

**Northern Gateway Pipelines Inc.  
Section 52 of National Energy Board Application for  
Enbridge Northern Gateway Project  
NEB File OFF-Oil-N304-2010-01 01  
Filed 27 May 2010**

**HAISLA NATION RESPONSE TO NGP IR NO. 1**

**June 29, 2012**

**REQUEST 1.1:**

<b>Position Regarding Project</b>		
<b>1.1</b>	<b>Reference:</b>	<ul style="list-style-type: none"> <li>(i) Written Evidence of the Haisla Nation, filed December 20, 21, 23, January 4, 12 and March 16.</li> <li>(ii) Oral Evidence of the Haisla Nation, Transcript, Volume 8, January 10, 2012 (A2K8X2).</li> </ul>
	<b>Preamble:</b>	Northern Gateway would like to confirm the Haisla Nation's position in respect of the Northern Gateway Project ("Project").
	<b>Request:</b>	<ul style="list-style-type: none"> <li>(a) Please confirm that the Haisla Nation opposes the approval of Northern Gateway's Application for the Project.</li> <li>(b) If the Haisla Nation opposes the approval of the Application, please advise as to whether there are conditions of approval that would nonetheless address, in whole or in part, the Nation's concerns.</li> <li>(c) If so, please elaborate on the nature of any conditions that the Haisla Nation would suggest be imposed on the Project, should it be approved.</li> <li>(d) Please summarize the effects that the Haisla Nation considers would be created by the Project, should it be approved and constructed. Include both positive and negative effects.</li> <li>(e) Please describe the mitigation measures proposed by the Haisla Nation (if any) to reduce potentially adverse Project effects on the Haisla Nation's rights and interests.</li> </ul>

**RESPONSE:**

- a) *Please confirm that the Haisla Nation opposes the approval of Northern Gateway's Application for the Project.*

The Haisla Nation does not support the approval of Northern Gateway's application for the reasons set out below:

1. Northern Gateway is proposing to site its project in a location that places at risk the ecological integrity of a large portion and significant aspects of Haisla Nation Territory and resources.
2. All three aspects of the proposed project – the pipelines, the marine terminal and tankers - have the potential to impact Haisla Nation lands, waters and resources.
3. Northern Gateway has neither conducted sufficient due diligence nor provided sufficient information with respect to the assessment of a number of critical aspects of the proposed project, including but not limited to project design, impacts, risks, accidents and malfunctions, spill response, potential spill consequences and the extent, degree and duration of any significant adverse environmental effects.
4. There are significant risks of spills of diluted bitumen, synthetic crude, and condensate from corrosion, landslide hazards, seismic events along the pipeline route and at the terminal site; as well as loss of cargo or service fuels from tanker accidents, with no realistic plan provided for spill containment, cleanup, habitat restoration or regeneration of species dependent on the affected habitat.
5. Diluted bitumen, synthetic crude and condensate are all highly toxic to the environment and living systems and the consequences and effects of a spill could be devastating on the resources that support the Haisla Nation way of life, and would therefore have significant adverse effects on Haisla Nation culture and cultural heritage and aboriginal rights.
6. Risk assessments and technology have not overcome the potential for human error, wherein it is well established that 80% of oil tanker accidents that cause oil spills at sea are a result of human errors: badly handled manoeuvres, neglected maintenance, insufficient checking of systems, lack of communication between crew members, fatigue, or an inadequate response to a minor incident causing it to escalate into a major accident often resulting in groundings and collisions (<http://www.black-tides.com/uk/source/oil-tanker-accidents/causes-accidents.php>). It has also become increasingly obvious that maintenance of pipeline integrity and the remote detection of pipeline ruptures is inadequate as exemplified by major environmental damage from recent pipeline ruptures in Michigan and Alberta.

7. The proposed project requires the alienation of Haisla Nation aboriginal title land, and the federal government has refused to engage in consultation with the Haisla Nation about the potential impacts of the proposed project on Haisla Nation aboriginal rights, including aboriginal title.
8. The proposed project would require the use of Haisla Nation aboriginal title land for a purpose that is inconsistent with Haisla Nation stewardship principles and with the Haisla Nation's own aspirations for this land.
9. For the reasons set out above, the proposed project would constitute an unjustified infringement of Haisla Nation aboriginal title and rights. It would therefore be illegal for the Crown to authorize the project.

The Haisla Nation has repeatedly requested early engagement by federal government decision-makers to develop, together with the Haisla Nation, a meaningful process for consultation and accommodation in relation to the proposed project.

The Joint Review Panel process and the federal government's "Aboriginal Consultation Framework" have been imposed on the Haisla Nation and other First Nations, with significant aspects of the concerns expressed by the Haisla Nation about this approach being ignored.

The Haisla Nation continues to seek a commitment from the federal government to the joint development of a meaningful process to assess the proposed project and its potential impacts on Haisla Nation aboriginal rights, including aboriginal title.

Canada is legally required to work with the Haisla Nation to develop and follow such a process. If the process establishes that the approval of the proposed project would constitute an unjustified infringement of Haisla Nation aboriginal rights or aboriginal title, then Canada would be legally obliged to decline approval.

- b) *If the Haisla Nation opposes the approval of the Application, please advise as to whether there are conditions of approval that would nonetheless address, in whole or in part, the Nation's concerns; and*
- c) *If so, please elaborate on the nature of any conditions that the Haisla Nation would suggest be imposed on the Project, should it be approved.*

Given the significant deficiencies in the evidence provided by Northern Gateway to date and the acknowledged risks that have not been adequately addressed in the proposed project, the Haisla Nation does not foresee any conditions that could be attached to the project as currently conceived and presented that would **eliminate** the Haisla Nation's concerns.

Further, the Haisla Nation is of the view that the proposed project cannot be legally approved prior to the Crown discharging its obligation to consult with and accommodate the Haisla Nation on the proposed project. It is premature to delineate conditions until this process has taken place.

Finally, it is difficult for the Haisla Nation to identify conditions to attach to the proposed project as it is still trying to fully understand the potential impacts of the project and the proposed mitigation. This is primarily because there is insufficient information provided by Northern Gateway in its application material. Although we have attempted to elicit additional information through the JRP's information request process, Northern Gateway has not provide adequate and complete answers to the questions posed.

To date the material provided by Northern Gateway does not adequately explain the known risks inherent to the proposed project and lacks significant detail with respect to the extent and degree of potential effects. The material provided by Northern Gateway does not provide sufficient information to determine how the risks inherent to the proposed project will be minimized, nor how the potential for significant adverse effects will be avoided.

There are a number of areas where the Haisla Nation has identified inadequate information, including but not limited to:

- **Design:** there is a lack of information about detailed design considerations and monitoring procedures for pipeline integrity to avoid accidents and malfunctions due to corrosion, seismic events, and terrain instability. A notable example of this problem is in the Kitimat River Valley, where Northern Gateway has identified a high level of risk but has not offered any solutions. Another is the concern about the corrosive nature of the material to be transported. Northern Gateway denies that this is a problem, yet the US Department of Transportation Pipeline and Hazardous Material Safety Administration (PHMSA) has commissioned a major study to investigate the corrosive nature of diluted bitumen in pipelines.
- **Materials to be transported:** there is a lack of information about the fate, behaviour and effects of diluted bitumen, synthetic crude and condensate in the cold water marine and freshwater environment. This concern has

been identified by federal government participants as well as by numerous intervenors, and Northern Gateway has acknowledged the need for more research and information. Yet, Northern Gateway has not agreed to undertake this work so that it is available for review in this process.

- **Volume of material to be transported:** Northern Gateway's application is for a pipeline that will transport 525,000 barrels of diluted bitumen per day. Yet the pipeline will be built to have a capacity of up to 850,000 barrels per day, and Northern Gateway's application materials identifies future phases with increased volumes up to this amount. The risk assessments conducted by Northern Gateway are premised on 525,000 barrels per day, and fail to contemplate higher volumes which would affect a number of matters, including but not limited to: pipeline risk; volume of potential spills; and tanker traffic volume. The risk assessment needs to be revised, to address the risks associated with the pipeline transporting 850,000 barrels of diluted bitumen per day. Without this revision, Northern Gateway is asking the JRP to conduct its assessment on incomplete information that, by definition, understates the true potential risk of the proposed project.
- **Baseline information:** Northern Gateway has not undertaken the studies necessary to generate baseline ecosystem assessments for the Kitimat River drainage and Kitimat Arm, including seasonal habitat utilization by species and life stages throughout the watershed. This information is necessary to determine both stream crossing construction strategy and to assess the potential impacts of a spill, as well as to determine how to respond to a spill and when. A 'one-size fits all' approach to stream crossings during construction and spill response, when adequate information about seasonal habitat utilization by species and life stages throughout the watershed is lacking, is not adequate. This information is needed to determine when construction can proceed and what timeframe limitations there are for activities, to ensure that adverse effects to fish and wildlife are avoided. This information is also required, should a spill occur, to enable a proper assessment of the extent and degree of adverse effects as well as to provide a proper basis for restoration of affected habitat.
- **Past spills:** there is a lack of information about the cause, effects, emerging information and lessons learned as a result of Enbridge's large diluted bitumen spill into the Kalamazoo River. We know that 3,785,400 liters of diluted bitumen were pumped out of the pipeline, with a large portion of that ending up in to the Kalamazoo River. We know the large volume of the spill was the result of numerous attempts to re-pressurize the pipeline despite repeated spill alarms being triggered. We know that

government agencies stepped in to manage the spill because Enbridge's response was not swift enough. We know that Enbridge's clean-up costs to date exceed insurance coverage. We know that two years later Enbridge is still under a clean-up mandate from the US Environmental Protection Agency and the Michigan Department of Environmental Quality, and that portions of the Kalamazoo River are still closed to recreational use. What we do not know, however, is what the cause of the pipeline rupture was, what Enbridge has learned about how diluted bitumen behaves once it is released into the environment, or how a local population that relies on the river for fishing, for traditional harvesting and gathering of foods and medicines would have been affected.

- **Oil spill response:** there is a lack of information about oil spill response and planning, including best practices, best available technology and the local on-site equipment and personnel required full-time to respond properly to a spill. This is largely due to the lack of adequate baseline information on which to base response planning. Further, Northern Gateway has demonstrated an unwillingness to fully consider how spill response would be carried out until it receives a certificate for its project. Yet Northern Gateway seeks to rely on spill response as a mitigation strategy. If Northern Gateway seeks to rely on spill response as a mitigation strategy, it should provide in detail, prior to project approval, what its oil spill response would include and demonstrate that it is logistically, technologically and economically feasible. Northern Gateway has not done this.
- **Mitigation measures:** there is a lack of information about existing proven mitigation measures and their effectiveness in cleaning up an oil spill, restoring habitat and regenerating the species dependent on the affected habitat. This should be evaluated as part of project review, prior to project approval. Where Northern Gateway seeks to rely on a mitigation measure as a basis for project approval, it must demonstrate that the proposed mitigation will actually work.

Avoidance of any significant adverse effects must be the primary goal and dictate the design and location of the proposed project. Mitigation (e.g. complete resolution) of any potential environmental effects should be the preferred option, when all efforts to avoid such effects fail. Compensation for environmental effects must be a last resort and relied on only when best efforts have been made to avoid or mitigate effects. Unfortunately, the material submitted by Northern Gateway suggests that compensation is the primary option and lack of evidence on project design and procedures makes it impossible to evaluate how potential effects could be avoided or mitigated.

For example, Northern Gateway proposes to have spill interception points (river control points) along the Kitimat River Valley as part of its mitigation, but has no realistic plan in place that takes into consideration response delay times, rates of transportation, access issues or baseline ecosystem, fish and wildlife information for the receiving environment.

Nevertheless, if the project were to be approved **AFTER** the Crown meaningfully consulted and accommodated the Haisla Nation with respect to the impacts of the proposed project on its aboriginal title and rights, and if that consultation were meaningful yet did not result in changes to the proposed project, the following conditions would, at a minimum, have to be attached to the project.

**1. Conditions Precedent:** The following conditions precedent should be met prior to any field investigations, pre-construction activities or construction activities as well as during and subsequent to such investigations or activities. These conditions are necessary to ensure that potential effects of the project can be avoided or mitigated to reduce the likelihood of habitat damage or destruction:

- Comprehensive seasonal water quality monitoring throughout the Kitimat River watershed, Kitimat Arm and Douglas Channel that account for seasonal variations in flow, tidal cycles, snowmelt, rainfall, etc. Parameters for measurement would have to be agreed upon by the Haisla Nation prior to certification of the project;
- Comprehensive seasonal fisheries surveys of fish habitat utilization throughout the Kitimat River watershed, Kitimat Arm and Douglas Channel that account for where species and life stages are at different times of the year and accurately define sensitive habitats;
- Comprehensive seasonal wildlife and bird surveys of habitat utilization throughout the Kitimat River watershed, Kitimat Arm and Douglas Channel that account for where species and life stages are at different times of the year and accurately define sensitive habitats;
- Comprehensive seasonal vegetation surveys of habitat utilization throughout the Kitimat River watershed, Kitimat Arm and Douglas Channel that accounts for the distribution of species and life stages at different times of the year and accurately define sensitive habitats;
- Development of comprehensive spill response capability based on a realistic assessment of spill containment, spill response and spill capacity requirements throughout the Kitimat River Valley, Kitimat Arm and Douglas Channel. The Haisla Nation's past experience has shown that relying on

promises is not good enough. This spill response capability must be demonstrated prior to project approval;

- Verification that the proposed project would result in real benefits, economic or otherwise, that would flow to the Haisla Nation, to other First Nations, and to British Columbia.

Whenever any field investigations or activities are proposed, the proposal or permit application would have to include the following environmental protections:

- Soil and erosion control plans;
- Surface water management and treatment plans;
- Groundwater monitoring plans;
- Control and storage plans for fuels, lubricants and other potential contaminants;
- Equipment deployment, access and use plans;
- Habitat reclamation of disturbed or cleared areas.

Prior to any pre-construction or construction activities the following detailed studies would have to be undertaken and provided to the Haisla Nation for review and approval, to ensure that the best design and construction approaches are being used, so that potential effects of the project can be avoided or mitigated to reduce the likelihood of habitat damage or destruction:

- Detailed analysis of terrain stability and slide potential throughout the pipeline corridor and at the storage tank and terminal site;
- Detailed engineering design to mitigate seismic risk and local weather extremes;
- Development of pipeline integrity specifications and procedures including best practices for leak detection;
- Development of storage tank integrity specifications and maintenance and monitoring procedures;
- Assessment of spill containment, spill response and spill capacity requirements throughout the Kitimat River watershed, Kitimat Arm and Douglas Channel;



- Development of detailed tanker acceptance program specifications and procedures;
- Development of detailed tanker and tug traffic management specifications and procedures;
- Development of detailed port management specifications and procedures including operating limits for tanker operation, movement and docking.

**2. Ongoing Consultation:** A commitment to ongoing consultation with and accommodation of the Haisla Nation on all of the activities set out above.

**3. Ongoing process for variance, waiver or discharge of conditions:** A commitment to ongoing meaningful involvement of the Haisla Nation by the National Energy Board prior to any decision on any changes to or sign off on conditions and commitments to any certificate that is issued.

**4. Third Party Oversight of Construction:** A requirement that Northern Gateway fund a third party oversight committee, which should include a Haisla Nation representative, to monitor certificate compliance during construction of the marine terminal and the pipeline. This committee would have the ability to monitor and inspect construction and should be provided with copies of all compliance documents submitted by Northern Gateway to the National Energy Board.

**5. Operational Conditions:** A number of operational conditions should be incorporated into the certificate, including but not limited to:

- The requirement to monitor terrain along the pipeline so that breaches based on earth movements can be anticipated and prevented;
- The requirement to implement automatic pipeline shutdown whenever a leak detection alarm occurs;
- Conditions on the disposal of any contamination that must be removed as a result of an accident or malfunction resulting in a spill that will minimize additional habitat destruction and maximize the potential for regeneration of habitat and resources damaged by the spill;
- Parameters for terminal and tanker operations (including standards for tankers allowed to transport cargo; tanker inspection requirements and schedules; escort tug specifications, standards, maintenance and inspection; pilotage protocols and procedures; environmental conditions and operating limits; etc.) as well as other parameters set out in and relied

on for the TERMPOL review to become conditions of any certificate issued by the National Energy Board, with a provision that the Haisla Nation's approval of any changes to these conditions is required.

For additional response, see Response 1.1e), below.

