North Slave region outweighs the seasonal benefits to be gained from the bridge. We are further concerned about possible cost overruns and revenue shortfalls.

In view of the significant concern expressed about the bridge and the effects of the proposed tolls on the mineral industry and the economy of the NWT and western Nunavut, we believe this application should be referred for Environmental Assessment.

Yours truly,



Bernadette Stewart
President



Mackenzie Valley Land and Water Board
7th Floor - 4910 50th Avenue
P.O. Box 2130
YELLOWKNIFE NT X1A 2P6
Phone (867) 669-0506
FAX (867) 873-6610

FILE NO: MV2003L8-0007

DATE: 16/09/03

TO: Andrew Gamble - Deh Cho Bridge Corp.

FAX NUMER: (867) 669-2028

FROM: Stephen Mathyk - Regulatory Officer

Number of pages including cover: 8

Mon @ 1:30

Andrew, please find attached the DIAND - South Mackenzie District (SMD) comments regarding the further information you submitted on August 17, 2003 in response to their information requests of earlier that month. You will note that several additional requests for information have been made by DIAND. I have spoken with Ed Hornby regarding these requests and confirmed that they are required in order for the SMD inspection staff to recommend conditions for the above water license. I would recommend that you arrange a meeting with Paula Spencer if there is any confusion as to the content of your response to these further requests. This will hopefully avoid any further delays and get the application process back on track. In any case, I am planning on formulating a draft license to present to the Board at the earliest possible time. Please contact me if you require anything further.

Regards,

A handwritten signature in black ink, appearing to be "S. Mathyk".

NOTE: The document accompanying this transmission contains confidential information intended for a specific individual and purpose. The information is private, and is legally protected by law. If you are not the intended recipient, you are hereby notified that any disclosure, copying, distribution, or the taking of any action in reference to the contents of this telecopied information is strictly prohibited. If you have received this communication in error, please notify the above person immediately by telephone and return the original to by regular mail to address above.



Indian and Northern
Affairs Canada
www.inac.gc.ca

Affaires indiennes
et du Nord Canada
www.ainc.gc.ca

#16 Yellowknife Airport
YELLOWKNIFE NT X1A 3T2

Telephone (867) 669 2761
Facsimile (867) 669 2720

September 5, 2003

Your file - Votre référence

Our file - Notre référence

Mackenzie Valley Land and Water Board
7th Floor, 4910 - 50th Avenue
P.O. Box 2130
YELLOWKNIFE NT X1A 2P6

Mackenzie Valley Land
& Water Board

File _____

SEP - 6 2003

ATTENTION: Mr. Stephen Mathyk
Regulatory Officer

Application # MV200318-0007

Copied To PUM/Sm/Reg
D. Tyson - DFO

Dear Sir:

Re: Water Licence Application MV200318 - 0007, Bridge Construction, Mackenzie River

I have reviewed the letter from Andrew Gamble and Associates, dated 18 August, 2003, and the attachment in the form of a letter from Jivko Engineering to Mr. Andrew Gamble, dated 17 August, 2003, in response to my information request of 12 August. I have also reviewed the document entitled *Project Description*, including Preliminary Design Drawings, Geotechnical Information Report, Hydrotechnical Information Report, and Abstract of Preliminary Hydraulic Design, dated August, 2003.

I will address the responses in the order they were raised in my letter of 12 August.

Consultation

This Division is very cognizant of the fact that it is not our place to assess the adequacy of consultation, since that is clearly within the purview of the Mackenzie Valley Land and Water Board (the Board.) Our comments of 12 August merely reflected the fact that given the scale and social and possible economic significance of this development, the record of consultation seemed incomplete, in that while Table 1 of the application does detail meetings, including date, parties, and purpose, there was no record of issues raised nor suggested solutions. I note the resolution of support from the Association of Communities is conditional upon the benefits to users being shown as significantly exceeding the costs, for instance. In a letter from the N.W.T. Motor Transportation Association to the Government of the Northwest Territories, included in the application, the support seemed conditional on a specific axle based toll, and a consultation regime to review that toll. The application makes no commitment to any specific toll regime.

Public Hearing

In my remarks of 12 August, one of the reasons for suggesting a public hearing was to develop



information to assist the Board in establishing an appropriate security deposit. Mr. Gamble's response of 18 August suggests this should not be an issue, stating for instance that GNWT would have the right and "considerable incentive" to step in and ensure completion of the project. While qualifying this assurance with the assertion that it would be an unlikely event, the proponent, in the same letter, states the project economics are very sensitive to interest rates, and a delay might have serious consequences to the project. Given that the project is weather dependent, (freezing ground in October, on-ice construction in April,) conditions beyond the control of the proponent may in themselves cause a delay in the project.

At present, this Division is not in possession of sufficient information to adequately advise the Board of the risk of failure or delay, nor the financial risk this may pose to the public.

Review Time

This Division will continue to review and consider the information provided by the proponent in a timely fashion, to assist the Board in a timely decision on this application.

Information Requests

Application

Section 4.2 Selection of Bridge Site

"Proposed bridge location is based on Preliminary Hydraulic Design, Mackenzie River Bridge, Liard River Bridge..." Northwest Hydraulic Consultants Ltd. (NHCL) - 1975.,

Information Request - DLAND SMD needs to see this report, and a "Final Report" if produced. The report may need to be updated or verified prior to construction.

We have reviewed the abstracts from the NHCL 1975 report, and the subsequent update by Trillium Engineering and Hydrographics Inc. provided by the proponent. The updated analysis seems to support the proponent's position that the proposed design will not significantly affect river dynamics. ✓

Section 4.3 Regime Analysis

1. *Is the 50 year interval for air photos (bank stability) up to 1975 or to 2003?*
2. *Is river bed analysis based on 1975 work or recent findings?*
3. *Where is the geotechnical data ie: have areas of proposed approaches been drilled to determine the presence of any seeps or springs?*
4. *What is nature of river bed substrate?*
5. *Where is the description of river bed (x-section) to illustrate substrate characteristics?*

- ** Information Request: DIAND-SMD needs to see the stratigraphy model and substrate characterization.**
- ** Information Request: DIAND-SMD requests the geotechnical and stability data collected for the affected areas of the Mackenzie River and associated river banks.**

We have reviewed the update by Trillium Engineering and Hydrographics Inc. and the geotechnical results provided by EBA Engineering. We note that while the Trillium report states they do not expect any ice scour problems, they go on to recommend "Site specific bed material sampling...as part of the foundation investigation." We further note in the Geotechnical Information Report that only seven of the ten planned boreholes were drilled, leaving an information gap concerning scour potential in the vicinity of piers six and eight, as well as the north abutment.

6. *What data is available to support the statement "The resulting minor increase in velocity would probably produce no scour effect."?*
- > *any constriction of flow for a river such as the Mackenzie would certainly increase flow velocity (and scouring) considerably.*
 - > *where is river discharge data to support this assumption?*
7. *What model was used to predict that if scouring occurs "the bed would adjust over a very long period of time, and the increase in depth would be less than 0.3 m."?*
- > *will river bed be able to withstand scouring and/or deep cutting?*
 - > *is the 0.3 m assumption based on scouring from turbulence at river bed interface alone, or was more severe scouring (ie: boulders along river bed) considered?*
- ** Information Request: DIAND-SMD requests a stream flow/velocity model and calculations used to predict changes in velocity and potential scouring effect on the river bed.**

A review of the Trillium Engineering and Hydrographic Inc. update explains the modelling and assumptions used to support this statement. The caution expressed in the cover letter, (Trillium to JVKO Engineering) recommending site specific bed material sampling, and re-enforced on page 24 of that report, suggesting it would be prudent to assess the actual bed material before proceeding with final bridge design is noted. It is also noted that not all of the geotechnical assessment boreholes could be drilled, due to overflow conditions at the public crossing. There remains then some uncertainty whether the substrate will respond as predicted, absent complete characterization, especially at the undrilled pier locations.

8. *Where is baseline water quality data for the affected areas?*
-> *what is available?*
-> *what has been collected?*

**** Information Request: DIAND-SMD requests the baseline data available for areas potentially affected by this project. Baseline water chemistry is important to determine potential effects from project activities.**

I note in Jivko Engineering's response to Mr. Gamble, that baseline water quality data is not yet available, and this Division remains unable to advise the Board on possible consequences to water quality of this project. Determining sediment loading and developing monitoring parameters would seem problematic without this information.

Section 4.4 Ice Action

9. *What are calculated ice forces vs. what is specified in Canadian Bridge Code CSA-S6-00?*
10. *What data will be used in calculating ice forces?*

**** Information Request: DIAND-SMD requests data, methodology and calculations used in ice force predictions, as well as comparison to Canadian Bridge Code.**

I note that the Trillium Engineering and Hydrographics Inc. report details the methodology and data collection methods used to predict the effects of ice action, and that Trillium Engineering and Hydrographics Inc. appears satisfied that the data is sufficient to assess any impacts to the bridge of this phenomenon.

