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November 9, 2012

National Energy Board  
444 - 7th Avenue SW  
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Attention: Ms. Sheri Young,  
Secretary to the Joint Review Panel  
Enbridge Northern Gateway Project

**Richard A. Neufeld, Q.C.**  
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Direct: (403) 268-70203  
File No.: 15084-281

Dear Ms. Young:

**RE: Northern Gateway Pipelines Inc.  
Enbridge Northern Gateway Project Application of 27 May 2010  
Hearing Order OH-4-2011**

Please find enclosed for filing with the Joint Review Panel Northern Gateway's response to JRP IR 14.

Yours truly,  
**Fraser Milner Casgrain LLP**

A handwritten signature in blue ink, appearing to read "R. Neufeld", is written over a light blue rectangular background.

Richard A. Neufeld, Q.C.  
Partner

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Northern Gateway Pipelines Inc.  
 Section 52 of the *National Energy Board Act* Application for  
 Enbridge Northern Gateway Project  
 NEB File No.: OF-Fac-Oil-N304-2010-01 01  
 Filed 27 May 2010

**Information Request No. 14**

**Socio-Economic Matters**

<b>14.1 Framework for Monitoring Socio-Economic Effects</b>	
<b>Reference:</b>	<ul style="list-style-type: none"> <li>i) Exhibit A48-1 (A2C3I9) JRP IR 5.3 to Northern Gateway (Adobe pages 4 to 6 of 15)</li> <li>ii) Exhibit B40-2 (A2E7Q0) Northern Gateway response to JRP IR 5.3 (Adobe pages 7 to 10 of 33)</li> <li>iii) Exhibit B8-2 (A1V5D2) Application Volume 6C, Section 4.4 Regional Social and Economic Effects (Adobe page 163 of 273)</li> <li>iv) Exhibit B8-2 (A1V5D2) Application Volume 6C, Section 4.4 Regional Social and Economic Effects (Adobe page 171 of 273)</li> <li>v) Exhibit B8-2 (A1V5D2) Application Volume 6C, Section 4.4 Regional Social and Economic Effects (Adobe page 176 of 273)</li> <li>vi) Exhibit B8-2 (A1V5D2) Application Volume 6C, Section 4.4 Regional Social and Economic Effects (Adobe page 194 of 273)</li> <li>vii) Exhibit B8-2 (A1V5D2) Application Volume 6C, Section 4.4 Regional Social and Economic Effects (Adobe page 205 of 273)</li> <li>viii) Exhibit B8-2 (A1V5D2) Application Volume 6C, Section 4.4 Regional Social and Economic Effects (Adobe page 214 of 273)</li> <li>ix) Exhibit B8-2 (A1V5D2) Application Volume 6C, Section 4.4 Regional Social and Economic Effects (Adobe page 242 of 273)</li> </ul>
<b>Preamble:</b>	<p>In reference (i), the JRP asked Northern Gateway to describe the proposed components of its program for monitoring the effects and effectiveness of its regional and Aboriginal hiring and training practices. In response in reference (ii), Northern Gateway states that all prime contractors will be required to provide an Aboriginal Participation Plan, that contractors will be required to provide regular employee and Aboriginal involvement statistics (as a monitoring standard), and that training institutions that provide industry related training will be required</p>

		<p>to provide a monitoring plan (as a condition to any funding provided).</p> <p>In references (iii) through (ix), Northern Gateway proposes a number of measures to monitor the potential social and economic effects of the project, including:</p> <ul style="list-style-type: none"> <li>• monitoring project workers' use of private and commercial accommodation;</li> <li>• monitoring waste and wastewater disposal;</li> <li>• monitoring workforce use of local recreation and leisure facilities;</li> <li>• monitoring incidents involving police and social service providers regarding workers residing in Kitimat;</li> <li>• monitoring staffing and service demands on the RCMP and social services regarding project-related caseloads;</li> <li>• monitoring project workers' use of regional health care facilities;</li> <li>• monitoring enrollment in training and education programs established in support of the project; and</li> <li>• monitoring project effects on highway traffic the initial project mobilization event.</li> </ul> <p>Reference (vi) also states that Northern Gateway will liaise with police, social services providers and local governments to establish criteria for monitoring workers so that incremental demands on social services are reduced.</p> <p>The Panel notes that significant participation by third parties will be required in order for Northern Gateway to establish and implement its proposed monitoring noted in references (iii) through (ix) above and in response to JRP IR 5.3.</p>
	<b>Request:</b>	<p>Please provide:</p> <p>a) a description of the framework Northern Gateway will use to develop and implement its monitoring of potential socioeconomic effects as referred to above, including but not limited to:</p> <p>a.1 the framework for consultations with third parties, including a preliminary list of potential third parties that may be involved, and a description of the outcomes of any consultations that have taken place to date with third parties</p>

		<p>regarding their participation in monitoring;</p> <ul style="list-style-type: none"><li>a.2 a description of how criteria for monitoring will be established with proposed third parties, including any examples of anticipated criteria;</li><li>a.3 a description of how information derived from the monitoring programs will be used to adaptively manage potential socio-economic effects, within the timeframes for which the effects are anticipated (for example, within the timeframe of a single construction spread); and</li></ul> <p>b) a description of how Northern Gateway would develop and implement its proposed monitoring if it is unable to secure the participation of any or all of the anticipated third parties.</p>
	<p><b>Response:</b></p>	<p>In Exhibit B8-2 (A1V5D2) Northern Gateway notes that many of the Project’s potential socio-economic effects cannot be managed by it alone. Its shared responsibility model (see adobe page 61) recognizes that Northern Gateway will need to work with Aboriginal groups, other community partners and provincial and local governments to mitigate, monitor and manage socio-economic effects. However, as construction work will be undertaken by contractors, Northern Gateway, in consultation with stakeholders, will establish a socio-economic monitoring framework, consistent with this model, that will identify the objectives and principles by which Northern Gateway and its contractors will be held accountable.</p> <p>a1. The key component of the socio-economic effects monitoring program is the construction execution plans (CEPs) that Northern Gateway will develop as the basis for describing the scope of work of prime contractors. These CEPs will include information on Northern Gateway’s pre-qualification of potential Aboriginal and local subcontractors and formal socio-economic contract performance requirements. The CEPs will describe the preliminary and final workforce accommodation plans, workforce and procurement commitments, materials transportation plans, safety and security plans, etc., that each contractor will have to adopt and employ for project execution. Detailed CEPs will be developed and continuously improved for each spread.</p> <p>Development of the CEPs and the socio-economic effects monitoring framework will utilize existing Northern Gateway consultation processes, such as the Community Advisory Boards (CABs), for example, and build upon pre-construction consultation commitments and any applicable conditions of certification. The CEPs will be developed in consultation with potentially affected Aboriginal groups, municipal authorities, local businesses, police, emergency</p>



		<p>responders, hospital authorities, and provincial government departments. While there have been preliminary discussions with some of these organizations, this process will commence in earnest as the overarching project execution plan is developed. They will be revised once a certificate and any associated conditions have been received and again prior to mobilization of a contractor to construct a specific scope of work.</p> <p>Exhibit B8-2 has generically identified the key parties with whom consultation will be required in order to prepare the CEPs. These include:</p> <ul style="list-style-type: none"><li>• municipal governments on matters related to:<ul style="list-style-type: none"><li>○ use of commercial accommodations (especially for workers on the pump stations)</li><li>○ potential demands on services and infrastructure, like waste disposal sites and recreational facilities, possible infrastructure and services constraints, and the terms and conditions under which Northern Gateway or its contractors that may affect use would be allowed to use services and infrastructure</li><li>○ preferred transportation routes and travel windows during periods of mobilization and demobilization</li></ul></li><li>• Emergency and medical service providers on matters related to:<ul style="list-style-type: none"><li>○ available emergency response capacity and constraints</li><li>○ use of facilities when emergency requirements exceed in-camp capabilities</li><li>○ public health conditions/concerns</li></ul></li><li>• Law enforcement (RCMP) on matters related to:<ul style="list-style-type: none"><li>○ handling of incidents related to the project workforce</li><li>○ reporting of such incidents to Northern Gateway and the contractor</li><li>○ security and public safety</li></ul></li><li>• School boards on matters relating to:<ul style="list-style-type: none"><li>○ preferred transportation routes and travel windows</li></ul></li></ul>
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during periods of mobilization and demobilization

Given the current plans for spread construction, camp locations and pump station locations, it is expected that discussions would be held with agencies and governments in the following communities:

Community	Pipeline Camps	Pump Stations
Kitimat	Spread 12, Kitimat Terminal,	
Terrace	Hoult and Clore tunnels	Clearwater
Houston	Spread 11	Houston
Burns Lake	Spread 10	Burns Lake
Fort St. James	Spread 9	Fort St. James
Bear Lake	Spread 7	Bear Lake
Tumbler Ridge	Spread 6	Tumbler Ridge
Grande Prairie	Spread 4	Smoky River
Whitecourt	Spread 2	Whitecourt

One potentially instructive example would involve worker accommodation plans in the District of Kitimat. By committing to work with the District of Kitimat to implement policies on construction camps and housing that will generate the maximum benefits for the community, Northern Gateway will be able to adjust its construction camp and housing policies to meet changing local and regional conditions. In Kitimat and in other locations, Northern Gateway will work with local governments to find the best way for accommodating workers given other possible competing demands for housing from tourism and other construction projects that may be underway at the same time.

With respect to its commitments to education, Northern Gateway commenced implementation of its Education, Training and Employment Strategy in 2011. This strategy was created to assist communities in developing necessary and transferable skills associated with the pipeline and construction sectors. Northern Gateway has been and is continuing to work with communities, training institutions, and governments to design and implement programs based on labour market demand and linked to employment outcomes. Even though the Project is still in the regulatory review stage, Northern Gateway is already facilitating partnerships with other pipeline and construction companies to match community labour supply with Project demand.

a2. The shared responsibility model anticipates development of a socio-economic monitoring and management process through an inclusive

		<p>and collaborative process. Consultation with local governments and service providers will ultimately lead to defining key elements of the CEPs which will be refined and implemented by Northern Gateway and each of the construction contractors.</p> <p>Without pre-judging the outcome of this collaboration, it is expected that consultations with local governments and service providers will lead to agreements on:</p> <ul style="list-style-type: none"><li>• desirable socio-economic outcomes</li><li>• appropriate lead and supporting roles for participants</li><li>• priority issues/concerns, indicators and evaluation criteria</li><li>• reporting on findings and issues resolution</li></ul> <p>These items will then become terms and conditions in the CEPs that will stipulate, among other things, how project workers will be allowed to interact with the community, the services and facilities that will be provided by camps or by municipal governments and services providers during construction operations and during emergencies. These items will also address how workforce, heavy equipment and materials transportation will be managed to mitigate impacts on public and worker safety and maintenance of private and public roads.</p> <p>In terms of potential monitoring criteria, some suggested measures could include, without prejudice, evaluation criteria that would address:</p> <ul style="list-style-type: none"><li>• verification of ESA and JRP findings</li><li>• compliance with conditions of certification and relevant subsequent approvals</li><li>• effectiveness of mitigation and management measures</li><li>• effectiveness of adaptive management measures taken by participants</li></ul> <p>It will be important to define these criteria in a manner that allows identification of effects that are directly related to Northern Gateway's activities, bearing in mind that socio-economic conditions and the demand for public services will be affected by various other projects and activities in communities and the surrounding regions as well as government policies and programs and the choices that groups and individuals make. To be effective, and recognizing the relatively</p>
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		<p>short time during which construction activities will occur in most regions, these criteria will also need to be reported in as close to ‘real-time’ as possible so that action and response mechanisms can be identified and implemented as quickly as possible.</p> <p>With respect to commitments to training, Northern Gateway has been working closely with local communities to identify common skills development goals, design plans that will result in employment outcomes, and identify possible partners and funders. Northern Gateway will continue to work with local communities to identify and involve employment partners in the training initiatives process. It is Northern Gateway’s practice to do post training monitoring and follow up, typically through the training institutions. Each ‘training for employment’ project is being detailed in a formalized plan that sets out responsibilities and contains a follow up reporting component. Northern Gateway plans to complete a yearly summary of training activities and outcomes every December.</p> <p>a3. In terms of implementation, the CEPs will identify a Northern Gateway field management structure with defined roles and accountabilities. Within this structure individuals (including contact details) will be named for each spread who will serve as the liaison between Northern Gateway, the contractor, local communities and service providers and will manage any related issues.</p> <p>The liaisons will be accountable to regularly consult with and respond to local communities and service providers on the contractor’s activities. The liaison persons will also prepare bi-weekly compliance, incident and near miss monitoring reports that will be provided to Northern Gateway senior management. The liaisons will also coordinate weekly construction progress meetings between Northern Gateway and its contractor’s management team that will include discussions of all incidents and issues, including those of a self reporting origin. The discussions will focus on mitigation of these issues and identification of opportunities for continuous improvement of Project execution. Timely adjustments and improvements to all applicable aspects of the CEPs will be discussed with potentially affected municipal representatives, first responders, land owners, Aboriginal groups and other stakeholders.</p> <p>Prior to spread and/or camp mobilization events in particular, Northern Gateway will facilitate specific engagement of key stakeholder representatives to ensure that any lessons learned from camp/community interactions on one spread can be applied to work activities on others. The bi-weekly reports will contain Aboriginal and local resident employment and business involvement performance data.</p>
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		<p>All training agreements that Northern Gateway enters into, participates in or funds include a requirement of the trainer, college, organization and/or community to provide monitoring reports upon completion of the training at the 3, 6, 9 and 12 month time frame. These will enable Northern Gateway, training providers and other stakeholders to evaluate outcomes and make adaptive management adjustments if required.</p> <p>b. If a municipal government, affected Aboriginal group, stakeholder or particular service provider in any geographic area along the Project corridor chose not to participate in the development of the associated CEP, the CEPs developed for other nearby spreads will be adopted as an initial basis for effects monitoring and management. The spread specific designated liaisons will provide bi-weekly reports to all affected parties identified in the applicable CEP, regardless of whether they have chosen to participate in the development of the CEP. However, Northern Gateway anticipates that if a certificate is granted, service delivery agencies in particular will want to participate in order to plan for and better manage any opportunities and challenges they may face and will acknowledge that a collaborative approach will benefit all parties.</p> <p>Thus far, Northern Gateway’s training activities have been focused around the equity partners. All equity partners have expressed an interest and willingness to participate in skills development.</p> <p>While there have been some concerns expressed by local colleges around engaging in programming with Northern Gateway to date, Northern Gateway has now adopted the “community as expert” model. This model has been successful because communities take the lead on skills development initiatives, which clearly demonstrates both community support and Northern Gateway’s constructive motivations.</p>
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## Consultation Matters

<b>14.2 Update on Public and Aboriginal Consultation</b>	
<b>Reference:</b>	<ul style="list-style-type: none"> <li>i) Exhibit B83-26 Attachment 16 – Public Consultation Reply – Update (A2V1U0)</li> <li>ii) Exhibit B83-40 Attachment 17 – Aboriginal Engagement Reply-Update (A2V1V4)</li> </ul>
<b>Preamble:</b>	<p>Reference (i) and its appendices provide information on Northern Gateway’s public consultation efforts in the period from January 1, 2011 to June 30, 2012.</p> <p>Reference (ii) and its appendices covers the period April 1, 2011 to June 30, 2012 and provides a detailed update for each Aboriginal group with which Northern Gateway is engaged, including information regarding the status of Aboriginal Traditional knowledge (ATK) studies.</p> <p>Although engagement activities after June 30, 2012 are not described, Northern Gateway indicates that both its public consultation and Aboriginal engagement programs will be ongoing through all phases of the Project.</p>
<b>Request:</b>	Please provide an update on public consultation and Aboriginal engagement activities since June 30, 2012.
<b>Response:</b>	The Public Consultation Update for July 1, 2012 to November 2, 2012 is provided as <b>Attachment 1 JRP IR 14.2</b> . The Aboriginal Engagement Update for July 1, 2012 to November 2, 2012 is provided as <b>Attachment 2 JRP IR 14.2</b> .

<b>14.3 Consultation with BC Métis Federation</b>	
<b>Reference:</b>	<ul style="list-style-type: none"> <li>i) Letter of Comment from the BC Métis Federation, dated 23 May 2012 (A2T4J8)</li> <li>ii) Letter of Comment from the BC Métis Federation, dated 9 August 2012 (A2W0X6)</li> </ul>
<b>Preamble:</b>	References i) and ii) raise questions about the consultation undertaken by Northern Gateway with the Métis population of British Columbia that could be impacted by the proposed Project, including consultation with the BC Métis Federation.
<b>Request:</b>	<p>Please provide a summary of any consultation which has taken place with the BC Métis Federation. In the summary please include:</p> <ul style="list-style-type: none"> <li>a) dates and means of contacts;</li> <li>b) any concerns that were raised;</li> <li>c) how concerns have been addressed;</li> <li>d) any outstanding concerns; and</li> <li>e) any plans for future consultations.</li> </ul> <p>If no consultation with the BC Métis Federation has taken place, please include a justification as to why not.</p>
<b>Response:</b>	<p>Northern Gateway has not, to date, extended an invitation to consult with the British Columbia Métis Federation (“BCMF”) in respect of the Project, and the BCMF has not, to date, expressed an interest to Northern Gateway in consulting with Northern Gateway about the Project.</p> <p>The reason Northern Gateway has not extended an invitation to consult with the BCMF, to date, is twofold:</p> <ul style="list-style-type: none"> <li>(1) the BCMF, to Northern Gateway’s knowledge, is not recognized by the British Columbia or Federal governments as representing the interests of the Métis people in the province of British Columbia; and</li> <li>(2) the Métis Nation British Columbia (“MNBC”), which is recognized by the British Columbia and Federal governments as representing the Métis people in the province of British Columbia, has asked Northern Gateway not to consult with the BCMF, as this could</li> </ul>

		<p>undermine the MNBC's confirmed political legitimacy.</p> <p>With respect to the assertion in paragraph (1) above, Northern Gateway can advise that the MNBC provided Northern Gateway with two letters confirming that the British Columbia and Federal governments only recognize the MNBC as the legitimate representative organization of the Métis people in the Province of British Columbia. For example, in a letter dated September 8, 2011, addressed to BCMF President Keith Henry, the Honourable Mary Polak, MLA, advised:</p> <p>British Columbia recognizes MNBC as the politically representative organization for Métis people in the province. The Ministry of Aboriginal Relations and Reconciliation (MARR) will continue to maintain its bilateral relationship with MNBC and work with MNBC in the tripartite process with the Office of the Federal Interlocutor. At this time, MARR is not able to support a separate bilateral or trilateral process with BCMF and does not have any program resources available to assist BCMF with its infrastructure development.</p> <p>Similarly, in a letter dated October 12, 2011, addressed to BCMF President Keith Henry, David McArthur, Chief of Staff to the Honourable John Duncan, Minister of Aboriginal Affairs and Northern Development Canada, advised:</p> <p>Lastly, in regard to the funding requests that you submitted on behalf of your organization with your letter of August 3, 2011, the Department will continue its relationship with Métis Nation British Columbia as the representative organization for Métis in British Columbia and, as a result, will not be funding a separate organization representing the same population.</p> <p>Notwithstanding the BCMF is not recognized as the representative organization for the Métis people in the Province of British Columbia, Northern Gateway is interested in communicating with anyone who has an interest in the Project. BCMF has not contacted Northern Gateway to express its interest in the Project; however, Northern Gateway understands that through the JRP process, BCMF has expressed an interest in the Project. Northern Gateway will contact BCMF to ascertain their interests and concerns. It must be recognized, however, that Northern Gateway takes the same position as the governments of Canada and the Province of BC, that MNBC is the politically representative organization for the Métis people in the province of BC, and Northern Gateway does not want to take any action that undermines the authority of the MNBC.</p>
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		With respect to engagement of Métis people in BC, Northern Gateway has had extensive engagement with MNBC the recognized representative organization for the Métis people in the province of BC.
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**Spill Modeling**

<b>14.4 Environment Canada Technical Review of Marine Spill Modeling</b>	
<b>Reference:</b>	<p>Written evidence of the Government of Canada - Government of Canada Environment Canada- Technical Review of Enbridge Northern Gateway's Marine Spill Modeling Studies and Related Environmental Consequence Analysis, dated 11 September 2012 (A2Z9W0)</p>
<b>Preamble:</b>	<p>In the noted reference, Environment Canada submitted its technical review of Northern Gateway's marine spill modeling studies and related environmental consequence analysis and notes areas where it is of the view that additional work should be undertaken.</p> <p>The Panel recognizes the evidence on the record to date that captures the high level discussion between Environment Canada and Northern Gateway on the topic. However, the technical review provides technical details and it also presents suggested additional information for Northern Gateway to consider.</p>
<b>Request:</b>	<p>Please provide a detailed response to the technical review. Please ensure that your response includes, but is not limited to:</p> <ul style="list-style-type: none"> <li>a) whether Northern Gateway agrees or disagrees with the positions and analysis presented;</li> <li>b) any additional analysis that Northern Gateway feels would be beneficial to the Panel in considering the submission; and</li> <li>c) any additional commitments that Northern Gateway is prepared to make to address the issues noted in the submission.</li> </ul>
<b>Response:</b>	<p>The response to JRP IR 14.4 is provided as <b>Attachment 1 JRP IR 14.4</b>.</p>

## **Public Consultation Update**

### **ENBRIDGE NORTHERN GATEWAY PROJECT**

**November 9, 2012**



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## ABBREVIATIONS

ACR .....	Alberta Chamber of Resources
Alliance, the .....	Northern Gateway Alliance
ASETS .....	Alberta Skills and Employment Training Strategy
CAB.....	Community Advisory Board
JRP .....	Joint Review Panel
Project, the.....	Enbridge Northern Gateway Project
RoW .....	Right-of-Way





## Public Consultation Update

### Section 1: Introduction

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# 1 Introduction

Northern Gateway provided a summary of its public consultation activities in Volume 4 of its Application filed May 27, 2010.<sup>1</sup> Northern Gateway has provided two updates to the information filed in its Application: one in March 2011 and one in July 2012.<sup>2</sup> These materials describe the objective and design of Northern Gateway's public consultation program. Northern Gateway understands, and takes very seriously, its responsibility to inform stakeholders, to listen to questions and concerns and be responsive to those concerns. Northern Gateway's public consultation program continues to be extensive, transparent, creative in its approaches, varied, and responsive to stakeholder feedback.

In response to JRP IR 14.2, this update provides a summary of Northern Gateway's public consultation efforts in the period from July 1, 2012 to November 2, 2012 (Update Period). This Update includes information on:

- Public Consultation program
- Community Advisory Boards
- Employment, Training and Business Initiatives
- Northern Gateway Alliance
- Community Investment and Benefits
- Landowner Consultation
- Route Refinements in Response to Stakeholder Input

With the final hearing beginning on September 4, 2012, Northern Gateway's public consultation team has been busy listening to the proceedings and preparing for the hearing, as well as continuing to engage with the public and listening to their comments and concerns. The questioning phase of the hearing process has led to increased media attention on the Project. This has resulted in increased interest from the public in learning more about the Project. Northern Gateway continues to use a variety of means to consult and engage with the public including face-to-face meetings, coffee chats, presentations, public forums, technical meetings, community meetings, Community Advisory Boards (CABs), blogs, social media sites including Facebook and Twitter, receptions, community investment events, emails, telephone calls, letters, advertisements and website postings. Northern Gateway focused its engagement efforts in potentially directly affected communities in British Columbia and Alberta, but also made efforts to reach out and be responsive to the broader Canadian public where possible.

The following describes in more detail the breadth of public consultation activities conducted by Northern Gateway during the Update Period.

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<sup>1</sup> B2-1.

<sup>2</sup> B22-2 and B83-26.



## 2 Public Consultation Program

### 2.1 Community Meetings

Northern Gateway remains committed to actively engaging with community members and leaders along the pipeline route. Northern Gateway has participated in more than 22 presentations and meetings in a variety of venues and formats during the Update Period, most of which have been in direct response to requests from stakeholders, all with the opportunity to raise questions and concerns. Please see **Appendix A** for a list of community presentations, meetings and events that provided a range of stakeholders with the opportunity to discuss the Project with Northern Gateway representatives. Appendix A does not include the technical meetings, community sponsorships, or CABs, discussed below.

There has been a significant increase in requests for meetings and presentations during the Update Period given the increased media coverage and the start of the final hearings.

Engagement activities during the Update Period have included:

- giving presentations to and meeting with local governments, community business organizations, post secondary-educational institutions and community groups such as Chambers of Commerce;
- acting as a liaison between third party speakers and community contacts who arrange presentations that are open to the public;
- touring the Stuart River - hosted by a CAB member at their request;
- setting up meetings on specific issues, such as fish habitat compensation planning;
- providing Project representatives to participate or present at community conferences and economic development events;
- hosting receptions to bring interested stakeholders together for a presentation, question and answer session and/or one-on-one conversation;
- maintaining a Project office in Kitimat, British Columbia and opening an office in Prince George, British Columbia (officially scheduled for November 16, 2012); and
- investing in communities through initiatives such as the Women Building Communities and CAB computer donation programs.

Northern Gateway is also actively working with other industry players to deal with common issues. For example, Northern Gateway presented at the British Columbia Chamber Energy Summit alongside Kinder Morgan and other industry associations. Northern Gateway also attended the Canadian Energy Pipeline Association's reception at the Union of British Columbia Municipalities Conference, an industry impact management meeting in Kitimat, and the BC Energy Conference in Dawson Creek.

Northern Gateway has addressed a full spectrum of topics during presentations and discussions. Please see **Appendix A** for a list of topics covered during the Update Period.

## Public Consultation Update

### Section 2: Public Consultation Program

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## 2.2 Technical Meetings

Northern Gateway continues to provide a variety of accessible forums for the distribution of accurate, fact-based information about the Project and to provide opportunities for question and answer sessions that respond to detailed topics of interest. Additionally, Northern Gateway tries to structure its engagement such that it facilitates participation by diverse interests and participants within a community, providing opportunity for group interaction and for one-on-one dialogue.

Since July 1, 2012, Northern Gateway has hosted three community technical information meetings in northern British Columbia. Approximately 70 attendees signed in at these meetings, held in Fort St. James, Burns Lake, and Kitimat. The meetings were held in direct response to requests for additional information made during previous visit to these communities. In particular, the following requests for information were made:

- the District of Kitimat asked whether Enbridge was incorporating new leak detection technology into its pipeline operations and how that would impact the proposed Northern Gateway Project;
- a CAB member asked the President and CEO of Enbridge for information on what would happen in the event of a spill in the Kitimat Valley;
- the District of Fort St James requested a presentation on emergency response efforts relevant to Fort St. James; and
- the Village of Burns Lake requested information on emergency response.

In response to these requests, Northern Gateway arranged technical meetings on these topics. Technical meetings were scheduled with topic experts in mid-August due to the hearing schedule. Northern Gateway notified stakeholders of the community technical information meetings as follows:

- placed advertisements in the following local newspapers:
  - Fort St. James Caledonia Courier on August 1 and 8, 2012
  - Vanderhoof Omineca Express on August 1 and 8, 2012
  - Burns Lake District News on August 1 and 8, 2012
  - Houston Today on August 1 and 8, 2012
  - Kitimat Northern Sentinel on August 1 and 8, 2012
  - The Northern Connector on August 3 and 10, 2012
- notified members of the BC North Coastal, BC North West and BC North Central Community Advisory Boards via email;
- notified the Districts of Fort St. James and Kitimat and the Village of Burns Lake through phone calls and personal communication;
- notified the Chambers of Commerce in Fort St. James, Houston and District, Kitimat, Terrace and District, Vanderhoof, and Burns Lake via email; and

## Public Consultation Update

### Section 2: Public Consultation Program

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- notified Alliance members residing in Burns Lake, Fort St. James, Houston, Fraser Lake, Kitimat, Prince George, Terrace and Vanderhoof via email.

Northern Gateway held the technical meetings on August 14, 15 and 16, 2012 from 6:00-9:00 pm. Each meeting started with an hour-long open house format to allow members of the community to meet with Northern Gateway representatives, ask one-on-one questions and view information panels, maps, pipe samples, and brochures. The open house session was followed by a presentation and a question and answer session. Attendees had access to specialists in the areas of engineering, emergency response, leak detection, pipeline integrity and design, and community relations.

Presentations on the topics of pipeline integrity and design, leak detection, and emergency response preparedness were moderated by a member of the CAB planning team and followed by a question and answer period. Questions were asked verbally and in written format. Please see **Appendix B** for copies of the presentations given at the meetings.

In addition to the community technical meetings described above, Northern Gateway worked with the College of New Caledonia's Business Student Society in Prince George to arrange a public technical information session for the students on September 17, 2012. Approximately 20 people participated in this event, which followed the same format as the technical meetings discussed above. The presentation was a general overview of the Project. A copy of the presentation is provided in **Appendix B**. The event was promoted by the Business Student Society through Facebook, posters, the Student Union calendar, an email to staff and students and by the Prince George Chamber of Commerce.

Northern Gateway will continue to provide community members along the RoW with opportunities to learn about Project updates and to ask questions by hosting public technical information meetings in the future where there is interest.

### **2.3 Toll-Free Information Number and Email Account**

Toll-free and email inquiries have increased over the past four months, likely due to increased media coverage and the start of the final hearings. During the Update Period, Northern Gateway received and responded to 105 toll-free line calls. This brings the current total in 2012 to 277. Since the inception of the line, Northern Gateway has received more than 985 toll-free calls. This is a direct way for individuals to provide comments, ask questions and have their interests and concerns addressed by Northern Gateway representatives.

During the Update Period, Northern Gateway also received and responded to over 405 emails and letters. This brings the total for 2012 to 994 email and letter inquiries.

### **2.4 Website**

In August 2012, the Northern Gateway website launched topic-focused 'Join the Conversation' landing pages in an effort to help guide website users through a path of related content including web pages, blog posts, videos and news articles. Users arriving on the Northern Gateway website from digital ads placed on other websites (mostly news-based websites) will 'land' on one of these discussion topics: Jobs & Benefits, Trade & Economy, Safety & Environment, Energy & Enbridge, Aboriginals & Communities.

## Public Consultation Update

### Section 2: Public Consultation Program

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Since the launch of the new website in December 2011, to the end of the Update Period more than 760,000 ‘hits’ from over 190,000 unique visitors have been recorded. Over 76 per cent of website visitors have been from B.C. and Alberta, with Ontario accounting for an additional 16 per cent of Canadian visitors. Canadians comprise over 91 per cent of the total website visits.

While some of this website traffic reflects the increase in attention to the Project brought on by the JRP final hearings, approximately 40 percent of website traffic results from digital advertising efforts to aide internet users in finding information about the Project.

In addition to posting new content, primarily through the blog feature, Northern Gateway has continued to enhance digital communication on the Project website; the majority of pages have commenting features and allow for readers to ask questions about the material or post their own opinions about the material.

## 2.5 Videos

During the Update Period, the following new videos have been produced:

- **Greater Strides Hockey Academy** – In this video Dr. Reg Crowshoe, an Elder with the Piikani Nation in Southern Alberta, Brantt Myhres, a former NHL player and President and CEO of Greater Strides and Meagan Bigsnake, former NCAA hockey player and Greater Strides hockey instructor, among others, describe the benefits of the Greater Strides Hockey Academy, which provides a world class, comprehensive, Aboriginal culture-based hockey academy focused on academics, athletics, health and wellness, and most importantly, Aboriginal and cultural grounding. Northern Gateway is a proud supporter of this program.  
 (<http://www.northerngateway.ca/news-and-media/northern-gateway-blogs/aboriginal-engagement/actions-speak-louder-than-words/>)
- **Kalamazoo River – A River Returns to Its People** – In this video Kalamazoo community members discuss the river remediation, the return of wildlife to the river and the enhancements to river access for the community. Steve Wouri, Enbridge President of Liquids Pipelines, also discusses the opportunities Enbridge took to learn from the spill on the Kalamazoo River.  
 (<http://www.northerngateway.ca/news-and-media/northern-gateway-blogs/pipeline-safety/a-river-returns-to-its-people/>)

These videos are available for viewing on the Northern Gateway website and are also published on the popular video sharing website YouTube. The videos are referenced regularly through Northern Gateway’s social media accounts and blogs.

The videos published by Northern Gateway have been viewed over 82,000 times since the new website was launched in December 2011, with the comprehensive tanker safety and route safety videos being the most watched.

## 2.6 Join the Conversation

Since the ‘Join the Conversation’ blogs were launched in December 2011, over 115 blog posts have been published with over 550 user comments. The comments demonstrate a diverse level of knowledge and interest about the Project and wider energy-related and environment issues.

## Public Consultation Update

### Section 2: Public Consultation Program

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Enbridge Executive Vice President Janet Holder has published regular blog posts over the past few months, in addition to more general Project posts published by the Northern Gateway communications team. Northern Gateway knowledge experts in the areas of marine operations and pipeline engineering attempt to respond directly to questions asked about specific details related to the Project.

#### **2.7 Join the Conversation through Social Media**

During the Update Period, Northern Gateway has continued its ongoing efforts to build online connections with social media users in B.C. and Alberta, as well as with others discussing the Project. Both Facebook and Twitter have been used for questions and answers, as well as wider discussions about the Project. Northern Gateway continues to regularly share Project-specific information, including timely blog posts and video, along with thought-provoking news articles related to the Project and other Enbridge business. When questions are asked online, members of the Northern Gateway communications team attempt to provide answers and/or links to relevant information on the Northern Gateway website or other credible online sources (news media, government and industry associations primarily).

Twitter is another useful tool for discussion and information sharing. In October 2011, the Northern Gateway Twitter account had approximately 500 subscribers. By the end of the Update Period, the number of subscribers had grown to over 2,500. Northern Gateway actively listens to the ongoing discussion about the Project and the review process on Twitter, and wherever practical, offers links and sources to help people on this network understand more about the Project and its application review. Members of the Northern Gateway communications team monitor the Twitter account and regularly respond to queries about the Project.





## Public Consultation Update

### Section 3: Community Advisory Boards

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## 3 Community Advisory Boards

The Community Advisory Board (CAB) process established by Northern Gateway continues to be a beneficial way to engage the public in a respectful conversation about the Project.

As described in the May 2010 Application, Volume 4, Section 3.5.3, the March 2011 Update to the Application, Volume 4, Section 3 and the Reply Evidence,<sup>3</sup> the CABs are designed to be inclusive of diverse community interests in each of five geographic regions: British Columbia North Coastal, British Columbia Northwest, British Columbia Central, Alberta North Central and Peace Country. They include representatives from environment groups, Aboriginal groups, business associations, municipal governments, and the public. The CAB meetings provide an opportunity for broad stakeholder consultation and engagement and the sharing of diverse viewpoints and experience in an atmosphere of respect.

There are five regional CABs that meet quarterly:

- AB North Central CAB meets in Edmonton;
- Peace Country CAB meets in Grande Prairie;
- British Columbia Northern Central CAB meets in Prince George;
- British Columbia Northwest CAB meets in Terrace or Smithers; and
- British Columbia North Coastal CAB meets in Kitimat.

During the Update Period, the 14<sup>th</sup> round of CAB meetings occurred. This round of meetings, held October 29 to November 2, was the third round of CAB meetings in 2012. Due to the final hearing schedule, only three rounds of meetings are scheduled to occur in 2012.

The agendas, copies of presentations and meeting summaries, which demonstrate a range of topics being addressed through the CAB process, can be found on the publically accessible CAB website ([www.communityadvisoryboards.com](http://www.communityadvisoryboards.com)). Please also see **Appendix D** for copies of the CAB agendas, summaries, bulletins and a list of the presentations. There are a number of examples where CAB members themselves or organizations have given presentations at CAB meetings. In Round 14 of the CABs, these examples include:

- BC North Central CAB, C. Kendall gave a member presentation on the “Carney Hill Neighbourhood Centre Society (Est 1994), Where Health is Wealth”; and
- BC North Coastal CAB, C. Brown gave a presentation on behalf of the Douglas Channel Watch on “What Enbridge Isn’t Telling You” with D. Shannon.

Community members and organizations have also given presentations at CAB meetings. In the Round 14 CAB meetings, a CAB member arranged for Spartan Controls to give a presentation about the electronic systems they create for pipeline companies to operate and maintain pipeline systems.

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<sup>3</sup> B2-1, B22-2 and B-83-26.

## Public Consultation Update

### Section 3: Community Advisory Boards

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Please see **Appendix D** for a specific list of presentations given at the Round 14 CAB meetings.

At the end of each CAB meeting, topics of discussion and recommendations for speakers are proposed for the next CAB meeting. The member driven agenda is responsive to the desire of the CAB membership to continue to be informed about the many aspects of the Project.

To enhance engagement and the effectiveness of the CABs, Northern Gateway routinely asks for feedback to better understand what the CABs are doing well, what can be improved and what the CABs need to do to be successful. Responses to these formal questions, as well as informal feedback, have resulted in improvements to the CAB process. Some examples of the refinements made to the CAB process that were made as a result of feedback during the Update Period are listed below:

- As outlined in the CAB Operational Guidelines, each regional CAB is responsible for developing and implementing a communication strategy that clearly identifies target audience, methodology and common messaging. Communication strategies will be shared with the CAB Sharing Table and may form part of a broader communication plan to educate and inform nonparticipating stakeholders and the general public. One implementation of the strategy was a request to create an identity that is demonstrably independent from Northern Gateway. To fulfill this request the CAB members developed a CAB logo to brand their communications materials, including the CAB website. The CAB logo, along with the CAB website, CAB bulletin and nominating a CAB spokesperson (discussed in the July 2012 Reply Evidence), are all steps towards implementing this overall communications strategy. The logo was developed prior to the CAB conference and officially launched during the Round 14 CAB meetings.
- The CAB members were keen to be involved in Northern Gateway community investment initiatives for their region and looked for ways to reach out to their community. Since July 1, 2012, Northern Gateway was able to provide that opportunity by engaging the CAB members in a CAB driven computer donation initiative. CAB members were asked to identify organizations in their communities that would benefit from recycled Enbridge computers. Input so far has resulted in the donation of 33 computers to 17 different organizations along the pipeline RoW. This initiative is ongoing and Northern Gateway will continue to find opportunities for CAB members to provide advisory capacity to community initiatives.
- The BC North West CAB members expressed interest in sharing information that was available to them at their CAB meetings with a greater audience. With the assistance and support of the Northern Gateway CAB planning team, one CAB member led the regional CAB in hosting a public luncheon during the scheduled Round 14 CAB meeting in Terrace, British Columbia. The lunch was co-hosted by the BC North West CAB and the Kitimat-Terrace Industrial Development Society and provided community members the opportunity to listen to a presentation on marine aspects of the Project and to pose questions to the presenters, which included a marine design specialist and a cargo ship captain. Approximately 60 people attended the luncheon.
- Given the differences between each regional CAB, Northern Gateway encourages CAB members to attend a meeting in a location different from their membership location. In Round 14, a member from the Peace Country CAB attended the BC North Central CAB.

## Public Consultation Update

### Section 3: Community Advisory Boards

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- The CAB planning team continues to hear requests for access to Enbridge Senior Management. In Round 14 the Executive Vice President for Western Access, Janet Holder, gave a regulatory update and answered questions regarding the Project at the BC North Central CAB meeting.
- In Round 14 new people attended at each CAB meeting. This resulted in requests for new memberships at most locations.

As previously stated, Northern Gateway's intention is that the CAB process will continue for the life of the Project or for as long as the CAB membership sees value in the process continuing.

## 4 Employment, Training and Business Initiatives

During the Update Period, Northern Gateway has continued to implement its Education, Training and Employment Strategy as a mechanism to help local community members develop the essential and transferable skills necessary to work in the growing pipeline and construction sectors.

Northern Gateway is committed to building skills and subsequently improving employment outcomes within Northern Gateway's local communities in advance of Project approval. Northern Gateway recognizes the importance of building transferable skills in local communities given the skills shortage (current and future) in both Alberta and British Columbia. Northern Gateway works with local communities to identify employment opportunities and assists communities in accessing funding for training which will result in employment outcomes. Funding partners include provincial and federal governments, industry and existing service providers.

Delivery of the Education, Training and Employment Strategy focuses on four key areas:

- Employer Outreach/Employment Connections
  - Link companies who have a labour demand to local communities with the intention of employment matching
  - Engage employers in training-to-employment Projects – focused on establishing employment outcomes for local communities
  - Better understand needs, challenges and opportunities for Aboriginal workforce
  - Help Aboriginal groups understand the labour demand and skills required to fulfill the demand
- Community Based Training
  - Use of the Education and Training Fund<sup>4</sup> to assist in community based training initiatives with partners
  - Capacity development
  - Coordination and facilitation services
  - Community as expert philosophy
- Trades & Industry Training
  - Support trades and technical training for local communities
  - Industry specific “demand” training through employer partnerships (survey / environment)
  - Apprenticeship support and funding
- Youth Engagement

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<sup>4</sup> B83-26 at adobe page 30.

## Public Consultation Update

### Section 4: Employment, Training and Business Initiatives

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- School outreach & engagement
- Education and career support
- Capacity development
- Career exploration
- Industry education and knowledge
- Stay in School Bursary

In November of 2011, Northern Gateway announced a budget of \$1.5 million, specifically directed toward skills development, training and community education initiatives. This initiative has been rapidly and enthusiastically embraced in local communities. Skills development and community education initiatives started and related commitments made during the Update Period have an estimated value of approximately \$800,000. Reflecting upon the results of the past 12 months, in November of 2012, Northern Gateway proposed a significant expansion of this effort, identifying a budget increase for skills development, training and community education initiatives of more than \$3 million. Initiatives undertaken during the Update Period include the following:

- **Workforce Connections** – 121 delegates attended the Northern Gateway Workforce Connections Workshop in Edmonton in September, 2012. The one-day workshop brought together 13 companies in Alberta who have a current labour market demand, Aboriginal Human Resources and Social Development professionals, as well as service providers and educators to network and build partnerships. Participants included Aboriginal Affairs and Northern Development Canada, Alberta Human Services, Service Canada, Industry and representatives from Aboriginal groups across Alberta. Northern Gateway is planning to host a similar workshop in Prince George in February, 2013.
- **Training-to-employment Underway**– Training-to-employment projects during the Update Period included survey and geomatics training which resulted in five employment opportunities, four pre-apprenticeship graduates, all of whom are working or in advanced training and nine students currently in ironwork training which is expected to result in full employment by December, 2012.
- **Training-to-employment in Planning Stages** – Northern Gateway is developing partnerships to deliver Emergency Medical Respondent training in winter 2013 resulting in up to ten employment placements, camps and catering training in winter/spring 2013 resulting in ten employment placements, essential skills and workplace readiness training for 30 participants resulting in up to 15 employment placements and entry level construction training resulting in up to ten employment placements.

#### Section 4: Employment, Training and Business Initiatives

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- **Contractor Readiness Sessions** – As a mechanism to assist local communities in preparing for the business and contracting opportunities associated with the Project, Northern Gateway partnered with Alberta Human Services and The Business Link to deliver four Contractor Readiness Sessions in Edmonton, Grand Prairie, St. Paul and Slave Lake. The sessions will be delivered by a third party contractor specializing in business development and will run in November 2012. The sessions are designed to assist local contractors in understanding the requirements of doing business with oil and gas companies more broadly and will cover safety, prequalification requirements and sub-contracting processes. One-hundred participants are expected to attend the sessions.
- **BC Labour Market Planning Update Session “Meeting our Workplace Needs”** – Northern Gateway attended a meeting hosted by the Ministry of Jobs, Innovation and Tourism in October 2012.
- **Enbridge Job Postings** – Enbridge job postings are sent to interested local communities every week.
- **Public Relations Training** - At the request of four British Columbia central interior local communities, training in media and public relations is being planned for late November, 2012. Training will focus on managing media, public speaking and issues management to be used in various settings and situations.
- **School Engagement & Stay in School Bursary** – The school engagement plan is in the development stage and will be implemented in 2013. School engagement will be a pilot project offered to five Northern Gateway Aboriginal schools. This program will support and provide capacity to schools to implement programs and activities focused on learning about the energy sector in Canada and career opportunities in the pipeline and construction sectors. One Stay in School Bursary will be offered to each local community as a mechanism to reward youth for staying in school.
- **Pipeline Services Handbook** – A pipeline services handbook, which details activities associated with pipeline construction, is in the final review stages and is expected to be available in January 2013.
- **Alberta Chamber of Resources (ACR) Aboriginal Workforce Development Pilot Project** – Northern Gateway is assisting the design and development of a pilot project designed to link work ready, trades exposed Aboriginal people to job opportunities with ACR member companies. This partnership is established with Service Canada, Alberta Human Services, Aboriginal Affairs and Northern Development Canada and the 13 Aboriginal Skills and Employment Training Strategy (ASETS) holders in Alberta. This pilot project will launch in November 2012 and is expected to place at least 35 Aboriginal people into employment placements.
- **Alberta Human Services** –Northern Gateway presented the skills development strategy to Alberta Human Services Regions and discussed possible funding partnerships for local communities.

## 5 Northern Gateway Alliance

During the Update Period, membership in the Northern Gateway Alliance continued to grow by more than 150 members. Membership now stands at 1746. As stated in previous filings, the Alliance is a community coalition that provides the opportunity for people to understand the regulatory review process and on how to participate in that process. Alliance members receive regular Project updates through emails from the Chairman, Colin Kinsley, and during meetings organized by the Alliance.

The Alliance, with support from Northern Gateway, continues to communicate regularly with members via e-mail. During the Update Period, the Alliance sent seven e-mail communications to its members. E-mail communication topics included:

- Findings in the National Transportation Safety Board report on the Marshall incident;
- Northern Gateway safety and integrity programs;
- Response to the Province of BC's statement on heavy oil pipelines;
- Release of a video on the Marshall incident;
- Deadline to submit a Letter of Comment in relation to the JRP hearing process;
- Announcement about Northern Gateway filing its opening statement at the final hearings; and
- Announcement about Enbridge CEO succession.

The Alliance received and responded to email inquiries and phone calls. In August, 2012, Colin Kinsley hosted a group of students from UNBC at a barbeque where students had the opportunity to pose questions to Northern Gateway specialists. The Alliance also hosted presentations in Smithers and Prince George when Peter Tertzakian was touring Northern BC in October. Peter Tertzakian is an economist with ARC Financial, who gave a presentation of his own photographs describing the history of oil dependence, starting with use of whale oil to present use of hydrocarbons. Later in October, Colin Kinsley met with Alliance members in northern Alberta between Grande Prairie and Mayerthorpe to discuss Project updates.

The Alliance website ([www.northerngatewayalliance.ca](http://www.northerngatewayalliance.ca)) continues to be a communication tool available for use by Alliance members. Among other things, it provides links to Project information on the Northern Gateway website and Letters of Comment page on the JRP website.



## 6 Community Investment and Benefits

Northern Gateway contributes to building strong communities where its employees work and live. During the Update Period, Northern Gateway donated funds to a number of worthy causes along the proposed RoW and Northern Gateway personnel participated in a number of charitable and community events. A list of events and initiatives in which Northern Gateway invested during the Update Period is provided in **Table 1**.

Many women who participated in the initial round of Women Building Communities events in June contacted Northern Gateway following those events. With their help, three events were held in Kitimat, Burns Lake and Prince George. Approximately 25 women attended the Women Building Community event in Kitimat on October 19, 2012 where Lori Ackerman, Mayor of Fort St. John spoke about dealing with change in her community. It was encouraging to see many young women talking to her and asking questions after her speech. A raffle for prizes and a donation from Northern Gateway provided funds to the Tamitik Status of Women. The next evening, on October 20, 2012, 50 women attended the meeting in Burns Lake to hear Linda Edgecomb motivate the audience to be aware and improve oneself. A lively raffle for prizes donated by generous women generated funds that were matched by Northern Gateway for a donation to the Burns Lake food bank. On November 1, a Women Building Community event brought 35 women together to hear Janet Holder, Executive Vice President for Western Access, Enbridge Inc., motivate attendees by talking about her personal and work experiences. Northern Gateway is pleased to make the connection with the communities and find common threads between the values of the company, the personnel working on the project and the people in the community.

When Enbridge replaces staff computers, the old computers are either donated to an organization or auctioned off as part of a United Way campaign in a central location. This year, the Northern Gateway team offered some of those computers to CAB members who identified organizations in their communities who could use these computers. This resulted in 33 computers being donated to 17 organizations across the proposed RoW. One CAB member explained that in her community the computers were being used by older children to develop resumes, apply to college and apply for bursaries. Younger children were using these computers to learn basic computer skills.

Northern Gateway will continue to invest in communities along the proposed RoW.

Table 1: Northern Gateway Sponsored Community Events and Initiatives

Group	Event	Location
BC Building Trades	Annual Golf Tournament	Prince George, BC
Smithers Chamber of Commerce	Celebrity Charity Golf Tournament	Smithers, BC
Whitecourt Chamber of Commerce	Annual Golf Tournament	Whitecourt, AB
Kitimat Chamber of Commerce	Annual Golf Tournament	Kitimat, BC
Morinville Chamber of Commerce	Annual Golf Tournament	Morinville, AB



## Public Consultation Update

## Section 6: Community Investment and Benefits

Phoenix Transition House	Donation following the Women Building Communities Event	Prince George, BC
The Town of Bruderheim	Donation towards a Gazebo in the Community Park	Bruderheim, AB
Colleymount Recreation Commission	Donation towards repairs of the Trout Creek Community Hall	Trout Creek, BC
Kitimat Concert Association	Sponsorship of the 2012/2013 Concert Season	Kitimat, BC
University of Alberta	DiscoverE Science and Engineering Programs for students in Grande Prairie	Grande Prairie, AB
District of Kitimat	Kidsport Program	Kitimat, BC
Kitimat Chamber of Commerce	Annual Fish Derby	Kitimat, BC
Lakes District Fall Fair Society	Lakes District Fall Fair	Burns Lake, BC
PG YMCA	2012 Champions Hockey Weekend	Prince George, BC
Prince George Cougars	Rink Board	Prince George, BC
Kitimat Ice Demons	2012/2013 Hockey Season	Kitimat, BC
Terrace River Kings	2012/2013 Hockey Season	Terrace, BC
Houston Chamber of Commerce	Business Excellence Awards	Houston, BC
District of Vanderhoof	Weekly Free Skate Program	Vanderhoof, BC
MLP Services	Evening in Pink - Cancer Fundraiser	Prince George, BC
Sangudo Arts for Everyone	Sangudo Arts Festival	Sangudo, AB
Northern Lights Youth Choir	Donation for new risers	Fort St. John, BC
Dawson Creek Hospital Foundation	Annual Fundraiser	Dawson Creek, BC
Vancouver Venture For Diversity	Annual Golf Tournament	Vancouver, BC
Kitimat Community Services	Donation of a desk/office supplies for their food share program office	Kitimat, BC
Kitimat Community Services	Donation to the food share program	Kitimat, BC
Sturgeon County Hospital Foundation	Annual Celebration of Life and Culture Event	St. Albert, AB
Houston Public Library	Youth Pizza and Movie Night	Houston, BC
Pouce Coupe Library	Wine for Books	Pouce Coupe, BC
Morinville Chamber of Commerce	Business Excellence Awards	Morinville, AB
Prince George Community Foundation	Citizen of the Year Awards	Prince George, BC
Vanderhoof Chamber of Commerce	Great Pumpkin Walk	Vanderhoof, BC
Kitimat Marine Rescue	Donation towards the purchase of a new boat	Kitimat, BC
Kitimat Rotary Club	Gift basket for their annual auction	Kitimat, BC



## Public Consultation Update

### Section 6: Community Investment and Benefits

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Prince George Rotary Club	Big Blue Ball fundraiser for Men's Health	Prince George, BC
Terrace Chamber of Commerce	Business Excellence Awards	Terrace, BC
Various Organizations	Donation of recycled Enbridge computers determined by the regional Community Advisory Boards	Local communities

## 7 Landowner Consultation

Northern Gateway continues to engage with landowners, occupants and disposition holders, as appropriate. Since July 1, 2012, Northern Gateway representatives have responded to the landowner, occupant or disposition holder inquiries that have come through the email account or the toll-free line (for example, in relation to trapper identification and compensation and location of the pipeline route).

Northern Gateway continues to review the routing of the pipelines and locations of its pump stations and has committed to filing Route Revision V by the end of 2012. Landowners, occupants and disposition holders that are affected by any adjustments to the pipeline route or pump station locations will be consulted or disengaged, as appropriate.

Additionally, Northern Gateway reconfirmed its offer to personally meet with Ms. Darlene Wong and Alberta Lands Ltd. on October 31, 2012 (see **Appendices E and F** for copies of the letters). Ms. Wong responded to Northern Gateway indicating that she wants all communication from Northern Gateway to be by registered mail.



## 8 Route Refinements in Response to Stakeholder Input

Northern Gateway is actively engaging with stakeholders to provide Project information, to listen and to understand stakeholder concerns and, where practical, to refine the Project's design, execution and operations to address those concerns. In some instances, after careful consideration and utilizing the criteria listed in the May 2010 Application (see Volume 3, Sections 2.3 and 2.4), route refinements based on stakeholder feedback are not ultimately accepted or incorporated into the Project. A list of the route refinements made prior to July 1, 2012 in response to stakeholder input can be found in Volume 4 of Northern Gateway's Application, filed in May 2010, the Volume 4 Update, filed March 2011, and the Reply and Update, filed July 2012.<sup>5</sup>

During the Update Period, one additional route refinement was made. As discussed in Northern Gateway's response to JRP IR 11.10(c), Northern Gateway completed an evaluation of a possible relocation of the pipeline route further away from the Morice River in response to concerns raised by the Department of Fisheries and Oceans. A revised pipeline route and corridor (KP 996 to Northern Gateway Response to JRP IR No. 11 KP 1048) has been identified and will be included in pipeline Route Revision V. The reroute provides additional separation from the Morice River (approximately three kilometers).

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<sup>5</sup> B2-1, B22-2 and B-83-26.

## 9 Conclusion

During the Update Period, Northern Gateway has continued to engage with the public, listen to their comments and concerns and address those comments and concerns. There has been increased media attention on the Project during the Update Period due to the start of the questioning phase of the final hearing process. This has led to increased interest from the public in learning more about the Project. Northern Gateway has continued its consultation and engagement efforts through face-to-face meetings, coffee chats, presentations, public forums, technical meetings, community meetings, CABs, blogs, social media sites such as Facebook and Twitter, receptions, community investment events, emails, telephone calls, letters, advertisements and website postings, among others.

The CAB process continues to provide an opportunity for people with diverse community interests to share their viewpoints and experience in a respectful atmosphere. New attendees participated in the 14<sup>th</sup> Round of CAB meetings, held during the Update Period. Each meeting followed a member driven agenda relevant to the community in which the meeting was held.

Northern Gateway continues to help local community members develop the essential and transferable skills necessary to work in the growing pipeline and construction sectors through a variety of programs offered through its employment, training and business initiatives.

The Northern Gateway Alliance continues to provide the opportunity for people to understand the regulatory review process and on how to participate in that process. It has continued to engage with the public through its website, e-mails, phone calls and hosting receptions and presentations. Membership in the Alliance continued to grow during the Update Period.

Northern Gateway continues to provide accurate, fact-based information about the Project and opportunities for question and answer sessions that respond to detailed topics of interest in a variety of forums. Northern Gateway will continue to listen to the public, provide factual information and address public comments and concerns.

Public Consultation Update

Appendix A: List of Community Presentations, Meetings and Events

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## **Appendix A List of Community Presentations, Meetings and Events**





Public Consultation Update

Appendix B: Presentations from Community Technical Meetings

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## **Appendix B Presentations from Community Technical Meetings**



Public Consultation Update

Appendix C: CAB Composition Breakdown for each Regional CAB

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## **Appendix C CAB Composition Breakdown for each Regional CAB**



## **Appendix D CAB Meeting (Agendas, Summaries, Bulletins, List of Presentations)**



Public Consultation Update

Appendix E: Letter D. Wong

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## Appendix E Letter D. Wong



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## Appendix F Letter to Alberta Lands

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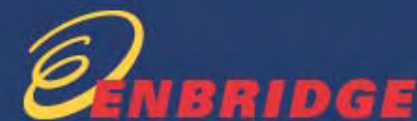


Event Type	Event Date	Details	Topics
Presentation	5-Jul-12	Luncheon Presentation to Prince George Chamber of Commerce	<ul style="list-style-type: none"> <li>• Project need</li> <li>• Communication with Aboriginal Communities</li> </ul>
Tour	15-Aug-12	Boat tour of the Stuart River hosted by CAB member to provide subject matter experts opportunity to see where pipeline would be crossing	<ul style="list-style-type: none"> <li>• Pipeline integrity</li> <li>• Emergency response</li> <li>• Protection of the environment</li> </ul>
Meeting/Presentation	20-Aug-12	UNBC Resource Management Class	<ul style="list-style-type: none"> <li>• Environmental assessment process</li> <li>• First Nations input</li> <li>• Geotechnical studies</li> <li>• Earthquake assessment</li> </ul>
Presentation	5-Sep-12	Fort Saskatchewan Chamber of Commerce AGM	<ul style="list-style-type: none"> <li>• Value Added</li> <li>• Terminal Location Decision</li> <li>• Regulatory Process</li> </ul>
Presentation	7-Sep-12	Alberta Air and Waste Management Association	<ul style="list-style-type: none"> <li>• Value Added</li> <li>• Terminal Location</li> <li>• Emergency Response</li> </ul>
Presentation	12-Sep-12	St. Albert Chamber of Commerce	<ul style="list-style-type: none"> <li>• Value Added</li> <li>• Terminal Location Decision</li> <li>• Regulatory Process</li> </ul>
Meeting	17-Sep-12	Kitimat Impact Management Group - Industry meeting organized by Chamber of Commerce to discuss potential effect on community of Kitimat from industrial activity. Attendees included Northern Gateway, Apache, Rio Tinto, BC Housing Commission, District of Kitimat	<ul style="list-style-type: none"> <li>• Project timeline updates</li> <li>• Workforce requirements and housing effects</li> </ul>
Presentation	19-Sep-12	Prince Rupert Chamber of Commerce	<ul style="list-style-type: none"> <li>• Terrestrial and marine Emergency response</li> <li>• Benefits</li> <li>• Alternatives to pipeline</li> </ul>
Presentation	21-Sep-12	Economics Society of Northern Alberta	<ul style="list-style-type: none"> <li>• Value Added</li> <li>• Terminal Location</li> <li>• Emergency Response</li> <li>• Benefits</li> </ul>
Meeting	24-Sep-12	Attended Canadian Energy Pipeline Association reception at the Union of British Columbia Municipalities Conference	<ul style="list-style-type: none"> <li>• Geotechnical and seismic work in Kitimat Valley</li> </ul>

Event Type	Event Date	Details	Topics
Open House	27-Sep-12	Northern Gateway Reception – provided delegates at Alberta Urban Municipalities Association (AUMA) opportunity to ask questions to topic experts on a one on one basis	<ul style="list-style-type: none"> <li>• Regulatory Process</li> <li>• Questions regarding opposition of project</li> </ul>
Presentation	9-Oct-12	Burns Lake Mayor and Council	<ul style="list-style-type: none"> <li>• Emergency Response Planning</li> <li>• Route selection</li> </ul>
Speech	10-Oct-12	BC Chamber Energy Summit in Vancouver	<ul style="list-style-type: none"> <li>• Benefits of Northern Gateway (nationally, provincially, and locally)</li> <li>• JRP regulatory process</li> <li>• Importance of safety</li> </ul>
Presentation	11-Oct-12	Northern Ports Symposium in Prince Rupert (North West Corridor Corporation)	<ul style="list-style-type: none"> <li>• Benefits</li> <li>• Alternatives to pipeline</li> </ul>
Coffee Chat	22-Oct-12	Alberta Chamber and Grande Prairie Chamber members to give a project update.	<ul style="list-style-type: none"> <li>• Project updates</li> <li>• Labour needs of the project</li> <li>• NTSB Report</li> </ul>
Dinner Meeting	24-Oct-12	Whitecourt Chamber	<ul style="list-style-type: none"> <li>• JRP update</li> <li>• Events and activities in BC</li> <li>• Alliance activity in Alberta</li> </ul>
Presentation	29-Oct-12	Wetaskiwin District Chamber of Commerce	<ul style="list-style-type: none"> <li>• Benefits</li> <li>• BC Government response</li> </ul>

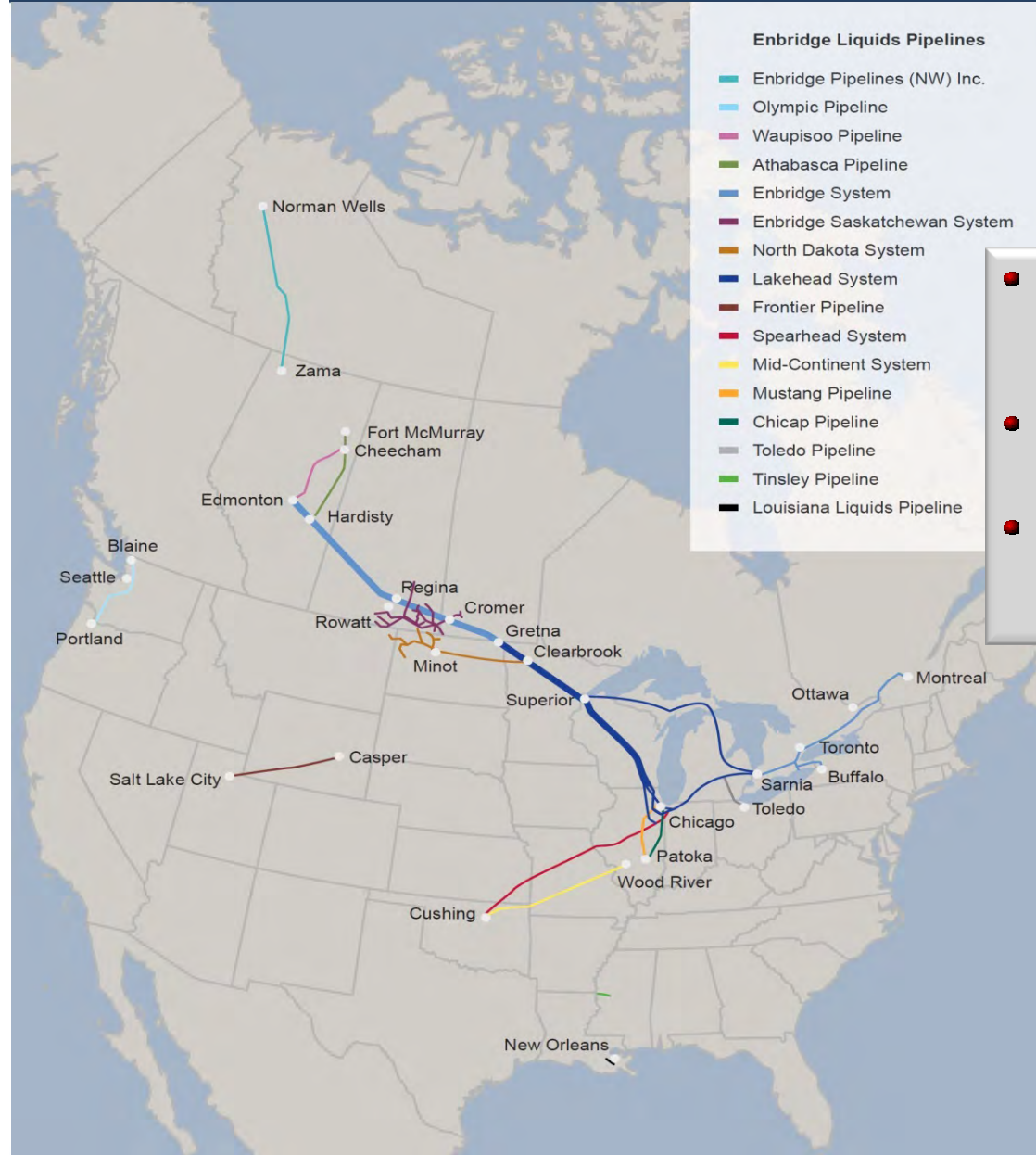
# Leak Detection

**Northern Gateway Pipeline**  
**August, 2012**





# Introduction



## Enbridge Liquids Pipeline (ENB LP) Energy Transportation Map

- Operates world's longest liquids pipeline and Canada's largest transporter of crude oil
- Operates 15,294 miles of crude pipeline
- Delivers an average of more than 2.2 million BPD of crude oil and liquids



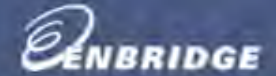
## Leak Detection Methods Comprehensive Strategy

- Surveillance & Third Party
- Pipeline Operator Monitoring (SCADA)
- Computational Pipeline Monitoring / Leak Detection system
- External sensors
- Volume Balance
- In-line Inspection





## Surveillance & Third Party



- Aerial & Foot Patrol
- Third Party Reporting



## Pipeline Operator Monitoring



- Pipeline control via Edmonton Control Center
- Supervisory Control & Data Acquisition (SCADA)
  - High speed network updating pipeline controller “real-time” with pipeline data
  - Remote control of pumps and isolation valves along pipeline
  - Alarms generated when abnormal conditions occur (pressure, flow, etc.)
- Leak Detection Analyst



## Pipeline Operator Monitoring



- Remote Facility Monitoring
  - Pressures, flows, seals, sumps, underground flanges, vibration
  - Fire detection, hydrocarbon sensing
  - Pump enclosures
- Staffed pump stations in remote locations (24/7)
  - On-site monitoring, security, rapid response
- Research of other facility based technologies





## Material Balance

“Mathematical calculation used to determine whether a leak has developed in a pipeline”



Canadian Standards Association Z662  
Oil & Pipeline Systems Standard  
Annex E – Recommended Practice for Hydrocarbon  
Pipeline System Leak Detection

## Computational Pipeline Monitoring

“Software-based monitoring tool that alerts the pipeline operator of a possible ... commodity release.”