- d) *Please summarize the effects that the Haisla Nation considers would be created by the Project, should it be approved and constructed. Include both positive and negative effects.*

## **1. Physical and Jurisdictional Impacts**

### **1.1 Construction**

The Haisla Nation is concerned about the direct physical and jurisdictional impacts that the construction of the proposed project will have. These concerns are set out for each of the marine terminal, the pipeline, and tanker traffic, below:

#### Marine Terminal:

- a. The proposed marine terminal will require the alienation of 220-275 hectares (554-680 acres) of land from Haisla Nation Territory, land to which the Haisla Nation claims aboriginal title.
- b. The terminal will require the additional alienation of land for ancillary infrastructure and development, including:
  - i. road upgrades,
  - ii. perimeter access roads and roads within the terminal area,
  - iii. a potential public bypass road,
  - iv. an impoundment reservoir,
  - v. a disposal site for excess cut material outside the terminal area,
  - vi. a new 10km long transmission powerline, and
  - vii. a 100-m waterlot with a 150-m "safety zone".
- c. The terminal proposes to use Haisla Nation aboriginal title land, including foreshore and waters, in a way that is inconsistent with Haisla Nation stewardship of its lands, waters and resources and with the Haisla Nation's own aspirations for the use of this land. Since aboriginal title is a constitutionally protected right to use the

aboriginal title land for the purposes the Haisla Nation sees fit, this adverse use would fundamentally infringe the aboriginal title of the Haisla Nation.

- d. The terminal will require the destruction and removal of documented culturally modified trees, some with modifications dating back to 1754. These culturally modified trees are living monuments to the history of the Haisla people.
- e. The terminal will expose two Haisla Nation cultural heritage sites to increased risk of vandalism and chemical weathering.
- f. The terminal will result in the direct loss of 4.85 hectares (11.98 acres) of freshwater fish habitat (harmful alteration, disruption or destruction (HADD) under the *Fisheries Act*).
- g. The terminal will require dredging, underwater blasting, and placement of piles and berthing foundations, resulting in an as yet un-quantified loss of intertidal and subtidal marine habitat.

Pipeline:

- a. The proposed pipeline construction right-of-way will require the alienation of 9,200 hectares (22,734 acres) of Haisla Nation Territory - land to which the Haisla Nation claims aboriginal title - and will put this land to a use that is inconsistent with Haisla Nation stewardship of its lands, waters and resources and with the Haisla Nation's own aspirations for the use of this land.
- b. The pipeline will require 127 watercourse crossings in Haisla Nation Territory. Seven of these are categorized as high risk, 5 as medium high risk, and 7 are medium or medium low risk for harmful alternation, disruption or destruction (HADD) of fish habitat. This risk is just from pipeline construction and does not address the issue of spills.
- c. The pipeline is estimated to result in temporary or permanent destruction of freshwater fish habitat of 3.1 hectares (7.68 acres) in Haisla Nation Territory.
- d. The pipeline will require the clearing of land and vegetation and the destruction of wetlands. The extent of this is yet to be quantified.

Tanker Traffic:

- a. Although Northern Gateway has not made any submission on this point, it is clear that having adequate spill response capability at

Kitimat will require additional infrastructure upgrades in and around Kitimat, as well as potential spill response equipment cache sites. None of this has been considered or addressed in Northern Gateway's application material – as such the material is incomplete.

- b. The construction for this additional infrastructure could result impacts to ecosystems, plants, wildlife and fish, and in additional HADD or fish mortality from accidents.

All of the land alienations required for the proposed project would profoundly infringe Haisla Nation aboriginal title which is, in effect, a constitutionally protected ownership right. The proposed project would use Haisla Nation aboriginal title land in a way that is inconsistent with Haisla Nation stewardship of its lands, waters and resources and with the Haisla Nation's own aspirations for the use of this land. Since aboriginal title is a constitutionally protected right to use the aboriginal title land for the purposes the Haisla Nation sees fit, this adverse use would fundamentally infringe the aboriginal title of the Haisla Nation.

The Haisla Nation is also concerned about the socio-economic and health impacts of the proposed project. Northern Gateway has yet to file its Human Health and Ecological Risk Assessment. Further, the socio-economic impact analysis submitted as part of the application provides only a limited assessment of the potential impacts of the project on the Haisla Nation at a socio-economic level.

Haisla Nation society and economy must be understood within the cultural context of a people who have lived off the lands, waters and resources of their Territory since long before European arrival. To limit a socio-economic impact assessment to direct impacts and to ignore consequential impacts flowing from those impacts fails to capture the potential impacts of the proposed project on the Haisla Nation at a socio-economic level.

## **1.2 Operation**

The proposed marine terminal, pipeline corridor and shipping lanes will be located in highly sensitive habitats for fish, wildlife and plants. Any accident of malfunction at the wrong time in the wrong place can be devastating ecologically. The Haisla Nation has identified the following concerns relating to physical impacts from the operation of the proposed project:

### Marine Terminal:

- a. Intertidal and subtidal marine habitat impacts as a result of marine vessels.

- b. The likelihood of spills from the marine terminal as a result of operational mistakes or geohazards.
- c. The effects and consequences of a spill from the marine terminal. This includes impacts on the terrestrial and intertidal and subtidal marine environment and fish, marine mammals, birds, and other wildlife, as well as impacts on Haisla Nation culture and cultural heritage that could result from such impacts.
- d. Response to a spill from the marine terminal, including concerns about spill response knowledge, planning and capability, as well as impacts flowing from response measures themselves.

Pipeline:

- a. The likelihood of spills from the pipeline as a result of pipeline failure, resulting from inherent pipeline integrity issues or external risks to pipeline integrity, such as geohazards.
- b. The effects and consequences of a spill from the pipelines. This includes impacts on the terrestrial environment and freshwater environment, and on plants, fish, birds, and other wildlife, as well as impacts on Haisla Nation culture and cultural heritage that could result from such impacts.
- c. Response to a spill from the pipelines, including concerns about spill response knowledge, planning and capability, as well as impacts flowing from response measures themselves.

Tanker Traffic:

- a. Increased vessel traffic in waters used by Haisla Nation members for commercial fishing and for traditional fishing, hunting and food gathering.
- b. The likelihood of spills, including condensate, diluted bitumen, synthetic crude, and bunker C fuel and other service fuels, from the tankers at sea and at the marine terminal.
- c. The effects and consequences of a spill. This includes impacts on the marine environment and fish, marine mammals, birds, and other wildlife, as well as impacts on Haisla Nation culture and cultural heritage that could result from such impacts.
- d. Response to a spill, including concerns about spill response knowledge, planning and capability, as well as impacts flowing from response measures themselves.
- e. Potential releases of bilge water, with concerns about oily product and foreign organisms.

These issues are important. They go to the very heart of Haisla Nation culture. They go to the Haisla Nation relationship with the lands, waters, and resources of its Territory. A major spill from the pipeline at the marine terminal or from a tanker threatens to sever us from or damage our lifestyle built on harvesting and gathering seafood and resources throughout our Territory.

Northern Gateway proposes a pipeline across numerous tributaries to the Kitimat River. A spill into these watercourses is likely to eventually occur. The evidence before the Panel shows that pipeline leaks or spills occur with depressing regularity.

One of Enbridge's own experiences, when it dumped 3,785,400 liters of diluted bitumen into the Kalamazoo River, shows that the concern of a spill is real and not hypothetical. A thorough understanding of this incident is critical to the current environmental assessment since diluted bitumen is what Northern Gateway proposes to transport. However, nothing was provided in the application materials to address the scope of impact, the level of effort required for cleanup and the prolonged effort required to restore the river. An analysis of this incident would provide a basis for determining what should be in place to maintain pipeline integrity as well as what should be in place locally to respond to any spill.

The Kalamazoo spill was aggravated by an inability to detect the spill, by an inability to respond quickly and effectively, and by an inability to predict the fate of the diluted bitumen in the environment. As a result, the Kalamazoo River has suffered significant environmental damage. The long-term cumulative environmental damage from this spill is yet to be determined.

Further, the Haisla Nation is also concerned about health impacts of the proposed project and awaits the Human Health and Ecological Risk Assessment which Northern Gateway has promised to provide.

### **1.3 Decommissioning**

Northern Gateway has not provided information on decommissioning that is detailed enough to allow the Haisla Nation to set out all its concerns about the potential impacts from decommissioning at this point in time. This is not good enough. The Haisla Nation needs to know how Northern Gateway proposes to undertake decommissioning, what the impacts will be, and that there will be financial security in place to ensure this is done properly.

## **2. Lack of Consultation**

Broadly, the Haisla Nation has concerns about all three physical aspects of the proposed project – the pipeline, the marine terminal and tanker traffic – during all three phases of the project – construction, operation and decommissioning.

These concerns have not been captured or addressed by Northern Gateway's proposed mitigation. The Haisla Nation acknowledges that a number of these concerns can only be addressed through meaningful consultation with the Crown. The Haisla Nation has therefore repeatedly asked federal decision-makers to commit to the joint development of a meaningful consultation process with the Haisla Nation. The federal Crown decision-makers have made it very clear that they have no intention of meeting with the Haisla Nation until the Joint Review Panel's review of the proposed project is complete.

The federal Crown has also stated that it is relying on consultation by Northern Gateway to the extent possible. The federal Crown has failed to provide any clarity, however, about what procedural aspects of consultation it has delegated to Northern Gateway. Northern Gateway has not consulted with the Haisla Nation and has not advised the Haisla Nation that Canada has delegated any aspects of the consultation process.

The Haisla Nation asserts aboriginal title to its Territory. Since the essence of aboriginal title is the right of the aboriginal title holder to use land according to its own discretion, Haisla Nation aboriginal title entails a constitutionally protected ability of the Haisla Nation to make decisions concerning land and resource use within Haisla Nation Territory. Any government decision concerning lands, waters, and resource use within Haisla Nation Territory that conflicts with a Haisla lands, waters or resources use decision is only valid to the extent that the government can justify this infringement of Haisla Nation aboriginal title.

The Supreme Court of Canada has established that infringements of aboriginal title can only be justified if there has been, in the case of relatively minor infringements, consultation with the First Nation. Most infringements will require something much deeper than consultation if the infringement is to be justified. The Supreme Court has noted that in certain circumstances the consent of the aboriginal nation may be required. Further, compensation will ordinarily be required if an infringement of aboriginal title is to be justified [*Delgamuukw*].

The Haisla Nation has a chosen use for the proposed terminal site. This land was selected in the Haisla Nation's treaty land offer submitted to British Columbia and Canada in 2005, as part of the BC Treaty Negotiation process, as lands earmarked for Haisla Nation economic development.

The Haisla Nation has had discussions with the provincial Crown seeking to acquire these lands for economic development purposes for a liquefied natural gas project. The Haisla Nation has had discussions with potential partners about locating a liquefied natural gas facility on the site that Northern Gateway proposes to acquire for the marine terminal. The Haisla Nation sees these lands as appropriate for a liquefied natural gas project as such a project is not nearly as detrimental to the environment as a diluted bitumen export project. This use,

therefore, is far more compatible with Haisla Nation stewardship of its lands, waters and resources.

By proposing to use Haisla Nation aboriginal title land in a manner that is inconsistent with Haisla Nation stewardship of its lands, waters and resources, and that interferes with the Haisla Nation's own proposed reasonable economic development aspirations for the land, the proposed project would result in a fundamental breach of the Haisla Nation's constitutionally protected aboriginal title.

Similarly, Haisla Nation aboriginal rights are constitutionally protected rights to engage in certain activities (e.g. hunting, fishing, gathering) within Haisla Nation Territory. Government decisions that infringe Haisla Nation aboriginal rights will be illegal unless the Crown can meet the stringent test for justifying an infringement.

The Haisla Nation does not associate any positive effects with the proposed project at this point in time. The concerns associated with a potential spill and the devastating impacts that such a spill could have on Haisla Nation way of life, culture and cultural heritage, and aboriginal rights and title raise the concern that participating in the proposed project at any level would make the Haisla Nation complicit in the creation of an unacceptable risk to its land, waters and resources.

e) *Please describe the mitigation measures proposed by the Haisla Nation (if any) to reduce potentially adverse Project effects on the Haisla Nation's rights and interests.*

The Haisla Nation is of the view that the information on the record is inadequate (as set out in detail above) to identify suitable mitigation measures to address Haisla Nation concerns with the proposed project. Northern Gateway has declined to undertake or commission sufficient work on a range of topics to allow for the determination of the scope and nature of the risks associated with its proposal. Neither has Northern Gateway undertaken work of an appropriate quality and nature to identify the options for mitigation or the possible efficacy of these measures:

- **Design:** there is a lack of information about detailed design considerations and monitoring procedures for pipeline integrity to avoid accidents and malfunctions due to corrosion, seismic events, terrain instability, etc.
- **Materials to be transported:** there is a lack of information about the fate, behaviour and effects of diluted bitumen, synthetic crude and condensate in the cold water marine and freshwater environment.



- **Baseline information:** there is a lack of baseline ecosystem assessments for the Kitimat River drainage and Kitimat Arm including seasonal habitat utilization by species and life stage throughout the watershed.
- **Past spills:** there is a lack of information about the cause, effects, emerging information and lessons learned as a result of Enbridge's large diluted bitumen spill into the Kalamazoo River, as well as its recent pump station failure that resulted in a spill.
- **Oil spill response:** there is a lack of information about oil spill response and planning, including best practices, best available technology and the local on-site equipment and personnel required full-time to respond properly to a spill.
- **Mitigation measures:** there is a lack of information about existing proven mitigation measures and their effectiveness in restoring habitat and regenerating the species dependent on the affected habitat, and in cleaning up a spill.

The impacts of the proposed project on Haisla Nation aboriginal title and rights could be mitigated by Northern Gateway taking the following steps:

1. Locating the project entirely outside Haisla Nation Territory. Northern Gateway has gone on the record as considering terminal sites outside Haisla Nation Territory. This would allow the pipeline, terminal and marine shipping route to be entirely outside of Haisla Nation Territory.
2. Changing the project so that it will transport a less persistent and toxic product, such as natural gas, and involve the Haisla Nation meaningfully at an economic and project planning level, and in a consultation and accommodation process. We understand that Enbridge has expressed an interest in developing natural gas pipelines.

The Haisla Nation has lived along the shores of the Kitimat River, Kitimat Arm and Douglas Channel since long before European settlers arrived in the area. This is the home of the Haisla Nation and the Haisla Nation must protect it. The Haisla Nation has, unfortunately, learned the hard way through its first-hand experience with industrial development to be wary of promises and to demand accountability and proof. The Haisla Nation has serious concerns about the level of due diligence conducted by Northern Gateway to date with respect to pipeline risk, fate and effects of diluted bitumen and condensate in the environment, and spill response capability.

The Haisla Nation is concerned that the effects of a spill from the proposed pipeline, marine terminal or tankers could have long lasting effects with devastating impacts on Haisla Nation cultural heritage. This concern is not academic. Material filed with the Panel has shown that there is a real likelihood of spills, that Northern Gateway proposes to transport toxic materials, and that effective clean-up of these materials if spilled is impossible.

The Haisla Nation is governed by its *nuyem* (traditional law) and passes this on through *nusa*, teaching by showing and doing. Older generations teach the younger generations about who the Haisla people are and why the Haisla people do things the way they do, through the hands-on teachings that take place during resource harvesting and processing. The Haisla language is also shared during this process.

A spill that disrupts traditional resource harvesting or processing will interrupt the cultural transmission of Haisla identity. This in turn will detrimentally impact the cultural heritage of the Haisla Nation.

The Haisla Nation does not believe that the adverse environmental effects or the impacts on Haisla Nation aboriginal rights and title flowing from the project as proposed can be mitigated. The Haisla Nation views the risks associated with the proposed project as inconsistent with Haisla Nation stewardship principles and the Haisla Nation's own aspirations for the use of its lands, waters and resources. As such, even with all of the mitigation steps proposed by Northern Gateway in place, the project would still constitute an unjustified infringement of Haisla Nation aboriginal title.

Significant additional due diligence work must be completed, **prior to seeking project approval**. It is only by conducting this additional due diligence now, prior to project approval, that the parties most likely to be affected by an accident or malfunction of the project will have meaningful input into the development of the safest project possible. This due diligence should include:

- **Design:** More comprehensive design planning and detail relating to pipeline route selection to avoid geohazards, pipeline design to avoid integrity issues as a result of accidents and malfunctions due to corrosion, seismic events, terrain instability, etc., pipeline monitoring procedures, and marine terminal design.
- **Materials to be transported:** Additional research and information about the fate, behaviour and effects of diluted bitumen, synthetic crude and condensate in the cold water marine and freshwater environment.

- **Baseline information:** Comprehensive baseline ecosystem assessments for the Kitimat River drainage and Kitimat Arm including seasonal habitat utilization by species and life stage throughout the watershed.
- **Past spills:** A full assessment of the cause, effects, spill response and clean-up success associated with Enbridge's large diluted bitumen spills – e.g. into the Kalamazoo River.
- **Oil spill response:** Additional detailed oil spill response planning based on the project environment, including best practices, best available technology and the local on-site equipment and personnel required full-time to respond properly to a spill.
- **Mitigation measures:** Details about the proven effectiveness of the proposed mitigation measures in restoring habitat and regenerating the species dependent on the affected habitat, and in cleaning up a spill.

