Hamlet of Tuktoyaktuk, Town of Inuvik
Government of Northwest Territories

ISSUED FOR USE

RESPONSE TO PARTIES' TECHNICAL SUBMISSIONS FOR CONSTRUCTION OF THE INUVIK TO TUKTOYAKTUK HIGHWAY, NWT

EIRB FILE NO. 02/10-05

September 13, 2012

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ACRONYMS

CEAA	Canadian Environmental Assessment Act
CSA	Canadian Standards Association
DFO	Department of Fisheries and Oceans
DOT	Department of Transportation (GNWT)
EIRB	Environmental Impact Review Board
EIS	Environmental Impact Statement
EMP	Environmental Management Plan
ENR	Environment and Natural Resources
GNWT	Government of the Northwest Territories
GTC	Gwich'in Tribal Council
HTC	Hunters and Trappers Committee
IFA	Inuvialuit Final Agreement, as Amended April 2005
IR	Information Request
ILA	Inuvialuit Land Administration
ISR	Inuvialuit Settlement Region
LSA	Local Study Area
NWT	Northwest Territories
OS	Operational Statements
PDR	Project Description Report
RSA	Regional Study Area
TAC	Transportation Association of Canada
VEC	Valued Ecological Component
VSC	Value Socio-economic Component
ZOI	Zone of Influence

The Developers of the proposed Inuvik to Tuktoyaktuk Highway are pleased to provide a response to the Parties' Technical Submissions received September 9 and 10, 2012. The Developers' responses are organized into the following sections:

Section 1.0 Aboriginal Affairs and Northern Development Canada

Source: **AANDC**
To: **GNWT Department of Transportation, Town of Inuvik, Hamlet of Tuktoyaktuk**
Subject: **3.2 Borrow Access (Maintenance and Operations)**

Developer Response: 3.2

Borrow or material sources will be accessed via winter road for both construction and operation of the Highway. Regular access to material sources for operation of the Highway will be required but not every year for each source. Use of a particular material source for operation in any given year will be dependent on maintenance and rehabilitation needs and overall operational planning for the Highway. Permanent access roads to the material sources are not being proposed.

Section 2.0 Environment Canada

Source: **Environment Canada**
To: **GNWT Department of Transportation, Town of Inuvik, Hamlet of Tuktoyaktuk**
Subject: **Water Quality**
Issue: **Blasting**

Developer Response: Water Quality - Blasting

As recommended by Environment Canada, the Developer will ensure that all construction contractors selected for the Highway construction project will only use emulsion-type, or more likely stick-type explosives, for any blasting activities that may be undertaken at any of the selected borrow sites. The contractor's Explosives Management Plan will outline the procedures for employing these explosives and provisions to ensure that blast residue will not enter any waterbodies.

Source: **Environment Canada**
To: **GNWT Department of Transportation, Town of Inuvik, Hamlet of Tuktoyaktuk**
Subject: **Water Quality**
Issue: **Sediment and Erosion Control**

Developer Response: Water Quality – Sediment and Erosion Control

The development of borrow pits will adhere to the AANDC Northern Land Use Guidelines for Pits and Quarries, which also includes relevant DFO operational statements for the protection of water resources. All borrow sources are located within continuous permafrost, where zones of unfrozen ground at depth are not expected to be encountered.

As previously indicated in IR #92.4, site drainage controls, including localized ditching/swales within the borrow sites and silt fencing will be employed as necessary to ensure that sedimentation contained in meltwater from ground ice in the aggregate, or site runoff in general, are appropriately managed and are not released into the surrounding watershed.

In addition, given the nature of the borrow sites, which typically consist of deposits of relatively porous aggregate material (sand, gravel, rocks/boulders), it would be expected that much of the seasonal meltwater generated by melting ground ice in the aggregate stockpiles would likely percolate directly into the shallow active layer that naturally develops each summer in the area.

Source: **Environment Canada**
To: **GNWT Department of Transportation, Town of Inuvik, Hamlet of Tuktoyaktuk**
Subject: **Fuel/Spill Contingency**
Issue: **Storage Tank Systems**

Developer Response: **Fuel/Spill Contingency – Storage Tank Systems**

As previously indicated, the Developer commits to ensuring that all contractors selected for construction of the Highway store fuel used for borrow source and Highway construction activities in double-walled fuel storage tanks, and in accordance with CCME guidelines and the CEPA *Storage Tank System for Petroleum Products and Allied Petroleum Products Regulations*.

Source: **Environment Canada**
To: **GNWT Department of Transportation, Town of Inuvik, Hamlet of Tuktoyaktuk**
Subject: **Fuel/Spill Contingency**
Issue: **Spill Contingency Plan**

Developer Response: **Fuel/Spill Contingency – Spill Contingency Plan**

The Developer is committed to ensuring that spill contingency plans to be developed by its construction contractors will be submitted for review. The Developer will also ensure that any Environmental Emergencies (E2) Regulations reporting requirements, if applicable, are identified.

Source: **Environment Canada**
To: **GNWT Department of Transportation, Town of Inuvik, Hamlet of Tuktoyaktuk**
Subject: **Waste Management**
Issue: **Incineration**

Developer Response: **Waste Management - Incineration**

The Developer is pleased to advise that there is no plan to employ incineration as a method of waste management by any of the contractors associated with the construction of the Highway.

Source: **Environment Canada**

To: **GNWT Department of Transportation, Town of Inuvik, Hamlet of Tuktoyaktuk**
Subject: **Wildlife**
Issue: **Wildlife Management Plan**

Developer Response: Wildlife – Wildlife Management Plan

As previously indicated, the Developer is committed to the development and implementation of a Wildlife Management Plan (WMP) which will include:

- specific mitigation measures for Species at Risk, caribou, grizzly bears, moose, furbearers, and birds;
- mitigation measures described in Section 4.2.7 of the EIS;
- camp safety design features;
- wildlife detection and deterrent strategies;
- critical periods for wildlife species;
- periods when sensitive wildlife species are likely to be present in the Project area;
- recommended setbacks;
- structure design features that will reduce or limit their potential use as nesting structures;
- triggers for adaptive management;
- appropriate linkages to other mitigation plans for weed control, dust management and waste management; and
- wildlife monitoring parameters.

The Developer has retained an environmental consultant to prepare the required Wildlife Management Plan. The Plan will be submitted for review by regulators at least 60 days prior to construction.