API Recommended Practice 1130  
Computational Pipeline Monitoring for Liquids

# Computational Pipeline Monitoring / Leak Detection System



$$\begin{aligned} & \text{Flow In} \\ - & \text{ Deliveries} \\ + & \text{ Injections} \\ + / - & \text{ Inventory Change} \\ = & \text{ Flow Out} \end{aligned}$$

Negative imbalance triggers leak alarm.

# Computational Pipeline Monitoring / Leak Detection System



- Leak detection equipment standards
- Regular performance testing of leak detection systems
  - Computer simulations
  - Fluid withdrawal
- Continuous improvement of procedures, training and maintenance practices

STANDARDS



## Evaluation of other types of Computational Pipeline Monitoring / Leak Detection systems



- Active Evaluation of:

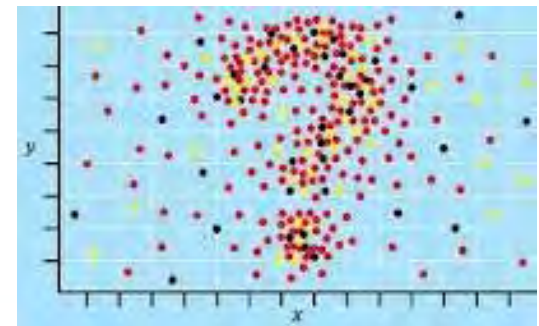
- Pressure Wave System

- Joint industry test led by Enbridge through the Pipeline Research Council Inc.
    - Utilizes pressure instrumentation commonly used on pipelines and sensitive areas
    - Potential to reduce detection time from minutes to seconds



- Statistical & Other System's

- Multivendor assessment



## External Leak Detection Sensors



- Not commonly used in pipelines in North America
- No existing industry standards
- Examples
  - Fiber Optic, odor sensing, conductive



## External Leak Detection Sensors



- Active evaluation of cable based leak detection sensors
  - Vendor technology, limitations
  - Installation base
  - Multi-vendor analysis
  - Computer modeling and test facility in Edmonton, Alberta
  - Scheduled completion in 2013



## Volume Balance Calculations



- Scheduled volume balance calculations performed by other supervisory computers
- Complementary layer to Enbridge leak detection systems





## In-line Inspection Leak Detection Tools



- Spherical balls in the pipe
- “Listens” for leaks
- Extremely low leak sensitivity
- Integrity Tools





## Leak Detection Methods Comprehensive Strategy – Northern Gateway Pipeline

- Surveillance & Third Party
- Pipeline Operator Monitoring
- Computational Pipeline Monitoring / Leak Detection system
- External sensors
- Volume Balance
- In-line Inspection
- People



- Questions



# Pipeline Integrity Management

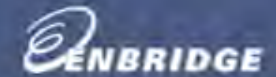
**Northern Gateway Pipeline  
August, 2012**



# Agenda



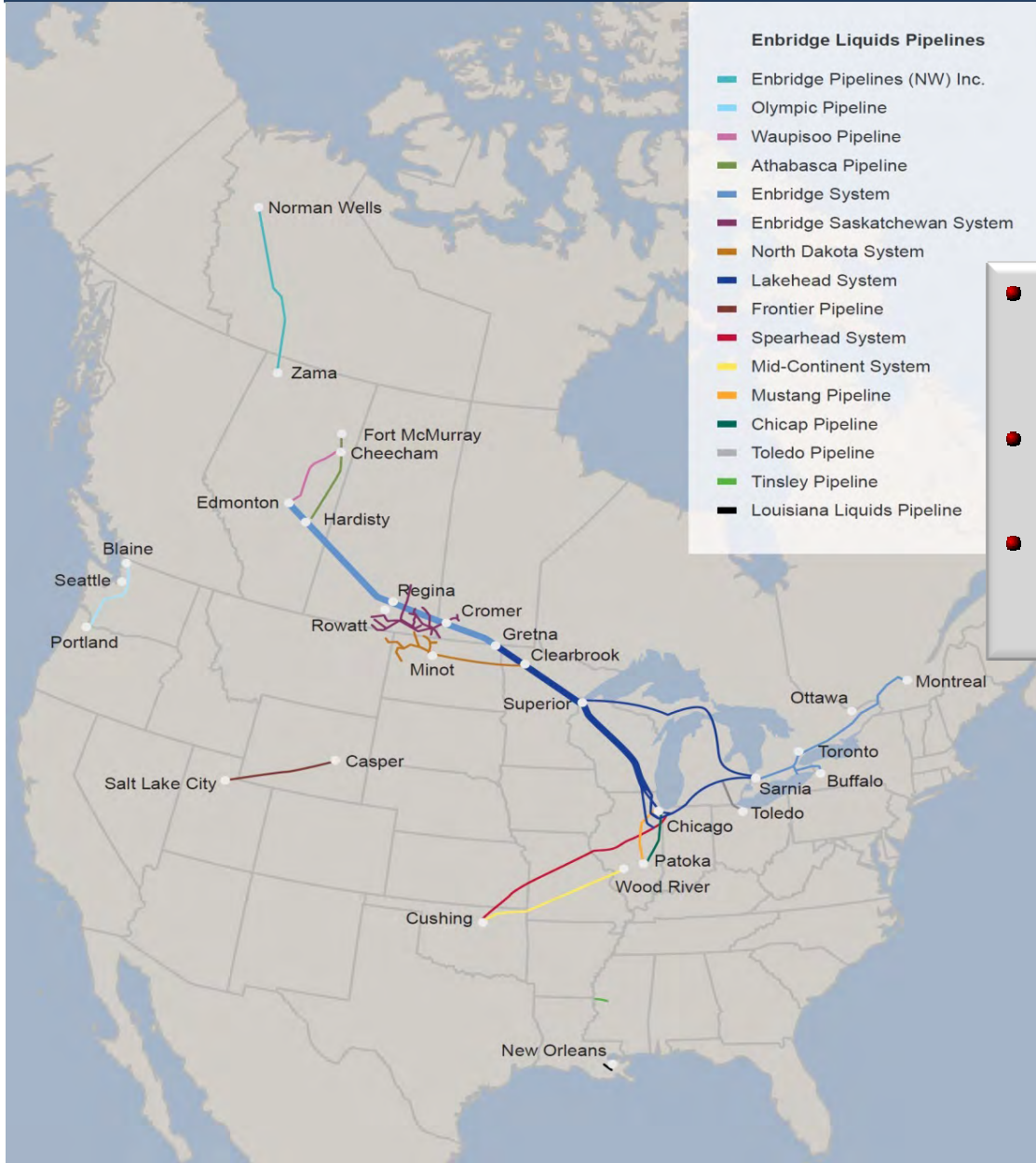
- **Introduction**
- **Regulations & Integrity Management**
- **Pipeline Monitoring**
- **Field Assessment**
- **Questions**



# Introduction

## Enbridge Liquids Pipelines

- Enbridge Pipelines (NW) Inc.
- Olympic Pipeline
- Waupisoo Pipeline
- Athabasca Pipeline
- Enbridge System
- Enbridge Saskatchewan System
- North Dakota System
- Lakehead System
- Frontier Pipeline
- Spearhead System
- Mid-Continent System
- Mustang Pipeline
- Chicap Pipeline
- Toledo Pipeline
- Tinsley Pipeline
- Louisiana Liquids Pipeline



## Enbridge Liquids Pipeline (ENB LP) Energy Transportation Map

- Operates world's longest liquids pipeline and Canada's largest transporter of crude oil
- Operates 15,294 miles of crude pipeline
- Delivers an average of more than 2.2 million BPD of crude oil and liquids





# Regulations



- **Canada On-shore Pipeline Regulations (OPR)**
  - **Mandatory: Meet CSA Z662**
- **Canadian Standards Association (CSA) Z662**
  - **Mandatory: Integrity Management System**
- **Installation and Facility Specific Regulations**

# Management System Definition



***A set of coordinated activities to direct and control an organization in order to continually improve the effectiveness and efficiency of its performance.***



# Enbridge Pipeline Integrity Goals



- **Primary Goal:**

**To prevent leaks or ruptures**



# Managed Concerns



- **External Corrosion**
- **Internal Corrosion**
- **Cracks**
- **Weld Defects**
- **Mechanical Damage**
- **Dents/Buckles**
- **Geo - hazards**

# Pipeline Integrity Activities



<b>PIPELINE CONCERN</b>	<b>PREVENTION EFFORTS</b>	<b>MONITORING EFFORTS</b>	<b>REPAIR EFFORTS</b>
<b>External Corrosion</b>	<b>Cathodic protection Ext Coatings</b>	<b>Cathodic protection In Line Inspection</b>	<b>Mechanical repair Recoating</b>
<b>Internal Corrosion</b>	<b>Product quality Cleaning Chemical Operations</b>	<b>Product quality ML Coupons In Line Inspection RT Monitors</b>	<b>Mechanical repair</b>
<b>Environmental Cracking</b>	<b>Materials Operations</b>	<b>In Line Inspection Pressure Cycling</b>	<b>Mechanical repair</b>
<b>Denting (construction)</b>	<b>Materials Procedures Inspection</b>	<b>Inspection In Line Inspection</b>	<b>Mechanical repair</b>
<b>Denting (by others)</b>	<b>Signage Public Awareness</b>	<b>ROW patrols In Line Inspection</b>	<b>Mechanical repair</b>

# In-Line Inspection

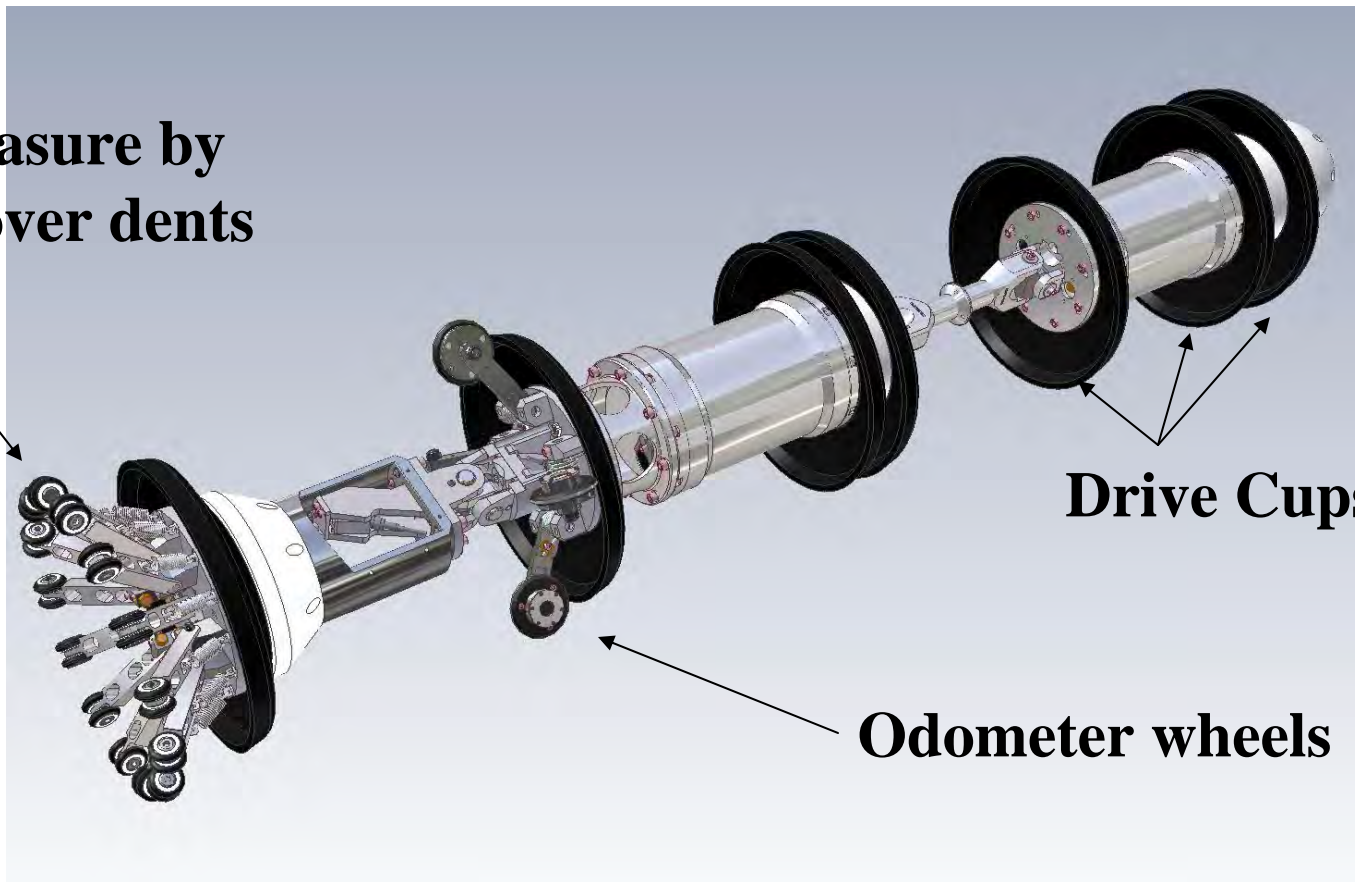


- **In-line inspection tools are sophisticated electronic vehicles that move inside the pipe along with the oil to obtain detailed measurements of the pipe condition.**
- **Each tool is designed to measure a certain defect:**
  - **internal corrosion**
  - **external corrosion**
  - **cracks**
  - **dents, buckles, gouges**

# Caliper Tool



**Fingers measure by  
deflecting over dents  
and welds**



**Drive Cups**

**Odometer wheels**

# Corrosion Inspection - USWM



# Excavation & Rehabilitation



- **If necessary, excavate and expose the pipe for detailed field assessment**
  - **Validate the Results of the In-Line Inspection Tool Runs**
  - **Investigate and repair a detected anomaly**

# Excavation Site



Coating  
removed

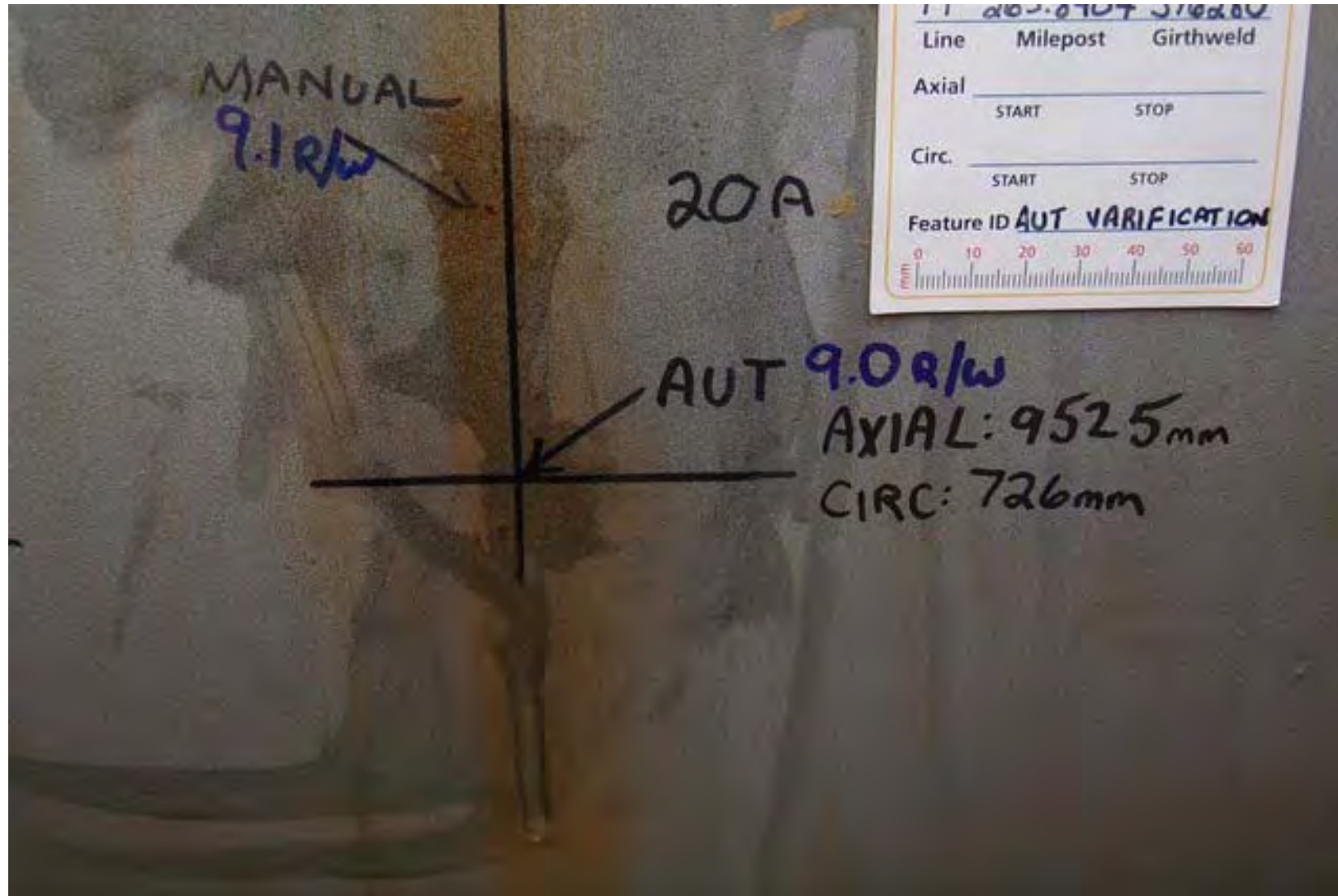


# Rocky Terrain Excavation





# Field Assessment



# Reinforcement Sleeve





# Coating Repairs



# Validation & Planning

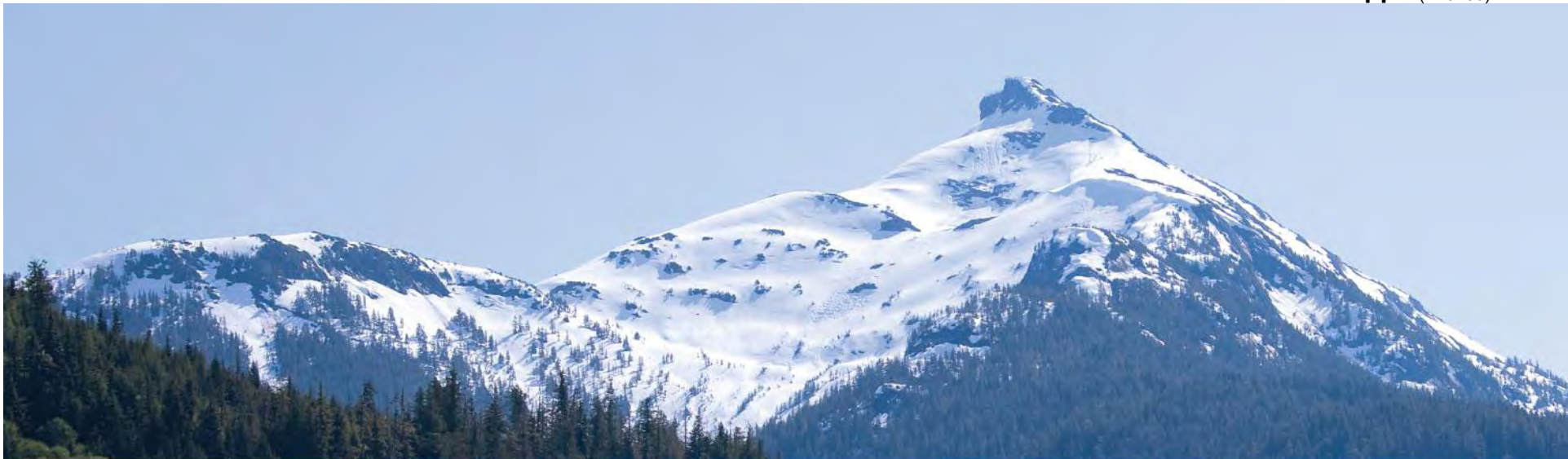


- **Field results are incorporated back into plan**
- **Further plans are finalized on timelines for monitoring cycles**



**Thank you,  
Questions?**

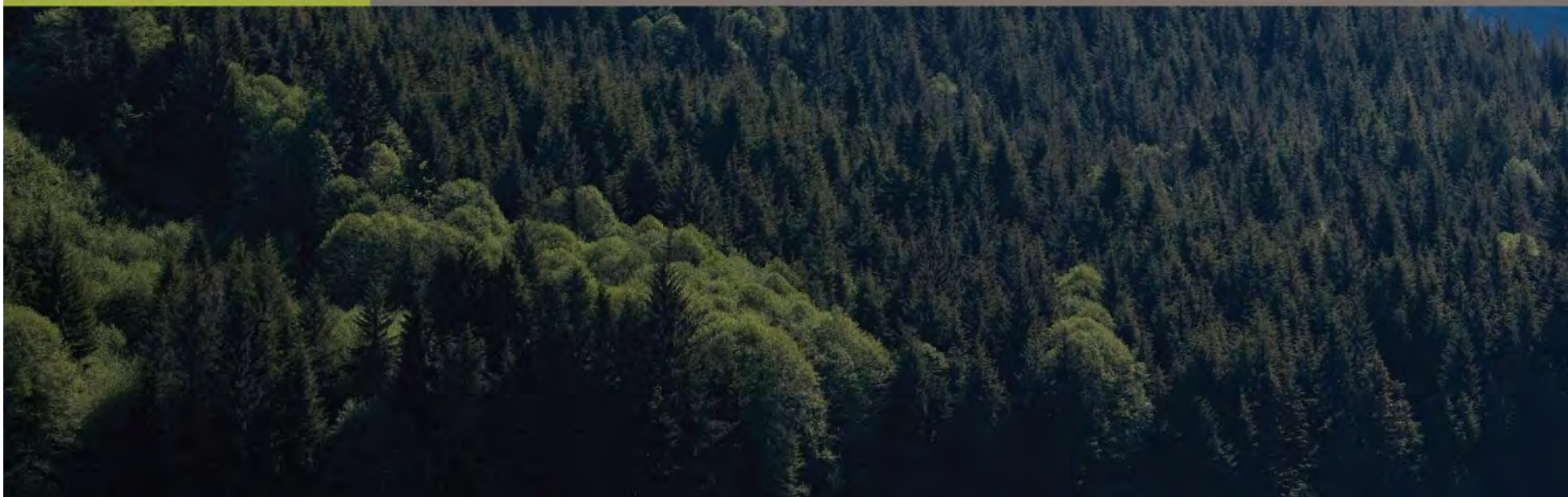




ENBRIDGE  
NORTHERN  
GATEWAY PIPELINES

# Emergency Response

Fort St. James  
August 14, 2012





# Overview

- Northern Gateway's Environmental Policy
- General prevention and response priorities
- Emergency preparedness and response program
- Tactical Watercourse Plans
- Case study: Kitimat River drainage area
- Questions



## Northern Gateway's Policy

Northern Gateway is committed to the protection of the health and safety of our employees and the general public, and to sound environmental stewardship. We believe that prevention of accidents and injuries and protection of the environment benefits everyone, and delivers increased value to our shareholders, customers and employees.





# General Prevention and Response Priorities

## Prevention- First priority is to prevent spills from occurring or escalating:

- Assess risk and determine suitable mitigations
- Utilize advanced technologies for leak detection

## Response – Priorities in the event of an incident:

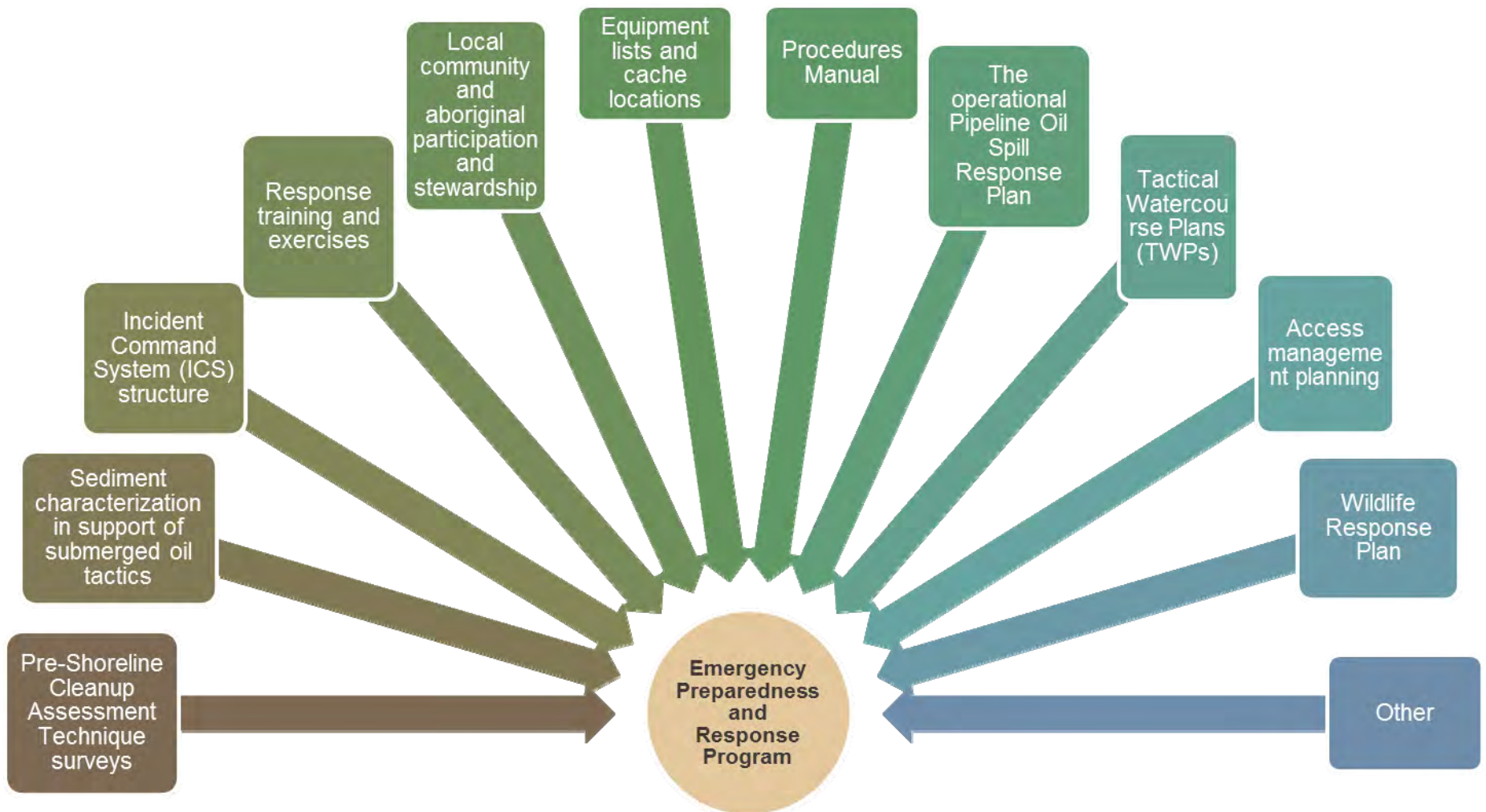
- Protect human safety
- Promptly control release at its source
- Implement effective containment and recovery operations
- Coordinate effective post-incident rehabilitation, remediation, and recovery monitoring

# Emergency Preparedness and Response Planning is a Process

- Northern Gateway is in the Environmental Assessment stage of the Project
- Northern Gateway is at the beginning of this continuous process



# Emergency Preparedness and Response Program



# Tactical Watercourse Plans (TWP)

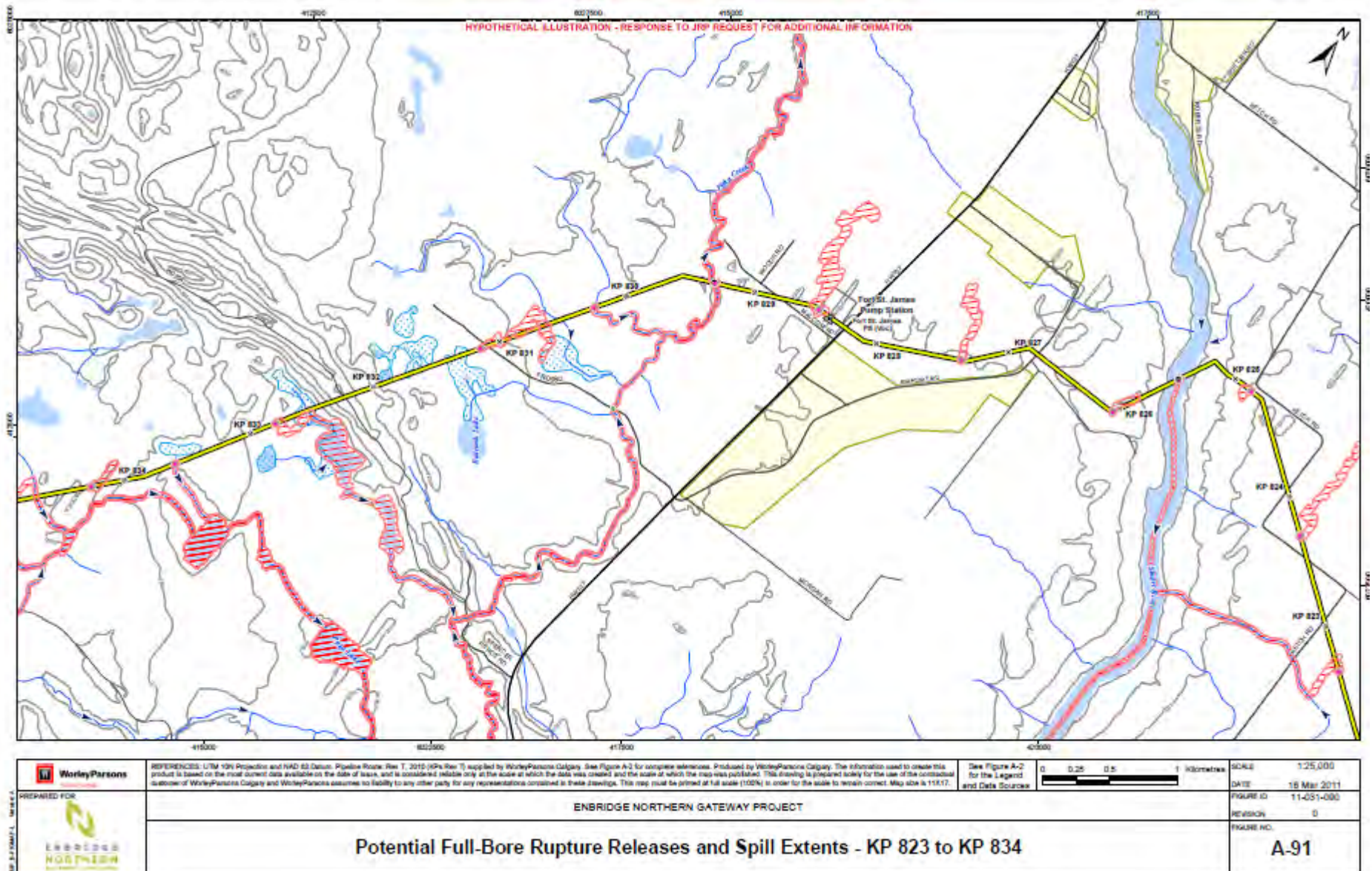
TWPs provide responders with response site-specific information including:

- spill risk
- watercourse and land use character
- accessibility
- strategic response areas (e.g., intercept points, equipment staging areas)
- local equipment and resources
- resources at risk
- guideline response strategies
- logistical contacts.





# Fort St. James Potential Pathway Modelling



## Response Site Selection

Response sites will be selected for ground-truthing based on the release trajectory modelling undertaken along the pipelines route, and other criteria including:

- sites upstream of environmental, socio-economic and cultural resources
- sites with good accessibility or potential for good accessibility
- sites with good potential for containment
- sites with good potential for product recovery
- sites that may be suitable for response resource staging
- sites where exclusion booming or other protective strategies may be implemented (e.g., water intakes)

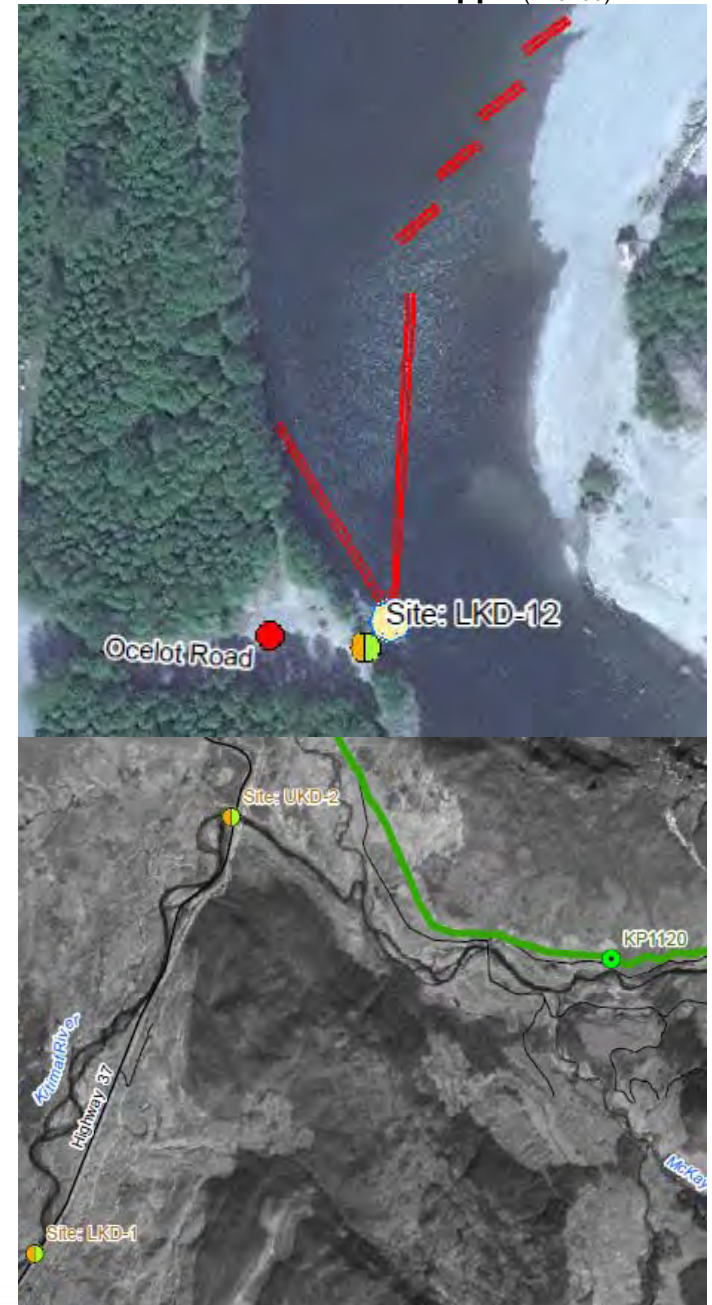


# Examples of Priority Areas for Response Sites



## Case Study: Tactical Watercourse Plan Content

- Information on the character of the drainage
  - geomorphology
  - hydrology
  - meteorology
  - resources at risk
- General response information
  - safety procedures
  - notification procedures
  - source control procedures
  - response tactical descriptions
- Response site-specific information
  - response site tactics sheets
  - response equipment deployment figures
- Logistical information



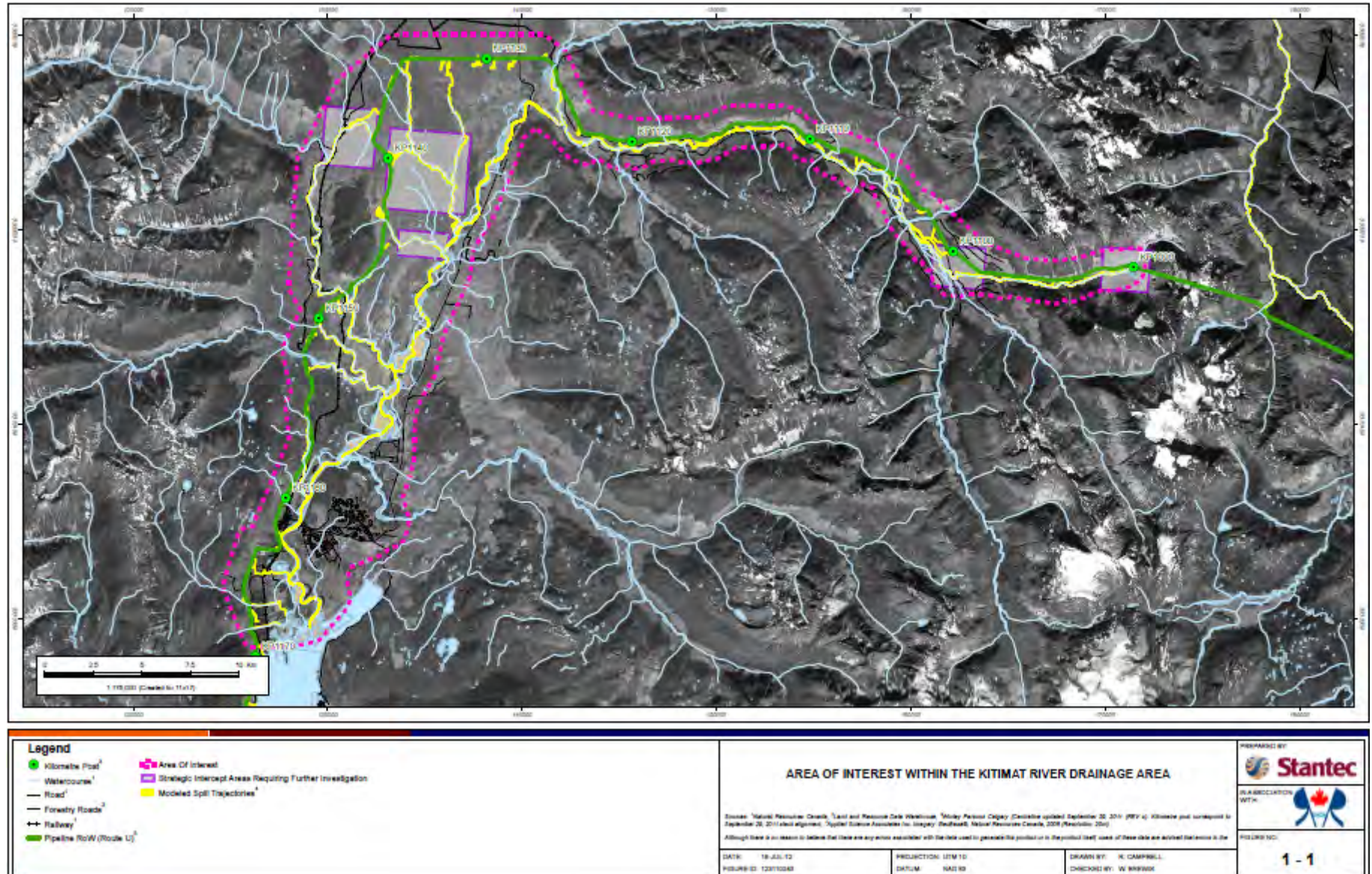


## Case Study: Preliminary Kitimat River Drainage Area TWP

- March - April 2012: Desk-based selection of potential response sites for ground-truthing.
- May 2012: Ground-truthing of potential response sites with representatives from the Kitselas Nation and Haisla Nation.
- 18 preliminary response sites selected following surveys.
- Indicative tactics described for each response site.
- July 2012: Preliminary Kitimat River Drainage Area Emergency Preparedness Report filed as Reply Evidence.



# Area of Interest for the Kitimat River Drainage Area TWP







# Response Sites in Lower Kitimat River Drainage Area



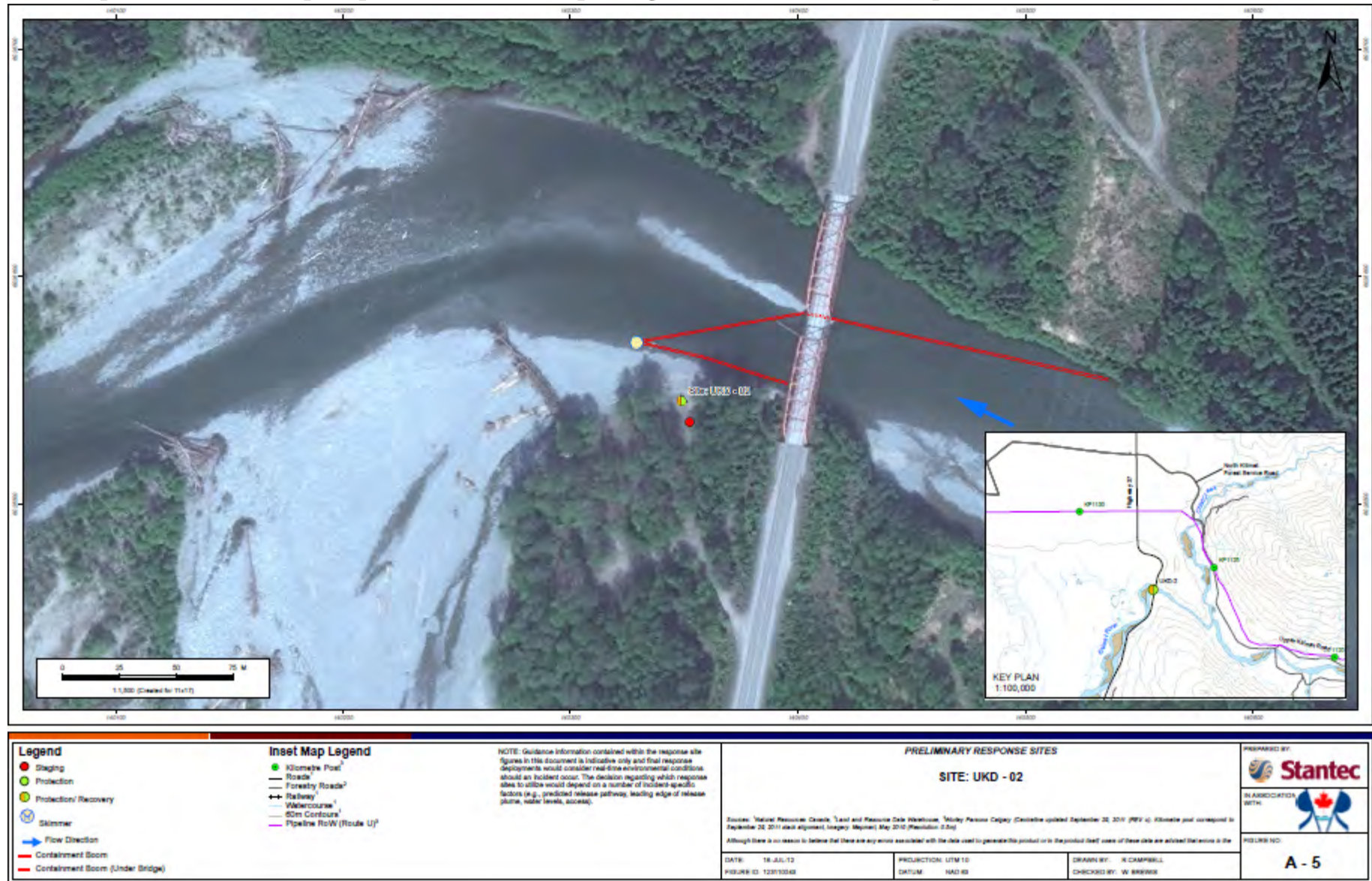
<p><b>Legend</b></p> <ul style="list-style-type: none"> <li><span style="color: green;">●</span> Kilometer Post<sup>1</sup></li> <li><span style="color: green;">○</span> Protection</li> <li><span style="color: yellow;">○</span> Protection/Recovery</li> <li><span style="color: red;">●</span> Staging</li> <li> Existing Boat Launch</li> <li> Road<sup>2</sup></li> <li> Forestry Roads<sup>2</sup></li> <li> Railway<sup>3</sup></li> <li> Pipeline ROW (Route U)<sup>4</sup></li> </ul>	<p><b>LOWER KITIMAT RIVER DRAINAGE AREA RESPONSE SITES OVERVIEW</b></p> <p><small>Source: National Resources Canada, Land and Resource Data Warehouse, "Stikine Person Cagay" (Creative Commons Attribution 3.0 2011) (PRV 4); Kilometre post copyright to September 30, 2011 used algorithm: Imagery: GeoEye/GeoEye, National Resources Canada, 2009 (Revision: 2011)</small></p> <p><small>Although there is no reason to believe that there are any errors associated with the data used to generate the product or in the product itself, users of these data are advised that there is the</small></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">DATE: 18 JUL 12</td> <td style="width: 33%;">PROJECTION: UTM 18</td> <td style="width: 33%;">DRAWN BY: K. CAMPBELL</td> </tr> <tr> <td>FILE/ID: 12201/0001/0001</td> <td>SYSTEM: NAD 83</td> <td>CHECKED BY: W. WILSON</td> </tr> </table>	DATE: 18 JUL 12	PROJECTION: UTM 18	DRAWN BY: K. CAMPBELL	FILE/ID: 12201/0001/0001	SYSTEM: NAD 83	CHECKED BY: W. WILSON	<p>PREPARED BY:</p> <p>IN ASSOCIATION WITH:</p> <p>FIGURE NO:</p> <p style="font-size: 24pt; font-weight: bold; text-align: center;">A - 3</p>
DATE: 18 JUL 12	PROJECTION: UTM 18	DRAWN BY: K. CAMPBELL						
FILE/ID: 12201/0001/0001	SYSTEM: NAD 83	CHECKED BY: W. WILSON						

# Response Site Tactics Sheets

 <b>Upper Kitimat Drainage - UKD-02</b> <b>Protection/Recovery Site</b>		<b>Upper Kitimat</b> <b>Hwy 37 Bridge</b>
<b>Site Photographs</b>  		<b>Access Information</b> <p>General Directions to Site: Head north on highway BC - 37 from Kitimat for approximately 25 km. Immediately before reaching the bridge over the upper Kitimat River turn left on the short access road to the river-side campground.</p> <p>Road Surface Type: Unpaved pebble and soil access road</p> <p>Road Condition: Good, very short unpaved section from highway</p> <p>Boat Launch: Boat entry may be possible at the site</p> <p>Boat Restrictions: Shallow water</p> <p>Water Depths: Up to 1 m (shallow on south bank)</p> <p>Helicopter Operations: N/A</p> <p>Other Comments:</p> <p>WINTER: The highway will be cleared of snow during winter the short access road to the campground will require clearing.</p>
<b>Site Information</b> <p>Site Name: 008 Upper Kitimat Hwy 37 Bridge</p> <p>Strategic Objective: To deflect oil towards the southwest shoreline for containment and recovery in order to prevent oil migrating down river.</p> <p>Latitude: 54.26004</p> <p>Longitude: -128.52390</p> <p>Region: Upper Kitimat drainage</p> <p>Population Density: Low</p> <p>Land Use: Public</p> <p>Distance from Pipeline (minimum): ~2.9 km downstream</p> <p>Distance from Confluence: 2.2 km downstream (Chist Creek)</p> <p>Landowner/Contact: See Emergency Response directory</p> <p>BC 24 hour spill reporting: 1-800-663-3456,</p> <p>Enbridge Edmonton control center emergency: 1-877-420-8800</p>	<b>Waterway Information</b> <p>Type of Waterway: Small river</p> <p>Stream Class: S1</p> <p>Bed Substrate: Cobbles, pebbles and gravel grading to sand up shore</p> <p>Channel Character: Cobble and pebble shoals, vegetated point bar</p> <p>Tidal Influence: No</p> <p>Ave. Current Speed: Moderate (TBD based on flow monitoring)</p> <p>Waterway Width (m): ~110 m</p> <p>Notes: Low turbidity at observed water level</p>	<b>Response Information</b> <p>Deployment Strategy: Contain and recover at campground on south shore.</p> <p>Response Method: Deflection booming plus containment booming</p> <p>Boom Required: Deflection total of 750' either as straight deflection or cascade and deflection booms (shore to bridge abutment) 300' containment boom (abutment to recovery site), 200' shore protection. Total 1250' of boom plus boom support equipment (anchors, sideline bridles etc)</p> <p>Recovery Method: Skimmer</p> <p>Tank Truck Access: Ample. Large workspace.</p> <p>Additional Pumps Required: None</p> <p>Hose Required: 50'</p> <p>Bridge Height: N/A</p> <p>Logistical Needs:</p> <p>Other Comments: Hydro crossing West or bridge</p> <p>WINTER: This section of the Kitimat River is unlikely to fully freeze over or narrow significantly during the winter.</p>
	<b>Shoreline Characteristics</b> <p>Shoreline Type: (N) cobbles, vegetation (intake) (S) cobbles, pebbles</p> <p>Bank Slope: (W) moderate (E) very gentle</p> <p>Bank Height: (W) ~2 m (E) ~0.5 m</p> <p>Valley Character: Meander, braided, floodplain</p> <p>Staging/Facilities Present: Yes, potential staging area</p> <p>Staging Location: Campground parking area beside river</p>	



# Response Equipment Deployment Examples



## Summary

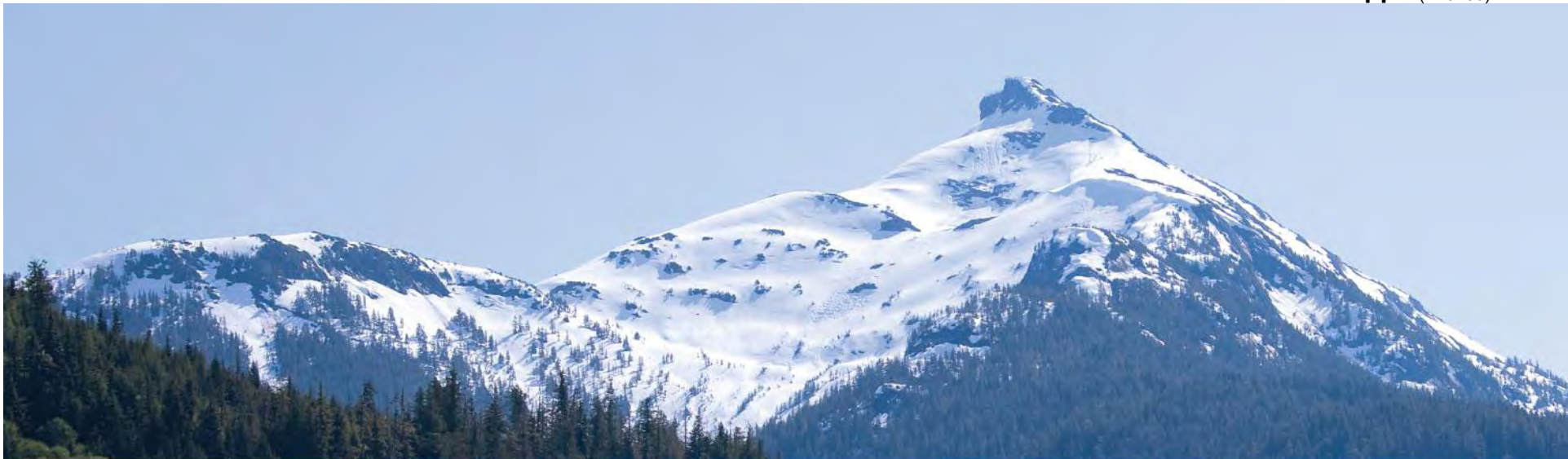
- Northern Gateway's priority is to limit the possibility of any spill occurring
- It is in Northern Gateway's best interest to never have a release on the system
- Northern Gateway will have a robust emergency preparedness and response system in place across the entire system and enhancements in higher consequence watercourses
- Northern Gateway is at the beginning of the planning process
- Emergency preparedness is a living process that undergoes continuous testing, review and improvement



ENBRIDGE  
NORTHERN  
GATEWAY PIPELINES

## Questions

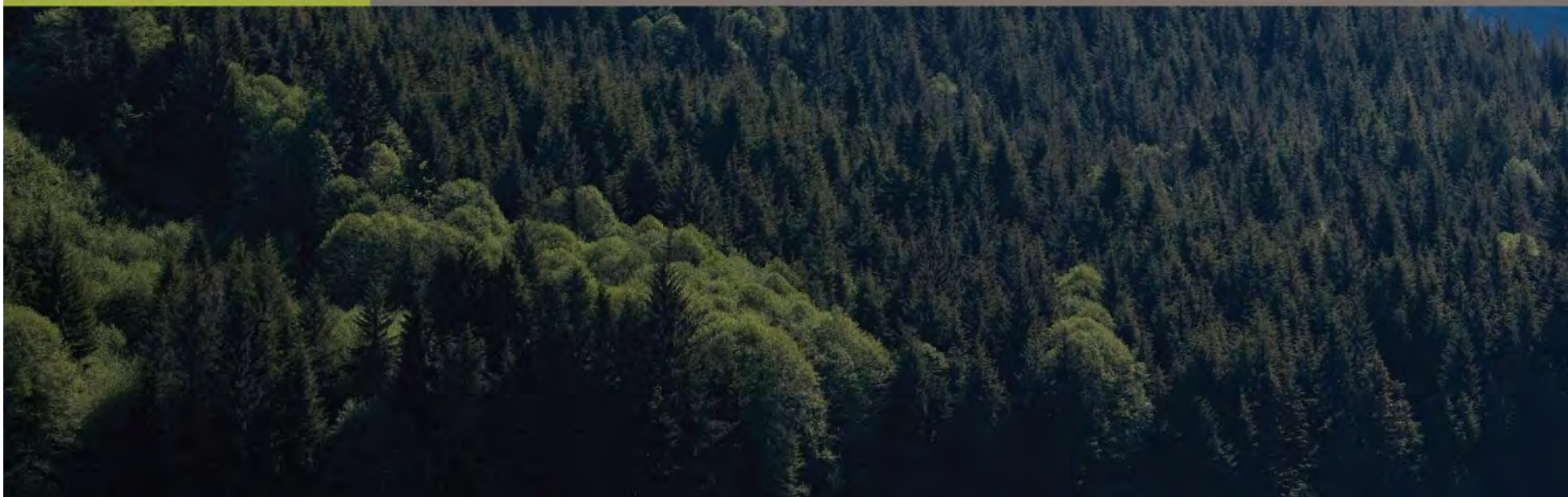




ENBRIDGE  
NORTHERN  
GATEWAY PIPELINES

# Emergency Response

Burns Lake  
August 15, 2012





# Overview

- Northern Gateway's Environmental Policy
- General prevention and response priorities
- Emergency preparedness and response program
- Tactical Watercourse Plans
- Case study: Kitimat River drainage area
- Questions



## Northern Gateway's Policy

Northern Gateway is committed to the protection of the health and safety of our employees and the general public, and to sound environmental stewardship. We believe that prevention of accidents and injuries and protection of the environment benefits everyone, and delivers increased value to our shareholders, customers and employees.