After this additional due diligence has been completed, the Haisla Nation will consider the proposed mitigation measures that are based on this additional due diligence work, along with the following additional measures:

1. Commitments to a level of accountability for construction, maintenance and operation of the proposed project that is open, transparent, and subject to review and oversight of an independent committee. These commitments should be enforceable through conditions which are part and parcel of any certificate issued by the National Energy Board, and which include specific enforcement and certificate cancellation provisions.
2. The creation, funding and maintenance for the life of the project, including decommissioning and rehabilitation, a fully secured (through an irrevocable letter of credit or similar instrument) oil spill response and clean-up endowment fund in an amount to be determined with the Haisla Nation.
3. The establishment of a regulatory framework that requires the creation, funding and maintenance for the life of the project and through decommissioning, a fully operational, staffed, trained and technologically up to date spill response organization based in Kitimat, with the full participation of the Haisla Nation. This response organization should have at hand the people, equipment and material to respond quickly to spills of all sizes and at all locations. Sufficient inventories of equipment and material would have to be on hand and stored throughout the Kitimat River Valley, Kitimat Arm and Douglas Channel to allow for rapid deployment in order to cope with any size of spill. In addition, sufficient numbers of well-

- trained personnel would have to be maintained locally to ensure that the time to respond to any spill and the potential damage was at least minimized. Detailed procedures for emergency response and schedules for training exercises should be included in the review.
4. A requirement that the project obtain and maintain stand-alone insurance coverage for the project that will cover all the effects of an accident or malfunction, including losses of a cultural nature that are difficult to quantify or that do not come with “proof” of economic loss. If third party insurers will not cover these potential losses, Northern Gateway Pipelines Inc. should provide proof of funds in reserve or as a trust to cover such losses.
  5. A commitment to apply the following design parameters for the marine terminal (above and beyond what Northern Gateway has already proposed):
    - conduct comprehensive baseline studies of water quality and marine (including benthic) species distribution at the marine terminal and reassess terminal design and location once this has been completed;
    - plan for a seismic event using appropriate risk levels and design criteria;
    - increase the tank impoundment capacity to hold the volume of a simultaneous leak from all 14 tanks;
    - avoid the proposed HADD, instead of destroying two fish-bearing streams and compensating by creating habitat in another location.
  6. A commitment to apply the following design parameters for the pipeline (above and beyond what Northern Gateway has already proposed):
    - route the pipeline to avoid all geohazards;
    - plan for a seismic event using appropriate risk levels and design criteria;
    - develop a valve placement strategy for the Kitimat River Valley that prevents a detrimental release of oil into the Kitimat River or its tributaries;
    - limit construction at watercourses to least-risk periods (LRPs) instead of resorting to habitat compensation for mitigation;
    - amend the 10-minute 3-minute rule to be a rule for automatic shutdown in the event of a leak detection alarm, with startup not permitted until the

- absence of a leak has been confirmed. Note that this procedure, had it been in place, would have dramatically reduced Enbridge's spill into the Kalamazoo River in 2010;
- commit to a comprehensive program of live monitoring (in conjunction with using remote technology) as an acknowledgement that most pipeline leaks are identified through third party reports of odor or visual detection of spills (rather than through remote technology);
  - conduct comprehensive planning for river control points in the Kitimat River Valley that take into consideration terrain and climatic conditions and that increases the number of river control points and provides them at critical junctures. The current approach is unrealistic and would be ineffective in terms of containing a spill due to travel times and river flow rates.
7. A commitment to apply the following operating parameters for tankers (above and beyond what Northern Gateway has already proposed, and in addition to recommendations set out in **Attachment 6 to JRP IR No 1.1**):
- set strict environmental operating conditions and limits, including conditions under which tankers are not allowed to berth, leave the berth, enter into or move through the Confined Channel Area and the Open Water Area;
  - commit to funding the establishment and maintenance of an independent port traffic control authority, and require mandatory compliance of all vessels with the port traffic control authority, with a consequential loss of berthing privilege of both the vessel and any other vessels owned by the same owner or company upon non-compliance;
  - agree to Haisla Nation participation in the administration of the Tanker Acceptance Program.

Northern Gateway's response to JRP IR 10 refers to fish habitat compensation being undertaken on the Kitimat River by Kitimat LNG as mitigation that Northern Gateway would be willing to undertake as part of its fish habitat compensation planning, as well as to mitigation measures identified for the Kitimat-Summit Lake ("KSL") Pipeline Looping Project as suitable for the Northern Gateway project.

It is important to distinguish between the KSL Pipeline Looping and the Kitimat LNG projects and the proposed Northern Gateway Pipeline project.

Firstly, both the KSL Pipeline Looping Project and the Kitimat LNG Project are natural gas projects. They do not entail transporting diluted bitumen, synthetic crude or condensate along a corridor that parallels the Kitimat River. If there is an accident or malfunction resulting in a spill, the natural gas will eventually dissipate into the air. It will not foul the land and waters of Haisla Nation Territory and disrupt critical ecosystems and fish and wildlife life cycles. The KSL Pipeline Looping Project and the Kitimat LNG Project do not have the potential to dump millions of liters of diluted bitumen, synthetic crude or condensate - sticky, toxic and carcinogenic products - into the Kitimat River.

Secondly, the KSL Pipeline Looping Project is a pipeline which will facilitate a project, the Kitimat LNG Project, which has and will continue to provide lasting and significant financial benefit to the Haisla Nation. The Haisla Nation considered the full nature of these projects and approved this use of Haisla Nation Territory land for these projects through a series of community votes.

As a result, mitigation measures which may address Haisla Nation concerns in the context of the KSL Pipeline Looping Project and the Kitimat LNG Project do not address Haisla Nation concerns in the context of the proposed Northern Gateway Pipeline project. The risks associated with the proposed project include a significant risk to the ecological integrity of the Kitimat River. The Haisla Nation has been working to restore fish habitat along the Kitimat River and conceptually, habitat compensation in the Kitimat River would assist in this work. Exposing the Kitimat River to a new risk for the proposed project does not make sense, given the significant rehabilitation work the Haisla Nation is engaged in.

For additional information about the Haisla Nation's concerns with the proposed project, please refer to the Haisla Nation Response to JRP IR No. 1, filed on June 21, 2012.

**REQUEST 1.2:**

<b>Position Regarding Programs Proposed by Northern Gateway</b>		
<b>1.2</b>	<b>Reference:</b>	(i) Application, Volume 6B, Section 13 (A1T0G5); Application, Volume 8B, Section 13.8.4.1 (A1T0I6 and A1T0I5); Northern Gateway's response to Coastal FN IR 1.35 (A2E4Q5); Northern Gateway's response to JRP IR 8.11 (A2I9I8). (ii) Application, Volume 8B, Section 13.8.4.2 (A1T0I6). (iii) Northern Gateway's response to Federal Government IR 1.79 (A2E8J0); Northern Gateway's response to Federal Government IR 2.66 (A2I9D0); Attachment 1 to Federal Government IR 2.66: Framework for the Marine Environmental Effects Monitoring Program (November 2011) (A2I9G6); Northern Gateway's response to Haisla Nation IR 1.59(e) and 1.70(a) (A2E8Y0).

	<b>Preamble:</b>	<p>(iv) Northern Gateway Response to Coastal FN IR No. 1.23 (A2E4Q5). (v) Application, Volume 8C, Section 9.3.4 (A1T0J1). (vi) Northern Gateway Response to JRP IR 6.1(d) (A2E7Q4). (vii) Application, Volume 7C, Section 8.5.3 (A1T0H2).</p> <p>Reference (i) describes the Fisheries Liaison Committee ("FLC") proposed by Northern Gateway.</p> <p>Reference (ii) addresses food, social and ceremonial ("FSC") fishing and states that "Northern Gateway will explore opportunities with coastal Aboriginal communities potentially affected by project-related marine transportation to document existing use (i.e., important species, locations and seasons of harvesting)."</p> <p>Reference (iii) describes Northern Gateway's commitment to develop and implement a Marine Environmental Effects Monitoring Program ("EEMP") for the marine terminal and marine transportation and provides a draft Framework for the Marine EEMP.</p> <p>Reference (iv) states: "Northern Gateway recognizes the importance in augmenting sensitivity maps with site-specific and general traditional and ecological knowledge ("TEK"). Subject to Project approval and prior to the Project operations, information available to Northern Gateway relating to Traditional Land Use ("TLU"), native food fishery, resource harvesting activity and heritage sites would be included in sensitivity maps and be subject to ground-truthing where appropriate."</p> <p>Reference (iv) describes mitigation measures to be used in the unlikely event of a hydrocarbon release and states: "For traditional marine uses in particular, Northern Gateway would work to ensure that the protection of culturally and environmentally sensitive sites was given high priority. Pre-identification of such sites through Geographic Response Plans prepared in conjunction with participating Aboriginal groups would be important for achieving that objective."</p> <p>Reference (vi) states: "Northern Gateway has discussed with Environment Canada the concept of third party scientific research being led through a new Marine Research Chair that would be established through an academic institution in British Columbia. The focus of the Marine Research Chair would be to establish baseline information and conduct research into the potential cumulative effects of the multiple projects that are being proposed in the Port of Kitimat."</p>
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	<p><b>Request:</b></p>	<p>Reference (vii) states: "Northern Gateway has offered opportunities for coastal Aboriginal communities and organizations to become directly involved in the RO [Response Organizations] for the Project."</p> <p>(a) Is the Haisla Nation prepared to participate in the FLC, should the Project be approved?</p> <p>(b) Is the Haisla Nation prepared to participate in a program designed to collect and record FSC fishing and other harvesting data, as proposed by Northern Gateway, should the Project be approved?</p> <p>(c) Is the Haisla Nation prepared to participate in the design and implementation of a Marine EEMP, as proposed by Northern Gateway, should the Project be approved?</p> <p>(d) Is the Haisla Nation prepared to participate in the ground-truthing of coastal sensitivity atlases, as proposed by Northern Gateway, should the Project be approved?</p> <p>(e) Is the Haisla Nation prepared to participate in the preparation of Geographic Response Plans, as proposed by Northern Gateway, should the Project be approved?</p> <p>(f) Is the Haisla Nation prepared to participate in discussions regarding the creation of a Marine Research chair in environmental planning, as proposed by Northern Gateway, should the Project be approved?</p> <p>(g) Is the Haisla Nation prepared to participate in marine oil spill training exercises to be conducted prior to commencement of operations, as proposed by Northern Gateway, should the Project be approved?</p> <p>(h) Is the Haisla Nation prepared to engage in good faith discussions regarding procurement and employment opportunities associated with the Project (including marine services such as whale spotting vessels operation, tugboat operations, etc.) should the Project be approved?</p> <p>(i) Is the Haisla Nation prepared to participate in the development of a framework for responding to social and cultural disruption, as part of marine emergency response planning?</p>
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## **RESPONSE:**

### **General Response**

The government cannot lawfully approve the proposed project without first consulting with and accommodating the Haisla Nation in relation to the impacts and effects of the proposed project.

For the reasons set out in the Response to IR No. 1.1, it is not possible at this time to adequately understand the breadth and depth of those impacts and effects. The measures identified in the preamble to this information request all relate to steps proposed to be taken by Northern Gateway **after** project approval. Much of the information sought to be identified through these programs is information which should be acquired **prior** to project approval, as it is critical to determining whether the project should be approved.

Northern Gateway's approach to sensitivity mapping is backwards. Northern Gateway intends to incorporate site-specific and general traditional and ecological knowledge ("TEK") into its sensitivity mapping **after** project approval. This information is **required prior** to project review.

Similarly, Northern Gateway states that pre-identification of culturally and environmentally sensitive sites will be a priority after project approval so they can be accounted for in geographic response plans.

This information should be included in the current mapping on which Northern Gateway has based its application, so that the potential impacts from the proposed project can be properly assessed. It is critical that this information be considered prior to project approval. Without this, it is not possible to reach proper decisions about project location or accurate conclusions about the potential impacts of the project on the exercise of Haisla Nation aboriginal rights.

Some of the terminology used by Northern Gateway in the context of the proposed programs delineated above displays a lack of understanding of the nature and scope of Haisla Nation rights that the proposed project will affect.

Firstly, the reliance on a Fisheries Liaison Committee to mitigate conflicts between tankers and use of water based transportation for traditional fishing, hunting, and harvesting demonstrates a lack of understanding about how and when these activities are carried out. Haisla Nation members fish year round, when the species are available. The seasonal nature of the Haisla fisheries is set out in the Affidavit of Michael E. Jacobs (A2K0W9). These practices are not limited to defined times in the way commercial fishery openings are.

Northern Gateway refers to the "native food fishery", again minimizing the scope and importance of Haisla Nation constitutionally protected rights. Fish, shellfish, sea mammals, sea birds and other seafood are integral to who the Haisla people

are. These are not just “native foods”, they are central to Haisla Nation culture and cultural heritage. They are the foundation for traditions, trade and commerce.

Some aspects of Northern Gateway’s proposed programs may appear to be beneficial, but the Haisla Nation questions whether they can achieve what Northern Gateway suggests they will. A Fisheries Liaison Committee must have an actual ability to influence tanker traffic scheduling, if it is to hold out any real hope of ensuring uninterrupted access to fisheries. Is Northern Gateway proposing this role for the Fisheries Liaison Committee?

Northern Gateway’s proposed documentation of FSC and other harvest data appears to be aimed at creating a record of what would have to be replaced or compensated for in the event of a spill that prevents ongoing harvest. This demonstrates a poor understanding of the role that traditional harvesting plays in Haisla Nation culture. The very absence of the ability to engage in the harvesting and processing of traditional foods would have devastating negative impacts on Haisla Nation culture and cultural heritage, and Haisla Nation aboriginal rights.

Finally, Northern Gateway refers to the “unlikely event of a hydrocarbon release”. Northern Gateway’s insistence on treating spills as a rare occurrence is misleading, given the chronic spills associated with the pipeline industry. Northern Gateway’s approach to spill response planning is inadequate and reflects this continuing denial of the need to have a clear understanding of whether a spill can be effectively responded to, and if so, how.

The impacts of the terrain of the Kitimat River Valley and the climatic and environmental conditions in the Kitimat River Valley and in Douglas Channel on Northern Gateway’s ability to respond to a spill should have been considered at the project conception stage. Instead, Northern Gateway is proposing to not develop detailed response plans until after project approval. This approach appears to be designed to avoid having a full debate at the project review stage about the effectiveness of spill response to mitigate the impacts of a spill. Deferring proper spill response planning until after project approval allows Northern Gateway to rely on what may well prove to be fictional mitigation measures to obtain project approval.

Northern Gateway’s proposed programs seem designed to create an appearance that the Haisla Nation’s concerns relating to the proposed project’s impacts on the marine environment are being addressed, when, in fact, they are not.

If the project were to be approved, the Haisla Nation would take whatever steps are necessary to seek to safeguard its lands, waters and resources, and the ability of its members to continue to engage in fishing, hunting, and gathering for food, social and ceremonial purposes, and to use and enjoy Haisla Nation

Territory. The Haisla Nation would continue to take whatever steps are necessary to safeguard its aboriginal title.

Where the Haisla Nation is of the view that participating in proposed programs will be beneficial to and consistent with its stewardship of its lands, waters and resources, it will do so. The Haisla Nation will expect Northern Gateway to fully fund these programs, and to cover the Haisla Nation's costs of participating in these programs.

a) *Is the Haisla Nation prepared to participate in the FLC, should the Project be approved?*

Yes, provided the FLC has a real and effective role in reducing impacts, and provided Northern Gateway will provide funding to offset the Haisla Nation's full costs of participating.

b) *Is the Haisla Nation prepared to participate in a program designed to collect and record FSC fishing and other harvesting data, as proposed by Northern Gateway, should the Project be approved?*

Please refer to general response above.

c) *Is the Haisla Nation prepared to participate in the design and implementation of a Marine EEMP, as proposed by Northern Gateway, should the Project be approved?*

Yes, provided Northern Gateway will provide funding to offset the Haisla Nation's full costs of participating.

d) *Is the Haisla Nation prepared to participate in the ground-truthing of coastal sensitivity atlases, as proposed by Northern Gateway, should the Project be approved?*

This work should be done now, during project review, so potential impacts can be fully considered prior to project approval.

e) *Is the Haisla Nation prepared to participate in the preparation of Geographic Response Plans, as proposed by Northern Gateway, should the Project be approved?*

Detailed spill response planning should be done now, during project review, so its potential effectiveness can be considered prior to project approval.

f) *Is the Haisla Nation prepared to participate in discussions regarding the creation of a Marine Research chair in environmental planning, as*

*proposed by Northern Gateway, should the Project be approved?*

A marine research chair in environmental planning is a good idea, and the Haisla Nation supports the idea of marine planning, including marine environmental planning.