Section 4.5 Components & Parameters

sub .1

11. *How was vertical clearance of bridge superstructure (8.0 m?) determined?*
12. *Is vertical clearance adequate for maximum flood return?*
13. *Where is hydraulic data to demonstrate historic river levels?*

**** Information Request: DIAND-SMD requests the above data and information.**

The Trillium Engineering and Hydrographics Inc. report adequately details the data used to determine the clearance for maximum flood and historic river levels.

sub .4

14. *"caissons will be installed to a depth of approx. 10 m below the riverbed."*
 -> *where will drill and dredge spoils be disposed?*
 -> *what about management of suspended solids from drilling?*
 -> *no details on materials to be used ie: gauge, corrosion protection, metal leaching?*

sub. 6

15. *Approaches will be infilled by placing "clean blasted rock" into the river.*
 -> *What is the volume, source, geochemistry, and size of blastrock?*
 16. *Ammonia modelling and management plan for dealing with ammonia blasting residues needs to be developed.*
 17. *Monitoring needs to be set up for ammonia blasting residues.*

**** Information Request: DLAND-SMD requests the proponent submit the volume, source, geochemistry and size of proposed blastrock as well as a management plan and monitoring plan to deal with ammonia residues in blast rock.**

I note the Project Brief generally describes fill material sources, but does not characterize the rock beyond "sandstone" and "granite." There is no reference in the response to the ammonia issue. However, an electronic mail message originally dated 18 August speaks to the likelihood of toxicity to fish from ammonia. A numerical accounting of the anticipated residual ammonia quantities, the estimated dilution rate, and baseline data regarding water temperature expected at the time of placement, pH, and dissolved oxygen would permit an analysis of the conclusions reached in that electronic message.

sub .7

18. *Excavated material from existing ferry landings may contain hydrocarbon contamination or other forms of contamination such as creosote.*
 19. *Depending upon test results, proposed gravel pits may not be appropriate for disposal ie: lined landfarm may be required*
"The material to be removed from this area consists of 90 cu m structural timber."
 -> *has this material been characterized?*
 -> *cribbing placed for such purposes in the past was typically treated with creosote.*
 -> *if present, proposed gravel pits may not be appropriate for disposal.*
**** Information Request: DLAND-SMD requires a waste management plan as an unlined gravel pit will not be suitable for disposal of materials if contaminated.**

**** Clarification: Does this activity require a land use permit?**

I note the response acknowledges disposal of excavated materials will require a land use permit. There is no application for a land use permit as part of this project. It is not considered probable that this department would permit the disposal of creosote contaminated materials on territorial lands. Before approving any disposal of creosote contaminated materials, a thorough assessment of the quantities and level of creosote present, as well as potential for ground water contamination would be required. Creosote is listed on Environment Canada's Priority Substances List.

6,000 cu m of blastrock will be placed into watercourse for road construction. This should also be included in the management plan and monitoring plan addressed in subsection 6, as well as characterization and geochemistry of the in-fill.

20. All in-fill used in the project should be subject to geochemical characterization

The response from the proponent apparently suggests that leaching from undisturbed bedrock occurring over the millennia adequately predicts water quality effects when large amounts of this same rock are placed directly into contact with water after being blasted, with the attendant exposure of fresh, unweathered surfaces. That has not been the accepted practice when predicting water quality effects for other infilling activities.

**** Information Request: Please provide DLAND SMD with information on how excavation activities and infilling will affect sediment loading and how the proponent intends to mitigate this.**

I note the response references the *Fish Habitat Assessment Study*, which is not available at this time, and suggests mitigation by silt curtains.

Section 4.6 Construction Details & Schedule

sub. 2 - Earthworks

21. *Proposed schedule involves in-filling of approaches as early as Oct. 2003*
 -> *given that the application is still under review, a start date within 2.5 months may not provide adequate time to review this project.*

sub. 4

22. *"Experience has shown that the water contamination from this procedure is insignificant, and if any, it would be well within the permissible indicators."*

**** Information Request: DLAND-SMD requests a water quality monitoring plan, including sampling protocol, frequency, and parameters. Baseline data needs**

Jivko Jivkov

From: "Jivko Jivkov" <jivko@theedge.ca>
To: "YK Paula Spencer" <PSpencer@eba.ca>
Cc: "YK Andrew Gamble" <agamble@theedge.ca>; "YK Stephen Mathyk" <stephen@mvlwb.com>;
"YK Keneth Dahl" <dahlk@inac.gc.ca>
Sent: Monday, August 18, 2003 7:24 PM
Subject: Amonia toxicity in blasted rock

Hello Paula,

Thanks for meeting with us this afternoon. The information that we submitted to you on the meeting did not include comments on presence of ammonia in the blasted rock. After the meeting I had an opportunity to talk to a Senior Aquatic Biologist and to an Aquatic Toxicologist (PhD) in Golder and to do some checking on the internet. Basically, the new information supports my previous opinion (ie. although ammonia can be toxic, but it is unlikely to be a problem in this situation).

The fact that the ammonia release from blasted rock has come up may be due to the pending inclusion of ammonia as a toxic substance (addition to Priority Substance List) by Environment Canada. I understand that the rationale for recommending the inclusion of this substance was outlined in an assessment report tabled in June 2001. I took a quick look at the synopsis report and have requested an electronic version of the full report.

While the report clearly states that freshwater fish may be potentially affected (names walleye as particularly sensitive species), the toxicity concerns are focused primarily on the municipal sewage treatment facilities that produce ammonia in substantial quantities and on a continual basis. They also mentioned that they had concerns with some of the industrial operations (eg. intensive livestock operations). There was no mention in the synopsis report of concerns associated with ammonia residues in blasted rock used in water bodies. It is interesting to note that they mentioned on several occasions that the degree of toxicity is strongly dependent on several key factors in the receiving water body: dilutional capacity (the greater the flows the lower the concern), water temperature (the lower the water temperature the lower the concern), pH (lower concern at basic pH values) and dissolved oxygen (higher DO results in rapid decline in ammonia values). They also indicated that ammonia toxicity was more of a problem in southern regions of Canada (presumably due to higher prevailing water temperatures).

In the end, it is unlikely that we would see a problem in our study area, for a number of reasons: high flow through (dilutional capacity), generally low water temperatures, high dissolved oxygen content of river and the input represents a one time exposure.

Please advise if you feel that this information is not sufficient. If more information is required, I will review the full assessment report for ammonia and pass on anything of interest.

Regards,
Jivko



Andrew Gamble & Associates
14 Mitchell Drive, Yellowknife, NT, Canada X1A 2H5

Mr. Stephen Mathyk
Regulatory Officer
Mackenzie Valley Land and Water Board
7th Floor – 4910 – 50th Avenue
P.O. Box 2130
Yellowknife, NT X1A 2P6

By Hand

August 18th, 2003

Dear Mr. Mathyk;

Re: Water licence Application: MV200318-0007
Bridge Construction – km 23 of Hwy #3, Near Fort Providence

Thank you for forwarding comments from Mr. Edward Hornby of the DIAND South Mackenzie District.

We would like to respond to the comments made and provide additional information.

Consultation

As noted in our submission, the proponent has undertaken extensive consultation over the last several years. This includes the City of Yellowknife, NWT Association of Communities, YK Chamber of Commerce, NWT Chamber of Commerce, NWT Chamber of Mines and BHP. Others mentioned in the list have been afforded the opportunity to meet. We also consulted extensively with CCG and NTCL on the navigational issues and have submitted and followed up with CCG on our application under the Navigable Waters Protection Act. We note that the GNWT also conducted public hearings for the Deh Cho Bridge Act.

Public Hearing

As noted in the comments, a Public Hearing is not required under the Act or Regulations. As noted above, this proposal has been developed and refined over three years with the benefit of considerable consultation, media attention and public discussion. The enabling legislation, the Deh Cho Bridge Act, was subject to a series of open public hearings, committee review and debate in the NWT Legislature. The project is well understood and is broadly supported by government and regulatory agencies, business groups and the public.

It is our view that an additional Public Hearing would likely produce little, if any new information or views. It would certainly delay the project and the anticipated environmental and socio-economic benefits. It would also add to the costs and may even place the viability of the project at risk. We note that the project economics are very sensitive to interest rates which are favourable today, but may not be in a year from now.

On balance, we do not see how a Public Hearing would serve the public interest.

Phone: (867) 873-4629 Cell: (867) 444-2099 Fax: (867) 669-2028
e-mail: agamble@theedge.ca

Review Time

We will provide all available information on the project and assist in any way possible to ensure that reviewing agencies are able to make informed recommendations. We remain hopeful that we will have approval to proceed by the end of September, as this will be required to complete agreements and begin construction this winter. As noted above, any significant delay would seriously jeopardize the schedule and possibly the viability of the project.

Security Deposit

We do not believe that this should be an issue. The following measures are being taken to ensure bridge completion:

- ✓ The proposed design and construction techniques are all proven standard practice, successfully employed in similar conditions.
- ✓ The design and erection scheme will be subject to strict standards and rigorous independent engineering review.
- ✓ The work will be contracted to an established and experienced general contractor, meeting the requirements of the proponent, the GNWT and the lenders.
- ✓ All parties will carry full insurance and bonding, meeting very strict standards required by the proponent, the GNWT and the project lenders.
- ✓ The project financing will also include a cost overrun contingency to ensure completion.
- ✓ In the unlikely event of a financial failure of the owner, the lending agency and the GNWT will have the right (and considerable incentive) to step in and ensure completion of the project. This is a condition of agreements currently being negotiated.

Technical Information Requests

We are pleased to provide the enclosed response from Mr. Jivkov and additional technical information to assist DIAND-SMD in reviewing this project.

We will also offer to meet with Mr. Hornby and his staff to discuss these points and provide any additional information required.

Sincerely,

Andrew Gamble, P. Eng.

enclosures

c Mr Edward Hornby
District Manager
South Mackenzie District DIAND

DRAFT

August 14, 2003

Mr. Andrew Gamble, P. Eng.
Andrew Gamble & Associates
14 Mitchell Drive
Yellowknife, NT X1A 2H5
Tel: 867 873-4629

Dear Mr. Gamble,

Deh Cho Bridge near Fort Providence. Additional Information Required by DIAND-South Mackenzie District

Further to your request we have carefully reviewed the content of the additional information requested by DIAND-SMD. Part of this information is of general nature and other is technical related to the content of the Application submitted to the NIRB, and distributed to the 25(?) consulted stakeholder agencies. In the following we are referring to the technical part of the required information only.