# General Prevention and Response Priorities

## Prevention- First priority is to prevent spills from occurring or escalating:

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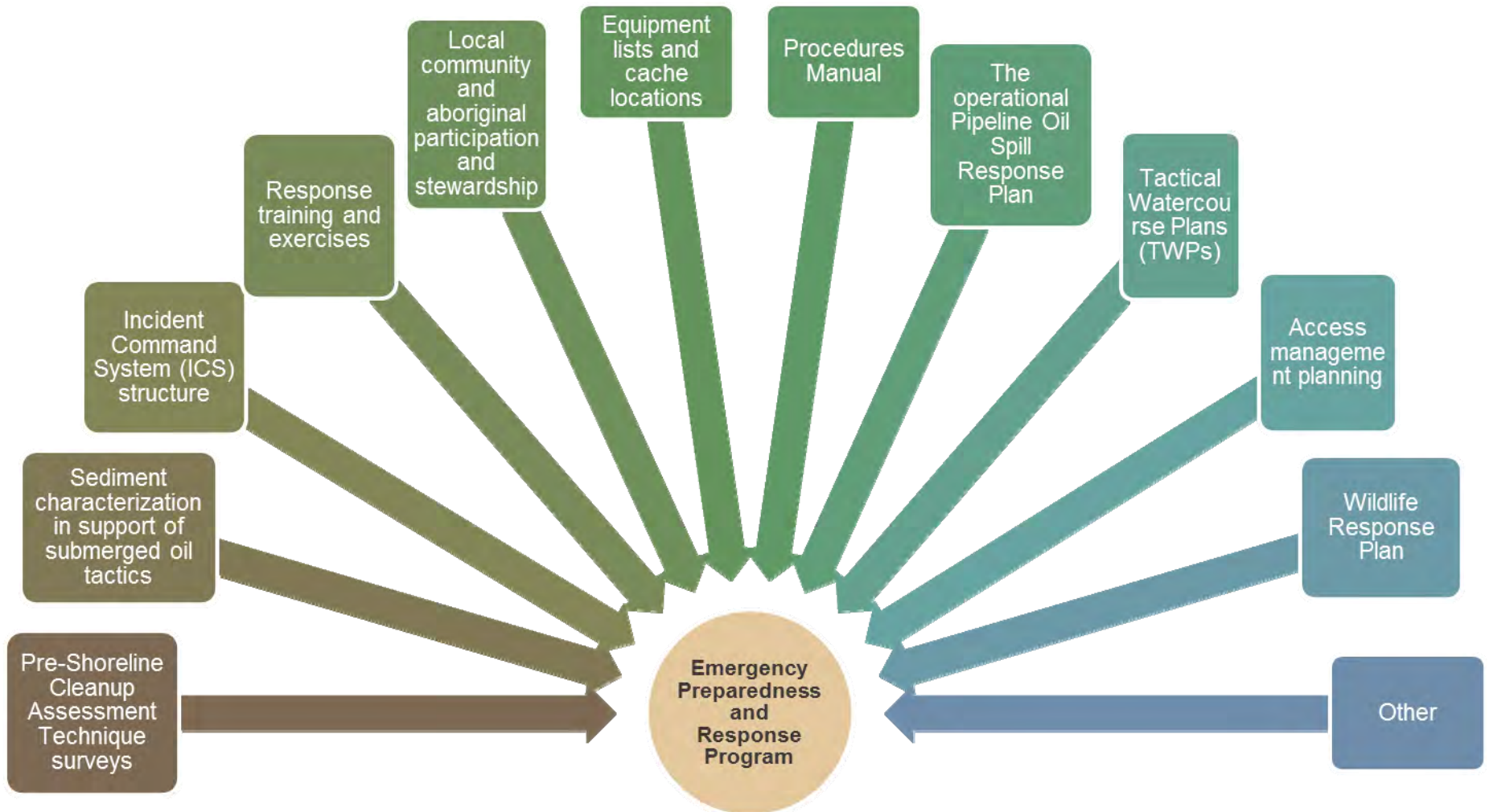
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# Emergency Preparedness and Response Program



# Tactical Watercourse Plans (TWP)

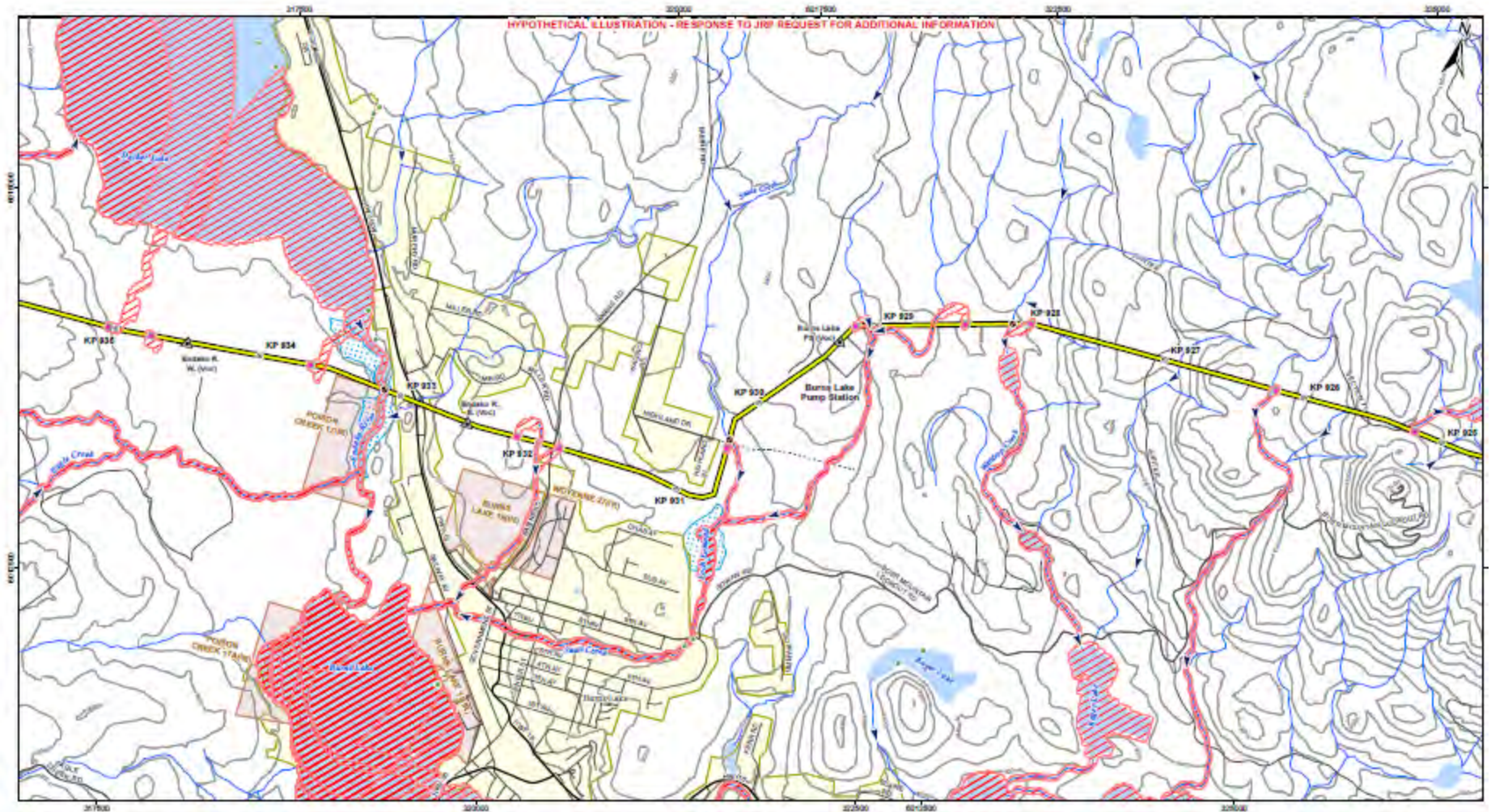
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- spill risk
- watercourse and land use character
- accessibility
- strategic response areas (e.g., intercept points, equipment staging areas)
- local equipment and resources
- resources at risk
- guideline response strategies
- logistical contacts.





# Burns Lake Potential Pathway Modelling



<p>WorleyParsons</p>	<p>REFERENCES: UTM 10N Projection and NAD 83 Datum. Pipeline Route: Rev. T, 2010 (RPA Row 7) supplied by WorleyParsons Calgary. See Figure A-2 for subgrade references. Produced by WorleyParsons Calgary. The information used to create this product is based on the most current data available to the date of issue, and is considered reliable only at the scale at which the data was created and the scale at which the map was published. This drawing is prepared solely for the use of the contractual customer of WorleyParsons Calgary and WorleyParsons assumes no liability to any other party for any representations contained in these drawings. This map must be printed at full scale (100%) in order for the scale to remain correct. Map size is 11X17.</p>	<p>See Figure A-2 for the Legend and Data Sources</p> <p>SCALE: 1:25,000 DATE: 18 Mar 2011 FIGURE ID: 11-031-101 REVISION: 0 FIGURE NO:</p>
<p>ENBRIDGE NORTHERN GATEWAY PROJECT</p>		
<p>Potential Full-Bore Rupture Releases and Spill Extents - KP 925 to KP 935</p>		
<p><b>A-102</b></p>		

## Response Site Selection

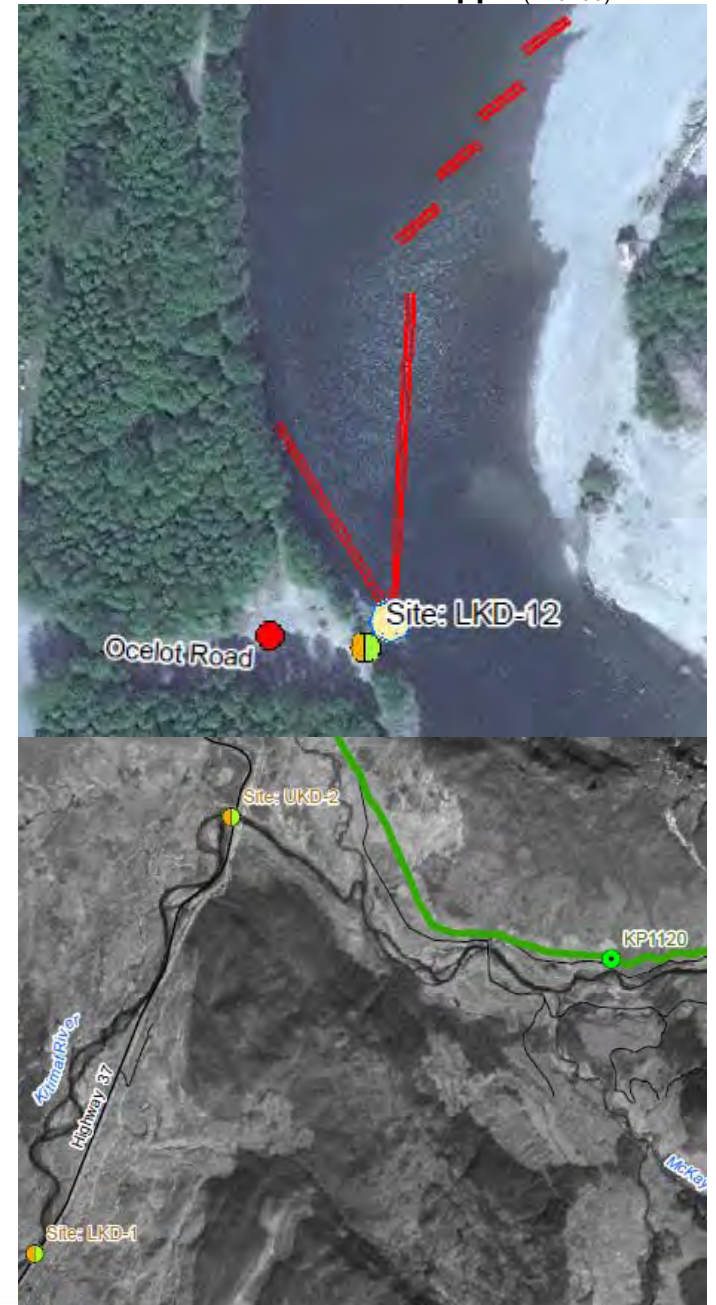
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## Case Study: Tactical Watercourse Plan Content

- Information on the character of the drainage
  - geomorphology
  - hydrology
  - meteorology
  - resources at risk
- General response information
  - safety procedures
  - notification procedures
  - source control procedures
  - response tactical descriptions
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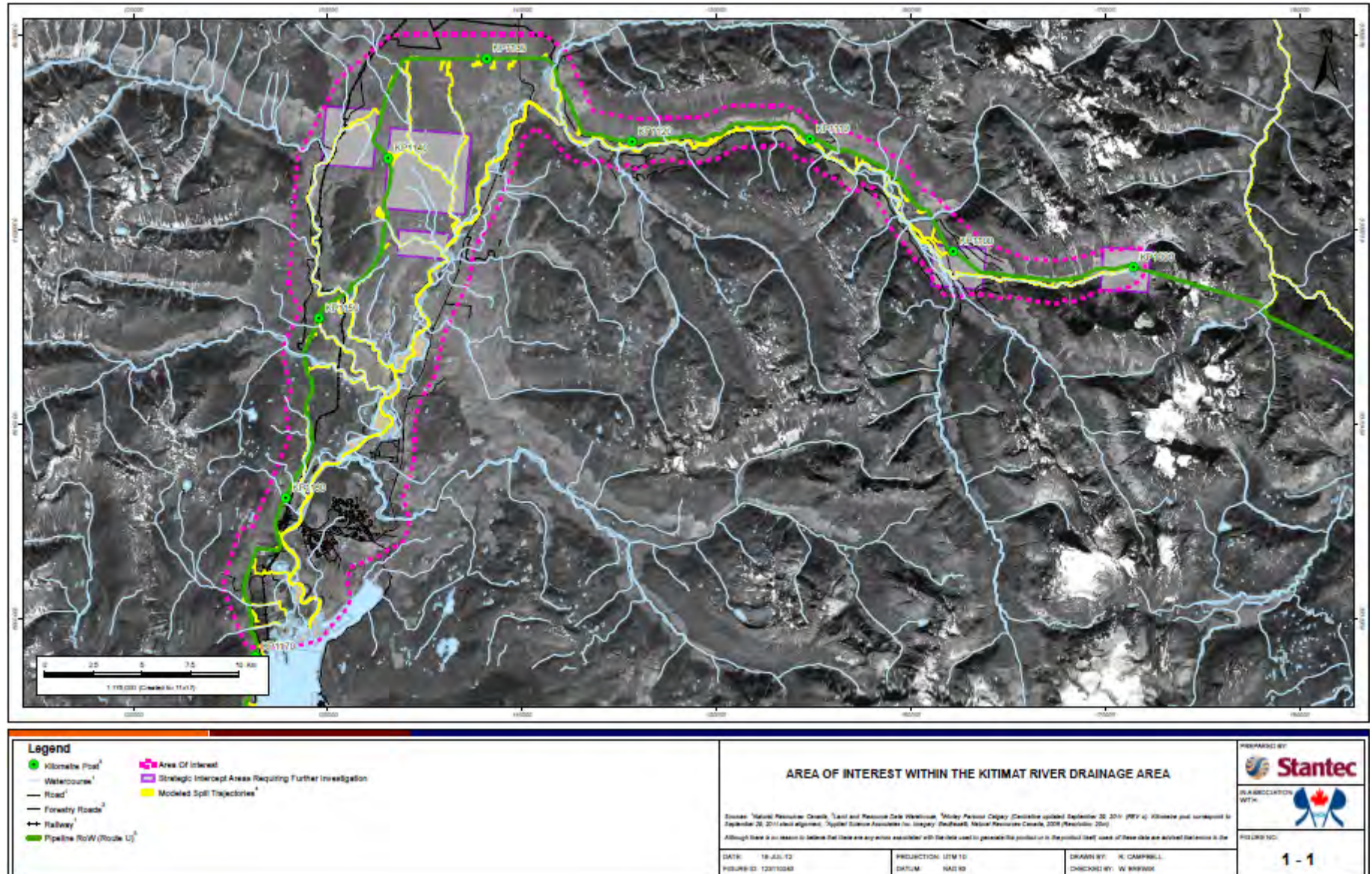
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# Area of Interest for the Kitimat River Drainage Area TWP








# Response Sites in Lower Kitimat River Drainage Area



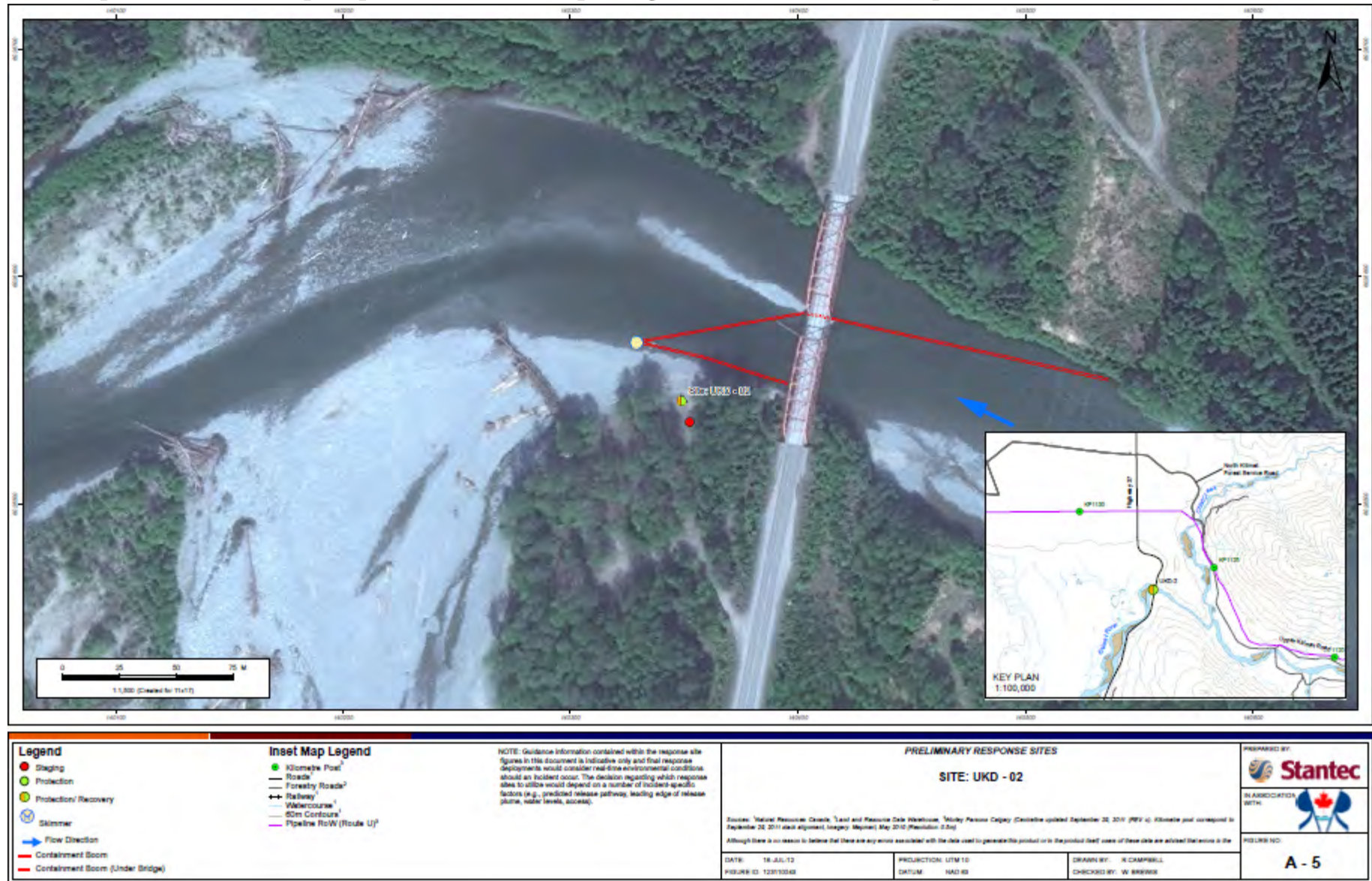
<p><b>Legend</b></p> <ul style="list-style-type: none"> <li><span style="color: green;">●</span> Kilometer Post<sup>1</sup></li> <li><span style="color: green;">○</span> Protection</li> <li><span style="color: yellow;">○</span> Protection/Recovery</li> <li><span style="color: red;">●</span> Staging</li> <li><span style="color: yellow;">○</span> Existing Boat Launch</li> <li><span style="border-bottom: 1px solid black; width: 20px; display: inline-block;"></span> Road<sup>1</sup></li> <li><span style="border-bottom: 1px dashed black; width: 20px; display: inline-block;"></span> Forestry Roads<sup>1</sup></li> <li><span style="border-bottom: 1px solid black; width: 20px; display: inline-block;"></span> Railway<sup>1</sup></li> <li><span style="border-bottom: 2px solid green; width: 20px; display: inline-block;"></span> Pipeline ROW (Route U)<sup>1</sup></li> </ul>	<p><b>LOWER KITIMAT RIVER DRAINAGE AREA RESPONSE SITES OVERVIEW</b></p> <p><small>Source: National Resources Canada, Land and Resource Data Warehouse, "Stikine Person Cagay" (Creative updated September 20, 2011) (PRV 4); Kilometer post copyright to September 20, 2011 (not aligned); Imagery: GeoEye, National Resources Canada, 2009 (Resolution: 25m)</small></p> <p><small>Although there is no reason to believe that there are any errors associated with the data used to generate the product or in the product itself, users of these data are advised that there is the</small></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">DATE: 18 JUL 12</td> <td style="width: 33%;">PROJECTION: UTM 18</td> <td style="width: 33%;">DRAWN BY: K. CAMPBELL</td> </tr> <tr> <td>FILENAME: 122010001.XDD</td> <td>UNIT: M</td> <td>CHECKED BY: W. WILSON</td> </tr> </table>	DATE: 18 JUL 12	PROJECTION: UTM 18	DRAWN BY: K. CAMPBELL	FILENAME: 122010001.XDD	UNIT: M	CHECKED BY: W. WILSON	<p>PREPARED BY:</p>  <p>IN ASSOCIATION WITH:</p>  <p>FIGURE NO:</p> <p style="font-size: 1.2em; font-weight: bold;">A - 3</p>
DATE: 18 JUL 12	PROJECTION: UTM 18	DRAWN BY: K. CAMPBELL						
FILENAME: 122010001.XDD	UNIT: M	CHECKED BY: W. WILSON						

# Response Site Tactics Sheets

 <b>Upper Kitimat Drainage - UKD-02 Protection/Recovery Site</b>		<b>Upper Kitimat Hwy 37 Bridge</b>
<b>Site Photographs</b>  		<b>Access Information</b> <p>General Directions to Site: Head north on highway BC - 37 from Kitimat for approximately 25 km. Immediately before reaching the bridge over the upper Kitimat River turn left on the short access road to the river-side campground.</p> <p>Road Surface Type: Unpaved pebble and soil access road</p> <p>Road Condition: Good, very short unpaved section from highway</p> <p>Boat Launch: Boat entry may be possible at the site</p> <p>Boat Restrictions: Shallow water</p> <p>Water Depths: Up to 1 m (shallow on south bank)</p> <p>Helicopter Operations: N/A</p> <p>Other Comments:</p> <p>WINTER: The highway will be cleared of snow during winter the short access road to the campground will require clearing.</p>
<b>Site Information</b> <p>Site Name: 008 Upper Kitimat Hwy 37 Bridge</p> <p>Strategic Objective: To deflect oil towards the southwest shoreline for containment and recovery in order to prevent oil migrating down river.</p> <p>Latitude: 54.28004</p> <p>Longitude: -128.52390</p> <p>Region: Upper Kitimat drainage</p> <p>Population Density: Low</p> <p>Land Use: Public</p> <p>Distance from Pipeline (minimum): ~2.9 km downstream</p> <p>Distance from Confluence: 2.2 km downstream (Chist Creek)</p> <p>Landowner/Contact: See Emergency Response directory</p> <p>BC 24 hour spill reporting: 1-800-663-3456,</p> <p>Enbridge Edmonton control center emergency: 1-877-420-8800</p>	<b>Waterway Information</b> <p>Type of Waterway: Small river</p> <p>Stream Class: S1</p> <p>Bed Substrate: Cobbles, pebbles and gravel grading to sand up shore</p> <p>Channel Character: Cobble and pebble shoals, vegetated point bar</p> <p>Tidal Influence: No</p> <p>Ave. Current Speed: Moderate (TBD based on flow monitoring)</p> <p>Waterway Width (m): ~110 m</p> <p>Notes: Low turbidity at observed water level</p>	<b>Response Information</b> <p>Deployment Strategy: Contain and recover at campground on south shore.</p> <p>Response Method: Deflection booming plus containment booming</p> <p>Boom Required: Deflection total of 750' either as straight deflection or cascade and deflection booms (shore to bridge abutment) 300' containment boom (abutment to recovery site), 200' shore protection. Total 1250' of boom plus boom support equipment (anchors, sideline bridles etc)</p> <p>Recovery Method: Skimmer</p> <p>Tank Truck Access: Ample. Large workspace.</p> <p>Additional Pumps Required: None</p> <p>Hose Required: 50'</p> <p>Bridge Height: N/A</p> <p>Logistical Needs:</p> <p>Other Comments: Hydro crossing West or bridge</p> <p>WINTER: This section of the Kitimat River is unlikely to fully freeze over or narrow significantly during the winter.</p>
	<b>Shoreline Characteristics</b> <p>Shoreline Type: (N) cobbles, vegetation (intake) (S) cobbles, pebbles</p> <p>Bank Slope: (W) moderate (E) very gentle</p> <p>Bank Height: (W) ~2 m (E) ~0.5 m</p> <p>Valley Character: Meander, braided, floodplain</p> <p>Staging/Facilities Present: Yes, potential staging area</p> <p>Staging Location: Campground parking area beside river</p>	



# Response Equipment Deployment Examples





## Summary

- Northern Gateway's priority is to limit the possibility of any spill occurring
- It is in Northern Gateway's best interest to never have a release on the system
- Northern Gateway will have a robust emergency preparedness and response system in place across the entire system and enhancements in higher consequence watercourses
- Northern Gateway is at the beginning of the planning process
- Emergency preparedness is a living process that undergoes continuous testing, review and improvement



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## Questions



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## Emergency Response

Kitimat Riverlodge Recreation Centre  
August 16, 2012





# Overview

- Northern Gateway's Environmental Policy
- General prevention and response priorities
- Emergency preparedness and response program
- Tactical Watercourse Plans
- Case study: Kitimat River drainage area
- Questions



# Northern Gateway's Policy

Northern Gateway is committed to the protection of the health and safety of our employees and the general public, and to sound environmental stewardship. We believe that prevention of accidents and injuries and protection of the environment benefits everyone, and delivers increased value to our shareholders, customers and employees.





# General Prevention and Response Priorities

## Prevention- First priority is to prevent spills from occurring or escalating:

- Assess risk and determine suitable mitigations
- Utilize advanced technologies for leak detection

## Response – Priorities in the event of an incident:

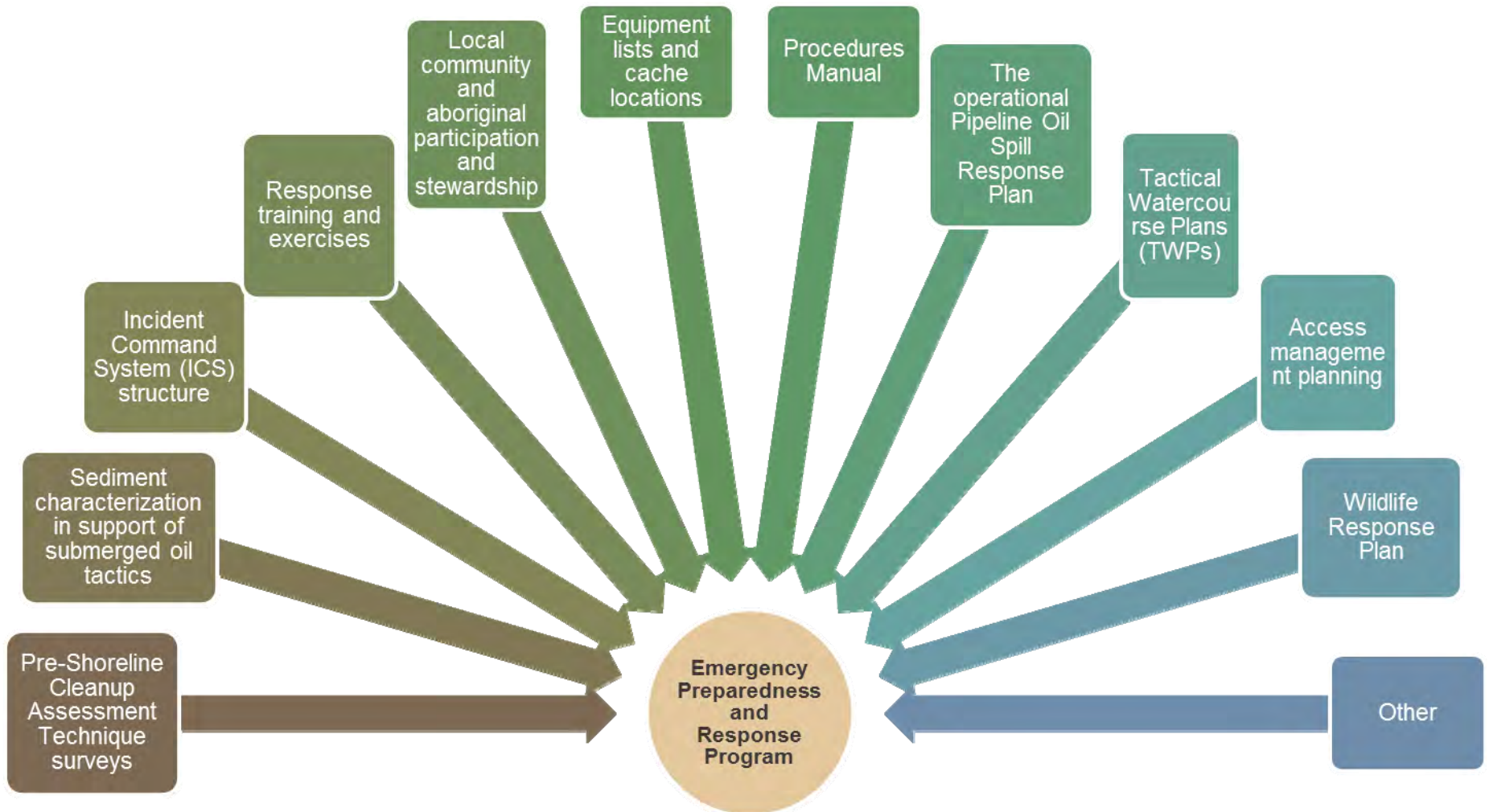
- Protect human safety
- Promptly control release at its source
- Implement effective containment and recovery operations
- Coordinate effective post-incident rehabilitation, remediation, and recovery monitoring

# Emergency Preparedness and Response Planning is a Process

- Northern Gateway is in the Environmental Assessment stage of the Project
- Northern Gateway is at the beginning of this continuous process



# Emergency Preparedness and Response Program



# Tactical Watercourse Plans (TWP)

TWPs provide responders with response site-specific information including:

- spill risk
- watercourse and land use character
- accessibility
- strategic response areas (e.g., intercept points, equipment staging areas)
- local equipment and resources
- resources at risk
- guideline response strategies
- logistical contacts.





# Lower Kitimat Valley Potential Pathway Modelling





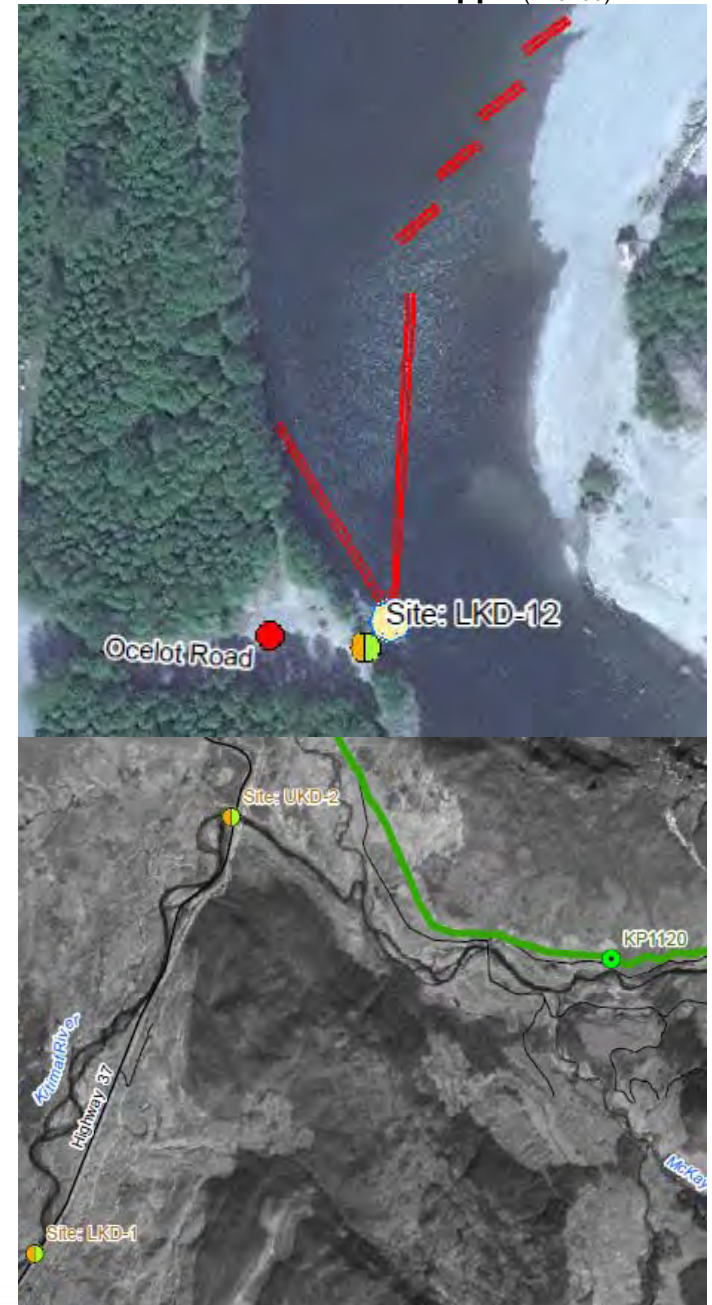
## Response Site Selection

Response sites will be selected for ground-truthing based on the release trajectory modelling undertaken along the pipelines route, and other criteria including:

- sites upstream of environmental, socio-economic and cultural resources
- sites with good accessibility or potential for good accessibility
- sites with good potential for containment
- sites with good potential for product recovery
- sites that may be suitable for response resource staging
- sites where exclusion booming or other protective strategies may be implemented (e.g., water intakes)

## Case Study: Tactical Watercourse Plan Content

- Information on the character of the drainage
  - geomorphology
  - hydrology
  - meteorology
  - resources at risk
- General response information
  - safety procedures
  - notification procedures
  - source control procedures
  - response tactical descriptions
- Response site-specific information
  - response site tactics sheets
  - response equipment deployment figures
- Logistical information



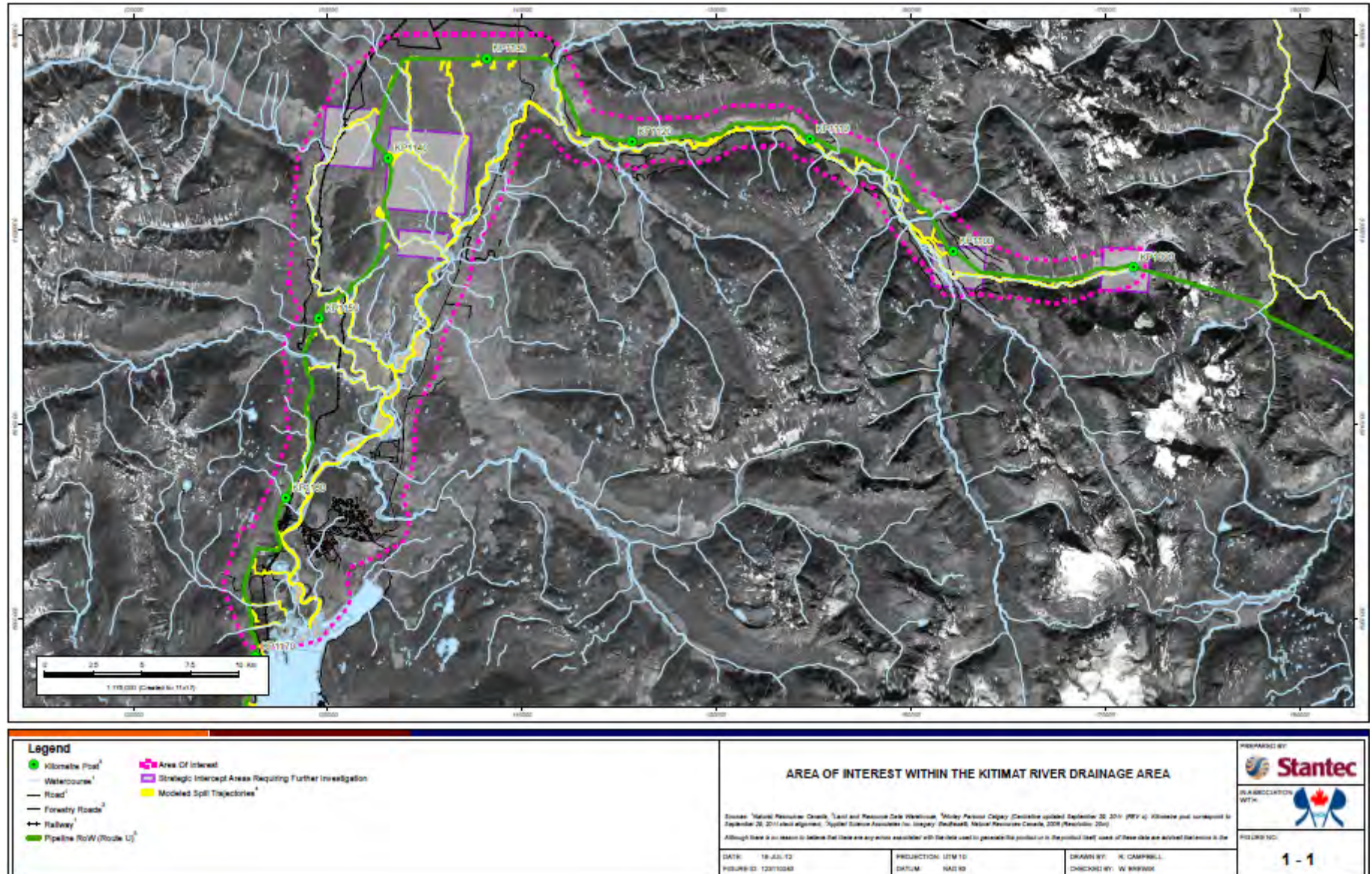
## Case Study: Preliminary Kitimat River Drainage Area TWP

- March - April 2012: Desk-based selection of potential response sites for ground-truthing.
- May 2012: Ground-truthing of potential response sites with representatives from the Kitselas Nation and Haisla Nation.
- 18 preliminary response sites selected following surveys.
- Indicative tactics described for each response site.
- July 2012: **Preliminary Kitimat River Drainage Area Emergency Preparedness Report** filed as Reply Evidence.





# Area of Interest for the Kitimat River Drainage Area TWP





# Response Sites in Lower Kitimat River Drainage Area



<p><b>Legend</b></p> <ul style="list-style-type: none"> <li><span style="color: green;">●</span> Kilometer Post<sup>1</sup></li> <li><span style="color: green;">○</span> Protection</li> <li><span style="color: yellow;">○</span> Protection/Recovery</li> <li><span style="color: red;">●</span> Staging</li> <li> Existing Boat Launch</li> <li> Road<sup>2</sup></li> <li> Forestry Roads<sup>2</sup></li> <li> Railway<sup>3</sup></li> <li> Pipeline ROW (Route U)<sup>4</sup></li> </ul>	<p><b>LOWER KITIMAT RIVER DRAINAGE AREA RESPONSE SITES OVERVIEW</b></p> <p><small>Source: National Resources Canada, Land and Resource Data Warehouse, "Stikine Pipeline Corridor" (Datafile updated September 20, 2011) (PRV 4). Kilometer post correspond to September 20, 2011 stake alignment. Imagery: GeoEye/GeoEye, National Resources Canada, 2009 (Resolution: 25m)</small></p> <p><small>Although there is no reason to believe that there are any errors associated with the data used to generate the product or in the product itself, users of these data are advised that there is the</small></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">DATE: 18 JUL 12</td> <td style="width: 33%;">PROJECTION: UTM 18</td> <td style="width: 33%;">DRAWN BY: K. CAMPBELL</td> </tr> <tr> <td>FILE/ID: 12201/0001/004</td> <td>SYSTEM: NAD 83</td> <td>CHECKED BY: W. WRENN</td> </tr> </table>	DATE: 18 JUL 12	PROJECTION: UTM 18	DRAWN BY: K. CAMPBELL	FILE/ID: 12201/0001/004	SYSTEM: NAD 83	CHECKED BY: W. WRENN	<p>PREPARED BY:</p> <p>IN ASSOCIATION WITH:</p> <p>FIGURE NO:</p> <p style="text-align: center; font-weight: bold; font-size: 1.2em;">A - 3</p>
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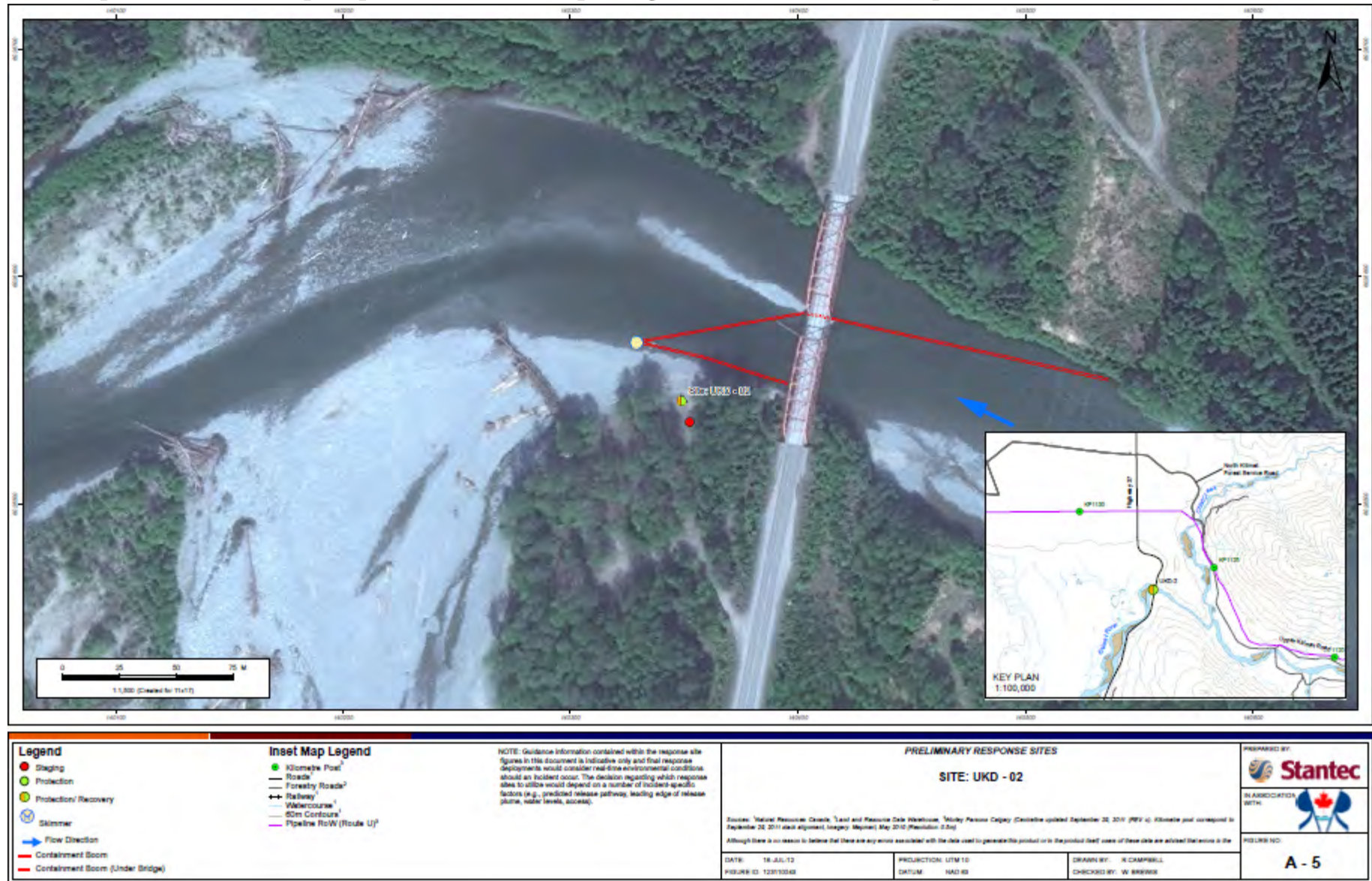


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# Response Equipment Deployment Examples



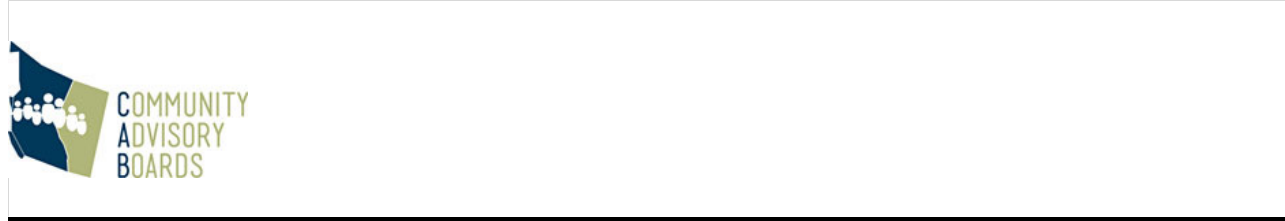
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- Emergency preparedness is a living process that undergoes continuous testing, review and improvement



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## Questions



## **Peace Country CAB**

The Peace Country Community Advisory Board meetings are currently held in Grande Prairie, Alberta. There are 30 registered members who sit at the table of this CAB and a number of Observers who regularly attend.

As of November, 2012 this membership currently consists of:

### **Aboriginal**

- *Valleyview Metis Local #1929*
- *Mountain Metis*
- *Grande Prairie Metis Local #1990*
- *Metis Nation of Alberta*
- *Fairview Metis Local #207*
- *Nose Creek Community*
- *Kelly Lake First Nation*
- *Kelly Lake Cree Nation*
- *Aseniwuche Winewak Nation*
- *Sturgeon Lake Cree Nation*
- *Sucker Creek First Nation*

### **Local Government**

- *Town of Valleyview*
- *Municipal District of Greenview No. 16*
- *District of Chetwynd*
- *Town of Fox Creek*
- *City of Grande Prairie*
- *County of Grande Prairie No. 1*

### **Economic Development**

- *Fox Creek Chamber of Commerce*
- *Peace Region Economic Development Alliance*
- *Dawson Creek & District Chamber of Commerce*
- *Grande Prairie & District Chamber of Commerce*

### **Recreation**



**Appendix C**  
(4/1/09)

- *ATV BC/ATV Moose Club*

**Hunter/Trapper**

- *Kelly Lake Trapline Owner*

**Tourism / Guides**

- *Guide Outfitters Association of British Columbia*

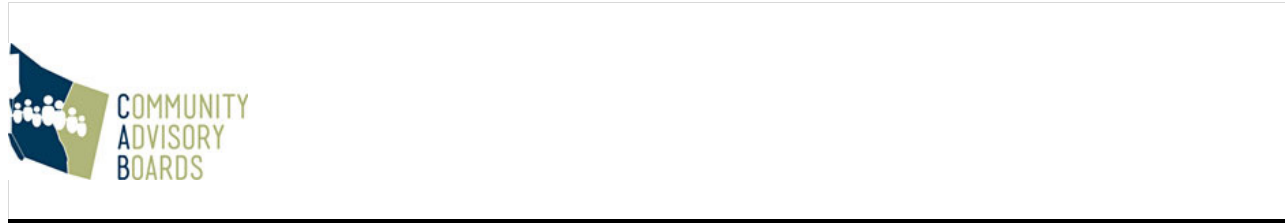
**Business**

- *Fox Creek Excavating & Environmental*
- *Sees the World*

**General Public**

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Community Advisory Boards



## Alberta North Central CAB

The Alberta North Central Community Advisory Board meetings are currently held in Edmonton, Alberta. There are 23 registered members who sit at the table of this CAB and a number of Observers who regularly attend.

As of November, 2012 this membership currently consists of:

### Aboriginal

- *Alexis Nakota Sioux First Nation*
- *Metis Nation of Alberta (Region 2 & 5)*
- *Sturgeon Lake Cree Nation*
- *Whitefish (Goodfish) Lake First Nation #128*
- *Paul First Nation*
- *Kapawe'no First Nation*
- *Sawridge First Nation*

### Local Government

- *Town of Morinville*
- *Town of Gibbons*
- *Town of Fox Creek*
- *Town of Whitecourt*
- *Woodlands County*

### Economic Development

- *Fox Creek Chamber of Commerce*
- *Grande Alberta Economic Region*
- *Mayerthorpe and District Chamber of Commerce*
- *Whitecourt and District Chamber of Commerce*

### ENGO

- *Alberta Fish and Game Association*

### Land/Resource Use

- *Alberta Outdoors Coalition*

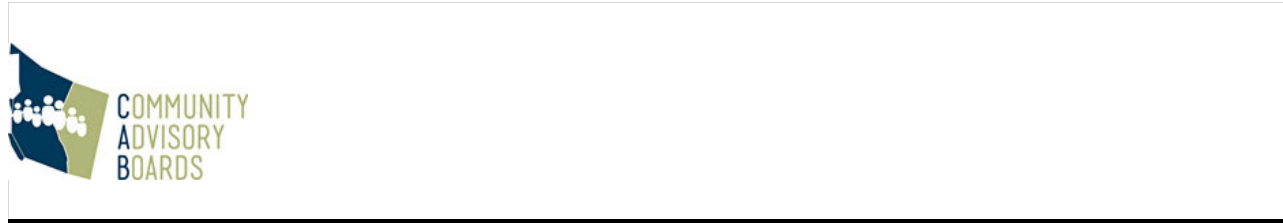
**Appendix 6**

- *Battleford Trails Surface Rights Association*

**General Public**

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<b>Community Advisory Boards</b>
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## **BC North Coastal CAB**

The BC North Coastal Community Advisory Board meetings are currently held in Kitimat BC. There are 20 registered members who sit at the table of this CAB, and a number of Observers who regularly attend.

As of November, 2012 this membership currently consists of:

### **Economic Development**

- *Kitimat Economic Development Association*
- *Kitimat-Terrace Industrial Development Society*
- *Kitimat Chamber of Commerce*
- *Prince Rupert & District Chamber of Commerce*

### **Aboriginal**

- *Terris Metis Elders*
- *Northwest BC Metis Association*
- *Kitsumkalum First Nation*

### **Marine Use**

- *Chamber of Shipping of British Columbia*
- *Aurora Marine Services Ltd.*
- *Island Tug and Barge Ltd.*
- *SMIT Marine Canada Inc.*

### **Land/Resource Use**

- *Kalum LRMP Implementation Committee*

### **Local Government**

- *District of Kitimat*

### **Recreation**

- *Outdoor Recreation Council of BC*

### **ENGO**

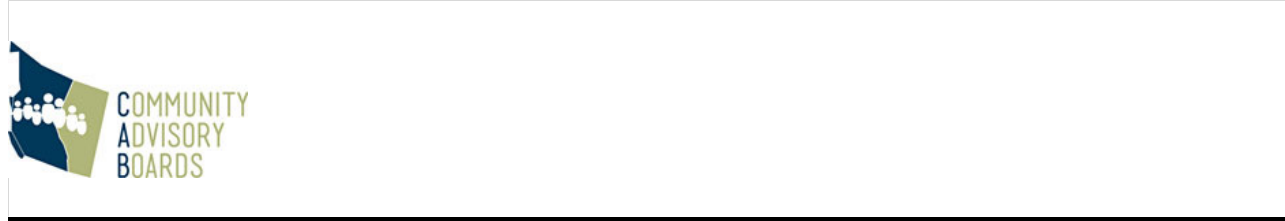
■ *BC Wildlife Federation*

**General Public**

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<b>Community Advisory Boards</b>
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## **BC North West CAB**

The BC North West Community Advisory Board meetings have been held in Smithers and Terrace, BC. There are 15 registered members who sit at the table of this CAB, and a number of Observers who regularly attend.

As of November, 2012 this membership currently consists of:

### **Aboriginal**

- *Northwest BC Métis Association*

### **Economic Development**

- *Kitimat-Terrace Industrial Development Society*
- *Smithers & District Chamber of Commerce*

### **Local Government**

- *City of Terrace*
- *Regional District of Bulkley-Nechako (Area B & G)*

### **Business**

- *Lee Millwright Services*

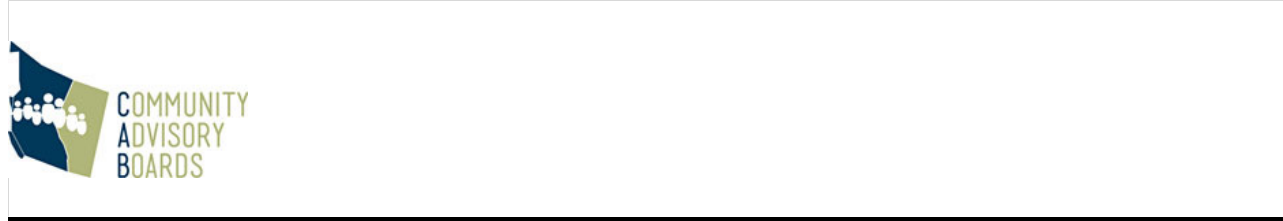
### **Recreation**

- *Kitimat Rod and Gun Club*

### **General Public**

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Community Advisory Boards



## **BC North Central CAB**

The BC North Central Community Advisory Board meetings are currently held in Prince George, BC. There are 42 registered members who sit at the table of this CAB and a number of Observers who regularly attend.

As of November, 2012 this membership currently consists of:

### **Aboriginal**

- *Cheslatta Carrier Nation*
- *Gitksan Hereditary Chiefs*
- *Hagwilget Village Council*
- *Nee-Tahi-Buhn First Nation*
- *McLeod Lake Indian Band*
- *Burns Lake Band*
- *Metis Nation of BC*
- *Skin Tye First Nation*

### **Local Government**

- *Bear Lake Community Commission*
- *District of Mackenzie*
- *Regional District of Bulkley-Nechako*
- *Regional District of Fraser-Fort George*
- *Village of Burns Lake*
- *Village of Fraser Lake*
- *District of Vanderhoof*
- *District of Fort St. James*
- *City of Fort St. John*
- *District of Tumbler Ridge*

### **ENGO**

- *BC Wildlife Federation*
- *Spruce City Wildlife Association*
- *Lakes District Friends of the Environment*

### **Community Services**

**Appendix C**  
(4/1/09)

- *Bear Lake Improvement Society*
- *Bear Lake Volunteer Fire Department*
- *Carney Hill Neighborhood Centre Society*

**Economic Development**

- *Fort St. John and District Chamber of Commerce*
- *Burns Lake & District Chamber of Commerce*

**Industry Association**

- *Energy Services BC*

**Training/Education**

- *College of New Caledonia – Nechako*

**Recreation**

- *Quad Riders ATV Association of British Columbia*

**Hunter/Trapper**

- *BC Trappers Association*

**General Public**

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Community Advisory Boards



**Peace Country Community Advisory Board  
Round # 14  
Holiday Inn and Suites, Grande Prairie  
Thursday, October 25, 2012**

8:00 – 8:30 a.m.	Registration and Breakfast
8:30 – 8:45 a.m.	Welcome / Introductions <ul style="list-style-type: none"> <li>• Safety Moment</li> </ul>
8:45 – 9:45 a.m.	Review of CAB Conference <ul style="list-style-type: none"> <li>• Round Table Discussion</li> <li>• Revisit break-out group summary</li> <li>• Terms of Reference</li> </ul>
9:45 – 10:15 a.m.	CAB Communications <ul style="list-style-type: none"> <li>• Logo, CAB Computer Donations, Next Steps</li> </ul>
10:15 – 10:30 a.m.	Nutrition Break
10:30 – 11:30 a.m.	Joint Review Panel Hearings / Q&A <ul style="list-style-type: none"> <li>• Michele Perret, Northern Gateway</li> </ul>
11:30 – 12:30 p.m.	Lunch (provided)
12:30 – 1:30 p.m.	Leak Detection Technology / Q&A <ul style="list-style-type: none"> <li>• Ray Philipenko, Manager, Leak Detection, Enbridge Pipelines Inc.</li> </ul>
1:30 – 1:45 p.m.	Nutrition Break
1:45 – 2:45 p.m.	Enbridge Emergency Response Planning / Q&A <ul style="list-style-type: none"> <li>• Neil Reid, Environment Supervisor, Canadian Operations, Enbridge Pipelines Inc.; Curtis Wakulchyk, Environmental Response Preparedness Coordinator, Enbridge Pipelines Inc.</li> </ul>
2:45 – 3:00 p.m.	Observer Q&A Period
3:00 – 3:15 p.m.	Key Messages (Communications Bulletin) & Next Meeting Agenda
3:15 p.m.	Closing



**Alberta North Central  
Community Advisory Board Round # 14  
Radisson Hotel South, Edmonton  
Friday, October 26, 2012**

8:00 – 8:30 a.m.	Registration and Breakfast
8:30 – 8:45 a.m.	Welcome / Introductions <ul style="list-style-type: none"> <li>• Safety Moment – Doug McDermid</li> </ul>
8:45 – 9:45 a.m.	Review of CAB Conference <ul style="list-style-type: none"> <li>• Round Table Discussion</li> <li>• Revisit break-out group summary</li> <li>• Terms of Reference</li> </ul>
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1:45 – 2:45 p.m.	Enbridge Emergency Response Planning / Q&A <ul style="list-style-type: none"> <li>• Neil Reid, Environment Supervisor, Canadian Operations, Enbridge Pipelines Inc.; Curtis Wakulchuk, Environmental Response Preparedness Coordinator, Enbridge Pipelines Inc.</li> </ul>
2:45 – 3:00 p.m.	Observer Q & A Period
3:00 – 3:15 p.m.	Key Messages (Communications Bulletin) & Next Meeting Agenda
3:15 p.m.	Closing





**BC North Coastal  
Community Advisory Board Round # 14  
Kitimat Valley Institute, Kitimat  
Tuesday, October 30, 2012**

8:00 – 8:30 a.m.	Registration and Breakfast
8:30 – 8:45 a.m.	Welcome / Introductions <ul style="list-style-type: none"> <li>• Safety Moment – Robert Hergott</li> </ul>
8:45 – 9:45 a.m.	Review of CAB Conference <ul style="list-style-type: none"> <li>• Round Table Discussion</li> <li>• Revisit break-out group summary</li> <li>• Terms of Reference</li> </ul>
9:45 – 10:15 a.m.	CAB Communications <ul style="list-style-type: none"> <li>• Logo, CAB Computer Donations, Next Steps</li> </ul>
10:15 – 10:30 a.m.	Nutrition Break
10:30 – 11:30 a.m.	Joint Review Panel Hearings / Q&A <ul style="list-style-type: none"> <li>• Michele Perret, Northern Gateway</li> </ul>
11:30 – 12:30 p.m.	Lunch (provided)
12:30 – 1:30 p.m.	Douglas Channel Watch Presentation / Q&A <ul style="list-style-type: none"> <li>• Cheryl Brown &amp; Dave Shannon</li> </ul>
1:30 – 1:45 p.m.	Nutrition Break
1:45 – 2:45 p.m.	Intelligent Pipeline Systems & Technologies / Q&A <ul style="list-style-type: none"> <li>• Jim Parsons &amp; Richard Bosomworth, Spartan Controls Ltd.</li> </ul>
2:45 – 3:00 p.m.	Observer Q&A Period
3:00 – 3:30 p.m.	Key Messages (Communications Bulletin) & Next Meeting Agenda
3:30 p.m.	Closing



**BC North West  
Community Advisory Board Round # 14  
Best Western Inn, Terrace  
Wednesday, October 31, 2012**

8:00 – 8:30 a.m.	Registration and Breakfast
8:30 – 8:45 a.m.	Welcome / Introductions <ul style="list-style-type: none"> <li>• Safety Moment – Robert Stromdahl</li> </ul>
8:45 – 9:45 a.m.	Review of CAB Conference <ul style="list-style-type: none"> <li>• Round Table Discussion</li> <li>• Revisit break-out group summary</li> <li>• Terms of Reference</li> </ul>
9:45 – 10:15 a.m.	CAB Communications <ul style="list-style-type: none"> <li>• Logo, CAB Computer Donations, Next Steps</li> </ul>
10:15 – 10:30 a.m.	Nutrition Break
10:30 – 11:30 a.m.	Joint Review Panel Hearings / Q&A <ul style="list-style-type: none"> <li>• Michele Perret, Northern Gateway</li> </ul>
11:30 a.m.	<b>Doors open to public</b> - Lunch provided
11:50 a.m.	Welcoming comments from Kitimat-Terrace Industrial Development Society
12:00 – 1:00 p.m.	Northern Gateway Marine Presentation / Q&A <ul style="list-style-type: none"> <li>• Michael Cowdell – Marine and Industrial Engineer, WorleyParsons; Northern Gateway Marine Advisor</li> </ul>
1:00 – 1:15 p.m.	Nutrition Break – <b>public meeting ends</b>
1:15 – 2:15 p.m.	Enbridge Emergency Response Planning / Q&A <ul style="list-style-type: none"> <li>• Curtis Wakulchyk, Environmental Response Preparedness Coordinator, Enbridge Pipelines Inc.</li> </ul>
2:15 – 2:30 p.m.	Observer Q&A, public event debrief
2:30 – 2:45 p.m.	Key Messages (Communications Bulletin) & Next Meeting Agenda
2:45 p.m.	Closing



**BC North Central  
Community Advisory Board Round # 14  
Sandman Suites, Prince George  
Friday, November 2, 2012**

8:00 – 8:30 a.m.	Registration and Breakfast
8:30 – 8:45 a.m.	Welcome / Introductions <ul style="list-style-type: none"> <li>• Safety Moment</li> </ul>
8:45 – 9:45 a.m.	Review of CAB Conference <ul style="list-style-type: none"> <li>• Round Table Discussion</li> <li>• Revisit break-out group summary</li> <li>• Terms of Reference</li> </ul>
9:45 – 10:00 a.m.	Northern Gateway Community Relations Update <ul style="list-style-type: none"> <li>• Michele Perret, Enbridge Northern Gateway</li> </ul>
10:00 – 10:15 a.m.	Nutrition Break
10:15 – 11:30 a.m.	Joint Review Panel Hearings / Q&A <ul style="list-style-type: none"> <li>• Janet Holder, Executive Vice-President, Western Access, Enbridge Inc.</li> </ul>
11:30 – 12:00noon	CAB Communications <ul style="list-style-type: none"> <li>• Logo, CAB Computer Donations, Next Steps</li> </ul>
12:00 – 1:00 p.m.	Lunch (provided)
1:00 – 2:00 p.m.	Enbridge Emergency Response Planning / Q&A <ul style="list-style-type: none"> <li>• Curtis Wakulchyk, Environmental Response Preparedness Coordinator, Enbridge Pipelines Inc.</li> </ul>
2:00 – 2:15 p.m.	Nutrition Break
2:15 – 2:45 p.m.	CAB member presentation – Carney Hill Neighbourhood Centre Society <ul style="list-style-type: none"> <li>• Catherine Kendall</li> </ul>
2:45 – 3:00 p.m.	Observer Q & A Period
3:00 – 3:15 p.m.	Key Messages (Communications Bulletin) & Next Meeting Agenda
3:15 p.m.	Closing

# COMMUNITY ADVISORY BOARD

**Peace Country CAB Round #14  
Grande Prairie, Alberta**

**Meeting Summary**

**Session Date: October 25, 2012**

## Facilitation Team:

- Dan George, Four Directions Management Services (FDMS)\*
- Teresa Dolman, FDMS

## Coordination and Logistics Team:

- Lisa Clement, Northern Gateway
- Kelsey Borland, Northern Gateway

## Enbridge Representatives:

- Michele Perret
- Curtis Wakulchyk, Environmental Response Preparedness Coordinator, Enbridge Pipelines Inc.