Source: **Environment Canada**
To: **GNWT Department of Transportation, Town of Inuvik, Hamlet of Tuktoyaktuk**
Subject: **Wildlife**
Issue: **Cumulative Effects Assessment for Species at Risk**

Developer Response: Wildlife – Cumulative Effects Assessment for Species at Risk

As a result of some of the cumulative effects-related concerns raised at the recently completed Technical Sessions held in Inuvik, August 22-23, 2012, the Developer has conducted supplemental work to assist in quantifying the potential cumulative effects associated with the development of the Inuvik to Tuktoyaktuk Highway in relation to past and reasonably foreseeable future projects within the cumulative effects study area selected for the Highway Project.

In anticipation that this subject will be further addressed at the upcoming public hearings, the Developer transmitted to the EIRB (on September 4, 2012) a series of figures depicting potential areas within which residual effects may occur (conservatively set at 1 km around all past and proposed projects assessed), and a complementary series of tables which summarize the estimated area of each type of vegetation cover (based on the EOSD land cover classes developed by the Canadian Forest Service – Wulder et al. 2004). An erratum was filed on September 12, 2012 to adjust information presented in the figures and tables to reflect the current configuration of the primary borrow sources.

These figures have been updated from those previously provided to the EIRB in the Developers response to IR 114 to incorporate additional 1 km area within which residual effects may occur. The figures include the proposed borrow sites to be used for construction of the Highway and the recently proposed South Parsons Lake Gas Supply Project. As a result, this most current set of figures and associated tables effectively supersedes the figures provided in response to IR 114, but the cumulative effects discussion provided by the Developer for SARA listed species in IR 114 remains valid.

The Developer is currently preparing an updated CEA using these spatial data and the results of the summer 2012 field surveys to support the cumulative effects predictions discussed in the EIS, in particular, in relation to caribou, grizzly bears and SARA listed species. This updated assessment will include consideration of all reasonably foreseeable projects, including the Mackenzie Gas Project, the recently proposed South Parsons Lake Gas Supply Project and the proposed Tuktoyaktuk Harbour Project.

In summary, the Developer is confident that the conclusions drawn with respect to cumulative effects, as based on information and methodology presented in the EIS, responses to information requests, and supplemental filings meets the requirements for cumulative effects assessment , as stated in Section 11.0 of the Terms of Reference. The Developer is prepared to discuss this further at the upcoming public hearings.

Section 3.0 Fisheries and Oceans Canada

Source: **Fisheries and Oceans Canada**
To: **GNWT Department of Transportation, Town of Inuvik, Hamlet of Tuktoyaktuk**
Subject: **Water Crossings**
Issue: **4.1.1 Summer Installations**

Developer Response: 4.1.1 Summer Installations

As stated in the EIS, it is anticipated that all water crossings will be completed in the winter period; however, if a summer water crossing installation is required, the Proponent will provide DFO with information on the water crossing type, construction methodology and mitigation measures to reduce or eliminate effects to fish or fish habitat during the regulatory approvals phase.

Summer works are anticipated to be limited to out of streambed activities, such as bridge girder and deck construction and associated works. All in-stream activities are anticipated to be carried out during winter construction.

The Developer can confirm that the DFO's Timing Windows Operational Statement will be used for any summer construction that may occur and that further consultations with DFO and communities will be undertaken as appropriate.

Source: **Fisheries and Oceans Canada**
To: **GNWT Department of Transportation, Town of Inuvik, Hamlet of Tuktoyaktuk**
Subject: **Water Crossings**
Issue: **4.1.2 Aggregate and Other Access Roads**

Developer Response: 4.1.2 Aggregate and Other Access Roads

The Developer confirms that the Ice Bridges and Snow Fills Operational Statement will be used for the construction and decommissioning of all winter roads associated with the Highway.

Source: **Fisheries and Oceans Canada**
To: **GNWT Department of Transportation, Town of Inuvik, Hamlet of Tuktoyaktuk**
Subject: **Water Crossings**
Issue: **4.1.3 Selection of Crossing Types**

Developer Response: 4.1.3 Selection of Crossing Types

The Developer is unclear which 10 watercourse crossings DFO is referring to. Field and desktop data for all watercourse crossings is presented in the EIS, Fish Habitat Assessment Report (Golder 2012), Interim Hydrotechnical Report and/or the September 2012 Master Watercourse Crossings Table. It is possible that the 10 sites mentioned in DFO's Technical Submission were watercourse crossings that were originally proposed but now will be avoided due to alignment changes or were deemed to not be actual water course crossings (e.g., standing water within ice polygon formations).

Source: **Fisheries and Oceans Canada**
To: **GNWT Department of Transportation, Town of Inuvik, Hamlet of Tuktoyaktuk**
Subject: **Water Crossings**
Issue: **4.1.4 Winter Fish Habitat**

Developer Response: 4.1.4 Winter Fish Habitat

As per the September 2012 Master Watercourse Crossings List, culverts will be used at all minor water courses and some of the medium (intermediate) water courses. Bridges will be used for major water course crossings and some medium (intermediate) crossings. All stream crossings which will utilize a culvert are expected to be frozen to the stream bed during the winter period. If water is present during the winter period due to subterranean water upwelling, water depths within the watercourse would still be too low to permit fish overwintering. Due to the low potential for the presence of fish overwintering habitat, a winter field survey of water courses to be crossed using culverts is not deemed necessary.

Source: **Fisheries and Oceans Canada**
To: **GNWT Department of Transportation, Town of Inuvik, Hamlet of Tuktoyaktuk**
Subject: **Water Crossings**
Issue: **4.1.5 General DFO Comments on Water Crossings**

Developer Response: 4.1.5 General DFO Comments on Water Crossings

Lessons learned based on the experience from constructing the Tuktoyaktuk to Source 177 Access Road will be included in the final Hydrotechnical Report, which will be submitted by September 30, 2012. Scenarios regarding each crossing type will also be included in the final Hydrotechnical Report.

The Developer confirms that during the regulatory phase, detailed design and associated site specific mitigation will be submitted to DFO and other regulators for review and approval.

Source: **Fisheries and Oceans Canada**
To: **GNWT Department of Transportation, Town of Inuvik, Hamlet of Tuktoyaktuk**
Subject: **Sedimentation**
Issue: **4.2 Sedimentation**

Developer Response: 4.2 Sedimentation

Prior to construction, the Developer will provide a draft Sediment and Erosion Control Plan (SECP) to regulators and other interested parties. The document will be finalized prior to construction.

DFO acknowledges the avoidance and mitigation measures provided in the EIS, but expressed concern that the effectiveness of mitigation measures cannot be evaluated because of lack of detail. Final design and associated site specific mitigation will be provided for DFO during the regulatory/permitting phase of the proposed project. DFO will have the opportunity during this regulatory phase to review and comment on the site specific designs and mitigation. Construction of watercourse crossings cannot occur without prior DFO approval.