General

The amount of information and project detail submitted in the original Application to the NIRB is in accordance with the standard format of applications for major undertaking that has been found to be sufficient by the majority of the consulted agencies. Usually Applications for major developments are being made well before the final design stage. Moreover, some critical elements of the final design and methodology for implementation are developed to meet the specific conditions required by a permitting agency (i.e., windows for completion of in-stream work, mitigation measures for compensation for loss of fish habitat, etc.) In addition, it is a usual practice to have requests for additional information in line of expertise of a given agency, which is being provided along with the development of the project. It is also a usual practice to modify conceptual elements of the Preliminary Design to reflect the results of Geotechnical Investigations, Hydrologic and Ice Studies, etc. In that regard we consider the information requested by the DIAND-SMD valid, and are pleased to advise that most of the information is available for distribution.

For the purpose of this undertaking the Deh Cho Bridge Corporation (DCBC) has commissioned the preparation of technical reports as follows:

- ✓ Fish Habitat Assessment Study presently being prepared by Golder Associates of Yellowknife, NT and to be completed in early September 2003 (Terms of Reference enclosed).
- ✓ Geotechnical Site Investigation Report prepared by the EBA Consulting Engineers of Yellowknife, NT and submitted to the DCBC in August 2003 (copy of the report enclosed).
- ✓ Updated Hydrotechnical Information Report prepared by Trillium Engineering and Hydrographics of Edmonton, AB and submitted in November 2002 (copy of the report is enclosed).

DCBC has also retained J.R. Spronken and Associates of Calgary, NT to carry out the design of the proposed bridge. Copies of Updated Preliminary Design Drawings and Project Brief are enclosed.

All of the completed reports and studies as well as the updated preliminary design have been forwarded to the Bridge Office of the DOT, GNWT, which in our understanding are the qualified and designated agency to carry out technical review of the undertaking. On their side, the Bridge Office has retained qualified bridge engineering consulting firms to review and discuss with the proponent every technical aspect of the bridge project.

Responses to the Requested Information

- ** DIAND-SMD needs to see this report (Preliminary Hydraulic Design, Mackenzie River Bridge, Liard River bridge....) and a "Final Report" if produced. The report may need to be updated or verified prior to construction.**

Enclosed is the relevant part of the requested report. Final report has not been produced. Parts of the report associated with River Engineering, Ice Engineering, Geotechnical Engineering, etc has been updated in the enclosed reports.

- ** DIAND-SMD needs to see the stratigraphy model and substrate characterization.**

Stratigraphic information is provided in the enclosed Geotechnical Site Investigation Report prepared by the EBA.

- ** DIAND-SMD requests the geotechnical and stability data collected for the affected areas of the Mackenzie River and associated river banks**

The stability of the riverbed has been assessed in the enclosed Updated Hydrotechnical Information Report.

The undertaking does not contemplate any construction works on the natural riverbanks. The construction of bridge approaches is limited to the existing spur like projections that have been in use for the ferry operation, and have remained stable, for over 30 years. The bridge approaches would be further stabilized according to the recommendations of Updated Hydrotechnical Information Report.

- ** DIAND-SMD requests a stream flow/velocity model and calculations used to predict changes in velocity and potential scouring effect on the riverbed.**

Stream flow velocity and potential scouring have been assessed in the enclosed Updated Hydrotechnical Information Report.

- ** DIAND-SMD requests the baseline data available for areas potentially affected by this project. Baseline water chemistry is important to determine potential effects from project activities.**

Collecting baseline water quality data is part of the Fish Habitat Assessment Study presently being conducted by the Golder.

- ** DIAND-SMD requests data methodology and calculations used in ice force prediction, as well as comparison to the Canadian Bridge Code.**

Detailed ice force assessment could be found in the Updated Hydrotechnical Information Report.

- ** Clarification: Does this activity require a land use permit? (Refers to 700 m detour construction)**

The detour on the south side (Attachment 7A of the Original Application) and part of the detour on the north side (Attachment 8A of the Original Application) are located beyond the waterline, within the HWY right-of-way and to our knowledge do not require land use permit.

The remaining part of the north approach involves placing of rock on the riverbed. Application for land use permit for this activity will be forwarded to the corresponding Authorities in September 2003 jointly with the applications for quarry permits, disposal permits, etc.

- ** Please provide DIAND-SMD with information on how excavation activities and infilling will affect the sediment loading and how the proponent intent to mitigate this.**

Specific chapter of the Fish Habitat Assessment Study deals with impact of the proposed construction method and mitigation plan of same. The mitigation plan will include installation of silt curtain during excavation and water sampling program.

- ** DIAND-SMD requests a water quality monitoring plan including sampling protocol, frequency, and parameters. Baseline data needs to be provided in order to determine potential impacts of the project and to be used in determination of water licence parameters, terms and conditions.**

Baseline data and water and water quality monitoring plan will be provided with the Fish Habitat Assessment Study presently being prepared by Golder and Associates.

I hope the DIAND-SMD will find the provided information to their satisfaction. If they have more questions or wish additional information, they could contact the undersigned at Tel (867) 920-4455, Fax (867) 873-6090, or email: jivko@theedge.ca.

Sincerely,



Jivko I. Jivkov, P.Eng.
Principal,
Jivko Engineering

enclosure



Mackenzie Valley Land and Water Board
7th Floor - 4910 50th Avenue
P.O. Box 2130
YELLOWKNIFE NT X1A 2P6
Phone (867) 669-0506
FAX (867) 873-6610

FILE NO: MV2003L8-0007

DATE: 13/08/03

TO: Andrew Gamble - Deh Cho Bridge Corp.

FAX NUMER: (867) 669-2028

FROM: Stephen Mathyk - Regulatory Officer

Number of pages including cover: _____

Andrew, please find attached the review commentaries from DIAND Water Resources and DIAND South Mackenzie District for the above water license application. These commentaries are for your review and response. Let me know if you require any further information.

Regards,

A handwritten signature in black ink, appearing to be "S. Mathyk".

NOTE: The document accompanying this transmission contains confidential information intended for a specific individual and purpose. The information is private, and is legally protected by law. If you are not the intended recipient, you are hereby notified that any disclosure, copying, distribution, or the taking of any action in reference to the contents of this telecopied information is strictly prohibited. If you have received this communication in error, please notify the above person immediately by telephone and return the original to by regular mail to address above.

South Mackenzie District (DIAND-SMD)
#16 Yellowknife Airport
Yellowknife, NT X1A 3T2

August 12, 2003

Stephen Mathyk
Regulatory Officer
Mackenzie Valley Land and Water Board
7th Floor -4910 - 50th Avenue
Yellowknife, NT X1A 2P6

Mackenzie Valley Land
& Water Board

File

AUG 13 2003

Application # MV2003L8-0007

Copied To PLM/sm/1266

Dear Mr. Mathyk:

Re: Water Licence Application MV2003L8-0007
Bridge Construction Km 23 of Hwy #3, Near Fort Providence

The South Mackenzie District has reviewed the above application and has attached comments, questions and information requests for consideration by the MVLWB. Overall, we feel the application requires further clarification on several important issues. The requested information will be required for the South Mackenzie District to properly consider the potential effects of this project, as well as assist in developing appropriate terms and conditions for the water licence.

If you have questions or comments regarding our review, please do not hesitate to contact me at 669-2760.

Sincerely,

Edward Hornby
District Manager
South Mackenzie District DIAND

email

**WATER LICENCE APPLICATION: MV2003L8-0007
HWY #3 BRIDGE NEAR FT. PROVIDENCE
COMMENTS TO MVLWB
AUGUST 11, 2003
PREPARED BY: RON BREADMORE AND PAULA SPENCER**

General

Consultation

Considering the potential socio-economic impacts of this project, we note the City of YK, YK Chamber of Commerce, Town of Hay River, Hay River Chamber of Commerce, NWT Chamber of Mines, BHP, Diavik, or Debeers might have been consulted. Canadian Coast Guard (Navigable Waters Act) does not appear to have been consulted.

Public Hearing

Existing NWTWA and Regulations do not require hearing for a Type B Water Licence, but we note this is the first bridge across the Mackenzie River, and is of a scale not normally associated with Type B Water Licence activities.

Therefore, we recommend a Public Hearing for this Type B Water Licence.

Review Time

Given the magnitude of the project, the projected start date of October 2003, and the fact the application was submitted to the board in July 2003, we feel the period for review is too short to address possible concerns that may arise from this project.

Information Requests

We have provided the following comments, questions and information requests to assist DIAND-SMD in properly reviewing this project, assessing potential project effects and to develop appropriate terms and conditions for this water licence.

Application

Section 4.2 Selection of Bridge Site

Proposed bridge location is based on "Preliminary Hydraulic Design, Mackenzie River Bridge, Liard River Bridge..." Northwest Hydraulic Consultants Ltd (NHCL) - 1975.

** Information Request - DIAND SMD needs to see this report, and a "Final Report" if produced. The report may need to be updated or verified prior to construction.

- / Study is preliminary and almost 30 years old (".....proposed site is believed to be depth of river is fairly uniform....") -> is this seen as adequate for a project of this scale ?
- Rivers (especially those the size of the Mackenzie River) are extremely dynamic
- -> can river bathymetry and shoreline conditions be expected to remain unchanged over 30 years ?

Section 4.3 Regime Analysis

- Is the 50 year interval for air photos (bank stability) up to 1975 or to 2003 ?
- Is river bed analysis based on 1975 work or recent findings ?
- Where is the geotechnical data ie: have areas of propose approaches been drilled to determine the presence of any seeps or springs?
- What is nature of river bed substrate?
- Where is the description of river bed (x-section) to illustrate substrate characteristics?
- ** **Information Request: DIAND-SMD needs to see the stratigraphy model and substrate characterization.**
- ** **Information Request: DIAND-SMD requests the geotechnical and stability data collected for the affected areas fo the Mackenzie River and associated river banks.**
- What data is available to support the statement "The resulting minor increase in velocity would probably produce no scour effect."?
 - > any constriction of flow for a river such as the Mackenzie would certainly increase flow velocity (and scouring) considerably
 - > where is river discharge data to support this assumption ?
- What model was used to predict that if scouring occurs "the bed would adjust over a very long period of time, and the increase in depth would be less than 0.3 m."?
 - > will river bed be able to withstand scouring and/or deep cutting ?
 - > is the 0.3 m assumption based on scouring from turbulence at river bed interface alone, or was more severe scouring (ie: boulders along river bed) considered ?
- ** **Information Request: DIAND-SMD requests a stream flow/velocity model and calculations used to predict changes in velocity and potential scouring effect on the river bed.**
- Where is baseline water quality data for the affected areas?
 - > what is available ?
 - > what has been collected ?
- ** **Information Request: DIAND-SMD requests the baseline data available for areas potentially affected by this project. Baseline water chemistry is important to determine potential effects from project activities.**

Section 4.4 Ice Action

What are calculated ice forces vs. what is specified in Canadian Bridge Code CSA-S6-00?

What data will be used in calculating ice forces?

**** Information Request: DIAND-SMD requests data, methodology and calculations used in ice force predictions, as well as comparison to Canadian Bridge Code.**

Section 4.5 Components & Parameters

sub .1

How was vertical clearance of bridge superstructure (8.0 m ?) determined ?

Is vertical clearance adequate for maximum flood return?

Where is hydraulic data to demonstrate historic river levels ?

**** Information Request: DIAND-SMD requests the above data and information.**

sub .4

"caissons will be installed to a depth of approx. 10 m below the riverbed."

-> where will drill and dredge spoils be disposed ?

-> what about management of suspended solids from drilling ?

-> no details on materials to be used ie: gauge, corrosion protection, metal leaching ?

sub .6

Approaches will be infilled by placing "clean blasted rock" into the river.

-> What is the volume, source, geochemistry, and size of blastrock ?

Ammonia modelling and management plan for dealing with ammonia blasting residues needs to be developed.

Monitoring needs to be set up for ammonia blasting residues.

**** Information Request: DIAND-SMD requests the proponent submit the volume, source, geochemistry and size of proposed blastrock as well as a management plan and monitoring plan to deal with ammonia residues in blast rock.**

sub .7

Excavated material from existing ferry landings may contain hydrocarbon contamination or other forms of contamination such as creosote.

Depending upon test results, proposed gravel pits may not be appropriate for disposal ie: lined landfill may be required

"The material to be removed from this area consists of 90 cu.m structural timber."

determination of water licence parameters, terms and conditions.

Section 10.4

Further information is required for the spill contingency plan. A more site specific and more detailed spill contingency plan is required.

Security Deposit

The proposed operation is without precedent in the Northwest Territories, and may pose a risk of economic failure during construction. There is no evidence of an economic model to address the operational uncertainty of major construction in an untried setting. This office does not have the experience to competently address the risk to the environment of a partially completed project, including potential hazards to navigation and the attendant risk that poses to the environment, nor the costs of mitigating that risk should the situation arise. It is felt this would be a proper subject for a public hearing.



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

August 6, 2003

Mackenzie Valley Land and Water Board
7th Floor, 4910 - 50th Avenue
P.O. Box 2130
Yellowknife, NT X1A 2P6

Attention: Stephen Mathyk

Re: Water Licence Application MV2003L8-0007 - Bridge Construction - Km 23 of Hwy #3 - Mackenzie River Crossing Near Fort Providence

Environment Canada (EC), has reviewed the information submitted with the above application and offers the following comments for your consideration. The following advice is provided pursuant to Section 22 of the Mackenzie Valley Resource Management Act. Environment Canada's contribution to your request for specialist advice is based primarily on the mandated responsibilities for Section 36(3) of the *Fisheries Act*, the *Canadian Environmental Protection Act*, the *Migratory Birds Convention Act* and *Migratory Birds Regulations*, and the *Species at Risk Act*.

Summary of activities:

The Deh Cho Bridge Corporation is proposing to build a nine-span, steel girder and concrete deck bridge across the Mackenzie River at the site of the existing ferry link. The bridge design is such that the piers, abutments and approaches will withstand ice action, and vessel-arresting devices will be constructed in front of piers to prevent vessel collision. The substructure will consist of 8 concrete caisson piers set 10 m below the streambed using metal casing to seal the hole, with excavated materials disposed on land. Abutments at each approach will be constructed of pilings and concrete. The existing approaches will be reconfigured with removal of some excess area at the north approach, and reclamation of the ferry haul-out area at the south approach. This will result in a net increase in riverbed area. Construction of the approaches will involve infilling with clean blast rock. During construction, it will be necessary to construct a 450 m detour road 25 m downstream of the existing access. This will require placing 6000 m³ of blast rock onto the river bed. Detour materials will be removed after bridge construction is complete.

Comments and Recommendations:

The proponent has provided a comprehensive application which describes the work to be undertaken, potential effects, and proposed mitigation measures. This has been reviewed with respect to potential effects of the construction, and no verification of design parameters or engineering aspects has been conducted by Environment Canada.

Mackenzie Valley Land
& Water Board

File

AUG - 6 2003

Application # MV2003L8-0007

Copied To PAH/SM/Reg /
Dave Tyson - DFO

Fax (867)873-6610

On the basis of the information provided, Environment Canada believes that the above noted project activities have the potential to affect fish pursuant to Section 36(3) of the *Fisheries Act*. Section 36(3) specifies that 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.

The advice provided herein does not absolve the proponent from their obligation to comply with Section 36(3) of the *Fisheries Act*. The proponent must ensure that any chemicals, fuel, wastes, or other deleterious substances associated with the proposed project do not enter waters frequented by fish.

The prevention of deleterious substances entering the river appears to be addressed in the application by such measures as: use of clean construction rock; capture of materials generated during caisson pier excavation; stabilization of the approaches with riprap; removal of debris from the ice surface; and spill contingency planning. Addition of fine sediment particles to the river should be minimized by use of best practices. For example, once the casing is sealed during caisson construction, the water to be pumped out should not be disposed to the river or the ice surface.

Monitoring of water quality will be required to confirm that proposed mitigation measures are effective. At a minimum, total suspended solids and turbidity should be measured upstream and downstream of activities, under ice as well as during the open water season. To identify duration of any impacts to water quality, sampling should be done before activities commence, and over a period of time during construction and following completion of the bridge. Environment Canada is available to discuss any questions on monitoring design.

The application includes a brief Spill Contingency Plan, which should be finalized for use as a field document. The document needs to outline a clear path of response (including a list of persons to be contacted in the event of a spill and assigned responsibilities of company staff), and should be specific on spill containment actions. For example, will there be an OSCAR unit on site? If not, how will floating booms and similar items be obtained? The section on preventative measures should note that operators should remain with their vehicle during refueling, and that drip pans should be utilized when refuelling equipment. The Spill Contingency Plan should identify where response equipment is to be found, and should include a copy of the Spill Report Form, noting that "all spills" are to be documented and reported to the NWT - 24 Hour Spill Line number (867) 920-8130. Environment Canada's contact persons and numbers should be changed to list David Tilden at 669-4728 and Magnus Bourque at 669-4729.

On the basis of the information provided, Environment Canada believes that the above noted project activities have the potential to affect migratory birds pursuant to Sections 6(a) and 35(1) of the *Migratory Birds Convention Act - Migratory Birds Regulations*. Section 6(a) of the *Migratory Birds Regulations* states that no person shall disturb, destroy or take a nest or egg of a migratory bird except under authority of a permit therefor. Section 35(1) of the *Migratory Birds Regulations* states "... no person shall deposit or permit to be deposited oil, oil wastes or any other substance harmful to migratory birds in any waters or any area frequented by migratory birds."

The advice provided herein does not ensure that the project will not result in the killing or taking of a migratory bird or its eggs, or nest and does not absolve project proponents from their obligations to comply with all provisions of the *Migratory Birds Convention Act* and *Migratory Birds Regulations*.

Man-made structures such as bridges may provide suitable nesting habitat and thus attract migratory birds including swallows, raptors, and other species. During construction, and maintenance following construction, if it becomes necessary to disturb or destroy the nests of migratory birds this may be done only under the authority of a permit issued by Environment Canada / Canadian Wildlife Service. As much as possible, maintenance activities should be scheduled so as not to occur during the nesting period of migratory birds. If nesting migratory birds are observed during construction and maintenance

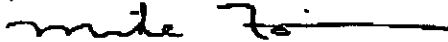
activities, Environment Canada / Canadian Wildlife Service personnel should be informed as soon as possible.

The Mackenzie River is an important migration corridor for significant numbers of migratory waterfowl and waterbirds. Therefore, there is the possibility for collisions of migratory birds with the bridge, especially during periods of reduced visibility (fog in spring or fall, or at night). The Project Description does not discuss plans for lighting the bridge. Environment Canada recommends that lighting be installed on the piers and superstructure of the bridge in such a way that it does not attract or become a hazard to migrating birds. For example, lighting should be focused on the bridge itself and not projected outwards as projected lighting is known to attract birds flying at night in some circumstances. The proponent should investigate thoroughly and use the best available technology to reduce or eliminate the possibility of collisions of migratory birds with the bridge.