The Haisla Nation has been undertaking its own marine planning initiative for Haisla Nation Territory. In addition, Haisla Nation Territory is included in the Pacific North Coast Integrated Management Area (PNCIMA), which is the subject of a collaborative integrated marine planning process. Initially, the federal government was involved in the planning process and in funding this process, but in September of 2011, the federal government withdrew from the agreement governing its involvement. Notably, there have been suggestions in the media that lobbying by Enbridge was instrumental in halting federal government participation in this important marine planning effort.

*g) Is the Haisla Nation prepared to participate in marine oil spill training exercises to be conducted prior to commencement of operations, as proposed by Northern Gateway, should the Project be approved?*

Yes, provided that Northern Gateway has demonstrated oil spill response capability prior to project approval and has developed proper oil spill response plans and capacity.

*h) Is the Haisla Nation prepared to engage in good faith discussions regarding procurement and employment opportunities associated with the Project (including marine services such as whale spotting vessels operation, tugboat operations, etc.) should the Project be approved?*

The Haisla Nation has significant legitimate concerns about the potential for the proposed project to have devastating impacts on Haisla Nation way of life, culture and cultural heritage, and on Haisla aboriginal rights, including aboriginal title.

Should the project be approved despite these very serious concerns - and after a meaningful consultation and accommodation process between the Haisla Nation and government decision makers - the Haisla Nation's expectations for economic involvement would extend far beyond token involvement in vessel operations.

*i) Is the Haisla Nation prepared to participate in the development of a framework for responding to social and cultural disruption, as part of marine emergency response planning?*

As set out above, the application material and post-approval programs proposed by Northern Gateway display a fundamental lack of understanding of the

potential for a spill to impact Haisla Nation culture and cultural heritage, and Haisla Nation aboriginal rights. It cannot be “made right” with a framework. It must be avoided. Spill response planning as a mitigation measure must be critically examined prior to project approval.

Further, this question fails to recognize the significant role that the Kitimat River plays in Haisla Nation culture. It is not just marine emergency response planning that needs to be fully considered prior to project approval, it is also spill response planning in the Kitimat River Valley, and at the proposed marine terminal.

**REQUEST 1.3:**

<b>Position Regarding Marine Shipping</b>		
<b>1.3</b>	<b>Reference:</b>	(i) Volume 5A Update, Section 5, pages 5-312 – 5-313 (A1Z6R1). (ii) Transcript, Volume 8, January 10, 2012 at paragraphs 4178-4180 (Chief Henry Amos) (A38290).
	<b>Preamble:</b>	The Haisla Nation has expressed concern about tanker traffic and potential effects on the environment.
	<b>Request:</b>	(a) Is it the position of the Haisla Nation that it has the right to decide whether vessel traffic can take place within its Traditional Territory? (b) If so, please provide examples of how the Haisla Nation currently regulates, or purports to regulate, vessel movements within its Traditional Territory. (c) Please confirm that the Haisla Nation is aware of existing and proposed marine vessel activity within its Traditional Territory, including: (i) fuel barges (ii) cargo/container ships (iii) commercial fishing vessels (iv) condensate tankers (v) liquefied natural gas tankers

**RESPONSE:**

- a) *Is it the position of the Haisla Nation that it has the right to decide whether vessel traffic can take place within its Traditional Territory?*
- b) *If so, please provide examples of how the Haisla Nation currently regulates, or purports to regulate, vessel movements within its Traditional Territory.*

The Haisla Nation, as an aboriginal title holder, and as a collective that exercises aboriginal rights, is required to safeguard the lands, waters and resources of its Territory. Aboriginal title and other aboriginal rights are constitutionally protected rights which can only be infringed under specific circumstances, as spelled out in *R. v. Sparrow*.

The honour of the Crown requires that it consult with, and where warranted accommodate, First Nations when contemplating a decision that has the potential to infringe asserted aboriginal rights, including aboriginal title. This requirement for consultation means there has to be a meaningful engagement process aimed at identifying impacts. In a situation where the *prima facie* claim is high, like the Haisla Nation's claim, and the potential impacts are significant, like with the proposed project, this will require deep consultation. Where a project entails vessel traffic, the consultation about that project should include the vessel traffic aspect. Case law recognizes that, in some circumstances, an aboriginal title right may be so strong and the potential impacts flowing from the infringement of that aboriginal title so extreme that the project cannot go ahead. In a situation like this, vessel traffic that forms part of the project would not go ahead either.

Haisla Nation *nuyem* and the concepts of *wa'wais* and *bagwaiyas* are the Haisla Nation laws that govern the use of lands, waters and resources. Through these concepts the Haisla Nation exercises and enforces its stewardship of the lands, waters and resources of its Territory. As opportunities have become available, the Haisla Nation has augmented its *nuyem* and *wa'wais* and *bagwaiyas* concepts with the use of provincial mechanisms and legislation. For example, when the trapline registration system was opened up in the Kitimat area, Haisla Nation members acquired provincial trapline registrations, using the available provincial regulatory process to protect one of their aboriginal rights from infringement by other trappers.

Many years later, after much work and negotiation, the Haisla Nation entered into a first of its kind agreement to co-manage the *Huchsduwachsdu Nuyem Jeas/Kitlope Heritage Conservancy*. This 1996 bi-lateral agreement between the Province of British Columbia and the Haisla Nation has ensured the protection of 322,020 hectares of pristine wilderness, comprising the entire Kitlope watershed from the glacial headwaters to the Kitlope River estuary.

The Haisla Nation aspires to ever-greater recognition of its inherent and constitutionally protected right to be the stewards of the lands, waters and resources in Haisla Nation Territory. The Haisla Nation has developed a land use plan, as well as a draft marine use plan. These plans set the stage for resource development in Haisla Nation Territory that is compatible with Haisla Nation stewardship of its lands, waters and resources. The draft marine use plan is based on Haisla Nation issuance of permits to control access to and use of

marine management zones that is compatible with the management objectives for those zones.

- c) *Please confirm that the Haisla Nation is aware of existing and proposed marine vessel activity within its Traditional Territory, including:*
- (i) *fuel barges*
  - (ii) *cargo/container ships*
  - (iii) *commercial fishing vessels*
  - (iv) *condensate tankers*
  - (v) *liquefied natural gas tankers*

The Haisla Nation is aware of the existing and proposed marine vessel activity within its Territory, including fuel barges, cargo/container ships, commercial fishing vessels, condensate tankers, and liquefied natural gas tankers.

The Haisla Nation is also aware of the increased cumulative effect of additional marine vessel activity as projects are approved. The presence of this shipping increases the significance of the potential impacts of the project on Haisla Nation aboriginal title and rights, through cumulative impacts.

The Haisla Nation is responsible for some of the vessel traffic within its Territory, with modern forms of transportation having replaced canoes. Until legal developments in the early 2000s which have defined the content of the honour of the Crown with respect resource decisions and potential impacts on First Nations, the Haisla Nation had little say about the projects with associated vessel traffic in its Territory.

**REQUEST 1.4:**

<b>Capacity to Participate in Review</b>		
<b>1.4</b>	<b>Reference:</b>	(i) Transcript, Volume 4, August 31, 2010 at paragraphs 617 – 624 (Chief Councillor Pollard) (A26075). (ii) Volume 5A Update, Section 5, Page 5-314 to 5-315 (A1Z6R1)
	<b>Preamble:</b>	The Haisla Nation has expressed the view that inadequate funding has been provided to participate in this process.
	<b>Request:</b>	(a) Please confirm that the Haisla Nation has received participant funding from the Canadian Environmental Assessment Agency to participate in this proceeding. (b) Please advise as to the amount of participant funding received to date from the Canadian Environmental Assessment Agency. (c) Please confirm that the Haisla Nation has received significant

		<p>funding from the Northern Gateway Project for the purpose of preparing traditional use studies in relation to this Project.</p> <p>(d) Please advise as to the amount of funding received by the Haisla Nation from any other external sources to participate in this proceeding, or otherwise oppose the Northern Gateway Project.</p> <p>(e) Is the Haisla Nation a member of the Turning Point/Great Bear Initiative?</p> <p>(f) Has the Haisla Nation received funding, directly or indirectly, from the Turning Point/Great Bear Initiative for the purpose of participating in this proceeding, or otherwise opposing the Northern Gateway Project? If so, how much funding was received?</p> <p>(g) Has the Haisla Nation received funding from Tides Canada or any similar organization for the purpose of participating in this proceeding or otherwise opposing the Northern Gateway Project? If so, how much funding was received and from whom?</p> <p>(h) Have any members of the Kitimaat Village Council received funding from Tides Canada or similar organizations to participate in this proceeding or to otherwise oppose the Northern Gateway Project, either directly or indirectly? If so, how much funding was received and by whom? Please include funding received by the Headwaters Initiative in this response.</p> <p>(i) Are there agreements or understandings in place as between coastal First Nations whereby no coastal First Nation will oppose LNG development supported by the Haisla First Nation, and no coastal First Nation, including the Haisla First Nation, will support the Northern Gateway Project?</p>
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**RESPONSE:**

a) *Please confirm that the Haisla Nation has received participant funding from the Canadian Environmental Assessment Agency to participate in this proceeding.*

Yes.

b) *Please advise as to the amount of participant funding received to date from the Canadian Environmental Assessment Agency.*

In December of 2009, the Haisla Nation requested participant funding in the amount of \$1,593,900 for participating in the Joint Review Panel process over the course of 2 years. The Canadian Environmental Assessment Agency has offered the Haisla Nation funding in the amount of \$371,500 to participate in the Joint Review Panel process. This left a shortfall of \$1,222,400. The Haisla Nation has reviewed its costs associated with its participation in the review of



the proposed project, and notes that even the \$1,593,900 sought in the original application for participant funding would not be enough to cover these costs.

- c) *Please confirm that the Haisla Nation has received significant funding from the Northern Gateway Project for the purpose of preparing traditional use studies in relation to this Project.*

The Haisla Nation has received funding from the Northern Gateway to prepare and provide a traditional use study in relation to the proposed project.

- d) *Please advise as to the amount of funding received by the Haisla Nation from any other external sources to participate in this proceeding, or otherwise oppose the Northern Gateway Project.*

None. The Haisla Nation is experiencing a shortfall in funding for Haisla Nation participation in the JRP Review process. The Haisla Nation's funding request to CEAA was for a total of \$1,593,900. Northern Gateway has provided some additional funding. There is still a significant shortfall which is resulting in a deficit situation. Participating in the Joint Review Panel process is, therefore, costing the Haisla Nation funds that will need to be diverted from other pressing projects and issues.

- e) *Is the Haisla Nation a member of the Turning Point/Great Bear Initiative?*

Yes.

- f) *Has the Haisla Nation received funding, directly or indirectly, from the Turning Point/Great Bear Initiative for the purpose of participating in this proceeding, or otherwise opposing the Northern Gateway Project? If so, how much funding was received?*

The Haisla Nation takes offence at the implication that its participation in the Joint Review Panel process is strictly to oppose the Northern Gateway Project. As set out above, the Haisla Nation is participating in the Joint Review Panel process as it is currently the only process for assessing the proposed project. This process has been imposed without meaningful consideration of Haisla Nation concerns, and the Haisla Nation is participating despite an unlevel playing field.

The Haisla Nation has not received funding from the Turning Point/Great Bear Initiative to participate in the Joint Review Panel proceedings, to oppose the Northern Gateway Project, or for any other purpose regarding the Northern Gateway Project.

- g) *Has the Haisla Nation received funding from Tides Canada or any similar organization for the purpose of participating in this proceeding or otherwise opposing the Northern Gateway Project? If so, how much funding was received and from whom?*

The Haisla Nation has not received funding from Tides Canada or similar organizations, either directly or indirectly, to participate in the Joint Review Panel proceedings, to oppose the Northern Gateway Project, or for any other purpose regarding the Northern Gateway Project.

- h) *Have any members of the Kitimaat [sic] Village Council received funding from Tides Canada or similar organizations to participate in this proceeding or to otherwise oppose the Northern Gateway Project, either directly or indirectly? If so, how much funding was received and by whom? Please include funding received by the Headwaters Initiative in this response.*

This question is beyond the scope of matters currently before the Joint Review Panel. Nevertheless, the Haisla Nation offers the following information:

“Kitimaat Village Council” is a misspelling of the former name of the Haisla Nation Council. The Haisla Nation Council is the elected government of the Haisla Nation.

The members of the Haisla Nation Council are: Ellis Ross (Chief Councillor), Henry Amos, Brenda Duncan, Godfrey Grant, Margaret Grant, Alex Grant Sr., Lucille Harms, Keith Nyce, Joanne Ross, Russell Ross Jr., Kevin Stewart. The Haisla Nation Council is governed by rules and a code of ethics that require disclosure of any potential conflicts of interest. If any member of Haisla Nation Council had received funding from Tides Canada or similar organizations in their personal capacity, they would have had to disclose this to Council.

None of these members have received funding from Tides Canada or similar organizations, either directly or indirectly, to participate in the Joint Review Panel proceedings, to oppose the Northern Gateway Project, or for any other purpose regarding the Northern Gateway Project.

Headwaters Initiative has no affiliation with the Haisla Nation Council. The Haisla Nation Council has no information about funding received by Headwaters Initiative.

- i) *Are there agreements or understandings in place as between coastal First Nations whereby no coastal First Nation will oppose LNG development supported by the Haisla First Nation, and no coastal First*

*Nation, including the Haisla First Nation, will support the Northern Gateway Project?*

The Haisla Nation Council has not entered into any agreement and is not aware of any agreement to not oppose LNG development and to not support the Northern Gateway Project. The Haisla Nation is not aware of any understandings in this regard, but cannot speak for other coastal First Nations.

In our view the support for LNG transport and the opposition to diluted bitumen transport flows from the fact that a spill of natural gas or LNG will quickly evaporate, whereas a spill of diluted bitumen will become entrained in the water column and sediment and will continue as a point source of toxicity for years and decades to come.

**REQUEST 1.5:**

<b>Position Regarding LNG Projects</b>		
<b>1.5</b>	<b>Reference:</b>	(i) Kitimat LNG, News Release, "Canada, BC, Join Haisla Nation and Kitimat LNG Partners in Marking Project Go-Ahead; 'A Very Big Day for Our People' Says Chief Councillor Pollard" (9 March 2011) online: Kitimat LNG <a href="http://mediacenter.kitimatlngfacility.com/Mediacenter/view_press_release.aspx?PressRelease.ItemID=2807">http://mediacenter.kitimatlngfacility.com/Mediacenter/view_press_release.aspx?PressRelease.ItemID=2807</a> >.
	<b>Preamble:</b>	(ii) Dina O'Meara, "National regulator approves BC LNG export licence Co-operative a partnership with Haisla First Nation", The Calgary Herald (3 February 2012) online The Calgary Herald <a href="http://www.calgaryherald.com/business/National+regulator+approves+export+licence/6093310/story.html">http://www.calgaryherald.com/business/National+regulator+approves+export+licence/6093310/story.html</a> .
	<b>Request:</b>	Northern Gateway would like to confirm the Haisla Nation's position with respect to certain liquefied natural gas ("LNG") projects.
		(a) Please confirm that the Haisla Nation supports construction and operation of the Kitimat LNG Project (also known as the KM LNG Project). (b) Please confirm that Kitimat LNG holds an export licence to ship 200 million tonnes of LNG over 20 years from the Kitimat LNG Terminal, to be located at Bish Cove, near the Port of Kitimat, BC, to Pacific Rim markets by marine vessel. (c) Please provide copies of all environmental assessment studies, risk assessments, TERMPOL review studies and Aboriginal Traditional Knowledge ("ATK") studies pertaining to the Kitimat LNG Project. If such studies do not currently exist, please advise when they will be completed and provided. If confidentiality

		<p>concerns exist in respect of the ATK study, please indicate whether the Haisla Nation is prepared to provide it to the Panel in confidence.</p> <p>(d) Please provide copies of all agreements that the Haisla Nation has entered into with Kitimat LNG including, impact benefit agreements and lease agreements.</p> <p>(e) Please confirm that the Haisla Nation supports construction and operation of the BC LNG Export Cooperative Project.</p> <p>(f) Please confirm that the Haisla Nation is a joint venture or partner with LNG Partners in Houston, in the BC LNG Export Cooperative.</p> <p>(g) Please confirm that the BC LNG Export Cooperative holds an export licence to ship 36 million tonnes of supercooled natural gas over 20 years from floating terminal off Kitimat, BC to Pacific Rim markets by marine vessel.</p> <p>(h) Please provide copies of all environmental assessment studies, risk assessments, TERMPOL review studies and ATK studies pertaining to the BC LNG Export Cooperative Project. If such studies do not currently exist, please advise when they will be completed and provided. If confidentiality concerns exist in respect of the ATK study, please indicate whether the Haisla Nation is prepared to provide it to the Panel in confidence.</p>
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**RESPONSE:**

This information request does not relate to evidence submitted by the Haisla Nation in this proceeding. The information requested relates to projects that are beyond the scope of this review, and seeks information that is not relevant to this project. The Haisla Nation therefore respectfully declines to answer this question.