Furthermore, environmental monitors will inspect sediment and erosion control measures to ensure they are working properly and to have them corrected if issues arise. The environmental monitors will also be recording turbidity in watercourses during the construction phase.

Source: **Fisheries and Oceans Canada**
To: **GNWT Department of Transportation, Town of Inuvik, Hamlet of Tuktoyaktuk**
Subject: **Water Withdrawal**
Issue: **4.3 Water Withdrawal**

Developer Response: 4.3 Water Withdrawal

DFO is correct in stating that the 2010 DFO Protocol for Winter Water Withdrawal from Ice-covered Waterbodies in the Northwest Territories and Nunavut does not cover water withdrawal from watercourses. In the 2005 DFO Protocol for Winter Water Withdrawal in the Northwest Territories water withdrawal criteria for watercourses were provided. In the absence of any new criteria, the criteria from the 2005 Protocol will be used. These criteria are:

1. Total water withdrawal for all activities is not to exceed 5% of the instantaneous flow rate of a single watercourse at the time of withdrawal.

2. In cases where there are multiple users withdrawing water from a single watercourse, the total combined withdrawal rate is not to exceed 5% of the instantaneous flow rate at the time of withdrawal. Therefore, consistent and coordinated water source identification is essential.

The Developer confirms that fish screens developed using the DFO Freshwater Intake End-of-Pipe Fish Screen Guideline will be used for all water withdrawals to protect fish from entrainment or impingement.

Detailed water requirement estimates, water source identification, construction camp siting, and the location of winter access and haul roads will be submitted in the regulatory applications. All water withdrawal planning and implementation will include identification of suitable water withdrawal sources (lakes and streams), assessment of allowable withdrawal quantities, unique source identification, and water withdrawal volume tracking.

A Water Withdrawal or Management Plan will be developed and finalized prior to the start of construction. This plan will be developed with input from community consultations, DFO and others as required.

Source: **Fisheries and Oceans Canada**
To: **GNWT Department of Transportation, Town of Inuvik, Hamlet of Tuktoyaktuk**
Subject: **Fisheries Management and Harvesting**
Issue: **4.4 Fisheries Management and Harvesting**

Developer Response: 4.4 Fisheries Management and Harvesting

The EIS acknowledges the potential for increased fishing pressure due to the presence of the Highway. Increased pressure, if it were to occur, would likely be mainly from residents of the communities of Inuvik and Tuktoyaktuk. It is difficult to predict what, if any, potential increased fishing pressure may occur. The potential for increased fishing pressure would exist regardless of the alignment of the proposed Highway. Most of the watercourses provide little opportunity for sport fishing, although Hans and Zed creeks do provide some sport fishing potential.

The proposed Highway does not provide direct access to major named lakes, which are known to provide fishing opportunities. Those wishing to fish these lakes would be required to travel off the Highway to access them. The inability to directly access these lakes from the Highway will reduce the number of people who will try and access them for fishing purposes. Increased fishing pressure is a human management issue, which can be addressed through education, guidelines, regulations and enforcement.

As identified in the EIS and the Technical Sessions, the FJMC, HTCs and DFO have a role in management fishing activities in the Project area. ENR also has a role in enforcement of sport fishing regulations. The Department of Transportation has agreed to working with the co-management organizations. The establishment of guidelines, regulations and the use of education and enforcement activities will contribute to reducing the potential of increased fishing pressure on fish populations along the Highway.

Source: **Fisheries and Oceans Canada**
To: **GNWT Department of Transportation, Town of Inuvik, Hamlet of Tuktoyaktuk**
Subject: **Borrow Sites**
Issue: **4.5 Borrow Sites**

Developer Response: 4.5 Borrow Sites

The Developer confirms that the 50 m setback for development of borrow sites will apply to watercourses and waterbodies. This has been added to the commitment tables.

The Developer confirms that the Sediment and Erosion Control Plan will include mitigation for borrow sites.

Source: **Fisheries and Oceans Canada**
To: **GNWT Department of Transportation, Town of Inuvik, Hamlet of Tuktoyaktuk**
Subject: **Monitoring**
Issue: **4.6 Monitoring**

Developer Response: 4.6 Monitoring

The Developer will develop a monitoring plan for the construction and operation of the Highway. Monitoring will include systems for detection, response and follow-up will be adaptive and responsive to field conditions.

The monitoring plan will be finalized prior to the start of construction. Training will be provided for environmental monitors. Department of Transportation has a regular monitoring schedule for culverts and other highway components to ensure that these structures are working as designed. Remedial action will be taken at structures that are not working as designed. DFO will have an opportunity to review and comment on the monitoring plan prior to its finalization. Environmental monitors and other potential monitors will be familiar with the monitoring and the Sediment and Erosion Control Plans.

The Developer understands that additional monitoring requirements may be put in place through DFO Authorizations or other permits. Any additional monitoring requirements would be added to the monitoring plan.

Source: **Fisheries and Oceans Canada**
To: **GNWT Department of Transportation, Town of Inuvik, Hamlet of Tuktoyaktuk**
Subject: **Blasting**
Issue: **4.7 Blasting**

Developer Response: 4.7 Blasting

The Developer confirms it will follow DFO *Guidelines on the Use of Explosives In or Near Fisheries Waters* and that DFO will receive all necessary information on any blasting that may be conducted near fisheries waters. The Developer has committed to following the DFO-recommended *Monitoring Explosive-Based Winter Seismic Exploration in Water Bodies NWT 2000-2002* (Cott and Hanna 2005), and in particular, that the maximum peak pressure not exceed 50 kPa.

Source: **Fisheries and Oceans Canada**
To: **GNWT Department of Transportation, Town of Inuvik, Hamlet of Tuktoyaktuk**
Subject: **No Net Loss Plan**
Issue: **4.8 No Net Loss Plan**

Developer Response: 4.8 No Net Loss Plan

The Developer will submit to DFO its plan for No Net Loss during the regulatory phase of the project. This plan will be prepared following completion of detailed design, which will also be in the regulatory phase of the project.

Source: **Fisheries and Oceans Canada**
To: **GNWT Department of Transportation, Town of Inuvik, Hamlet of Tuktoyaktuk**
Subject: **Cumulative Effects Assessment**
Issue: **4.9 Cumulative Effects Assessment**

Developer Response: 4.9 Cumulative Effects Assessment

Cumulative effects assessments can be qualitative, quantitative or both depending on the types of potential effects and available data. To have the potential for a cumulative effect a VEC must be negatively affected by a Project.