*\* FDMS is an independent and neutral facilitator and does not promote or market the Enbridge Northern Gateway Project.*

*Note: the following **summarizes** the subjects discussed at the meeting, and is not intended to be a verbatim transcript.*

**# 1: Opening and Welcome**

## Key Discussion Points:

- Welcome & Opening Comments – Four Directions Management
- Opening Prayer – Angie Crerar
- Round table introductions
- Safety Moment – Rene Fournier
- Volunteer for next safety moment – Michelle Gairdner
- Invitation for new members to join

**#2: CAB Conference / Sharing Table Review – Dan George**

## Key Discussion Points/Comments:

- Purpose of the conference was to be responsive to the direction received from CABs; to receive new information; to open dialogue between CAB regions and Enbridge Senior Management; and to build upon relationships
- Review of key messages from each presentation and input from breakout sessions (see CAB conference summary)

## Questions/Comments:

- Should we have so many CAB priorities? There may be other issues we wish to address but perhaps 2 or 3 priorities are enough.
- It was interesting to attend the CAB Conference and hear different perspectives
- It was very educational, an opportunity to understand the diversity within the CABs.
- Thought that the CABs would be more alike than they really are.
- Found history of the Gitksan very interesting
- Thought that Enbridge did a very good job with the presenters that they chose. The speakers came from diversified backgrounds. Especially enjoyed the alternative energy presentation.
- Concern for water bodies is a common theme



- Enjoyed the Sharing Table boat trip - the Harbor Master had some very good information

**\*Note: Dan George proposed updates to the CAB Operational Guidelines and Terms of Reference – these changes were adopted.**

### #3: CAB Communications Update – Kelsey Borland

Key Discussion Points/Comments:

- Presentation of new CAB Logo – the logo evolved from suggestions by the CAB members. There were multiple opportunities for input – during the initial concept phase at Round 12 meetings, during the voting phase at the Conference and subsequent e-blast
- Update on computer donations - NGP community investment initiative directed by the CABs – fulfilling the request of the CABs to be more involved with community investment opportunities and to provide exposure for the CABs. Thirty-three recycled Enbridge computers were donated to 17 different organizations along the pipeline right of way.
- The BC North West CAB, in conjunction with Kitimat-Terrace Industrial Development Society is hosting a luncheon during their regional CAB #14 meeting that is open to the public
- The CAB planning team is seeking feedback on the possibility of circulating a survey/questionnaire. This is a way to measure/evaluate our objective with CAB members of “increasing project knowledge, assisting CAB members with obtaining factual information about Enbridge, NGP and the pipeline industry”
- At the regional CAB 12 meeting, a portion of the Peace Country CAB broke off into a working group and drafted a letter of comment that could be submitted to the Joint Review Panel (JRP) on behalf of the Peace Country CAB members. The letter was put to vote and was **not** sent to the JRP.

Questions/Comments:

- Suggest that we have some CAB giveaways (swag)
- The Peace Country CAB supports the CAB planning team sending out a questionnaire to get a measure of how we are doing at the CABs
- Survey results need to be communicated back to the CABs
- Suggestions for survey questions:
  - o Are the CAB bulletins being used? How can they be improved?

### #4: Northern Gateway Project Update – Michele Perret

Key Discussion Points/Comments:

- The Joint Review Panel (JRP) process for Northern Gateway is currently in the final hearing phase – interested parties can listen to the live hearings and access transcripts
- Based on what has been heard in CAB meetings, public hearings and meetings, Northern Gateway has further enhanced the safety of the pipeline by increasing pipeline wall thickness, increasing the frequency of in-line inspections, adding additional shut-off valves, 24/7 manned pump stations, and dual leak detection systems
- Update on attending the BC Chamber Energy Summit in Vancouver; the contractor readiness sessions; and Peter Tertzakian’s visit to the north

Questions/Comments:

- Can you elaborate on the dual leak detection system?

- What is the targeted response time when there is a leak?
- When Enbridge is examining the pipelines with the smart pigs, we should be publishing the results. Nobody is talking about the good stuff that is done, we only hear about the bad stuff.
- When there is a pressure drop, we need to know how Northern Gateway responds and how long it took.
- Is Enbridge going to set up a “whistle blower” program?
- How long are pipelines left in the ground?
- Why do we ship our products south?
- Is David Black serious about building a refinery in BC? Why not Alberta?
- CAB member provided a 10 minute oral statement at JRP hearings
- CAB member hosted Peter Tertzakian and spoke about the experience
- Is there a Plan B in terms of routing?
- It’s cheaper to build a refinery in Grande Prairie than Kitimat, so if the peace country needs one we need to step up

#### **# 5: Leak Detection – Ray Philipenko, Manager, Leak Detection, Enbridge Pipelines Inc.**

##### Key Discussion Points/Comments:

- The goal of operating a pipeline is always zero leaks. There is high emphasis on prevention.
- There are multiple monitoring and detection systems proposed for Northern Gateway
- In the event that there is a spill – Northern Gateway’s commitment is to recognize, respond and report
- Leak detection systems include: external sensors, smart ball, surveillance and third party (ground, aerial, control centre, pump station), pipeline operator monitoring, computational pipeline monitoring / leak detection systems, external sensors, volume balance, in-line inspection, people

##### Questions/Comments:

- How small a leak can be detected using the material balance system?
- Are the sensors monitoring the amount of product going in and coming out?
- How do you measure percentage of release?
- Is the flow in/flow out leak detection system being used at Enbridge now?
- If there is an alarm do they shut down the line or are there other ways to deal with it?
- Was the leak in Michigan a strike or was it an integrity issue?
- Are the computers on a backup power system?
- What kind of pressure is in the pipeline?
- Are you prepared for the effects of Mother Nature? What do you do in the event of a natural disaster; floods, earthquakes, forest fires?
- Are local firefighters prepared to deal with forest fires near pump stations and pipelines?
- Do you have a cathodic protection system?
- What was the scenario in Michigan?
- Out of the 2 million barrels per day transported by Enbridge, are all the lines coming out of Alberta?

#### **# 6: Emergency Response – Neil Reid, Environment Supervisor, Canadian Operations, Enbridge Pipelines Inc.**

##### Key Discussion Points/Comments:

- Emergency response preparedness is a living process that undergoes continuous testing, review and improvement - it is not just theoretical
- Northern Gateway has done a tremendous amount of work on the emergency response plan without project approvals
- Coordinated community input and stakeholder involvement is important in emergency response preparedness

Questions/Comments:

- Is this the same plan that would be used for current pipelines?
- What is ground-truthing?
- What was the role of Kitselas and Haisla in the Kitimat River Drainage emergency response plan?
- Did the Haisla and Kitselas endorse the 18 emergency response points beforehand for the Kitimat River?
- How do you react in natural disasters - especially a fire?
- Are emergency response regulations different in Canada than the US or is it different province by province?
- How are different regions managed?
- Will there be signs to indicate there is an Enbridge line buried in the area?
- What is the target of involving local community members in emergency response?
- How do you plan on ensuring that the spill response plan does not sit on a shelf?
- How do you get emergency responders to the scene when there are steep banks?
- Are you going beyond the regulations?
- There is no consistency between the oil and gas producers and transporters. There should be policies that everyone has to follow.
- Mock disasters are the key to being prepared

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**#7: Next Meeting Agenda, Thank-You and Closing**

Key Discussion points:

- Observer Comments
  - Learned so much, there is a lot of misinformation in the media. The young people have a good deal of influence; this information should be brought to the younger generations.
  - The presentations were very good and important. Encouraging. Contractors should participate in the contractor readiness program.
- ACTION: Peace Country CAB is going to do a lunch on youth engagement or contracting with the help of the CAB Planning team – Michelle Gairdner to spearhead
- Next meeting agenda items include: emergency response – profiling of a past release and what the response was; regulatory update; training and contractor information
- Invitation to bring a friend at the next meeting

# COMMUNITY ADVISORY BOARD

**Alberta North Central CAB Round #14**  
**Edmonton, Alberta**

**Meeting Summary**

**Session Date: October 26, 2012**

## Facilitation Team:

- Dan George, Four Directions Management Services (FDMS)\*
- Teresa Dolman, FDMS

## Coordination and Logistics Team:

- Lisa Clement, Northern Gateway
- Kelsey Borland, Northern Gateway

## Enbridge Representatives:

- Michele Perret
- Cody Bruno
- Curtis Wakulchyk, Environmental Response Preparedness Coordinator, Enbridge Pipelines Inc.

*\* FDMS is an independent and neutral facilitator and does not promote or market the Enbridge Northern Gateway Project.*

*Note: the following **summarizes** the subjects discussed at the meeting, and is not intended to be a verbatim transcript.*

**# 1: Opening and Welcome**

## Key Discussion Points/Comments:

- Welcome & Opening Comments – Four Directions Management
- Opening Prayer – Violet Poitras, Paul First Nation
- Round table introductions
- Safety Moment – Doug McDermid
- Volunteer for next safety moment – Calvin Rakach
- Invitation for new members to join

**#2: CAB Conference / Sharing Table Review – Dan George**

## Key Discussion Points/Comments:

- Purpose of the conference was to be responsive to the direction received from CABs; to receive new information; to open dialogue between CAB regions and Enbridge Senior Management; and to build upon relationships
- Review of key messages from each presentation and input from breakout sessions (see CAB conference summary)

## Questions/Comments:

- Has there been progress made with the First Nations on this project?
- It was great to meet with other CABs and it was noticed that those without pipeline cultures are moving forward. We live with them in our communities and we can bring some positive information about pipelines to others.
- The CAB Sharing Table tour of the Harbor in Vancouver was awesome. To see all the activity in that little harbor was amazing.



- The Northern Gateway website is hard to find. When you google Enbridge you see all kinds of sites, but not the updated Northern Gateway website.
- Kinder Morgan is hosting open houses regarding their expansion. They have been putting oil on ships since 1953 and there has never been a spill related to loading in that time. It is important for people to know that they have been doing it for a very long time safely. It is proof that it can be done.
- It is great to hear what other people are concerned about and to be able to discuss how safe pipelines are
- The CAB conference was of great value. Peter Tertzakian was great and had a good message - in Canada we have the oil and we need to share.
- There are a lot of problems that the land owners have when it comes to pipelines. There are new regulations in place and I hope this company will be responsible when it comes time for the project. Landowners would like to have the pipeline buried 5 feet below the ground so that they don't have to call the company every time they want to dig on their property. Reclamation in Alberta has to come to the new standards that have come out.
- The communication and knowledge that was shared was easy to understand and not too technical.
- Location and organization of the CAB was awesome. The speakers were something else, the humor and interaction took the seriousness of technical jargon out of the room. It helped to open minds and create conversations.
- Enbridge is being very open to traditional knowledge and using that knowledge to make changes and re-routing is very nice to see. Appreciate Enbridge taking the information provided by the Aboriginal communities very seriously.
- Lorraine Little's presentation was awesome and demonstrated how Enbridge goes above and beyond to work with the community in Michigan.
- Venue is ideal and well-situated to access public transportation and the airport. Speakers were very appropriate, it was critical to have Enbridge Senior Management attend; it gives value to this process. Time was a bit tight, not enough opportunity to ask questions.
- There was a big gap between the conference and the current round of CABs. CAB meetings should be a little closer together once the JRP process is over.
- Does Enbridge see value in the CAB Conference?
- It is a phenomenal opportunity to talk to other people
- The media seems to only pick up on bad news, is the positive message being translated through the media?
- ACTION: Northern Gateway to look into turnaround time for reimbursements
- ACTION: Share Peter Tertzakian's UNBC / JDC West presentation with the CABs if there is a recording

***\*Note: Dan George proposed updates to the CAB Operational Guidelines and Terms of Reference – these changes were adopted.***

### **#3: CAB Communications Update – Kelsey Borland**

Key Discussion Points/Comments:

- Presentation of new CAB Logo – the logo evolved from suggestions by the CAB members. There were multiple opportunities for input – during the initial concept phase at Round 12 meetings, during the voting phase at the Conference and subsequent e-blast

- Update on computer donations - NGP community investment initiative directed by the CABs – fulfilling request of the CABs to be more involved with community investment opportunities and to provide exposure for the CABs. Thirty-three recycled Enbridge computers were donated to 17 different organizations along the pipeline right of way.
- The BC North West CAB, in conjunction with Kitimat-Terrace Industrial Development Society is hosting a luncheon during their regional CAB #14 meeting that is open to the public
- The CAB planning team is seeking feedback on the possibility of circulating a survey/questionnaire. This is a way to measure/evaluate our objective with CAB members of “increasing project knowledge, assisting CAB members with obtaining factual information about Enbridge, NGP and the pipeline industry”

Questions/Comments:

- CAB member provided an update on the computers that her community received. Older children are using the computers to help develop resumes, apply to college, bursaries, anything that they might need to continue on in their lives. Younger kids use them to play games and to learn basic computer skills.
- ACTION: Look into adding website address to the bottom of the CAB logo
- CAB bulletin is being used at council meetings
- ACTION: Email out links to the JRP hearings and CAB website – along with instructions on how to mark these as favourites
- ACTION: Update CAB website with link to the JRP hearings, transcripts, and the contractor readiness workshops
- The AB North Central supports the CAB planning team sending out a questionnaire to get a measure of how we are doing at the CABs.
- Suggestions for survey questions:
  - o What were your thoughts on the project 5 years ago and what are your thoughts today?
  - o What is your interpretation of the media coverage of the project?

**#4: Northern Gateway Project Update – Michele Perret**

Key Discussion Points/Comments:

- The Joint Review Panel (JRP) process for Northern Gateway is currently in the final hearing phase – interested parties can listen to the live hearings and access transcripts
- Based on what has been heard in CAB meetings, public hearings and meetings, Northern Gateway has further enhanced the safety of the pipeline by increasing pipeline wall thickness, increasing the frequency of in-line inspections, adding additional shut-off valves, 24/7 manned pump stations, and dual leak detection systems
- Update on Sharing Table meeting and Port Metro Vancouver tour
- Discussion about the BC Chamber of Commerce Energy Summit in Vancouver

Questions/Comments:

- How do you react when one hears that the federal government will make the final decision?
- What is the status of the Pacific Trails Pipeline?
- How can Northern Gateway make the BC government more comfortable with the BC benefits if Alberta is unwilling to revenue share?

- Is there something Northern Gateway can do to assist the conversations between Allison Redford and Christy Clark regarding revenue sharing? It seems there are a lot of issues between the two government leaders.

#### # 5: Leak Detection – Ray Philipenko, Manager, Leak Detection, Enbridge Pipelines Inc.

##### Key Discussion Points/Comments:

- The goal of operating a pipeline is always zero leaks. There is high emphasis on prevention.
- There are multiple monitoring and detection systems proposed for Northern Gateway
- In the event that there is a spill - Northern Gateway's commitment is to recognize, respond and report
- Leak detection systems include: external sensors, smart ball, surveillance and third party (ground, aerial, control centre, pump station), pipeline operator monitoring, computational pipeline monitoring / leak detection systems, external sensors, volume balance, in-line inspection, people

##### Questions/Comments:

- Why is the Control Centre a secret location?
- How will the Northern Gateway project affect the control centre?
- How do the various shut down methods (isolation valves, control centre, automatic safety controls, etc.) work together?
- Are there valves that would be controlled with a sensor, which would shut down automatically?
- If there is a leak detected, does the system automatically shut down or does it need to be manually closed?
- Are pump stations only going to be manned in BC?
- Is there a Pipeline Act in BC? Are there separate standards / regulations in BC?
- Is the BC government aware of the extent of the leak detection?
- Was the pipeline that leaked in Michigan a recent purchase of Enbridge?
- Have you done a lot of pipeline replacements since Marshall?
- Is there a point of diminishing returns with regards to increasing the number of shut down valves?
- What is the regulatory requirement for testing the pipelines integrity – specifically corroding?

#### # 6: Emergency Response – Neil Reid, Environment Supervisor, Canadian Operations, Enbridge Pipelines Inc.

##### Key Discussion Points/Comments:

- Emergency response preparedness is a living process that undergoes continuous testing, review and improvement - it is not just theoretical
- Northern Gateway has done a tremendous amount of work on the emergency response plan without project approvals
- Coordinated community input and stakeholder involvement is important in emergency response preparedness

##### Questions/Comments:

- Will Enbridge own their own equipment or will they be relying on other responders in the area?
- Are there official agreements between pipeline companies if they are using the same corridor to assist one another in the event of a release?

- How do you deal with forest fires?
  - There is a sense from the presentation that there is a confidence in the plans they put in place and a confidence that if required the plans would actually work.
  - The jobs that stem from an oil spill are an interesting outcome of such an event. The people who came and responded to the spill were provided with training they wouldn't have otherwise received.
  - Is there a mutual use agreement to use old forestry roads?
  - The emergency response plan serves almost as a disaster plan for more than the Northern Gateway pipeline – have we shared this with municipalities?
- 

#### **# 7: Next Meeting Agenda, Thank-You and Closing**

Key Discussion points:

- Next meeting agenda items: media / communications theme – bring in a media person from both BC and Alberta
- ACTION: Plan 2013 CAB Conference around FCM
- Closing prayer: Violet Poitras, Paul First Nation

# **C**OMMUNITY **A**DVISORY **B**OARD (CAB)

**BC North Coastal CAB Round #14**  
**Kitimat, BC**

**Meeting Summary**

**Session Date: October 30, 2012**



## Facilitation Team:

- Dan George, Four Directions Management Services (FDMS)\*
- Teresa Dolman, FDMS

## Coordination and Logistics Team:

- Lisa Clement, Northern Gateway Project (NGP)
- Emma Shea, Northern Gateway Project

## Enbridge Representatives:

- Michele Perret, Senior Manager, Community and Municipal Relations, Enbridge Pipelines Inc.
- Curtis Wakulchyk, Environmental Response Preparedness Coordinator, Enbridge Pipelines Inc.
- Neil Reid, Environment Supervisor, Canadian Operations, Enbridge Pipelines Inc.
- Michael Cowdell, Marine Advisor, NGP
- Cpt. Jerry Aspland, Marine Advisor, NGP
- Shane Kelly, Geotechnical Engineer, NGP

*\* FDMS is an independent and neutral facilitator and does not promote or market the Enbridge Northern Gateway Project.*

*Note: the following **summarizes** the subjects discussed at the meeting, and is not intended to be a verbatim transcript.*

**# 1: Opening and Welcome**

## Key Discussion Points:

- Welcome & Opening Comments – Four Directions Management
- Round table introductions
- Safety Moment – Robert Hergott
- Volunteer for next safety moment – Robert Stromdahl or Beverly Hayden

**#2: CAB Conference / Sharing Table Review – Dan George**

## Key Discussion Points:

- Purpose of the conference was to be responsive to the direction received from CABs; to receive new information; to open dialogue between CAB regions and Enbridge Senior Management; and to build upon relationships
- Review of key messages from each presentation and input from breakout sessions (see CAB conference summary)

## Questions/Comments:

- A lot of information digestion had to take place
- Good to see the diversity of CAB members in the room
- Phenomenal speakers
- More interaction occurring between CAB members from previous year
- Peter Tertzakian was great
- Not a lot of time to socialize and branch out, the meet and greet in the upstairs lobby was loud. Perhaps consider a shorter day on the first day to allow for increased networking opportunity

**\*Note: Dan George proposed updates to the CAB Operational Guidelines and Terms of Reference – these changes were adopted.**

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### #3: CAB Communications Update – Emma Shea

Key Discussion Points:

- Presentation of new CAB Logo: The logo evolved from suggestions by the CAB members. There were multiple opportunities for input during the initial concept phase at Round 12 meetings, during the voting phase at the Conference, and subsequent e-blast
  - Update on computer donations: NGP community investment initiative directed by the CABs, fulfilling request of the CABs to be more involved with community investment opportunities and to provide exposure for the CABs. Thirty-three recycled Enbridge computers were donated to 17 different organizations along the pipeline right of way.
  - Discussion around the BC North Coastal CAB planning another public session. CAB member L. Stevenson volunteers to help coordinate an “after-work” session in December
  - Suggestion to place CAB communications bulletins in local coffee shops (i.e. “sip n’ chat”)
  - Provide CAB members the link to the bulletins in order to tweet it out more broadly
  - The BC North Coastal CAB supports the CAB Planning Team sending out a questionnaire to get a measure of how we are doing at the CABs
- 

### #4: Northern Gateway Project Update – Michele Perret

Key Discussion Points:

- The Joint Review Panel (JRP) process for Northern Gateway is currently in the final hearing phase – interested parties can listen to the live hearings and access transcripts
- Based on what has been heard in CAB meetings, public hearings and meetings, Northern Gateway has further enhanced the safety of the pipeline by increasing pipeline wall thickness, increasing the frequency of in-line inspections, adding additional shut-off valves, 24/7 manned pump stations, and dual leak detection systems
- Update on Sharing Table meeting and Port Metro Vancouver tour
- Discussion about the BC Chamber of Commerce Energy Summit in Vancouver
- Introduction and summary of Women Building Communities initiative in June and October in Kitimat, Terrace, Houston, Burns Lake and Prince George. In the October round, money was raised for the food banks in Burns Lake and Prince George and the Tamitik Status of Women in Kitimat.
- Discussion about what happens after a favourable JRP decision – there is still work to be done. Detailed engineering, permitting, design and consultation

Questions/Comments:

- Has there been any consideration being given to a corridor for ALL of the proposed pipelines?
  - How will you get the pipelines past the sand hill in Kitimat or out by Alcan because of the limited space?
  - Clarification required on the geotechnical issues for all of the proposed pipelines coming into Kitimat. There are a number of geo-hazards, how will NGP manage them?
- 

### # 5: Q & A with Shane Kelly – Geotechnical Hazards

Key Discussion Points:

- Detailed discussion of the marine clays in the local region, and effects to marine clays due to seismic activity
- Provided website reference to NRCAN's earthquake website: <http://www.earthquakescanada.nrcan.gc.ca>

Questions/Comments:

- What is a seismologist?
- How do the glacial marine clays respond in the event of an earthquake?
- If the salt in the marine clay displaces, will it cause the marine clay to liquefy?
- Are the marine clays above Onion Lake different than the ones in Douglas Channel?
- What created the landslides in 1974 and 1975?
- Did you do any studies on marine clays with respect to the proposed LNG facilities?
- Is there an East West fault line going through the community of Kitimat?
- I would like to speak about the Onion Lake Delta Aquifer. What is the vulnerability of this aquifer to an oil spill?
- What happens to the oil as it breaks down in the sub terrain over years?
- There are a lot of questions around earthquakes. We should put the BC Shakeout link in our bulletin. [www.shakeoutbc.ca](http://www.shakeoutbc.ca)

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**# 6: Douglas Channel Watch – Cheryl Brown and Dave Shannon**

Key Discussion Points:

- Douglas Channel Watch is an intervenor in the Joint Review Process
- The Northern Gateway Douglas Channel animated video has been removed from NGP's website
- Discussion of world ports that have Very Large Crude Carrier (VLCC) traffic and incidents that have occurred at these ports
- TERMPOL is perceived as voluntary and not binding – done by the proponent and not done by a 3<sup>rd</sup> party and not reviewed by a 3<sup>rd</sup> party. Only Transport Canada reviews.
- Worried about the increased tanker traffic that would come with potential LNG tankers too
- Less concern with a methanol spill compared to an oil spill. Yes to LNG, but no to oil
- More opportunity for things to go wrong due to the length of the voyage in Douglas Channel
- Comment made that the science for cleaning up dilbit is still being studied
- Propose more legislation regarding shipping safety instead of just taking companies like Enbridge's word for it.

Questions/Comments:

- The Douglas channel is wider and deeper than many of the port examples provided
- Can you give us a comparison of the volume of ships going up and down the channel now compared to what has been done in the past? Are the ships that come in now piloted?
- There is a standard practice in BC where every vessel must report in to Prince Rupert to communicate where they are in the water. Methanex has not had many ships, it is difficult to predict what traffic or how busy the waterways will be but there is a communication system in place
- It is difficult to compare ports of access because the sea lanes that are available elsewhere are likely narrower than what we would deal with in the Douglas Channel
- Is it the opinion of the Douglas Channel watch that the carrying of condensate is a serious problem for Enbridge but you are fine with LNG?
- We need to improve the standard of shipping. Instead of saying no we need to find a way to make things better

- A lot of the examples presented today are from the 70's, 80's and 90's. Has there have been improvements in technology? Have the port examples used had any accidents recently?
- Enbridge talks about technology, tugs, vetting companies/ships coming into Kitimat. Have there been any serious incidents when tankers have been using tugs and other safety items?
- What is happening with navigation and "air traffic control" for our current situation?
- What kind of parameters do we need to have in place in order for the Douglas Channel Watch to be okay with tankers here?
- Human error is a factor, but we can't get away from that
- As a group, the CAB is looking for ways to provide suggestions to Enbridge to make things better and create higher standards
- What is Enbridge's tanker vetting process?
- Would the JRP enforce voluntary TERMPOL commitments into mandatory?
- Is there a reason/evidence to believe that Enbridge would not follow through on their commitments?

### **# 7: Intelligent Pipeline Systems: Spartan Controls – Richard Bosomworth & Jim Parsons**

#### Key Discussion points:

- Discussion about systems, tools, programs and people that when combined make a safe, operating pipeline
- Provided information about who Spartan Controls is, and the Kitimat office real estate recently purchased

#### Questions/Comments:

- What is an ESD (emergency shutdown valve) and MOV (motorized operating valve)?
- Do you use a redundant source of communication on your pipelines (wireless or hard wired)?
- Has there been any progress made in making decisions on dual leak detections systems?
- Are you a company that trains local people?
- Will you work with the Northwest Community College to train people locally?
- The concern is that we are seeing a lot of people from other parts of Canada when other people in Kitimat aren't receiving the appropriate training.

### **# 8: Next Meeting Agenda:**

- David Black Refinery
- Alternative Technologies
- Marnie Terminal & hazards/risk around the marine terminal
- Kitimat Naturalists – impact on estuary
- Emergency response

### **Possible public presentation on Geotechnical hazards in December 2012**

# **C**OMMUNITY **A**DVISORY **B**OARD (CAB)

**BC North West CAB Round #14**

**Terrace, BC**

**Meeting Summary**

**Session Date: October 31, 2012**



## Facilitation Team:

- Dan George, Four Directions Management Services (FDMS)\*
- Teresa Dolman, FDMS

## Coordination and Logistics Team:

- Lisa Clement, Northern Gateway Project (NGP)
- Emma Shea, Northern Gateway Project

## Enbridge Representatives:

- Michele Perret, Senior Manager, Community and Municipal Relations, Enbridge Pipelines Inc.
- Curtis Wakulchyk, Environmental Response Preparedness Coordinator, Enbridge Pipelines Inc.
- Michael Cowdell, Marine Advisor, NGP
- Cpt. Jerry Aspland, Marine Advisor, NGP

*\* FDMS is an independent and neutral facilitator and does not promote or market the Enbridge Northern Gateway Project.*

*Note: the following **summarizes** the subjects discussed at the meeting, and is not intended to be a verbatim transcript.*

**# 1: Opening and Welcome**

## Key Discussion Points:

- Welcome & Opening Comments – Four Directions Management
- Round table introductions
- Safety Moment – Robert Stromdahl
- Volunteer for next safety moment – Sharon Hartwell

**#2: CAB Conference / Sharing Table Review – Dan George**

## Key Discussion Points:

- Purpose of the conference was to be responsive to the direction received from CABs; to receive new information; to open dialogue between CAB regions and Enbridge Senior Management; and to build upon relationships
- Review of key messages from each presentation and input from breakout sessions (see CAB conference summary)
- Discussed Port Metro Vancouver tour – CAB Sharing Table representative discussed her time on the tour and the confidence gained in vessel traffic in Douglas Channel

## Questions/Comments:

- Conference was very informative: Peter Tertzakian & Chuck Szmurlo presentations were very good
- Really enjoyed the presenters, the variety of groups all had something to say. Enlightening.
- When Enbridge provided presentations, it seems we only saw the positive side of the story. For example, Enbridge did not show any pictures of the Marshall, Michigan spill – we only saw the positive clean-up efforts. Show us the good, the bad, and the ugly.

- This was Enbridge's second presentation to the CABs on Marshall, Michigan. The first provided more information about the spill rather than the clean-up. Referred again to the clean-up response website: <http://response.enbridgeus.com/response>

**\*Note: Dan George proposed updates to the CAB Operational Guidelines and Terms of Reference – these changes were adopted.**

### #3: CAB Communications Update – Emma Shea

Key Discussion Points:

- Presentation of new CAB Logo: The logo evolved from suggestions by the CAB members. There were multiple opportunities for input during the initial concept phase at Round 12 meetings, during the voting phase at the Conference, and subsequent e-blast
- Update on computer donations: NGP community investment initiative directed by the CABs, fulfilling request of the CABs to be more involved with community investment opportunities and to provide exposure for the CABs. Thirty-three recycled Enbridge computers were donated to 17 different organizations along the pipeline right of way.
- The BC North West CAB, in conjunction with Kitimat-Terrace Industrial Development Society hosted a luncheon during their regional CAB #14 meeting, which was open to the public on October 31 in Terrace
- Group approved protocol should protestors or disturbance take place during the public luncheon

### #4: Northern Gateway Project Update – Michele Perret

Key Discussion Points:

- The Joint Review Panel (JRP) process for Northern Gateway is currently in the final hearing phase – interested parties can listen to the live hearings and access transcripts
- Northern Gateway has further enhanced the safety of the pipeline by increasing pipeline wall thickness, increasing the frequency of in-line inspections, adding additional shut-off valves, 24/7 manned pump stations, and dual leak detection systems
- Introduction and summary of Women Building Communities initiative in June and October in Kitimat, Terrace, Houston, Burns Lake and Prince George. In the October round, money was raised for the food banks in Burns Lake and Prince George and the Tamitik Status of Women in Kitimat.
- Discussion about what happens after the JRP decision – there is still work to be done. Detailed engineering, permitting, design and consultation

Questions/Comments:

- What reassurances are there that you will stick to the commitments that Enbridge has made?
- When you refer to 24/7 monitoring of the pump stations, do you mean 24/7 electronic monitoring or do you mean physically manning the stations?
- Would like some answers from the geotechnical team regarding the 18 potential landslide areas, how do they intend to deal with these?
- Who has the final say on the project? Is it federal government or provincial government? If the BC government says no, could the federal government over rule that?
- What is the final cost for the detailed engineering phase of the project?
- Is the oversight monitoring done by the government or is it an industry process?

- If you receive Joint Review Panel and Government in Council (GIC) approval, you could still run into trouble with getting First Nations approval. Could there be legal challenges faced?
- 

#### # 5: Public Luncheon: Northern Gateway Marine Operations – Michael Cowdell and Jerry Aspland

##### Key Discussion Points:

- Information provided regarding Northern Gateway's proposed marine operations, tanker safety enhancements, TERMPOL, characteristics of Tankers, lessons learned in the industry over time
- Provided link to <http://www.marinetraffic.com/> to view 'real time' tanker traffic

##### Questions/Comments:

- Why not route to Kitesault instead of Kitimat?
- Where do BC Pilots load and unload?
- Does Enbridge own the terminal and the ships? What is Enbridge liable for?
- The improvements in this industry over a time have been some of the greatest improvements to any industry
- Who is responsible for a spill? Enbridge or the ship owner?
- Why doesn't the shipping industry tell us more facts about what is actually occurring on the west coast today? The industry should tell more of the positive story
- Questions and discussion around the Jones Act
- Questions around lobbying in the U.S. to remove double hull tanker legislation
- What are the engine configurations of Very Large Crude Carriers?

##### Public Luncheon Debrief with CAB members:

- Need to broaden the outreach to opponents
  - Invite the media to BC North West CAB public meetings
  - Make sure the invite is sent to First Nations members
- 

#### # 6: Enbridge Emergency Response – Curtis Wakulchyk, Environmental Response Preparedness Coordinator, Enbridge Pipelines Inc.

##### Key Discussion Points:

- Emergency response preparedness is a living process that undergoes continuous testing, review and improvement - it is not just theoretical
- Northern Gateway has done a tremendous amount of work on the emergency response plan without project approvals
- Coordinated community input and stakeholder involvement is important in emergency response preparedness

##### Questions/Comments:

- How do you perform emergency response on ice on water?
- How do you plan to communicate with each other in remote areas during a response? Satellite phones?
- Impressed with coverage of the ground-truthing undertaken to plan for emergency response
- What is the target to respond to certain spills, i.e. Kitimat River Valley?
- Snow falling equipment is necessary, and be sure to use local people who know the area as part of the response

- What happens when a forest fire occurs? What about emergency response if there is a fire?
- 

**# 7: Next Meeting Agenda ideas:**

- Final JRP summary
- Update on alternative energy projects in the area

# **C**OMMUNITY **A**DVISORY **B**OARD (CAB)

**BC North Central CAB Round #14**  
**Prince George, BC**

**Meeting Summary**

**Session Date: November 2, 2012**



## Facilitation Team:

- Dan George, Four Directions Management Services (FDMS)\*
- Teresa Dolman, FDMS

## Coordination and Logistics Team:

- Lisa Clement, Northern Gateway Project (NGP)
- Emma Shea, NGP

## Enbridge Representatives:

- Janet Holder, Executive Vice-President, Western Access, Enbridge Inc.
- Michele Perret, Senior Manager, Community and Municipal Relations, Enbridge Pipelines Inc.
- Curtis Wakulchyk, Environmental Response Preparedness Coordinator, Enbridge Pipelines Inc.
- Shane Kelly, Geotechnical Engineer, NGP

*\* FDMS is an independent and neutral facilitator and does not promote or market the Enbridge Northern Gateway Project.*

*Note: the following **summarizes** the subjects discussed at the meeting, and is not intended to be a verbatim transcript.*

**# 1: Opening and Welcome**

## Key Discussion Points:

- Welcome & Opening Comments – FDMS
- Round table introductions
- Safety Moment – Russ Beerling

**#2: CAB Conference / Sharing Table Review – Dan George**

## Key Discussion Points:

- Purpose of the conference was to be responsive to the direction received from CABs; to receive new information; to open dialogue between CAB regions and Enbridge Senior Management; and to build upon relationships
- Review of key messages from each presentation and input from breakout sessions (see CAB conference summary)
- Debriefed on Port Metro Vancouver tour for CAB Sharing Table representatives

## Questions/Comments:

- More vivid memories of the first conference than the second, but those who did not make it missed out. The information at the seminar should be made available in book form to take home. A great opportunity to gather information
- Really impressed with Peter Tertzakian
- Impressed with the diversity of people who attended
- Appreciate the respect in the room
- CAB member indicated that BC Hydro could take “a page out of Enbridge’s book” with regards to consultation

- There are conflicting levels of understanding and respect about the project, and it's because people are not sitting at the CAB table
- Interest in BC CAB members doing a tour of Alberta and vice versa

**\*Note: Dan George proposed updates to the CAB Operational Guidelines and Terms of Reference:**

- a) Revision to Terms of Reference Compensation for Conferences and other CAB hosted events.**
- b) Revision to Operational Guidelines - Language for initial CAB composition to past tense.**

*The recommended changes were adopted.*

### **#3: CAB Communications Update – Emma Shea**

Key Discussion Points:

- Presentation of new CAB Logo: The logo evolved from suggestions by the CAB members. There were multiple opportunities for input during the initial concept phase at Round 12 meetings, during the voting phase at the Conference, and subsequent e-blast
- Update on computer donations: NGP community investment initiative directed by the CABs, fulfilling request of the CABs to be more involved with community investment opportunities and to provide exposure for the CABs. Thirty-three recycled Enbridge computers were donated to 17 different organizations along the pipeline right of way.
- BC North Central CAB indicates it has been difficult in finding organizations to accept Enbridge computers for lack of wanting to be associated with Enbridge
- The BC North West CAB, in conjunction with Kitimat-Terrace Industrial Development Society hosted a luncheon during their regional CAB #14 meeting that was open to the public on October 31 in Terrace
- Interest from Fraser Lake in hosting a public meeting

### **#4: Northern Gateway Project Update – Michele Perret**

Key Discussion Points:

- The Joint Review Panel (JRP) process for Northern Gateway is currently in the final hearing phase – interested parties can listen to the live hearings and access transcripts
- Northern Gateway responded in July to concerns heard in hearing room, CABs, and public meetings by further enhancing the safety of the pipeline by increasing pipeline wall thickness, increasing the frequency of in-line inspections, adding additional shut-off valves, 24/7 manned pump stations, and dual leak detection systems – based on stakeholder input and concerns
- Introduction and summary of Women Building Communities initiative in June and October in Kitimat, Terrace, Houston, Burns Lake and Prince George. In the October round, money was raised for the food banks in Burns Lake and Prince George and the Tamitik Status of Women in Kitimat.
- Discussion about what happens after the JRP decision – there is still work to be done. Detailed engineering, permitting, design and consultation

Questions/Comments:

- Announcements of pipeline enhancements – shouldn't we have been doing that before?
- Are we looking at leak detection technologies like sniffers, etc.?

**# 5: Q & A with Shane Kelly – Geotechnical Hazards**

## Key Discussion Points:

- Detailed discussion of impact of seismic activity on potential pipelines
- Provided website reference to NRCAN's earthquake website: <http://www.earthquakescanada.nrcan.gc.ca>
- Provided website to Neptune Canada – ocean floor tsunami movement monitoring: <http://www.neptunecanada.com/>

## Questions/Comments:

- What level of responsibility does a Geotechnical Engineer bear (i.e. making a proper prediction) on identifying hazards correctly?
  - Can't predict earthquakes. When you design the infrastructure, how do you do so accurately on something you can't predict? The job is to provide information on the best location of the project. Find where the landslides will be and avoid them.
  - When was the biggest earthquake in Alaska?
  - What design features do you have to withstand earthquakes?
- 

**# 6: Regulatory Update – Janet Holder, Executive Vice-President, Western Access, Enbridge Inc.**

## Key Discussion Points:

- Timeline of regulatory process
- Topics covered on each witness panel, and location

## Questions/Comments:

- Do other companies have to go through the JRP hearings as well?
  - Would CN Rail have to go through the environmental review process to move the oil if NGP was turned down?
  - Why are the hearings in Prince Rupert and not in Kitimat?
  - Potentially 4 pipelines that will be built at the same time – what about the entire workforce that will be needed for this?
  - What are your thoughts about David Black's refinery proposal? Should we build one? In Prince George? Would be more expensive to build in Prince George than Kitimat.
  - Infrastructure developments/orders are taking place today for events in 2015 (operating). How will you secure your pipeline material in advance?
  - Do the pipelines have the capacity to ship refined products?
  - Would the projects all eventually be refined?
- 

**# 7: Enbridge Emergency Response – Curtis Wakulchyk, Environmental Response Preparedness Coordinator, Enbridge Pipelines Inc.**

## Key Discussion Points:

- Emergency response preparedness is a living process that undergoes continuous testing, review and improvement - it is not just theoretical
- Northern Gateway has done a tremendous amount of work on the emergency response plan without project approvals
- Coordinated community input and stakeholder involvement is important in emergency response preparedness

- Spill response exercises are practiced more than once a year. Some are scheduled and some are not scheduled

Comments/Questions:

- Has any planning taken place with local first responders in the local community yet? Need to be proactive in this case, rather than reactive
- How often on an operating pipeline do you do spill exercises?
- How often do you do on-site practice exercises on a leak?
- It would be impractical to work on emergency response details until the route is finalized.
- What is your target time to respond to a spill?
- Discussion about bitumen recovery – does it sink or float?
- What is the response plan for fish? Do you work closely with DFO and how will you deal with fish?
- Great that you have an emergency response plan – but it all comes down to leak prevention and detection, and the right route
- I have learned more about pipelines as a result of the CABs than I have in 15 years working in the industry

**# 8: CAB member presentation: Carney Hill Neighborhood Centre Society – Catharine Kendall**

Key Discussion Points:

- It's about developing community – like the CABs
- Serve over 1000 people per month out of the drop in centre
- Advocates for change
- Looking at creating a larger centre
- Serve 100 children daily
- Healthy Neighborhoods: Everyone safe, no one left out
- “To know how a community is doing, all you have to do is look at the children.”

Comments/Questions:

- Eye opener to me – I was born here and did not know about the information presented today
- Commend Carney Hill Neighborhood Centre Society for the work they are doing

**# 8: Next Agenda ideas**

- A British Columbia Landowner
- Department of Fisheries and oceans – would like to hear from local office.
- CAB member presentation: BC Wildlife Federation

# Peace Country

## Community Advisory Board Round 14

Meeting Date: October 25, 2012

Communications Bulletin



### Presentation Topics

1. Joint Review Panel Hearings Update, Michele Perret
2. Leak Detection, Ray Philipenko
3. Emergency Response, Neil Reid

### Key Presentation Messages:

- People need to be aware of the Joint Review Panel (JRP) process and the methods to access the live hearings and transcripts (1)
- Northern Gateway has further enhanced the safety of the pipeline by increasing pipeline wall thickness, increasing the frequency of in-line inspections, adding additional shut-off valves, 24/7 manned remote pump stations, and dual leak detection systems (1)
- The goal of operating a pipeline is always zero leaks. There is a high emphasis on prevention. (2)
- In the unlikely event that there is a leak, recognize, respond and reporting is Northern Gateway's commitment (2)
- Coordinated community input and stakeholder involvement is important in emergency response preparedness (3)
- Emergency response preparedness is a living process that undergoes continuous testing, review and improvement (3)

### About the CABs

The Community Advisory Boards (CABs) are an important aspect of the Enbridge Northern Gateway Project consultation and engagement processes. CABs provide an opportunity for participants to:

- gather, receive and process information to arrive at a common body of knowledge;
- identify and discuss key areas of regional interest or concern;
- recommend improvements or enhancements to Northern Gateway; and
- educate the general public.

The CABs have been designed to be inclusive of diverse community interests in each of five geographic regions. They include representatives from (but not limited to) environmental groups, Aboriginal groups, business associations, municipal governments and the public. CABs are participant driven and as such, members determine a priority list of topic areas they would like discussed at each regional meeting. CABs are open to the public through pre-registration and anyone can come attend as an observer.

### About the Peace Country CAB

The Peace Country CAB meetings are currently held in Grande Prairie, Alberta. There are 26 registered members who sit at the table of this CAB and a number of Observers who regularly attend. This membership currently consists of Aboriginal groups, local government, economic development interests, tourism/guide outfitters, general public, trappers, and businesses.

### Peace Country CAB Contact Information

Inquiries about the Peace Country CAB process are to be directed to the regional CAB Spokespeople.

- E-mail: [peacecountry@communityadvisoryboards.com](mailto:peacecountry@communityadvisoryboards.com)
- Phone: 1-888-434-0533
- Website: [www.communityadvisoryboards.com](http://www.communityadvisoryboards.com)



Participation in CABs is on a "without prejudice" basis, and participation in the CAB process is not representative of support for the Project. Meaningful dialogue is encouraged, opportunities for learning are created, and relationships that are mutually beneficial and respect the interests and integrity of all the parties are developed. The CABs are intended to be in place for the lifecycle of the project, should the project receive regulatory approval from the Joint Review Panel (JRP). For more information about the Joint Review Panel process, please visit <http://gatewaypanel.review-examen.gc.ca/clf-nsi/hm-eng.html>



# AB North Central

## Community Advisory Board Round 14

Meeting Date: October 26, 2012  
Communications Bulletin



### Presentation Topics

1. CAB Conference Recap, Dan George
2. CAB Communications, Kelsey Borland
3. Joint Review Panel Hearings Update, Michele Perret
4. Leak Detection, Ray Philipenko
5. Emergency Response, Neil Reid

### Key Presentation Messages:

- CAB Conference was a positive experience – attendees benefited from sharing information and collaborating with CAB members from all 5 regions (1)
- The Northern Gateway computer donation initiative directed by the CABs is having a positive impact on the organizations who have received computers (2)
- The Joint Review Panel (JRP) process for Northern Gateway is currently in the final hearing phase – interested parties can listen to the live hearings and access transcripts (3)
- Northern Gateway has further enhanced the safety of the pipeline by increasing pipeline wall thickness, increasing the frequency of in-line inspections, adding additional shut-off valves, 24/7 manned pump stations, and dual leak detection systems (3)
- Enbridge is going above and beyond industry standards and regulations (4)
- There are cascading monitoring and detection systems proposed for Northern Gateway (4)
- Emergency response preparedness is a living process that undergoes continuous testing, review and improvement - it is not just theoretical (5)
- There is a huge emphasis on spill prevention (5)
- Northern Gateway has done a tremendous amount of work on the emergency response plan without project approvals (5)

### About the CABs

The Community Advisory Boards (CABs) are an important aspect of the Enbridge Northern Gateway Project consultation and engagement processes. CABs provide an opportunity for participants to:

- gather, receive and process information to arrive at a common body of knowledge;
- identify and discuss key areas of regional interest or concern;
- recommend improvements or enhancements to Northern Gateway; and
- educate the general public.

The CABs have been designed to be inclusive of diverse community interests in each of five geographic regions. They include representatives from (but not limited to) environmental groups, Aboriginal groups, business associations, municipal governments and the public. CABs are participant driven and as such, members determine a priority list of topic areas they would like discussed at each regional meeting. CABs are open to the public through pre-registration and anyone can come attend as an observer.

### About the AB North Central CAB

Currently held in Edmonton, Alberta, 23 registered members sit at the table of this CAB and a number of observers regularly attend. This CAB is comprised of representatives from Aboriginal/Metis groups, Environmental interest, municipal government, land and resource users, and recreational interests.

### AB North Central CAB Contact Information

Inquiries about the AB North Central CAB process are to be directed to the regional CAB Spokespeople.

- E-mail: [abnorthcentral@communityadvisoryboards.com](mailto:abnorthcentral@communityadvisoryboards.com)
- Phone: 1-888-434-0533
- Website: [www.communityadvisoryboards.com](http://www.communityadvisoryboards.com)



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# BC North Coastal Community Advisory Board Round 14

Meeting Date: October 30, 2012  
Communications Bulletin



## Presentation Topics

1. Review of CAB conference 2012
2. CAB Communications
3. Joint Review Panel Hearings
4. Q&A – Geotechnical Hazards
5. Douglas Channel Watch
6. Intelligent Pipeline Systems & Technologies

## Key Presentation Messages:

- Great speakers at CAB conference. (1)
- There appeared to be good interaction between the diverse CAB members, but would appreciate even more opportunity to do so. (1)
- CAB Communications initiatives include the creation of a logo, donations of used Enbridge computers based on CAB member input, CAB public meetings, use of the CAB bulletins and website. (2)
- Discussion of the JRP Hearings process, topics being covered, where and when; how to listen to the hearings live via JRP website. (3)
- Documents on the public record available on the JRP project review website. (3)
- Information provided regarding the various types of marine clays in this region; discussion of impacts to marine clays due to seismic activity. (4)
- Earthquake websites: [www.shakeoutbc.ca](http://www.shakeoutbc.ca); [www.earthquakescanada.nrcan.gc.ca](http://www.earthquakescanada.nrcan.gc.ca)
- Examples of VLCC incidents that have occurred at world ports, confined channels, and open waters due to a variety of factors. (5)
- Overview and discussion of TERMPOL and voluntary vs. mandatory commitments. (5)
- Douglas Channel Watch's perspective is that there is a lack of government legislation on marine transportation requirements. (5)
- Safe pipelines are a combination of tools + systems & programs + people. (6)
- Spartan Controls has moved into the community with an office and wants to support industry as required. (6)

## About the CABs

The Community Advisory Boards (CABs) are an important aspect of the Enbridge Northern Gateway Project consultation and engagement processes. CABs provide an opportunity for participants to:

- gather, receive and process information to arrive at a common body of knowledge;
- identify and discuss key areas of regional interest or concern;
- recommend improvements or enhancements to Northern Gateway; and
- educate the general public.

The CABs have been designed to be inclusive of diverse community interests in each of five geographic regions. They include representatives from (but not limited to) environmental groups, Aboriginal groups, business associations, municipal governments and the public. CABs are participant driven and as such, members determine a priority list of topic areas they would like discussed at each regional meeting. CABs are open to the public through pre-registration and anyone can come attend as an observer.

## About the BC North Coastal CAB

The BC North Coastal CAB meetings are currently held in Kitimat, BC. There are 18 registered members who sit at the table of this CAB, and a number of Observers who regularly attend. This membership currently consists of economic development interest, Aboriginal groups, marine use, land/resource use, local government, recreation, ENGO, and general public.

## BC North Coastal CAB Contact Information

Inquiries about the BC North Coastal CAB process are to be directed to the regional CAB Spokespeople.

- E-mail: [bcnorthcoastal@communityadvisoryboards.com](mailto:bcnorthcoastal@communityadvisoryboards.com)
- Phone: 1-888-434-0533
- Website: [www.communityadvisoryboards.com](http://www.communityadvisoryboards.com)



Participation in CABs is on a “without prejudice” basis, and participation in the CAB process is not representative of support for the Project. Meaningful dialogue is encouraged, opportunities for learning are created, and relationships that are mutually beneficial and respect the interests and integrity of all the parties are developed. The CABs are intended to be in place for the lifecycle of the project, should the project receive regulatory approval from the Joint Review Panel (JRP). For more information about the Joint Review Panel process, please visit <http://gatewaypanel.review-examen.gc.ca/clf-nsi/hm-eng.html>

# BC North West

## Community Advisory Board Round 14

Meeting Date: October 31, 2012  
Communications Bulletin



### Presentation Topics

1. Review of CAB conference 2012
2. CAB Communications
3. Joint Review Panel Hearings
4. Marine Presentation
5. Emergency Response

### Key Presentation Messages:

- CAB Conference speakers were excellent and enlightening. (1)
- Diversity of people at conference was great, but would have appreciated a more balanced perspective on presentations. (1)
- Discussion of Port Metro Vancouver boat tour and reassurances made in port safety in that area. (1)
- CAB Communications initiatives include the creation of a logo, donations of used Enbridge computers based on CAB member input, CAB public meetings, use of the CAB bulletins and website. (2)
- Website resources provided regarding tanker traffic and earthquakes: [www.shakeoutbc.ca](http://www.shakeoutbc.ca); [www.earthquakescanada.nrcan.gc.ca](http://www.earthquakescanada.nrcan.gc.ca); [www.pacificenergypier400.info/](http://www.pacificenergypier400.info/); [www.youtube.com/user/cosbcful](http://www.youtube.com/user/cosbcful). (3)
- Discussion of the JRP Hearings process, topics being covered, where and when; how to listen to the hearings live via JRP website. (3)
- Northern Gateway has undertaken new community initiatives in the last few months, including “Women Building Communities”. (3)
- The JRP process is complex and lengthy. The decision on the project is still over a year away. (3)
- The CAB public luncheon marine presentation will be available on the CAB website. (4)
- The public luncheon was well received, and the CAB needs to continue to broaden its outreach to be inclusive of diverse perspectives. All are welcome. (4)
- The proposed right-of-way has been ground-truthed and walked to identify emergency response tactics. (5)
- Anchoring points for response equipment is pre-determined; there is a systematic approach to emergency response planning and response. (5)
- Stockpiling of response equipment in remote areas will occur. (5)

### About the CABs

The Community Advisory Boards (CABs) are an important aspect of the Enbridge Northern Gateway Project consultation and engagement processes. CABs provide an opportunity for participants to:

- gather, receive and process information to arrive at a common body of knowledge;
- identify and discuss key areas of regional interest or concern;
- recommend improvements or enhancements to Northern Gateway; and
- educate the general public.

The CABs have been designed to be inclusive of diverse community interests in each of five geographic regions. They include representatives from (but not limited to) environmental groups, Aboriginal groups, business associations, municipal governments and the public. CABs are participant driven and as such, members determine a priority list of topic areas they would like discussed at each regional meeting. CABs are open to the public through pre-registration and anyone can come attend as an observer.

### About the BC North West CAB

The BC North West CAB meetings are currently held in Terrace, BC. There are 14 registered members who sit at the table of this CAB, and a number of Observers who regularly attend. This membership currently consists of economic development interest, Aboriginal groups, land/resource use, local government, recreation, and general public.

### BC North Coastal CAB Contact Information

Inquiries about the BC North Coastal CAB process are to be directed to the regional CAB Spokespeople.

- E-mail: [bcnorthwest@communityadvisoryboards.com](mailto:bcnorthwest@communityadvisoryboards.com)
- Phone: 1-888-434-0533
- Website: [www.communityadvisoryboards.com](http://www.communityadvisoryboards.com)



Participation in CABs is on a “without prejudice” basis, and participation in the CAB process is not representative of support for the Project. Meaningful dialogue is encouraged, opportunities for learning are created, and relationships that are mutually beneficial and respect the interests and integrity of all the parties are developed. The CABs are intended to be in place for the lifecycle of the project, should the project receive regulatory approval from the Joint Review Panel (JRP). For more information about the Joint Review Panel process, please visit <http://gatewaypanel.review-examen.gc.ca/clf-nsi/hm-eng.html>

# BC North Central

## Community Advisory Board (CAB) Round 14

Meeting Date: November 2, 2012  
Communications Bulletin



### Presentation Topics

1. Review of CAB conference 2012
2. Q&A – Geotechnical Hazards
3. Joint Review Panel Hearings & Northern Gateway Update
4. CAB Communications
5. Emergency Response
6. Carney Hill Neighbourhood Centre Society

### Key Presentation Messages:

- Great speakers at CAB conference; the CAB conference was a great opportunity to gather information about the project and the industry in general. (1)
- Information provided regarding seismic activity on the west coast, and potential impacts on pipelines. Earthquake websites: [www.earthquakescanada.nrcan.gc.ca](http://www.earthquakescanada.nrcan.gc.ca); [www.neptunecanada.com](http://www.neptunecanada.com). (2)
- Discussion of the Joint Review Panel (JRP) Hearings process, topics being covered, where and when; how to listen to the hearings live via JRP website (listed on the footer below). (3)
- Updated regulatory timeline provided (attached). (3)
- CAB communications initiatives include the creation of a logo, donations of used Enbridge computers based on CAB member input, CAB public meetings, use of the CAB bulletins and website. (4)
- Table-top and field exercises related to emergency response occur multiple times a year. These should include seasonal considerations. (5)
- Initiate and be proactive in communicating with First Responders along the proposed route. (5)
- The Carney Hill Neighborhood Centre Society serves 100 children daily and 1000 people per month in the drop-in centre. (6)
- A golden opportunity to continue to help the community through this organization. (6)

### About the CABs

The Community Advisory Boards (CABs) are an important aspect of the Enbridge Northern Gateway Project consultation and engagement processes. CABs provide an opportunity for participants to:

- gather, receive and process information to arrive at a common body of knowledge;
- identify and discuss key areas of regional interest or concern;
- recommend improvements or enhancements to Northern Gateway; and
- educate the general public.

The CABs have been designed to be inclusive of diverse community interests in each of five geographic regions. They include representatives from (but not limited to) environmental groups, Aboriginal groups, business associations, municipal governments and the public. CABs are participant driven and as such, members determine a priority list of topic areas they would like discussed at each regional meeting. CABs are open to the public through pre-registration and anyone can come attend as an observer.

### About the BC North Central CAB

The BC North Coastal CAB meetings are currently held in Prince George, BC. There are 39 registered members who sit at the table of this CAB, and a number of Observers who regularly attend. This membership currently consists of economic development interest, Aboriginal groups, community service, economic development, land/resource use, local government, recreation, ENGO, trappers, and general public.

### BC North Coastal CAB Contact Information

Inquiries about the BC North Coastal CAB process are to be directed to the regional CAB Spokespeople.

- E-mail: [bcnorthcentral@communityadvisoryboards.com](mailto:bcnorthcentral@communityadvisoryboards.com)
- Phone: 1-888-434-0533
- Website: [www.communityadvisoryboards.com](http://www.communityadvisoryboards.com)



Participation in CABs is on a “without prejudice” basis, and participation in the CAB process is not representative of support for the Project. Meaningful dialogue is encouraged, opportunities for learning are created, and relationships that are mutually beneficial and respect the interests and integrity of all the parties are developed. The CABs are intended to be in place for the lifecycle of the project, should the project receive regulatory approval from the Joint Review Panel (JRP). For more information about the Joint Review Panel process, please visit <http://gatewaypanel.review-examen.gc.ca/clf-nsi/hm-eng.html>

**List of Presentations at Round 14 CAB Meetings**

- Carney Hill Neighbourhood Centre Society (est 1994): Where Health is Wealth, C. Kendall
- Enbridge Northern Gateway Proposal For Kitimat Compared to World Crude Oil Ports with VLCC Traffic Routes
- Leak Detection, Enbridge
- Marine Operations, Northern Gateway
- Regulatory Process, Northern Gateway
- Emergency Response, Northern Gateway
- Safe Intelligent Pipeline: Instrumentation and Automation Enhance Pipeline Projects, Spartan Control



October 31, 2012

**VIA COURIER**

Darlene Wong  
Box 450  
Gibbons, AB  
TOA 1N0

Dear Madam Justice Wong,

RE: Enbridge Northern Gateway Project ("Project")  
SE 22-56-23 W4M ("Lands")

I have recently moved into the position of Senior Lands and RoW Specialist and have taken over responsibility for the land program for the Project. I would like to once again extend an offer to meet with you in person to introduce myself and to discuss the routing of the pipeline through your Lands and the concerns that you have raised.

I look forward to hearing from you to determine a mutually agreeable time and location to meet.

Best regards,

A handwritten signature in blue ink that reads "M. Yohemas".