**REQUEST 1.6:**

<b>Position Regarding Kitimat – Summit Lake Pipeline Looping Project</b>		
1.6	<b>Reference:</b>	<p>(i) BC Environmental Assessment Office, “Kitimat – Summit Lake Pipeline Looping Project Assessment Report With Respect to Review of the Application for an Environmental Assessment Certificate Pursuant to the Environmental Assessment Act, S.B.C. 2002, c. 43” (12 May 2008) at page 7, online: BC Environmental Assessment Office  <a href="http://a100.gov.bc.ca/appsdata/epic/documents/p270/12145997912188e248a8d30d995f6590f6f594d7789f5e20e141ef52b.pdf">http://a100.gov.bc.ca/appsdata/epic/documents/p270/12145997912188e248a8d30d995f6590f6f594d7789f5e20e141ef52b.pdf</a>.</p> <p>(ii) <i>Ibid</i> at pages 122-133 (provided as Attachment to Haisla Nation IR 1.6).</p>

	<b>Preamble:</b>	<p>Reference (i) states: “The Haisla Nation wrote to the EAO indicating that they support the Project receiving a Provincial EA Certificate, subject to certain conditions (which are being met).”</p> <p>Reference (ii) provides a First Nation Consultation Report in respect of the Haisla Nation.</p>
	<b>Request:</b>	<p>(a) Please confirm that the Haisla First Nation supports the construction and operation of the Pacific Trails Pipeline Project (also known as the Kitimat-Summit Lake Looping Project).</p> <p>(b) Please confirm that Reference (ii) accurately describes the nature and strength of claim by the Haisla First Nation in respect of those portions of the Kitimat- Summit Lake Looping Project that will traverse Haisla traditional territory.</p> <p>(c) Please confirm that Reference (ii) lists the mitigation measures proposed by the Kitimat-Summit Lake Looping Project to address construction-related impacts on Haisla First Nation traditional territory, and that such measures are acceptable to the Haisla First Nation. If any such measures are not acceptable, please identify them and advise as to modifications considered appropriate by the Haisla First Nation.</p> <p>(d) Please advise as to whether similar measures would be requested by the Haisla First Nation to deal with construction-related impacts of the Northern Gateway Project.</p> <p>(e) Please file a copy of the report entitled <i>Haisla Traditional Use and Occupancy of the Proposed PNG Pipeline Corridor through the lower Kitimat River Valley</i> cited on page 124 of Reference (ii).] If confidentiality concerns exist in respect of the study, please indicate whether the Haisla are prepared to provide it to the Panel in confidence.</p>

**RESPONSE:**

This information request does not relate to evidence submitted by the Haisla Nation in this proceeding. The information requested relates to projects that are beyond the scope of this review, and seeks information that is not relevant to this project. The Haisla Nation therefore respectfully declines to answer this question.

**REQUEST 1.7:**

<b>Scientific and Technical Evidence</b>		
<b>1.7</b>	<b>Reference:</b>	(i) Written Evidence of the Haisla Nation, <i>Overview of Haisla Nation Scientific and Technical Evidence</i> (December 21, 2011) at paragraph 5 (A2K3D4). (ii) Resume of Gillian Bakker (A2K3D6). (iii) Curriculum Vitae of Tracy K. Collier, page 5, item 125 (A2K3D9) (iv) Technical Data Report – Toxicity of Oil to Fish – Potential Effects of an Oil Spill into the Kitimat River from a Northern Gateway Pipeline Rupture, by Peter V. Hodson, PhD et al, December 19, 2011, adobe page 80 (“Hodson Study”) (A2K3D7).
	<b>Preamble:</b>	Reference (i) states that: “The evidence provided by the Haisla Nation’s independent experts indicates that despite all the material submitted by Enbridge Northern Gateway to the Joint Review Panel, there are significant information gaps that suggest a lack of understanding about what is involved in developing the kind of project being proposed; a lack of understanding about the extent and degree of impacts and effects from the project as proposed; and serious questions about the overall approach to structural design of the proposed project.”
	<b>Request:</b>	(a) Please explain how Ms. Gillian Bakker’s experience qualifies her to comment on corrosion and metallurgy issues as they relate to pipelines and storage facilities. (b) Please provide a copy of the paper authored by Pennart et al entitled “ <i>The use of an ecological risk assessment for regional management of aquatic impacts</i> ” Pine River Report (page 80 of Hodson study). (c) Please provide a copy of the technical memo prepared for the US Department of Commerce by Johnson et al entitled “Polycyclic aromatic hydrocarbons and fish health indicators in the marine ecosystem in Kitimat British Columbia” listed in Reference (iii).

**RESPONSE:**

- a) *Please explain how Ms. Gillian Bakker’s experience qualifies her to comment on corrosion and metallurgy issues as they relate to pipelines and storage facilities.*

At no point in the referenced paper by Gillian Bakker does she “comment” on corrosion and metallurgy issues. She has conducted and produced a literature review of white and grey literature, summarized these papers and provided a full reference list. Her background in engineering has enabled her to sieve through appropriate literature and to understand the issues with which the various papers

deal; she does not, however, comment or provide her personal or professional opinion on the results of the published literature.

- b) *Please provide a copy of the paper authored by Pennart et al entitled “The use of an ecological risk assessment for regional management of aquatic impacts” Pine River Report (page 80 of Hodson study).*

This publication can be accessed at:

<http://www.esaa-events.com/remtech/2004/pdf/09DePennart.pdf>

- c) *Please provide a copy of the technical memo prepared for the US Department of Commerce by Johnson et al entitled “Polycyclic aromatic hydrocarbons and fish health indicators in the marine ecosystem in Kitimat British Columbia” listed in Reference (iii).*

This publication can be accessed at:

[http://docs.lib.noaa.gov/noaa\\_documents/NMFS/NWFSC/TM\\_NMFS\\_NWFSC/TM\\_NMFS\\_NWFSC\\_98.pdf](http://docs.lib.noaa.gov/noaa_documents/NMFS/NWFSC/TM_NMFS_NWFSC/TM_NMFS_NWFSC_98.pdf)

**REQUEST 1.8:**

<b>Pipeline Corrosion, Transportation of Diluted Bitumen and Crude Oil</b>		
<b>1.8</b>	<b>Reference:</b>	<i>The Corrosive Nature of Diluted Bitument and Crude Oil Literature Review Prepared by Gillian Bakker, M.A.Sc, M.R. Gordon and Associates Ltd., December, 2011, at page 7, section 4, first paragraph, third sentence (A2K3D5).</i>
	<b>Preamble:</b>	In the Reference, the author states: “The Alberta report lists 81,917 km of hazardous liquid pipeline as having a total of 5,333 incidents over a time span of sixteen years.”
	<b>Request:</b>	<p>(a) Please provide the reference, including the page number, in the Alberta report where the 5,333 incidents are listed.</p> <p>(b) Please provide a breakdown of the total of 5,333 incidents into the applicable pipeline categories, and list the number of incidents associated with each pipeline category.</p> <p>(c) Please provide the reference, including the page number, in the Alberta report where the 81,917 km of hazardous pipelines is listed.</p> <p>(d) Please provide a breakdown of the total of 81,917 km into the applicable pipeline categories, include the total mileage of each category, as well, please provide each of the pipe sizes (diameter) and the corresponding length for each pipe size in each pipeline category.</p>

**RESPONSE:**

- a) *Please provide the reference, including the page number, in the Alberta report where the 5,333 incidents are listed.*

The link to the paper is: <http://www.ercb.ca/docs/documents/reports/r2007-a.pdf>

- b) *Please provide a breakdown of the total of 5,333 incidents into the applicable pipeline categories, and list the number of incidents associated with each pipeline category.*

page 28 (pdf page 32) Figure 11a Multiphase total incidents = 4,726

page 30 (pdf page 34) Figure 12a Crude oil total incidents = 411

page 38 (pdf page 42) Figure 15a Other products total incidents = 196

TOTAL INCIDENTS= 4,726 + 411 + 196 = 5,333

- c) *Please provide the reference, including the page number, in the Alberta report where the 81,917 km of hazardous pipelines is listed.*

Hazardous liquid is defined as: crude oil + multiphase + "other"  
For breakdown of incidents, see response IR 1.8a).

From in the document at the link in response IR 1.8a), page 9 (pdf page 13) Figure 2, crude oil + multiphase + other = 14 902 km + 38 536 km + 28 479 km = 81, 917 km.

- d) *Please provide a breakdown of the total of 81,917 km into the applicable pipeline categories, include the total mileage of each category, as well, please provide each of the pipe sizes (diameter) and the corresponding length for each pipe size in each pipeline category.*

See response to IR 1.8 c) for pipeline categories including total mileage of each category.

For pipe sizes (diameter) and corresponding length for each pipe size, see the following in the document at the link in response IR 1.8a):

Figure 4c on page 13 (pdf page 17) for crude oil

Figure 4f on page 15 (pdf page 19) for multiphase

Figure 4g on page 15 (pdf page 19) for "other"



**REQUEST 1.9:**

<b>Spill Response</b>		
<b>1.9</b>	<b>Reference:</b>	<p>(i) <i>Preliminary Analysis and Observations regarding Enbridge Northern Gateway Project Proposal Documents – Oil Spill Contingency Planning</i>, prepared by Nuka Research and Planning Group, LLC on behalf of the Haisla Nation at page 17 (A2K3E1).</p>
	<b>Preamble:</b>	<p>(ii) General Oil Spill Response Plan (March 2011)(A1Y318).</p> <p>In Reference (i) Nuka Research and Planning Group, LLC (“Nuka”) states: “This Report was developed to inform the following question, based on a review of publicly submitted document: Does the proposed Northern Gateway Project have the potential to cause significant adverse impacts that cannot be mitigated?” Nuka then concludes that “Enbridge has not fully examined relevant information and has not provided the level of planning and analysis needed to answer that question definitively”.</p>
	<b>Request:</b>	<p>(a) Is it Nuka’s opinion that if Northern Gateway was to prepare detailed operational response plans, the question posed by Nuka could be definitively answered?</p> <p>(b) If so, what would the answer be?</p> <p>(c) Is it the understanding of Nuka that Northern Gateway intends to rely only on the General Oil Spill Response Plan filed in this proceeding when it commences pipeline operation?</p> <p>(d) Is it the understanding of Nuka that operational response plans for the Project will not include measures such as tactics for dealing with submerged oil; spill response training exercises, additional response scenarios and tactics sheets; and additional measures to enhance containment and response in sensitive areas, such as the Kitimat River Valley?</p> <p>(e) Please explain why the Nuka report is considered to be a "Preliminary" analysis.</p> <p>(f) Please describe Nuka's prior experience is dealing with diluted bitumen at:</p> <p>(i) the emergency response planning stage of a project</p> <p>(ii) the environmental assessment stage of a project, or</p> <p>(iii) in an actual emergency response.</p> <p>(g) Please provide a list of the environmental assessments for proposed liquids transportation projects in respect of which Nuka has provided advice.</p> <p>(h) Please advise as to when the Prince William Sound Regional</p>

		<p>Citizens Advisory Committee (Reference (i) at page 63 of 142) was formed, and for what purpose.</p> <p>(i) Please provide recommendations as to how an Advisory Panel should be formed to incorporate local stakeholder input.</p> <p>(j) Is it the expectation of Nuka that First Nations such as the Haisla Nation would be part of such a panel?</p> <p>(k) Is Nuka aware of the Marine Community Advisory Board established for the Project, and if so, would that be an appropriate forum for discussion of a Citizens Advisory Committee?</p>
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**RESPONSE (Responded to by Nuka Research):**

- a) *Is it Nuka's opinion that if Northern Gateway was to prepare detailed operational response plans, the question posed by Nuka could be definitively answered?*

It is our opinion that a detailed operational response plan will provide critical information to help regulators, stakeholders, and the public to understand the capabilities and limitations of Northern Gateway to utilize available resources, technologies, and personnel during an oil spill response. An effective spill response organization is a critical mitigation measure for any operation with the potential to spill oil. The level of detail needed to evaluate the potential effectiveness of Northern Gateway's spill response systems to mitigate a spill from their operations should include key elements, currently lacking in the project documents, including:

- Information about the potential fate and effects of spilled product to all possible receiving environments;
- Trajectory models for all project oils;
- Identification of all spill response equipment available through direct ownership or under contract;
- Development of spill response tactics specific to the project oils and their potential fate in receiving environments;
- Development of scenario analyses that describes the spill response resources (e.g. boom, skimmers, storage devices, pumps, vessels, aircraft, trained personnel) that would be mobilized and deployed to the spill site, estimates their deployment time, calculates recovery rates, and shows the amount of oil that can expected to be recovered on-water (offshore and nearshore environments);
- Description of maximum response operating limits for oil spill response systems and estimate of the on-scene conditions that would represent spill response limits.

In our opinion, the definitive answer as to whether the adverse impacts from an oil spill could be adequately mitigated is necessarily subjective and ultimately determined by the definition of “adequate mitigation”. It is our opinion, based on our extensive experience as oil spill planners and responders, that any oil spill to marine, estuarine, or fresh waters will result in some residual oil that cannot be removed from the environment. It is also our opinion that there may be significant periods of time when on-scene conditions (wind, waves, cold temperatures, visibility) may limit or preclude the opportunity to safely or effectively conduct oil spill response at all, and that this response gap is an important factor to understanding the potential adverse impacts from the project. Since oil spill response preparedness in and of itself may not mitigate all of the potential adverse impacts from an oil spill, we recommend the adoption of additional prevention measures that reduce oil spill risks during times when spill response effectiveness is limited or precluded. In order to answer the question posed in our original document, a much more comprehensive and detailed description of the complete oil spill prevention and response system must be presented. Detailed operational response plans and associated analyses can help decision-makers to define the capabilities and limits of oil spill response for Northern Gateway, and inform the determination as to whether this capacity represents “adequate mitigation.”

b) *If so, what would the answer be?*

We cannot predict how this question would be answered without having the opportunity to review detailed operational plans as discussed above.

c) *Is it the understanding of Nuka that Northern Gateway intends to rely only on the General Oil Spill Response Plan filed in this proceeding when it commences pipeline operation?*

Our understanding of Northern Gateway’s intent is limited to the information that has been submitted through the JRP and TERMPOL processes. Based on this information, we believe that the GOSRP is not the operational response plan, but rather a framework document describing how oil spill response planning might be accomplished.

d) *Is it the understanding of Nuka that operational response plans for the Project will not include measures such as tactics for dealing with submerged oil; spill response training exercises, additional response scenarios and tactics sheets; and additional measures to enhance containment and response in sensitive areas, such as the Kitimat River Valley?*

Based on the submission documents that we reviewed, we understand that Northern Gateway intends to develop additional oil spill response plans that may include some or all of the elements listed above (Request 1.9d). However, it is

our understanding that Northern Gateway does not intend to develop these materials until after the project has been approved. It is our opinion that these documents should be developed and subject to review **prior** to plan approval, because the adequacy of operational response plans is a key consideration in answering the question: "Does the proposed Northern Gateway Project have the potential to cause significant adverse impacts that cannot be mitigated?"

e) *Please explain why the Nuka report is considered to be a "Preliminary" analysis.*

At the time that we prepared the document, we understood that additional submissions might be provided by Northern Gateway, and that the contents of those submissions might influence some of our initial analysis. Our understanding of the JRP process is that submittal of evidence is an ongoing process; therefore, we used the term "preliminary" to indicate that our work was based on an analysis of only those documents submitted prior to the date of our report.

f) *Please describe Nuka's prior experience is dealing with diluted bitumen at:*

- (i) the emergency response planning stage of a project*
- (ii) the environmental assessment stage of a project, or*
- (iii) in an actual emergency response.*

Northern Gateway is the first diluted bitumen project proposal that Nuka Research has evaluated. During our research for this project, we conducted an extensive literature review and interviewed several of our colleagues in the oil spill planning and response community. We also conducted a site visit to the Kalamazoo River oil spill site, where we interviewed the Federal On-Scene Commander, Enbridge personnel, and oil spill cleanup personnel as well as local natural resource agencies. We are not aware of any individuals within the professional oil spill planning and response community who claim expertise in the field of diluted bitumen emergency response planning or environmental assessment. The international oil spill planning and response community has very little experience with diluted bitumen oil spill prevention, planning and response, as evidenced by the dearth of published literature on diluted bitumen response. Nuka Research is currently preparing a manuscript for submission to the Society for Environmental Toxicologists and Chemists that describes the current state-of-knowledge regarding diluted bitumen oil spill response.

g) *Please provide a list of the environmental assessments for proposed liquids transportation projects in respect of which Nuka has provided advice.*

Nuka Research's role as a consultant to the Haisla Nation has been to evaluate the oil spill contingency planning, risk analysis, and response preparedness

associated with the proposed Northern Gateway pipeline, marine, terminal, and vessel traffic. While we have evaluated environmental analyses for proposed exploration and production operations, most of the work we do for liquid transportation projects involves existing operations. We have participated in the regulatory review of the Trans-Alaska Pipeline oil spill contingency plan, and we recently led a project focused on reducing spills from pipelines associated with oil and gas production operations on Alaska's North Slope.

Nuka Research is currently under contract to the U.S. Bureau of Ocean Energy Management/Bureau of Safety and Environmental Enforcement to develop an oil spill occurrence estimator, which will provide a statistical model to support oil spill risk analyses conducted as part of environmental assessments/environmental impact statements for proposed oil development projects in the U.S. Arctic.

*h) Please advise as to when the Prince William Sound Regional Citizens Advisory Committee (Reference (i) at page 63 of 142) was formed, and for what purpose.*

The following information is excerpted from the PWSRCAC website. The website <http://www.pwsrcac.org/about/index.html> also contains links to the RCAC's annual reports, U.S. Coast Guard recertification documents, and auditor reports/financial statements. The PWSRCAC website describes the organization as follows:

**The Prince William Sound Regional Citizens' Advisory Council is an independent non-profit corporation guided by its mission: *citizens promoting environmentally safe operation of the Alyeska Pipeline marine terminal in Valdez and the oil tankers that use it.***

The council is immediately accountable to those it represents: the people and groups with the most to lose from another catastrophic oil spill in Prince William Sound. They include communities and interest groups in a region stretching from the sound itself to Kodiak Island to lower Cook Inlet—all areas that were touched by oil from the *Exxon Valdez* oil spill. The council's 19 member organizations include representatives from communities, aquaculture, commercial fishing, environmental, Alaska Native, recreation, and tourism groups.

The council's influence depends on the quality of its analytical work on oil transportation safety, not on regulatory powers or political connections.

The council has an ongoing responsibility to sponsor accurate scientific research that monitors the environmental impacts of the Valdez Marine Terminal and tankers. The council regularly retains experts in various fields to conduct independent research on issues related to oil transportation safety.

PWSRCAC is unique in having no mission except promoting environmental safety and informing the public about it, while industry and government must manage competing missions.

Industry must balance the need for environmental protection against the pressure for profits, while government agencies are always subject to political pressure to promote economic development and minimize the regulatory burden on industry. The citizens' council, by contrast, is relatively free from political and financial pressure. The council's advisory role and its diverse, community-based board largely insulate it from direct lobbying and other usual forms of political pressure.

The 1989 *Exxon Valdez* experience demonstrated that the oil industry could learn from people who live and work in the region affected by the terminal and tanker operations. A moral imperative also emerged from the Exxon Valdez spill: those people with the most to lose from oil pollution must have a voice in the decisions that put their livelihoods and communities at risk.

The council's structure and responsibilities stem from two documents:

- **Contract with Alyeska Pipeline Service Co.:** The first document is a contract with Alyeska Pipeline Service Co., which operates the trans-Alaska pipeline as well as the Valdez terminal. Although this contract guarantees annual funding for the council, it also ensures absolute independence from Alyeska as long as oil flows through the trans-Alaska pipeline.
- **Oil Pollution Act of 1990 (OPA 90):** The second guiding document is the federal Oil Pollution Act of 1990. In the Oil Pollution Act of 1990, Congress mandated citizens' councils for Prince William Sound and Cook Inlet. The purpose of these councils is to promote partnership and cooperation among local citizens, industry and government, and to build trust and provide citizen oversight of environmental compliance by oil terminals and tankers. Congress identified complacency on the part of the oil industry and government regulators as a root cause of the *Exxon Valdez* spill.

In February 1990, PWSRCAC and Alyeska signed a contract ensuring for PWSRCAC absolute independence from Alyeska, access to Alyeska facilities, guaranteed annual funding, and assurance that the contract would last as long as oil flowed through the trans-Alaska pipeline.

Under the terms of its contract with Alyeska, the council reviews, monitors, and comments on various aspects of the company's operations:

- Oil spill prevention and response plans
- Environmental protection capabilities
- Actual and potential environmental impacts of terminal and tanker operations

The council comments on and participates in monitoring and assessment of environmental, social, and economic consequences of oil-transportation activities,

including comments on the design of measures to mitigate the impacts of oil spills and other environmental effects of terminal and tanker operations. The contract also calls for the council to increase public awareness of Alyeska's oil spill response, spill prevention and environmental protection capabilities, as well as the actual and potential environmental impacts of terminal and tanker operations. The contract states that the council may work on other related issues not specifically identified when the contract was written.

The council was initially funded at \$2 million a year. The funding is renegotiated every three years; current Alyeska funding is approximately \$2.8 million a year.

Although the council works closely with and is funded by Alyeska, the council is an independent advisory group. The contract is explicit: "Alyeska shall have no right . . . to have any degree of control over the formation or operation of the corporation . . ."

[Alyeska/PWSRCAC Contract](#) (pdf/3MB)

The Oil Pollution Act of 1990 (OPA 90) requires Alyeska Pipeline Service Co. to establish and fund a citizens' advisory group. The council's contract with Alyeska pre-dates OPA 90, but the similarities in the powers and duties given the council in the two documents are not coincidental. Many people involved in the establishment of the council also actively promoted citizen involvement provisions in the federal law.

The Act established two demonstration projects in Alaska--one in Prince William Sound, the other in Cook Inlet--designed to promote partnership and cooperation among local citizens, industry and government, and to provide citizen oversight of environmental compliance by oil terminals and tankers. PWSRCAC is certified as the program for Prince William Sound.

The Act allows an alternative, pre-existing organization to fulfill the requirement for a citizen group and our council has done so for Prince William Sound since 1991. Each year, the U.S. Coast Guard assesses whether the council fosters the general goals and purposes of the Oil Pollution Act and is broadly representative of the communities and interests as envisioned in the Act.

As the council for Prince William Sound pursuant to the Act, we have duties similar to those laid out in our contract with Alyeska. But the responsibilities under the Oil Pollution Act are somewhat broader, as they encompass all aspects of the North Slope crude oil transportation system through Prince William Sound and the Gulf of Alaska.

- i) *Please provide recommendations as to how an Advisory Panel should be formed to incorporate local stakeholder input.*

Both the Prince William Sound and the Cook Inlet Regional Citizens Advisory Councils (RCAC) provide tangible models for how to form and run an RCAC. Both organizations are established as non-profit entities with full time staff and a Board of Directors representing specific stakeholder groups. Both organizations receive direct funding from the oil industry as at least part of their operating budgets. Both groups use their funding to undertake research and development,

planning projects, scientific analyses, and policy analysis focused on promoting safe transportation of oil through their regions of interest. The U.S. Coast Guard certifies the RCACs. Both organizations have websites with extensive information about their makeup, mission statements, and activities ([www.pwsrcac.org](http://www.pwsrcac.org) and [www.circac.org](http://www.circac.org)).

In addition to the RCAC models in Alaska, the Final Report of the BP Deepwater Horizon Oil Spill and Offshore Drilling<sup>1</sup> contains specific recommendations for how to strengthen the involvement of local and regional citizens and stakeholders in oil spill contingency planning. One of the major lessons learned from that spill was that a lack of citizen involvement in oil spill contingency planning and response hindered overall response effectiveness and crisis communications. We recommend that Northern Gateway review this final report (specifically, pages 268-269) as well as the transcripts from the public hearings held during November-December 2010 for specific recommendations as to developing an effective citizen advisory council to oversee complex oil transportation systems.

j) *Is it the expectation of Nuka that First Nations such as the Haisla Nation would be part of such a panel?*

Both of the RCACs in Alaska include representation from regional Alaska Native groups (native corporations and villages), which are roughly analogous to First Nations. As a major stakeholder in the Kitimat region, we would expect that a citizens advisory panel for Northern Gateway operations would include representation from the Haisla and other First Nations whose lands or interests have the potential to be adversely effected by the project.

k) *Is Nuka aware of the Marine Community Advisory Board established for the Project, and if so, would that be an appropriate forum for discussion of a Citizens Advisory Committee?*

We are not familiar with the Marine Community Advisory Board and therefore cannot comment on its appropriateness as a discussion forum for formation of a Citizens Advisory Committee. We do recommend that any such discussions should include public hearings and should allow for open and broad participation.

**REQUEST 1.10:**

Spill Response		
<b>1.10</b>	<b>Reference:</b>	<i>Preliminary Analysis and Observations regarding Enbridge Northern Gateway Project Proposal Documents – Oil Spill Contingency Planning, prepared by Nuka Research and</i>

<sup>1</sup> <http://www.oilspillcommission.gov/final-report>



	<p><b>Preamble:</b></p> <p><b>Request:</b></p>	<p>Planning Group, LLC on behalf of the Haisla Nation at pages 81 – 85 of 142, Table 5.1 (A2K3E1).</p> <p>In the Reference, Nuka lists over 50 incidents, dating back to 1967, when heavy oil sank or submerged.</p> <p>(a) Please confirm that the development of methods and technologies suitable for dealing with heavy (sinking) oils is a challenge faced by industry and governments around the world.</p> <p>(b) Of the incidents listed by Nuka, at least 9 involved the release of bunker fuel oil. Has Nuka reviewed, or been requested to review, the bunker oil spill contingency planning being done in respect of the recovery of heavy oil from commercial vessel traffic (existing or proposed) aside from Northern Gateway in:</p> <ul style="list-style-type: none"> <li>i. the Kitimat area</li> <li>(ii) the Prince Rupert area</li> <li>(iii) the Vancouver area</li> <li>(iv) any other Canadian port</li> </ul> <p>(c) Nuka states on numerous occasions that the pipeline oil spill response planning undertaken to date is inadequate due to its assumption that all spills will consist solely of floating oil (for example, see page 96 of Reference (i)).</p> <ul style="list-style-type: none"> <li>(i) Please provide Nuka’s understanding as to the percentage of oil spilled in the Marshall event that was the subject of the sinking.</li> <li>(ii) Please confirm that Nuka is not recommending that booms not be included in operational response plans, but rather that consideration must also be given to dealing with submerged oil.</li> </ul> <p>(d) Please list the liquids pipeline projects in respect of which Nuka has prepared operational spill response plans, if any.</p> <p>(e) Provide examples of oil spill response plans prepared by Nuka for liquid pipelines in North America or elsewhere.</p>
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**RESPONSE (provided by Nuka Research):**

*a) Please confirm that the development of methods and technologies suitable for dealing with heavy (sinking) oils is a challenge faced by industry and governments around the world.*

The development of methods and technologies suitable for dealing with heavy (sinking) oils is a challenge faced by industry and governments around the world. This fact is well supported by the published literature and by documented experience during actual spill responses.

- b) *Of the incidents listed by Nuka, at least 9 involved the release of bunker fuel oil. Has Nuka reviewed, or been requested to review, the bunker oil spill contingency planning being done in respect of the recovery of heavy oil from commercial vessel traffic (existing or proposed) aside from Northern Gateway in:*
- (i) the Kitimat area*
  - (ii) the Prince Rupert area*
  - (iii) the Vancouver area*
  - (iv) any other Canadian port.*

We are not aware of bunker oil spill contingency plans for any of the listed ports nor have we been requested to review any such plans. We have been actively involved with past efforts to promulgate oil spill planning and response requirements for non-tank vessels (fuel oil or “bunker” spills) in Alaska, and have reviewed and prepared comments on pending U.S. federal requirements governing non-tank vessel oil spill planning. We have been involved with two major maritime risk assessment projects in Alaska (Aleutian Islands and Cook Inlet), both of which have included a strong focus on the risk of bunker (fuel oil) spill, and the oil spill response, rescue tug, and marine salvage capabilities needed to reduce the risk of impacts from non-tank vessel spills.

- c) *Nuka states on numerous occasions that the pipeline oil spill response planning undertaken to date is inadequate due to its assumption that all spills will consist solely of floating oil (for example, see page 96 of Reference (i)).*
- (i) Please provide Nuka’s understanding as to the percentage of oil spilled in the Marshall event that was the subject of the sinking.*
  - (ii) Please confirm that Nuka is not recommending that booms not be included in operational response plans, but rather that consideration must also be given to dealing with submerged oil.*

i) There remain discrepancies in the official amount of oil released during the 2010 Kalamazoo River spill. While Enbridge estimates have put the figure at 3.2 million liters ([http://response.enbridgeus.com/response/main.aspx?id=12783#How\\_much](http://response.enbridgeus.com/response/main.aspx?id=12783#How_much)), the most recent EPA situation report states that over 4.3 million liters has been recovered (<http://www.epa.gov/enbridgespill/pdfs/sitreps/20120517-sitrep-145.pdf>), derived from the various waste streams recovered from the spill site. There are no definitive calculated percentages of the amount of oil that sank versus floated in the Kalamazoo River spill. To date, EPA calculations have focused primarily on the amount of total oil recovered.

Due to the environmental variables involved such as extreme high water levels, the resulting overbank washover and continuing cleanup, it is difficult to ascertain

the total percentage of oil that sank. By Day Two and Day Three of the response, the responders observed the oil sinking to the river bottom, presenting the responders with a challenge in recovering the submerged oil since conventional methods of recovery focused on the floating oil.

ii) This is a correct interpretation of our recommendation. We believe that the spill response system developed for Northern Gateway should have the capacity to contain and recover oil that is positively, neutrally, or negatively buoyant. Boom can be an effective containment barrier for floating oil spills, assuming water currents, waves, and wind speeds do not exceed operating limits. However, equipment and tactics must also be identified to track, contain, and recover oil that submerges or sinks in river, estuarine, and marine environments.

d) *Please list the liquids pipeline projects in respect of which Nuka has prepared operational spill response plans, if any.*

Nuka Research staff has past experience developing oil spill contingency plans for liquid pipelines, facilities, exploration and production operations, and vessels in the Gulf of Mexico, Washington, Oregon, Alaska, and West Africa. Nuka Research cannot disclose a complete list of plans we have written due to client confidentiality. While we do have experience developing oil spill contingency plans and other emergency response manuals, our role in oil spill contingency planning is more typically as a regulatory and technical reviewer of pipeline, vessel, facility, and exploration/production contingency plans. We review oil spill contingency plans on behalf of government and non-governmental clients, evaluating the plans for regulatory compliance and operational effectiveness. We often focus our review on scenario analyses, to assess whether planholders have demonstrated sufficient resources and planning in place to support a worst case discharge. We review approximately 6-10 oil spill contingency plans per year, including liquid transportation pipelines, and we regularly participate in oil spill response drills and exercises that test various components of oil spill contingency plans and response systems. We have developed standard oil spill tactics guides in Alaska and Massachusetts. We have developed geographic response plans (site-specific protection strategies) for over 500 sites in Alaska and nearly 200 sites in Massachusetts and Rhode Island.

e) *Provide examples of oil spill response plans prepared by Nuka for liquid pipelines in North America or elsewhere.*

Nuka Research does not release client work products that are not in the public domain. We are providing an excerpt from a contingency plan that Nuka Research has developed to demonstrate our proficiency in this area and to show an example of the level of planning detail that we typically provide in oil spill scenarios.

Provided at **Attachment NGP IR 1.10**, we have provided scenario summaries with redacted information that is specific to the operator to protect confidentiality, including maps, diagrams and incident organization charts. This scenario is for a relatively small jet fuel release to tidal flats. This is one of five scenarios developed for this operator.

**REQUEST 1.11:**

<b>Potential Socio-Cultural Impacts</b>		
<b>1.11</b>	<b>Reference:</b>	<i>Ecological Costs Associated with the Proposed Northern Gateway Pipeline</i> prepared by Matthias Ruth, PhD and Rebecca Gasper, MS dated December 2011, page 18, last paragraph (A2K3F0).
	<b>Preamble:</b>	In the Reference, the authors state that they “cannot predict the extent to which the project will have sociocultural impacts for the Haisla and other First Nations or whether Enbridge’s proposed actions to mitigate these impacts will be effective”.
	<b>Request:</b>	(a) Please explain why the authors were unable to make these predictions. (b) To the extent that the authors lacked information to make these predictions, please indicate the information that would have been required and how such information could be obtained.

**RESPONSE (provided by M. Ruth and R. Gasper):**

The goal of the study was to attempt to quantify the ecological costs associated with the Northern Gateway project. Since ecological costs often do not have associated market prices, their value is typically excluded from cost-benefit analyses. Although we focus on monetary values, we intended to acknowledge through the statement identified in the query that the price of ecosystem services is not the only way that the sites and services affected by the pipeline are significant or valuable to the Haisla people.