The Highway project as stated in the EIS indicates that potential residual effects on fish and fish habitat will be minor and not significant. Most potential effects will be eliminated or reduced through standard and proven mitigation measures such as the use of Best Management Practices (BMPs), including DFO Operational Statements. In the event that fish habitat may be affected at a particular crossing, an Authorization may be required and a fish habitat compensation plan developed, resulting in No Net Loss of productive capacity.

Past projects in the geographic scope of the cumulative assessment include; the Tuktoyaktuk Source 177 access road, past seismic lines, drilling sites, the buried Ikhil pipeline, former NCPC power line, winter access trails and communities. The culvert originally placed at the water crossing to the Tuktoyaktuk Source 177 access road which was a potential barrier to fish movement was repaired within hours of reporting and now operates as designed. As a result only minor to negligible effects on fish and fish habitat occurred. The access road will be upgraded to be incorporated into the Highway. This upgrading will not involve any instream activities at this crossing location therefore no additional effects would occur on this section of the Highway and therefore no cumulative effects resulting from the access road would be expected to occur.

Other identified past activities have not demonstrated any significant effect on fish or fish habitat over the last several decades. As no effects have been identified there is little to no potential for cumulative effects to occur from these past projects.

The proposed MGP project and proposed Parsons Lake gas facility in their submissions to the EIRB stated that the Projects would have no significant residual effects on fish and fish habitat. In addition, in their cumulative effects assessment they included the Highway and its potential effects were predicted to not create a cumulative effect on fish and fish habitat. In the current Highway assessment, as previously stated any potential effects on fish or fish habitat are expected to be minor to negligible and therefore no potential cumulative effects with respect to the MGP and Parson Lake Projects are expected to occur.

As previously indicated, the EIS acknowledges that there is the potential for increased fishing pressure due to the presence of the Highway. Increased pressure, if it were to occur, would likely be mainly from residents of the communities of Inuvik and Tuktoyaktuk. It is difficult to predict what, if any, potential increased fishing pressure may occur. The potential for increased fishing pressure would exist regardless of the alignment of the proposed Highway. Most of the watercourses provide little opportunity for sport fishing, although Hans and Zed creeks do provide some sport fishing potential.

The proposed Highway does not provide direct access to major named lakes, which are known to provide fishing opportunities. Those wishing to fish these lakes would be required to travel off the Highway to access them. The inability to directly access these lakes from the Highway will reduce the number of people who will try and access them for fishing purposes. Increased fishing pressure is a human management issue, which can be addressed through education, guidelines, regulations and enforcement.

Section 4.0 Health Canada

Source: **Health Canada**
To: **GNWT Department of Transportation, Town of Inuvik, Hamlet of Tuktoyaktuk**
Subject: **Air Quality**
Issue: **Response to Information Request #128**

Developer Response: Response to Information Request #128

The Developer has reviewed their response based on Health Canada's comments and has updated the response to Information Request #128 to read as follows.

As stated in the EIS (Section 4.2.2), the CCME acknowledges that there is no apparent lower threshold for the effects of particulate matter and ozone on human health and that there are additional benefits to reducing and maintaining ambient levels below the standards.

However, it is important to note that air quality criteria and standards, such as the NWT Guideline for Ambient Air Quality Standards in the Northwest Territories, specify criteria for maximum concentrations deemed to be acceptable in ambient air.

Low residual effects to humans are anticipated primarily due to the very limited number of potential human receptors within 1,000 m of the Highway (two residential leases). Other factors that reduce the potential residual effects include:

- the limited distance that particulate matter may be transported (100 m to 400 m depending on particulate size);
- the intermittent, short-term and rapidly reversible nature of dust that will be generated, primarily by moving vehicles;
- the relatively short snow-free and dry season when dust is most likely to be generated; and
- the implementation of mitigation measures to suppress dust, primarily during the relatively short snow-free and dry season.

Section 5.0 Infrastructure Canada

Source: **Infrastructure Canada**
To: **GNWT Department of Transportation, Town of Inuvik, Hamlet of Tuktoyaktuk**
Subject: **Responses to Federal Departments**

Developer Response: Responses to Federal Departments

The Developer has replied to issues and comments raised by other federal departments in Sections 1, 2, 3, 4, 6, 7 and 8 of this document.

Section 6.0 Natural Resources Canada

Source: **Natural Resources Canada**
To: **GNWT Department of Transportation, Town of Inuvik, Hamlet of Tuktoyaktuk**
Subject: **Issue 1 – Terrain Conditions and Sensitivity Along Proposed Route**
Issue: **Recommendations #1-2**

Developer Response: Issue 1 – Recommendations #1-2

The Developer has reviewed the recommendations presented by Natural Resources Canada and will incorporate them in the detailed design and other phases of work moving forward with the Project.

Source: **Natural Resources Canada**
To: **GNWT Department of Transportation, Town of Inuvik, Hamlet of Tuktoyaktuk**
Subject: **Issue 2 – Analysis Conducted to Support Road Design and Assessment of Impacts**
Issue: **Recommendations #3-6**

Developer Response: Issue 2 – Recommendations #3-6

The Developer has reviewed the recommendations presented by Natural Resources Canada and will incorporate them in the detailed design and other phases of work moving forward with the Project.

Source:	**Natural Resources Canada**
To:	**GNWT Department of Transportation, Town of Inuvik, Hamlet of Tuktoyaktuk**
Subject:	**Issue 3 - Surficial Geology and Related Ground Ice Assessment**
Issue:	**Recommendations #7-9**

Developer Response: Issue 3 – Recommendations #7-9

The Developer has reviewed the recommendations presented by Natural Resources Canada and will incorporate them in the detailed design and other phases of work moving forward with the Project.

Section 7.0 Parks Canada

Source: **Parks Canada**
To: **GNWT Department of Transportation, Town of Inuvik, Hamlet of Tuktoyaktuk**
Subject: **Pull-Out Near the Pingo Canadian Landmark**

Developer Response: Pull-Out Near the Pingo Canadian Landmark

The Developer will work with Parks Canada to consider the development of a pull-out within the 60 m Right-of-Way in the detailed design of the Highway.

Source: **Parks Canada**
To: **GNWT Department of Transportation, Town of Inuvik, Hamlet of Tuktoyaktuk**
Subject: **Dust Suppression**
Issue: **Calcium Chloride**

Developer Response: Dust Suppression and the Use of Calcium Chloride

In the construction and operation of the Highway, the Developer will use water and/or Calcium Chloride for dust suppression in accordance with the *NWT Guideline for Dust Suppression (1998)*.