*for*  
Marnie Yohemas  
Senior Lands and RoW Specialist  
Land Services (Cdn Projects)





October 31, 2012

**VIA COURIER**

Darryl Carter & Company  
#103, 10134 – 97<sup>th</sup> Avenue  
Grande Prairie, AB T8V 7X6

Attention: Mr. Darryl Carter, Q.C.

Dear Sir,


RE: Enbridge Northern Gateway Project ("Project")  
Your client: Alberta Lands Ltd. (Grant Evaskevich)  
District Lot 1476, Block A, Peace River District, British Columbia ("Lands")

I have recently moved into the position of Senior Lands and RoW Specialist and have taken over responsibility for the land program for the Project. I understand that an offer to meet with you and your client was made in August 11, 2011 and again confirmed by Mr. Doering at the hearings in Prince George this October, 2012. I would like to once again extend our offer to meet with you and your client in Grande Prairie to introduce myself and to discuss your client's concerns.

I look forward to hearing from you to determine a mutually agreeable time and location to meet.

Best regards,

A handwritten signature in blue ink that reads "Marnie Yohemas".

 Marnie Yohemas  
Senior Lands and RoW Specialist  
Land Services (Cdn Projects)



## **Aboriginal Engagement Update**

### **ENBRIDGE NORTHERN GATEWAY PROJECT**

**November 9, 2012**



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## Abbreviations

AANDC.....	Aboriginal Affairs and Northern Development Canada
AGM .....	Annual General Meeting
ACR .....	Alberta Chamber of Resources
ASETS .....	Alberta Skills and Employment Training Strategy
ATK.....	Aboriginal Traditional Knowledge
BLWG .....	Burns Lake Working Group
CAB.....	Community Advisory Board
CCAB .....	Canadian Council for Aboriginal Business
FTE .....	Full Time Equivalent
HRSDC .....	Human Resources and Skills Development Canada
JRP .....	Joint Review Panel
LDATES .....	Lakes District Aboriginal Training-to-employment Society
LOI .....	Letter of Intent
MNA.....	Métis Nation of Alberta
MOU.....	Memorandum of Understanding
Northern Gateway .....	Enbridge Northern Gateway Pipelines
NTSB.....	National Transportation Safety Board
Project.....	Enbridge Northern Gateway Project
RoW .....	Right-Of-Way
SWAT .....	Strategic Watercourse Assessment Team
TLE.....	Treaty Land Entitlement
TLU .....	Traditional Land Use

# 1 Introduction

This Update covers the period from July 1, 2012 to November 2, 2012 (Update Period) and supplements the information provided by Northern Gateway Pipelines Limited Partnership (Northern Gateway) in:

- the May 2010 Application, Volume 5A, which was filed with the Joint Review Panel (JRP) on May 27, 2010;
- the June 2011 Update to the Application, Volume 5A, which was filed with the JRP on June 8, 2011;
- Northern Gateway's response to JRP IR 5.9 and JRP IR 10.10, which were filed with the JRP on October 6, 2011 and June 7, 2012, respectively; and
- Northern Gateway's Aboriginal Engagement Reply & Update, which was filed with the JRP as Attachment 17 Reply Evidence on July 20, 2012.

This Update was prepared to respond to JRP IR 14.2. The purpose is to provide a detailed update for each Aboriginal group with which Northern Gateway is engaged. While this response covers engagement activities up to November 2, 2012, it should be noted that Northern Gateway's Aboriginal engagement program will be ongoing throughout all phases of the Project.



## 2 Written Notices and Correspondence

Northern Gateway continues to provide written notices to Aboriginal groups in order to provide information on key steps in the regulatory process. In July 2012, all Aboriginal groups with whom Northern Gateway engages received a letter notifying them that Northern Gateway filed its Reply Evidence which included an Aboriginal Engagement Reply and Update covering the period April 1, 2011 to June 30, 2012. For a sample version of this notice, see **Appendix A** of this Update.

Northern Gateway also provided additional written correspondence to various groups. For sample versions of this correspondence, see **Appendix A** of this Update.



## 3 Meetings and Events

During the Update Period, Northern Gateway continued to communicate with Aboriginal groups by meeting with them in their communities or at mutually convenient locations. Updates for each Aboriginal group follow. These updates are not exhaustive. Informal contact between Northern Gateway representatives and Aboriginal group representatives also occurred at JRP hearings, Community Advisory Board (CAB) meetings, and on other occasions. The subsections that follow provide information on key events that involved multiple groups.

In addition, the Skills Development & Business Development team communicated with a number of Aboriginal groups during the Update Period in various forms, including meetings, phone conversations and e-mails. A list of the meetings the Skills Development & Business Development had with Aboriginal groups during the Update Period is provided in **Appendix B**.

### 3.1 Strategic Watercourse Assessment Team (SWAT)

From July 2012 to August 2012, Northern Gateway conducted SWAT fieldwork for specific watercourse crossings along the proposed pipeline route to assess, through ground truthing, the optimal crossing locations for the pipelines, the conditions of the sites for construction, and other processes relating to the construction of the Project. This fieldwork provided the opportunity for 11 individuals representing seven different Aboriginal groups to observe the SWAT fieldwork, to better understand the construction process for watercourse crossings and to provide relevant information associated with Aboriginal traditional practices within close proximity to the watercourse crossings.

### 3.2 Canadian Council for Aboriginal Business (CCAB) Gala

In September 2012, Northern Gateway sponsored the attendance of three Chiefs at the CCAB Gala. This annual event celebrates individuals and organizations who have achieved excellence in building business relationships with Canadian Aboriginal communities.

### 3.3 Métis Nation British Columbia 2012 Annual General Meeting (AGM)

In September 2012, Northern Gateway representatives attended the Provincial AGM at the request of the Métis Nation of British Columbia. Numerous regional Métis associations were represented at the AGM, and Northern Gateway was provided an opportunity to discuss the Project with these attendees.

### 3.4 British Columbia Chamber of Commerce Energy Summit

Northern Gateway sponsored representatives from seven Aboriginal groups to attend the British Columbia Chamber of Commerce Energy Summit in October 2012, held in Vancouver, British Columbia. Discussions at the summit included topics such as social and economic benefits, building better business relationships, the need for oil and gas development in Northern British Columbia and the substantially increased scope and comprehensiveness of public engagement and regulatory review that has been



established since the construction of the original Trans Mountain Pipeline system in British Columbia in the 1950's.

### **3.5 Pre-Construction Reconnaissance Fieldwork**

In October 2012, individuals from two Aboriginal groups took part in pre-construction reconnaissance fieldwork with Northern Gateway. Pre-construction reconnaissance involved a team of six senior construction specialists and pipeline designers utilizing two helicopters to fly along the pipeline corridor, circling areas of interest such as slopes, side hills and rocky terrain, and touching down at significant features, such as river crossings.

### **3.6 Tunnel and Surface Site Investigation Fieldwork**

Tunnel and surface site investigation fieldwork took place in October 2012. It consisted of portal site visits to visually assess the suitability of the proposed Clore and Hoult tunnel portal locations, geological mapping visits to visually assess geological units along proposed tunnel alignments and access road and surface works visits to visually assess surface soil units and terrain (slopes, creeks, instability, etc). Three individuals representing two different Aboriginal groups observed and participated in site visits and fieldwork.

### **3.7 Burns Lake Working Group (BLWG)**

In September and October 2012, Northern Gateway met with the BLWG to discuss business, economic and social opportunities relating to the development, construction and operation of the Project. Four Aboriginal groups from the regions of Fort St. James and Burns Lake, British Columbia were represented at these meetings.

### **3.8 Aboriginal Leadership and Management Programs**

During the Update Period, Northern Gateway offered Enbridge sponsorship funding for the Banff Centre's Aboriginal Leadership and Management programs for 12 leaders from Aboriginal groups. To date, five scholarships have been awarded. The purpose of these scholarships is to build leadership capacity in Aboriginal communities and to create sustained, self-determined social and economic development.

## 4 Education, Training and Employment Initiatives

During the Update Period, Northern Gateway has continued to implement its Education, Training and Employment Strategy as a mechanism to help Aboriginal group members develop the essential and transferable skills necessary to work in the growing pipeline and construction sectors.

Northern Gateway is committed to building skills and subsequently improving employment outcomes within Northern Gateway's local communities in advance of issuance of a Certificate. Northern Gateway recognizes the importance of building transferable skills in Aboriginal groups given the skills shortage (current and future) in both Alberta and British Columbia. Northern Gateway works with Aboriginal groups to identify employment opportunities and assists Aboriginal groups in accessing funding for training which will result in employment outcomes. Funding partners include provincial and federal governments, industry and existing service providers.

Delivery of the Education, Training and Employment Strategy focuses on four key areas:

- Employer Outreach/Employment Connections
  - Link companies who have a labour demand to local Aboriginal groups with the intention of employment matching
  - Engage employers in training-to-employment projects – focused on establishing employment outcomes for local communities
  - Better understand needs, challenges and opportunities for Aboriginal workforce
  - Help Aboriginal groups understand the labour demand and skills required to fulfill the demand
- Community Based Training
  - Use of Education and Training Fund to assist in community based training initiatives with partners
  - Capacity development
  - Coordination and facilitation services
  - Community as expert philosophy
- Trades & Industry Training
  - Support trades and technical training for local communities
  - Industry specific “demand” training through employer partnerships (survey/environment)
  - Apprenticeship support and funding
- Youth Engagement
  - School outreach & engagement
  - Education and career support

## Aboriginal Engagement Update

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### Section 4: Education, Training and Employment Initiatives

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- Capacity development
- Career exploration
- Industry education and knowledge
- Stay in School Bursary

In November 2011, Northern Gateway announced a budget of \$1.5 million, specifically directed toward skills development, training and community education initiatives. This initiative has been rapidly and enthusiastically embraced in local communities. Skills development and community education initiatives started, and related commitments made, during the Update Period have an estimated value of approximately \$800,000. Reflecting upon the results of the past 12 months, in November 2012, Northern Gateway proposed a significant expansion of this effort, identifying a budget increase for skills development, training and community education initiatives of more than \$3 million.

The Skills Development & Business Development team is currently engaged with 25 Aboriginal groups in skills and/or business development initiatives. Initiatives undertaken during the Update Period include the following:

- **Greater Strides Aboriginal Youth Leadership Camp** – Over 200 Aboriginal youth from northern Alberta and British Columbia participated in the Greater Strides Hockey Academy Youth Leadership camp in Edmonton (July) and Prince George (August). The Greater Strides Hockey Academy provides a world class, comprehensive, Aboriginal culture-based hockey academy focused on academics, athletics, health and wellness, and most importantly, Aboriginal and cultural grounding.
- **Workforce Connections** – 121 delegates attended the Northern Gateway Workforce Connections Workshop in Edmonton in September 2012. The one day workshop brought together thirteen companies in Alberta who have a current labour market demand, Aboriginal Human Resources and Social Development professionals, as well as service providers and educators to network and build partnerships. Participants included AANDC, Alberta Human Services, Service Canada, Industry and representatives from Aboriginal groups across Alberta. Northern Gateway is planning to host a similar workshop in Prince George in February 2013.
- **Guiding Circles Facilitator Training** – 40 Aboriginal participants from local groups attended Guiding Circles Facilitator Training held in Prince George and Edmonton in September 2012. Guiding Circles is an Aboriginal focused career development tool designed to assist professionals working with Aboriginal job seekers in managing obstacles to employment. The Guiding Circles Facilitator Training Workshop combines contemporary career coaching techniques and Aboriginal perspectives. The second level of training is planned for spring 2013.
- **Lakes District Aboriginal Training-to-employment Society (LDATES)** – Northern Gateway assisted in the establishment of a society in the British Columbia Lakes District (comprised of local area Aboriginal groups) to deliver Aboriginal training-to-employment services. Northern Gateway assisted the society in submitting a technical proposal for funding to Human Resources and Skills Development Canada (HRSDC). Although the submission was not selected by HRSDC for funding, Northern Gateway has established a funding service agreement with LDATES, who will deliver Construction Craft Laborer certified training for 50 Aboriginal people between January 2013 and

## Aboriginal Engagement Update

### Section 4: Education, Training and Employment Initiatives

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January 2014. The training will also include upgrading, pre-trades training, safety tickets, essential skills and post-employment follow-up. Northern Gateway provides capacity assistance to LDATES both in the design and delivery stage of the project. Northern Gateway's investment into the LDATES project is expected to be \$240,000 plus a 0.25 Full Time Equivalent (FTE) and in kind services.

- **Training-to-employment Underway** – Training-to-employment projects during the Update Period include survey and geomatics training, which resulted in five employment opportunities, four pre-apprenticeship graduates, all of whom are working or in advanced training and nine students currently in Ironwork training, which is expected to result in full employment by December 2012.
- **Training-to-employment in Planning Stages** – Northern Gateway is working on developing partnerships to deliver Emergency Medical Respondent training in winter 2013 resulting in up to ten employment placements, camps and catering training in winter/spring 2013 resulting in ten employment placements, essential skills and workplace readiness training for 30 participants resulting in up to 15 employment placements and entry level construction training resulting in up to ten employment placements.
- **Contractor Readiness Sessions** – As a mechanism to assist local communities in preparing for the business and contracting opportunities associated with the Project, Northern Gateway partnered with Alberta Human Services and The Business Link to deliver four Contractor Readiness Sessions in Edmonton, Grand Prairie, St. Paul and Slave Lake. The sessions will be delivered by a third party contractor specializing in business development and will run in November 2012. The sessions are designed to assist local contractors in understanding the requirements of doing business with oil and gas companies more broadly and will cover safety, prequalification requirements and sub-contracting processes. 100 participants are expected to attend the sessions.
- **Trades Winds to Success** – Northern Gateway has committed \$200,000 for the purchase of 15 additional seats for Northern Gateway Aboriginal groups for 2013. In 2012, Northern Gateway provided a financial contribution in the amount of \$80,000, which funded eight seats for the 16 week Aboriginal pre-apprenticeship training program. The program provides the skills and knowledge to start a career in the following trades: boilermaker, carpenter, electrician, ironworker, millwright, plumber, steam/pipe fitter, or welder.
- **Aboriginal Affairs and Northern Development Canada's Best Practices Conference** – Northern Gateway presented the Northern Gateway Skills Development Strategy at the conference in Red Deer, Alberta in October 2012.
- **Alberta Aboriginal Workforce Strategy Steering Committee** – Northern Gateway is a committee member on the Alberta Aboriginal Workforce Strategy Steering Committee
- **Alberta Chamber of Resources (ACR) Aboriginal Workforce Development Pilot Project** – Northern Gateway is assisting the design and development of a pilot project designed to link work ready, trades exposed Aboriginal people to job opportunities with ACR member companies. The partnership was been established with Service Canada, Alberta Human Services, AANDC and the 13 Alberta Skills and Employment Training Strategy (ASETS) holders in Alberta. The project will

Aboriginal Engagement Update

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Section 4: Education, Training and Employment Initiatives

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launch in November 2012 and is expected to place at least 35 Aboriginal people into employment placements.

- **Northeast Alberta Apprenticeship Initiative** – Northern Gateway is a committee member supporting Tribal Chiefs Employment and Training in the design of a Northeast Alberta Apprenticeship Training Project..

## **5 Engagement Updates**

### **5.1 Northeast Alberta Region**

#### **5.1.1 Beaver Lake Cree Nation**

Northern Gateway is not currently engaged with the Beaver Lake Cree Nation.

#### **5.1.2 Whitefish Lake (Whitefish Lake First Nation #128)**

In July 2012, Northern Gateway contacted Whitefish Lake (Whitefish Lake First Nation #128) regarding the deadline to register youth from Whitefish Lake (Whitefish Lake First Nation #128) in the Greater Strides Hockey camp. Whitefish Lake (Whitefish Lake First Nation #128) also contacted Northern Gateway to request contact information for Northern Gateway's team overseeing training and employment initiatives to obtain meeting notes from a recent meeting between the parties. Northern Gateway provided the Nation with the contact information.

In September 2012, Northern Gateway contacted Whitefish Lake (Whitefish Lake First Nation #128) to request information for the consultant who completed the Nation's ATK study. The Nation provided the information to Northern Gateway.

In early November 2012, Northern Gateway contacted Whitefish Lake (Whitefish Lake First Nation #128) to inquire on the status of the training and employment initiatives that the Nation and Northern Gateway have been involved in for the benefit of Whitefish Lake (Whitefish Lake First Nation #128). Northern Gateway also expressed its availability to discuss any Project related matter that was of interest to the Nation.

Whitefish Lake (Whitefish Lake First Nation #128) also participated in the Northern Gateway CAB meetings that took place in October 2012.

In addition to the engagement activities summarized above, Northern Gateway continues to notify the Whitefish Lake (Whitefish Lake First Nation #128) of updates and supplementary information filed with the JRP relating to the Project's regulatory application.

#### **5.1.3 Saddle Lake (Saddle Lake Cree Nation)**

In July 2012, the Saddle Lake (Saddle Lake Cree Nation) contacted Northern Gateway to request a meeting to discuss a community relations agreement proposal that the Nation proposed to Northern Gateway in June 2012. Northern Gateway followed up with the Saddle Lake (Saddle Lake Cree Nation) and was informed that they no longer wished to bring forward the proposal. Northern Gateway was advised by the Nation that the meeting was no longer necessary.

In late September, Northern Gateway was in contact with the Saddle Lake (Saddle Lake Cree Nation) to request a meeting with Chief and Council to provide a Project update and discuss an approach for ongoing discussions. Northern Gateway proposed meeting dates and is currently awaiting a response.



## Aboriginal Engagement Update

### Section 5: Engagement Updates

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In addition to the engagement activities summarized above, Northern Gateway continues to notify the Saddle Lake (Saddle Lake Cree Nation) of updates and supplementary information filed with the JRP relating to the Project's regulatory application.

#### **5.1.4 Kehewin Cree Nation**

In September 2012, Northern Gateway contacted the Kehewin Cree Nation to inquire about the status of the Nation's ATK study that was to be completed by the end of May 2012. Northern Gateway was informed that the Kehewin Cree Nations Peacekeepers, a Kehewin Cree Nation organization established to address government consultation and industry relations matters and who is Northern Gateway's contact with the Nation, was in the process of moving their office to a new location which resulted in a disruption in their business activities. Northern Gateway was also advised by the consultant hired by the Nation to complete the Nation's ATK study that the study was near completion and would be submitted to Northern Gateway in short order.

In October 2012, Northern Gateway contacted the Kehewin Cree Nation to inquire about the status of the Nation's ATK study. Northern Gateway did not receive a response and subsequently made a follow-up inquiry in early November 2012. At that time Northern Gateway was informed by the Nation's consultant overseeing the completion of the Kehewin Cree Nation's ATK study that there was a disruption in the completion of the ATK study due to the relocation of the Kehewin Cree Nations Peacekeepers office; however, the ATK study would be submitted to Northern Gateway by November 9, 2012. Northern Gateway informed the Nation that once the ATK study is submitted to Northern Gateway, a technical meeting could be arranged between the parties to address issues and concerns raised by the Nation in their ATK study.

In addition to the engagement activities summarized above, Northern Gateway continues to notify the Kehewin Cree Nation of updates and supplementary information filed with the JRP relating to the Project's regulatory application.

#### **5.1.5 Métis Settlements General Council**

The Métis Settlements General Council includes the Buffalo Lake Métis Settlement, Kikino Métis Settlement and East Prairie Métis Settlement. Northern Gateway is currently engaged with the Buffalo Lake Métis Settlement, Kikino Métis Settlement and East Prairie Métis Settlement individually as discussed in each individual Aboriginal group update.

#### **5.1.6 Buffalo Lake Métis Settlement**

In early November 2012, Northern Gateway contacted the Buffalo Lake Métis Settlement to inquire if there was any Project related matter that the Buffalo Lake Métis Settlement wished to discuss with Northern Gateway and to express Northern Gateway's availability to discuss such matters. Northern Gateway also informed the Buffalo Lake Métis Settlement that it hoped to arrange a meeting with them in the next month or so to introduce Northern Gateway's skills, training and employment team and to discuss potential employment opportunities related to the Project.

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In addition to the engagement activities summarized above, Northern Gateway continues to notify the Buffalo Lake Métis Settlement of updates and supplementary information filed with the JRP relating to the Project's regulatory application.

#### **5.1.7 Kikino Métis Settlement**

In early November 2012, Northern Gateway contacted the Kikino Métis Settlement to inquire if there was any Project related matter that the Kikino Métis Settlement wished to discuss with Northern Gateway and to express Northern Gateway's availability to discuss such matters. Northern Gateway also mentioned the recent contact made with Kikino Métis Settlement by Northern Gateway's skills, training and employment team to further discussions surrounding potential employment opportunities related to the proposed Project.

In addition to the engagement activities summarized above, Northern Gateway continues to notify the Kikino Métis Settlement of updates and supplementary information filed with the JRP relating to the Project's regulatory application.

#### **5.1.8 Métis Nation of Alberta Region 2**

During July 2012, the Métis Nation of Alberta Region 2 (MNA Region 2) contacted Northern Gateway to provide information relating to the delay in meeting the deadline for completing their ATK study final report. MNA Region 2 requested an extension and indicated that the ATK study final report would be submitted by July 31, 2012.

Later in July 2012, a MNA Region 2 representative contacted Northern Gateway to request the Project shape files. Northern Gateway responded by sending Project shape files to the MNA Region 2.

In October 2012, Northern Gateway contacted the MNA Region 2 to obtain an update on the status of the MNA Region 2 ATK study final report. MNA Region 2 responded and advised that they would follow-up with Northern Gateway. Lastly, in the latter part of October, MNA Region 2 participated in the Alberta Central CAB meeting held in Edmonton.

In November 2012, Northern Gateway received the MNA Region 2 ATK study final report from the MNA Region 2

In addition to the engagement activities summarized above, Northern Gateway continues to notify the MNA Region 2 of updates and supplementary information filed with the JRP relating to the Project's regulatory application.

## **5.2 Edmonton Region**

### **5.2.1 Enoch Cree Nation**

During July 2012, Northern Gateway sent an email to the Enoch Cree Nation following up on a letter from Northern Gateway offering to arrange a technical meeting to address issues and concerns raised in the Nation's ATK study and the summary of issues filed in the Application, including Project mitigation measures, operations, maintenance, first response and also to hear the views of the Nation relating to

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watercourse crossings. Subsequently, the Enoch Cree Nation representative responded and acknowledged receipt of the correspondence from Northern Gateway and advised that they would discuss the information with the Nation's leadership and respond to Northern Gateway.

In late October 2012, Northern Gateway contacted the Enoch Cree Nation as follow-up to the July meeting offer. Subsequently, the Enoch Cree Nation representative responded indicating they would follow-up regarding a potential meeting date in November.

In addition to the engagement activities summarized above, Northern Gateway continues to notify the Enoch Cree Nation of updates and supplementary information filed with the JRP relating to the Project's regulatory application.

#### **5.2.2 Alexander (Alexander First Nation)**

In July 2012, Northern Gateway and the Alexander (Alexander First Nation) were in contact a few times to discuss Project related matters and met on one occasion to discuss a land access and benefits agreement related to locating the pipeline across Alexander (Alexander First Nation) reserve lands. Northern Gateway also inquired about the status of the Nation's review of the Alexander First Nation final ATK study report. The Nation indicated it was reviewing the ATK study and inquired about the outstanding amount owing to the Nation under the terms of the ATK study funding agreement. Subsequently, Northern Gateway advised the Nation that the outstanding ATK funding would be directed to the Nation once they submitted their final ATK study report to Northern Gateway. Northern Gateway will continue to offer technical meeting dates to the Alexander (Alexander First Nation) to address concerns raised in the Nation's updated ATK study, once it is provided by the Nation.

In August and September 2012, Northern Gateway and the Alexander (Alexander First Nation) were in contact a few times regarding the land access and benefits agreement.

In October 2012, Northern Gateway and the Alexander (Alexander First Nation) met to discuss the land access and benefits agreement. During the meeting, Northern Gateway also inquired about the status of the Alexander First Nation's final ATK study report and the Nation advised that it had limited financial capacity to complete a review of that report. Subsequently, Northern Gateway contacted the Nation's ATK study contact and advised the Nation that the outstanding ATK funding could be directed towards the finalization of the Nation's ATK study report. Northern Gateway and the Alexander (Alexander First Nation) were also in contact a few times to make arrangements for subsequent meetings in November.

In late October 2012, representatives of the Alexander (Alexander First Nation) and Northern Gateway's ATK team met by conference call to discuss the next steps the Nation would take to complete their ATK study final report.

In early November, representatives of Northern Gateway and the Alexander (Alexander First Nation) had a conference call to further discuss the completion of the Nation's final ATK study report. The parties established a go forward approach to complete that report. The Nation also indicated that their ATK study report would be submitted to Northern Gateway by the end of November 2012.

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In addition to the engagement activities summarized above, Northern Gateway continues to notify the Alexander (Alexander First Nation) of updates and supplementary information filed with the JRP relating to the Project's regulatory application.

#### **5.2.3 Métis Nation of Alberta**

During July 2012, Northern Gateway contacted the Métis Nation of Alberta (MNA) to confirm receipt of the July 20, 2012 Northern Gateway Project notification and Enbridge press release.

During September 2012, Northern Gateway contacted MNA legal counsel to inquire about the MNA Letter of Intent (LOI) and next steps regarding the LOI. MNA legal counsel responded and provided a contact for MNA LOI discussions. Subsequently, Northern Gateway followed-up with a meeting request to MNA and was advised that the MNA would be having a provincial meeting in October and would follow-up with Northern Gateway with potential meeting dates after its October meeting.

In late October 2012, Northern Gateway contacted the MNA on a few occasions to request potential meeting dates. A meeting is planned for November 8, 2012 with the MNA to discuss the MNA LOI and plan next steps.

In addition to the engagement activities summarized above, Northern Gateway continues to notify the MNA of updates and supplementary information filed with the JRP relating to the Project's regulatory application.

#### **5.2.4 Métis Regional Council Zone IV of the Métis Nation of Alberta**

During September 2012, Northern Gateway contacted the Métis Regional Council Zone IV of the Métis Nation of Alberta (MNA Region 4) to inquire about the status of the Northern Gateway ATK study offer. MNA Region 4 responded and provided a copy of the MNA Region 4 TLU proposal. Subsequently, Northern Gateway and MNA Region 4 had a discussion regarding details of the TLU study work plan including anticipated time lines for completion. Northern Gateway also confirmed that MNA Region 4 had received JRP IR 5.9 and 10.10 and provided information relating to both information requests. Northern Gateway offered to meet to provide a Project update and review JRP IR 5.9 and 10.10. Potential meeting dates were discussed and Northern Gateway agreed to follow-up.

During October 2012, Northern Gateway discussed the TLU proposal with MNA Region 4 and subsequently sent a letter of approval for the MNA Region 4 TLU study, which included November 30, 2012 as the time line for completion of the MNA Region 4 TLU study final report.

In addition to the engagement activities summarized above, Northern Gateway continues to notify the MNA Region 4 of updates and supplementary information filed with the JRP relating to the Project's regulatory application.

#### **5.2.5 Grande Cache Métis Local #1994**

Northern Gateway is currently engaging the Grande Cache Métis Local #1994 through MNA Region 4. Northern Gateway is willing to meet directly with Grande Cache Métis Local #1994 upon request.

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In addition to the engagement activities summarized above, Northern Gateway continues to notify the MNA Region 4 of updates and supplementary information filed with the JRP relating to the Project's regulatory application, with copies to the Grande Cache Métis Local #1994.

#### **5.2.6 Gunn Métis Local #55**

Northern Gateway is currently engaging Gunn Métis Local #55 through the MNA Region 4. Northern Gateway is willing to meet directly with Gunn Métis Local #55 upon request.

In addition to the engagement activities summarized above, Northern Gateway continues to notify the MNA Region 4 of updates and supplementary information filed with the JRP relating to the Project's regulatory application, with copies to the Gunn Métis Local #55.

#### **5.2.7 Yellowhead Tribal Council**

Northern Gateway is currently engaged with the Alexander (Alexander First Nation), the Alexis Nakota Sioux Nation and the Enoch Cree Nation who are affiliates of the Yellowhead Tribal Council.

### **5.3 Central Alberta Region**

#### **5.3.1 Paul (Paul First Nation)**

In October 2012, Northern Gateway contacted the Paul (Paul First Nation) to inquire about the status of the training and employment initiatives that the Nation and Northern Gateway have been involved with for the benefit of the Nation. Northern Gateway also expressed its availability to discuss any Project related matter that was of interest to the Nation.

The Paul (Paul First Nation) also participated in the Northern Gateway CAB meetings that took place in October 2012.

In addition to the engagement activities summarized above, Northern Gateway continues to notify the Paul (Paul First Nation) of updates and supplementary information filed with the JRP relating to the Project's regulatory application.

#### **5.3.2 Alexis Nakota Sioux Nation**

During early July 2012, Northern Gateway was invited to participate in the Alexis Nakota Sioux Annual Pow Wow and members of Northern Gateway's team, including executive senior management, attended the event. The event also included a Business Partnerships Barbeque hosted by the Alexis Nakota Sioux Nation and included participation of other industry partners and government representatives. The Alexis Nakota Sioux Nation also invited Northern Gateway to a meeting with AANDC to discuss the lands the Nation had designated for commercial purposes. During the meeting, Northern Gateway and Alexis Nakota Sioux Nation confirmed their desire to locate a Project pump station on Alexis Nakota Sioux Nation reserve lands. The AANDC Manager for Lands and Environment First Nations Relations, Treaty 6 Alberta Region, provided information regarding the process for designating reserve lands for commercial purposes, as well as the process and requirements for entering into lease arrangements on reserve lands.

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Subsequently, Northern Gateway sent a letter to the Alexis Nakota Sioux Nation and provided information regarding the Project engineering hydraulic analysis in relation to the placement of a pump station on the Alexis Reserve. Northern Gateway also requested a meeting with the Nation to discuss securing an access benefit agreement with the Alexis Nakota Sioux Nation. Lastly, the Alexis Nakota Sioux Nation contacted Northern Gateway to inquire about meeting arrangements to discuss employment and training opportunities.

In August 2012, Alexis Nakota Sioux Nation Lands Management sent a letter to Northern Gateway requesting a meeting to discuss the current pipeline route, required pump station infrastructure, site specific regulatory requirements, pump station lease, timing requirements for pump station land tenure, drawings and pictures of similar pump stations and an interim access agreement.

During September 2012, Northern Gateway contacted the Alexis Nakota Sioux Nation and provided information on the JRP hearing schedule, including the expected schedule for the Aboriginal Engagement and Public Consultation witness panel.

Northern Gateway and the Alexis Nakota Sioux Nation planned to meet in October. Unfortunately, the Nation could not attend the meeting. Northern Gateway followed-up by sending correspondence to the Alexis Nakota Sioux Nation regarding the next steps in employment, training and business opportunities under the economic participation memorandum of understanding (MOU), as well as a process to receive information from the Alexis Nakota Sioux Nation regarding business opportunities. Northern Gateway also requested authorization from the Alexis Nakota Sioux Nation to use information from their ATK study final report.

In the latter part of October, Northern Gateway contacted the Alexis Nakota Sioux Nation to offer the Nation an opportunity to participate in the Project SWAT helicopter tour. The Alexis Nakota Sioux Nation accepted the offer and participated in the SWAT fieldwork pre-construction reconnaissance tour to view parts of the proposed Project route, including proposed watercourse crossings across the Simonette and Little Smokey rivers.

Also in October 2012, Northern Gateway, including its technical team members, met with the Alexis Nakota Sioux Nation Lands Management Corp. and a Nation member who lives near the potential pump station location to discuss a potential location for the pump station. Northern Gateway also requested clarification from the Nation surrounding the information the Nation would require for the completion of land lease arrangements for the pump station. The parties also toured the potential site of the pump station on the Alexis Reserve and no issues were identified at this time.

In early November 2012, Northern Gateway and the Alexis Nakota Sioux Nation were in contact a few times to discuss the status of the Nation's authorization to Northern Gateway to use information contained in the Alexis Nakota Sioux Nation ATK study final report. The Alexis Nakota Sioux Nation indicated that the Nation's ATK authorization letter would be forthcoming from the Nation's legal counsel.

In addition to the engagement activities summarized above, Northern Gateway continues to notify the Alexis Nakota Sioux Nation of updates and supplementary information filed with the JRP relating to the Project's regulatory application.



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#### 5.3.3 Maskwacis Cree Nation

The Maskwacis Cree Nation, previously known as Four Nations Administration, is located at Hobbema, Alberta. For administrative purposes, the organization includes the following four First Nations:

- Samson (Samson Cree Nation)
- Ermineskin Tribe (Ermineskin Cree Nation)
- Louis Bull (Louis Bull Tribe)
- Montana First Nation

As described in the June 2011 Update to the Application, Volume 5A, Northern Gateway was asked to engage with each of the four Nations independently.

##### 5.3.3.1 Samson (Samson Cree Nation)

In July 2012, Northern Gateway and the Samson (Samson Cree Nation) were in contact many times to make meeting arrangements to discuss the Project. The parties subsequently met and discussed potential business opportunities arising from the Project, as well as Northern Gateway's offer of funding for an ATK study. Samson (Samson Cree Nation) indicated that they would like to be treated the same as other Aboriginal groups in respect of funding to complete an ATK study. In response, Northern Gateway informed the Nation that Northern Gateway has engaged Aboriginal groups who were perceived to be in similar circumstances in similar ways, including engagement in relation to funding of ATK studies. The Nation raised a site specific issue in relation to the proposed Project corridor, namely, a wolves den located along the corridor. The Nation also expressed an interest in learning about the criteria surrounding the offer of equity to Aboriginal groups and Northern Gateway discussed the criteria with the Nation. Northern Gateway also outlined its engagement approach with Aboriginal groups in response to the Nation's inquiries surrounding Northern Gateway's engagement with the Nation and confirmed that it had used the same approach in its engagement with Samson (Samson Cree Nation). During the meeting, Northern Gateway also provided information regarding the material Northern Gateway has filed with the JRP and inquired if the Nation had an opportunity to review JRP IR 10.10 surrounding Northern Gateway's response to the written and oral evidence submitted by the Samson (Samson Cree Nation) to the JRP. The Nation requested copies of the Northern Gateway's responses to JRP Information Requests, a summary of contact between Northern Gateway and Samson (Samson Cree Nation), including copies of correspondence that Northern Gateway had directed to the Nation, as well as Project shape files. Northern Gateway committed to providing the requested information to the Nation.

In August 2012, Northern Gateway provided the Samson (Samson Cree Nation)'s consultation coordinator with a summary of contact between Northern Gateway and Samson (Samson Cree Nation), including copies of correspondence that Northern Gateway had directed to the Nation. Northern Gateway also provided the Nation with Project shape files. Northern Gateway and Samson (Samson Cree Nation)'s leadership were also in contact a few times to make meeting arrangements to discuss Project related matters.

In September 2012, Northern Gateway and Samson (Samson Cree Nation)'s leadership were also in contact a few times to make meeting arrangements. A meeting was subsequently arranged for early

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October 2012. Samson (Samson Cree Nation)'s consultation coordinator also contacted Northern Gateway to request a meeting summary from the July 2012 meeting, as well as the information that Northern Gateway had agreed to provide the Samson (Samson Cree Nation) at the meeting. Northern Gateway forwarded the correspondence and other attachments it had provided to the Nation in August 2012.

In October 2012, Northern Gateway and the Samson (Samson Cree Nation) met to discuss potential training, employment and business opportunities arising from the proposed Project, including the possibility of Northern Gateway arranging for the introduction of its skills, training, employment and business opportunities team to the Nation. The Samson (Samson Cree Nation) also inquired about the criteria surrounding equity that was offered to Aboriginal groups. Northern Gateway explained the criteria to the Nation's representatives. The parties also discussed Northern Gateway's offer of funding to the Nation to complete an ATK study. The Nation indicated that it would respond to that offer in the coming weeks. Northern Gateway awaits a response from the Nation regarding its ATK study funding offer. Following the meeting, the Samson (Samson Cree Nation)'s consultation coordinator requested the list of action or follow-up items from the meeting and Northern Gateway provided the consultation coordinator with the information.

As part of the above-described meeting in October, Northern Gateway met with the President and CEO of Peace Hills Trust and the parties re-confirmed their mutual interest in seeing Peace Hills Trust provide a portion of the future Northern Gateway Project debt financing, thereby creating benefit for the Samson (Samson Cree Nation). Peace Hills Trust is a trust company wholly owned by Samson (Samson Cree Nation).

In addition to the engagement activities summarized above, Northern Gateway continues to notify the Samson (Samson Cree Nation) of updates and supplementary information filed with the JRP relating to the Project's regulatory application.

#### **5.3.3.2 Ermineskin Tribe (Ermineskin Cree Nation)**

In July 2012, Northern Gateway and Ermineskin Tribe (Ermineskin Cree Nation) were in contact many times to confirm the arrangements for a Project technical meeting and to discuss the Nation's ATK study work plan and budget. A Project technical meeting was held in the latter part of July and a member of Northern Gateway's engineering team provided Project technical information to Ermineskin Tribe (Ermineskin Cree Nation) and information on watercourse crossings. Northern Gateway also provided information on training, employment and business opportunities in response to a request for information on the subject. Northern Gateway and Ermineskin Tribe (Ermineskin Cree Nation) also reviewed the draft ATK study work plan and budget submitted by the Nation.

In August 2012, Ermineskin Tribe (Ermineskin Cree Nation) provided a revised ATK study work plan and budget to Northern Gateway. The parties agreed on the contents of the work plan and budget and the documents were submitted to Northern Gateway for processing. The Nation requested the website address where they could access a Project route map and Northern Gateway agreed to provide the link by e-mail to the Nation. Northern Gateway subsequently e-mailed the website link to the Nation. The Nation later requested a hard of the Project route map to use at their meetings with the Elders from Ermineskin Tribe (Ermineskin Cree Nation). Northern Gateway met with Ermineskin Tribe (Ermineskin Cree Nation) in the

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latter part of August to further discuss the Nation's ATK study work plan and Northern Gateway provided the Nation with a hard copy of the Project route map.

In October 2012, Ermineskin Tribe (Ermineskin Cree Nation) contacted Northern Gateway, requested Project shape files and inquired about the status of the funding to the Nation for the first phases of their ATK study. Northern Gateway advised that the first payment towards completion of an ATK study was forthcoming and should be received by the Nation in short order. The Nation was also provided with Project shape files.

In early November 2012, Northern Gateway contacted the Ermineskin Tribe (Ermineskin Cree Nation) to inquire about the status of the Nation's ATK study. Northern Gateway also informed the Nation that it hoped to arrange a meeting with the Ermineskin Tribe (Ermineskin Cree Nation) in the next month or so to introduce Northern Gateway's skills, training and employment team and discuss potential employment opportunities related to the Project. In response, the Ermineskin Tribe (Ermineskin Cree Nation) advised that the Nation would need to extend the date of submission of the Nation's ATK study report to mid November 2012. Ermineskin Tribe (Ermineskin Cree Nation) also indicated that they look forward to a future meeting to discuss potential employment opportunities arising from the Project.

In addition to the engagement activities summarized above, Northern Gateway continues to notify the Ermineskin Tribe (Ermineskin Cree Nation) of updates and supplementary information filed with the JRP relating to the Project's regulatory application.

#### **5.3.3.3 Louis Bull (Louis Bull Tribe)**

In July 2012, Northern Gateway contacted the Louis Bull (Louis Bull Tribe) on a few occasions regarding the status of the Nation's ATK study. The Louis Bull (Louis Bull Tribe)'s consultation coordinator indicated that the Nation would need an extension for the completion of their ATK study until the middle of August 2012. The consultation coordinator also advised that she is the sole person working in the Tribe's consultation office and she sometimes has many projects underway that require her attention, including the ATK study relating to the Project. Northern Gateway reiterated its offer of a Project technical meeting with the Louis Bull (Louis Bull Tribe) to discuss any concerns the Nation may have and to provide Project technical information to them.

In September 2012, Northern Gateway contacted the Louis Bull (Louis Bull Tribe) regarding the status of the Nation's ATK study. Louis Bull (Louis Bull Tribe) indicated that a meeting with the Tribe's Elders would take place the following week to review the contents of the Nation's ATK study. The Tribe's consultation coordinator reiterated that she is the sole person working on the ATK study report. Northern Gateway indicated its understanding of the consultation coordinator's workload.

In October 2012, Northern Gateway contacted the Louis Bull (Louis Bull Tribe) to inquire about the status of the Tribe's ATK study report.

In early November 2012, Northern Gateway contacted the Louis Bull (Louis Bull Tribe) to inquire about the status of the Nation's ATK study. Northern Gateway awaits a response to its inquiry. Northern Gateway also informed the Tribe that it hoped to arrange a meeting with them in the next month or so to introduce Northern Gateway's skills, training and employment team and to discuss potential employment opportunities related to the proposed Project.

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In addition to the engagement activities summarized above, Northern Gateway continues to notify the Louis Bull (Louis Bull Tribe) of updates and supplementary information filed with the JRP relating to the Project's regulatory application

#### **5.3.3.4 Montana First Nation**

In July 2012, Northern Gateway contacted the Montana First Nation on a couple of occasions to make meeting arrangements to discuss Project related matters, including the status of the Nation's ATK study. Northern Gateway and Montana First Nation were not able to agree on a meeting date in July.

In September 2012, Northern Gateway contacted Montana First Nation to inquire about the status of the Nation's ATK study. The Nation did not respond to the inquiry.

In late October 2012, the Montana First Nation consultation coordinator contacted Northern Gateway to advise that she was leaving her employment with the Nation. Northern Gateway subsequently contacted the Montana First Nation consultation coordinator to inquire about the status of the Nation's ATK study. The Montana First Nation consultation coordinator advised Northern Gateway that she would follow-up with Northern Gateway regarding the inquiry. When Northern Gateway did not receive a response, the consultation coordinator was contacted again in early November 2012 to inquire about the status of the Nation's ATK study and to request a date for the completion of the ATK study. Northern Gateway also informed the Montana First Nation consultation coordinator that it hoped to arrange a meeting with the Montana First Nation in the next month or so to introduce Northern Gateway's skills, training and employment team and to discuss potential employment opportunities related to the Project. Northern Gateway also requested the name of the Nation's contact person.

In addition to the engagement activities summarized above, Northern Gateway continues to notify the Montana First Nation of updates and supplementary information filed with the JRP relating to the Project's regulatory application.

#### **5.3.4 Michel First Nation**

In November 2012, Northern Gateway contacted the Michel First Nation to inquire if there were any Project related matters that the Nation wished to discuss with Northern Gateway and to express Northern Gateway's availability to discuss such matters. Northern Gateway also informed the Michel First Nation that it hoped to arrange a meeting with the Nation in early 2013 to introduce Northern Gateway's skills, training and employment team and to discuss potential employment opportunities related to the Project.

In addition to the engagement activities summarized above, Northern Gateway continues to notify the Michel First Nation of updates and supplementary information filed with the JRP relating to the Project's regulatory application.

## **5.4 Northwest Alberta Region**

### **5.4.1 Lesser Slave Lake Indian Regional Council**

The Lesser Slave Lake Indian Regional Council consists of five member Nations:

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- Sawridge (Sawridge First Nation)
- Swan River First Nation
- Driftpile First Nation
- Kapawe'no First Nation
- Sucker Creek (Sucker Creek First Nation)

Northern Gateway is currently engaged with all five Nations individually.

#### **5.4.1.1 Sawridge (Sawridge First Nation)**

In September 2012, Northern Gateway discussed meeting arrangements with the Sawridge First Nation and a go forward approach. Subsequently, Northern Gateway met with the Sawridge First Nation to provide a Project update and determine next steps for business, employment and training opportunities discussions. Northern Gateway and the Sawridge First Nation agreed to follow-up to confirm the tentative date set for mid-October 2012.

In October 2012, Northern Gateway and the Sawridge First Nation were in contact to make meeting arrangements. Subsequently, Northern Gateway confirmed a meeting for early November.

In early November 2012, Northern Gateway, including the Vice President of Aboriginal and Stakeholder Relations and a member of the business, employment and training team, met with the Sawridge First Nation and the Kapawe'no First Nation to provide a Project update and discuss business, employment and training opportunities. The Kapawe'no and the Sawridge First Nations provided information relating to the Nations' Joint Venture partnerships and their business capacity. Northern Gateway provided information on the environmental stewardship initiative and business procurement and employment training opportunities. Northern Gateway's business, employment and training team member committed to attending a community meeting later in November.

In addition to the engagement activities summarized above, Northern Gateway continues to notify the Sawridge First Nation of updates and supplementary information filed with the JRP relating to the Project's regulatory application.

#### **5.4.1.2 Swan River First Nation**

In July 2012, Northern Gateway met with the Swan River First Nation for a technical meeting to discuss watercourse crossings and issues and concerns raised by the Nation in their ATK study report and to address inquiries made by the Nation and Management Solutions in Environmental Science (MSES) personnel in a report prepared by MSES for the Nation, which was filed with the JRP as part of the Nation's evidence. Northern Gateway's team, including members of its engineering and environment team, addressed questions about detailed routing, route revisions, the nature of the 1km pipeline corridor, the completion of fieldwork studies, the involvement of Aboriginal groups in baseline studies, the use of ATK study information in determining the pipeline route, watercourse crossings, the potential effects of the Project on fish habitat and mitigation measures contemplated if there is disturbance in fish habitat. Northern Gateway also explained the detailed routing process. Swan River First Nation asked if Northern

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Gateway will be bringing Aboriginal people out to view the proposed watercourse crossings and Northern Gateway indicated that there is a plan to have representatives from Aboriginal groups walk the pipeline route and view the proposed watercourse crossings. Northern Gateway also advised the Nation that they may forward any additional concerns they may have following the meeting to Northern Gateway. Northern Gateway also indicated that it has committed to developing and implementing a Pipeline Environmental Effects Monitoring Program. Northern Gateway also committed to providing information relating to sensitive watercourse crossings, the Pine River spill, participation in Northern Gateway fieldwork and Section 11 of Volume 6A of the Application (Freshwater Fish and Fish Habitat), as well as the response to Haisla Nation IR 2.46. The representative from MSES requested a copy of Northern Gateway's technical presentation and Northern Gateway provided a copy of the presentation to MSES and Swan River First Nation. The Nation indicated they would follow-up with Northern Gateway regarding ATK study information in relation to the Pipeline Environmental Effects Monitoring Program.

During August 2012, Northern Gateway was in contact with the Swan River First Nation to provide information on the "Workforce Connections" event and an invitation to attend the event.

In September 2012, Northern Gateway contacted the Swan River First Nation as follow-up to the July 2012 technical meeting and provided information about sensitive watercourse crossings, the Pine River spill, participation in Northern Gateway fieldwork and Section 11 of Volume 6A of the Application (Freshwater Fish and Fish Habitat), as well as the response to Haisla Nation IR 2.46. Subsequently, Swan River First Nation legal counsel contacted Northern Gateway and requested that Northern Gateway resend the letter and attachments and requested to be copied on all correspondence to Swan River First Nation.

Northern Gateway also informed Swan River First Nation that despite Northern Gateway's best efforts to receive a response from Swan River First Nation relating to the Aboriginal Ownership Agreement, which included an equity participation component, the deadline respecting the offer of equity participation had passed and was no longer available to the Nation.

In addition to the engagement activities summarized above, Northern Gateway continues to notify the Swan River First Nation of updates and supplementary information filed with the JRP relating to the Project's regulatory application.

#### **5.4.1.3 Driftpile First Nation**

During July 2012, the Driftpile First Nation sent correspondence to Northern Gateway advising that they would follow-up with Northern Gateway in August to make meeting arrangements. In addition, the Driftpile First Nation provided authorization to Northern Gateway to use the Driftpile First Nation ATK study final report. Northern Gateway responded by inquiring about the ATK study issues summary table.

In August 2012, Northern Gateway received the Driftpile First Nation ATK study issues summary table. Northern Gateway also sent an invitation to Driftpile First Nation to participate in the "Workforce Connections" event.

During early September 2012, Driftpile First Nation's legal counsel informed Northern Gateway that a letter from Driftpile First Nation would be forthcoming. Subsequently, Driftpile sent correspondence to confirm meeting arrangements. Northern Gateway and Driftpile First Nation met to discuss general



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Project matters, as well as potential areas of shared interest in the Project. During the meeting Northern Gateway provided, among other things, information on the JRP process and its views of Driftpile First Nation's request for confidential and without prejudice discussions.

In October 2012, Driftpile First Nation contacted Northern Gateway to receive an update on the status of Northern Gateway's deliberations following the September meeting.

In early November, Northern Gateway provided a written response to the Driftpile First Nation including a proposed go-forward approach to guide discussions surrounding Project opportunities and issues and concerns raised by the Driftpile First Nation.

In addition to the engagement activities summarized above, Northern Gateway continues to notify the Driftpile First Nation of updates and supplementary information filed with the JRP relating to the Project's regulatory application.

#### **5.4.1.4 Kapawe'no First Nation**

During August 2012, Northern Gateway contacted the Kapawe'no First Nation to discuss receiving authorization to use the Kapawe'no First Nation ATK study report.

In September 2012, Northern Gateway had discussions with Kapawe'no First Nation regarding meeting arrangements to discuss Project opportunities and next steps. Subsequently, Northern Gateway met with the Kapawe'no First Nation to provide a Project update and determine next steps for business, employment and training opportunities discussions.

In October 2012, Northern Gateway was in discussions with the Kapawe'no First Nation to make meeting arrangements to discuss employment, training and business opportunities.

In early November 2012, Northern Gateway, including the Vice President of Aboriginal and Stakeholder Relations and members of the business, employment and training team met with the Sawridge First Nation and the Kapawe'no First Nation to provide a Project update and discuss business, employment and training opportunities. Kapawe'no and the Sawridge First Nations provided information relating to the Nations' Joint Venture partnerships and their business capacity. Northern Gateway provided information on the environmental stewardship initiative and business procurement and employment training opportunities. Northern Gateway's business, employment and training team member committed to attending a community meeting later in November.

In addition to the engagement activities summarized above, Northern Gateway continues to notify the Kapawe'no First Nation of updates and supplementary information filed with the JRP relating to the Project's regulatory application.

#### **5.4.1.5 Sucker Creek (Sucker Creek First Nation)**

During September 2012, Northern Gateway had discussions with the Sucker Creek First Nation regarding meeting arrangements to discuss Project benefit opportunities and a go forward approach.

In October 2012, Northern Gateway continued discussions with the Sucker Creek First Nation regarding meeting arrangements to discuss the introduction of the employment and training discipline, to obtain

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clarity on the point of contact for the Sucker Creek First Nation and to receive information regarding a potential training proposal. Northern Gateway and Sucker Creek First Nation also discussed a Project technical meeting for the Sucker Creek First Nation Prince George members who participated in the Sucker Creek First Nation ATK study. In late October, Northern Gateway confirmed a meeting with Sucker Creek First Nation for November 9. Later in October, the Sucker Creek First Nation participated in the Peace Country CAB meeting held in Grande Prairie.

In addition to the engagement activities summarized above, Northern Gateway continues to notify the Sucker Creek First Nation of updates and supplementary information filed with the JRP relating to the Project's regulatory application.

#### **5.4.2 Métis Nation of Alberta Region 5**

In October 2012, the Métis Nation of Alberta Region 5 (MNA Region 5) participated in the Alberta Central CAB meeting held in Edmonton.

In addition to the engagement activities summarized above, Northern Gateway continues to notify the MNA Region 5 of updates and supplementary information filed with the JRP relating to the Project's regulatory application.

#### **5.4.3 Western Cree Tribal Council**

The Western Cree Tribal Council consists of three Nations:

- Sturgeon Lake Cree Nation
- Duncan's First Nation
- Horse Lake First Nation

Northern Gateway is directly engaged with the three Nations on an individual basis.

##### **5.4.3.1 Sturgeon Lake Cree Nation**

In July 2012, Northern Gateway and Sturgeon Lake Cree Nation were in contact a few times regarding the costs associated with a community meeting that occurred in June 2012.

In August 2012, Northern Gateway and Sturgeon Lake Cree Nation were in contact many times to discuss topics such as the Nation's ATK study, a training proposal, employment and business opportunities, capacity funding and costs associated with a community meeting that occurred in June 2012. The Nation also requested electronic Project mapping specific to the Nation's traditional territory. Northern Gateway subsequently provided an electronic map to the Nation. Regarding the training proposal, the Nation indicated that they were not ready to move forward as anticipated and they would notify Northern Gateway when they were ready to do so. The parties also agreed to meet in the future to discuss capacity funding. In addition, Northern Gateway and Sturgeon Lake Cree Nation continued with discussions regarding the costs associated with a community meeting that occurred in June 2012.

In September 2012, Northern Gateway and Sturgeon Lake Cree Nation were in contact a few times to make meeting arrangements and met on two occasions. On the first occasion, Northern Gateway and

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Sturgeon Lake Cree Nation met to discuss the status of the training and skills development initiatives that Northern Gateway and the Nation were developing. Northern Gateway also provided information on the changing roles of some members of Northern Gateway's Aboriginal Relations team. On the second occasion, Northern Gateway and Sturgeon Lake Cree Nation met to discuss changes to the Nation's engagement team, as well as a process for future engagement with the Nation. Subsequently, the Nation advised Northern Gateway that the Sturgeon Lake Cree Nation Chief and Council would be Northern Gateway's point of contact. In late September 2012, the parties were in contact to arrange a meeting for the middle of October 2012.

In October 2012, Northern Gateway and Sturgeon Lake Cree Nation were in contact and met on one occasion. Northern Gateway, through correspondence, provided the Nation with an overview and update on the development of skills, employment and training initiatives related to the Nation. Northern Gateway also informed Sturgeon Lake Cree Nation of a funding initiative titled "Careers In Motion" that the Government of Alberta is interested in pursuing for the benefit of the Sturgeon Lake Cree Nation. Northern Gateway and Sturgeon Lake Cree Nation also met during the latter part of October 2012 to discuss topics such as skills, training and employment initiatives, business opportunities and capacity funding. Northern Gateway also provided a Project update, including an update on the status of the JRP regulatory hearings. The Nation raised concerns regarding the recent earthquake in British Columbia and the possible effects of an earthquake on the Project. Northern Gateway advised the Nation that Northern Gateway has committed to additional funds of several hundred million dollars, to further enhance the safety of an already very safe proposed Project design and confirmed that the magnitude and general location of the recent earthquake in Haida Gwaii had been anticipated in the Project design. The Nation also mentioned the importance of taking people out to the proposed Project area for a first hand view of the region and Northern Gateway advised that more tours of the proposed Project area are contemplated in the future. The Nation also confirmed their point of contact for business opportunities and another for skills, employment and training initiatives.

The Sturgeon Lake Cree Nation also participated in the CAB meetings in October 2012.

In addition to the engagement activities summarized above, Northern Gateway continues to notify the Sturgeon Lake Cree Nation of updates and supplementary information filed with the JRP relating to the Project's regulatory application.

#### **5.4.3.2 Duncan's First Nation**

During July 2012, Northern Gateway attempted to contact the Duncan's First Nation several times to discuss the Duncan's First Nation ATK study.

In August 2012, Northern Gateway contacted Duncan's First Nation to follow-up on the June letter requesting authorization to use the Nation's ATK study final report and to discuss meeting arrangements. Additionally, the Duncan's First Nation requested GIS mapping assistance for its ATK study data.

In September 2012, Northern Gateway completed mapping developed from GIS data provided by the Duncan's First Nation. The mapping was then provided electronically to the Duncan's First Nation. Northern Gateway continued attempts to arrange a meeting with Duncan's First Nation.

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In October 2012, Northern Gateway was invited to the Duncan's First Nation Industry Meet and Greet Session and Business Forum. Northern Gateway was unfortunately unable to attend the event. Duncan's First Nation contacted Northern Gateway in October to provide a copy of Duncan's First Nation media release relating to the Nation's concerns with respect to recent pipeline related incidents in Duncan's First Nation's traditional territory. The media release expressed Duncan's First Nation's desire for more stringent safety regulations for the industry by the province. In late October, Northern Gateway mailed two copies of the ATK study maps that were developed for Duncan's First Nation in September 2012.

In addition to the engagement activities summarized above, Northern Gateway continues to notify the Duncan's Cree Nation of updates and supplementary information filed with the JRP relating to the Project's regulatory application.

#### **5.4.3.3 Horse Lake First Nation**

During July 2012, Northern Gateway was in contact with the Horse Lake First Nation to provide requested GIS mapping assistance for the Horse Lake First Nation's ATK study. Northern Gateway was also in contact with Horse Lake First Nation regarding SWAT fieldwork participation that was scheduled for late July 2012 and early August 2012 in the Grande Prairie region.

In August 2012, the Horse Lake First Nation participated in SWAT fieldwork for the proposed Bald Mountain Creek, Calahoo Creek and South Redwillow River crossings. Northern Gateway also continued to be in contact with Horse Lake First Nation with respect to the Nation's ATK study GIS mapping request.

In September, Northern Gateway completed mapping developed from GIS data provided in the Horse Lake First Nation ATK study. The mapping was then made available electronically to the Horse Lake First Nation. Northern Gateway was also in contact with the Horse Lake First Nation to arrange meetings for early October 2012.

In early October 2012, Northern Gateway met with Horse Lake First Nation to provide an update and discuss meeting arrangements for a November meeting with Northern Gateway Vice President, Aboriginal and Stakeholder Relations and Horse Lake First Nation leadership to discuss Project benefits. In late October, Northern Gateway and the Horse Lake First Nation met in preparation for the upcoming meeting and to address any issues and concerns. The Horse Lake First Nation raised issues identified in their ATK study final report and Northern Gateway indicated a process for following up on site specific issues. The Horse Lake First Nation also provided a change in point of contact for business opportunity discussions and requested information relating to previous discussions between the former Horse Lake First Nation point of contact and Northern Gateway.

During early November 2012, Northern Gateway, including the Vice President, Aboriginal and Stakeholder Relations met with the Horse Lake First Nation to discuss a Project update, next steps to address the ATK study final report, environmental stewardship and next steps relating to employment, training and business opportunity discussions. Northern Gateway provided information relating to mitigation of the caribou herd issue identified in the Horse Lake First Nation ATK study final report. Northern Gateway committed to providing a technical meeting in the near future.

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In addition to the engagement activities summarized above, Northern Gateway continues to notify the Horse Lake First Nation of updates and supplementary information filed with the JRP relating to the Project's regulatory application.

#### **5.4.4 Aseniwuche Winewak Nation**

During early July 2012, the Aseniwuche Winewak Nation followed-up from the June meeting with Northern Gateway and provided direction on how the Aseniwuche Winewak Nation ATK study final report is to be used for the Project.

In addition to the engagement activities summarized above, Northern Gateway continues to notify the Aseniwuche Winewak Nation of updates and supplementary information filed with the JRP relating to the Project's regulatory application.

#### **5.4.5 Nose Creek Settlement**

During July 2012, Northern Gateway met with Nose Creek Settlement to provide a Project update, to discuss the employment and training strategy and next steps for a meeting to discuss Project mitigation measures. Nose Creek Settlement expressed interest in training programs for environmental monitoring.

In October 2012, the Nose Creek Settlement participated in the Peace Country CAB meeting held in Grande Prairie.

In addition to the engagement activities summarized above, Northern Gateway continues to notify the Nose Creek Settlement of updates and supplementary information filed with the JRP relating to the Project's regulatory application.

#### **5.4.6 Métis Nation of Alberta Region 6 (Region VI Regional Council, Métis Nation of Alberta)**

During July 2012, Northern Gateway was in contact with the Métis Nation of Alberta Region 6 (Region VI Regional Council, Métis Nation of Alberta) (MNA Region 6) to offer an invitation to participate in the SWAT fieldwork that was scheduled for late July 2012 and early August 2012 in the Grande Prairie region. The MNA Region 6 declined the offer.

In August 2012, Northern Gateway was in contact with the MNA Region 6 to discuss their ATK final report. Northern Gateway and the MNA Region 6 also discussed the Economic Participation LOI and the next steps with the MNA. Northern Gateway requested Stantec to work with the MNA Region 6 to complete the ATK study final report.

In September 2012, Northern Gateway contacted the MNA Region 6 and requested an update as to when Northern Gateway would receive the MNA Region 6 final ATK study report.

During October 2012, the MNA Region 6 submitted a report to Northern Gateway that provided a summary of the June 2012 fieldwork undertaken for the MNA Region 6 ATK study. Subsequently, Northern Gateway followed-up with the MNA Region 6 to obtain a status update on when Northern Gateway could expect the MNA Region 6 final ATK study report. MNA Region 6 left a message, to which Northern Gateway will follow-up. In late October, MNA Region 6, including Valleyview Métis

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Local #1929, Grande Prairie Métis Local #1990 and Fairview Métis Local #207, participated in the Alberta Peace Country CAB meeting held in Grande Prairie.