Moreover, we intended to acknowledge that there are other potential impacts, including sociocultural effects, that have been raised by the Haisla people and that have affected other indigenous groups when similar projects have been implemented. These impacts are significant in making the decision to build the pipeline, and thus deserved acknowledgement, but attempting to quantify or analyze them was beyond the scope of our study.

**REQUEST 1.12:**

<b>Potential Socio-Cultural Impacts</b>		
<b>1.12</b>	<b>Reference:</b>	<i>Ecological Costs Associated with the Proposed Northern Gateway Pipeline</i> prepared by Matthias Ruth, PhD and Rebecca Gasper, MS dated December 2011, page 24 (A2K3F0).
	<b>Preamble:</b>	In the Reference, the authors state that “every oil spill will have a unique impact on the environment depending on a variety of factors including the type of oil spilled, the location of the spill, the type of ecosystem and resident wildlife affected, and weather at the time of the spill”. The authors state that they estimate the ecological cost of the seven hypothetical spill scenarios developed in the Northern Gateway Pipeline application
	<b>Request:</b>	Please confirm that when estimating the ecological cost of each spill scenario, the authors did not take into account the probability of the scenario occurring nor did they discount ecological costs based on the probability of any particular spill occurring.

**RESPONSE (provided by M. Ruth and R. Gasper):**

For each oil spill scenario in the application, we used the given specifications (namely spill volume and, where presented, duration of impacts) to derive a social and ecological cost estimate for the spill. We did not calculate the costs of oil spills over the lifetime of the pipeline, therefore we did not make any calculations of cumulative impacts of spills or adjustments for likelihood of the spills occurring. We intended only to illustrate the ecological costs associated with each spill scenario presented by Enbridge if it were to occur.

**REQUEST 1.13:**

<b>Potential Socio-Cultural Impacts</b>		
<b>1.13</b>	<b>Reference:</b>	<i>Ecological Costs Associated with the Proposed Northern Gateway Pipeline</i> prepared by Matthias Ruth, PhD and Rebecca Gasper, MS dated December 2011, pages 42 and 46 (A2K3F0).
	<b>Preamble:</b>	At page 42 of the Reference, the authors provide an estimate of the costs associated with carbon emissions from tankers ranging from \$85 million to \$55 billion and averaging between \$3 billion and \$8 billion. At page 46, the authors indicate that Enbridge only considered emissions from tankers when berthed and loading or unloading and did not consider emissions from tankers on their entire routes.
	<b>Request:</b>	For the data provided in Table 18, please provide a breakdown of the

		total emissions assumed, the cost of the emissions and the point of their generation distinguishing between emissions that occur within Canadian territory and the remainder of the tanker emissions outside of Canadian waters.
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**RESPONSE (provided by M. Ruth and R. Gasper):**

We do not distinguish between tankers in and outside of Canadian waters. Rather, we use an average emissions profile for each tanker type as mentioned on page 30 of the report. The researchers who developed these profiles took into account average days at sea, average speed and capacity utilization of the tanker types.

To calculate associated costs, we summed the emissions profiles for the estimated fleet reported by Enbridge (see Table 12 of the report). Total emissions from this fleet average 12.5 million metric tonnes CO<sub>2</sub> per year. This emissions level was then multiplied by the social cost of carbon ranges as described on page 26 and then totaled into net present value at various discount rates over the 30 year life of the project.

<b>Annual Shipping Emissions</b>					
<b>Social cost of carbon (\$/t)</b>			<b>Emissions (t CO<sub>2</sub>)</b>		
<b>Average</b>	High	Low	Average	High	Low
<b>17</b>	101	4	212500000	1262500000	53125000

**REQUEST 1.14:**

<b>Potential Socio-Cultural Impacts</b>		
<b>1.14</b>	<b>Reference:</b>	<i>Ecological Costs Associated with the Proposed Northern Gateway Pipeline</i> prepared by Matthias Ruth, PhD and Rebecca Gasper, MS dated December 2011, page 42, last paragraph (A2K3F0).
	<b>Preamble:</b>	In Table 19 of the Reference, the authors provide an estimate of the costs due to upstream impacts from oil sands extraction, which range from \$716 million to \$106 billion, averaging between \$5 billion and \$13 billion.
	<b>Request:</b>	What, if any, benefits did the authors include regarding the oil sands extraction activities that would be associated with these estimated costs?

**RESPONSE (provided by M. Ruth and R. Gasper):**

We did not calculate the benefits of upstream oil sands extraction in this report. The focus of this report was on those ecological and social costs that were not quantified in the Enbridge analysis and are typically excluded from cost-benefit analysis because there is no market price associated with them.

**REQUEST 1.15:**

<b>Economics</b>		
<b>1.15</b>	<b>Reference:</b>	<i>Ecological Costs Associated with the Proposed Northern Gateway Pipeline</i> prepared by Matthias Ruth, PhD and Rebecca Gasper, MS (December 2011), Section 4.3 at page 29, Section 5.1 at page 41, and Section 5.2 at pages 43-44 (A2K3F0).
	<b>Preamble:</b>	In Section 5.2, Table 22 provides “Social and ecological [costs] of hypothetical oil spill examples off the coast of British Columbia resulting from tanker activities” in millions of dollars. Example 3 in the table pertains to a tanker spill of 36,000 m3 of diluted bitumen in Wright Sound. The NPV of the cost of this spill ranges from \$3 billion (for a spill with impacts lasting 2 years, discounted at 7%) to \$13 billion (for a spill with impacts lasting 10 years, discounted at 0%).  Section 4.8 provides the “Oil Scenario analysis methods”. It explains: “For spills that occur in the open ocean and estuarine environments, we use ecological and social costs estimated by the Environmental Protection Agency (EPA) using oil fate analysis and modeling.” A footnote provides the source: EPA (2004) Basic Oil Spill Cost

	<p><b>Request:</b></p>	<p>Estimation Model, and Table 14 provides the per gallon base socioeconomic and environmental costs of a heavy oil spill, according to spill volume, as reported by in the EPA (2004) document.</p> <p>For three different recovery period scenarios, the authors calculate the NPV of the socioeconomic and ecological costs associated with a spill: (1) impacts last for 2 years; (2) impacts last for 5 years; and (3) impacts last for 10 years. The authors note “To account for attenuation of impacts over time, we use methodology by Liu and Wirtz (2006). They assume that damages to ecosystem services lessen over time by 10% each year. Therefore, in the first year of the spill, we estimate 100% of ecosystem costs, in year two we estimate 90% of total costs and so forth.”</p> <p>Please provide the stream of annual socioeconomic and ecological costs behind the NPV results for a hypothetical spill in Wright Sound, for the three recover period scenarios. Please also show specifically how the EPA (2004) assumptions enter the calculations.</p>
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**RESPONSE (provided by M. Ruth and R. Gasper):**

The total cost streams for the NPV calculations for the three scenarios are in the table below. To arrive at these costs, we multiply the total social and economic cost estimates provided in the EPA (2004) report by the total volume of the spill.

<b>Annual costs (US\$2011) of a spill in Wright Sound, Scenario 3</b>			
<b>Year</b>	<b>Two year</b>	<b>Five Year</b>	<b>Ten Year</b>
<b>1</b>	1997140530	1997140530	1997140530
<b>2</b>	1797426477	1797426477	1797426477
<b>3</b>		1617683829	1617683829
<b>4</b>		1455915446	1455915446
<b>5</b>		1310323902	1310323902
<b>6</b>			1179291512
<b>7</b>			1061362360
<b>8</b>			955226124.4
<b>9</b>			859703511.9
<b>10</b>			773733160.7



**REQUEST 1.16:**

<b>Economics</b>		
<b>1.16</b>	<b>Reference:</b>	<p><i>Ecological Costs Associated with the Proposed Northern Gateway Pipeline</i> prepared by Matthias Ruth, PhD and Rebecca Gasper, MS (December 2011), Section 4.3 at page 29, Section 5.1 at page 41, and Section 5.3 at pages 43-44 (A2K3F0).</p>
	<b>Preamble:</b>	<p>Section 4.3 treats “Impacts specific to Haisla Territory”. Table 11 shows the “Ecosystems affected by the proposed project within the Coastal and Kitimat regions, noting that “Impacts within these regions are expected to be particularly relevant to the Haisla people”. Table 11 shows that a total of 10,459 ha of forest, and 526 ha of wetlands are project areas that are relevant to the Haisla. Given the total project area of these ecosystems (forests: 61,908 ha from Table 8, wetlands: 10,500 ha from Table 10), the Haisla territory accounts for 17% of total forestland and 5% of total wetland area.</p> <p>Section 5.3 presents the estimated costs of the project impacts in Haisla territory. It is noted that the costs of impacts depend “... on choice of discount rate, social cost of carbon and ecosystem service values.” Table 23 contains the “Costs (US\$ million) due to ecological and social impacts of construction within the Haisla territory over a 30-year project lifetime.” The cost categories include: wetland services, forest services, tourism impacts, and salmon impacts.</p> <p>A different discount rates (7% - 0%), the NPV of impact costs show: wetland services (average value) at US\$340-638 million; forest services (average value) at UR\$1305-3050 million; tourism impacts at US\$0.349-0.844 million; and salmon impacts are US\$0.009-0.021 million. All of these are in Haisla territory.</p> <p>For comparison, Table 17 in Section 5.1 presents the “Average costs due to the construction of the project” in US\$ million. These construction impact costs are calculated for the whole of the project area “over a 30 year assumed project lifetime.” At different discount rates (7%-0%), the NPV of impact costs show: wetland services at US\$341-641 million; forest services (average value) at US\$1379-3121 million; tourism impacts at US\$0.01-0.02 million; and salmon impacts are US\$0.0008-0.02 million.</p>
	<b>Request:</b>	<p>(a) Out of the entire project area only 17% of forests, and 5% of wetlands fall into Haisla territory, yet the magnitudes of the impact costs to forests and wetlands on Haisla territory are essentially the same as they are for the whole Project. Please</p>

		<p>clarify how this outcome is possible.</p> <p>(b) Please explain why the calculated NPV for salmon impacts are higher in Haisla territory than they are for the entire project area including the Haisla territory.</p> <p>(c) Please explain why the calculated NPV for tourism impacts are higher in Haisla territory than they are for the entire project area including the Haisla territory.</p>
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**RESPONSE (provided by M. Ruth and R. Gasper):**

Based on the comments we have received, we have updated our estimates of the impacts within the Haisla territory. They are provided in the table below.

Impacts within the Haisla territory (US\$ million)							
Discount rate (%)	Wetland services, average	Wetland Services, range	Forest services, average	Forest services, range	Tourism impacts	Salmon	Total
0	632	64-2,105	675	652-824	0.02	0.02	716-2,929
3	466	50-1,485	497	483-589	0.01	0.01	533-2,074
5	456	44-1,229	423	412-493	0.01	0.01	456-1,722
7	335	39-1,020	371	362-425	0.01	0.01	401-1,445

**REQUEST 1.17:**

Economics		
1.17	<p><b>Reference:</b></p> <p><i>Ecological Costs Associated with the Proposed Northern Gateway Pipeline</i> prepared by Matthias Ruth, PhD and Rebecca Gasper, MS (December 2011), Section 4.1 at page 27, Section 4.2 at page 29, Appendix B (A2K3F0).</p> <p><b>Preamble:</b></p> <p>In section 4.1, Table 7 presents the data sources for the ecosystem service values used in the study's NPV calculations. For wetlands, per hectare US\$ values are drawn from Woodward and Wui (2001) and Costanza et al. (1997, 2008).</p> <p>In the "range" of coastal wetland values, the low end (\$164) seems to be the value for wetland storm protection estimated by Woodward and Wui (2001). In the "range" of inland wetland values, the low end (\$893 – <i>eight hundred ninety three</i>) also seems to be taken from</p>	

		<p>Woodward and Wui (2001). It represents “all other services” and is a sum of service values. Referring to Appendix B, it seems to be the sum of the Woodward &amp; Wui average values for: inland flood protection (\$273), water quality (\$290), water supply (\$88), and habitat (\$212). But the sum of these numbers is \$863 (<i>eight hundred sixty three</i>).</p> <p>In the source document, Woodward and Wui (2001), the US\$ wetland ecosystem service values corresponding to those in Ruth and Gasper (2011) are: storm protection (\$237), inland flood protection (\$393), water quality (\$417), water supply (\$127), and habitat (\$306). These values are all 44-45% greater than those used and reported in Ruth and Gasper (2011).</p> <p>“Average” ecosystem service values for coastal and inland wetlands are in Appendix B. However, the basis for the choice of the average values actually used for calculations (\$4082 for coastal wetlands and \$2952 for inland wetlands), as shown in Table 7 (section 4.1) and Table 10 (section 4.2), is not stated.</p>
	<b>Request:</b>	<p>(a) Please confirm that \$893 represents a typographical error in Table 7 that should read \$863.</p> <p>(b) Please explain why the Woodward and Wui values were seemingly deflated, instead of inflated to year 2011.</p>

**RESPONSE (provided by M. Ruth and R. Gasper):**

Based on comments we have received, we have updated Table 7 and include the updates below. In deriving our final wetland cost estimates, we did inflate the values in Woodward and Wui to 2011 values. We have updated the Appendix table and our total cost values to reflect the most recent inflation data. The updated tables are below.

Table 7 Cost estimates					
Ecosystem service	Valuation			Area affected	
	Average value (US\$2011/ha)	Range	Reference	Area (ha)	Reference
<b>Salmon habitat</b>	3		David Suzuki, 2010	1,840	Pembina, 2009
<b>Wetland inland</b>	2,469	562-22,422	Woodward and Wui, 2001	10,500	Enbridge TDR, 2010

			Costanza et al., 1997		
			Costanza et al., 2008		
<b>Wetland coastal</b>	4,000	164-53,282	Costanza et al., 2008 Woodward and Wui, 2001	562	Enbridge TDR, 2010
<b>Forest, water supply</b>	1,484		Costanza, 1997	61,908	Enbridge TDR, 2010
<b>Grassland</b>	314	272-355	Costanza, 1997 Loomis et al. 2000	10,031	Enbridge TDR, 2010
<b>Kitimat Tourism</b>	3		LSM Consulting, 2003	562	Enbridge TDR, 2010

<b>Wetland Data Source Appendix</b>							
<b>Study</b>	<b>Scope</b>	<b>Ecosystem</b>	<b>Service</b>	<b>Method</b>	<b>Mean</b>	<b>Low</b>	<b>High</b>
<b>Woodward and Wui, 2001<sup>2</sup></b>	Global	Wetland	Storm protection	Meta-analysis of peer-reviewed and grey literature using travel cost , contingent valuation and replacement cost methods	407	19	8,850
<b>Woodward and Wui, 2001</b>	Global	Wetland	Flood protection	Meta-analysis of peer-reviewed and grey literature using travel cost , contingent valuation and	676	153	3,007

<sup>2</sup> The utility of using this meta-analysis is to identify trends among many studies of wetland valuation.

				replacement cost methods			
<b>Woodward and Wui, 2001</b>	Global	Wetland	Water quality	Meta- analysis of peer- reviewed and grey literature using travel cost , contingent valuation and replacement cost methods	717	216	2,372
<b>Woodward and Wui, 2001</b>	Global	Wetland	Water supply	Meta- analysis of peer- reviewed and grey literature using travel cost , contingent valuation and replacement cost methods	219	10	4,425
<b>Woodward and Wui, 2001</b>	Global	Wetland	Habitat	Meta- analysis of peer- reviewed and grey literature using travel cost , contingent valuation and replacement cost methods	527	164	1,688

Total average costs						
Discount rate	Wetlands	Forest	Grassland	Tourism impacts	Salmon	Totals
0	635	3,131	34	0.02	0.002	3,800
3	469	2,096	29	0.01	0.001	2,594
5	393	1,675	27	0.01	0.001	2,095
7	336	1,379	25	0.01	0.0008	1,740

**REQUEST 1.18:**

Economics		
<b>1.18</b>	<b>Reference:</b>	<i>Ecological Costs Associated with the Proposed Northern Gateway Pipeline</i> prepared by Matthias Ruth, PhD and Rebecca Gasper, MS (December 2011), Section 4.2 at page 29, and Section 5.1 at page 41 Appendix B (A2K3F0).
	<b>Preamble:</b>	<p>Table 10 at page 29 provides the per hectare values for wetland ecosystem services. "Average" values are as follows: climate regulation (\$17/ton with 0.4 ton/ha); coastal flood protection (\$4082/ha); and "all other services", (\$2942/ha). The corresponding impact areas for these services are: climate regulation (10,500 ha); coastal flood protection (562 ha); and "all other services" (10,500 ha).</p> <p>These value and area assumptions are used to generate the NPV for wetland ecosystem services over a 30-year period, and at differing discount rates.</p> <p>The results of the wetland NPV calculations are presented in Table 17 page 41: "Average costs due to construction of the project (US\$2011)."</p>
	<b>Request:</b>	Please provide the annual construction impact costs to wetlands ecosystem services used for the NPV calculations shown in Table 17 (i.e., the vector [641; 474; 398; 341]). Please confirm that these are based only on the assumptions shown in Table 10. If there are other assumptions, please indicate what they are.