EPB should be notified of changes in the proposed or permitted activities associated with this application.

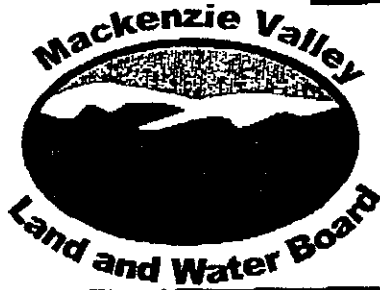
If you have any questions or comments, please do not hesitate to contact me at (867) 669-4743 or mike.fournier@ec.gc.ca.

Sincerely,



Mike Fournier
Environmental Assessment Coordinator

cc: Steve Harbicht (Head, Assessment & Monitoring)
Anne Wilson (Water Pollution Specialist)
Vanessa Charwood (EA Coordinator, Canadian Wildlife Service)
Paul Latour (Habitat Biologist, Canadian Wildlife Service)



Mackenzie Valley Land and Water Board
7th Floor - 4910 50th Avenue
P.O. Box 2130
YELLOWKNIFE NT X1A 2P6
Phone (867) 669-0506
FAX (867) 873-6610

FILE NO: MV2003L8-0007

DATE: 06/08/03

TO: Andrew Gamble – Deh Cho Bridge Corp.

FAX NUMER: (867) 669-2028

FROM: Stephen Mathyk – Regulatory Officer

Number of pages including cover: 4

Andrew, please find attached the review commentary from Environment Canada for the above water license application. This commentary is for your review and comment. Let me know if you require any further information.

Regards,

A handwritten signature in black ink, appearing to be "S. Mathyk".

NOTE: The document accompanying this transmission contains confidential information intended for a specific individual and purpose. The information is private, and is legally protected by law. If you are not the intended recipient, you are hereby notified that any disclosure, copying, distribution, or the taking of any action in reference to the contents of this telecopied information is strictly prohibited. If you have received this communication in error, please notify the above person immediately by telephone and return the original to by regular mail to address above.



Indian and Northern Affairs Canada
 Affaires indiennes et du Nord Canada
 www.inac.gc.ca www.ainc.gc.ca
 Water Resources Division
 Box 1500
 Yellowknife, NT X1A 2R3

Your file - Votre référence

Our file - Notre référence

August 5, 2003

Stephen Mathyk
 Regulatory Officer
 Mackenzie Valley Land and Water Board
 7th Floor - 4910 - 50th Avenue
 P.O. Box 2130
 Yellowknife, NT X1A 2P6

Mackenzie Valley Land
 & Water Board

File:

AUG 13 2003

Application # MV2003L8-0007

Copied To PLM/SM/KLB

Dear Mr. Mathyk:

Re: Water Licence Application: MV2003L8-0007
Bridge Construction - Km 23 of Hwy #3, Near Fort Providence

Thank you for allowing the Water Resources Division the opportunity to review the above mentioned water licence application. The Division feels that the following standard licence clauses will address any water related concerns with this application:

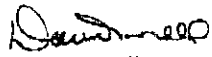
- Ensure that any fuels, chemicals or wastes associated with this undertaking do not enter any waters.
- Fill materials should be obtained from an approved source and be clean and free of contaminants.
- Silt fences should be erected where necessary during construction.
- All sites affected by construction shall be stabilized, landscaped as necessary, and suitable erosion control measures implemented to minimize sediment deposition into the Lake. Any erosion sites should be reported to the Inspector immediately.
- All debris, sediment or construction materials shall be removed from the ice each year during construction prior to break up.
- As-built drawings should be submitted to the Board within ninety (90) days of completion of the project.
- The surveillance monitoring program should include both upstream and downstream sites to detect any contamination from this project.
- Report all unauthorized discharges of waste immediately to the NWT Spill Line at (867)920-8130 and submit a detailed report to an Inspector following the event.

Canada

- 2 -

If you have any questions regarding the above please do not hesitate to contact me at 669-2658. Thank you.

Yours truly,



David Milburn
Manager

Deh Gah Got'ie Dene Council

General Delivery – Ft. Providence, N.T. – X0E 0L0
PH. 867-699-7000 - FAX. #867-699-3210

Mackenzie Valley Land and Water Board
7th Floor – 4910 50th Ave.
P.O. Box 2130
Yellowknife, N.T.
X1A 2P6

Facsimile #867-873-6610

RECEIVED
JUL 31 2003

RE: Deh Cho Bridge Corporation Water License MV 2003L8-007

Dear Mr. Mathyk:

Please be advised that the Deh Gah Got'ie Dene Council did have the opportunity to discuss this application at a duly convened meeting of the Council held July 22, 2003. At this time the Council passed the following motion:

Moved By: Sub-Chief Louie Constant Seconded By: Councilor Margaret Field

That the Deh Gah Got'ie Dene Council hereby supports the Deh Cho Bridge Corporation's Water License Application #MV 2003L8-007 as submitted.

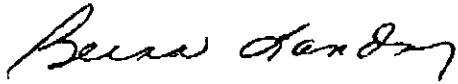
Motion Past Unanimously

This agreement was reached taking into account the following;

- a detailed consultation by the successful contractor of the program;
- a technical review by the Ft. Providence Resource Management Board and eventual letter of support;
- the project will be done in an environmentally friendly manner;
- local employment will be realized as well as training; and
- the community will have access to all reports and data.

Shall you need to consult further on this matter or need further documentation please do not hesitate to contact the undersigned.

Sincerely,



Chief Berna Landry
DGGDC

c.c. Deh Cho Bridge Corporation
Ft. Providence, N.T.

Ft. Providence Resource Management Board
Ft. Providence, N.T.

Ft. Providence Metis Council
Ft. Providence, N.T.

Deh Cho First Nations
Ft. Simpson, N.T.



INCORPORATED HAMLET OF FORT PROVIDENCE

GENERAL DELIVERY

FORT PROVIDENCE, N.W.T. XDE 0L0

PH. (867) 699-3441 FAX (867) 699-3210

July 30th, 2003

Mackenzie Valley Land & Water Board
7th Floor, 4910 - 50th Ave.
P.O. Box 2130
Yellowknife, NT
X1A 2P6

Re: Water License Application – Deh Cho Bridge MV 2003L8 -0007

Attention: Stephen Mathyk

Dear Sir:

We have had the opportunity to review the Water License Application – MV 2003L8-0007 for bridge construction near Fort Providence, NT.

As we do not have any issues or points of concerns that would require clarification regarding our community or the environment, we are supportive of having this water license application approved.

Yours truly,

Maggie Levavasseur
Mayor



Mackenzie Valley Land and Water Board

7th Floor - 4910 50th Avenue • P.O. Box 2130
YELLOWKNIFE, NT X1A 2P6
Phone (867) 669-0506 • FAX (867) 873-6610

July 4, 2003

File: MV2003L8-0007

Mr. Andrew Gamble
Deh Cho Bridge Corporation
14 Mitchell Drive,
YELLOWKNIFE, NT X1A 2H5

Fax: (867) 669-2028

Dear Mr. Gamble:

**Water License Application MV2003L8-0007 - Complete
Bridge Construction; Km 23 of Hwy #3, Near Fort Providence**

FAXED
July 7/03

This acknowledges receipt of your water license application on July 3, 2003. The Mackenzie Valley Land and Water Board and staff will be processing your application as per the *Mackenzie Valley Resource Management Act (MVRMA)* and the *Northwest Territories Waters Act*.

Within sixty (60) days of the date of this letter, the Mackenzie Valley Land and Water Board will take one of the following actions:

1. Issue a Type "B" license, subject to any conditions included pursuant to Section 15 of the *Northwest Territories Waters Act*;
2. Order, pursuant to Subsection 24(1) of the *MVRMA* and/or Section 21 of the *Northwest Territories Waters Act*, that a hearing be held or further studies or investigations be made respecting the waters proposed to be used in the aforementioned operation;
3. Refer the application to the Mackenzie Valley Environmental Impact Review Board for an environmental assessment pursuant to Subsection 125(1) of the *MVRMA*; or
4. Where a requirement set out in Section 61 or 62 of the *MVRMA* has not been met, refuse to issue a permit.

If you have any questions, contact me at (867) 669-0506 or email mvlwbpermit@mvlwb.com.

Yours sincerely,

A handwritten signature in black ink, appearing to read "Stephen Mathyk".

Stephen Mathyk
Regulatory Officer

Copied to: Ed Hornby, South Mackenzie District, DIAND
David Milburn, Water Resources Division, DIAND
J. David Tyson, Fish Habitat Management, DFO



Mackenzie Valley Land and Water Board
7th Floor - 4910 50th Avenue • P.O. Box 2130
YELLOWKNIFE, NT X1A 2P6
Phone (867) 669-0506 • FAX (867) 873-6610

July 3, 2003

File: MV2003L8-0007

Distribution List

Dear Sir/Madame:

Water License Application
Bridge Construction, MV2003L8-0007
Km 23 of Hwy #3, Near Fort Providence

Attached for your review and comments is the aforementioned Water License Application. The Department of Fisheries and Oceans (DFO) – Fish Habitat Management, DFO – Navigable Waters Protection and the Mackenzie Valley Land and Water Board intend to conduct a joint Preliminary Screening of this application under the *Mackenzie Valley Resource Management Act*. Your comments will be used in the evaluation and joint Preliminary Screening of this application.

Please submit your comments in writing by **August 4, 2003** quoting Water License MV2003L8-0007. Should you find that additional time is required to complete further studies or investigations, contact me prior to this date.

If you have any questions regarding the water license application, contact me at (867) 669-0506 or email mvlwbpermit@mvlwb.com.

Yours sincerely,

A handwritten signature in black ink, appearing to read "S. Mathyk".

Stephen Mathyk
Regulatory Officer

Attachment

Deh Cho Bridge Corporation Ltd.

General Delivery

Fort Providence, N.T. XOE OLO

Phone: (867) 699-3441 Fax: (867) 699-3210

June 30th, 2003

FAXED
07-02-03

Jivko Jivkov
Jivko Engineering
Yellowknife, N.T.

Environmental Permit Applications – Deh Cho Bridge Project:

Enclosed please find a certified copy of Resolution No. 11 which was passed at the Deh Cho Annual Assembly in Kakisa Lake. The resolution is in favour of the Deh Cho Bridge and supports the necessary permit applications related to advancing the project.

For clarification we specifically note that the following affected member communities were in attendance at the assembly in Kakisa.

- Deh Gah Gotie Dene Council – Fort Providence
- Fort Providence Metis Council – Local No. 57 – Fort Providence
- Jean Marie River Dene Band – Jean Marie River
- Liiklil Kue First Nation – Fort Simpson
- Fort Simpson Metis Nation – Local No. 52 – Fort Simpson
- Pehdeh Ki First Nation (Wrigley Dene Band) – Wrigley
- Kaa gee Tu First Nation (Kakisa Dene Band) – Kakisa Lake

We further advise that Resolution No. 11 was unanimously passed by all Deh Cho Chiefs, Leaders and registered delegates in assembly. For further information please contact the undersigned.

Yours truly,
Deh Cho Bridge Corporation Ltd.


Albert J. Lafferty
Chief Operating Officer

Attachment: Deh Cho First Nations – Resolution No. 11

- c. Andrew Gamble, Project Manager
Michael Vandell, President



DEH CHO FIRST NATIONS
BRANCH OFFICE - BOX 89, FORT SIMPSON, N.W.T. X0E 0N0
TEL: (867) 695-2355 FAX: (867) 695-2038
E-Mail: dehchofn@cancom.net



11th Annual Deh Cho Assembly
Kakisa Lake, NT
June 23-27, 2003


Resolution #11

Deh Cho (Mackenzie River) Bridge

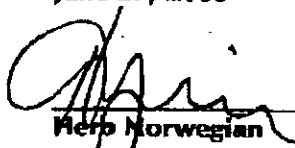
Moved by:


Chief Bobby Cayen
West Point First Nation

Seconded by:


Richard Lafferty
Ft. Providence Metis
Nation

Certified copy of
resolution made at
Ka'a'gee tu, NT dated
June 27, 2003


Herb Norwegian
Grand Chief

WHEREAS, the community of Ft. Providence is proposing to build, own and operate a bridge over the Mackenzie River at Ft. Providence and;

WHEREAS, this represents a significant economic opportunity for the Deh Gah Gotie Dene and Metis and whereas this project will serve as a model for other First Nations and;

WHEREAS, a bridge crossing the Mackenzie River on the Yellowknife highway would provide significant economic benefits throughout the Northwest Territories and;

WHEREAS, it appears that the bridge will reduce the long-term impacts and risks to the environment

THEREFORE BE IT RESOLVED, that the Deh Cho First Nations Leadership and delegates in assembly support the community of Ft. Providence's proposal along with the necessary environmental permits required to build, own and operate the Deh Cho Bridge



Fisheries
and Oceans

Pêches
et Océans

Attachment 3

Fish Habitat Management
Suite 101, 5204-50th Avenue
Yellowknife, Northwest
Territories
X1A 1E2

Your file: None reference

Our file: None reference
SC02159

18 June, 2003

5610 - 50A Avenue
Yellowknife, NT
X1A 1G3

Attention: Jivko Jivkov

RE: Deh Cho Bridge Corporation, Bridge, Mackenzie River at Fort Providence, NT

Dear Mr. Jivkov:

The Mackenzie Valley Land and Water Board (MVLWB), the Department of Fisheries and Oceans - Fish Habitat Management (DFO-FHM), and DFO - Navigable Waters Protection (DFO-NWP) intend to conduct a joint Preliminary Screening for the above project under the *Mackenzie Valley Resource Management Act* (MVRMA). For this project: the MVLWB has determined that you will require a Water License, DFO-FHM has determined that you will require a *Fisheries Act* section 35(2) Authorization, and DFO-NWP has determined that you will require a *Navigable Waters Protection Act* (NWPA) section 5 (1)(a) Approval.

MVLWB and DFO-FHM will issue a joint screening package for review by stakeholders. The DFO-NWP review of the Approval application will be conducted as required under the NWPA.

In order to complete the MVLWB/DFO-FHM Preliminary Screening package, you must provide the additional information requested by the MVLWB for the Water License application. Once the information has been received and found to be satisfactory, the MVLWB will distribute the joint screening package for comments by stakeholders.

With respect to the NWPA, it is important to note that:

- detailed final drawings of the proposed bridge are required by DFO-NWP to accompany the completed application so that the drawings can be available to the public during the advertisement period required under the NWPA;

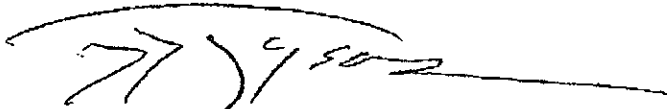
Canada

- all concerns raised by DFO-NWP or other stakeholders regarding the project must be addressed before the NWP review can be completed;
- draft drawings and descriptions of any habitat compensation works or undertakings that may affect navigation will need to be reviewed; and
- a letter from Deh Cho Bridge Corporation and NTCL indicating that all NTCL concerns have been addressed by Deh Cho Bridge Corporation is required.

Please remember that the NWP section 5(1)(a) Approval process requires a 30 day advertising period.

Once all license, authorization, and approval screening requirements have been satisfactorily completed a joint MVLWB/DFO-FHM/DFO-NWP screening report will be issued. As per section 118(1) of the MVRMA, no license, authorization or permit may be issued until the requirements of Part 5 have been completed.

If you have any questions, feel free to contact me at (867) 669-4919, or by fax at (867) 669-4940.



J. David Tyson
Area Habitat Biologist
Fish Habitat Management
Department of Fisheries and Oceans- Western Arctic Area

cc: Julie Dahl, Area Chief, Habitat, DFO-FHM
Barry Putt, A/Supervisor, NWP Inspections, DFO-NWP
Stephen Mathyk, Regulatory Officer, MVLWB
Andrew Gamble, Project Manager, Deh Cho Bridge Corporation



Mackenzie Valley Land and Water Board

7th Floor - 4910 50th Avenue • P.O. Box 2130
YELLOWKNIFE, NT X1A 2P6
Phone (867) 669-0506 • FAX (867) 873-6610

June 2, 2003

File: MV2003L8-0007

Mr. Andrew Gamble
Deh Cho Bridge Corporation
14 Mitchell Drive,
YELLOWKNIFE, NT X1A 2H5

Fax: (867) 669-2028

Dear Mr. Gamble:

FAXED
June 30

**Water License Application MV2003L8-0007 - Incomplete
Bridge Construction; Km 23 of Hwy #3, near Fort Providence**

The aforementioned Water License Application submitted on May 28, 2003 has been reviewed and has been found to be lacking sufficient information to conduct a preliminary screening. In order for this application to be considered complete and forwarded for review, the following information must be submitted to our office:

1. Confirmation of follow-up with notified First Nations to ensure awareness of the proposed project and to address any concerns that these First Nations may have in relation to the undertaking;
2. Confirmation that our office has received the appropriate application fee in relation to the above mentioned Water License Application;
3. Confirmation of receipt of 28 copies of your submitted application for distribution to reviewing organizations; and
4. Confirmation of where the excavated material mentioned in Section 10.3 on page 9 of 14 of the submitted application is to be deposited.

Upon receipt of this information, the application will be processed and reviewed as per the *Mackenzie Valley Resource Management Act* and the *Northwest Territories Waters Act*. If you require further guidance, please refer to the document "GUIDE FOR COMPLETING WATER USE APPLICATIONS TO THE MACKENZIE VALLEY LAND AND WATER BOARD" which can be found on our

Website www.mvlwb.com. If this supplementary information is not provided within 90 days, then it shall be assumed that you do not wish to continue with the processing of this application.

If you have any further questions, contact me at (867) 669-0506 or email mvlwbpermit@mvlwb.com.

Yours sincerely,



Stephen Mathyk
Regulatory Officer

Copied to: Ed Hornby, South Mackenzie District, DIAND, Yellowknife
David Tyson, Fish Habitat Management, DFO, Yellowknife

Deh Cho Bridge Corporation Ltd.

Distribution List

May1, 2003

Deh Cho Bridge Proposal

As you know, the Community of Ft. Providence is planning to construct a bridge crossing of the Deh Cho (Mackenzie River) at Ft. Providence, to replace the current ferry and ice crossing.. The attached briefing provides an overview of our progress and plans.

We believe that this project will provide positive economic benefits for the North. Through the proposed commercial vehicle toll, consumers and businesses using the bridge will pay the marginal cost of this project and enjoy the benefits of lower costs and a more reliable link between this region, other communities and the south. There will be no toll for smaller non-commercial vehicles. The project will provide a much needed piece of public infrastructure, without diverting limited government investment dollars from other programs or regions.

This project is also a model for greater local and Aboriginal participation in economic development initiatives. Our success will lead to opportunities for other communities.

Most importantly, we believe that this project is environmentally responsible. Our studies show that with good construction practices, this project can be completed without significant environmental risk or disturbance. Once constructed, a bridge will eliminate the ongoing need to push gravel into the river to maintain the ferry landings, eliminate the contamination of the river by materials tracked onto the ferry and ice crossing and eliminate the need to disturb the natural ice formation at the crossing. We also believe that by keeping trucks off the ice, we will reduce the potential risk of a major spill into the river.

This project will require environmental approvals from Fisheries and Oceans Canada and from the Mackenzie Valley Land and Water Board. In addition to reviewing the scientific data, these two agencies will be considering your views as 'affected' communities.

Naturally, if you do have any concerns or questions, we would be pleased to provide any additional information or meet with you.

Deh Cho Bridge Corporation Ltd.

If you do not have concerns, we are requesting a formal indication your support for the environmental approvals that are critical to a final go ahead on this project. We would very much appreciate a short letter from your organization, indicating that you support the project and do not have any major concerns about potential environmental or social impacts.

Please do not hesitate to contact any of us for further information about this project.

Sincerely,

Samuel Gargan,
Chief, Deh Gah Got'ie Dene Council
(867) 699-3401

Albert Lafferty
President, Ft. Providence Metis Council
(867) 699-3441

Michael Vandell
President, Deh Cho Bridge Corporation
(867) 699-3314

attachment

Deh Cho Bridge Corporation Ltd.

DISTRIBUTION LIST

Chief Rita Cli, Liidli Kue First Nation (Fort Simpson), (F) 695-2665
President Randy Sibbeston, Metis Local #52, (F) 695-2040
Chief Fred Norwegian, Jean Marie River First Nation, (F) 809-2002
Chief Lloyd Chicot, Ka'a'gee Tu First Nation (Kakisa), (F) 825-2002
Chief Tim Lennie, Pehdzeh Ki Dene Council (Wrigley), (F) 581-3229
President Rob Tordiff, Northwest Territory Metis Nation – (F) 872-2772
Grand Chief Micheal Nadlii, Deh Cho First Nation, (F) 695-2038
Mayor Tom Wilson, Village of Fort Simpson, (F) 695-2005

A Message from the Community of Fort Providence and the Deh Cho Bridge Corporation

Almost three years ago, our community recognized that the growing need for a bridge at Fort Providence brought with it an opportunity for us to participate in making it happen.

Community leaders knew that success in this venture would depend on developing a proposal that would provide benefits to the public, industry government and the environment, as well as to our community.

We believe that the current plan meets these tests. We are encouraged by the strong support and encouragement of the territorial and federal governments, other Deh Cho and North Slave communities and the general public.

Our dream is on the verge of becoming a reality, but there are still several tasks ahead before construction can start. We must finalize the designs, complete environmental assessments and obtain the necessary permits, arrange financing, develop a community benefits plan and conclude an agreement with the GNWT. We must also maintain public and political support for the proposed enabling legislation – The Deh Cho Bridge Act.

If all goes well, construction will start in the winter of 2003/04 and we will be seeing the first vehicles cross the bridge by the fall of 2005.

If we succeed, this project will be a remarkable accomplishment for our community. It will provide benefits for years to come, to all business and residents that rely on this critical link with southern Canada

Our community, our leaders and the Board of the Bridge Corporation are committed to the success of this project.

***Sam Gargan, Chief
Deh Gah Got'ie Dene Council***

***Albert Lafferty, President
Ft. Providence Metis Council***

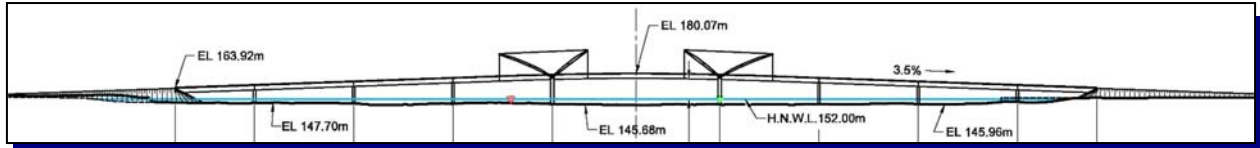
***Michael Vandell, President
Deh Cho Bridge Corporation Ltd.***

***Maggie Levavasseur, Mayor
Hamlet of Fort Providence***

Deh Cho Bridge

The Proposal

The *Deh Cho Bridge Corporation* is proposing to design, finance, construct and operate a bridge across the Deh Cho (Mackenzie River) on the Yellowknife Highway at Ft. Providence. Current shareholders in the corporation include the Ft. Providence Dene and Metis.



Why Now?

It is clear that the long term benefits of a bridge will outweigh the costs. However, the GNWT will not have the cash to build this bridge in the foreseeable future. The increased traffic and low interest rates have created a private sector business opportunity. The community of Fort Providence has taken the initiative and made a business case and proposal.

Concept

The general concept is similar to that taken successfully in other infrastructure projects in southern Canada – for example the Bridge linking PEI to New Brunswick and Highway 407 in Toronto, as well as other smaller scale projects.



The *Deh Cho Bridge Corporation* will raise about \$55 million in equity and debt financing (similar to a mortgage) to design, finance, build and maintain the bridge to agreed standards.

The GNWT will enter into an agreement for a 35 year *Concession Period* with the Bridge Corporation. During this period, the GNWT will commit to paying a contribution from ongoing ferry and ice bridge savings. The GNWT will also collect and pay the Corporation a toll from commercial vehicles crossing the bridge.

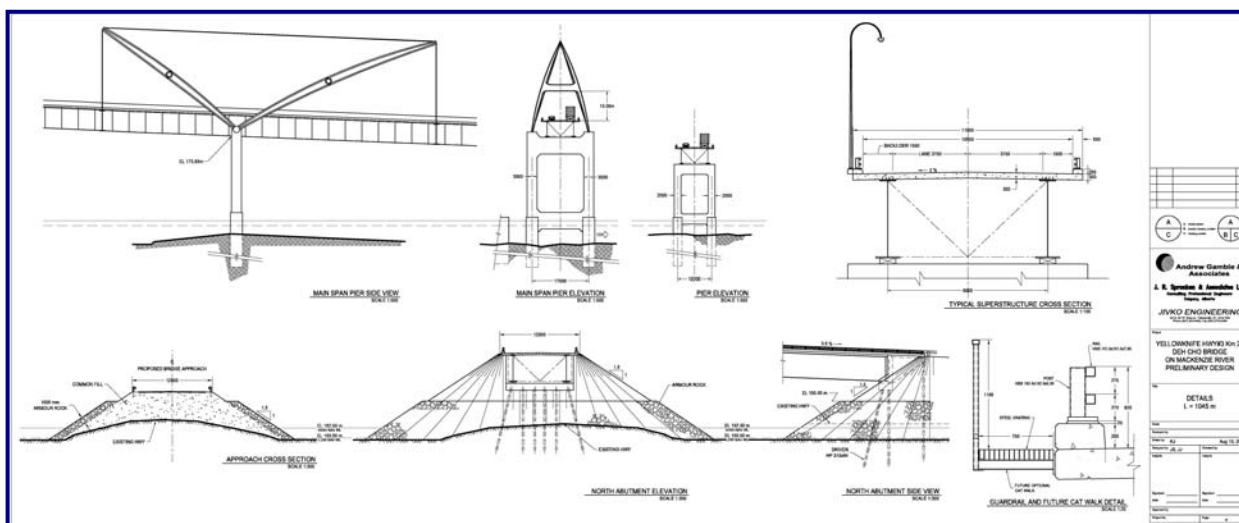
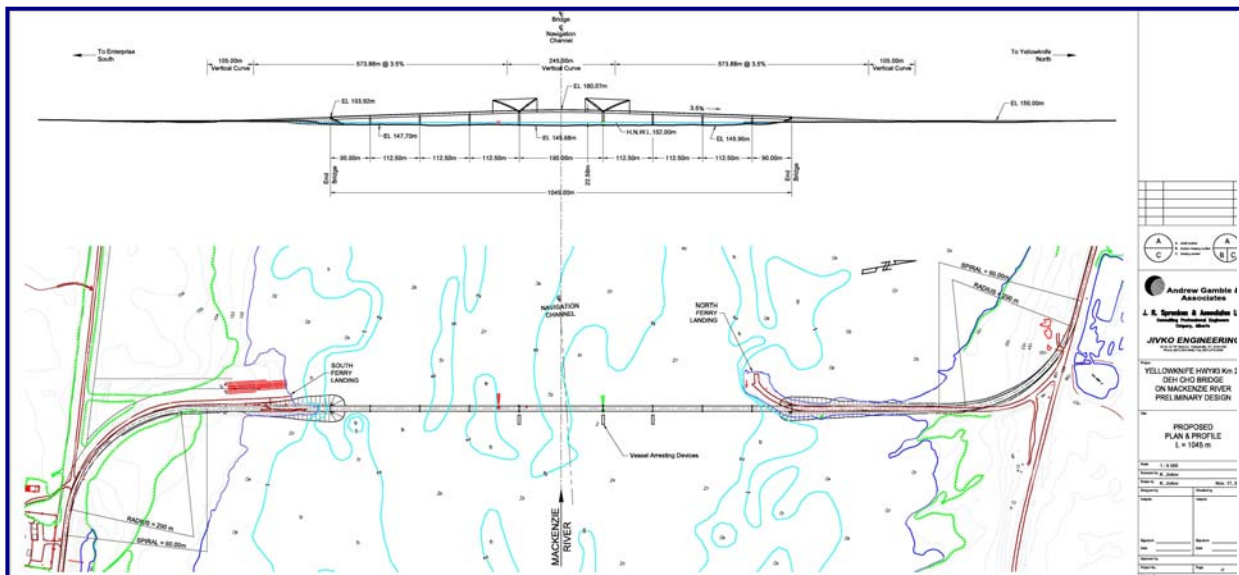
These revenues will be used to service and retire the debt, operate and maintain the bridge and provide a return on the shareholder's investment. Revenues will increase with traffic and inflation.

At the end of the Concession Period, ownership of the bridge will be handed over to the government, paid for and in good condition. At this time the Government could suspend its annual contribution and tolls. Both the government and users would continue to benefit from ongoing savings.

Deh Cho Bridge

The Bridge

- ✓ The bridge will be built at the current ferry landing.
- ✓ It will be two lanes and about 1 kilometre long.
- ✓ There will be 9 spans, resting on 8 piers and 2 abutments.
- ✓ The piers will be concrete filled steel caissons.
- ✓ The superstructure will be steel girders.
- ✓ The deck will be precast concrete panels.
- ✓ The bridge will meet all Canadian Codes and Standards.
- ✓ There will be no practical weight or dimension limits on the loads.
- ✓ The main span will be 185 metres wide with a clearance of 22.5 metres above the river, more than adequate for passage of tug and barge traffic
- ✓ The bridge will be designed for a service life of at least 75 years.
- ✓ The total construction costs are estimated at \$50-55 million.



Where We Came From

July 2000 – The Ft. Providence Combined Council Alliance and Deh Cho MLA considered the idea of constructing of the bridge and agreed to conditions for proceeding with a feasibility study.

September 2000 - The Alliance obtained seed financing of \$100,000 from the federal and territorial governments for the initial feasibility study.

December 2001 - The Alliance completed and approved a preliminary design and estimate, environmental scoping and financing plan.

February 2002 - The Alliance submitted a formal proposal to the GNWT to design, finance, construct and maintain the bridge for a 35 year concession period.

May 2002 - The territorial government provided an additional \$200,000 contribution and entered into formal discussions with the Alliance. Work commenced with GNWT on negotiating design modifications and potential terms of an agreement.

November 2002 - The Alliance and the GNWT signed a Memorandum of Intent (MOI) on the project. This MOI outlines the basis and conditions for negotiating a final agreement.

December 2002 - the Deh Cho Bridge Corporation Ltd. (DCBC) was established to assume responsibility for the project, with the Ft. Providence Dene and Metis as Shareholders.

December 2002 – An agreement with NTCL on the navigation clearances for the bridge removed a major hurdle to finalizing the design and seeking permits.

January 2003 - Federal DIAND provided an additional \$222,000 contribution for project development and preparation of an application for a federal equity contribution.



March 2003 – The GNWT introduced the Deh Cho Bridge Act in the Territorial Legislature. The Deh Cho Bridge Corporation submitted permit applications to Fisheries and Oceans (Fisheries Act) and Canadian Coast Guard (Navigable Waters Protection Act).

Deh Cho Bridge

Where We're Going

This proposal now has a solid commitment from the Territorial Government, under the sponsorship of the Hon. Joseph Handley, Minister of Transportation. There has also been support from the Hon. Robert Nault, Federal DIAND Minister and the Hon. Ethel Blondin, MP for the Western Arctic. There is broad support from businesses, the trucking industry and the general public.



There is a lot yet to do:

- ✓ Building on the MOI, the Corporation must negotiate the details of a **final agreement** with the GNWT.
- ✓ The Corporation must submit an application to the Mackenzie Valley Land and Water Board and undertake required consultation and environmental assessment work and obtain land use, water use and navigable waters **permits**.
- ✓ The Board of Directors has directed that consultations begin immediately on developing a **Community Benefits Plan**. This would include priorities for local training, employment and business participation during construction, allocation of expected operating profits and minimizing potential negative impacts.
- ✓ The Corporation must raise **equity financing** totaling \$5 million. \$0.5 million has already been raised through federal and territorial contributions. The Corporation will be seeking an additional equity contribution through federal DIAND and raising the balance from current and new equity partners.
- ✓ The Corporation must secure the **debt financing** for the project. Given the terms of the MOI and projected cash flows, there are a range of financial institutions interested in placing the debt.
- ✓ We must **finalize the design** and construction details.
- ✓ The Corporation will need to select construction partners and finalize **construction contracts**.

All of the above work must be completed by the fall of 2003, to allow construction to commence in the winter of 2003/04 and be completed by the fall of 2005.



Deh Cho Bridge

Benefits & Costs

The proposal offers net savings and other benefits to businesses and individuals the North Slave Region, whether they use the bridge or not. It also offers significant fiscal, financial and policy benefits to the Federal and Territorial governments.

Business/Industry

- ✓ More reliable service and greater certainty of access/supply through elimination of unpredictable winter disruptions of 1 to 3 weeks and spring closure of 4 weeks.
- ✓ Reduced costs due to ferry/ice bridge delays. Even when the crossing is open, it adds from 20 minutes to several hours to a one-way trip.
- ✓ Savings in costs to finance, transport and store inventory required during service interruptions.
- ✓ Proposed Commercial Freight Allowance of \$5-6/tonne will be more than offset by savings.

The Public

- ✓ More reliable service and access for driving public.
- ✓ Reduced costs for goods and services.
- ✓ Reduced risk of shortage of goods, during period of isolation.
- ✓ No fees for non-commercial traffic

Government of the Northwest Territories

- ✓ Direct savings from operation and maintenance of ferry, shore infrastructure, ice bridge and ice bridge access roads.
- ✓ Direct savings in capital. No need to replace or add ferry or invest in support infrastructure.
- ✓ GNWT savings exceed proposed annual government contribution.
- ✓ Supports strategies of the 14th Legislative Assembly – “*partnership arrangements to help build infrastructure*”. GNWT has provided over \$200,000 in contributions and a loan guarantee for up to \$2 million for final design and environmental assessment.
- ✓ A northern solution with significant economic spin-off, including direct and indirect fiscal benefits from the business and employment incomes generated by construction.
- ✓ At the end of concession period the GNWT acquires the bridge at no cost.



Government of Canada

- ✓ Direct and indirect fiscal benefits from the business and employment incomes generated by construction.
- ✓ Supports DIAND objectives – e.g. “*To secure First Nations participation in, and expand economic benefits from, major regional development initiatives, in such areas as regional infrastructure projects...*”
- ✓ Supports regional economic development, including the non renewable resource sector.
- ✓ Benefits exceed proposed capital commitment.
- ✓ DIAND has provided almost \$300,000 contribution to feasibility study and business plan.

The Environment

The environmental considerations of the bridge have been critical for the community of Fort Providence.

Golder Associates was retained to undertake environmental scoping of the project in order to identify environmental concerns and potential issues from the perspective of both the community and regulatory agencies.

This report is not a full assessment, but does include a preliminary review of potential impacts to the air, terrestrial, and aquatic environments. It examines construction phase and long term operations phase environmental costs, benefits, risks and mitigation and compares the proposed bridge to continuation of the existing ferry/ice bridge operation.



The report concludes that the potential for impacts are greatest during the construction phase and identifies measures which can minimize risks and mitigate impacts. Potential concerns have been factored into the proposed design and construction approach.

In the long term, a permanent bridge should result in reduced environmental impacts and risks, compared to the current ferry/ice bridge operation.

The regulatory and environmental review processes have been initiated and include applications to;

- ✓ Fisheries and Oceans Canada under the Fisheries Act,
- ✓ Coast Guard Canada under the navigable Waters Protection Act, and
- ✓ The Mackenzie Valley Land and Water Board, under the Mackenzie Valley resource Management Act.

Additional environmental assessment requirements to support these applications are currently being defined. All permits must be in place before any construction starts.



Deh Cho Bridge

Business Reaction

The Deh Cho Bridge Corporation has been conducting consultations with business, industry and the public. The following are two examples of positive business reaction.



Yellowknife Direct Charge Co-op

The Yellowknife Direct Charge Co-op provides groceries, dry goods and gasoline to over 2,800 member families, representing approximately 9,000 people. With gross annual sales of \$23 million, the Co-op has about 40% of the Yellowknife retail grocery market. Last year the total Co-op tonnage, including fuel, was about 14,000 tonnes. The Co-op spends about \$2.5 million per year on transportation.



The former General Manager, John Taylor, identifies potential savings in air freight, inventory financing, the cost of renting and storing extra fuel tankers, the cost of renting and heating extra trailers and the losses due to handling and spoilage.

He estimates that a bridge would result in savings to the Co-op of about \$300,000 per year. After taking the proposed toll into account, the bridge will result in a net annual savings of about \$100 per member family.

RTL Robinson Enterprises

Based in Yellowknife, RTL – Robinson Enterprises is the North's largest trucking and heavy civil construction company. Their equipment fleet includes over 180 trucks and 400 trailers



RTL provides trucking services, including major freight and fuel resupply contracts, LTL (less than truckload) service, equipment mobilization and specialized and oversize loads for business, mines and individual customers. RTL also specializes in construction and operation of winter roads. In 1997 this company moved over 100 million litres of fuel and 45,000 tonnes of freight in the N.W.T.

President, Marvin Robinson notes several costs of the current ferry/ice bridge crossing:

- During 'normal' ferry/ice bridge operations, there is a delay/detour adding of 20-30 minutes at the crossing. This can extend to several hours during peak times, when trucks are forced to line up at the ferry. In the worst case, trucks can encounter unscheduled interruptions in service during freeze-up and wait several days for service to resume.
- Some oversized loads cannot be accommodated on the ferry and must wait for the ice bridge to reach full capacity.
- During periods of extended service interruption, the RTL fleet is idle. There is usually a rush just before spring breakup to get ahead and after breakup to catch up on demand. The potential benefits of a bridge to the trucking industry include cost savings from reduced trip times, reduced delays, improved scheduling and better equipment utilization.

If a bridge were built, the proposed commercial freight toll would be offset by decreased costs. In a highly competitive trucking market, the industry would pass on the savings as well as the costs.