In addition to the engagement activities summarized above, Northern Gateway continues to notify the MNA Region 6 of updates and supplementary information filed with the JRP relating to the Project's regulatory application.

#### **5.4.7 Valleyview Métis Local #1929**

Northern Gateway is currently engaging the Valleyview Métis Local #1929 through the MNA Region 6. Northern Gateway is willing to meet directly with the Valleyview Métis Local #1929 upon request.

In addition to the engagement activities summarized above, Northern Gateway continues to notify the MNA Region 6 with copies to the of updates and supplementary information filed with the JRP relating to the Project's regulatory application, with copies to Valleyview Métis Local #1929.

#### **5.4.8 Grande Prairie Métis Local #1990**

Northern Gateway is currently engaging the Grande Prairie Métis Local #1990 through the MNA Region 6. Northern Gateway is willing to meet directly with the Grande Prairie Métis Local #1990 upon request.

In addition to the engagement activities summarized above, Northern Gateway continues to notify the MNA Region 6 with copies to the of updates and supplementary information filed with the JRP relating to the Project's regulatory application with copies to Grande Prairie Métis Local #1990.

#### **5.4.9 East Prairie Métis Settlement**

During July 2012, Northern Gateway was in contact with the East Prairie Métis Settlement to provide potential meeting dates for a technical meeting, which would be attended by one of Northern Gateway's team members overseeing engineering matters. A technical meeting took place in mid-July and included a Project update, a regulatory update, a presentation on watercourse crossings methods, a presentation on Northern Gateway's employment and training strategy and information on Project filings specific to JRP IR 10.10 and 5.9. Northern Gateway also provided East Prairie Métis Settlement with a large Project map and discussed how Northern Gateway incorporates information from ATK studies in the planning and design of the Project. Northern Gateway also responded to questions and concerns from East Prairie Métis Settlement relating to the Project RoW, reclamation in relation to vegetation, pipe material, potential effects of forest fires on the RoW and the Smokey, Athabasca, and North Saskatchewan Rivers watercourse crossing methods.

East Prairie Métis Settlement expressed concerns relating to potential Project effects on their traditional land use, including dependence on the East Prairie river, hunting and harvesting areas (areas were not defined) and twenty-one sites identified as potential sites affected by the proposed Project.

Northern Gateway concluded the meeting by expressing appreciation for the issues and concerns raised by the East Prairie Métis Settlement and encouraged the East Prairie Métis Settlement to consider Northern Gateway's ATK study offer. Northern Gateway also stressed its continued desire to understand



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the issues and concerns of the East Prairie Métis Settlement in relation to potential Project effects on the community and discuss the Project mitigation measures.

In October 2012, Northern Gateway and the East Prairie Métis Settlement were in contact several times regarding an ATK study work plan, budget and time lines for completion of their study. During late October, Northern Gateway and the East Prairie Métis Settlement mutually agreed to move forward with the ATK study. As follow-up, Northern Gateway sent an ATK study letter of approval to East Prairie Métis Settlement and offered to host a community meeting to provide a Project presentation, to review of JRP IR 5.9 and 10.10 and to listen to the community members' concerns and responses related to the proposed Project.

In addition to the engagement activities summarized above, Northern Gateway continues to notify the East Prairie Métis Settlement of updates and supplementary information filed with the JRP relating to the Project's regulatory application.

## **5.5 Northeast British Columbia Region**

### **5.5.1 Kelly Lake Cree Nation**

During July 2012, Northern Gateway met with the Kelly Lake Cree Nation to provide a copy of a Project construction oriented LOI and to seek input from the Kelly Lake Cree Nation. The Kelly Lake Cree Nation provided information relating to the Nation's corporation and interests relating to Project benefits.

In September 2012, Northern Gateway met with the Kelly Lake Cree Nation to review and seek input from the Kelly Lake Cree Nation relating to the LOI. Subsequently, Northern Gateway and the Kelly Lake Cree Nation executed the LOI. Northern Gateway also provided information relating to job opportunities and training and business joint ventures. Northern Gateway introduced the lead for the Project Employment and Training Strategy.

In October 2012, Northern Gateway contacted the Kelly Lake Cree Nation to make meeting arrangements. In late October, a Kelly Lake Cree Nation trapper participated in the Peace Country CAB held in Grande Prairie.

In addition to the engagement activities summarized above, Northern Gateway continues to notify the Kelly Lake Cree Nation of updates and supplementary information filed with the JRP relating to the Project's regulatory application.

### **5.5.2 Kelly Lake First Nation**

During July 2012, Northern Gateway met with the Kelly Lake First Nation to provide a Project update and approach for ongoing engagement. Northern Gateway also requested a response to its request for authorization to use the Kelly Lake First Nation ATK study final report. The Kelly Lake First Nation expressed interest in working with other Aboriginal groups on Joint Venture project opportunities and a community meeting in the future to discuss project related matters.

In September 2012, Northern Gateway made attempts to contact the Kelly Lake First Nation to make meeting arrangements and subsequently, met to discuss potential dates for a community meeting in the

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near future to provide information regarding employment, training and business opportunity discussions. The Kelly Lake First Nation expressed specific interest relating to brush clearing project opportunities and responded to Northern Gateway's request for authorization to use of the Kelly Lake First Nation ATK study final report.

In October 2012, the Kelly Lake First Nation participated in the Peace Country CAB held in Grande Prairie.

In addition to the engagement activities summarized above, Northern Gateway continues to notify the Kelly Lake First Nation of updates and supplementary information filed with the JRP relating to the Project's regulatory application.

#### **5.5.3 Kelly Lake Métis Settlement Society**

During July 2012, Northern Gateway contacted the Kelly Lake Métis Settlement Society by phone and requested a meeting. Northern Gateway also informed the Kelly Lake Métis Settlement Society that the mailing address, previously provided by the Kelly Lake Métis Settlement Society was invalid. Lastly, Northern Gateway expressed concern over the many attempts to offer to meet and Kelly Lake Métis Settlement Society's non-response to those offers. Northern Gateway's offer to meet with the Kelly Lake Métis Settlement Society remains open and Northern Gateway is always open to continuing to engage with Kelly Lake Métis Settlement Society to the extent that the Kelly Lake Métis Settlement Society is reciprocally interested and willing.

In addition to the engagement activities summarized above, Northern Gateway continues to notify the Kelly Lake Métis Settlement Society of updates and supplementary information filed with the JRP relating to the Project's regulatory application.

#### **5.5.4 Treaty 8 Tribal Association**

The Treaty 8 Tribal Association has yet to reply to Northern Gateway's repeated requests for clarification regarding its interest in undertaking a TLU study. Northern Gateway continues to notify the Treaty 8 Tribal Association of updates and supplementary information filed with the JRP relating to the Project's regulatory application. Northern Gateway will continue to keep the Treaty 8 Tribal Association apprised of Project related information and remains open to continuing to engage with the Treaty 8 Tribal Association in Project dialogue, to the extent that the Treaty 8 Tribal Association is reciprocally interested and willing. In parallel, Northern Gateway continues to engage on an individual basis with the Treaty 8 Tribal Association member First Nations discussed below.

##### **5.5.4.1 Saulteau First Nations**

In July 2012, Northern Gateway contacted the Saulteau First Nations in regard to upcoming SWAT fieldwork which would be taking place in their traditional territory. No response has been received by Northern Gateway in connection with this correspondence.

In August 2012, Northern Gateway invited the Saulteau First Nations to send youth attendees to the Greater Strides Hockey Academy being held in Prince George, British Columbia. The Saulteau First

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Nations responded and confirmed that they had ten youth who could attend the Greater Strides Hockey Academy.

In September 2012, Northern Gateway contacted the Saluteau First Nations to invite them to attend a luncheon with guest speaker Peter Tertzakian. Mr. Tertzakian is the Chief Energy Economist and Managing Director at ARC Financial Corporation, which is the largest private investor in the Canadian energy industry. No response was received by Northern Gateway in connection with this invitation.

Northern Gateway remains interested in and committed to funding a Saaluteau First Nations-specific ATK study, as offered on numerous occasions. Northern Gateway has not received a reply from the Saaluteau First Nations regarding this offer.

In addition to the engagement activities summarized above, Northern Gateway continues to notify the Saaluteau First Nations of updates and supplementary information filed with the JRP relating to the Project's regulatory application.

#### **5.5.4.2 West Moberly First Nations**

In July 2012, Northern Gateway forwarded the letter of response it received from the Government of Canada regarding Northern Gateway's letter dated May 29, 2012 and the West Moberly First Nations' TLE claim. The May 29, 2012 letter was sent at the request of the West Moberly First Nations and sought a timely resolution to the West Moberly First Nations' TLE negotiations. Also, in July 2012, Northern Gateway sent congratulatory correspondence to the Chief regarding his re-election.

In late July 2012, Northern Gateway sent correspondence to the West Moberly First Nations regarding their interest in potentially locating a pump station on lands located within their traditional territory. Northern Gateway also sent correspondence regarding the potential for West Moberly First Nations involvement in upcoming SWAT fieldwork in their traditional territory.

In August 2012, Northern Gateway invited the West Moberly First Nations to send youth attendees to the Greater Strides Hockey Academy being held in Prince George, British Columbia.

In September 2012, Northern Gateway received correspondence from the West Moberly First Nations inquiring about the SWAT fieldwork activities in their traditional territory. Northern Gateway replied by advising that the summer SWAT fieldwork sessions had already taken place; however, additional SWAT fieldwork was anticipated and the West Moberly First Nations would be invited to participate in this future work. In mid-September 2012, Northern Gateway met with the West Moberly First Nations to discuss potential economic development and procurement opportunities arising in connection with the Project.

In October 2012, Northern Gateway met with Dunne-za Ventures Limited Partnership, which is a West Moberly First Nations wholly-owned, economic development management company. The purpose of the meeting was for the parties to develop a better understanding of each others' potential demand and supply needs associated with the proposed Project.

In addition to the engagement activities summarized above, Northern Gateway continues to notify the West Moberly First Nations of updates and supplementary information filed with the JRP relating to the Project's regulatory application.

## 5.6 Central British Columbia Region

### 5.6.1 McLeod Lake (McLeod Lake Indian Band)

The McLeod Lake Indian Band has not been actively engaged in discussions or communications with Northern Gateway since May 2012, when four members of the McLeod Lake Indian Band and Northern Gateway executives met in Vancouver to discuss potential employment, training, and procurement opportunities which could be made available to the McLeod Lake Indian Band following issuance of a Project certificate.

Although the McLeod Lake Indian Band is not actively engaged in dialogue with respect to the Project, it is worth noting that Summit Pipeline Services Ltd., which is owned by the McLeod Lake Indian Band, continues to conduct work for Enbridge. Through its relationship with Enbridge, Summit Pipeline Services Inc. is well-positioned to secure an aggregate of approximately \$20,000,000 worth of work on Enbridge's existing oil and gas transmission system in 2012.

Northern Gateway continues to notify the McLeod Lake Indian Band of updates and supplementary information filed with the JRP relating to the Project's regulatory application. Northern Gateway will continue to keep the McLeod Lake Indian Band apprised of Project related information and remains open to continuing to engage with the McLeod Lake Indian Band in Project dialogue, to the extent that the McLeod Lake Indian Band is reciprocally interested and willing.

### 5.6.2 Lheidli T'enneh First Nation (Lheidli T'enneh Band)

In July 2012, Northern Gateway met with the Lheidli T'enneh First Nation to discuss a preliminary overview of the Project application for temporary land tenures from the Province of British Columbia for undertaking geotechnical field investigations along the proposed Project route. The Lheidli T'enneh First Nation advised they were pleased with the early outreach, and especially the potential employment and support requirements which might be available to the Lheidli T'enneh First Nation from their participation in the geotechnical field investigation work. Also in July 2012, Northern Gateway sent correspondence to the Lheidli T'enneh First Nation advising that the Executive Vice President of Western Access, Janet Holder, would be available to meet with them to discuss the Project. In late July 2012, Northern Gateway sent information to the Lheidli T'enneh First Nation regarding upcoming SWAT fieldwork in their traditional territory.

In August 2012, Northern Gateway invited the Lheidli T'enneh First Nation to send youth attendees to the Greater Strides Hockey Academy being held in Prince George, British Columbia. The Lheidli T'enneh First Nation responded and confirmed that they had two youth who could attend the Greater Strides Hockey Academy. Also, in August 2012, Northern Gateway followed up with the Lheidli T'enneh First Nation regarding upcoming SWAT fieldwork activities in Lheidli T'enneh First Nation traditional territory.

In mid-August 2012, Northern Gateway received correspondence from the Lheidli T'enneh First Nation requesting their participation in a community information session regarding pipeline development within their traditional territory. On the same date, the Lheidli T'enneh First Nation sent a request to the Project that Janet Holder attend the upcoming community pipeline information session. In late August 2012,

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Northern Gateway representatives, including Janet Holder, attended the Lheidli T'enneh First Nation community pipeline information session in Prince George, British Columbia, and presented information on the proposed Project.

In late August 2012, the Lheidli T'enneh First Nation sent a letter to Northern Gateway inviting Northern Gateway to attend their 2012 AGM in Prince George, British Columbia, and requested sponsorship of the event. Also, in late August 2012, Northern Gateway received correspondence from the Lheidli T'enneh First Nation regarding their community's new Economic Development Department and Diversification Plan, requesting that the Project become a partner in the initiative.

In September 2012, Northern Gateway confirmed its participation in and sponsorship of the Lheidli T'enneh First Nation's 2012 AGM, which it attended. Northern Gateway met with Lheidli T'enneh First Nation community members at the AGM and provided Project information.

In mid-September 2012, Northern Gateway sponsored Lheidli T'enneh First Nation representatives to participate in the Guiding Circles Facilitator Training Workshop in Prince George, British Columbia.

In late September 2012, the Lheidli T'enneh First Nation met with Northern Gateway in Vancouver to discuss the terms of a proposed Lheidli T'enneh First Nation Economic Development Diversification Department agreement with Northern Gateway.

In October 2012, at the invitation of Northern Gateway, two representatives of the Lheidli T'enneh First Nation attended the British Columbia Chamber of Commerce's Energy Summit held in Vancouver, British Columbia.

In addition to the engagement activities summarized above, Northern Gateway continues to notify the Lheidli T'enneh First Nation of updates and supplementary information filed with the JRP relating to the Project's regulatory application.

### **5.6.3 Carrier-Sekani Tribal Council**

During the Update Period the Carrier-Sekani Tribal Council has not been actively engaged in discussions or communications with Northern Gateway.

Northern Gateway continues to notify the Carrier-Sekani Tribal Council of updates and supplementary information filed with the JRP relating to the Project's regulatory application. Northern Gateway will continue to keep the Carrier-Sekani Tribal Council apprised of Project related information and remains open to continuing to engage with the Carrier-Sekani Tribal Council in Project dialogue, to the extent that the Carrier-Sekani Tribal Council is reciprocally interested and willing. Northern Gateway also remains committed to meaningful engagement with the individual Carrier Sekani Tribal Council member First Nations whose individual traditional territories intersect the proposed Project corridor.

#### **5.6.3.1 Saik'uz First Nation**

In July 2012, Northern Gateway representatives visited the Saik'uz First Nation's band administration office to follow-up with the invitation extended by their Chief at the Enbridge 2012 AGM in Toronto, for Enbridge executives to visit the Saik'uz First Nation. Northern Gateway was advised that the Chief of the

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Saik'uz First Nation was unavailable to meet, but received confirmation of the Saik'uz First Nation's continued desire to hold a meeting between the parties.

Also, in July 2012, Northern Gateway received correspondence from a Yinka Dene Alliance representative requesting that its members be addressed as a collective. Northern Gateway advised by reply correspondence that it has been directly corresponding with the Saik'uz First Nation for some time in relation to their Chief's directive at the Enbridge AGM.

In September 2012, Northern Gateway sent follow-up correspondence to the Saik'uz First Nation seeking a response to Northern Gateway's repeated requests to arrange a meeting between Enbridge executives and the Saik'uz First Nation. To date, the Chief of the Saik'uz First Nation has not yet confirmed a specific meeting date.

Northern Gateway continues to notify the Saik'uz First Nation of updates and supplementary information filed with the JRP relating to the Project's regulatory application. Northern Gateway will continue to keep the Saik'uz First Nation apprised of Project related information and remains open to continuing to engage with the Saik'uz First Nation in Project dialogue, to the extent that the Saik'uz First Nation is reciprocally interested and willing.

#### **5.6.3.2 Nak'azdli Band**

In July 2012, Northern Gateway representatives visited the Nak'azdli Band's administration office to follow-up with the invitation extended by a Hereditary Chief of the Nak'azdli Band at both the Enbridge 2011 AGM in Calgary and the Enbridge 2012 AGM in Toronto, for Enbridge executives to meet with the Nak'azdli Band. The Nak'azdli Chief advised that he could not speak with Northern Gateway representatives without all of the Chiefs of the Yinka Dene Alliance being present.

Also, in July 2012, Northern Gateway received correspondence from the Yinka Dene Alliance requesting that its members be addressed as a collective. Northern Gateway replied that it has been directly corresponding with the Nak'azdli Band for some time in relation to their Chief's directive at the Enbridge AGM.

In August 2012, Northern Gateway sent a letter to follow-up with the Chief of the Nak'azdli Band on previous correspondence requesting to meet with the Nak'azdli Band Chief and Council regarding oral presentations made by the Daiya-Mattess Keyoh Holders located within Nak'azdli Band traditional territory. Northern Gateway advised that because it had not heard from the Nak'azdli Chief in connection with this request, it planned to meet directly with the Daiya-Mattess Keyoh Holders to discuss their recent oral presentations to the JRP.

In September 2012, a Northern Gateway representative visited the Nak'azdli Band office with the intention of discussing the Project. The Nak'azdli Chief advised that he could not speak with Northern Gateway representatives without all of the Chiefs of the Yinka Dene Alliance being present.

Also, in September 2012, Northern Gateway sent follow-up correspondence to the Nak'azdli Band seeking a response to Northern Gateway's repeated requests to arrange a meeting between Enbridge executives and the Nak'azdli Band. To date, the Chief of the Nak'azdli Band has not yet confirmed a specific meeting date.



Northern Gateway continues to notify the Nak'azdli Band of updates and supplementary information filed with the JRP relating to the Project's regulatory application. Northern Gateway will continue to keep the Nak'azdli Band apprised of Project related information and remains open to continuing to engage with the Nak'azdli Band in Project dialogue, to the extent that the Nak'azdli Band is reciprocally interested and willing.

### **5.6.3.3 Tl'azt'en Nation**

In August 2012, Northern Gateway offered to sponsor Tl'azt'en Nation representatives to participate in the Guiding Circles Facilitator Training Workshop in Prince George, British Columbia. Northern Gateway did not receive a response to this offer.

In September and October 2012, Northern Gateway invited Tl'azt'en Nation representatives to attend the BLWG meetings in Vancouver, British Columbia. Tl'azt'en Nation advised that they were unable to attend.

Northern Gateway continues to notify the Tl'azt'en Nation of updates and supplementary information filed with the JRP relating to the Project's regulatory application. Northern Gateway will continue to keep the Tl'azt'en Nation apprised of Project related information and remains open to continuing to engage with the Tl'azt'en Nation, to the extent that the Tl'azt'en Nation is reciprocally interested and willing.

### **5.6.3.4 Takla Lake First Nation**

In mid-July 2012, Northern Gateway received correspondence from the Yinka Dene Alliance, of which the Takla Lake First Nation is a member, requesting information regarding Northern Gateway's recent visits to the Nak'azdli Band and the Saik'uz First Nation. Northern Gateway promptly responded to the Yinka Dene Alliance, by way of reply letter, advising that the visits were initiated in order to follow-up on the Nak'azdli Band and the Saik'uz First Nation's request to meet with Enbridge's President and CEO, as the Project, to date, had not received a response.

Northern Gateway continues to notify the Takla Lake First Nation of updates and supplementary information filed with the JRP relating to the Project's regulatory application. Northern Gateway will continue to keep the Takla Lake First Nation apprised of Project related information and remains open to continuing to engage with the Takla Lake First Nation, to the extent that the Takla Lake First Nation is reciprocally interested and willing.

### **5.6.3.5 Nadleh Whut'en First Nation**

In mid-July 2012, Northern Gateway received correspondence from the Yinka Dene Alliance, of which the Nadleh Whut'en First Nation is a member, requesting information regarding Northern Gateway's recent visits to the Nak'azdli Band and the Saik'uz First Nation. Northern Gateway promptly responded to the Yinka Dene Alliance, by way of reply letter, advising that the visits were necessary in order to follow-up on the Nak'azdli Band and the Saik'uz First Nation's request to meet with Enbridge's President and CEO, as the Project, to date, had not received a response.

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Northern Gateway continues to notify the Nadleh Whut'en First Nation of updates and supplementary information filed with the JRP relating to the Project's regulatory application. Northern Gateway will continue to keep the Nadleh Whut'en First Nation apprised of Project related information and remains open to continuing to engage with the Nadleh Whut'en First Nation, to the extent that the Nadleh Whut'en First Nation is reciprocally interested and willing.

#### **5.6.3.6 Stellat'en First Nation**

In July 2012, Northern Gateway provided the Stellat'en First Nation with a copy of the scope of work proposed for SWAT fieldwork within the Stellat'en First Nation traditional territory in the latter part of the summer. The Stellat'en First Nation requested that the Project keep them updated on the SWAT fieldwork. The Stellat'en First Nation did not participate in this SWAT fieldwork.

Northern Gateway continues to notify the Stellat'en First Nation of updates and supplementary information filed with the JRP relating to the Project's regulatory application. Northern Gateway will continue to keep the Stellat'en First Nation apprised of Project related information and remains open to continuing to engage with the Stellat'en First Nation, to the extent that the Stellat'en First Nation is reciprocally interested and willing.

#### **5.6.3.7 Burns Lake Band (Ts'il Kaz Koh First Nation)**

In July 2012, Northern Gateway representatives provided the Burns Lake Band with a copy of the scope of work proposed for SWAT fieldwork within the Burns Lake Band traditional territory in the latter part of the summer. The Burns Lake Band responded and expressed interest in participating in the SWAT fieldwork.

In late July 2012, the Burns Lake Band and Northern Gateway representatives met to discuss potential business opportunities arising from the proposed Project and specifically to discuss a potential camp facility proposal.

In August 2012, the Burns Lake Band participated as observers in SWAT fieldwork within the Burns Lake traditional territory. Also, in August 2012, Northern Gateway invited the Burns Lake Band to send youth attendees to the Greater Strides Hockey Academy being held in Prince George, British Columbia.

In mid-August 2012, the Burns Lake Band contacted Northern Gateway to inform them that a Burns Lake Tragedy Fund had been established in response to the recent mill explosion in Burns Lake and requested a donation. Northern Gateway responded by providing financial assistance.

In September 2012, Northern Gateway sent correspondence to the Burns Lake Band reminding them to register for the Guiding Circles Facilitator Training Workshop to be held in Prince George, British Columbia. In mid-September 2012, Northern Gateway sent correspondence to the Burns Lake Band outlining the details of, and an agenda for, the upcoming BLWG meeting. Subsequently, a Burns Lake Band representative attended the BLWG meeting, which was held in Vancouver, and discussed topics including Northern Gateway communications, training and employment, economic development, and community investment.

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In late September 2012, Northern Gateway provided details to the Burns Lake Band regarding the upcoming Energy Summit and BLWG meeting.

In October 2012, Northern Gateway provided the Burns Lake Band with a copy of the application for funding for the Burns Lake Band Manufacturing Feasibility Study. In mid-October 2012, the Burns Lake Band met with Northern Gateway and Natural Resources Canada representatives to discuss the Burns Lake Band's Camp Manufacturing Proposal. At the invitation of Northern Gateway, the Burns Lake Band attended and actively participated in the British Columbia Chamber of Commerce Energy Summit held in Vancouver, British Columbia, and attended the BLWG meeting.

In late October 2012, Northern Gateway sent correspondence to the Burns Lake Band to discuss funding for the Camp Construction Facility Feasibility Study.

In addition to the engagement activities summarized above, Northern Gateway continues to notify the Burns Lake Band of updates and supplementary information filed with the JRP relating to the Project's regulatory application.

#### **5.6.3.8 Wet'suwet'en First Nation**

In mid July 2012, Northern Gateway received correspondence from the Yinka Dene Alliance, of which the Wet'suwet'en First Nation is a member, requesting information regarding Northern Gateway's recent visits to the Nak'azdli Band and the Saik'uz First Nation. Northern Gateway promptly responded to the Yinka Dene Alliance, by way of reply letter, advising that the visits were necessary in order to follow-up on the request to meet with Enbridge's President and CEO, as the Project, to date, had not received a response.

Northern Gateway continues to notify the Wet'suwet'en First Nation of updates and supplementary information filed with the JRP relating to the Project's regulatory Application. Northern Gateway will continue to keep the Wet'suwet'en First Nation apprised of Project related information and remains open to continuing to engage with the Wet'suwet'en First Nation in Project dialogue, to the extent that the Wet'suwet'en First Nation is reciprocally interested and willing.

#### **5.6.4 Yekooche (Yekooche First Nation)**

In July 2012, Northern Gateway met with the Yekooche First Nation to discuss a letter from the NTSB regarding the Enbridge incident in Marshall, Michigan, as well as upcoming SWAT fieldwork within the Yekooche First Nation traditional territory.

In August 2012, the Yekooche First Nation participated in SWAT fieldwork within the Yekooche First Nation traditional territory. Also, in August 2012, Northern Gateway invited the Yekooche First Nation to send youth attendees to the Greater Strides Hockey Academy being held in Prince George, British Columbia.

In mid August 2012, a Northern Gateway representative met with the Yekooche First Nation to discuss economic development, the BLWG, and employment and training.

In October 2012, Northern Gateway representatives met with the Yekooche First Nation to discuss their potential participation in the BLWG, as well as broader economic and employment opportunities. Also in

## Aboriginal Engagement Update

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October, at the invitation of Northern Gateway, the Yekooche First Nation attended the British Columbia Chamber of Commerce Energy Summit held in Vancouver, British Columbia.

In addition to the engagement activities summarized above, Northern Gateway continues to notify the Yekooche First Nation of updates and supplementary information filed with the JRP relating to the Project's regulatory application.

#### **5.6.5 Lake Babine Nation**

In mid-July 2012, Northern Gateway sent follow-up correspondence to the Lake Babine Nation requesting a meeting with Chief and Council.

In August 2012, Northern Gateway invited the Lake Babine Nation to participate in the Guiding Circles Facilitator Training Workshop in Prince George, British Columbia.

In mid-September 2012, a Northern Gateway representative met with the Lake Babine Nation to discuss the Lake Babine Nation's engagement in the Project. At this time, the Lake Babine Nation advised that they are no longer interested in communicating with anyone from Northern Gateway.

Northern Gateway continues to notify the Lake Babine Nation of updates and supplementary information filed with the JRP relating to the Project's regulatory application. Northern Gateway will continue to keep the Lake Babine Nation apprised of Project related information and remains open to continuing to engage with the Lake Babine Nation in Project dialogue, to the extent that the Lake Babine Nation is reciprocally interested and willing.

#### **5.6.6 Skin Tyee Nation**

In July 2012, Northern Gateway representatives provided the Skin Tyee Nation with a copy of the scope of work proposed for the latter part of the summer related to SWAT fieldwork within the Skin Tyee Nation traditional territory. The Skin Tyee Nation responded and expressed interest in participating in the SWAT fieldwork.

In early August 2012, the Skin Tyee Nation participated as observers in SWAT fieldwork within the Skin Tyee Nation traditional territory. Also, in August 2012, Northern Gateway invited the Skin Tyee Nation to send youth attendees to the Greater Strides Hockey Academy being held in Prince George, British Columbia.

In September 2012, Northern Gateway sponsored representatives from the Skin Tyee Nation to participate in the Guiding Circles Facilitator Training Workshop in Prince George, British Columbia. Also in September 2012, the Skin Tyee Nation attended the BLWG meeting which provided an overview of Northern Gateway's communications strategy, as well as an update on the JRP regulatory process.

In October 2012, Northern Gateway sponsored the participation of Skin Tyee Nation representatives in the British Columbia Chamber of Commerce Energy Summit held in Vancouver, British Columbia. Also, in October 2012, the Skin Tyee Nation attended the BLWG meeting which provided an update on Northern Gateway's education, training and skills development initiatives, as well as an overview of the upcoming fieldwork in the Burns Lake region.

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In addition to the engagement activities summarized above, Northern Gateway continues to notify Skin Tyee Nation of updates and supplementary information filed with the JRP relating to the Project's regulatory application.

#### **5.6.7 Nee-Tahi-Buhn (Nee-Tahi-Buhn Indian Band)**

In July 2012, Northern Gateway representatives provided the Nee-Tahi-Buhn Indian Band with a copy of the scope of work proposed for SWAT fieldwork within the Nee-Tahi-Buhn Indian Band traditional territory in the latter part of the summer. The Nee-Tahi-Buhn Indian Band responded and expressed interest in participating in the SWAT fieldwork.

In early August 2012, the Nee-Tahi-Buhn Indian Band participated as observers in SWAT fieldwork within the Nee-Tahi-Buhn Indian Band traditional territory. Also, in August 2012, Northern Gateway invited the Nee-Tahi-Buhn Indian Band to send youth attendees to the Greater Strides Hockey Academy being held in Prince George, British Columbia.

In September 2012, Northern Gateway sponsored representatives from the Nee-Tahi-Buhn Indian Band to participate in the Guiding Circles Facilitator Training Workshop in Prince George, British Columbia.

Also, in September 2012, the Nee-Tahi-Buhn Indian Band also attended the BLWG meeting which provided an overview of Northern Gateway's communications strategy, as well as an update of the JRP regulatory process.

In October 2012, Northern Gateway sponsored the participation of Nee-Tahi-Buhn Indian Band representatives in the British Columbia Chamber of Commerce Energy Summit held in Vancouver, British Columbia. Also, in October 2012, the Nee-Tahi-Buhn Indian Band attended the BLWG meeting which provided an update on Northern Gateway's education, training and skills development initiatives, as well as an overview of the upcoming fieldwork in the Burns Lake region.

In addition to the engagement activities summarized above, Northern Gateway continues to notify the Nee-Tahi-Buhn Indian Band of updates and supplementary information filed with the JRP relating to the Project's regulatory application.

#### **5.6.8 Cheslatta Carrier Nation**

In July 2012, Northern Gateway representatives provided Cheslatta Carrier Nation with a copy of the scope of work proposed for SWAT fieldwork within the Cheslatta Carrier Nation traditional territory in the latter part of the summer. The Cheslatta Carrier Nation responded and expressed interest in participating in the SWAT fieldwork.

In late July 2012, Northern Gateway met with Cheslatta Carrier Nation representatives to provide them with the completed digitized maps of the Cheslatta Carrier Nation's traditional territory, and to discuss the amendment to the protocol agreement between the two parties.

In early August 2012, the Cheslatta Carrier Nation participated as observers in SWAT fieldwork within the Cheslatta Carrier Nation traditional territory. Also, in August 2012, Northern Gateway invited the Cheslatta Carrier Nation to send youth attendees to the Greater Strides Hockey Academy being held in Prince George, British Columbia.

## Aboriginal Engagement Update

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In September 2012, Northern Gateway sponsored representatives from the Cheslatta Carrier Nation to participate in the Guiding Circles Facilitator Training Workshop in Prince George, British Columbia.

Also, in September 2012, the Cheslatta Carrier Nation attended the BLWG meeting which provided an overview of Northern Gateway's communications strategy, as well as an update of the JRP regulatory process.

In October 2012, Northern Gateway sponsored the participation of Cheslatta Carrier Nation representatives in the British Columbia Chamber of Commerce Energy Summit held in Vancouver, British Columbia. Also, in October 2012, the Cheslatta Carrier Nation attended the BLWG meeting which provided an update on Northern Gateway's education, training and skills development initiatives, as well as an overview of the upcoming fieldwork in the Burns Lake region.

In addition to the engagement activities summarized above, Northern Gateway continues to notify the Cheslatta Carrier Nation of updates and supplementary information filed with the JRP relating to the Project's regulatory application.

## **5.7 Northwest British Columbia**

### **5.7.1 Office of the Wet'suwet'en**

In September 2012, Northern Gateway sent correspondence to the Office of the Wet'suwet'en following up on previous correspondence and offers to continue to engage the Office of the Wet'suwet'en to the extent that the Office of the Wet'suwet'en is reciprocally interested and willing. Also, Northern Gateway expressed interest in meeting with the Office of the Wet'suwet'en to better understand their reasons for filing a motion with the JRP in August 2012, requesting the removal of a portion of Northern Gateway's Aboriginal Engagement Reply and Update. To date, no response has been received by Northern Gateway in connection with this correspondence. Further to this correspondence, Northern Gateway left the Office of the Wet'suwet'en a voicemail message offering to meet and discuss the matters raised in its most recent correspondence to the Office of the Wet'suwet'en.

Northern Gateway continues to notify the Office of the Wet'suwet'en of updates and supplementary information filed with the JRP relating to the Project's regulatory application. Northern Gateway will continue to keep the Office of the Wet'suwet'en apprised of Project related information and remains open to continuing to engage with the Office of the Wet'suwet'en in Project dialogue, to the extent that the Office of the Wet'suwet'en is reciprocally interested and willing.

### **5.7.2 Gitksan Hereditary Chiefs**

In July 2012, Northern Gateway held a conference call with representatives from the Gitksan Development Corporation and Gitksan Energy Inc. to discuss a proposed protocol agreement and potential dates for a community meeting with the Gitksan Hereditary Chiefs. In late July 2012, Northern Gateway sent correspondence to the Gitksan Development Corporation and Gitksan Energy Inc. in follow-up to their recent conference confirming the next steps required to execute the proposed protocol agreement with the Gitksan Hereditary Chiefs.



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In August 2012, Northern Gateway invited the Gitksan Hereditary Chiefs to send youth attendees to the Greater Strides Hockey Academy being held in Prince George, British Columbia. The Gitksan Hereditary Chiefs responded and confirmed that they had 13 youth who could attend the Greater Strides Hockey Academy.

In September 2012, Northern Gateway met with two Gitksan Hereditary Chiefs in Kispiox Village to discuss opportunities for community investment and relationship building, including the funding of a significant cultural project and a series of proposed meetings with the Gitksan Hereditary Chiefs.

In October 2012, Northern Gateway received a request from the Gitksan Hereditary Chiefs to provide funding for their upcoming Gitksan Hereditary Chiefs 2012 Summit. Northern Gateway responded to this request and provided funding support for the event.

In late October 2012, Northern Gateway held a conference call with a Gitksan Hereditary Chief to discuss Peter Tertzakian's recent presentation to the Gitksan Hereditary Chiefs in Hazelton, British Columbia. The Chief explained that Mr. Tertzakian's presentation was well received and that he provided factual information on pipeline safety and transportation. Also, in late October 2012, Northern Gateway held a conference call with a Gitksan Hereditary Chief to discuss the funding of a proposed cultural project in Gitksan traditional territory.

In addition to the engagement activities summarized above, Northern Gateway continues to notify the Gitksan Hereditary Chiefs of updates and supplementary information filed with the JRP relating to the Project's regulatory application.

## **5.8 Métis Nation British Columbia**

In July 2012, Northern Gateway met with Métis Nation British Columbia representatives to discuss training and employment initiatives, and the possible funding of a Métis Nation British Columbia training, employment and construction liaison.

In August 2012, Northern Gateway invited the Métis Nation British Columbia to send youth attendees to the Greater Strides Hockey Academy being held in Prince George, British Columbia.

In August 2012, Northern Gateway received an invitation to attend the Métis Nation British Columbia 2012 AGM and Industry Engagement and Partnerships Open House.

In mid-September 2012, Northern Gateway sponsored Métis Nation British Columbia representatives to participate in the Guiding Circles Facilitator Training Workshop in Prince George, British Columbia.

In late September 2012, Northern Gateway attended the Métis Nation British Columbia's 2012 AGM and Industry Engagement and Partnerships Open House in Richmond, British Columbia.

In early October 2012, Northern Gateway received letter correspondence thanking Northern Gateway for its attendance and commitment to the Métis Nation British Columbia's 2012 AGM and Industry Engagement and Partnerships Open House. Also, in October 2012, Northern Gateway sponsored the participation of Métis Nation British Columbia representatives in the British Columbia Chamber of Commerce Energy Summit held in Vancouver, British Columbia.

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### Section 5: Engagement Updates

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In mid-October 2012, Northern Gateway met with the Métis Nation British Columbia to discuss the proposed protocol agreement. The Métis Nation British Columbia also requested Northern Gateway's assistance in providing Project materials to assist them in designing an internal communications plan. Later, in October 2012, Northern Gateway provided the Métis Nation British Columbia numerous links and copies of Project related materials in response to the Métis Nation British Columbia's request.

In addition to the engagement activities summarized above, Northern Gateway continues to notify the Métis Nation British Columbia of updates and supplementary information filed with the JRP relating to the Project's regulatory application.

#### **5.8.1 Prince George Métis Community Association**

See Métis Nation British Columbia summary.

#### **5.8.2 New Caledonia Métis Association (New Caledonia Métis Association [North Central Region])**

See Métis Nation British Columbia summary.

### **5.9 Coastal British Columbia Region**

#### **5.9.1 Kitsumkalum Band (Kitsumkalum First Nation)**

In July 2012, Northern Gateway sent follow-up correspondence to the Kitsumkalum Band Chief requesting that the parties work towards creating opportunities to continue discussions related to the Project. To date, no response has been received by Northern Gateway in connection with this correspondence.

Northern Gateway continues to notify the Kitsumkalum Band of updates and supplementary information filed with the JRP relating to the Project's regulatory application. Northern Gateway will continue to keep the Kitsumkalum Band apprised of Project related information and remains open to continuing to engage with the Kitsumkalum Band in Project dialogue, to the extent that the Kitsumkalum Band is reciprocally interested and willing.

#### **5.9.2 Kitselas (Kitselas First Nation)**

In July 2012, Northern Gateway representatives sent correspondence to the Kitselas First Nation requesting that they review and provide feedback on the draft Preliminary Kitimat River Drainage Area Emergency Preparedness Report. Also, in July 2012, Northern Gateway met with representatives from the Kitselas First Nation to provide an update on the Project and discuss an amendment to an existing agreement between the parties. At this meeting, Northern Gateway also provided numerous reports and updated filing information to the Kitselas First Nation.

In August 2012, Northern Gateway invited the Kitselas First Nation to send youth attendees to the Greater Strides Hockey Academy being held in Prince George, British Columbia. Also, in August 2012,

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Northern Gateway representatives left a voicemail and sent correspondence confirming the Kitselas First Nation's participation in upcoming SWAT fieldwork in their traditional territory.

In mid August 2012, Northern Gateway spoke with the Kitselas First Nation to confirm the community representatives who would potentially take part in the SWAT fieldwork occurring in Kitselas First Nation's traditional territory. Due to re-scheduling logistics, the Kitselas First Nation was unable to participate in the SWAT fieldwork.

In September 2012, Northern Gateway sent correspondence to the Kitselas First Nation, including electronic data files pertaining to the Project, pursuant to requests made at previous meetings.

In October 2012, Northern Gateway met with the Kitselas First Nation to discuss tunnel and surface site investigation fieldwork and to confirm the Kitselas First Nation's participation in this work. At this meeting, Northern Gateway advised that it would make two Banff Centre Scholarships focusing on Aboriginal leadership available to Kitselas First Nation members. Subsequently, the Kitselas First Nation participated in fieldwork related to tunnel and surface site investigation. In addition to including the Kitselas First Nation in this work, Northern Gateway has also provided resources for the Kitselas First Nation to undertake an independent assessment of the Northern Gateway Clore and Hoults tunnels and transmission corridor.

In addition to the engagement activities summarized above, Northern Gateway continues to notify the Kitselas First Nation of updates and supplementary information filed with the JRP relating to the Project's regulatory application. Northern Gateway continues to work with the Kitselas First Nation in support of their environmental assessment of the Project within Kitselas First Nation traditional territory.

#### **5.9.3 Kitamaat Village Council (Haisla Nation)**

In early July 2012, Northern Gateway received correspondence from the Haisla Nation regarding studies that address the Haisla Nation's Aboriginal interest and use. The Haisla Nation advised that supporting documents and relevant information could be found in the JRP evidence that was filed and provided specific references.

In July 2012, Northern Gateway received correspondence from the Haisla Nation regarding the parties' mutual interest in extending the Letter Agreement. Northern Gateway responded and requested meeting dates to discuss the proposed extension of the original Letter Agreement. Also, in July 2012, Northern Gateway requested that the Haisla Nation review and provide feedback on the draft Preliminary Kitimat River Drainage Area Emergency Preparedness Report.

In late July 2012, Northern Gateway advised the Haisla Nation of recent and upcoming filings with the JRP, and dropped off Project related materials and correspondence to the Haisla Nation.

In August 2012, a Haisla Nation representative participated in SWAT fieldwork which took place in Haisla Nation traditional territory. Also, in August 2012, Northern Gateway received correspondence from the Haisla Nation advising that the dates for upcoming SWAT fieldwork may need to be re-scheduled. Northern Gateway acknowledges and respects that participation in fieldwork does not constitute support for the Project.

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In mid-August 2012, Northern Gateway representatives met with the Haisla Nation to resolve the previously outstanding CMT issue and discuss an extension to the Letter Agreement. Also, in mid-August 2012, Northern Gateway attended an open house in Kitimat, British Columbia, where a Haisla Nation representative was present, to discuss issues including leak detection, pipeline integrity, emergency response, and local benefits.

In late August 2012, Northern Gateway received correspondence from the Haisla Nation confirming their stance in relation to Northern Gateway conducting SWAT fieldwork in their traditional territory. The Haisla Nation confirmed their participation in this SWAT fieldwork. Also, in late August 2012, Northern Gateway sent correspondence to the Haisla Nation addressing the extension of the Letter Agreement between the parties, and proposed agenda items for future meetings. The Haisla Nation responded and provided comments in connection with the proposed extension. Northern Gateway acknowledges and respects that participation in fieldwork does not constitute support for the Project.

In October 2012, Northern Gateway sent correspondence to the Haisla Nation apprising them of proposed due-diligence fieldwork activities which were anticipated to take place in Haisla Nation traditional territory. In mid-October 2012, Northern Gateway representatives sent follow-up correspondence to the Haisla Nation with specific information relating to upcoming due diligence fieldwork activities.

In late October 2012, the Haisla Nation participated in the observation of fieldwork related to tunnel and surface site investigation, which is part of the due diligence fieldwork activities recently discussed by the parties. Northern Gateway acknowledges and respects that participation in fieldwork does not constitute support for the Project.

In addition to the engagement activities summarized above, Northern Gateway continues to notify the Haisla Nation of updates and supplementary information filed with the JRP relating to the Project's regulatory application.

#### **5.9.4 Hartley Bay Band (Gitga'at Nation)**

During the Update Period the Gitga'at Nation has not been actively engaged in discussions or communications with Northern Gateway.

Northern Gateway continues to notify the Gitga'at Nation of updates and supplementary information filed with the JRP relating to the Project's regulatory application. Northern Gateway will continue to keep the Gitga'at Nation apprised of Project related information and remains open to continuing to engage with the Gitga'at Nation in Project dialogue, to the extent that the Gitga'at Nation is reciprocally interested and willing.

#### **5.9.5 Kitasoo/Xai'xais Nation**

During the Update Period the Xai'Xais Nation has not been actively engaged in discussions or communications with Northern Gateway.

Northern Gateway continues to notify the Xai'Xais Nation of updates and supplementary information filed with the JRP relating to the Project's regulatory application. Northern Gateway will continue to keep the Xai'Xais Nation apprised of Project related information and remains open to continuing to

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engage with the Xai'Xais Nation in Project dialogue, to the extent that the Xai'Xais Nation is reciprocally interested and willing.

#### **5.9.6 Heiltsuk Nation (Heiltsuk Tribal Council)**

During the Update Period the Heiltsuk Nation has not been actively engaged in discussions or communications with Northern Gateway.

Northern Gateway continues to notify the Heiltsuk Nation of updates and supplementary information filed with the JRP relating to the Project's regulatory application. Northern Gateway will continue to keep the Heiltsuk Nation apprised of Project related information and remains open to continuing to engage with the Heiltsuk Nation in Project dialogue, to the extent that the Heiltsuk Nation is reciprocally interested and willing.

#### **5.9.7 Gitxaala Nation (Kitkatla)**

During the Update Period the Gitxaala Nation has not been actively engaged in discussions or communications with Northern Gateway.

Northern Gateway continues to notify the Gitxaala Nation of updates and supplementary information filed with the JRP relating to the Project's regulatory application. Northern Gateway will continue to keep the Gitxaala Nation apprised of Project related information and remains open to continuing to engage with the Gitxaala Nation in Project dialogue, to the extent that the Gitxaala Nation is reciprocally interested and willing.

#### **5.9.8 Old Massett Village Council (Council of the Haida Nation) and Skidegate Band Council (Council of the Haida Nation)**

During the Update Period the Old Massett Village Council has not been actively engaged in discussions or communications with Northern Gateway.

Northern Gateway continues to notify the Old Massett Village Council of updates and supplementary information filed with the JRP relating to the Project's regulatory application. Northern Gateway will continue to keep the Old Massett Village Council apprised of Project related information and remains open to continuing to engage with the Old Massett Village Council in Project dialogue, to the extent that the Old Massett Village Council is reciprocally interested and willing.

During the Update Period the Skidegate Band Council has not been actively engaged in discussions or communications with Northern Gateway.

Northern Gateway continues to notify the Skidegate Band Council of updates and supplementary information filed with the JRP relating to the Project's regulatory application. Northern Gateway will continue to keep the Skidegate Band Council apprised of Project related information and remains open to continuing to engage with the Skidegate Band Council in Project dialogue, to the extent that the Skidegate Band Council is reciprocally interested and willing.

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#### **5.9.9 Metlakatla First Nation**

During the Update Period the Metlakatla First Nation has not been actively engaged in discussions or communications with Northern Gateway.

Northern Gateway continues to notify the Metlakatla First Nation of updates and supplementary information filed with the JRP relating to the Project's regulatory application. Northern Gateway will continue to keep the Metlakatla First Nation apprised of Project related information and remains open to continuing to engage with the Metlakatla First Nation in Project dialogue, to the extent that the Metlakatla First Nation is reciprocally interested and willing.

#### **5.9.10 Lax-Kw'alaams First Nation**

During the Update Period the Lax Kw'alaams First Nation has not been actively engaged in discussions or communications with Northern Gateway.

Northern Gateway continues to notify the Lax Kw'alaams First Nation of updates and supplementary information filed with the JRP relating to the Project's regulatory application. Northern Gateway will continue to keep the Lax Kw'alaams First Nation apprised of Project related information and remains open to continuing to engage with the Lax Kw'alaams First Nation in Project dialogue, to the extent that the Lax Kw'alaams First Nation is reciprocally interested and willing.

#### **5.9.11 Coastal First Nations/Turning Point Initiative/Great Bear Initiative**

During the Update Period the Coastal First Nations has not been actively engaged in discussions or communications with Northern Gateway.

Northern Gateway continues to notify the Coastal First Nations of updates and supplementary information filed with the JRP relating to the Project's regulatory application. Northern Gateway will continue to keep the Coastal First Nations apprised of Project related information and remains open to continuing to engage with the Coastal First Nations in Project dialogue, to the extent that the Coastal First Nations is reciprocally interested and willing.





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July 19, 2012

«Company\_Name»  
«Prefix» «First\_Name» «Last\_Name»  
«Address\_Line\_1»  
«City», «Province» «PC»

Dear «Prefix» «Last\_Name»,

I'm writing you today to provide information regarding the United States' National Transportation Safety Board's (NTSB) release of its conclusions and recommendations yesterday, with regard to the Enbridge pipeline leak in Marshall, Michigan in July 2010.

Enbridge has not been waiting for the NTSB's report to further improve our safety standards. Since the incident we have undertaken our own internal investigation and incorporated the findings of that investigation into new practices and processes to improve our safety and reliability.

Enbridge and Enbridge Energy Partners have been working with the NTSB and other regulators throughout the course of the investigation so that we can take the necessary steps to prevent such an accident from occurring again. We are now reviewing the NTSB reports in detail to determine whether any further changes are required.

Enbridge has already implemented, in 2010 and 2011, appropriate operational and procedural changes based on its own detailed internal investigation. Enbridge's overarching objective and business priority is to ensure the safety and reliability of our delivery systems for the people who live and work near our pipeline systems across North America, our employees, and our customers.

In direct response to the Marshall accident, or as part of our ongoing improvement initiatives and activities, Enbridge has taken the following steps:

### **Pipeline and Facility Integrity**

- Further heightened the importance of our pipeline and facility integrity program.
- Re-organized the functional areas that are responsible for pipeline and facility integrity.
- Substantially increased capital and operating budgets associated with maintenance and integrity programs.
- Undertook hundreds of internal inspections and thousands of investigative digs.
- Placed a renewed emphasis on the safety of our overall system.

### **Leak Detection**

- Established the Pipeline Control Systems and Leak Detection department, doubling the number of employees and contractors dedicated to leak detection and pipeline control.
- Enhanced procedures for leak detection analysis.
- Updated control room management procedures.
- Implemented a Leak Detection Instrumentation Improvement Program to add and upgrade instrumentation across our system.

### **Pipeline Control and Control Centre Operations (CCO)**

- Developed a Control Room Management (CRM) plan based on the U.S. Code of Federal Regulations and implemented a number of the sections, October 1, 2011, remaining sections implemented by August 1, 2012.
- Revised and enhanced all procedures pertaining to decision making, handling pipeline startups and shutdowns, leak detection system alarms, communication protocols, and suspected column separations.
- Changed organizational structures to better align, focus and manage employees' span of control and workloads.
- Augmented CCO (Control Centre Operations) staff, adding training, engineering and operator positions.
- We also completed the design and construction of a new, world-class CCO in Edmonton, Alberta which was underway at the time of the accident.

### **Public Awareness**

- Reviewed and strengthened Public Awareness Programs in the U.S. and Canada.
- Developing an industry-leading online and in-person training tool to provide Enbridge-specific information to emergency responders.
- In the U.S, we:
  - Formalized the U.S. Public Awareness Committee.
  - Improved the Program Effectiveness Evaluation process.
  - Provided annual employee training for field employees across the company's U.S. operations.
  - Created a Public Awareness Hotline.

- In Canada, we:
  - Formalized the Canadian Public Awareness Committee.
  - Are creating a Canadian Public Awareness Database.
  - Improved the landowner/tenant database.
  - Developed a landowner newsletter.
  - Established Community Relations positions in each region.

### **Emergency Response**

- \$50 million spent between 2012 and 2013 (projected) to improve our equipment, training, and capabilities.
- Develop better tools for waterborne spills.
- In 2011, a cross-business unit response team was created for large-scale events requiring more resources than a single region could provide.
- In 2011, created a dedicated Emergency Response group in Operation Services for increased regional support.
- Conducting an Emergency Response preparedness assessment to enhance abilities to more rapidly respond and contain a significant release.

### **Safety Culture**

- Reinforced a high level of safety and operational integrity across Enbridge in integrity management, third-party damage avoidance and detection, leak detection, incident response capacity, worker and contractor occupational safety, public safety and environmental protection.
- Implemented “Lifesaving Rules” and training for all Enbridge employees and contractors. The Lifesaving Rules are applicable to all employees and contractors, and are communicated, clarified and reinforced across all business units at Enbridge.
- Introduced new Safety Culture training sessions for all employees.

Over the past two years we have made significant improvements in the above areas. The NTSB’s findings will provide us with regulatory guidance and important information to help improve our performance and achieve our goal of zero spills.

We remain committed to a respectful, open and transparent review, and discussion of the Northern Gateway Project. Should you have any questions, please do not hesitate to contact me or a member of the Northern Gateway team, at the information provided below.

Sincerely,



Jody Whitney  
Manager, Aboriginal Consultation and Regulatory Compliance  
BC Region

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## NEWS RELEASE

### **Northern Gateway files Reply Evidence to JRP, makes pledge to heighten pipeline safety, operations measures**

**CALGARY, ALBERTA – July 20, 2012** – Today Enbridge Inc. (TSX, NYSE: ENB) announced Northern Gateway has filed Reply Evidence in the regulatory application for the project and, contained in that filing, details further enhancements in pipeline design and operations. These extra measures build on the plan in the application presently before federal regulators that already far surpasses industry codes and standards.

“We recognize that there are concerns among Aboriginal groups and the public around pipeline safety and integrity. We had already planned to build a state-of-the-art project, using the most advanced technology, safety measures and procedures in the industry today,” said Janet Holder, Executive Vice President, Western Access, Enbridge Inc. “With these enhanced measures, we will make what is already a very safe project even safer in order to provide further comfort to people who are concerned about the safety of sensitive habitats in remote areas.”

Enbridge and the Northern Gateway project team have worked hard to ensure this unique project would be built and operated to the highest standards. The measures contained in the Reply Evidence go above and beyond anything that has ever been done before in the industry.

The extra measures include:

- Increasing pipeline wall thickness of the oil pipeline
- Additional pipeline wall thickness for water crossings such as major tributaries to the Fraser, Skeena and Kitimat Rivers
- Increasing the number of remotely-operated isolation valves. This would increase the number of isolation valves in BC by 50%
- Increasing frequency of in-line inspection surveys across entire pipeline system by a minimum 50% over and above current standards
- Installing dual leak detection systems
- Staff pump stations in remote locations on a 24/7 basis for on-site monitoring, heightened security, and rapid response to abnormal conditions

Enbridge expects these extra measures will carry an additional cost of approximately \$400 million - \$500 million.

“After years of consultation with stakeholders and after personally attending many regulatory hearings for Northern Gateway, it has become clear – we have to do everything we can to ensure confidence in the project,” said Ms. Holder. “We’ve listened. We have often been asked if we could guarantee that we would never have a significant pipeline failure over the years on Northern

Gateway. These initiatives will put the project closer than any pipeline system in the world to providing that guarantee.”

The Northern Gateway Project is a proposed 1,176-km twin pipeline system and marine terminal. The proposed project, currently under regulatory review, would transport 525,000 barrels per day (bpd) of oil for export and import 193,000 bpd of condensate.

#### **About Enbridge Inc.**

*Enbridge Inc. is a North American leader in delivering energy and one of the Global 100 Most Sustainable Corporations. As a transporter of energy, Enbridge operates, in Canada and the U.S., the world's longest crude oil and liquids transportation system. The Company also has a significant and growing involvement in natural gas gathering, transmission and midstream businesses, and an increasing involvement in power transmission. As a distributor of energy, Enbridge owns and operates Canada's largest natural gas distribution company, and provides distribution services in Ontario, Quebec, New Brunswick and New York State. As a generator of energy, Enbridge has interests in almost 1,000 megawatts of renewable and alternative energy generating capacity and is expanding its interests in wind and solar energy, geothermal and hybrid fuel cells. Enbridge employs about 7,000 people, primarily in Canada and the U.S. and is ranked as one of Canada's Greenest Employers, and one of the Top 100 Companies to Work for in Canada. Enbridge's common shares trade on the Toronto and New York stock exchanges under the symbol ENB. For more information, visit [www.enbridge.com](http://www.enbridge.com).*

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*Certain information provided in this news release constitutes forward-looking statements. The words "anticipate", "expect", "project", "estimate", "forecast" and similar expressions are intended to identify such forward-looking statements. Although Enbridge believes that these statements are based on information and assumptions which are current, reasonable and complete, these statements are necessarily subject to a variety of risks and uncertainties pertaining to operating performance, regulatory parameters, weather, economic conditions and commodity prices. You can find a discussion of those risks and uncertainties in our Canadian securities filings and American SEC filings. While Enbridge makes these forward-looking statements in good faith, should one or more of these risks or uncertainties materialize, or should underlying assumptions prove incorrect, actual results may vary significantly from those expected. Except as may be required by applicable securities laws, Enbridge assumes no obligation to publicly update or revise any forward-looking statements made herein or otherwise, whether as a result of new information, future events or otherwise.*

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July 31, 2012

**DELIVERED VIA MAIL**

«Company\_Name»  
«Address\_Line\_1»  
«City», «Province» «PC»

**Attention: «Prefix» «First\_Name» «Last\_Name»**

Dear «Prefix» «Last\_Name»:

**Re: Reply and Update, Aboriginal Engagement, Enbridge Northern Gateway Project filed with the Joint Review Panel (JRP) on July 20, 2012**

On July 20, 2012, Northern Gateway filed its Reply Evidence with the JRP. A link to the Reply Evidence is found at the National Energy Board (NEB) website at:

<https://www.neb-one.gc.ca/ll-eng/livelink.exe?func=ll&objId=833081&objAction=browse>

As part of Northern Gateway's Reply Evidence, Northern Gateway filed an Aboriginal Engagement Reply and Update, which covers the period April 1, 2011 to June 30, 2012 and supplements the information provided by Northern Gateway in:

- the May 2010 Application, Volume 5A, which was filed with the Joint Review Panel (JRP) on May 27, 2010;
- the June 2011 Update to the Application, Volume 5A, which was filed with the JRP on June 8, 2011; and
- Northern Gateway's response to JRP IR 10, which was filed with the JRP on June 7, 2012 (in response to JRP IR 10.9, Northern Gateway provided an update on the status of various Aboriginal Traditional Knowledge studies, and in response to JRP IR 10.10, Northern Gateway provided a brief engagement update and a summary of oral and written evidence provided by Aboriginal groups to the JRP.)

The Aboriginal Engagement Reply and Update provides a detailed update for each Aboriginal group with which Northern Gateway is engaged, including groups that provided evidence to the JRP. Although engagement activities after June 30, 2012 are not described in the Reply and Update, Northern Gateway's Aboriginal engagement program will be ongoing throughout all phases of the Project.



The Reply and Update, which is Attachment 17 to the Reply Evidence, is found at the NEB website at:

[https://www.neb-one.gc.ca/ll-eng/livelink.exe/fetch/2000/90464/90552/384192/620327/624476/833081/Northern\\_Gateway\\_Pipelines\\_Limited\\_Partnership\\_-\\_Attachment\\_17\\_-\\_Aboriginal\\_Engagement\\_Reply\\_-\\_Update\\_-\\_A2V1V4.pdf?nodeid=833134&vernum=0](https://www.neb-one.gc.ca/ll-eng/livelink.exe/fetch/2000/90464/90552/384192/620327/624476/833081/Northern_Gateway_Pipelines_Limited_Partnership_-_Attachment_17_-_Aboriginal_Engagement_Reply_-_Update_-_A2V1V4.pdf?nodeid=833134&vernum=0)

Appendix A of the Reply and Update provides copies of relevant notices and correspondence and is found at the NEB website at:

[https://www.neb-one.gc.ca/ll-eng/livelink.exe/fetch/2000/90464/90552/384192/620327/624476/833081/Northern\\_Gateway\\_Pipelines\\_Limited\\_Partnership\\_-\\_Attachment\\_17\\_-\\_Appendix\\_A\\_to\\_Aboriginal\\_Engagement\\_Reply\\_-\\_Update\\_-\\_A2V1V5.pdf?nodeid=833118&vernum=0](https://www.neb-one.gc.ca/ll-eng/livelink.exe/fetch/2000/90464/90552/384192/620327/624476/833081/Northern_Gateway_Pipelines_Limited_Partnership_-_Attachment_17_-_Appendix_A_to_Aboriginal_Engagement_Reply_-_Update_-_A2V1V5.pdf?nodeid=833118&vernum=0)

We invite you to take some time to read through the Reply and Update, as well as the referenced materials. If you have any questions, please do not hesitate to contact me at your convenience.