**RESPONSE (provided by M. Ruth and R. Gasper):**

The requested annual cost data are below. The costs are based on the assumptions listed in Table 10. Please note that in addition to calculating the cost of lost carbon over the lifetime of the project, we also calculate the one-time loss of carbon currently stored in the ecosystem, which totals US\$14 million.

<b>Annual wetland costs (US\$)</b>			
<b>Year</b>	<b>Total wetland cost</b>	<b>Year</b>	<b>Total wetland cost</b>
<b>1.00</b>	41975663.6	<b>15.00</b>	20701755.65
<b>2.00</b>	33367110.92	<b>16.00</b>	18873989.09
<b>3.00</b>	33368959.56	<b>17.00</b>	17229311.2
<b>4.00</b>	33370852.58	<b>18.00</b>	15749420.61
<b>5.00</b>	33372791.02	<b>19.00</b>	14417846.24
<b>6.00</b>	33374775.99	<b>20.00</b>	13219764.34
<b>7.00</b>	33376808.6	<b>21.00</b>	12141833.69
<b>8.00</b>	33378889.99	<b>22.00</b>	11172047.4
<b>9.00</b>	33381021.33	<b>23.00</b>	10299599.47
<b>10.00</b>	33383203.83	<b>24.00</b>	9514764.69
<b>11.00</b>	30285838.71	<b>25.00</b>	8808790.594
<b>12.00</b>	27498487.22	<b>26.00</b>	8173800.162
<b>13.00</b>	24990154.66	<b>27.00</b>	7602704.299
<b>14.00</b>	22732945.94	<b>28.00</b>	7089123.041

**REQUEST 1.19:**

<b>Project Effects on Ecosystem Goods and Services – Estimates of Effects from Construction</b>		
<b>1.19</b>	<b>Reference:</b>	<i>Ecological Costs Associated with the Proposed Northern Gateway Pipeline</i> prepared by Matthias Ruth, PhD and Rebecca Gasper, MS (December 2011), Table 8, page 28 (A2K3F0).
	<b>Preamble:</b>	The assessment of the potential loss of ecological services associated with loss of forests includes an estimate of \$1,484 per hectare for ecosystem services other than climate regulation. According to

	<p><b>Request:</b></p>	<p>Appendix B, this value is based on the work of Costanza et. al. (1997).</p> <p>(a) Please provide an explanation of how the \$1,484 per hectare was derived, given that Constanze et. al. estimate the average global ecosystem value of temperate/boreal forests to be \$302 per hectare, of which \$88 comes from climate regulation and the remaining \$214 per hectare is for other ecosystem services.</p> <p>(b) Please identify the information sources used by Costanza et. al. to determine the value of specific ecosystem service values for temperate/boreal forests for the specific services, such as waste treatment, food production, recreation and raw materials, and provide an explanation as to why these values are relevant to the forested lands along the proposed pipeline route.</p> <p>(c) Since one of the mitigation measures for project effects on merchantable timber includes paying stumpage to affected forestry stakeholders (Section 5.4.4.3 of Volume 6C), would not the inclusion of a value for loss of ecological services associate with loss of raw materials (stumpage) already be included in project costs?</p> <p>(d) Specifically, regarding the derivation of the \$1,484 per hectare, please also describe why this may be relevant given that the meta-analyses on which Costanza et al. are based include global services provided by tropical rainforests. If the values of tropical rainforests are excluded, how would this affect the final value per hectare?</p>
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**RESPONSE (provided by M. Ruth and R. Gasper):**

a) *Please provide an explanation of how the \$1,484 per hectare was derived, given that Constanze et al. estimate the average global ecosystem value of temperate/boreal forests to be \$302 per hectare, of which \$88 comes from climate regulation and the remaining \$214 per hectare is for other ecosystem services.*

The cost estimate \$1,484 was derived by inflating the total ecosystem services value for forests (\$969/ha) less the value ascribed to climate regulation (\$141/ha).

b) *Please identify the information sources used by Costanza et. al. to determine the value of specific ecosystem service values for temperate/boreal forests for the specific services, such as waste treatment, food production, recreation and raw materials, and provide an explanation as to why these values are relevant to the forested lands along the proposed pipeline route.*



The numbers from Costanza et al. were derived by the authors based on a synthesis of over 100 studies of various biomes using a variety of cost estimation methods. Their method was similar to the meta-analyses and other syntheses that we used in our report whereby they performed a literature search and compiled their cost estimate ranges based on relevant published work and their own calculations.

These studies were vetted by several of the top scientists in the field of ecological economics at a workshop in preparation for their paper. The use of a variety of studies and methods from different areas of the world provides a snapshot of an average monetary value of the services described in their paper. As discussed in section 2 of our report, Canada's forest ecosystems provide the same services discussed in the Costanza et al. paper (e.g., water quality and supply, recreation, habitat).

Costanza et al.'s estimates cover a variety of forest types around the world, representing one of the most thorough scientific reviews of such estimates. While we do not claim that their estimates reflect the exact dollar value of similar services in the affected forests in Canada, we believe that they provide a reasonable approximation of these costs. In fact, as mentioned in the Costanza et al. paper, their estimates represent only a subset of all services that ecosystems provide—only those that can be quantified through rigorous scientific methods—and therefore are likely to be conservative.

c) *Since one of the mitigation measures for project effects on merchantable timber includes paying stumpage to affected forestry stakeholders (Section 5.4.4.3 of Volume 6C), would not the inclusion of a value for loss of ecological services associate with loss of raw materials (stumpage) already be included in project costs?*

While stumpage fees may compensate foresters for the market price of timber, there are other ecological costs associated with loss of forest as described in section 2.1 of our report. These services include nutrient cycling, soil formation, water quality and supply, habitat, pollination and others.

d) *Specifically, regarding the derivation of the \$1,484 per hectare, please also describe why this may be relevant given that the meta-analyses on which Costanza et al. are based include global services provided by tropical rainforests. If the values of tropical rainforests are excluded, how would this affect the final value per hectare?*

As described in our response to query 1.19 (b), we do not expect the Costanza et al., values to be an exact representation of Canada's forest value, but rather a

reasonable estimate. We therefore used the total average forest value they derived. If instead we use the numbers for boreal forest alone, other ecosystem services (excluding climate regulation) are worth a total of US\$368/ha. This changes our forest cost estimates by 2% and our total construction costs for the project by 1.6%.

**REQUEST 1.20:**

<b>Project Effects on Ecosystem Goods and Services – Oil Spill Analysis Methods</b>		
<b>1.20</b>	<b>Reference:</b>	<i>Ecological Costs Associated with the Proposed Northern Gateway Pipeline</i> by Matthias Ruth, PhD and Rebecca Gasper, MS (December 2011), page 27 (A37893).
	<b>Preamble:</b>	Table 7 in the report provides an estimate of the value of tourism in Kitimat on a US dollar per hectare basis that may be at risk. The figure shows “3” and then “143” on the second line.
	<b>Request:</b>	What is the correct value estimate for tourism impacts?

**RESPONSE (provided by M. Ruth and R. Gasper):**

The value used for tourism estimates is US\$3/ha. We report the second value in the table for reference, but used US\$3/ha for our calculations as we thought this number was more relevant for our study. We have updated Table 7 (see response to query 1.17) to avoid confusion.

**REQUEST 1.21:**

<b>Seismic Design</b>		
<b>1.21</b>	<b>Reference:</b>	Limitations of Code-Based Seismic Design, Report Number SMI-35-2011, December 15, 2011, Prepared by Praveen K. Malhotra (A2K3E6).
	<b>Preamble:</b>	The Reference discusses that code based seismic design of tanks and pipelines does not eliminate the risk; it only reduces the risk to a certain unknown level.
	<b>Request:</b>	(a) Please identify and provide details of the specific projects that have been constructed using risk based design for a tank system on which this reference is based. (b) For the projects identified in question (a) above, please describe if and how secondary containment has been included in the design to reduce the risk.

**RESPONSE (provided by P. Malhotra):**

It is not possible to provide specific details about the projects because those are confidential.

Risk-based design has been performed for several tanks including those with secondary containment. Secondary containments are very effective in reducing the risk to the environment if they are lined and exceed the full capacity of the tanks. But piping can rupture and spill the contents of the tank outside the containment. Also, there is risk to the owner due to business interruption. Therefore, owners can decide to significantly exceed the minimum code requirements to reduce the risk to a level which provides the most cost-effective risk management solution. All these factors are considered in risk-based design.

**REQUEST 1.22:**

Seismic Design		
<b>1.22</b>	<b>Reference:</b>	Limitations of Code-Based Seismic Design, Report Number SMI-35-2011, December 15, 2011, Prepared by Praveen K. Malhotra (A2K3E6).
	<b>Preamble:</b>	The Reference states: "The minimum code requirements may have to be significantly exceeded in order to reduce the risk to the environment to a 'tolerable level'."
	<b>Request:</b>	Please define what Malhotra means by "significantly exceeded" and by "tolerable level" in the above statement.

**RESPONSE (provided by P. Malhotra):**

The tolerable level of risk needs be determined by the stakeholders who will be affected by the damage to the environment. What size and frequency of leaks are they willing to tolerate? Enbridge should find this information from the stakeholders. It cannot be simply assumed that a code-designed tank or pipeline will reduce the risk to a tolerable level. The risk needs to be quantified and compared with the tolerable level. Codes only provide the minimum design requirements; they do not guarantee that the risk will be reduced to a tolerable level.

**REQUEST 1.23:**

Seismic Design		
<b>1.23</b>	<b>Reference:</b>	Limitations of Code-Based Seismic Design, Report Number SMI-35-2011, December 15, 2011, Prepared by Praveen K. Malhotra, page 2, item 2, second line (A2K3E6).

	<p><b>Preamble:</b></p> <p><b>Request:</b></p>	<p>The Reference states: “The probability of exceeding design accelerations at the Kitimat terminal is about 2% during the 30-year life of the project.”</p> <p>(a) Please clarify why the Malhotra feels 2% in 30 years is not an acceptable risk, specifically with respect to what the implications of exceeding the design accelerations at the Kitimat terminal have on the failure of a tank, including clarification on what constitutes a “tank failure”. Include in your clarification a description of the basis and the associate rationale.</p> <p>(b) Please provide a basis for the statement that “design accelerations for pipelines could have 10 times greater chance of being exceeded in 30 years...” (page 9, last paragraph).</p>
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**RESPONSE (provided by P. Malhotra):**

It is not sufficient to define the exceedance probability of the design acceleration. How the design acceleration will be used to size the structure is equally important. What will be the performance of the tank under the design acceleration? Will it suffer any damage under the design acceleration or will it remain completely undamaged (elastic)? In code-based design, the actual performance of the tank is not explicitly computed. The design loads are reduced by a factor of up to 3.5 (R factor) without quantifying the damage suffered by the tank. Tank is meant to contain the liquid; therefore a leak constitutes a “failure”. A fire in the tank also constitutes a failure. Tank failure can take many different forms: (1) buckling of shell; (2) rupture of base plate; (3) rupture of attached piping; (4) rupture of tank shell; or (5) sloshing damage to the tank roof. The probability of failure is an important step in risk-based design. The probability of failure is not same as the probability of exceeding the design acceleration (say 2% in 30 years).

Pipelines are long distributed structures. The entire pipeline will not be shaken by the same earthquake. Different sections of the pipeline will be shaken by different earthquakes which can occur independently of each other. Therefore, the probability of significant shaking anywhere along the pipelines is much higher than the probability of significant shaking at a single point along the pipelines. This can be easily shown by performing an aggregate probabilistic seismic hazard analysis along the route of the pipelines.

**REQUEST 1.24:**

<b>Seismic Design</b>		
<b>1.24</b>	<b>Reference:</b>	Limitations of Code-Based Seismic Design, Report Number SMI-35-2011, December 15, 2011, Prepared by Praveen K. Malhotra, page 5, paragraph 1, line 10 (A2K3E6).
	<b>Preamble:</b>	The Reference states: "Earthquakes of magnitude up to M7.5 can occur anywhere on these area sources according to Atkinson [4]."
	<b>Request:</b>	Please provide evidence of seismic events and their likelihood within 25 km along the pipeline route and the terminal site.

**RESPONSE (provided by P. Malhotra):**

Structures are not designed for earthquakes that have happened in the past. Structures are designed for earthquakes that can happen in the future. The recorded data are usually not long enough to statistically establish the size of the maximum earthquake that can happen near a project. Based on the seismic activity of the region and other similar regions around the world, geologists generate a seismic source model for the project. According to that model, an earthquake of magnitude M7.5 can occur anywhere along the route of the pipelines.

**REQUEST 1.25:**

<b>Current Socio-Economic Information for Haisla First Nation</b>		
<b>1.25</b>	<b>Reference:</b>	Application, Volume 8C: Risk Assessment and Management of Spills – Marine Transportation, Section 9.3.1.1 (A25249).
	<b>Preamble:</b>	Section 9.3.1.1 describes the number of registered members of the Kitimat Village Council as of 2009.  According to the 2011 census, there are 415 people living on the Kitimaat 1 reserve and the most recent information (April 2012) from Aboriginal Affairs and Northern Development indicates there are 1,392 registered members of the Haisla First Nation of whom 649 live on their own reserves.
	<b>Request:</b>	(a) Please provide information on the population of the Haisla First Nation and for the Kitimat 1 reserve for individuals from 1996 to 2012.  (b) Please provide estimates of the number of people living in the Kitimaat 1 reserve currently employed in:

		(i) commercial marine resource harvesting (ii) forestry (iii) tourism (iv) public administration (v) other
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**RESPONSE:**

- a) *Please provide information on the population of the Haisla First Nation and for the Kitimat 1 reserve for individuals from 1996 to 2012.*

The official name for the Haisla Nation is the “Haisla Nation” not the “Haisla First Nation”. “Kitimat 1 reserve” is a misspelling of “Kitamaat 1”, or Kitamaat IR No. 1. Kitamaat IR No. 1 is not a residential reserve. This reserve is located adjacent to the Kitimat River as a base for Haisla Nation eulachon fishing and processing – an anchor cultural activity of the Haisla people. Our village is located on Kitamaat IR No. 2.

INAC’s First Nation’s Profiles lists the following population statistics for the Haisla Nation as of May, 2012:

Registered members on own reserve:	643
Registered members on other reserves:	26
Registered members off-reserve:	1,042
TOTAL:	1,711

Roughly 75% of Haisla Nation members who live off-reserve live in Kitimat or Terrace.

- b) *Please provide estimates of the number of people living in the Kitamaat 1 reserve currently employed in:*
- (i) commercial marine resource harvesting*
  - (ii) forestry*
  - (iii) tourism*
  - (iv) public administration*
  - (vi) other*

As noted above, Kitamaat IR No. 1 is not a residential reserve.

The Haisla Nation does not keep detailed records of the employment of its members, and is therefore not able to provide this information.

Haisla Nation members hold various employment based on where they live and what opportunities are afforded to them. More significantly though, Haisla Nation members, whether they live on IR No. 2, in Kitimat, in Terrace, or further afield,

continue to rely on resources harvested in Haisla Nation Territory for food, social and ceremonial and commercial purposes. They fish for a wide range of species, including but not limited to eulachon, herring, salmon (pink, chum, coho, sockeye and chinook), sablefish, halibut, other groundfish, shellfish, crab, sea cucumber, sea urchins, and herring spawn on kelp.

Haisla Nation members hunt for a wide range of species, including but not limited to duck, geese, deer, mountain goat, moose, bear, seal, porcupine, beaver, rabbit.

Haisla Nation members gather seaweed, seagull eggs, and a wide range of plants and berries, including but not limited to devil's club, wild celery, wild crabapples, wild currants, blueberries, salmon berries, elderberries, yew wood, balsam, cedar, Indian hellebore, and labrador tea.

Haisla Nation members provide these resources to family and friends, so that even Haisla Nation members who do not obtain these resources directly for themselves continue to enjoy them.

The Skeena Native Development Society conducted a Labour Market Census in 2006, the results of which are set out in written intervenor evidence of the Kitasoo/Xaixais Integrated Resource Authority (A2K3T5). This census identified the following employment information for the Haisla Nation:

fisheries:	2%
forestry:	1%
public:	40%
other services:	47%
unknown:	10%

The Haisla Nation cannot vouch for the accuracy of this information.