Section 8.0 Transport Canada

Source: **Transport Canada**
To: **GNWT Department of Transportation, Town of Inuvik, Hamlet of Tuktoyaktuk**
Subject: **Navigable Waters**
Issue: **Applications for Approvals of Works**

Developer Response: Navigable Waters - Applications for Approvals of Works

Transport Canada has recommended that the Developer submit applications for approval of works in, on, over, under, through or across any navigable waterway under the *Navigable Waters Protection Act* once design plans have been finalized, and that the Developer should assess works with final waterway crossings design plans. The Developer will assess works with final waterway crossing design plans against Transport Canada's Minor Works and Waters (*Navigable Waters Protection Act*) Order before sending applications to Transport Canada.

In the development of the Highway, the Developer will comply with applicable legislation, regulations, standards and guidelines, including the *Transport of Dangerous Goods Act, 1992*.

Section 9.0 Tuktoyaktuk Community Corporation

Source: **Tuktoyaktuk Community Corporation**
To: **GNWT Department of Transportation, Town of Inuvik, Hamlet of Tuktoyaktuk**
Subject: **Environmental and Wildlife Protection**

Developer Response: Environmental and Wildlife Protection

The Developer is committed to protecting wildlife and the environment during the construction and operation of the Highway. Several commitments have been made by the Developer to this effect (see EIRB registry document #254). Key commitments include complying with all legislation and regulations, developing and implementing environmental and wildlife management plans, and employing environmental and wildlife monitors during the construction process.

Source: **Tuktoyaktuk Community Corporation**

To: **GNWT Department of Transportation, Town of Inuvik, Hamlet of Tuktoyaktuk**

Subject: **Protecting the Traditional and Cultural Values of Husky Lakes**

Developer Response: Protecting the Traditional and Cultural Values of Husky Lakes

The preferred alignment respects and protects the traditional and cultural values of Husky Lakes by positioning the Highway away from Husky Lakes a distance that is greater than the 1 km setback as defined by the Inuvialuit Land Administration. More discussion about the selection of the preferred alignment is provided in the following Developer's Response on Highway Routing.

Source: **Tuktoyaktuk Community Corporation**
To: **GNWT Department of Transportation, Town of Inuvik, Hamlet of Tuktoyaktuk**
Subject: **Business and Employment Opportunities**

Developer Response: Business and Employment Opportunities

The Developer is committed to maximizing business and employment opportunities for the local residents. The following items are included in the Developer's commitments (submitted separately – registry document #254) for this Project:

The Developer is committed to observing the relevant economic measures of the Inuvialuit Final Agreement (IFA).
The Developer is committed to preferential employment opportunities for qualified local residents and contractors.
The IFA guidelines for business operation will apply to this Project, giving priority hiring to companies included on the Inuvialuit Business List.
The Developer and on-site Project contractors will be responsible for the implementation of focused socio-economic measures, including recruitment and skills training.
The Developer will require that its Project contractor(s) ensure that all heavy equipment operators are suitably trained in proper machinery maintenance and operation; that equipment is regularly inspected and serviced; and that contractor staff obey posted Highway rules (e.g., speed limits, hunting/fishing restrictions).
The Developer will require that its contractor(s) educate their staff on the prevention of accidents and malfunctions. The training received will be outlined for the Developer, including emergency spill response.

Source: **Tuktoyaktuk Community Corporation**
To: **GNWT Department of Transportation, Town of Inuvik, Hamlet of Tuktoyaktuk**
Subject: **Monitoring and Reporting Business and Employment Opportunities**

Developer Response: Monitoring and Reporting Business and Employment Opportunities

The Developer is committed to monitoring and reporting on business and employment opportunities in the development to the Highway Project. Section 7.2.1 of the EIS states:

The Developer will require the contractor(s) to report on various parameters related to their activities. Parameters include:

- *ISR hiring/contract preferences;*
- *Employment:*
  - *Number of workers employed;*
  - *Employee gender;*
  - *Location of employee residence; and*
  - *Wages paid.*
- *Training:*
  - *Types of training provided;*
  - *Number of employees trained;*
  - *Employee gender; and*
  - *Location of employee residence.*

The Developer is willing to provide this information to related monitoring programs, upon request.

The Developer is committed to issuing on a regular basis a newsletter on the Project, which will highlight progress and any substantive reports/information provided to public domain parties. A dedicated link to similar information will also be featured on the main Department of Transportation website.

Source: **Tuktoyaktuk Community Corporation**
To: **GNWT Department of Transportation, Town of Inuvik, Hamlet of Tuktoyaktuk**
Subject: **Highway Routing**

Developer Response: Highway Routing

The preferred alignment respects the traditional and cultural values of Husky Lakes and combines a number of different priorities and inputs from various parties.

The initial routing study was carried out in the fall of 2009 by the Developer's engineering and environmental field team. That field study examined a route corridor largely derived from past work of the Government of Canada looking at a proposed highway from Tuktoyaktuk to Inuvik. This route is the Primary 2009 Alignment. In the northern portion of the route, the field study examined a second route corridor identified at the time by the community of Tuktoyaktuk, called the Upland or Elders Route.

The design of the roadway on the Upland Route was fully considered and was found to have some serious problems and concerns in comparison to the Primary 2009 Alignment. Most important of these concerns is safety. The Upland Route, due to the hilly nature of the existing ground, required many more vertical and horizontal curves than the preferred route. In fact there were rarely any straight sections of the Highway that would allow safe passing to occur in the entire Upland Route area of more than 40 km in length, and sight distance at crests of hills and through curves would be limited. In the design of the Upland Route it is difficult to maintain the minimum design criteria, and it is this criteria that sets the safety standards for the Highway.

In the design of the Primary 2009 Alignment, the minimum design criteria is exceeded for the most part and generally meets the higher desirable design criteria. The likelihood of collisions or accidents on the Primary 2009 Alignment will be lower than on the Upland Route.

In addition, while the Upland Route was slightly shorter than the preferred route, the 'up and down' ground has many more hills and valleys, using more material to construct, than the Primary 2009 Alignment.

The Primary 2009 Alignment is favoured by the Developer over the Upland Route and has been updated twice to date in the development of the project. Once in 2009 (Alternate 2 – 2009 Minor Realignment) to respect the 1 km minimum setback from Husky Lakes and again in 2010 (Alternate 3 – 2010 Minor Realignment) at the suggestion of Inuvialuit interests to smooth a transition and gain greater separation between the Highway and Husky Lakes.

Alternative 3 – 2010 Minor Realignment is the preferred alignment. Recognizing the cultural and traditional value of Husky Lakes, the preferred alignment now exceeds the minimum distance setback requirements from Husky Lakes as defined by the Inuvialuit Land Administration. When compared to the other alignments considered, the preferred alignment also provides the better solution relative to safety, environmental footprint, cost and other factors.

In the next stages of development (detailed geotechnical investigation and detailed design stage), the preferred alignment will be refined. For example, slight revisions will be made to accommodate foundation and/or stream flow conditions at crossings, or to manage areas of thaw sensitive, ice-rich terrain.

Source: **Tuktoyaktuk Community Corporation**
To: **GNWT Department of Transportation, Town of Inuvik, Hamlet of Tuktoyaktuk**
Subject: **Naming the Highway**

Developer Response: Naming the Highway

The Highway will be numbered according to GNWT Department of Transportation numbering convention. Recognizing the importance of the Highway to the region, the Developer will work with the people of the Inuvialuit Settlement Region to establish a descriptive name for the Highway.

Section 10.0 Wildlife Management Advisory Council (NWT)

Source: **Wildlife Management Advisory Council (NWT)**
To: **GNWT Department of Transportation, Town of Inuvik, Hamlet of Tuktoyaktuk**
Subject: **Spatial and Temporal Boundaries**

Developer Response: Spatial and Temporal Boundaries

The Developer appreciates that WMAC has a different view on the appropriate spatial and temporal boundaries selected for the cumulative effects assessment for the Highway Project but the Developer wishes to note that the boundaries selected for this assessment closely followed the Guide for proponents entitled *Cumulative Effects Assessments in the Inuvialuit Settlement Region,* dated August 2002. This Guide was prepared for the Environmental Impact Screening Committee and the Environmental Impact Review Board.

Regarding the spatial boundary selected for the CEA, as stated in the Guide:

> *in general, the spatial boundary for a CEA should encompass all of the area affected by a specific project effect, as well as the area affected by similar effects from other projects or human activities that overlap with the project effect. This area generally extends to the furthest distance at which the contribution of the project's residual (i.e., post-mitigation) effect is no longer measurable or could reasonably be expected to occur.*

Potential spatial effects of the proposed Highway project were discussed and assessed for all VECs in Section 4.0 (Impact Assessment) of the EIS. In general, the predicted residual effects on all VECs related to the relatively short term construction phase and longer term operations phase of the Highway were predicted to be low in magnitude and localized to the immediate Project footprint area or the Local Study Area (500 m). For wildlife species, the majority of the predicted residual effects were also of a generally short term and rapidly reversible nature.

Potential spatial effects for past, existing and possible future projects were discussed and assessed in Sections 5.3.1 and 5.3.2, respectively of the EIS. The predicted residual effects of these past, existing and possible future projects on all VECs were determined to be highly localized and no residual effects were identified that could operate in a potentially cumulative manner with any residual effects related to the construction and operation of the Highway.

On this basis, the Developer is of the opinion that the cumulative effects assessment presented in the EIS has met the requirements of the EIRB and CEAA guidelines. Given that all of the predicted residual environmental effects are expected to occur within the CEA spatial boundary defined for the proposed Highway Project, the Developer is confident that the spatial boundary selected for the CEA in the EIS was and remains appropriate.

Regarding the temporal boundary selected for the CEA, as stated in the Guide:

> *It is important that the temporal boundaries reflect the effect on the land base, VECs, harvesting activity or land use, and the duration of time required for these uses or the VECs to recover from that effect. Duration does not refer to the duration of the project activity.*
>
> *One or more time periods during the project life may be used to predict the condition of the land, VEC or harvesting activity, taking into account the effect(s) of the project during those periods in combination with all other existing project and activity effects. At minimum, the operational assessment should include the period of peak development or activity for the proposed project.*

On this basis, the Developer selected a 10 year period of time for the CEA. As indicated in our response to WMAC's letter dated June 27, 2011 and in the Addendum to the EIS submitted in response to the EIRB's letter dated July 15, 2011, The rationale for selecting the 10 year temporal timeframe for the cumulative effects assessment portion of the EIS was that it includes a reasonable number of years that spans both the construction (four years) and initial operation (six years) of the Highway. This timeframe also recognized a basic assumption of cumulative effects assessment that the other projects or activities to be considered should include those projects or activities that are currently under regulatory review, or are reasonably likely to occur and are not hypothetical.

The outer limit of the temporal timeframe selected could conceivably have been extended to 20 years or more, but this was not considered to be necessary or appropriate as the assessment would need to have extended into the realm of hypothetical projects, and baseline environmental parameters (such as future fish and wildlife population cycles) will likely have changed in a currently unpredictable manner.

Source: **Wildlife Management Advisory Council (NWT)**
To: **GNWT Department of Transportation, Town of Inuvik, Hamlet of Tuktoyaktuk**
Subject: **Worst Case Scenario**

Developer Response: Worst Case Scenario

A fundamental goal of the EIRB as set out in the IFA is to consider a potentially possible scenario as a legitimate test by which to judge whether negative impacts to wildlife, wildlife habitat and wildlife harvesting can be minimized to acceptable levels by mitigative and remedial measures. Such a worst case scenario will also be used by the EIRB to establish the Developer's potential liability.

As indicated in the EIS, the Developer determined that the most probable, although highly unlikely worst case scenario associated with the construction and operation of the proposed Highway would involve potential environmental damage to the Husky Lakes and effects to traditional activities and harvesting, caused by a fuel supply truck crash on the Highway, resulting in a fuel spill of greater than 10,000 litres into an open watercourse, which leads directly to the Husky Lakes.

The Developer appreciates that WMAC has a different view of what should have been considered as a Worst Case Scenario. In particular, as indicated in WMAC's Technical Submission dated September 2012, WMAC prefers that a Worst Case Scenario involving the severe disruption and/or loss of caribou harvest with the Inuvialuit Settlement Region be considered.

The Developer acknowledges that this is a valid potential alternative Worst Case Scenario, but with respect, the Developer is confident that organizations with mandate for wildlife and harvest management (GNWT ENR, the HTCs, Inuvialuit Game Council, WMAC, CWS, DFO, FJMC) and other interested stakeholders can and will work together to ensure that such a possible indirect Worst Case Scenario does not arise.

Source: **Wildlife Management Advisory Council (NWT)**
To: **GNWT Department of Transportation, Town of Inuvik, Hamlet of Tuktoyaktuk**
Subject: **Cumulative Effects Assessment**
Subject: **Cumulative Effects Assessment**

Developer Response: Wildlife – Cumulative Effects Assessment

As a result of some of the cumulative effects-related concerns raised at the recently completed Technical Sessions held in Inuvik, August 22-23, 2012, the Developer has conducted supplemental work to assist in quantifying the potential cumulative effects associated with the development of the Inuvik to Tuktoyaktuk Highway in relation to past and reasonably foreseeable future projects within the cumulative effects study area selected for the Highway Project.

In anticipation that this subject will be further addressed at the upcoming public hearings, the Developer transmitted to the EIRB (on September 4, 2012) a series of figures depicting potential areas within which residual effects may occur (conservatively set at 1 km around all past and proposed projects assessed), and a complementary series of tables which summarize the estimated area of each type of vegetation cover (based on the EOSD land cover classes developed by the Canadian Forest Service – Wulder et al. 2004). It should be noted that on September 12, 2012, an erratum was filed with the EIRB to adjust the spatial data presented in the figures and tables to reflect the current configuration of the primary borrow sources.

These figures have been updated from those previously provided to the EIRB in the Developers response to IR 114 to incorporate a 1 km zone of influence within which residual effects related to the construction and operation of the Highway may occur. The figures include the proposed borrow sites to be used for construction of the Highway and the recently proposed South Parsons Lake Gas Supply Project. As a result, this most current set of figures and associated tables effectively supersedes the figures provided in response to IR 114, but the cumulative effects discussion provided by the Developer for SARA listed species in IR 114 remains valid.

The Developer is currently preparing an updated CEA using these spatial data and the results of the summer 2012 field surveys to support the cumulative effects predictions discussed in the EIS, in particular, in relation to caribou, grizzly bears and SARA listed species. This updated assessment will include consideration of all reasonably foreseeable projects, including the Mackenzie Gas Project, the recently proposed South Parsons Lake Gas Supply Project and the proposed Tuktoyaktuk Harbour Project.

In summary, the Developer is confident that the conclusions drawn with respect to cumulative effects, as based on information and methodology presented in the EIS, responses to information requests, and supplemental filings meets the requirements for cumulative effects assessment , as stated in Section 11.0 of the Terms of Reference. The Developer is prepared to discuss this further at the upcoming public hearings.

Source: **Wildlife Management Advisory Council (NWT)**
To: **GNWT Department of Transportation, Town of Inuvik, Hamlet of Tuktoyaktuk**
Subject: **Cumulative Effects Follow-up and Monitoring**

Developer Response: Cumulative Effects Follow-up and Monitoring

Section 7.0 (Follow-up and Monitoring) of the EIS provided a summary of the anticipated biophysical and socio-economic compliance and effects monitoring programs associated with the short-term construction and long-term operation of the proposed Highway.

The Developer provided a draft effects monitoring table in the Addendum to the EIS submitted to the EIRB in response to Category 3 Conformity Request #13.

The Developer also provided a draft compliance monitoring table in the Addendum to the EIS submitted to the EIRB in response to Category 3 Conformity Request #14.

Programs and plans for monitoring and managing priority valued components on a regional scale in the Inuvialuit Settlement Region are administered by government organizations, such as AANDC, EC, and GNWT ENR. These programs include the NWT Cumulative Impact Monitoring Program (CIMP), Environmental Monitoring and Assessment Network North (EMAN-North), Beaufort Regional Environmental Assessment (BREA), and Environmental Stewardship Framework (ESF), among others.

Source: **Wildlife Management Advisory Council (NWT)**
To: **GNWT Department of Transportation, Town of Inuvik, Hamlet of Tuktoyaktuk**
Subject: **Reference to 15 KM Avoidance Zone**

Developer Response: Reference to 15 km Avoidance Zone

In reviewing the WMAC's February 2012 and September 2012 submissions to the EIRB, the Developer noted that WMAC regularly described a potential caribou avoidance zone of as great as 15 km. Specifically citing from the September 2012 Technical Submission:

> *"As stated before, caribou frequently avoid roads and other human infrastructure. This avoidance can be as great as 15 km and can impact many thousands of hectares of habitat (Oberg et al. 2000, Wolfe et al. 2000, Dyer et al. 2001, Johnson and Boyce 2001, Schindler et al. 2007, Stankowich 2008, Vistnes and Nellemann 2008, Flanders et al. 2009)."*

This reference to a 15 km zone of influence is carried throughout the Technical Submission and is the basis for much of WMAC's argument, which greatly overstates predictions of habitat loss associated with the Highway and other past and potential future projects within the CEA spatial boundary.

In an effort to evaluate the possible validity of this rather large potential avoidance zone, the Developer's consultants reviewed each of the references listed in the WMAC submission. These included: Oberg et al. 2000, Wolfe et al. 2000, Dyer et al. 2001, Johnson and Boyce 2001, Schindler et al. 2007, Stankowich 2008, Vistnes and Nellemann 2008, Flanders et al. 2009.

None of the documents cited refer to a 15 km zone of influence based on research conducted by these authors. Some articles discuss varying avoidance levels or reduced use of areas, and cite other studies which reference reduced use of areas within 250 m to15 km of industrial developments. Further investigation of those cited papers reveals that the likely source of the large zone of influence originated from Boulanger et al. 2009, which specifically states:

> *"…around the Ekati-Diavik mine complex during the operation period for both mines we detected a 14 km zone of influence from the aerial survey data, and a weaker 11 km zone from the satellite collar locations."*

This paper subsequently presented a caveat to the effect that:

> ***"…our study addressed the effects of large open pit mines, which would present a very different configuration of stimuli to caribou than, for example, a road or tourist lodge."***

On this basis, with respect, it is the Developer's position that consideration of a potential 15 km zone of influence is not appropriate for the proposed Highway. Given the low physical profile of the Highway on the landscape and the low level of traffic expected to use the Highway and with the application of the numerous available mitigation measures described in the EIS and in updated commitments, a 1 km zone of influence within which potential residual effects may occur is considered to be reasonable and appropriate.

Source: **Wildlife Management Advisory Council (NWT)**
To: **GNWT Department of Transportation, Town of Inuvik, Hamlet of Tuktoyaktuk**
Subject: **Wildlife Management Plan**

Developer Response: Wildlife Management Plan

The Developer has made many commitments related to the development of a Wildlife Management Plan, mitigation measures and monitoring plans. In particular, many commitments are specific to caribou and grizzly bears. The Developer looks forward to receiving recommendations and advice from WMAC related to the Wildlife Management Plan, mitigation measures and monitoring plans.

WILDLIFE AND WILDLIFE HABITAT	
General	
Prior to construction, the Developer will develop and implement species specific Wildlife Management Plans (WMP) that will include: - specific mitigation measures for Species at Risk, caribou, grizzly bears, moose, furbearers, and birds; - mitigation measures described in Section 4.2.7 of the EIS; - camp safety design features; - wildlife detection and deterrent strategies; - critical periods for wildlife species; - periods when sensitive wildlife species are likely to be present in the Project area; - recommended setbacks; - structure design features that will reduce or limit their potential use as nesting structures; - triggers for adaptive management; - appropriate linkages to other mitigation plans for weed control, dust management and waste management; and - wildlife monitoring parameters.	Design, Construction
The Developer will require its construction Contractors to conform with the Wildlife Management Plan (WMP) that will be developed for the Inuvik to Tuktoyaktuk Highway construction project.	Design, Construction
Pre-disturbance surveys for critical wildlife habitat features (e.g., dens, nests) will be conducted prior to construction, in cooperation with GNWT ENR, as required. Survey results will be distributed in monitoring reports and provided to applicable regulators and interested parties, and may include mitigative measures to reduce potential effects.	Design, Construction
All wildlife encounters and mortalities will be reported to the environmental monitor, Safety Advisor, and GNWT ENR.	Design, Construction, Operations

The Developer will implement general wildlife protection measures along the proposed Highway as follows: - Minimizing loss of habitat and the reduction of habitat effectiveness through Project design; - Educating users of the Highway that wildlife have the right-of-way at all times; - Posting signage along the Highway, emphasizing areas of high wildlife use; - Implementing a policy whereby Project personnel and contractors will not disturb any wildlife or critical habitat features such as dens or nests; - Implementing a system during the construction phase that serves to notify workers of wildlife presence in or near construction areas; - Hiring environmental monitors during construction to watch for wildlife; - Adhering to spill contingency plans, as required, in a timely manner; - Conducting follow-up monitoring of spill sites to verify effectiveness; - Utilizing clean equipment, particularly when deployed in or near water; - Implementing appropriate dust control measures to minimize effects to habitat and forage quality; - Adhering to waste management plans and procedures to avoid attracting wildlife; - Timing construction activities to avoid critical periods; - Applying and conforming with pre-determined setback distances from key wildlife habitat features; - Implementing a "no hunting" policy for Highway construction and maintenance workers; and - Working with agencies such as the HTCs, WMAC, Environment Canada and GNWT ENR to develop guidelines and conditions for Highway usage and follow-up with monitoring of harvesting activities.	Design, Construction, Operations
The Developer is committed to working with agencies and other interested stakeholders such as the HTCs to develop appropriate management restrictions and tools to ensure that the environment of the area remains protected. The types of measures that the Developer can implement directly include the provision of educational and informative signage at key points along the Highway.	Design, Construction, Operations
The construction and/or operations phase Wildlife Mitigation and Monitoring Plan(s) will be reviewed with co-management groups such as the Hunter and Trapper Committees and the Wildlife Management Advisory Committee as the development of the plans proceeds.	Construction, Operations
An annual construction monitoring report will be provided to applicable regulators and interested parties that will include: - Encounters and mortalities; - Notifications provided to workers regarding wildlife presence; - Waste management practices - Measures used to reduce disturbance to any nesting birds; - Dust control effectiveness; - Conformance with the Wildlife Management Plan, Environmental Management Plan, Erosion and Sediment Control Plan, and other plans; - Adaptive management measures that were implemented, if any.	Construction
Wildlife data collected will be provided to GNWT ENR for entry into WMIS or to Environment Canada, Yellowknife.	Design

Types of Mitigation for Caribou	
Types of mitigation measures that the Developer will integrate into the Project design, construction, and anticipated future operational practices to reduce or minimize potential impacts of the proposed Highway on caribou are: - Limiting blasting activities, if required, to borrow sites and will only occur when caribou are >500 m from the blast site; - Working with agencies such as the HTCs, WMAC, and GNWT ENR to develop guidelines for periodic Highway closures, if required, as a way of minimizing the disruption of migration patterns to barren-ground caribou; - All sightings of caribou will be reported to environmental staff on-site; - Caribou sightings will be recorded (including a GPS location if possible) and be submitted to the GNWT DOT Planning, Policy and Environmental Division and GNWT ENR upon completion of construction; and - Caribou crossing signs will be placed along the Highway, as needed.	Design, Construction, Operation
Types of Mitigation Measures for Grizzly Bears and Furbearers	
In October 2011, GWNT ENR and GNWT DOT will undertake a grizzly bear den survey for the proposed Highway alignment and key potential borrow sources. This survey will be repeated in fall 2012 as a pre-construction denning survey	Design, Construction
Types of mitigation measures that the Developer will integrate into the Project design, construction, and anticipated future operational practices to reduce or minimize potential impacts of the proposed Highway on grizzly bears and furbearers include: - Freshly dug dens will be mapped such that construction activities will avoid active dens during the hibernation period; - If possible, no activities will occur within 500 m of an active den during the denning period (October 15 to May 25); and - No blasting will occur if active bear dens are confirmed within 500 m of a proposed blasting area. - Maintaining a minimum distance of 500 m between identified grizzly bear/wolverine den sites and personnel during construction; - Dens (grizzly bear, wolverine) discovered within 500 m of the Highway after the pre-construction survey will be reported immediately to GNWT ENR to determine the appropriate course of action; - Providing the wildlife monitor and designated, trained staff access to non-lethal deterrent materials (e.g., bear spray). The use of any deterrent method on wildlife will be reported to GNWT ENR; - Minimizing and properly disposing of wildlife attractants such as garbage, food wastes, and other edible and aromatic substances; - Storing all food, grease, oils, fuels, and garbage in bear/wolverine-proof containers and/or areas; and - Transporting waste to Tuktoyaktuk and/or Inuvik municipal solid waste facilities for disposal. Disposal of wastes at these facilities will follow the specified terms and conditions for use.	Construction

BORROW SOURCES	
The borrow pits required for construction of the Highway will be developed, operated and decommissioned in full compliance with all regulatory requirements.	Design, Construction
Supplemental geotechnical and biophysical studies will be conducted to fulfill the requirements of the land use and quarry applications.	Design
For stockpiles developed at active borrow sites for use in the following winter, the Highway construction contractor(s) or their environmental consultants will be tasked to carry out inspections of the stockpiles and the active borrow areas in the late summer to determine if a wildlife den has been established in any of the stockpiles or borrow sites.	Construction
Borrow pits will be closed as soon as they are no longer required and reclaimed in a progressive manner, as described in the Pit Development Plan.	Construction, Operations, Reclamation