Sincerely,



**Jody Whitney,**  
Director, Aboriginal Consultation and Regulatory Compliance, Northern Gateway  
BC Region

**Skills, Training and Employment Meetings - July 1 to November 2<sup>nd</sup>, 2012**

**Alexis Nakota Sioux Nation**

- July 5<sup>th</sup>, 2012
- July 31<sup>st</sup>, 2012
- August 21, 2012 (conference call)
- October 30<sup>th</sup>, 2012 (career fair & meeting)

**Aseniwuche Winewak Nation**

- Next meeting scheduled for November 21

**Kapawe'no First Nation**

- November 2, 2012

**Paul (Paul First Nation)**

- Community site visit done in July for training-to-employment initiative with Stewart Weir
- Next meeting scheduled for November 9<sup>th</sup>

**Métis Nation of Alberta**

- Next meeting scheduled for November 9<sup>th</sup>

**Saddle Lake (Saddle Lake Cree Nation)**

- July 31<sup>st</sup>, 2012 meeting
- November 2, 2012 (conference call)

**Sawridge (Sawridge First Nation)**

- November 2, 2012

**Sturgeon Lake Cree Nation**

- Proposed community event November 22

**Sucker Creek (Sucker Creek First Nation)**

- Next meeting scheduled November 9<sup>th</sup>

**Whitefish Lake (Whitefish Lake First Nation #128)**

- July 3<sup>rd</sup> (conference call)
- July 19<sup>th</sup>
- September 27<sup>th</sup>

**Cheslatta Carrier Nation**

- August 17<sup>th</sup> & September 12<sup>th</sup> (Lakes District Aboriginal Training-to-employment Society (LDATES))
- October 12<sup>th</sup>

- November 5th

**West Moberly First Nations**

- September 21<sup>st</sup>

**Burns Lake Band (Ts'il Kaz Koh First Nation)**

- August 17<sup>th</sup> & September 12<sup>th</sup> (LDATES)
- October 12<sup>th</sup>
- November 6<sup>th</sup>

**Lheidli T'enneh First Nation (Lheidli T'enneh Band)**

- September 12<sup>th</sup> (LDATES)
- November 1<sup>st</sup>

**Skin Tyee Nation**

- August 17<sup>th</sup> & September 12<sup>th</sup> (LDATES)
- October 12<sup>th</sup>
- November 5<sup>th</sup>

**Métis Nation British Columbia**

- August 17<sup>th</sup> & September 12<sup>th</sup> (LDATES)
- October 12<sup>th</sup>

**Nee-Tahi-Buhn (Nee-Tahi-Buhn Indian Band)**

- August 17<sup>th</sup> & September 12<sup>th</sup> (LDATES)
- October 12<sup>th</sup>
- November 5<sup>th</sup>



## **Attachment 1 JRP IR 14.4**

# **Northern Gateway's Response to Government of Canada – Environment Canada Written Evidence: Technical Review of Enbridge Northern Gateway's Marine Spill Modelling Studies and Related Environmental Consequence Analysis (Exhibit E9-39)**

November 2012



Northern Gateway's Response to Government of Canada – Environment Canada  
Written Evidence: Technical Review of Enbridge Northern Gateway's Marine Spill  
Modelling Studies and Related Environmental Consequence Analysis (Exhibit E9-39)  
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# 1 Introduction

In a filing (Exhibit E9-39) dated September 11, 2012, Environment Canada advanced a series of positions and recommendations regarding the evidence filed by Northern Gateway relating to marine spill modelling studies and associated environmental consequence analyses. In response to JRP IR 14.4, this document provides Northern Gateway's reply to Environment Canada's positions and recommendations.

After reviewing the Environment Canada submission, Northern Gateway expressed willingness to again meet with Environment Canada to discuss and resolve two primary issues that arose during previous communications. The issues are:

1. The need for and timing of additional spill modelling.
2. The need for and timing of additional research into the fate and behaviour of diluted bitumen in a marine environment, modelling, and associated spill response requirements.

Northern Gateway considers the marine technical models and scenarios selected for the Application, and the approach to that selection, to be appropriate for the purposes of Environmental and Socio-economic Assessment ("ESA"). Further modelling is not necessary to support the conclusion that environmental effects of a marine oil spill may be adverse and significant; both of which are already documented in the Application. Northern Gateway does however acknowledge, and is in general agreement with, Environment Canada's recommended modifications to the marine technical models used. While not seeing value in filing additional scenarios and modifying the models at this time, Northern Gateway does envisage, during the operational emergency preparedness planning process, the consideration of additional scenarios and approaches to enhance the models.

As discussed during Northern Gateway's June 20, 2012 meeting with Environment Canada and through reply evidence responding to Environment Canada's recommendation #2-9, Northern Gateway supports the position that stochastic spill modelling is a consideration for the detailed planning phase, post Certificate. Northern Gateway is in agreement with Environment Canada that stochastic spill modelling may be useful to assist the development of detailed site specific response plans (geographic response plans) and other elements of the marine emergency preparedness and response planning program.

Environment Canada offers both the Aleutian Islands Risk Assessment Project and the Cook Inlet Maritime Risk Assessment Project as exemplary applications of state-of-the-art modelling for the risk assessment process. The Aleutian and Cook Inlet Assessments are not project related risk assessments. They are part of a regional process of identifying risks and risk reduction measures. Northern Gateway used a Project specific quantitative risk assessment to evaluate risk reduction measures, such as escort tugs. Similar to the Aleutian and Cook Inlet Assessments, Northern Gateway envisions this process as a phased approach. Technology and approaches are continuously evolving. Northern Gateway will apply state-of-the-art technologies and approaches to modelling, post Project Certificate, for the purposes of marine emergency preparedness and response planning.



Northern Gateway filed a Framework for Pipeline Oil Spill Preparedness (Exhibit B158-2) to help clarify the process for developing an operational emergency preparedness and response program for the Project. Figure 1-1 outlines a similar process for the Marine Emergency Preparedness Program. The framework includes the Scientific Advisory Committee signifying that Northern Gateway is supportive of Environment Canada's recommendation to convene such a committee. Section 2 describes the process by which Northern Gateway envisages the development of such a committee. Section 3 describes Northern Gateway's approach to the Geographic Response Planning process and identifies where, how and when Northern Gateway envisions utilizing oil spill models and stochastic outputs as part of the detailed response planning process. Section 4 outlines the process required to determine an agreed-upon Net Environmental Benefit Analysis (NEBA) approach to follow during the Geographic Response Planning process. An assumption in this response is that the Project receives a favorable recommendation from the Joint Review Panel and that a Project Certificate is issued in early 2014.

Northern Gateway's responses to Environment Canada's positions and recommendations, as detailed in their filed review dated September 11, 2012, are provided in Appendix A.

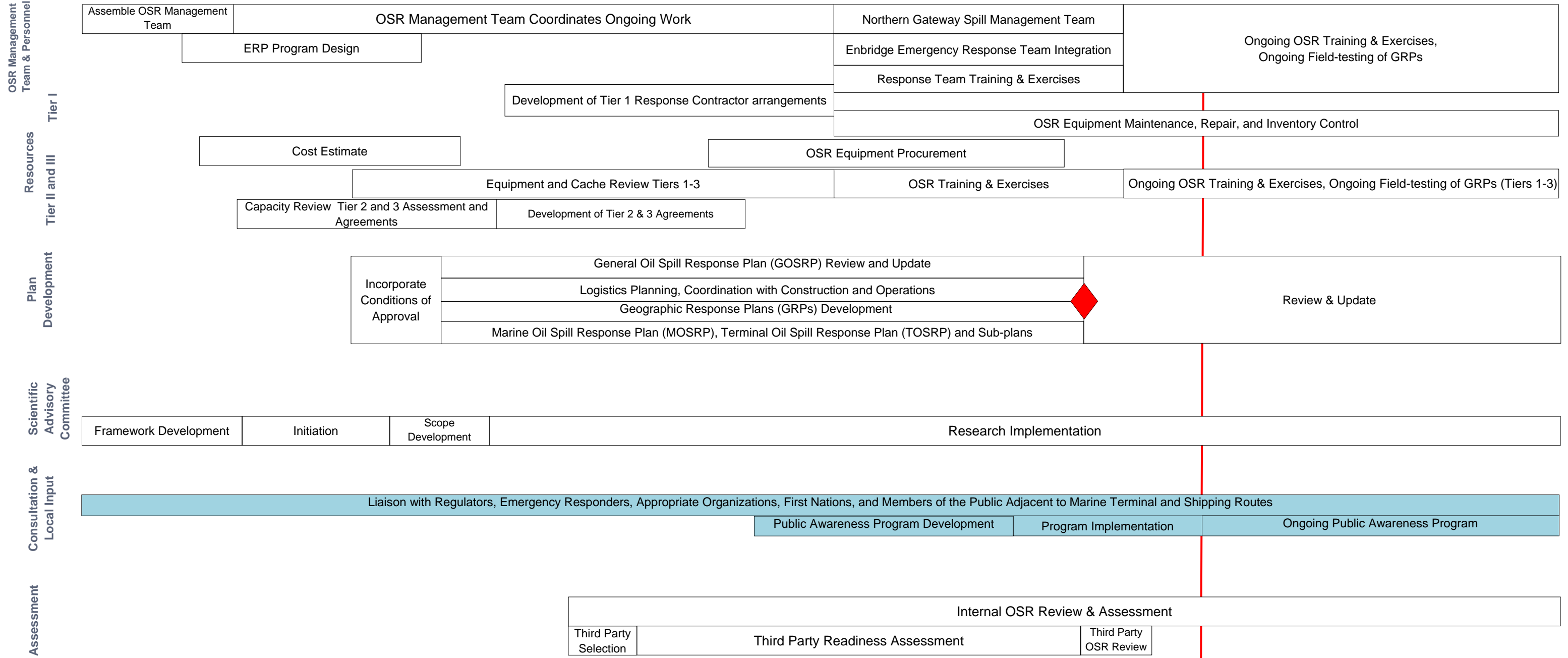
Figure 1-1



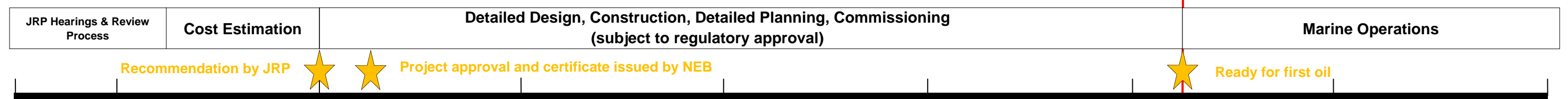
# Northern Gateway: Framework for Marine Oil Spill Preparedness

★ Project Milestone  
 ◆ OSR Planning Output

## ERP Elements



## Project Phase



2012

2013

2014

2015

2016

2017

2018

Dates are subject to refinement and assume a mid 2018 operational date





## 2 Scientific Advisory Committee Development

Northern Gateway accepts the suggestion of Environment Canada for development of a Scientific Advisory Committee (or “committee”), which will provide advice on research elements to advance knowledge applicable to detailed emergency preparedness and response planning.

A framework for development and objectives for the committee will be initiated in 2013, assuming participation by Federal, and Provincial regulators and other industry participants. Should the Project be approved, it is envisaged that the scope of work for the Committee will be further developed and refined throughout 2014, followed by implementation of identified research programs into 2016. It is expected that subsequent follow-up studies will be undertaken throughout the lifetime of the Project.

Northern Gateway envisages that the Scientific Advisory Committee will comprise members of Provincial and Federal governments, academia, industry, and spill response experts. It is expected that research topics for the Scientific Advisory Committee may include, but are not limited to:

- Physical and chemical data for the range of oils
- Fate and transport of diluted bitumen and synthetic oil in freshwater and marine environments
- Appropriate model inputs (e.g., meteorological and oceanographic data) and outputs
- Oil-sediment interactions
- Containment, detection, and recovery of submerged and sunken oil
- Equipment testing and efficiency in varying environments (e.g., cold water, fast current, high viscosity oils)

The specific membership, scope and terms of reference of the Committee will be determined through committee development meetings. Additional research areas may follow an initial research scoping process and be informed by an advisory panel (comprising local community, Aboriginal and government representatives and other stakeholders). The role of the advisory panel is to provide a local input into the relevant work streams of the committee. This will also provide an opportunity to communicate the scopes of work, progress, and findings to stakeholders and participating Aboriginal groups. Northern Gateway anticipates that the reported research of the Scientific Advisory Committee will have an industry-wide application, beyond that of the Project. Substantial volumes of petroleum and petroleum products, including diluted bitumen and synthetic crude, are currently transported to and from Canadian ports. Additionally, heavy fuel oil is carried by most large commercial vessels.

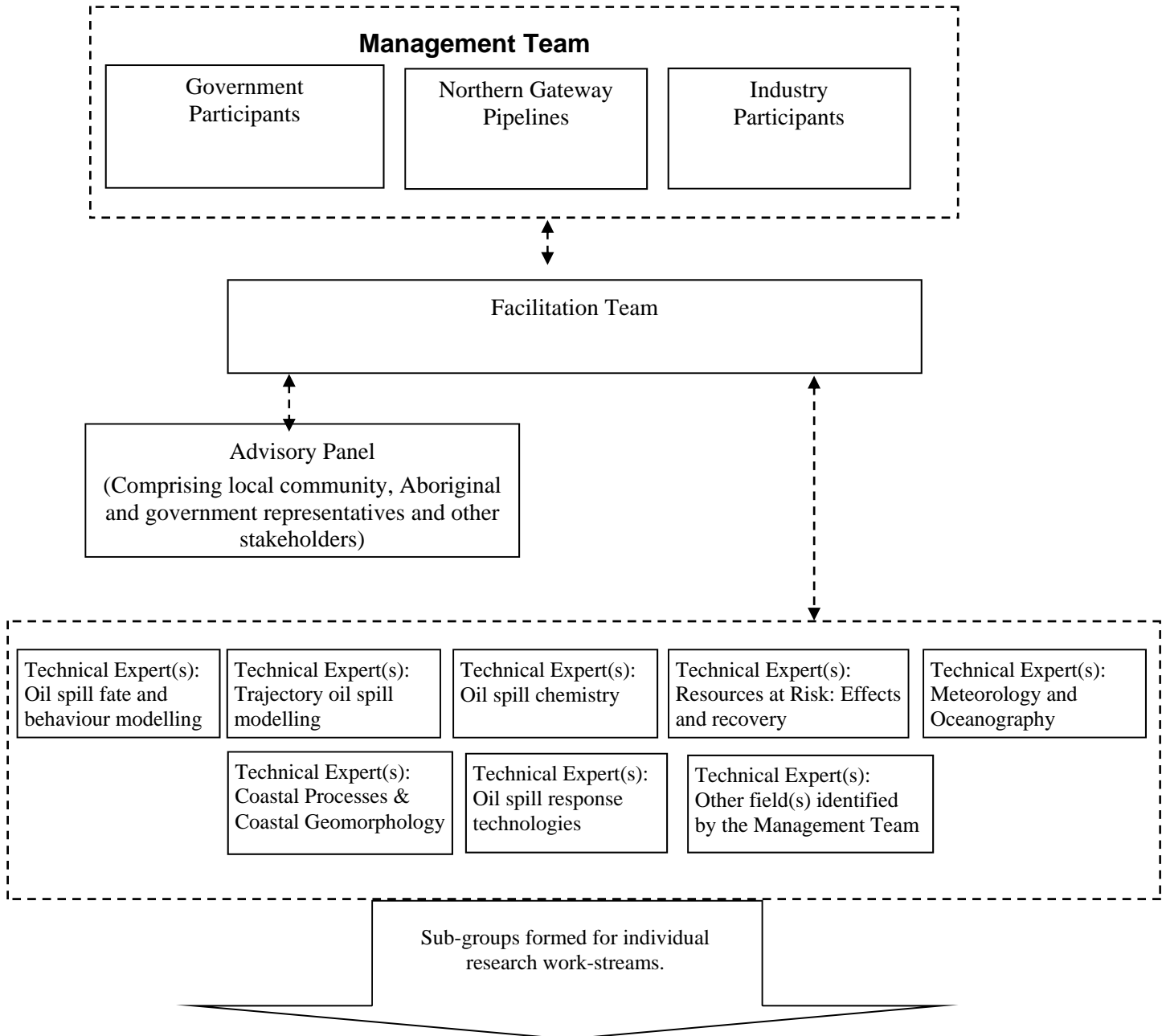
Figure 2-1 illustrates a proposed organizational structure for the management, facilitation and advisory of the Scientific Advisory Committee.





Northern Gateway’s Response to Government of Canada – Environment Canada  
 Written Evidence: Technical Review of Enbridge Northern Gateway’s Marine Spill  
 Modelling Studies and Related Environmental Consequence Analysis (Exhibit E9-39)  
 Section 2: Scientific Advisory Committee Development

**Figure 2-1: Proposed Scientific Advisory Committee Management and Facilitation Structure**





The Scientific Advisory Committee process is expected to involve the following steps:

- an initial meeting of the management team (involving Government participants, Northern Gateway, and other Industry participants), at which the scope of work for the committee will be discussed, and committee participants, advisory panel participants and facilitators will be identified.
- subsequent committee meetings, which will initially focus on further defining the scope of work and the separation of experts, into sub-groups, to work on agreed upon research work-streams.
- advisory panel meetings; the purpose of these meetings will be to communicate the scope of work of the committee and capture opinions on additional elements that may be considered within the various research work-streams.
- linked communication between the two facilitator teams, allowing for feedback from the advisory panel to the committee.
- the management team will meet with the facilitator teams, and committee member (as appropriate) throughout the process to monitor progress.

### 3 Geographic Response Plans (GRPs)

In alignment with Northern Gateway's risk-based approach, GRPs are to be developed for priority areas and sites. These will be selected based on the potential for oiling and the presence of coastal environmental and/or socio-economic sensitivities. The focus will be on areas along the Project's marine transportation routes in the marine channels. The Coastal Operations and Sensitivity Atlas, to be updated following the further identification of resources at risk and priority sites, will be used as a screening tool for the selections of GRP sites. Stochastic modelling scenarios will be developed based on input from the Scientific Advisory Panel during the operational emergency preparedness planning process. Modelling outputs will help inform the risk-based approach to GRP site selection by depicting the likelihood of potential oiling. Following a similar framework utilised by the State of Alaska for Geographic Response Strategies (Alaska Dec, 2012), Northern Gateway envisages that GRPs will be grouped by subareas.

The guiding principles behind the development of GRPs are that they should:

- be responder oriented
- be adaptable to prevailing conditions
- include site specific information and avoid duplication with other plans
- identify site specific sensitivities
- include relevant information on response equipment required, logistical consideration, specific deployments instructions
- practicable, field tested, and updated over time.

The purpose of a GRP is to guide spill responders during the initial phase of oil spill response in order to reduce adverse effects on environmental, socio-economic and cultural resources.

GRPs provide responders and response planners with site-specific information on:

- spill risk
- shoreline and land use characteristics
- location and accessibility
- strategic response areas
- local equipment and resources
- resources at risk
- recommended response strategies
- winter/seasonal considerations
- logistical contacts

Data collected through the Marine Environmental Effects Monitoring Program (MEEMP), by participating Aboriginal groups and, where possible, local community coastal stewardship





initiatives will be used to further describe environmental, cultural and socio-economic resources at risk in the CCAA and OWA to assist the identification of suitable response sites.

## GRP Site Selection

Following the identification of coastal environmental and socio-economic sensitivities, the most sensitive sites for priority protection will be identified for GRP development by the GRP Candidate Sites work group. This approach follows that used to develop the Southeast Alaska Subarea Contingency Plan's Geographic Response Strategies (Alaska DEC, 2012). The work group will evaluate sites from a risk of being oiled perspective. This evaluation may include examination of probabilistic oiling, based on proximity to the shipping route or navigational hazards and potential oil trajectories. The priority sites will be determined by evaluating the potential to successfully protect the site using spill response methods. Existing coastal sensitivity data for candidate sites may be augmented by site survey data collection and ground-truthing where appropriate.

Priority protection of coastal sensitivities is not limited to sites for which a GRP is developed. Instead, it is envisaged that GRPs will provide beneficial guidance for the coordination of a response at similar sites. To this end, chosen priority sites may be representative rather than comprehensive of all sensitivities identified.

## Ground Truthing

Following the selection of potential response sites, each site will be ground-truthed to assess the feasibility of mounting an effective response at that site. Ground-truthing will involve the collection of data on:

- site accessibility
- shoreline character
- prevailing oceanographic conditions
- proximity and suitability of strategic response areas (e.g., staging areas)
- local resources
- alternative response sites

Site accessibility assessment will include consideration of land and water access management requirements to equipment depots, potential staging areas, and priority response sites.

## Field Testing

Specific training and exercises will be focused on developing familiarity with priority response sites that have a higher mitigated risk of being oiled following a release, combined with a



potential to successfully protect the site. It is anticipated that field testing for select sites will begin in 2017, well in advance of Project operations.

## Refinement

The findings of field testing for response sites, where appropriate, will be used to update the GRPs. Updates to GRPs may occur following known changes, such as in access routes or infrastructure, throughout the lifetime of the Project. Further ground-truthing may be required following such changes.



## 4 Net Environmental Benefit Analysis

As per Northern Gateway's reply evidence response to Environment Canada's recommendation #2-6, Northern Gateway agrees with Environment Canada that, when developing GRPs, an approach to net environmental benefit analysis (NEBA) should be agreed upon for the consideration of appropriate response options (B83-2, Q/A.30, adobe pp. 17-18 of 80).

Northern Gateway will explore the various approaches to NEBA with Environment Canada and endeavor to jointly identify the most suitable approach for use in Project spill response planning. Northern Gateway is aware that Efroymsen et al., 2003 is the standard methodology that Environment Canada uses to conduct this research in house.

Pre-planning for NEBA will assist in evaluating the appropriateness of various response tactics on an area-specific basis and will consider conventional mechanical containment and recovery tactics, dispersant use, and controlled burning. The analysis will consider the appropriateness of response tactics to the meteorological and oceanographic conditions that may be expected in the area, resources at risk, fate and weathering behaviours and the potential for oiling as indicated by modelling scenarios.

Environment Canada has noted that regulations governing the use of spill treating agents, such as dispersants, are currently being considered for development. The consideration of areas where dispersant use may be appropriate, or areas where pre-approved dispersant use may be recommended, will observe and follow any changes to regulations surrounding their use.

The identification of shoreline clean-up endpoints would require a NEBA approach to evaluate the appropriateness of various shoreline treatment options. Northern Gateway understands that data availability on shoreline character, as collected through the development of the Coastal Operations and Sensitivity Atlas and as part of the MEEMP, will benefit this process.



## 5 Conclusions

Northern Gateway considers the marine technical models and scenarios selected for the Application, and the approach to that selection, to be appropriate for the purposes of Environmental and Socio-economic Assessment. The extensive use of a trajectory and fate modelling throughout the development of the marine emergency preparedness program and the advancements in research through the Scientific Advisory Committee will ensure that Northern Gateway has refined, tested and functional modeling tools that can be carried into the operational phase of the Project. These tools will be used for ongoing preparedness initiatives and would assist in the coordination of a response should a marine spill occur.



## 6 References

Alaska DEC. 2012. Southeast Alaska Subarea Contingency Plan: Geographic Response Strategies: Part One – Introduction. Alaska Department of Environmental Conservation, pp. 1-20.  
Available at: <http://dec.alaska.gov/spar/perp/grs/se/home.htm>

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## **Appendix A Northern Gateway's responses to Environment Canada's Technical Review of Enbridge Northern Gateway's Marine Spill Modelling Studies and Related Environmental Consequence Analysis**





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## Part A: Proponent's Approach to Assessment of Spills

### Overall Comments

Comments from Environment Canada	Northern Gateway's Response
<b>OC.I. OVERALL APPROACH</b>	
<p><b>1.</b> The Proponent has not employed a stochastic approach to spill modelling. Instead, the Proponent's analysis is based mainly on deterministic modelling of a few hypothetical spill scenarios. This approach does not reflect the current state-of-the-art in conducting consequence assessment related to major oil spills in the marine environment.</p> <p>The rationale of using stochastic modelling to predict the water surface and shoreline oiling in risk assessment studies is well established within the oil spill scientific community. Stochastic modelling predicts oil trajectory and shoreline oiling considering a wide range (decades) of the uncontrollable variability in environmental conditions, while deterministic modelling addresses oil trajectory considering specific environmental conditions (a few days). Furthermore, outputs of the stochastic modelling are usually used to identify spill scenarios that lead to greatest impact for a given spill volume and location, which cannot be done with the deterministic modelling. These scenarios can then be used for deterministic trajectory and fate modelling to inform spill response planning. In addition, while the Proponent recognized the variability of the factors and parameters controlling the transport</p>	<p>Northern Gateway provided seven marine spill modelling scenarios in the Application and an additional seven opposite-season scenarios as Attachment JRP IR 8.26. Northern Gateway does not agree that further modelling is necessary to conclude that environmental effects of a marine oil spill may be adverse and significant; both of which are already documented in the Application. Rather, Northern Gateway is of the opinion that additional modelling may be useful during detailed planning post Project approval for the purpose of emergency preparedness and response planning, such as in the development of site-specific response plans (geographic response plans).</p> <p>The assertion that multi-decadal stochastic simulations should be conducted is inappropriate when considering the waterbodies that could be affected. Multi-decadal data to support such simulations is lacking for the relevant areas. The greatest limitation on the modelling accuracy is likely the absence of adequate wind data, which was largely addressed by the installation of six additional meteorological stations by Northern Gateway. However, data from that network was not available when the stochastic modelling was completed. In addition, the absence of strong coupling to the Pacific Ocean is a limitation on long-term hindcasts. Such data, from high-quality models operated by the US Navy, is only</p>

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<p>and fate of an oil spill, the deterministic trajectory modelling as presented was performed without explicit consideration of uncertainty.</p> <p>It is understood that the Proponent did use stochastic modelling to select the spill scenarios addressed in some of the deterministic modelling. However, the selection of a one year period (2004) from which weather conditions were sampled and the use of a “single spill from the stochastic model output that is most representative of the overall stochastic result at the release site” were not justified. Stochastic modelling was not used in the consequence analysis. Detailed comments on the arguments provided by the Proponent regarding stochastic modelling in its response to the Department’s Information Request (IR) No. 2.76 (Exhibit <a href="#">A219D0</a>) are discussed in the Specific Comments section of this report, below.</p> <p>The stochastic modelling method should be used to assess the potential environmental consequences of a spill. The extent of water and shoreline oiling should be assessed using multi-decadal environmental databases for each scenario selected. Established criteria should be used to select the conditions for the deterministic modelling based on the results of the stochastic modelling.</p>	<p>available for the past seven years. The inclusion of this direct coupling data, in addition to the full set of wind data, would be an appropriate consideration for future modelling, should the Project be approved.</p> <p>Northern Gateway wishes to meet again with Environment Canada to discuss the need for and timing of additional stochastic spill modelling.</p>
<p>2. Oil weathering was addressed using two different models: The SLROSM for mass balance calculations and the MWQM for the ecological risk assessment. The rationale for the use of two different models for oil weathering is not clear and makes it more difficult to connect the studies. Outputs of oil spill modelling should be used as inputs for the consequence analysis overall.</p>	<p>As stated in Northern Gateway’s response to Federal Government IR 1.112, “[t]he various models have different objectives. The SL Ross/Hayco models focus in the weathering and other physical fate processes of the oil in the environment. The Marine Water Quality Model (“MWQM”) was developed to predict concentrations and provide a detailed chemical characterization of hydrocarbons for toxicological purposes only in the water column and sediment</p>

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	<p>of the open water areas affected by surface oil. The model was used to support the ecological and human health risk assessment (Stephenson et al. 2010). The MWQM is run independently of the SL Ross/Hayco models.” The MWQM provides chemistry data to inform the toxicology assessment, which is separate from the SL Ross/Hayco model outputs.</p> <p>The use of the two models does not change the conclusions of the analysis nor the overall assessment. Northern Gateway recognizes that there is potential to better integrate the models, and that such may be undertaken in the future. . However Northern Gateway is of the opinion that reliance on more than one model supports the weathering predictions by encompassing different methodologies.</p>
<p><b>OC.II. SCENARIO SELECTION</b></p>	
<p>Seven spill scenarios were selected to illustrate possible environmental impacts. The scenarios were based on six spill locations. These spill scenarios are not sufficient to represent high risk spills, either in terms of potential frequency, potential size, or both. The number and the selection of spill scenarios need to be adequate in order to gain sufficient understanding of relative impact of spill size, types of oil (or hazardous substances) spilled, spill locations, and spill season on the impacts to the environmental and socioeconomic resources.</p> <p>1. By adding more spill scenarios, the Proponent could include potential spills based on locations, spill size, and season considered to pose the highest risk with the greatest possible consequences. The selection of the locations should not only be based on vessel traffic and conditions, but should also consider the proximity to environmentally sensitive areas and/or areas of economic and cultural importance. While selected spill scenarios</p>	<p>Six spill sites were selected, and for each site, four seasons, and three commodity types were examined using the stochastic model. Of these, seven representative scenarios were selected for presentation, on the basis that they reflected the range of spill conditions that would be expected. Seven opposite season scenarios were additionally provided as Attachment JRP IR 8.26.</p> <p>Northern Gateway is in agreement with Environment Canada that additional modelling scenarios may be useful during the detailed planning process, should the Project be approved, for the purposes of emergency preparedness and response planning.</p>

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<p>are not expected to be exhaustive, they should provide a wide range of high-risk scenarios with which to evaluate the relative risk and potential impacts to the resources in the study areas should a spill occur.</p>	
<p>2. The method used to select spill scenarios was not explained in the reports reviewed. The selection of the scenarios should be based on the well established “risk matrix” method (TRB, 2008; AIRS, 2011; Etkin <i>et al.</i>, 2011). The risk matrix should be constructed using sufficient numbers of ranges for return frequency and spill size, for instance. The scenarios should be selected considering the spills expected to produce the highest risk in the matrix.</p>	<p>Northern Gateway acknowledges that environmental effects of a marine oil spill may be adverse and significant; both of which are already documented in the Application.</p> <p>Northern Gateway supports the methodology used in the studies, as referenced by Environment Canada, but in the context of contingency planning and risk management during detailed planning, post Project approval. Northern Gateway considers the scenarios selected for the Application and the approach to that selection appropriate to the Environmental and Socio-economic Assessment. Should the Project be approved, Northern Gateway will develop a process to select scenarios for spill modelling to assist in the development of geographic response plans, and other elements of emergency preparedness and response planning.</p>
<p>3. The spill volumes (related to grounding or collision) selected in the study (10,000 and 36,000 m<sup>3</sup>) are not sufficient to represent the spill size distribution as it was characterized in the Proponent's ‘Marine Shipping Quantitative Risk Analysis’ Technical Data Report, as prepared by Det Norske Veritas (DNV, 2010, or “the Marine QRA”) (Exhibit <a href="#">A1Z6L8</a>) - Figures 6-2 and 6-3 and Table 7-9 and in the Proponent's ‘TERMPOL Study No. 3.15 – General Risk Analysis and Intended Methods of Reducing Risk’ (NGP 2010a) (Exhibit <a href="#">A1Z6J9</a>) - Table 4-12. The Proponent has shown that a total loss event is probable in 2.4% of grounding incidents (DNV, 2010 - Table 6.2). The Aleutian Islands Risk Assessment Project (2011) reported this percentage to be 5% (95<sup>th</sup> percentile).</p>	<p>The 10,000 m<sup>3</sup> spill volume used in modelling corresponds with the Transport Canada response planning standard. Figure 6-1 in the Marine Shipping Quantitative Risk Analysis Technical Data Report shows the conditional probability of a spill, following a grounding incident, against spill volume. A spill volume of 36,000 m<sup>3</sup> corresponds to a conditional probability of 0.2% should a VLCC grounding or collision incident occur and is therefore more a conservative estimate than the 95<sup>th</sup> percentile. Based on the calculations in the QRA, the spill volume estimate of the 95<sup>th</sup> percentile for groundings and collisions would be between 20000 and 21000 m<sup>3</sup>.</p>

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<p>For a better representation of the spill size distribution and high risk events, the spill volumes to be considered in the spill scenarios should include both a median (50<sup>th</sup> percentile) and relevant large spill volume (95<sup>th</sup> percentile).</p>	<p>The DNV QRA Table 6-2 lists Lloyd's Registry FairPlay (LRFP) damage statistics for double hull tankers. According to this data, total loss occurs 2.4% of the time. Total loss is defined as when "the vessel is damaged beyond repair from an insurance perspective". Total loss is typically defined in this way as the LRFP database does not provide corresponding data on oil outflow.</p> <p>DNV has assumed that in the case of "total loss for insurance purposes", there will be some oil outflow. Extensive damage to the double bottom not extending into the inner hull can easily exceed the value of the tanker, especially for older tankers. Thus, assuming some outflow in all cases is a conservative assumption.</p> <p>One should be careful however not to draw the conclusion that in these total insurance losses (2.4% of groundings) the total volume of oil onboard the tanker is spilled. Spillage of 100% of the cargo oil is an extremely rare event, generally occurring only where a ship breaks up in the open ocean. For example, the Exxon Valdez was a high energy grounding damaging 8 of 11 cargo tanks. Oil spillage amounted to approximately 40,000 m<sup>3</sup> (21% of the cargo oil).</p> <p>It should be noted that results from the Aleutian Islands Risk Assessment and the DNV QRA cannot be directly compared as baseline conditions are very different. In the Unimak Pass region (applicable to the Aleutian Islands Risk Assessment) where the risk of grounding is most severe the following general comparisons with the Project's area can be made:</p> <ul style="list-style-type: none"> <li>• there are a wide range of vessel types, many having single hull oil tanks</li> <li>• the waterway is subject to "right of innocent passage" with no vetting of the ships transiting this region</li> <li>• there is very little infrastructure for rescue or salvage,</li> </ul>
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	<ul style="list-style-type: none"> <li>• there are no operating restrictions on vessels transiting the pass.</li> </ul> <p>Large spill volume outflows from grounding events generally occur when weather conditions are severe. Within the CCAA (segments 1, 2, 3, and 6), the sea state rarely exceeds 2 m and winds are generally parallel to the waterway. Ship speed is limited to about 12 knots and tugs are present. We expect spills exceeding the 36,000 m<sup>3</sup> credible worst case scenario in the DNV QRA to be unusual events.</p>
<p>4. Only the summer and the winter seasons were used to select the spill scenarios. A closer look at the data on key sensitive shoreline areas presented in Table 5-4 in the Proponent's Project Application 'Volume 7C – Risk Assessment and Management of Spills - Kitimat Terminal' (NGP, 2010b) (Exhibit <a href="#">A1T0H2</a>) and in Table 5-5 in the Proponent's Project Application 'Volume 8C – Risk Assessment and Management of Spills – Marine Transportation – Parts 1 to 6' (NGP, 2010c) (Exhibits <a href="#">A1T0I7</a> through <a href="#">A1T0J2</a>) showed that the areas are sensitive during the entire year, i.e. all four seasons. For this reason, it is necessary to use four seasons in the selection of the scenarios. Also, more complete databases of the environmental and socioeconomic resources at risk could be used to better reflect the seasonal variability in the presence of species that could be affected by a spill.</p>	<p>Summer and winter scenarios were provided within the Application as representative of the two extremes that would capture fall and spring conditions. Within the ecological risk assessment, all receptors were assumed to be present regardless of season or location.</p> <p>Data will be collected to further describe resources at risk as part of the Marine Environmental Effects Monitoring Program (MEEMP).</p>
<p>5. The selection of the scenarios to be run in deterministic mode, either to inform spill response planning or for other purposes, should be selected from the pool of the stochastic runs. They should be the ones that pose the highest potential impact.</p>	<p>Northern Gateway generally agrees with this statement. Using stochastic model output, one can use a percentile ranking of the impacts based on the criteria of choice (e.g., shoreline oiling, surface oiling, water column concentration) to determine the spill scenario(s) necessary to plan for.</p>

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	<p>Northern Gateway commits to using a state-of-the-art approach to oil spill modelling, such as that described by Etkin et al. (2011), during detailed planning, post Project approval, for the purposes of contingency planning.</p>
<p>6. No validation and/or calibration spill scenarios were considered in the work presented by the Proponent. Verification of the modelling approach using spills of opportunity (actual spills that have occurred in the Project area) is crucial in this study. A good example of such a spill is the Queen of the North ferry sinking and resultant oil spill that took place in the Wright Sound area during the spring of 2006. The location of this spill event is very close to the Wright Sound spill site selected in this study. It would be beneficial to include additional spill scenarios in order to validate and calibrate the modelling approach used to predict oil trajectory and fate. For this, recent local spill data should be investigated.</p>	<p>Mapping data on spill locations, such as that of the Queen of the North, to Northern Gateway's understanding, is not overly precise. A field crew, assembled by Northern Gateway, did however conduct an overflight during the Queen of the North spill. The channels and regions that were observed to receive oil generally aligned with the probability extents observed in the Project's Wright Sound spill scenario stochastics for that season. The persistence of the hydrocarbons differed due to variation in the physical properties of the hydrocarbons from that spilled during the Queen of the North incident.</p> <p>Northern Gateway further notes that good spill model validation does not necessarily require modeling actual incidents in the locale of interest. Well documented spills in any location with a similar environment are suitable for validating a spill model.</p> <p>Northern Gateway wishes to determine suitable approaches for validation and/or calibration of spill models, as would be informed by an expert scientific committee, post Project approval.</p>
<p>7. The incident frequency for route segment 6 is relatively high (Table 7-8 in DNV, 2010). A spill site should be added for this segment. A spill site should also be considered along the Southern Approach (via Principle Channel) on route segment 9. This site would be important to address the risk of oiling of Banks Island, Graham Island and Moresby Island (Haida Gwaii). Finally, a spill site should be considered further along the Northern Approach (route segment 5) to assess the risk of oiling of Alaskan shorelines.</p>	<p>Northern Gateway is of the opinion that the location of spill scenario sites used in the modeling should be identified using stochastic modeling and the risk matrix approach. Such an approach can be undertaken as part of the detailed contingency planning process post Project approval.</p>

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<b>OC.III. CONSEQUENCE ANALYSIS</b>	
<p>The Proponent did not present a consequence analysis that assessed the potential impacts to ecological and socioeconomic resources that could result from a representative range of spill scenarios. Most of the information presented was descriptive and/or not based on results obtained from recognized state-of-the-art modelling approaches.</p> <p>1. Consequence assessment discussed in Chapter 6 of the Marine QRA (DNV, 2010) and in Chapter 4.3.4 in NGP (2010a) relates to vessel damage and volume of cargo that may be released, not to environmental impacts. As a result, the risk evaluations discussed in Chapters 7 and 8 of the Marine QRA do not include any environmental impact in the risk results.</p>	<p>As stated previously, Northern Gateway does not agree that additional modelling is necessary to conclude that environmental effects of a marine oil spill may be adverse and significant; both of which are already documented in the Application. Rather, Northern Gateway is of the opinion that state-of-the-art modelling may be useful during detailed planning post Project approval for the purpose of emergency preparedness and response planning, such as in the development of site-specific response plans (geographic response plans).</p> <p>The Marine Shipping QRA (DNV, 2010) considered oil outflow as a surrogate for consequence. The environmental and socio-economic effects are assessed separately. Notwithstanding, the QRA provided input into the selection of spill scenarios.</p>
<p>2. The ecological risk assessment studies discussed in NGP (2010a,b,c) and in more detail in the Technical Data Report by Stephensen <i>et al.</i> (2010) (Exhibit A1V8G1) were based on two compartment models: MWQM for water and MSQM for sediment. These are one dimensional models that do not respond to the requirements of a consequence analysis in the case of this Project, where three dimensional processes are important. Such one dimensional models are appropriate for screening applications only. In addition, the technical background on which these models were developed and the assumptions made to address a complex three dimensional problem in one dimension would benefit from clarification. For instance, the approaches used to model oil droplet formation and oil sedimentation in the MWQM are not based on the state-of-knowledge.</p>	<p>The MWQM and MSQM were developed as adjuncts to the oil spill fate and transport models discussed elsewhere, for the specific purpose of providing information on the solubility of individual hydrocarbon fractions and compounds in water, and their potential sorption to particles and deposition to subtidal sediment. It is correct that these are one-dimensional models. However, the specific purpose (estimating dissolved hydrocarbon concentrations in a thin layer of water below the oil slick for toxicological purposes) is adequately served by the MWQM, as the highest dissolved hydrocarbon concentrations would be found immediately below the slick. Horizontal dispersion and vertical mixing of the water column (the 3-dimensional processes referred to by the EC reviewer) would serve to dilute hydrocarbon concentrations estimated in the MWQM. Potential effects of dissolved hydrocarbon concentrations on marine biota (plankton, fish, eggs and larvae) are therefore addressed in a conservative manner through the MWQM.</p>

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	<p>Sinking of liquid or semi-solid oil in the open water areas of Douglas Channel and Wright Sound is unlikely, due to the fact that the density of the weathered oil does not exceed 1, and that low concentrations of suspended sediment are present in these areas. Therefore, transport of oil constituents (such as PAHs) to subtidal sediments was conservatively estimated as a process of sorption from the dissolved phase to the particulate phase (including living organisms such as plankton) followed by sinking and sedimentation. This was done based upon the conservatively estimated dissolved hydrocarbon concentrations from the MWQM. The MSQM is two-dimensional (allowing it to represent the deposition and burial of contaminants over time, with mixing of sediment layers caused by bioturbation). While it represents only a single location, that location is a worst-case location based upon maximum dissolved concentrations in the water column beneath the slick. This approach, while simple, is adequate for the first step in the environmental assessment purpose, (which is to determine first whether the Project could cause adverse environmental effects). Subsequent analysis is then used to determine whether those effects are likely to occur.</p>
<p><b>3.</b> Evaluation of the consequences (or severity) should be the result of a product/convolution between the spatial distribution of the probability of oiling obtained from the stochastic modelling and the spatial distributions of the vulnerability of the environmental receptors (resources). This should be done for each season, and preferably for each month of the year, due to the magnitude of the Project and the environmental and socioeconomic resources at risk.</p>	<p>This work can be undertaken using the stochastic approach within the risk matrix framework, as part of the detailed contingency planning process, post Project approval.</p>
<p><b>4.</b> The consequence analysis should be conducted for each of the selected spill sites. It should not concentrate on two sites only (Kitimat Terminal and Wright Sound). Different environmental</p>	<p>This work can be undertaken using the stochastic approach within the risk matrix framework, as part of the detailed contingency planning process, post Project approval.</p>

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and socioeconomic resources could be affected by different spill sites and the spatial distribution of surface water and shoreline oiling vary with the location of the spill.	
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**Specific Comments**

Northern Gateway’s Response to Environment Canada IR 2.76 (Exhibit A2I9D0) related to spill modelling	Environment Canada Response	Northern Gateway’s Follow-up Comments
<b>SC.1. OVERALL APPROACH</b>		
<i>a) Need for Additional Spill Scenarios</i>		
<p>“Given the geographic area that will be transited by vessels in the Confined Channel Assessment Area (“CCAA”) and Open Water Area (“OWA”), the range of potential spill volumes, and the variety of environmental condition that might exist at the time of a spill, there are an <b>infinite number</b> of scenarios that might transpire in respect of spill events. The approach taken by Northern Gateway in describing the effects of potential spills has been guided by a number of principles:”</p>	<p>The issue of an “infinite number” of scenarios is not specific to this project. The aim of a spill analysis is not to address an “infinite number” of scenarios, but is meant to define and address spill scenarios that pose the highest risk to environmental and socioeconomic resources.</p>	<p>Northern Gateway agrees with Environment Canada’s response and is supportive of undertaking this work during the detailed contingency planning process, post Project approval.</p>
<p>“First, Northern Gateway considered that the spill scenarios selected for discussion should be realistic and credible. The types of incidents considered and realistic spill volumes were based on <b>credible scenarios identified in the</b></p>	<p>The Proponent’s ‘Marine Shipping Quantitative Risk Analysis’ Technical Data Report as prepared by Det Norske Veritas (DNV, 2010, or “the Marine QRA”) (Exhibit A1Z6L8) did not identify scenarios. Rather, it</p>	<p>The Marine Shipping QRA (DNV, 2010) considered oil outflow as a surrogate for consequence. The environmental and socioeconomic effects from a spill were assessed separately. Notwithstanding, the</p>

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<p><i><b>DNV report.</b></i></p>	<p>provided information on the frequency and volume distributions of probable spills. In Environment Canada's view, the scenarios selected for the spill modelling analysis do not represent the distributions and findings of the Marine QRA. Recent events such as the 2010 BP Deepwater Horizon spill event in the Gulf of Mexico demonstrate the importance of considering all credible scenarios, even if their probability to occur is low. As discussed below, the probability of an event is not sufficient to select credible spill scenarios. Both the probability and consequences for environmental and socioeconomic resources should be considered in the selection of spill scenarios.</p>	<p>Marine QRA study provided input into the selection of spill scenarios and credible worst case spill volumes.</p> <p>Northern Gateway supports the selection of additional modelling scenarios, informed by an expert scientific committee, post Project approval, for the purposes of emergency preparedness and response planning.</p>
<p><i>“Second, the development of detailed, locally-specific trajectory models was intended primarily to inform the preparation of spill response plans and associated requirements for equipment and personnel, as well as for use during an actual spill response (i.e., short-term prediction of spill trajectories to aid in spill response deployment). The models are not intended for assessment purposes.”</i></p>	<p>It is important to select the scenarios that <i>inform preparation of spill response plans and associated requirements for equipment and personnel</i>. The selection of these scenarios should be based on a scientifically sound approach that can identify spill events that pose the highest risk. According to the current state-of-knowledge, the “risk matrix” method is widely used to identify such scenarios. This method is used to identify credible spill scenarios based on both their probability and consequences for environmental and socioeconomic resources.</p>	<p>Agreed. The “risk matrix” approach can be part of the detailed contingency planning process post Project approval.</p>



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<p><i>“Third, as is discussed later in this response (Federal Government IR 2.76d), the use of stochastic modelling in the assessment of potential spill effects associated with marine transportation does not add substantially to the characterization of environmental effects or the determination of potential significance of these effects.”</i></p>	<p>Environment Canada does not agree with this statement as it does not address the purpose of stochastic modelling in a risk assessment study related to oil spills (not necessarily marine transportation). Stochastic modelling is not meant to add to the characterization of environmental effects or the determination of potential significance of these effects. Stochastic modelling is used to assess the spatial extents of oiling needed to assess the extents of environmental impact by probabilistic methods.</p>	<p>Northern Gateway maintains its position with regard to the use of stochastic modelling in the assessment of potential spill effects.</p> <p>As used in the “risk matrix” approach, stochastic modeling provides a method for determining the specific spill scenarios that meet the stated criteria for ranking consequences. This approach can be part of the detailed contingency planning process post Project approval.</p>
<p><i>“In the Application (Volume 8C) Northern Gateway presented the results of trajectory modelling for five spill scenarios. Four involve large spills of 10,000 m<sup>3</sup>, at locations throughout the CCAA and OWA. One involves a much larger, 36,000 m<sup>3</sup> spill in Wright Sound, within the CCAA. Effects on the biophysical and human environments and spill response approaches, specific to the location and timing of each spill scenario, were also provided.”</i></p>	<p>In a previous paragraph, the Proponent stated that: <i>“The models are not intended for assessment purposes”</i>. In this argument, the Proponent claimed that: <i>“Effects on the biophysical and human environments and spill response approaches, specific to the location and timing of each spill scenario, were also provided”</i>. These two statements contradict each other and the effects on the biophysical and human environments that the Proponent is referring to were not assessed using the method as discussed above under the subsection titled <i>Consequence Analysis</i>.</p>	<p>Northern Gateway maintains that the assessment of effects on the biophysical and human environment was not the intention of the models provided in the Application (Volume 8C). Rather the unmitigated effects, qualitatively described for each scenario, were provided as supplementary information to achieve a greater understanding of the site-specific requirements for spill response planning applicable to each scenario.</p>
<p><b>b) Spatio-temporal Modelling</b></p>		
<p><i>“Northern Gateway has outlined an extensive list of commitments to reduce the chance of a</i></p>	<p>The probability of a spill event is not sufficient to select spill scenarios to model. Both the</p>	<p>This approach can be part of the detailed contingency planning process post Project approval.</p>

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<p><i>spill occurring from a tanker calling at the Kitimat Terminal. As noted in the DNV Risk assessment, the probability of a major oil spill occurring is low (1 in 15,000 years); however it is impossible to eliminate all risk.”</i></p>	<p>probability and the consequences for environmental and socioeconomic resources should be considered to select spill scenarios that help more effectively understand the risk.</p>	
<p>“While other specific spill scenarios could be chosen to show different consequences to marine birds, traditional use, or any number of receptors, Northern Gateway does not agree that this will result in different conclusions in the environmental assessment. Because vessels are moving through the CCAA and the OWA (i.e., they are not stationary), there is potential for an incident to occur anywhere along the marine transportation routes. As a result, there are an <b>infinite number</b> of possible locations and conditions that could be postulated for spill scenarios. Ultimately the trajectory of a single spill, the spill response and its success, and the consequences of a spill would be influenced by on a range of factors such as:</p> <ul style="list-style-type: none"> <li>- the type of oil spilled</li> <li>- the exact location of the spill</li> <li>- the volume of oil spilled</li> <li>- the response and restoration actions taken</li> <li>- the weather and oceanographic conditions</li> <li>- the time of year</li> <li>- time of day</li> <li>- proximity to sensitive areas”</li> </ul>	<p>It is unclear which conclusions are being referred to. Reading the Summary and Conclusions sections in NGP (2010b) and NGP (2010c), there appear to be no results-based conclusions in either report. Considering more scenarios with the approach used by the Proponent would not be expected to add significant information to the end results. This is not because the end results are not sensitive to the number of scenarios considered, but rather because of the approach used by the Proponent to assess the impact on environmental and socioeconomic resources.</p> <p>The issue of an “infinite number” of possible locations and conditions is not specific to this project. This issue has been and continues to be part of modelling studies related to oil spills in the marine environment. This same remark applies for listing the various factors that may affect the oil spill trajectory. One of the fundamental reasons why the stochastic method was introduced in risk assessment studies is due to the wide variety of these factors and their influence on the end results. In contrast to the deterministic method, the</p>	<p>In response to the first comment, Northern Gateway maintains that the assessment of effects on the biophysical and human environment was not the intention of the models provided in the Application (Volume 8C). Rather the unmitigated effects, qualitatively described for each scenario, were provided as supplementary information to achieve a greater understanding of the site-specific requirements for spill response planning applicable to each scenario. Additional scenarios will not change the conclusions drawn from the modeling.</p> <p>Northern Gateway agrees with the benefits of conducting a stochastic modeling study as part of detailed contingency planning. Northern Gateway is supportive of undertaking this work during the detailed contingency planning process, post Project approval.</p>

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	<p>stochastic method takes into consideration the variability inherent in weather and oceanographic conditions, the year and day of the spill. By considering an appropriate number of spill scenarios, this method can also include the effects of the spill volume, spill location and spill type if necessary. Results-based conclusions can be obtained from such studies regarding the most probable environmental impact that may results from a spill in the study areas. This is why the number of spill scenarios is important.</p>	
<p><i>“As stated by Northern Gateway in the Application (Volume 8C, Section 1.2), “it is assumed that all areas along the Northern and Southern Approaches are at risk of being oiled in the event of a spill.” Northern Gateway has qualitatively assessed the entire Confined Channel Assessment Area and Open Water Area relating to the potential effects of hydrocarbon spills. Northern Gateway identified that there is the potential of significant and adverse effects on the biophysical environment and human uses (e.g., traditional use, other types of fishing, recreation) resulting from an oil spill. Depending on the spill conditions and the success of the response, effects could persist over the moderate to long term. <b>Providing additional scenarios will not change the prediction of effects in the environmental</b></i></p>	<p>Using a different modelling approach as discussed above, the number of scenarios selected using the risk matrix method will provide a much more representative assessment of the environmental impact.</p>	<p>Northern Gateway maintains that the same conclusion would be reached using the risk matrix approach because the consequences are high. A more “representative assessment” would not change the result of the risk calculation.</p>

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<i>assessment.”</i>		
<b>d) Assessment of Spill Trajectories and Consequences</b>		
<p><i>“Environment Canada requests that an assessment of the environmental effects of a spill be completed based on a geographic-specific analysis of spill probability combined with an analysis of environmental consequences for areas with high probabilities for spill contact. To do this, the following would be required. First, a number of stochastic modelling runs would need to be completed for different volumes and types of oil using multiple locations within the CCAA (to represent the movement of a vessel through the CCAA and the potential for a spill to occur anywhere within the CCAA). While annual probabilities could be computed, it would likely be best to do this for specific seasons, and at least the summer inflow or the winter outflow periods. The mathematical prediction of oiling potential would then be overlaid on maps of seasonal environmentally sensitive areas to determine how likely it would be that oil would affect an environmentally sensitive or important area.”</i></p>	<p>Two key references have been provided in this review report to aid the Proponent in conducting this work. A sufficiently large number of stochastic runs should be used to ensure the end results are statistically representative for the process studied. This work should be done for both the Confined Channel Assessment Area (CCAA) and Open Water Area (OWA). At least four seasons should be used for each of the selected spill locations. The purpose is to consider locations at high risk for spill incidents. This approach has been used in major assessments in the past and it is well recognised by the oil spill community as a state-of-the-art method (TRB, 2008; AIRS, 2011; Etkin <i>et al.</i>, 2011).</p>	<p>Northern Gateway agrees with this comment. Etkin <i>et al.</i> (2011) describes an approach that can be part of detailed contingency planning post Project approval.</p>
<p><i>“While this approach has been used by some assessors to attempt to quantify and discuss the effects of an oil spill on the biophysical and human environment, Northern Gateway does</i></p>	<p>In its response to Government of Canada Information Request No. 1.116 (Exhibit A2E8J0), the Proponent cites two references (Fingas, 2011 and Simecek-Beatty, 2011). The</p>	<p>Additional modelling can be part of the detailed contingency planning process post Project approval.</p>

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<p><i>not support this approach and offered several references that discussed the most appropriate uses for trajectory models.”</i></p>	<p>Proponent writes: “<i>Fingas (2011) and Simecek-Beatty (2011) both discuss uncertainty associated with use of trajectory models and the appropriate use of these models primarily to aid in short-term spill response planning</i>”. This cannot be used as an argument for not using the probabilistic approach discussed here, or stochastic modelling specifically. The two references indeed support the use of stochastic modelling compared to deterministic modelling when predicting oil trajectory. In the first reference, Fingas (2011) emphasizes that the major limitation in oil trajectory modelling is due to the lack of an accurate knowledge of winds and currents. This reinforces the need for statistically-generated estimates. While Fingas’ modelling chapter relates to spill modelling in general, Simecek-Beatty’s (2011) paper explicitly addresses uncertainty in oil spill trajectory forecasting. The overall message of that work is that providing an oil trajectory forecast to decision makers without clear indication of the uncertainty is not acceptable in modern oil spill modelling practices. Keeping in mind that the Simecek-Beatty (2011) paper focused on oil trajectory forecasting during the response to oil spill events, she reported that the ensemble forecasting developed relatively recently is one way to include uncertainty in the predictions.</p>	
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	<p>The main philosophy of stochastic modelling is based on ensemble modelling which takes into consideration the possible variations in weather conditions.</p>	
<p><i>“The spill models use a grid to predict the movement of hydrocarbons. In the case of the Local model (i.e., the CCAA), a 400-m grid was used versus a 3-km grid for the Regional Model (i.e., OWA). The models use multiple “slicklets” to predict hydrocarbon trajectories as opposed to a large spill mass. Together the trajectories of the different slicklets are used to predict the overall behaviour of a spill. The prediction of oil presence in a specific grid unit (i.e., a pixel), only indicates that a “slicklet” of oil may move from one pixel in to the next pixel. While the model can predict where each slicklet might travel based on the map pixels, there is no direct relationship to the volume of oil, the state of the oil (e.g., fresh, slick, emulsified), the specific trajectory of that slicklet within the pixel, or the potential for shoreline oiling.”</i></p>	<p>Firstly, the Lagrangian method has been used extensively in tracking oil spills both in real spill incidents and in risk assessment studies. Secondly, the statement that: “<i>there is no direct relationship to the volume of oil, the state of the oil (e.g., fresh, slick, emulsified), the specific trajectory of that slicklet within the pixel, or the potential for shoreline oiling</i>” applies to the model used by the Proponent, not to the Lagrangian method frequently used in oil spill modelling. The Proponent used two models to address the transport and fate of oil spills. One was used for the spill trajectory and a second model (SLROSM) to address the weathering and mass balance predictions. The two models were not coupled. The technical problems raised above would not be encountered if oil spill modelling was conducted using an integrated system of three dimensional hydrodynamic and oil spill models.</p>	<p>Northern Gateway agrees with these comments. The suggested approach can be followed during detailed planning, post Project approval, for the purpose of informing emergency preparedness and response planning.</p>
<p><i>“The results of each stochastic modelling are dependent on the location used for the start of the modelling run. The models also employ real historical information on weather (e.g.,</i></p>	<p>It is not clear how this can be used as an argument for not using the probabilistic approach to assess the risk of environmental impacts. The modelling results presented in</p>	<p>Northern Gateway acknowledges that Environment Canada does not agree with this comment. However, Northern Gateway maintains its position regarding the environmental assessment approach used.</p>



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<p><i>temperature, wind speed and direction), as well as historical and predicted oceanographic conditions (e.g., current direction and speeds). Because the tankers will be moving through the CCAA and OWA, and are not stationary, multiple stochastic runs would be required to represent multiple locations and different seasons. While the output from a stochastic model differs from those employed in the environmental assessment, Northern Gateway used a similar approach in using multiple locations and seasons (some scenarios were in summer and some in winter). In response to a request from the JRP, Northern Gateway has now completed additional opposite season modelling for each spill scenario further increasing the number of spill scenarios completed.”</i></p>	<p>Hay and Co. (2011a,b) and additional simulations conducted for the same locations for opposite seasons were obtained using deterministic trajectory modelling of few scenarios considering the summer and winter seasons and the selected spill sites. Environment Canada does not agree that the approach taken is similar to the stochastic modelling approach.</p>	<p>Northern Gateway supports the development of additional modelling scenarios, post Project approval, for the purposes of emergency preparedness and response planning.</p>
<p><i>“While data is available on the regionally-important habitat areas for marine biota, including marine birds, this information is not at a scale that would be suitable for highly site-specific assessments of effects of oil presence and probability in a map pixel, on the environmental resources within the same pixel. While the coastal sensitivity atlases for the CCAA and OWA do contain geo-referenced environmental data layers on aspects such as marine bird habitat, marine fish, fishing areas and traditional use, these data layers are</i></p>	<p>The lack of some of the data needed to conduct the study does not negate the need to use the recommended methodology to assess the risk of impact. Instead, the lack of data should motivate data collection to conduct the study more thoroughly. For the shoreline data, the study conducted by Polaris (2010a,b) aimed to provide updated information on the shorelines of both the CCAA and OWA areas.</p>	<p>Northern Gateway agrees with this comment. The stochastic modelling within the risk management approach can be used during the detailed contingency planning process post Project approval.</p>

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<p><i>based on the coastal atlases prepared by Province of British Columbia in the early 1990s and are coarse scale information and dated. However, as noted in the environmental assessment and many other responses to information requests, Northern Gateway will update the atlases in collaboration with federal and provincial government agencies and coastal Aboriginal groups following project approval and in advance of the start of operations.”</i></p>		
<p><i>“While maps can be produced that illustrate the probability that a slicklet may move through a specific area or touch a shoreline segment, as there is no information on actual exposure to oil (i.e., amount, weathering), there is no meaningful way to quantify the potential environmental effect (i.e., geographic scope, magnitude, duration and frequency) or to assign a significance rating to that specific map unit. In absence of such information and equally detailed information on the geography and temporal behaviour of the spill in relation to environmentally-sensitive areas, the worst case assumption for the map unit would be that effects on sensitive species, resources or harvesting would be adverse and significant. For example, if the area was a known key habitat area for marine birds for the specific time of year for the spill model, there is no</i></p>	<p>This applies for the un-coupled trajectory and fate and behaviour modelling approach used by the Proponent. However, coupled trajectory-weathering oil spill models can track many parameters in space and in time. All the weathering processes can be tracked and surface oiling can be quantified. As for the evaluation of the impact on the different species, various approaches have been used. The easiest approach is to associate a sensitivity factor for the different species. At minimum, the results should establish sufficient understanding of relative impact of spill size, types of oil spilled, spill locations, and spill season on the environmental and socioeconomic resources. Environment Canada recommends that the Proponent consult other risk assessment studies similar to this project. Of these, the Aleutian Islands Risk</p>	<p>Each slicklet carries the full set of weathering information as computed by the SL Ross model. Improved coupling could be undertaken as part of the detailed planning process post Project approval and could be informed by an expert scientific committee, as recommended by Environment Canada.</p>

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<p><i>accurate method to predict the actual number of birds that would contact the oil slick or how they would be affected (i.e., the number of birds that would be killed as a result of fouling, hypothermia and/or ingestion). Instead, for a conservative analysis, it would have to be assumed that large number of the marine birds would be present and vulnerable, and that mortality effects on those birds would be adverse and significant. The end determination is therefore identical to that which is already predicted in the environmental assessment for Northern Gateway and in earlier information requests.”</i></p>	<p>Assessment Project is highly recommended. The technical documentation for this effort is available at: <a href="http://www.alutiansriskassessment.com">www.alutiansriskassessment.com</a>. Even though it started recently, the Cook Inlet Maritime Risk Assessment Project is highly recommended as well. Additional information is available at: <a href="http://www.cookinletriskassessment.com">www.cookinletriskassessment.com</a>. Finally, Special Report 293 released by the Transportation Research Board of the National Academies (TRB, 2008) may also provide helpful guidance.</p>	
<p><i>“The stochastic modelling and consequence analysis will not improve the understanding of long-term chronic effects on marine ecosystems and food chains. An Ecological Risk Assessment, as was done in the environmental assessment for Northern Gateway, would still be required to better understand partitioning and persistence in the environment and associated chronic effects.”</i></p>	<p>Stochastic and consequence analysis do not aim to “<i>improve the understanding of long-term chronic effects on marine ecosystems and food chains</i>”.</p>	<p>Agreed.</p>
<p><i>“The completion of seasonally-specific stochastic models and an overlay onto same-season environmentally sensitive areas would only provide the probability that an area might be affected by oil. The likelihood of the spill occurring would still need to be considered.</i></p>	<p><i>“The likelihood of the spill occurring would still need to be considered”</i> is addressed in the definition of the risk matrix. The evaluation of the risk of impact as defined by the product of the probability of oiling and the consequences relates to the scenarios identified as posing the</p>	<p>Northern Gateway maintains its opinion that the calculation of risk using the risk matrix approach would still result in the same conclusion.</p>

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<p><i>While DNV did provide the likelihood of an oil spill incident per segment of the shipping routes (i.e., areas along the shipping route with similar operating conditions), they concluded that a major marine spill is not likely to occur during the life of the project. The likelihood that a spill will occur is an essential consideration in the assessment of adverse environmental effects for accidents and malfunctions.”</i></p>	<p>highest risk from the risk matrix.</p>	
<p><i>“Given these multiple information sources, Northern Gateway respectfully disagrees that an environmental consequence analysis based on stochastic modelling will provide information that aid in better understanding the effects of an oil spill or the ecological significance of an oil spill. The conclusions on significance from a stochastic modelling and consequence analysis will not be different than those already stated in the environmental assessment. The analysis would be a costly and time-consuming undertaking with no corresponding benefit to the environmental assessment and the conclusions on the effects of oil spill effects.”</i></p>	<p>The statements made in this paragraph are not consistent with current state-of-the-art approaches to spill modelling. The Proponent’s statement that: <i>“The conclusions on significance from a stochastic modelling and consequence analysis will not be different than those already stated in the environmental assessment”</i> is not supported by the international oil spill modelling community. The method used in this study cannot provide similar conclusions as those obtained with stochastic modelling for the reasons discussed above. Furthermore, the international oil spill community considers the probabilistic/stochastic method as the state-of-the-art and has been and continues to be used in major marine oil transportation projects (TRB, 2008; AIRS, 2011; Etkin <i>et al.</i>, 2011).</p>	<p>The conclusions from a modeling study using the risk matrix approach would not change the conclusion that a spill could have adverse and significant effects. Etkin, <i>et al.</i> (2011) presents the use of the risk matrix approach as a tool for contingency planning. Using this method, they outline how modeling is used in this context to assess spill impacts and evaluate different response strategies and protective schemes. This approach can be followed as part of the detailed contingency planning process post Project approval.</p>

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**Part B: Proponent's Approach to Modelling**  
**Overall Comments**

Comments from Environment Canada	Northern Gateway's Response
<b>OC.IV. WIND CONDITIONS</b>	
<p>Wind plays important roles in the trajectory and fate modelling of oil spills. Wind conditions used in both the regional and local models are questionable for the reasons listed below.</p> <p>1. Wind data from 2004 were used to assess transport and fate of oil spills. No justification was provided to support the selection of this specific year only. As stated in the first paragraph in page 1-1 of the Proponent's 'Wind Observations in Douglas Channel, Squally Channel and Caamaño Sound' Technical Data Report (Hay and Co., 2010) (Exhibit <a href="#">A1V8J1</a>), additional weather stations within the study area, such as the six GEM meteorological stations, became operational after 2004. Considering observations from these additional stations would enhance the accuracy of the spatial interpolation of the wind data. Without these stations, interpolated wind fields could be considered inaccurate, as stated in the last paragraph of Hay and Co. (2010).</p>	<p>The Hayco (2010) report does not state that the wind fields are "inaccurate"; the report instead states that the wind data contains "inaccuracies" in the areas of Squally Channel and Caamaño Sound. It may be true that the wind model could be subject to improvement in some areas using wind data from additional stations. Post Project approval, larger wind datasets, including the six from Northern Gateway's stations, can be used as inputs for modelling.</p>
<p>2. The approach used to interpolate wind data on the 3 km grid for the regional model has not been verified. Only one example was illustrated in Figure 2-8 in the Proponent's 'Hydrocarbon Mass Balance Estimates - Inputs for Spill Response Planning' Technical Data Report (Hay and Co., 2011a) (Exhibit <a href="#">A1Z6T0</a>). The wind field shown in this Figure is not realistic, especially for the middle and southern parts of the area covered by the grid. A more elaborate discussion and illustration of the results from this</p>	<p>Northern Gateway is unclear as to the aspects of the wind field that Environment Canada believe are unrealistic.</p> <p>GEM-LAM could be used for validation and, with the appropriate adjustments, could become the basis for the wind field in future modelling.</p>



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<p>interpolation method used for the regional model should be added in the Technical Data Report dealing with wind observations (Hay and Co., 2010). Validation of the method is required. A possible approach is to compare with the gridded wind fields generated by the GEM-LAM West 2.5 km wind model running at the Canadian Meteorological Centre for operational spill modelling in the region. But, validation against the observations is necessary, as wind fields predicted by the GEM-LAM West are also not immune from errors.</p>	
<p><b>3.</b> The kinematic model used to correct the interpolated wind fields on the 400 m grid due to canyon effects is too simplistic and lacks appropriate validation. The description of the method used was very brief. The study area is known for its very complex topography and wind circulation. Because many wind stations are available within the study area, it is important to use an established diagnostic or “mass consistent” wind model to generate 3D wind fields that are consistent with such complex terrain from the observations.</p>	<p>The 2D kinematic wind model is mass-conserving. Even with Northern Gateway's six additional stations, there remains insufficient information, in both horizontal and vertical coordinates, to warrant a 3D interpolation encompassing the many side valleys that drain into Douglas Channel, for example.</p>
<p><b>4.</b> The approach used to validate the kinematic model and discussed in section 6 of Hay and Co. (2010) and briefly in section 3.1.4 in Hay and Co. (2011a) requires revision as it uses a questionable comparison with the observations. In all three scenarios used to validate the model and discussed in section 6 of Hay and Co. (2010), the data observed at the GEM stations were used to generate the wind fields and used also to verify model results. This approach is not consistent with recognized methods used to validate predictive models. An appropriate validation approach should be based on comparing model results (wind field) with the observations from wind stations that were not used to</p>	<p>The interpolation method has the freedom to modify the initial interpolated wind field at all points, including the observation points, in order to force mass conservation. For that reason, use of the data for both computing the wind field and for validation is justified. For instance, consider the Wall Island time-series of Figure 6-7 in Hay and Co. (2010). One notes that the observed vectors (red) and the modelled vectors with the Wall Island and other GEM station data (blue) are similar, but not identical. The interpolation without the GEM data, in black, is almost entirely incorrect. Similarly, South Hecate winds changed from the observed values to a similar but slightly different time-series of winds after the model interpolated the observations in a mass-</p>



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<p>generate the interpolated wind field. For instance, two or three of the stations located in the interior of the study area (Kersey Point, Dorothy Island, Emilia Rock, Wright Sound, and Fawcett Point) should be used for validation and not include the data from these stations to generate the wind field as it was done in the study. Why were Kersey Point and Dorothy Island not considered in the validation work (Figures 6-7 to 6-10 in Hay and Co. (2010))? Why was South Hecate used in the validation while it was used to set the boundary conditions for the kinematic model?</p>	<p>conserving manner.</p> <p>Kersey Point and Dorothy Island were not included in the validation work as both observation sites turned out to be too strongly influenced by local topography. Kersey Point was not sensitive to southerly winds, and Dorothy Island was not sensitive to northerly winds. Rather than attempt a subjective filtering of the kinematic model time series at these points, they were excluded from the validation comparisons.</p>
<p>5. Because wind is a key parameter controlling the transport and fate of spilled oils, it is recommended to have the study on wind reviewed by an expert meteorologist in spatial and temporal interpolations of weather variables. Such an expert should also have a good understanding of numerical modelling.</p>	<p>Northern Gateway agrees with this recommendation. Northern Gateway wishes to point out that such a review would go beyond what is typically done for these types of oil spill modeling studies. It is generally sufficient to demonstrate that the wind model reasonably captures the wind field over the spill area.</p> <p>This review could be undertaken as part of the detailed planning process post Project approval and could be informed by the expert scientific committee.</p>
<p><b>OC.V. HYRODYNAMIC MODELLING</b></p>	
<p>Hydrodynamic modelling was performed using a low resolution (3 km) regional model and a high resolution (400 m) local model. A nesting procedure was used to couple the two models in one way. Both models used structured grids. Accurate hydrodynamic modelling is necessary for the proper modelling of the transport and fate of oil spilled in the study areas. Even though limited validation was considered, significant discrepancies were shown between predicted and observed currents. There is a need to improve the accuracy of current prediction before addressing oil spill modelling.</p>	<p>Through the validation, the station where one would expect the model to perform well, because of adequate wind data and simple geometry, CM2, did show good agreement, except at 150 m. CM1, at the upper part of Kitimat Arm, did not perform as well. As evident in Figure 6-7 of Hay and Co. (2010), without the GEM data, winds at Emilia Rock are frequently not correctly estimated. Similar comments apply to the CM4 data.</p> <p>In acknowledgement of the above, Northern Gateway considered that future modelling, post Project approval would benefit from the GEM wind data, and could use the salinity and temperature fields</p>

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<p><b>1.</b> As discussed in the Specific Comments section above, limited validation of the hydrodynamic model was shown. Even with such limited verification, significant disagreement between the predicted and observed currents has been noted from Section 3 and is also discussed in Section 4 of Hay and Co. (2011a). Actions should be taken to improve the hydrodynamic models. Further clarification should be offered on the decision to focus validation of the models on a small part of the existing databases in general and on the observation made by ASL (2010) for this project specifically.</p>	<p>from the existing run as a better initial condition. Greater attention could also be given to spatial variability in upper Kitimat Arm, to improve agreement at CM1.</p>
<p><b>2.</b> It should be explained why data assimilation was not performed using existing data to improve the accuracy of both the regional and local hydrodynamic models. This procedure is now well developed and used to improve model predictions in ocean modelling.</p>	<p>Data assimilation is appropriate only after a reasonable non-assimilative model is developed. Northern Gateway is of the opinion that such a stage has now been reached and data assimilation will be a consideration for post Project approval improvements to hydrodynamic models.</p> <p>Northern Gateway notes that such work goes beyond what is typically undertaken for similar types of oil spill modeling studies. Developing and running a model with true data assimilation is non-trivial and only suited for a large scale, long term modeling effort supported by an industry and government consortium.</p>
<p><b>3.</b> The study areas, especially the CCAA, are characterized by very complex topography and narrow channels. As acknowledged in the first paragraph in page 4-5 of Hay and Co. (2011a), high spatial resolution is needed to capture complex flow circulations in these channels. Most of the selected spill sites are in these channels. It should be clarified why spatial resolution was not increased (grid size of 100 m or less) in narrow sections of the CCAA and why non-structured grids were not used to enhance the resolution in</p>	<p>Northern Gateway supports the view that a modeling study of this nature and scope is meant to capture the currents in an average sense in order to predict how a spill will be transported. The hydrodynamics are complex within the CCAA but Northern Gateway does not consider it necessary to resolve the small scale features in order to adequately predict spill trajectories.</p> <p>The H3D model uses a structured grid, so it is not possible to increase spatial resolution in particular areas. In narrow one-</p>

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<p>these locations.</p>	<p>dimensional channel sections, H3D allows the width of the channel to be modified, and this change could be undertaken, if required, in modelling post Project approval.</p> <p>With respect to non-structured grids, many models in wide usage (e.g., ROMS, POM, and EFDC) use structured grids. Northern Gateway notes that the GEM LAM 2.5 km meteorological model, as referenced in Environment Canada's review, uses a structured grid in the horizontal.</p>
<p>4. Because hydrodynamic currents are important inputs for oil spill modelling, it is recommended to have the study on hydrodynamic modelling reviewed by an expert oceanographer in coastal hydrodynamic with a good knowledge of the study areas and a thorough understanding of numerical modelling.</p>	<p>Northern Gateway agrees with this recommendation. Northern Gateway wishes to point out that such a review would go beyond what is typically done for these types of oil spill modeling studies. It is generally sufficient to demonstrate that the hydrodynamic model reasonably captures the mean features of the current field over the spill area.</p> <p>This review could be undertaken as part of the detailed planning process post Project approval and could be informed by the expert scientific committee.</p>
<p><b>OC.VI. OIL SPILL MODELLING</b></p>	
<p>The oil spill scenarios in this study take place in relatively confined channel areas where the oil-shoreline interaction plays a major role in the mass balance calculations in particular and in the fate and behaviour of the spilled oil in general. The modelling approach used in this study employed two different models: one for trajectory that addresses oil-shoreline interaction and another for the fate and behaviour. The models were not coupled and were run separately. While the modelling work conducted in this project appears to be significant, there are several weaknesses concerning</p>	<p>Northern Gateway agrees with this recommendation and is supportive of using such an approach to stochastic modelling post Project approval.</p> <p>It should be noted that the availability of multi-decadal wind data is currently considered insufficient for the purposes of multi-decadal simulations.</p>

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<p>the approach used and the results shown to assess the environmental impact related to possible oil spills. Comments and suggestions to improve oil spill modelling for this project are listed below.</p> <p><b>1. Stochastic Modelling</b></p> <p>i. The Technical Data Report by Hay and Co. (2011a) stated in page 2-17 that the trajectory model was run in a stochastic mode considering the four seasons, four spill locations and three oils/condensate scenarios, for a total of 48 stochastic runs. However, no results from these stochastic simulations were discussed in any of the reports reviewed. Stochastic trajectory modelling is crucial for such a risk assessment study. It is recommended to conduct thorough stochastic modelling for each spill site considered in the study using the appropriate approach and conditions. Special attention should be given to considering representative multi-decadal wind databases and sufficiently high numbers of simulations per stochastic run in order to capture possible variations in oil trajectories and probability of oiling.</p>	
<p>ii. Apparently, results from the stochastic modelling were used to define the “specific” spill scenarios, which is the appropriate approach. However, a clear description of the method used to select these scenarios is missing. For instance, how is “most representative” defined (first paragraph in page 2-18 in Hay and Co. (2011a))? As results from the modelling of these specific spill scenarios were used in the overall assessment of the potential effects on the biophysical and human environments, it is crucial that a complete description of the method used to select the range of environmental conditions for these scenarios is provided and</p>	<p>The assessment was visual. An animation procedure was developed so that the trajectories of every tenth slicklet in the simulations overlay the stochastic map of probability. The spill for which trajectories most closely lay in the high-probability areas was deemed most representative.</p>

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illustrated in the report.	
<p><b>2. Oil Fate Modelling</b></p> <p><b>i.</b> The Proponent's 'Properties and Fate of Hydrocarbons Associated with Hypothetical Spills at the Marine Terminal and in the Confined Channel Assessment Area' and 'Properties and Fate of Hydrocarbons Associated with Hypothetical Spills in the Open Water Area' Technical Data Reports as prepared by SL Ross Environmental Research Ltd. (SLRoss, 2010a,b) (Exhibits <a href="#">A1V8F9</a> and <a href="#">A1V8G0</a>) describe the work completed on oil fate modelling. These Technical Data Reports show very limited information about the methods used to model the different weathering processes. Also, no reference was provided regarding a detailed description of the oil spill model, SLROSM, used in the study and its validation and calibration. Such information is crucial to understand why the model produced non-realistic results related to weathering and shown in some of the Figures 4-2 to 4-97 in SLRoss (2010a) and Figures 2-2 to 2-49 in SLRoss (2010b), as discussed below. Detailed description of the algorithms used to predict the dispersion, emulsification, spreading, and viscosity change with time, as well as all modelled processes, should be included in the reports. Validation and calibration of the model should be described as well.</p>	<p>Northern Gateway confirms that information was not provided in the report, as indicated by Environment Canada.</p> <p>The following is a brief description of the sources of the main spill process algorithms used in SLROSM. The spreading model relies on the work of Fay (1971) and Mackay <i>et al.</i> (1980a) but includes modifications to account for oil viscosity changes and the development of a yield stress in the oil (<i>i.e.</i>, pour point). Longer term spreading takes into account oceanic diffusion processes according to relationships developed by Okubo (1971). Evaporation models use the work of Stiver and Mackay (1983) with modifications developed by SL Ross and Mackay (1988). Natural dispersion is modelled using either Audunson's (1980) natural dispersion model modified to account for oil density, viscosity, interfacial tension and pour point or Delvigne's (1985, 1987) oil entrainment model. In this project, Audunson's algorithms were selected for the Modeling. Emulsification is modelled using the relationship developed by Mackay and Zagorski (1982) with modifications by Bobra (1991) and SL Ross and Mackay (1988).</p> <p>References:</p> <p>Audunson, T. 1980. The fate and weathering of surface oil from the <i>Bravo</i> blowout. Marine Environmental Research No. 3, p 35-61.</p> <p>Bobra, M. 1991. Water-in-oil emulsification: A physicochemical study. Proceedings of the 1991 Oil Spill Conference, American Petroleum Institute, Washington, D.C. pp 483-488.</p>

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	<p>Delvigne, G.A.L. 1985. Experiments on natural and chemical dispersion of oil in laboratory and field circumstances. Proceedings of the 1985 Oil Spill Conference, American Petroleum Institute, Washington, D.C.</p> <p>Delvigne, G.A.L. 1987. Droplet size distribution of naturally dispersed oil. In Kuiper, J. and W.J. Van den Brink (eds). Fate and effects of oil in marine ecosystems. Martinus Nijhoff Publications, Dordrecht, Netherlands, p. 29-40.</p> <p>Fay, J.A. 1971. Physical processes in the spread of oil on a water surface. Proceedings of the Conference on the Prevention and Control of Oil Spills, American Petroleum Institute, Washington, D.C., p. 463-467.</p> <p>Mackay, D. and W. Zagorski. 1982. Water in oil emulsions: a stability hypothesis. Proceedings of the 5th Annual Arctic and Marine Oilspill Program Technical Seminar. Environment Canada, Ottawa.</p> <p>Mackay, D., I.A. Buist, R. Mascarenhas and S. Paterson. 1980a. Oil spill processes and models. Department of Chemical Engineering, University of Toronto, Toronto, Environmental Protection Service Publication No. EE-8.</p> <p>Okubo, A. 1971. Oceanic Diffusion Diagrams. Deep Sea Research, Vol. 18, p. 789-802. eds. Perry, R.H. and D.W. Green. 1984. Perry's Chemical Engineers' Handbook. 6th Edition, McGraw Hill Book Co.</p> <p>S.L. Ross Environmental Research Ltd. and D. Mackay Environmental Research Limited. 1988. <i>Laboratory studies of the behaviour and fate of waxy crude oil spills.</i></p>
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	<p>Environmental Studies Research Funds, Report 084, Ottawa.</p> <p>Stiver, W. and D. Mackay. 1983. Evaporation rate of spills of hydrocarbons and petroleum mixtures. Environmental Protection Service, Environment Canada, EE-8.</p>
<p>ii. The weather conditions used to generate fate modelling results shown in Table 4-2 and Figures 4-2 to 4-97 in SLRoss (2010a) and in Table 2-1 and Figures 2-2 to 2-54 in SLRoss (2010b) are not clear and the explanation provided in the two Technical Data Reports is confusing. Specifically, were the results shown in SLRoss (2010a) obtained using the seasonal average (as it is mentioned in each subsections from 4.3.1 to 4.6.3) wind shown in Table 4-1, i.e. was wind kept constant during each simulation period? If this is the case, the results of such simulations do not have substantial value for the evaluation of the environmental impact. Ultimately, the results could be presented in tabular format for indication purposes only. If a variable wind (time series) was used in each of these simulations, there is a need to clarify this in the reports. The need for this clarification is further illustrated from the presentation of the results. It is not clear why simulations in the Open Water Area (OWA) refer to specific months (January, April, June and October) (Figures 2-2 to 2-49 in SLRoss, 2010b), while those for the Confined Channel Assessment Area (CCAA) refer to seasons (winter, spring, summer and fall) (Figures 4-2 to 4-97 in SLRoss, 2010a). It is recommended that further detail and justification be offered on which wind conditions were used in all the fate modelling studies. Time series of the wind used should be shown in the reports.</p>	<p>The oil fate results in SL Ross (2010a) (Table 4-2 and Figures 4-2 to 4-97) were generated using “real-time” time series of varying winds, water temperatures and air temperatures selected by Hayco. The specific time series selected were based on Hayco’s stochastic model results that were used to identify spill input conditions that resulted in typical spill behavior for that location and season, as described on page 4-3 of the TDR.</p> <p>Representative wind and temperature time series were used in both the OWAA and the CCAA. The actual time series data could be provided to Environment Canada, if necessary.</p>

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<p>iii. One of the most significant issues with the results of the fate modelling shown in both Technical Data Reports (SLRoss 2010a,b) relates to the calculation of natural dispersion. The percentage of oil dispersed is highly overestimated. The algorithm used to model oil dispersion provides unrealistic results. Not only do the data show considerable overestimation of the dispersion, but they also show questionable variations of the process with time. The model needs significant revision and validation. Similar observations were made when checking modelling results for the specific examples discussed in Section 4.2 in Hay and Co. (2011a). Not only the results show overestimations of the dispersion of oil, but also oil re-surfacing was not taken into consideration. For instance, for the spill example discussed in page 2-26 of the report, Figure 4-18 shows relatively calm wind conditions during the first three days of the simulation. It should be explained why about 40% of the spilled SYN oil is dispersed during this period (Figure 4-9 and Table 4-7). Also, significant oil re-surfacing is expected to take place during the fifth day (very calm wind conditions, Figure 4-18) after the dispersion of 40% of the oil. This is not shown in the mass balance calculations. SYN oil is light, but similar oils do not disperse that easily, especially at low temperatures and after weathering. It is recommended to provide a full description of the algorithm used to assess natural dispersion and how the re-surfacing of large droplets is addressed. Validation of the algorithm(s) should be discussed.</p>	<p>The modeling results from the three oil types considered in the Project provide a wide-range of oil fates and worst case conditions that were subsequently used to evaluate potential spill impacts and to guide spill response planning. The dilbit fate results provide scenarios with most of the oil remaining on the surface, the synthetics and condensate products provide scenarios where most of the oil is predicted to quickly disperse. The potential surface water and in-water impacts from spills of products to be shipped by the Project are thus covered by the modeling results. Refinement of the dispersion modelling process would not alter the conclusions of the spill impact assessments or the spill response planning.</p>
<p>iv. Modelling of evaporation was based on the Mackay approach. The three calibration constants in the model were established by running laboratory tests using a constant wind speed of 3 m/s, as described in SLRoss (2010a). First, the time resolution for sampling the process was coarse, especially during the first hour</p>	<p>Northern Gateway maintains its position with regard to the work undertaken on the characterization of the evaporation parameters.</p>

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<p>(two points at most, as shown by the first column in the tables showing the evaporation data in Appendix A). It is impossible to capture the proper trend of the evaporation process with such a low sampling rate, especially for light and highly volatile products such as the SYN oil and CRW condensate. As a result, the evaporation could be underestimated. While this could be seen as a conservative approach from a mass balance perspective, it may lead to underestimation of the emulsification process during the first hours of the spill, which in turn will lead to overestimation of the natural dispersion. Second, the evaporation tests were conducted in duplicate. It is not clear how these data were used to determine the three constants in the Mackay model. Further clarification of the significance of the red dots in the corresponding figures in Appendix A and on how the two-day series of data were used to establish the evaporation model (one series of these data is apparently shown by the blue dots in the corresponding figures in Appendix A) would be helpful. In any case, there is a need to explain these data and why in some cases there is a significant discrepancy between these series of data and the two-week data, as shown in Figures A-6 and A-34 in Appendix A.</p>	
<p>v. There is an inconsistency between the results of the emulsification tests and the proponent's interpretation. This may have significant effects on the modelling of the dispersion process. For instance, based on the definition given in Tables 2-2 and 2-3 in page 2-5 of SLRoss (2010a) and on the results obtained for the SYN oil and shown in page A-1 of Appendix A it is "very likely" that emulsion form with the two-day weathered sample and that the emulsion is stable (columns 5 and 7 compared to column 6 and 8). The conclusion shown at the bottom of the page says that it is</p>	<p><i>Re: "There is an inconsistency between the results of the emulsification tests and the proponent's interpretation."</i></p> <p>Environment Canada is correct in indicating that in the emulsion spreadsheet for Synthetic crude oil at 1° C the emulsion formation should have been classified as "likely" but the data indicate that the emulsion would be "unstable" based on our interpretation of the data. This would not impact any of the subsequent modeling completed for either the CCA or OWA using the Synthetic oil property data generated from the raw data included in the</p>

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“unlikely” for this weathered oil to form an emulsion. This should be explained further. Also, the new term “entrained” was used in page A-10 of Appendix A to describe the emulsion, but was not discussed in Tables 2-2 and 2-3 in page 2-5 of the report itself. The same comment applies for the data shown in pages A-11, A-20, and A-38. Also, the data shown in the last columns in page A-39 reveal a mass balance issue in the corresponding experiments.

Appendix to the SL Ross TDR.

*Re: “Also, the new term “entrained” was used in page A-10 of Appendix A to describe the emulsion, but was not discussed in Tables 2-2 and 2-3 in page 2-5 of the report itself. The same comment applies for the data shown in pages A-11, A-20, and A-38. “*

The following text provides additional clarification on the approach used by SL Ross to characterize emulsions.

#### **Emulsification Tendency and Stability**

The tendency of crude oil to form water-in-oil emulsions (or “mousse”) and the stability of the emulsion formed are measured by two numbers: the Emulsification Tendency Index (Zagorski and Mackay 1982, Hokstad and Daling 1993) and the Emulsion Stability (adapted from Fingas *et al.* 1998). The Emulsification Tendency Index is a measure of the oil's propensity to form an emulsion, quantified by extrapolating back to time = 0 the fraction of the parent oil that remains (i.e., does not cream out) in the emulsion formed in a rotating flask apparatus over several hours. If a crude oil has an Emulsification Tendency Index between 0 and 0.25 it is unlikely to form an emulsion; if it has a Tendency Index between 0.25 and 0.75 it has a moderate tendency to form emulsions. A value of 0.75 to 1.0 indicates a high tendency to form emulsions. Recently the Emulsion Stability assessment has been changed to reflect the four categories suggested by Fingas *et al.* 1998. Emulsion types are selected based on water content, emulsion rheology and the visual appearance of the emulsion after 24 hours settling. The four categories, and their defining characteristics, are:

1. Unstable – looks like original oil; water contents after 24 hours of 1% to 23% averaging 5%; viscosity same as oil on average

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2. Entrained Water – looks black, with large water droplets; water contents after 24 hours of 26% to 62% averaging 42%; emulsion viscosity 13 times greater than oil on average
3. Meso-stable – brown viscous liquid; water contents after 24 hours of 35% to 83% averaging 62%; emulsion viscosity 45 times greater than oil on average
4. Stable – the classic “mousse”, a brown gel/solid; water contents after 24 hours of 65% to 93% averaging 80%; emulsion viscosity 1100 times greater than oil on average

Under the old emulsion stability assessment scheme, the stability was determined by the fraction of the original oil that remained in the emulsion after 24-hours settling (0 to 0.25 = unstable, 0.25 to 0.75 = fairly stable, 0.75 to 1 = very stable).

Both the Tendency Index and Stability generally increase with increased degree of evaporation. Colder temperatures generally increase both the Tendency Index and Stability (i.e., promote emulsification) unless the oil gels as the temperature drops below its pour point and it becomes too viscous to form an emulsion. Emulsion formation results in large increases in the spill's volume, viscosity increases (which can reduce dispersant effectiveness), and increased water content (which can prevent ignition of the slicks and *in situ* burning).

*Re: “Also, the data shown in the last columns in page A-39 reveal a mass balance issue in the corresponding experiments.”*

With heavy oils such as this, the oil can adhere to the glass ware above the water surface, thus reducing the quantity (thickness) on the water surface.

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vi. The coastal CCAA area receives freshwater from a number of streams and rivers expected to carry a significant amount of suspended particulate matter (SPM). SPM plays a key role in the transport and fate of pollutants in this type of marine environment. In the Proponent's assessment, the presence of SPM is important when addressing the risk of sedimentation of the spilled oil. It should be clarified whether the spatial and temporal distribution of SPM concentration in the CCAA were investigated. Only a general description of the oil sedimentation process was discussed in NGP (2010a,b,c). While it appears that oil sedimentation was addressed in the MWQM model in the ecological risk assessment study (Stephenson *et al.*, 2010), the behaviour model used to predict the process requires revision. Also, not only were no real data on SPM concentrations used, but the extremely low sedimentation rates used show that the available information on the processes of SPM flocculation and sedimentation has not been adequately consulted. An investigation of the data on the distribution of SPM concentrations in the study areas is required. For areas with relatively high concentrations of SPM, sediment samples from these areas should be collected and used for quantitative analysis of the formation of oil-SPM aggregates with four oils. Established analytical procedures should be used. The data should then be used in a more comprehensive oil spill model to assess oil sedimentation due to oil-SPM aggregation.

In environments where oil can be mixed with SPM it is possible for oil to sink due to an increase in density caused by the incorporation of particulates with densities greater than sea water. Various studies (for example: Michel and Galt, 1995; Michel, 2006) have looked at spills of lighter than water oils where the spill began as a surface slick and then sank. Significant interaction between oil and particulates requires a source of particulate material and the energy to mix the oil and the material together. This may occur on shorelines and in open water when wave energy is sufficient to mix oil into the water column. Present oil spill models have methods for calculating oil-SPM interactions and can predict sinking oil. This approach may be undertaken as part of the detailed contingency planning process post project approval.

In his monograph "The Basics of Oil Spill Cleanup", Fingas (2000), the former head of the Environmental Emergencies division at Environment Canada, includes a chapter on behavior of oil in the environment. Within this chapter, topics such as evaporation, emulsification, natural dispersion, dissolution, biodegradation, formation of tar balls, and sedimentation, adhesion to sediments, and oil-fines interaction are discussed. The specific topic of oil-SPM interaction is accorded a single paragraph by Fingas (2000), as follows:

*"Oil slicks and oil in shorelines sometimes interact with mineral fines suspended in the water column and the oil is thereby transferred to the water column. Particles of mineral with oil attached may be heavier than oil and sink to the bottom as sediment or the oil may detach and refloat. Oil-fines interaction does not generally play a significant role in the fate of most oil spills in their early stages, but can have an impact on the rejuvenation of an oiled shoreline over the long term."*

Concentrations of total suspended sediment (TSS) in the outer areas of Douglas Channel and in Wright Sound are low (<10 mg/L



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	<p>and often &lt;1 mg/L), and shorelines are generally rocky (bedrock, boulder and cobble). Significant sources of TSS are not present. In the inner areas of Douglas Channel, the influence of the Kitimat River is substantial. Visible high turbidity events caused by TSS can occur as far out as the proposed marine terminal location, particularly in association with major rainstorm events or seasonal high runoff. In general, however, measured TSS concentrations at the marine terminal are low (&lt;20 mg/L). Spill models show that the fate of oil spills near the marine terminal will be determined primarily by wind and tide, with oil stranding on shorelines within a short period of time. Northern Gateway therefore does not agree with Environment Canada's opinion that oil-SPM interactions are likely to be the predominant process in the transport and fate of oil in this environment.</p> <p>References:</p> <p>Fingas, M. 2000. The Basics of Oil Spill Cleanup. 2<sup>nd</sup> Edition. Lewis Publishers, Jennifer Charles (ed.).</p> <p>Michel, J. and J.A. Galt. 1995. Conditions under which floating slicks can sink in marine settings. Proc. 1995 International Oil Spill Conference, API Publ. No. 4620, American Petroleum Institute, Washington, DC, pp. 573-576.</p> <p>Michel, J., 2006. Assessment and Recovery of Submerged Oil: Current State Analysis. A report prepared for the USCG Research and Development Center, Groton, CT. June, 2006, pp. 36 (plus appendix).</p>
<p><b>vii.</b> Contrary to what is mentioned in Stephenson <i>et al.</i> (2010), the ecological study was not conducted according to methodology described by the CCME (CCME, 1996, 1997). The CCME</p>	<p>From the perspective of the Canadian Environmental Assessment Act, when it is concluded that adverse environmental effects arising from accidents and malfunctions may be significant, it is</p>

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<p>approach emphasizes the importance of properly assessing the factors and processes that govern the overall risk caused by a contaminated site.</p>	<p>also important to consider the likelihood of the adverse effects. The central question for the regulatory authority or the Minister in the process decision following submission of an environmental assessment study report remains: "Is the project likely to cause any significant adverse environmental effects?" Thus, only environmental effects that are both likely and adverse can be considered in determinations of significance. If environmental effects are not both likely to occur and adverse, then they cannot be taken into consideration in a determination of significance under the Act (Canadian Environmental Assessment Agency 1994). The Environment Canada reviewers have stated that "the Department does not have the mandate or expertise to assess the probability that a spill may occur". Additionally they have stated that their review "does not examine the issue of ecological consequences". Therefore their evidence can be considered only in the context of the adversity of environmental effects, and specifically as to the adequacy of the oil fate and transport modeling, but not in the context of the likelihood, and therefore the significance of adverse environmental effects.</p> <p>The CCME Framework for Ecological Risk Assessment (CCME 1996) identifies a tiered assessment approach based upon the following tiers:</p> <ul style="list-style-type: none"> <li>• Screening assessment</li> <li>• Preliminary Quantitative Ecological Risk Assessment (ERA)</li> <li>• Detailed Quantitative ERA</li> </ul> <p>Each tier represents a progressive increase in complexity of analysis, with concurrent narrowing of focus, but each contains the same four basic elements or tasks to complete, including: receptor characterization, exposure assessment, hazard assessment and risk characterization. The ERA studies carried out for the Northern</p>
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	<p>Gateway Project are fully consistent with the approach outlined by the CCME guidance.</p> <p>In addition, however, CCME (1996) states that the level of the ERA required to sufficiently demonstrate risk will depend on site-specific factors and may represent a continuum from qualitative to quantitative analysis. Each level in the tiered assessment process is progressively more complex. If the ERA is adequate for ecologically based decision/risk management purposes at a screening level of assessment, the ERA process stops at that level. The guidance is explicit that screening assessments are characterized by simple, qualitative or comparative methods, and that the level of complexity and sophistication in modeling increases at higher tiers of assessment, if these tiers are warranted. An important theme of this guidance is that it is not necessary in all cases to apply the most sophisticated or state-of-the-art models in order to arrive at conclusions that can be relied upon management decisions. Screening studies in particular are likely to be focused at the species level and to be descriptive as opposed to predictive.</p> <p>In the present case, it has been concluded that the environmental effects of oil spills in the marine environment, ranging in size from 250 m<sup>3</sup> to 36,000 m<sup>3</sup>, could be adverse in the context of the Canadian Environmental Assessment Act. This conclusion is sufficient for the present management purpose (the environmental assessment process under the Act), and no evaluation at a higher tier under the ERA process is likely to alter this fundamental conclusion. The basis for Northern Gateway's contention that accidental spills during marine transportation of oil are not likely to occur, and that the Project is not likely to result in significant adverse environmental effects as a result of marine oil spill accidents is explained elsewhere in the record, and it is not necessary to repeat that evidence here.</p>
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	<p>Therefore, the ERA studies associated with marine spill scenarios, and the models used to support the ERA studies, are consistent with CCME guidance and adequate for the environmental assessment purpose.</p> <p>References:</p> <p>Fingas, M. 2000. The Basics of Oil Spill Cleanup. 2<sup>nd</sup> Edition. Lewis Publishers, Jennifer Charles (ed.).</p> <p>Canadian Council of Ministers of the Environment (CCME). 1996. A Framework for Ecological Risk Assessment: General Guidance.</p> <p>Canadian Environmental Assessment Agency (CEAA). 1994. A Reference Guide for the Canadian Environmental Assessment Act. Determining Whether a Project is Likely to Cause Significant Adverse Environmental Effects. Prepared by the Federal Environmental Assessment Review Office. November, 1994.</p>
<p><b>3. Oil Trajectory Modelling</b></p> <p>i. The algorithm used to model oil-shoreline interaction needs to be strengthened. While it is based on the well known method proposed by Gundlach (1987), recent studies directly related to the subject have brought substantial new knowledge that apply to this project much better than what was used (Etkin <i>et al.</i>, 2007, 2008 a,b). The holding capacity (or oil retention) listed in the last column in Tables 2-1 and 2-2 in Hay and Co. (2011a) is expressed in cubic metre of oil per metre of shoreline length (m<sup>3</sup>/m). These rates were calculated by Gundlach assuming certain characteristics of beach shorelines and tide (4 m tide range, 1 m swash zone, beach face slope of 5% for sand and 9% for gravel) that apply to</p>	<p>Etkin, et al., (2008b) conclude that for medium crude oils, shoreline holding capacity can best be estimated using SCAT data from the Exxon Valdez spill which are “comparable to values originally modeled by Gundlach (1987)”. For heavy oils, Etkin, et al., (2008b) conclude that more data needs to be collected and that the Gundlach (1987) data “provide the most accurate estimate of holding capacity”.</p>

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<p>specific sites; they do not necessarily apply to the study areas. Using such values in this study could lead to a significant overestimation of the holding capacity and, thus, an underestimation of the length of the impacted (oiled) shorelines. Also, it appears that the same holding capacity shown in Tables 2-1 and 2-2 was used for the three types of oils. This assumption is questionable. Based on the physical properties of the SYN and MKH oils and the data available in the literature, the adhesion of the two oils to shorelines is expected to be quite different. This is also supported by the results from the adhesion tests shown in Table 3-5 in SLRoss (2010a). It should be explained why these data were not used to assess the holding capacity, at least to show the difference in behaviour between the two oils when addressing oil-shoreline interaction.</p> <p>It is recommended to revise the oil-shoreline algorithm considering morphological characteristics of the shorelines in the spill area, tide conditions in the spill area and existing information on holding capacities expressed in cubic metre of oil per unit area of shoreline (<math>m^3/m^2</math>) as a function of oil viscosity. For the holding capacity in simulations with viscous oils, it is recommended to use the data observed from the Exxon Valdez oil spill in Alaska and discussed in Etkin et al. (2007, 2008 a,b). Also, because the project addresses spills in confined channel systems, it is recommended to include oil removal process in the modelling of oil-shoreline interaction. The new simulations should be run until the total disappearance of oil from the water surface.</p>	
<p><b>ii.</b> Shoreline type plays a major role in the estimation of the oil holding capacity, oil residency and the overall evaluation of the</p>	<p>The approach described by Environment Canada can be undertaken during the detailed contingency planning process, post Project approval.</p>

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<p>environmental impact that may be caused by an oil spill. It is mentioned in page 2-18 of Hay and Co. (2011a) that: “<i>The definition of coastal classes and repetitive shore type is taken from the British Columbia Government Provincial Corporate Shoreline Information (RISC 1997, Internet site)</i>”. The selection of this source of information needs to be updated and justified. It should be explained why the more recent study conducted by Polaris (2010a,b) was not used for shoreline characterization in the oil spill modelling work. The study conducted by Polaris was directly related to this project and the databases include key information on shoreline type, shoreline sensitivity maps and oil residency that are very useful for oil spill modelling. In order to improve the assessment of oiled shoreline sensitivity areas, it is recommended to revise the shoreline classification in the oil spill models using the outcome from the two studies conducted by Polaris (2010a,b) for both the OWA and the CCAA</p>	
<p><b>iii.</b> The specific spill scenarios for which both trajectory and weathering modelling were performed (Section 4.2 in Hay and Co. (2011a)) were selected considering two seasons only (summer and winter). These simulations may be too restricted to be used for emergency response planning purposes discussed in NGP (2010 b,c).</p>	<p>As stated previously, Summer and winter scenarios were provided within the Application as representative of the two extremes that would capture fall and spring conditions. Within the ecological risk assessment, all receptors were assumed to be present regardless of season or location.          Northern Gateway agrees to consider additional scenarios at other times of the year in future trajectory and weathering modelling, post Project approval.</p>
<p><b>iv.</b> One of the key results from the trajectory modelling of the specific spill scenarios is the quantitative assessment of shoreline oiling. Beside the graphical presentation illustrations in Appendix C and the tables showing the mass balance calculations in Hay and Co. (2011a), the magnitude and length of shoreline oiling were not</p>	<p>Northern Gateway agrees with this recommendation. This approach would not change the conclusion that a spill could have adverse and significant effects. Northern Gateway however supports such an approach, as part of the detailed contingency planning process, post project approval.</p>



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<p>shown in the report. It is recommended to provide quantitative information on the length of oiled shorelines for each scenario. For comparison purposes, the information should be presented in a table that includes all scenarios.</p>	
<p>v. None of the trajectories predicted obtained using deterministic modelling were calculated considering uncertainty in the input parameters. As discussed elsewhere in this report, it is crucial that predicted trajectories be presented with associated uncertainties. For this, sufficient ranges of uncertainties in the estimation of the input parameters, especially wind speed and direction and hydrodynamic currents, should be considered.</p>	<p>This approach would not change the conclusion that a spill could have adverse and significant effects. Northern Gateway however supports such an approach, as part of the detailed contingency planning process, post project approval.</p>

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## Specific Comments

Comments from Environment Canada	Northern Gateway's Response
<b>SC.II. WIND CONDITIONS</b>	
<p>1. A definition of "SOR" should be added to the list of abbreviations on page <i>vii</i> of Hay and Co. (2010).</p>	<p>Agreed.</p> <p>SOR: Successive Over-Relaxation: a numerical method used in H3D to solve for the change in water level (mainly tide) over each time-step.</p>
<p>2. No apparent differences between Figures 5-1 and 5-2 in Hay and Co. (2011a) were used to show corrections made to the interpolated wind field.</p>	<p>This was an error in the report. The figure provided for Figure 5-2 did indeed match that of Figure 5-1. The correct figure Figure 5-2 is Attached. This omission does not affect any of the findings or interpretation within the report or Application.</p> <p>Please see <b>Attachment 2 JRP IR 14.4</b>.</p>
<p>3. The method used to modify wind speed due to limited fetch for the calculation of oil dispersion (page 2-19 in Hay and Co. (2011a)) should be discussed in the report.</p>	<p>The SL Ross dispersion and evaporation algorithms require wind speed as an input, but for the purposes of dispersion the relevant physical process is actually waves, which are influenced in the CCAA by limited fetch. Instead of altering the SL Ross' model, Hayco generated wind reduction factors for each scenario that, when used in a fetch-unlimited wave prediction, would produce appropriate waves at each scenario location in the CCAA. SL Ross then used the reduced winds to predict dispersion, and the normal winds to predict evaporation.</p>
<b>SC.III. HYDRODYNAMIC MODELLING</b>	
<p>1. Fisheries and Ocean Canada 2010 (page 2-7 in Hay and Co. (2011a)) is not included in the list of references. No reference was given for the bathymetric data. Because these data are important inputs for the hydrodynamic modelling, it is recommended to</p>	<p>Bathymetric data was extracted from a data set provided by Nautical Data International and referred to as the "Environmental Dataset for coastal BC". Greater detail in the fjords and passes was obtained from Canadian Hydrographic Service (CHS) charts</p>

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<p>discuss not only the source of the data, but also the quality of the data and how they were integrated into the hydrodynamic model.</p>	<p>3002, 3744, 3739, 3742 and 3743.</p> <p>The full reference for the Fisheries and Oceans Canada (2010) data is:</p> <p>Fisheries and Ocean Canada. 2010. Salinity and Temperature data. Provided in electronic form by the Ocean Productivity Group, Institute of Ocean Sciences, Sidney, British Columbia.</p>
<p><b>2.</b> Monthly mean flow discharge was used for freshwater input from the rivers (Table A-1 and A-2 in Hay and Co. 2011a). No information was provided on the length of the observations used to calculate these mean values. Also, using monthly mean values is not sufficient to capture potential effects of freshwater inputs on the transport and fate of oil spills in the study area. It is recommended to include other scenarios of freshwater inputs using lower and higher flow rates than the mean discharge.</p>	<p>To the extent that daily flow discharge data is available, it can be included in future runs of the model. The selection of additional scenarios will be based on the needs of the project, post Project approval.</p> <p>While simulations of spills under low and high freshwater flow conditions would potentially provide a different trajectory result, it would not change the conclusion that a spill could have adverse and significant effects.</p>
<p><b>3.</b> The amplitude and phase of the tide constituent M2 were used to validate results from both the regional and local hydrodynamic models (Tables 3-1 and 3-2). This is a very simplified approach to validate tide prediction. Instead, it is recommended to show a comparison between modelled and observed time series of water level for various locations in the study area. This should be performed for both the regional and local models. Proper scaling should be used in the plots to show how well the model reproduces the observations.</p>	<p>Northern Gateway acknowledges that this validation is a simplified approach. A number of considerations apply: Tidal height amplitudes and the barotropic tide, are not the prime agent driving currents in the study area, except that barotropic tides generate internal tides, when in conjunction with topographic variability and vertical density variations. The goal of the modelling was to get an initial tidal field that would provide approximately the correct amount of energy.</p> <p>Rather than harmonic constants, Environment Canada recommends a time-series, which would require consideration of storm surge processes. Storm surge processes have little effect on currents, although they could alter shoreline oiling. Northern Gateway supports these considerations for post Project approval</p>

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	modelling.
<p><b>4.</b> The modelled and observed currents shown on Figure 3-4 are not in agreement with respect to both phase and velocity. Figure 3-5 showing comparison between modelled and observed currents from the drifter is not clear. Overall, the validation of the model was illustrated for two locations only, while data are available at several locations. It is recommended to consider several series of current data measured at different locations to validate the model. In addition to the stick plots shown in Figures 3-4 and 3-5, times series of the corresponding values of current velocity and phase should be shown. Available data should be used to calibrate the model to improve its accuracy.</p>	<p>Northern Gateway agrees with this recommendation regarding model validation post Project approval.</p> <p>Northern Gateway acknowledges that although Figure 3-4 is in good agreement with respect to phase, it is more rectilinear than the observed data, and the modelled currents are faster.</p>
<p><b>5.</b> Validation of the local model against ASL (2010) observations shows significant disagreements between the predicted and observed currents at all depths and for the three locations (Figures 3-9 to 3-17). The agreement between modelled and observed currents at CM2 site is not “very good”. Beside the differences shown by the data at depths of 151 and 350 m, significant disagreement is shown near the water surface (7 m) in Figure 3.11. The local model needs substantial additional validation and calibration. The discrepancy shown between predicted and observed currents will have significant effects on the oil trajectory modelling.</p>	<p>While further calibration of the hydro model would potentially provide a different trajectory result, it would not change the conclusion that a spill could have adverse and significant effects. Northern Gateway supports the view that these are appropriate considerations for model calibration post Project approval.</p>
<p><b>6.</b> In the last paragraph on page 3-20 in Hay and Co. (2011a), the statement: “... because oil slick modelling includes a wind leeway factor, the impact of any errors in the modelled water velocities will be considerably reduced in the oil spill simulations” needs examination. Such a statement is valid in water systems where surface currents are controlled mainly by the wind. This is not the</p>	<p>Strong surface currents correspond to wind storms typically, except for narrow passages where tidal currents can be quite fast. Typically, surface currents in the top layer of the numerical model are less than 3.5% of the wind, and are more typically 1.5% or so. Oil slicks typically travel at 3.5% of the wind speed (that speed made up of the top layer of the model travelling at 1.5% of the</p>

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<p>case in the study area. Also, such a statement is in contradiction with the fact that reduced wind shear (2% instead of 3.5%) has been considered in oil trajectory modelling (Page A-8 in Appendix A in Hay and Co. (2011a)). Existing data, including those presented in the report, showed strong currents (above 1 m/s in some cases) in the study areas (ASL, 2010). The above statement cannot be used to justify the validity of the hydrodynamic modelling while significant discrepancies were shown between modelled and observed currents.</p>	<p>wind speed, and the oil travelling at 2% of the wind speed, relative to the top layer of the model). One can look on this 2% factor then as an expression of the vertical shear within the top layer of the model.</p>
<p><b>SC.IV. OIL SPILL MODELLING</b></p>	
<p><b>1. Approach</b></p> <p><b>i.</b> The use of un-coupled trajectory and weathering models is not sufficient to perform oil spill modelling. Where oil-shoreline interaction and dispersion play important roles, trajectory and weathering simulations should be performed using two-way coupling. There are many justifications for this. Tracking oil particles due to the re-surfacing process in the water column and oil removed from oiled shorelines, elimination of vanished particles from the system and modelling oil-sediment interaction considering spatially variable concentrations of oil and suspended sediments are good examples. It is recommended to use coupled trajectory and weathering models in this study.</p>	<p>Northern Gateway will consider such an approach during the detailed contingency planning, post Project approval.</p>
<p><b>ii.</b> Clear description of the stochastic and “specific” modelling approaches is required in Section 2.2 in Hay and Co. (2011a). Each approach should be discussed in separate subsections. The conditions used to perform the stochastic approach should be discussed.</p>	<p>Full descriptions of the approaches and conditions used in modelling will be provided for future modelling work.</p>

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<p><b>iii.</b> Subsection 3.2 (page 3-25 in Hay and Co. (2011a) entitled “Oil Spill Model” is placed under Section 3, which addresses “Model Validation”. This is misleading as no validation of the oil spill model is addressed in Subsection 3.2. This subsection presents modelling results for specific spill locations. To avoid confusion, Subsection 3.2 should not be placed under Section 3.</p>	<p>Agreed. Within the Hayco (2011a) TDR, Sub-section 3.2 would be better positioned at the beginning of Section 4.2. This will be considered for future reports.</p>
<p><b>2. Oil Fate Modelling</b></p> <p><b>i.</b> The modelling approach used a very limited number of parcels (not more than 200 per spill) to represent the spill volume. The justifications provided in pages 4-1 and 2-1 in the Technical Data Reports by SLRoss (2010a) and (2010b), respectively, lack evidence to show that such small number does not affect the accuracy of the results. Also, it should be clarified why only 50 parcels were used for spills in the OWA (SLRoss, 2010b) while 200 parcels were used for the CCAA (SLRoss, 2010a) to represent the same spill volume of 10,000 m<sup>3</sup>. It is recommended to increase the number of parcels to represent the large spill volume and to discuss possible effects on the fate modelling. The same number should be used for the OWA and CCAA.</p>	<p>Relatively small numbers of parcels were selected to model these spills because of the short spill durations assumed for the accidents (a few hours). Large slick sizes can be expected as a result and from a fate standpoint, the large slicks will not spread and thin as rapidly as smaller slicks. This will reduce evaporation and dispersion rates and result in more conservative spill behavior from the perspective of surface oil impacts.</p> <p>The number of slicks used in the modeling was selected to provide best estimates of slick oil evaporation, emulsification and dispersion not for slick trajectory or surface diffusion estimation. The larger slick sizes chosen in the OWA were selected to provide maximum reasonable oil persistence where landfall could be much further from the spill source than in the CCAA, where oil could be expected to come to shore more quickly.</p>



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<p><b>ii.</b> There is an inconsistency between the wind speed (10 m/s) mentioned in the text of the report and the one (10 knots) shown in Figures 3-1, 3-5, 3-9 and 3-13 in SLRoss (2010a). Legends and captions are missing in all figures and tables shown in Appendix A of SLRoss (2010a).</p>	<p>This is an error. The text in the TDR indicates that the wind speed was 10 m/s whereas the figure shows 10 knots. The figures are correct but the correct unit should be knots in both the text and the figure.</p>
<p><b>iii.</b> Mass balance calculations in some of the spill examples discussed in Section 4.2 in Hay and Co. (2011a) show that oil that reached the shorelines continues to weather. It should be described how such weathering was modelled. For the evaporation process, for instance, oiled area should be calculated first.</p>	<p>The model did not incorporate details of weathering of oil that was ashore. The evaporation rate per volume of oil was therefore assumed to be the same as for oil on water. Northern Gateway acknowledges that onshore weathering assumptions may be appropriate considerations for modelling post Project approval.</p>
<p><b>3. Oil Trajectory Modelling</b></p> <p><b>i.</b> The report should indicate how many particles (“N” variable in Appendix A of Hay and Co. (2011a)) were used to represent spill volumes used in this study, and should discuss how this number affects the end results, especially shoreline oiling.</p>	<p>50,000 particles were used for the deterministic runs, and 200 particles for each independent simulation within the stochastic simulations.</p> <p>An insufficient number of particles would result in discontinuous shoreline oiling, a map with many single-particle oil pathways, and/or a ‘spiky’ mass balance as the assumptions of a Monte Carlo-style simulation are violated. The number of particles used in the Mass Balance Estimates TDR (Hayco 2011a) produces smooth mass balances and maps with continuous oiling within the time frames modelled and are therefore deemed appropriate.</p>
<p><b>ii.</b> The wind shear against the oil surface was assumed to be 2% of the wind speed with little justification, while the common value</p>	<p>Typically, surface currents in the top layer of the numerical model (i.e., the computed average current over the top 1 m or so of the water column) are less than 3.5% of the wind, and are more</p>

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<p>used in oil spill modelling is around 3.5%. The difference should be explained. Also, justification is needed to explain why the wind effect was added to velocity vector of oil particles while the wind was already introduced in the hydrodynamic model H3D.</p>	<p>typically 1.5% or so.</p> <p>Oil slicks typically travel at 3.5% of the wind speed (that speed made up of the top layer of the model travelling at 1.5% of the wind speed and the oil travelling at 2% of the wind speed, relative to the top layer of the model). This 2% factor is then an expression of the vertical shear within the top layer of the model.</p> <p>A wind drag effect on floating oil is used to determine oil particle velocities in addition to the wind-generated velocities in the hydrodynamic model. The physical basis for this addition is that the surface model cell in H3D is on the order of one metre thick, and the momentum from the wind must therefore be distributed over this volume of water, possibly underestimating the actual surface velocity. In addition, the oil floating on the ocean surface is a thin layer with a different density to the underlying water, and, like the surface layers of the ocean in general, can move separately from the underlying water. The wind velocity factor is added to the slicklet's velocity to counteract these two underestimations.</p>
<p><b>iii.</b> No explanation was given on how the diffusion of oil particles was defined. A clear explanation of the definition of this parameter and how it is linked to the hydrodynamic should be added to the description of the oil spill model.</p>	<p>The diffusion of oil slicklets is described in Appendix A of the Hayco report. A description of the numerical value used for this spreading is however missing. A value of <math>1.3 \text{ m}^2/\text{s}</math> was used, based on a nominal cloud size of 1,000 m. When the spill gets larger, the diffusive turbulence in H3D dominates.</p>
<p><b>iv.</b> It appears that trajectory modelling for the Ness Rock spill site was performed using the low resolution (3 km) regional hydrodynamic model, while the spill site and the area affected by the spill is within the domain of the high resolution (400 m) hydrodynamic model (Figures C-24 to C-29 in Appendix C.5 in Hay and Co., 2011b). The reason should be documented.</p>	<p>The 3 km grid model was preferred for the Ness Rock trajectory modelling to allow spill trajectories that headed off shore to be modelled in addition. Ness Rock is near the boundary of the 400 m grid model, so one would expect reduced accuracy in currents computed in this region.</p>

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#### 4. Stochastic Modelling

i. It should be explained why only four spill sites were considered in the stochastic modelling (page 2-17 in Hay and Co. (2011a)), while six sites were considered for mass balance calculations (page 1-1 in Hay and Co. (2011a)).

There is an error in the Mass Balance Estimates TDR (Hayco 2011a). On page 2-17 the sentence: "The stochastic model is run for four seasons, four spill locations and three hydrocarbons, for a total of 48 stochastic runs" should read "At four of the six spill scenario locations, the stochastic model is run for four seasons and three hydrocarbons. In addition, for Ness Rock, diluted bitumen is run for four seasons, and for Butterworth Rocks, Syncrude synthetic light oil is run for four seasons. In total, 56 stochastic runs are undertaken." The following sentence, also on page 2-17: "Any individual spill occurring at any of the four sites will fall within the probability footprint of the stochastic model results for that spill site" should read "Any individual spill occurring at any of the sites will fall within the probability footprint of the stochastic model results for that spill site." The six locations are listed on page 1-1 of the TDR.



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### **Documents Reviewed by Environment Canada (Exhibit E9-39)**

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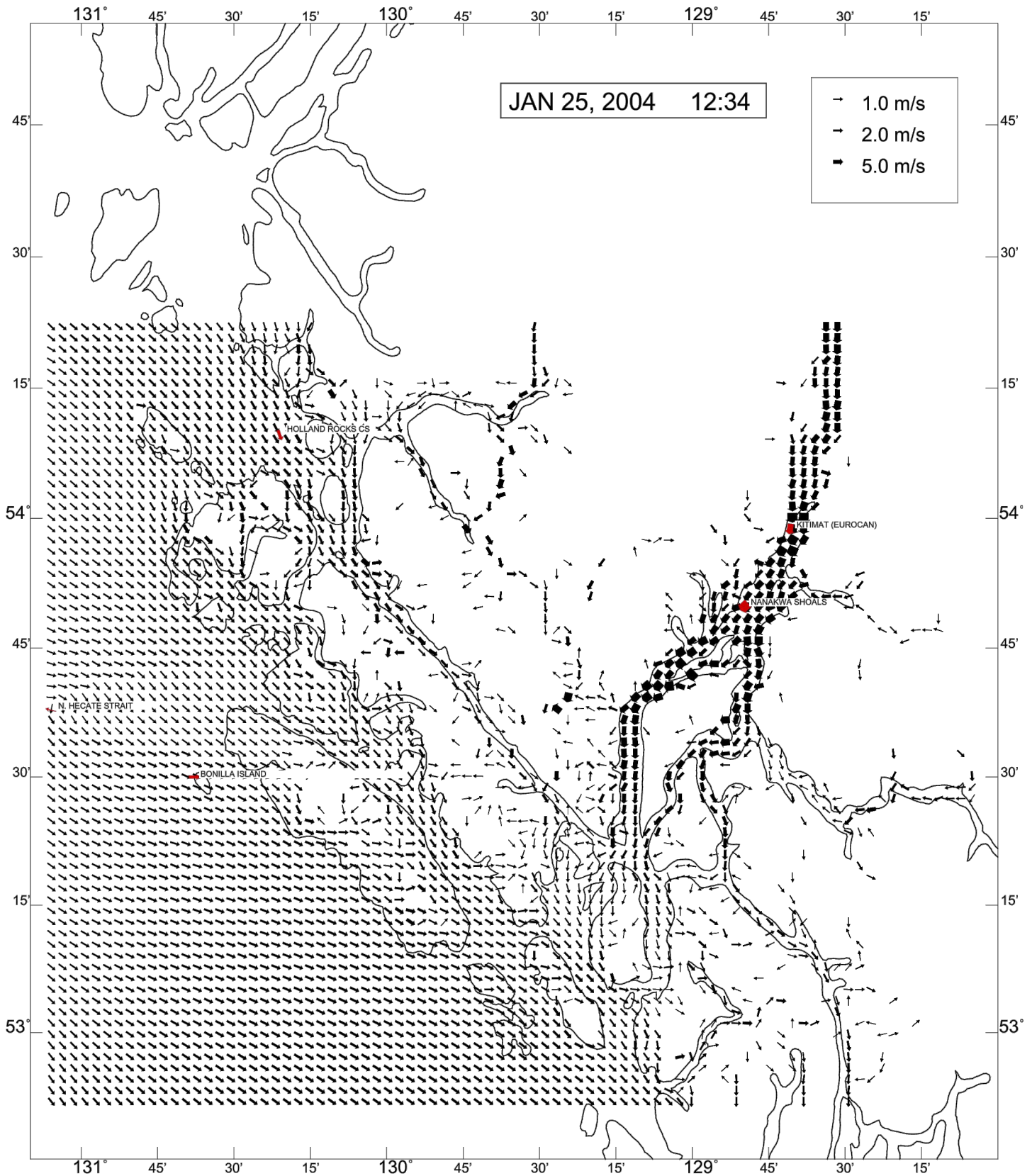


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CONTRACTOR:  
HAY & COMPANY CONSULTANTS

**ENBRIDGE NORTHERN GATEWAY PROJECT**

FIGURE NUMBER: 5-2  
DATE: 20090717

PREPARED BY: PREPARED FOR:

Kinematic Wind Model  
Volume Conserving Flow Field

SCALE: AUTHOR: TM APPROVED BY: JAS

PROJECTION: DATUM:

