

Response to Comments on the Site C Clean Energy Project Environmental Impact Statement, January 25, 2013
Submitted by BC Hydro on May 8th, 2013

This table contains BC Hydro’s responses to comments received during the comment period for the Environmental Impact Statement (EIS). Some of the comments and information requests refer to matters other than the technical merit or sufficiency of the EIS, and some of the comments raise matters unrelated to the information requested. In some cases, BC Hydro has provided clarification or information in its response. However, where BC Hydro has remained silent on an assertion made in a comment, this does not indicate BC Hydro’s agreement with that assertion. Some of the comments and information requests related to the identification or implementation of specific mitigation measures that will be further addressed prior to construction through consultation with regulatory bodies or with Aboriginal groups (where that has been indicated in the EIS).In reviewing BC Hydro’s responses, interested parties should also refer to BC Hydro’s cover letter dated May 8, 2013 that accompanies this table and BC Hydro’s cover letter of April 29, 2013.

Technical Memos have been prepared for subjects that require lengthy responses and for those subjects that arose as themes common to numerous information requests and comments.

IR #	Organization	EIS Section	Information Request / Comment	Triage Final Response
ab_0001-001	Treaty 8 Tribal Association	n/a; page(s) n/a; line(s) n/a EISG section n/a	<p>The following comments are not specific to any particular section of the EIS and are provided to illustrate general concerns regarding the approaches and materials used to assess the potential effects of the proposed Site C Project or to provide clarity regarding the methods taken by the Treaty 8 First Nations (T8FNs) in reviewing the EIS.</p> <p>Document Precedence. There are several discrepancies between information provided in the Executive Summary, the main description and assessment sections (i.e. 1 through 34), the summary sections (i.e. 35 through 40), and the appendices to the EIS. The T8FNs have requested clarification on some of these many discrepancies.</p> <p>To avoid duplication in our comments, we have reviewed the EIS assuming the following document precedence:</p> <ul style="list-style-type: none">• EIS main description and assessment sections (1 through 34) take precedence over the• EIS summary assessment sections (35 through 39), which take precedence over the• EIS Appendices, which take precedence over the• EIS Executive Summary. <p>Document Readiness. The EIS contains many typographical, formatting, citation, content, consistency, omission and other errors. Some of these errors have been corrected where noted in our specific comments on the various volumes. However, the T8FNs estimate that these errors number in the many hundreds. In some instances, the errors have prohibited proper review of the EIS, and these instances have been noted below in the general and specific comments. In general, however, the presence of this many errors in the EIS suggest a low standard of attention to care and to accuracy on the part of BC Hydro.</p> <p>Interpretation. For brevity, specific comments provided in this review focus</p>	<p>Thank you for your input during the comment period on the Environmental Impact Statement (EIS) for the Site C Clean Energy Project. BC Hydro has addressed topics raised in the cover letter through the responses to specific information requests provided by T8FNs in tabular format. Additional information is also provided here.</p> <p>The EIS was prepared in accordance with the Site C Clean Energy Project Environmental Impact Statement Guidelines dated September 5, 2012 (the EIS Guidelines), which were issued on September 7, 2012 by the Minister of Environment of Canada and the Executive Director of the Environmental Assessment Office of British Columbia in accordance with the BC/Canada Agreement.</p> <p>As required by Section 7.2.1 of the EIS Guidelines, BC Hydro prepared a tracking table to document issues, concerns and interests identified by Aboriginal groups in the course of consultations on the Project. Volume 1 Appendix H includes a summary of issues, concerns and interests with respect to the Project raised by Aboriginal groups between December 2007 and November 30, 2012.</p> <p>The EIS Guidelines (Preface and elsewhere) required that BC Hydro incorporate additional baseline information as made available based on concerns raised by Aboriginal groups. The EIS information is therefore not incomplete, as it does include information that was made available to BC Hydro by Aboriginal groups in time for inclusion in the EIS. BC Hydro's efforts to obtain community baseline information from First Nations with respect to the socio-economic effects assessment is outlined in Volume 3 Appendix B Part 1 - First Nations Community Baseline Reports - Approach to Gathering and Integrating Community Baseline Information.</p> <p>The Aboriginal Group Supplemental Report will include consideration of the Blueberry River and Saulteau First Nations Community Baseline Reports in the findings reported in the EIS. Any community baseline reports made available to BC Hydro from McLeod Lake Indian Band and Horse Lake First Nation will be considered if received in a timely fashion. Updated information will be submitted to CEA Agency and BCEAO.</p> <p>BC Hydro disagrees with the assertion that materials provided by the T8FNs "were not properly or not at all integrated or even referred to in the body of the EIS." BC Hydro's review and</p>

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			<p>primarily on concerns and requests for larification or information in relation to the EIS and supporting documentation. Lack of comment by the T8FNs does not necessarily indicate agreement with the materials presented in the EIS. The T8FNs anticipate that the issues raised by our comments will be addressed by BC Hydro. In the instances where the issues raised herein are not addressed, we anticipate that BC Hydro will duly record these instances, with supporting justification and clarification, as appropriate and in accordance with the Environmental Assessment Participation Agreement (EAPA) between the Parties, in order to provide a basis for further discussion and to track the resolution of issues discussed. Any comments provided herein may be supplemented or revised after further review by the T8FNs, and do not in themselves constitute adequate consultation by BC Hydro, the Provincial Crown of the federal Crown of the T8FNs with respect to the subject matter or adequacy of the EIS. The T8FNs reserve all rights to revisit the issues raised in the EIS or to make further comments on the EIS at any time.</p> <p>Liability. For greater certainty, and recognizing that BC Hydro is solely responsible for instructing its consultants, any use, re-use or reliance by BC Hydro on these comments, including but not limited to any advice or recommendations, for the purposes of project design, engineering, planning, management, construction, operation, environmental protection, or rehabilitation or for any other purpose whatsoever is at the sole discretion and risk of BC Hydro. The T8FNs, and consultants and advisors to the T8FNs, have assumed and accept no responsibility or liability for actions taken or not taken by BC Hydro with respect to these comments.</p> <p>Misleading Executive Summary. An EIS is intended to be a learning tool and the Executive Summary is the document most likely to be read by the majority of readers. The Executive Summary does not accurately reflect the body of the EIS or the requirements of the EIS Guidelines. Significant residual effects, levels of certainty or uncertainty, and the ineffectiveness of mitigation measures are routinely minimised or not mentioned at all in the Executive Summary. In addition, no information concerning the historical context of hydroelectric development on the Peace River is provided in the Executive Summary, including any references to the extensive habitat loss and fragmentation, downstream effects, or implications for Aboriginal and Treaty rights.</p> <p>Adequacy of the Environmental Impact Statement. Section 1.1.1 of the EIS notes the following:</p>	<p>consideration of the identified materials is documented in many places in the EIS, including the Aboriginal Issues, Concerns and Interests Tracking Table (Volume 1 Appendix H), the assessment of Current Use of Lands and Resources for Traditional Purposes (Section 19), the assessment of potential impacts of the Project on the exercise of asserted or established Aboriginal and treaty rights (Section 34), the socio-economic assessment sections of the EIS, the assessments on Fish and Fish Habitat, Wildlife Resources, Vegetation and Ecological Communities, Heritage Resources and Human Health. The Part 7 Community Baseline Report and EIS Integration Summary Table - Doig River First Nation, Halfway River First Nation, Prophet River First Nation, West Moberly First Nations - was omitted from the EIS filing in error; however, it was used in the preparation of the EIS. It will be submitted as part of the Aboriginal Group Supplemental Report.</p> <p>In addition, the referenced materials were incorporated, in full, as appendices to the EIS. Also included in the appendices was the Aboriginal Land and Resource Use Summary for the T8FNs, which relied extensively on the results of the TLUS and community baseline reports.</p> <p>Please see the following Technical Memos:</p> <ul style="list-style-type: none">- Cumulative Effects Assessment- Consideration of Historical Context in Assessment of Potential Effects and Impacts on Aboriginal Groups <p>An assessment of the potential impacts of the Project on the exercise of asserted or established Aboriginal rights and treaty rights is included in Section 34 of the EIS.</p>

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			<p><i>This Environmental Impact Statement contains a record of a comprehensive environmental assessment of the Project that:</i></p> <ul style="list-style-type: none">• <i>Meets the requirements of the EIS Guidelines</i>• <i>Is sufficient for the purpose of public hearings to be conducted by a Joint Review Panel</i>• <i>Provides the basis upon which the Minister of Environment of Canada can make a decision under Section 52 of CEAA 2012</i>• <i>Provides the basis upon which the Ministers of Environment and of Forests, Lands and Natural Resource Operations of British Columbia can make a decision under Section 17(3) of BCEAA</i>• <i>Demonstrates that if the Project will result in significant adverse effects, it can be justified by the benefits of the Project and the need for the Project</i> <p>The EIS as filed by BC Hydro does not meet any of the above requirements. In addition to several sections of the EIS that have yet to be provided by the Proponent, the T8FNs have provided specific comments below to identify the minimum additional information that is required to address the above requirements.</p> <p>Important Technical Studies not Completed. There are large portions of information clearly required by the EIS Guidelines that remain to be filed by the Proponent. For example, not only does the EIS not include data from Blueberry River First Nation (BRFN) and Saulteau First Nation (SFN), two First Nations that are located in close proximity to the proposed Project, but considerable information remains to be collected from the T8FNs as a result of unrealistic time constraints imposed by BC Hydro. It remains unclear as to why BC Hydro chose to file the EIS without information from several key First Nations. Leaving aside the many comments and information requests of the T8FNs, other Aboriginal groups, government and interveners, the necessary information has not been obtained or filed to undertake a proper effects assessment.</p> <p>Imbalanced Tone of the Environmental Impact Statement. The T8FNs observed reluctance on the part of BC Hydro throughout the EIS to refer to adverse and beneficial effects of the proposed Project with the same language. Potential adverse effects are often referred to as “changes” or with other neutral language while potential beneficial effects are referred to as “benefits” or with other positive language, even in instances where these potential beneficial effects are highly uncertain. It is misleading (and also not very informative) to refer to the adverse effects of the proposed Project using vague and value-</p>	

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			<p>neutral terms. An EIS is not a promotional document. It is an informational document that provides an opportunity for citizens, governments, Aboriginal Groups and the utility itself to reflect on the public interest of important decisions.</p> <p>Imbalanced Content in Describing Adverse and Beneficial Effects. In general, the potential beneficial effects of the proposed Project are presented in the EIS with concrete estimates (jobs, potential revenue, etc.), notwithstanding the substantial uncertainty associated with many of these forecasts. However, the same degree of clarity is not often provided in the EIS in relation to potential adverse effects. For example, while habitat loss is often reported, estimates of the numbers (or population densities) of wildlife, plants and fish lost as a result of inundation, road construction and other project activities are not reported, leaving the impression that these adverse effects are less real or less certain than the purported benefits.</p> <p>Cumulative Impacts on Aboriginal and Treaty Rights and Interests. The T8FNs have long raised concerns about the lack of cumulative effects assessment in Treaty 8 territory, and about the significant adverse effects caused by industrial development, extending back over a century. The treatment of the cumulative impacts of industrial development on the rights, interests, land use and wellbeing, and way of life of the T8FNs is inadequate in the EIS. It is possible to read the entirety of the main sections of the EIS and learn almost nothing about the history of the most affected peoples – the Treaty 8 First Nations, or of the nature and magnitude of the cumulative impacts of prior and proposed development. One of the very few references to this essential context is a single paragraph at p. 4-3 of Volume 1, describing the past 60 years of industrial development, which is provided without any reference to cumulative effects on Aboriginal peoples.</p> <p>Contextual baseline and trend-over-time data, including maps of changing land tenure and other factors affecting meaningful access to traditional lands for the practice of Treaty and Aboriginal rights, is essential to understanding the implications of the proposed Project, and to “assessing potential adverse impacts of the Project on the exercise of asserted or established Aboriginal rights and treaty rights”, as required by Section 20.3 of the EIS Guidelines.</p> <p>Without this holistic picture of change, and an understanding of the existing serious adverse impacts to which the proposed Project would add, cumulative implications for Aboriginal people cannot be, and have not been, properly</p>	

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			<p>identified. The EIS provides an incomplete and illusory picture of the actual status of the potentially-affected First Nations and their vulnerability to future change.</p> <p>Species at Risk. The purpose of the Species at Risk Act (SARA) is to prevent Canadian indigenous species, subspecies, and distinct populations from becoming extirpated or extinct, to provide for the recovery of endangered or threatened species, and encourage the management of other species to prevent them from becoming at risk (Government of Canada 2012). The intent of the SARA is to prevent the risk of further deterioration of at risk species and this can only be accomplished successfully through conservation, not mitigation. Viewing the proposed Project within the context of the purpose of the SARA, the footprint is too large and it affects far too many SARA listed species to make any reasonable justification for the proposed Project to proceed.</p>	
ab_0001-002 through 014	Treaty 8 Tribal Association		These IR numbers left intentionally blank.	These IR numbers left intentionally blank.
ab_0001-015	Treaty 8 Tribal Association	V.1, S.1.1; page(s) 1-1; line(s) 36-41 EISG S.1.1 Comment 1-1.	<p><i>An environmental assessment conducted in accordance with the agreement between the Ministers of Environment of BC and Canada with respect to the environmental assessment of the Project and with these EIS Guidelines, which have been developed under that Agreement, will meet the objectives of these principles.</i></p> <p>Comments The above language was added to Section 1.1 of the final EIS Guidelines, and was not contained or suggested in earlier versions that were the subject of consultation with the T8FNs. One of the principles for the environmental assessment referred to by this section of the EIS Guidelines is called "Aboriginal Consultation": <i>BCEAO and Canada are committed to working constructively with Aboriginal groups to ensure that the Crown fulfills its duties of consultation and accommodation. The proponent must ensure that it engages with Aboriginal groups that may be affected by the project, or that have asserted or established Aboriginal rights or treaty rights in the project area, as early as possible in the project planning process.</i></p> <p>The T8FNs are concerned about the presumption a priori that the proposed Joint Review Panel Agreement (JRPA) and EIS Guidelines will meet the principle of adequate consultation with and accommodation of Aboriginal peoples. It is</p>	Thank you for your comment.

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			<p>not possible to draw this conclusion until the process is completed. However, it is possible to ask the question, based on both experience of other similar processes and the direction received from the courts, whether the JRPA and the EISG contain the elements that will support the achievement of the objectives of these principles and avoid elements that potentially undermine them.</p> <p>In our letter of December 21, 2012 to the CEA Agency and the BC EAO, we discussed the supportive and disruptive elements of the JRPA and the EISG that, in our view, affect the likelihood that Aboriginal consultation and accommodation will achieve its primary objective, namely reconciliation between the Crown’s right to take up land with the Aboriginal and Treaty rights of the affected Aboriginal groups, including the T8FNs.</p>	
ab_0001-016	Treaty 8 Tribal Association	V.1, S.1.1.4; page(s) 1-2; line(s) 27 EISG S.1.1 S.5 Comment 1-2.	<p><i>This EIS demonstrates that globally recognized principles and practices for corporate social responsibility and sustainability have been incorporated into the planning of the Project: modifying designs to minimize footprint and avoid effects where possible; developing mitigation measures and compensation plans, often in consultation with the public and stakeholders to reduce effects; working with Aboriginal groups and local communities to reach benefit sharing agreements and partnerships that would foster economic development.</i></p> <p>Comments The T8FNs note the following in relation to the above statement concerning corporate social responsibility and sustainability: §§ Modification of Design. Meaningful minimization of the project footprint and avoidance of environmental effects has been precluded by the refusal to date by the Proponent to consider alternative hydroelectric schemes that would not maximize the development of the hydroelectric potential of the Peace River between Peace Canyon Dam and Fort St. John. §§ Consultation on Mitigation Measures. There has been very limited consultation between BC Hydro and the T8FNs concerning mitigation or compensation measures prior to the submission of the EIS. §§ Benefit Sharing Agreements. The T8FNs are opposed to the proposed Project and have indicated to the Proponent on numerous occasions the position that potential benefits available through a benefit sharing agreement in relation to the proposed Project cannot replace what would be lost as a result of its development. The adverse effects arising from the proposed Project for the Peace River valley cannot be accommodated or compensated by royalties or economic opportunities. The T8FNs have also indicated a willingness to consider negotiation of a benefit sharing agreement in relation to alternatives to the proposed Project, which could be developed with considerably reduced adverse effects, under the proviso that the Proponent</p>	<p>The evolution of the Project design since the 1982 BC Utilities Commission application is set out in Section 4.2. Table 4.1 lists design changes that were made to avoid or mitigate potential effects of the Project. BC Hydro's consideration of alternative means of carrying out the Project is described in Section 6.</p> <p>BC Hydro does not agree with the characterization of its consultation with the T8FNs concerning mitigation measures as “very limited”. In a series of meetings in summer 2012, BC Hydro sought input from the T8FNs regarding mitigation options for wildlife, fish/fish habitat, vegetation and heritage. In each instance, the T8FNs expressed their unwillingness to enter into discussions with respect to mitigations at that time.</p> <p>Regarding benefit sharing agreements, BC Hydro provided the T8FNs with an overview of its benefits mandate on March 27, 2012, and has expressed its willingness to engage in benefit discussions on several subsequent occasions. BC Hydro will continue to seek input from the T8FNs regarding mitigation, and remains willing to meet with the T8FNs to engage in benefit discussions. For a chronological summary of BC Hydro’s consultation with the T8FNs, please see Volume 5 Appendix A06, Part 2. A description of BC Hydro’s process for resolving outstanding issues with Aboriginal groups is described in Section 9.2.4.</p> <p>Globally recognized principles: The globally recognized principles and practices for corporate social responsibility and sustainability are those described in Section 1.1.4 of the EIS:</p> <ul style="list-style-type: none">• Modification of design to minimize the footprint and avoidance of effects where possible• Development of mitigation and compensation measures in consultation with the public and stakeholders• Working with Aboriginal groups and local communities to reach benefit sharing agreements and partnerships that would foster economic development <p>The design changes made to avoid or mitigate potential environmental effects are described in</p>

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			<p>first abandon plans to develop the proposed Project, which the Proponent has steadfastly refused to do. The EIS contains no indication that the Proponent has reached any benefit sharing agreement in relation to the proposed Project with any Aboriginal Groups listed in section 20 of the EIS Guidelines.</p> <p>§§ Free Prior and Informed Consent. The Declaration on the Rights of Indigenous Peoples addresses the issue of “free, prior and informed consent” and this recognized principle has not been addressed in the EIS; specifically, Article 28 states that: Indigenous peoples have the right to redress, by means that can include restitution or, when this is not possible, just, fair and equitable compensation, for the lands, territories and resources which they have traditionally owned or otherwise occupied or used, and which have been confiscated, taken, occupied, used or damaged without their free, prior and informed consent.</p> <p>§§ Alternates Analysis. The T8FNs were not informed of the alternates analysis conducted by the Proponent (see Section 6) until it was completed and no information provided by the T8FNs since 2010 has yet been incorporated into the Alternates Analysis. §§ Baseline Integration. Baseline information from many Aboriginal groups was either unavailable at the time that the EIS was issued for public review or, where it was available, was often not considered in the effects assessment. §§ Cumulative Effects. The assessment of cumulative effects has not considered the ecological baseline prior to the development of other hydroelectric projects by the Proponent on the same river as the proposed Project. §§ Past Infringements. The Proponent initiated the regulatory process for the proposed Project prior to resolving past infringements of the Proponent’s prior projects on the Aboriginal and Treaty rights of Aboriginal Groups located upstream and downstream of the proposed Project. §§ Equity. Issues related to equitable distribution of direct and cumulative effects (beneficial and adverse) of the proposed Project on Aboriginals and non-Aboriginals, local and Provincial residents, current and future generations are not addressed in the EIS. §§ Net Gains. No sustainability assessment framework is used to guide the impacts assessment process (e.g. defining metrics associated with Net Gains such as those adopted by the Kemess North Joint Review Panel.¹</p> <p>Information Request BC Hydro is requested to: a) identify the globally recognized principles and practices incorporated into the EIS, including the reference material relied upon, and where they are cited in the EIS; b) explain how BC Hydro can confidently predict the nature and extent of impacts of the proposed Project on Aboriginal and Treaty rights in the absence of baseline data</p>	<p>Section 4.2 of the EIS. The environmental, social and sustainability benefits of the Project are described in Section 7.4 of the EIS. Consultation with the public and government agencies is described in Section 9 of the EIS. Consultation with Aboriginal groups is described in Section 9.2 of the EIS.</p> <p>BC Hydro’s proposals to mitigate and provide other accommodation of potential impacts to the exercise of treaty rights is described in Section 34.4 of the EIS. BC Hydro’s mandate and willingness to enter into benefits agreements with Aboriginal groups is described in Section 34.7.1 of the EIS.</p> <p>FPIC: The concept of Free, Prior and Informed Consent has not been incorporated into the domestic law of Canada in relation to proposed conduct by the Crown. The obligations of the Crown in relation to proposed Crown conduct have been explained by the Supreme Court of Canada in Haida Nation, Taku River, Mikisew, Rio Tinto and Little Salmon.</p> <p>Alternates Analysis: BC Hydro’s consultation with the T8FNs with respect to alternative means of carrying out the Project is described in Volume 5 Appendix A06, Part 2. This included a meeting with the authors of the alternates analysis (Review of Alternate Sites on the Peace River) to seek input from the T8FNs, as well as subsequent correspondence wherein BC Hydro responded in writing to the T8FNs’ questions regarding the alternates analysis. Please also see the response to ab_0001-145.</p> <p>Baseline integration: The EIS describes BC Hydro’s efforts to gather traditional land use baseline information by entering into TLUS agreements and other agreements which allowed Aboriginal groups to assemble and share information with BC Hydro (see Section 9.2, page 9-32), and its efforts to gather social, economic, land use and human health baseline information by supporting the preparation of community baseline reports (see: Volume 3, Appendix B). In addition, BC Hydro has obtained baseline information in meetings and other direct consultation activities with Aboriginal groups, and has written to Aboriginal groups to request information for consideration in the preparation of the EIS (see: Section 9.2, page 9-41). Where relevant information was made available to BC Hydro, it was provided to subject matter experts and technical staff for review and integration into the effects assessments. Information received after the submission of the EIS will be considered by BC Hydro.</p> <p>Cumulative Effects: Please see the Technical Memo on Cumulative Effects Assessment.</p> <p>Past infringements: The EIS Guidelines do not require BC Hydro to resolve disputes regarding past projects prior to proceeding with a new project. Please see Section 11.1.4 Historic Grievances regarding Existing Facilities and the Technical Memo: Consideration of Historical Context in Assessment of Potential Effects and Impacts on Aboriginal Groups.</p> <p>Equity: In the EIS, BC Hydro does not make trade-offs between regions of the province or</p>

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			<p>for several potentially-affected Aboriginal Groups; c) identify its understanding of equitable distribution of impacts, the role of equity in environmental impact assessment, and how equity was considered in the EIS; d) identify BC Hydro's policy or approach to the concept of Free, Prior and Informed Consent adopted by the General Assembly of the United Nations (in the United Nations Declaration on the Rights of Indigenous Peoples), and how that policy was applied with respect to the positions of affected Aboriginal Groups toward the proposed Project; and e) identify any recommended Net Gains or other sustainability assessment tools, methods, weighting and metrics included in its EIS to determine that the Project is in the public interest and to be recommended for adoption by the Joint Review Panel</p> <p>1. Kemess North Joint Review Panel. 2007. Joint Review Panel Report. September 17, 2007.</p>	<p>country, and such analysis was not required by the EIS Guidelines and is therefore out of scope of the environmental assessment. Benefits of the Project were evaluated at three levels: Local (Sections 7.2.1, 7.3.1, 7.3.2, 7.3.4), Provincial (Sections 7.1, 7.2.2, 7.3.1, 7.3.2), and Federal (Sections 7.2.2, 7.3.1, 7.3.2). BC Hydro also looked at the economic benefits directly to Aboriginal groups (Section 7.3.3), and the environmental and sustainability benefits (Section 7.4)</p> <p>Net gains: The EIS Guidelines did not require the use of a sustainability assessment framework in the EIS. The environmental and sustainability benefits of the Project are described in EIS Section 7.4. Section 40.14 provides a summary of the environmental, economic, social and sustainability benefits, and Section 40.15 provides the justification for the potential significant adverse effects.</p>
ab_0001-017	Treaty 8 Tribal Association	V.1, S.4.1.2 ; page(s) 4-2 4-3 ; line(s) 12-45 1-16 EISG S.3.1 Comment 1-3.	<p>Comments BC Hydro has chosen to provide a brief, primarily Eurocentric summary of the human environment in the proposed Project area. Modern anthropologists and other academic researchers are exclusively cited, rather than Aboriginal elders and storytellers. The decision not to incorporate into the EIS information that is highly meaningful to the T8FNs could indicate that the Proponent remains largely unaware or uninterested in the historical, cultural and spiritual relationships of the T8FNs to the Peace River Valley. Information Request BC Hydro is requested to: a) explain why information contained in the Preamble and Sections 3 and 4 of the T8FNs Community Assessment Baseline Profile² – that would allow the Joint Review Panel and other reviewers the ability to understand the historic and cultural context of the Peace River Valley – was not integrated into this sub-section of the EIS or anywhere in the main sections of the EIS; and b) provide a table showing all points in the EIS main sections where inputs from the T8FNs Community Assessment Baseline Profile and Impact Pathways reports are incorporated, and how.</p> <p>2. Treaty 8 First Nations Community Assessment Team and The Firelight Group Research Cooperative. 2012. Telling a Story of Change the Dane-zaa Way: A Baseline Community Profile of Four Treaty 8 First Nations – Doig River First Nation, Halfway River First Nation, Prophet River First Nation, and West Moberly First Nations.</p>	<p>Section 3.2 (Project Location) of the EIS Guidelines established the information requirements respecting the concise description of the geographical setting in which the Project will take place. The information provided is in accordance with the EIS Guidelines and appropriate information has been provided in the EIS.</p> <p>Information included in the T8FN (Doig River First Nation, Halfway River First Nation, Prophet River First Nation, and West Moberly First Nations) community baseline reports was considered, along with many other information sources, throughout the EIS. In addition, the reports themselves were appended in their entirety to Volume 3 Appendix B7.</p> <p>A table identifying the integration of the T8FN information into the EIS was to be included in Volume 3 Appendix B Part 7 of the EIS but was omitted in error from the January 25, 2013 submission. This update has been added to the List of Errata and Updated Information. The EIS Integration Summary Table - Doig River First Nation, Halfway River First Nation, Prophet River First Nation, West Moberly First Nations will be submitted with the Aboriginal Group Supplemental Report.</p>
ab_0001-018			This line left intentionally blank	This line left intentionally blank.
ab_0001-	Treaty 8	V.1, S.4.1.4 ;	Comments While the Peace Moberly Tract and the proposed Peace River	Section 4.1.2.1 Aboriginal Lands describes, and Figure 4.4 illustrates, the location of the Project in

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019	Tribal Association	page(s) 4-5 4-6 ; line(s) n/a EISG S.3.2 Comment 1-4.	Boudreau Lakes areas are described, no discussion of ongoing Treaty Land Entitlement talks between the Crown and area First Nations is provided. This is an important contextual consideration. Information Request Provide information about any ongoing (whether active or in hiatus) Treaty Land Entitlement negotiations processes between area First Nations and the Crown.	<p>relation to Indian Reserves in the vicinity of the Project, and the location of the Project within the area described in Treaty 8. Figure 4.5 identifies the locations of First Nation communities located within 100 km of the Project. No Indian Reserves will be affected by the Project.</p> <p>BC Hydro is aware that several of the First Nations in the Project area are in discussions with Canada and British Columbia with respect to Treaty Land Entitlement (TLE) claims, and it is BC Hydro's understanding that the lands under consideration are confidential to those processes. BC Hydro is not aware of any lands that may be affected by the Project as being subject to any specific claims, Additions to Reserve, or TLE processes. Further, BC Hydro is not aware of any First Nation infrastructure that could potentially be affected by the Project.</p> <p>BC Hydro's Environmental Assessment Participation Agreement with the Treaty 8 Tribal Association (representing Doig River, Halfway River, Prophet River and West Moberly First Nations) provides for consideration of potential effects of the Project on lands that the First Nations may acquire through the TLE process. To date, no such lands have been identified by the First Nations to BC Hydro.</p>
ab_0001-020	Treaty 8 Tribal Association	V.1, S.4.1.5 ; page(s) 4-6; line(s) 13-16 EISG S.15.2.3 Comment 1-5.	<i>Current land use is a reflection of traditional uses and historic settlement patterns in combination with more recent activities involving resource extraction and processing and community development.</i> Comments To be more precise, from the T8FNs perspective, current land use patterns are also a reflection of land alienation patterns, development activities and government policies favouring resource development over Aboriginal traditional land use.	Thank you for your comment. Commenting on government policies respecting resource development is outside the scope of the environmental assessment.
ab_0001-021	Treaty 8 Tribal Association	V.1, S.4.2 ; page(s) 4-6; line(s) 41-43 EISG S.9.1 S.20.5 S.20.6 Comment 1-6.	<p><i>The design of the Project has evolved since the 1982 British Columbia Utilities Commission (BCUC) application.</i> Comments Throughout the EIS, in its various descriptions of the proposed Project, BC Hydro provides no summary of the historical concerns and opposition to the proposed Project by local First Nations. The response of the affected First Nations to the 1982 BCUC Application is relevant historical information that forms part of the context for the current proposal, and to the T8FNs opposition to the proposed Project.</p> <p>Information Request BC Hydro is requested to: a) indicate at what point in time it was first made aware of official T8FNs opposition to the proposed Project; b) explain why the opposition of the T8FNs to the proposed Project is not included in the contextual material described in the Project Overview, or anywhere in the EIS; c) identify its understanding of the key public concerns and reasons for opposition to the development of the proposed Project; and d) summarize the historic concerns raised by First Nations with respect to the proposed development, including those raised in the prior BCUC assessment and hearings process.</p>	<p>BC Hydro's understanding of key public concerns and reasons for opposition to the development of the Project are described in Volume 1 Appendix G, Part 1 Public and Stakeholder Issues and Interests Tracking Table.</p> <p>BC Hydro has been aware of opposition to the Project by the First Nations represented by the T8TA since the beginning of consultation regarding the Project. A Declaration stating that opposition and the reasons for it, dated September 17, 2010, is contained at Appendix 1 of the T8 TLUS in Volume 5 Appendix A.06 Part 5 at pages 26-30.</p>

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ab_0001-022	Treaty 8 Tribal Association	V.1, S.4.2 ; page(s) 4-7; line(s) 7 EISG S.4.1.1 Comment 1-7.	<p><i>Table 4.1 List of Design Changes Since the 1982 BCUC Application to Avoid or Mitigate Potential Environmental Effects</i> Comments This table summarizes the design changes in response to the recommendations of the BCUC in response to the 1982 Application in relation to a prior incarnation of the proposed Project. Below is a list of the recommendations of the BCUC from its 1983 report that remain relevant to the planning process for the proposal and which the Proponent does not appear to have addressed: §§ #2 – develop forecasts in a total energy context §§ #4 – analyze relative fuel prices and policies in the context of a total energy forecast for purposes of estimating interfuel substitution §§ #9 – provide data on the full rate impact to customers of the proposed project isolated from the impacts of the projects which may follow, and fully incorporating all line loss and distribution costs to show the impact on customers; when comparing projects, Hydro should also provide data on the different patterns of rate impacts associated with the various alternatives §§ #10 – provide data on the different patterns of rate impact that would result from the alternative system plans §§ #20 – provide a detailed cost estimate of the proposed Project using present day budget estimate practice and detailed enough to identify cost items more precisely than the evidence filed in the hearings Information Request The Proponent is requested to: a) explain how it has addressed recommendations 2, 4, 9, 10 and 20 of the BCUC Site C 1983 Report and if it has not addressed these recommendations, explain why not; and b) provide available information pertaining to the BCUC recommendations referred to in part a) where such information exists.</p>	<p>This question references the British Columbia Utilities Commission’s (BCUC) May 1983 Report & Recommendations:</p> <ul style="list-style-type: none"> • The BCUC’s Report & Recommendations is now 30 years old. Some of the quoted recommendations deal with BC Hydro’s September 1982 Load Forecast. Load forecasting methodology has changed significantly over the course of the last 30 years making comparisons not instructive and therefore outside the scope of the environmental assessment. • The BCUC’s 1983 Report & Recommendations concerned BC Hydro’s application for an Energy Project Certificate, which is the equivalent of a Certificate of Public Convenience and Necessity (CPCN). The EIS Guidelines are clear on page 2 that “the EIS is not intended to constitute a Certificate of Public Convenience and Necessity for the Site C Project. The Site C Project is exempt from the requirement for a Certificate of Public Convenience and Necessity as per Section 7 of the B.C. Clean Energy Act”. Accordingly, the BCUC’s 1983 Report and Recommendations concerning Project rate impact analysis are outside the scope of the environmental assessment. <p>Nevertheless, BC Hydro offers the following to be responsive.</p> <p>BCUC 1983 Recommendations Nos. 2 and 4: BC Hydro developed the 2012 Load Forecast in a “total energy context” through analyzing “relative fuel prices ... for purposes of estimating interfuel substitution”. For example, BC Hydro examined the respective pricing of electricity and natural gas and their respective penetration rates for the purposes of developing the residential load forecast generally and residential space and water heating in particular. End-use models are used for both the residential and commercial sectors. The residential use rate forecast is based on projections of factors such as housing mix (single family, row house, apartment, etc.), heating fuel choices (electric versus non-electric), appliance penetration rates, appliance life-span and changes in electricity demands. Refer to the copy of the 2012 Load Forecast attached to the Technical Memo on Project Need for more information, and in particular the descriptions of the residential and commercial forecasts in Sections 6 and 7 of the 2012 Load Forecast.</p> <p>BCUC 1983 Recommendation Nos.9 and 10: These recommendations address rate impacts of projects and alternatives, which are outside the scope of the environmental assessment. BC Hydro notes:</p> <ul style="list-style-type: none"> • The impacts of possible future electricity rate (price) increases are reflected in the 2012 Load Forecast. Refer to the copy of the 2012 Load Forecast attached to the Technical Memo on Project Need for more information; • Project rate impact analysis (e.g., “data on the full rate impact to customers of the proposed project isolated from the impacts of the projects which may follow”) is outside the scope of the environmental assessment because the EIS “is not intended to constitute” a CPCN for the Project.

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				<p>BC Hydro provided information concerning ratepayer benefits in Section 7.1 of the EIS, including information on the effect of the Project on ratepayer costs;</p> <ul style="list-style-type: none"> Rate impact analysis of alternatives (e.g., “Hydro should also provide data on the different patterns of rate impacts associated with the various alternatives”) is outside the scope of the environmental assessment because the EIS “is not intended to constitute” a CPCN for the Project. Figure 7.2 of the EIS provides an indicative cost of service comparison between the Project, and the Clean Portfolio and the Clean +Thermal Portfolio. <p>BCUC 1983 Recommendation No. 20: Information concerning the Project cost estimate is found in EIS Volume 1, Appendix F, Part 1. Table 1 of Appendix F provides a Project cost estimate breakdown. The Project cost estimate was developed “using present day budget estimate practice”; for example, the Project cost estimate is a Class 3 degree of accuracy as defined in the AACE International’s International Recommended Practice No. 10S-90, Cost Estimate Engineering Terminology (3 December 2012). Please see the Technical Memo on Project Costs for additional detail.</p>
ab_0001-023	Treaty 8 Tribal Association	V.1, S.4.3.2 ; page(s) 4-18; line(s) 25 EISG S.3.3.3 Comment 1-8.	<i>The Project would create an 83 km long reservoir that would be on average two to three times the width of the current river. Comments</i> The proposed reservoir also floods significant portions of the Halfway and Moberly Rivers as well as several other tributaries, as noted by BC Hydro in S.4.3.2. Information Request BC Hydro is requested to: a) include all of the area tributaries in its characterization of the size of the reservoir as required in the EIS Guidelines; and b) clarify whether it will correct this description in subsequent revisions to the EIS to reflect the complete linear extent of the reservoir.	Section 4.3.2 (Reservoir), Table 4.4, shows the extent and area of flooding in the Peace River and each tributary.
ab_0001-024	Treaty 8 Tribal Association	V.1, S.4.3.1.1 ; page(s) 4-20; line(s) 30-31 EISG S.4.2 Comment 1-9.	<i>The substation would have space to allow for additional connections to Fort St. John and Taylor in the future at either 138 kV or 230 kV. Comments</i> The configuration of these additional connections is potentially relevant to the cumulative effects and the consideration of alternatives to the proposed Project. Information Request The Proponent is requested to clarify whether the allowance for additional connections at the Peace Canyon Substation anticipates expansion of the right-of-way on the north side of the River (i.e. along 1L364), alongside the 500 kV corridor (should it be created for Site C) or in some other corridor.	<p>The comment refers to Section 4.3.3.1, not 4.3.1.1 as stated.</p> <p>The substation referred to in lines 30 and 31 on page 4-20 is the substation at Site C, not Peace Canyon. Additional connections to Fort St. John and Taylor referred to in these lines would likely follow existing rights of way.</p>
ab_0001-025	Treaty 8 Tribal Association	V.1, S.4.3.6.2 ; page(s) 4-36 ; line(s) 1; 4-8	Comments The EIS identifies that there will be “general parking” at temporary accommodations on the north and south side of the Peace River Valley, and that a shuttle service will be provided “as deemed necessary” – to the Fort St. John	Public and worker safety is an objective of the Project Charter (Section 3.1.4, Table 3.1). Section 2.1 of the Project Traffic Analysis Report (Volume 4, Appendix B of the EIS) describes the assumptions made in estimating the number and routes used by commuting workers. Table 2.1

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		EISG S.17.5.3 Comment 1-10.	<p>area and Chetwynd area, for commuters and “leisure transport to town”, among other reasons. It is uncertain how much parking will be available right at work sites or what BC Hydro’s policy toward self-commuting will be. Long-distance commuting and driving while drowsy (DWD) may create significant public safety risks for workers and motorists in other vehicles. More information is required about worker transportation policy related to the proposed Project.</p> <p>Information Request The Proponent is asked to: a) provide, in tabular format, an estimate of average travel distances and transit time by vehicle from all proposed work sites to: §§ Chetwynd §§ Moberly Lake §§ Hudson’s Hope §§ Dawson Creek §§ Taylor §§ Fort St. John, including Charlie Lake §§ Halfway River First Nation’s primary residential Reserve §§ Doig River First Nation’s primary residential Reserve b) provide estimates of how many workers from each of the above noted communities and their environs are likely to be involved in the construction stage of proposed Project; c) present lessons learned from consulting literature on long-distance self-commuting effects and DWD, and any commitments to minimize public safety risks; d) identify all plans, policies and programs BC Hydro will have in place to discourage and minimize self-commuting, including but not limited to parking restrictions, supports for car pooling and bus/van transportation, and rotation schedules with temporary accommodation; and e) assess rotational shift work options being considered or preferred by BC Hydro for the construction stage of the proposed Project, including whether BC Hydro will set rules related to maximum daily shift lengths and rotation lengths, for both self-commuters and non-self commuters.</p>	<p>presents the predicted distribution of off-site daily commuters by community. Information regarding travel times and distances is outside the scope of the environmental assessment. Please see Section 35.2.1.4 for additional information regarding Traffic Management Plan topics which will address public and worker safety.</p> <p>In the EIS, BC Hydro has proposed to support carpool programs and shuttles, based on demand, for workers commuting from off-site communities, including Aboriginal communities (Section 28.4.3.2). BC Hydro would also provide camp beds for the direct Project workers, including to those in off-site communities who would otherwise experience a long commute.</p>
ab_0001-026	Treaty 8 Tribal Association	V.1, S.4.3.6.2 and V.1, S.4.3.6.3 ; page(s) 4-35-36; line(s) n/a EISG S.15.2.3 Comment 1-11.	<p>Comments Several temporary accommodations are proposed to house portions of the construction stage workforce. Given the location of the work sites, desires to avoid high levels of interaction with community members (and associated adverse social effects), and the proximity of rural areas throughout the PRRD, there will be easy access to hunting, fishing and recreation activities for workers from each temporary accommodation, provided they have access to transportation. An influx of additional harvesters and recreational land users is already expected from the portion of the construction workforce (and indirect and induced in-migrants) who does not live at these temporary accommodations. While BC Hydro’s suggestion that camp workers are less likely to hunt, fish or recreate than more permanent in-migrants, no characterization of the portion of camp workers who will choose to hunt, fish or recreate is provided.</p> <p>Information Request BC Hydro is asked to: a) identify all potential contributions (impact pathways) of the proposed Project to increased impacts on current use</p>	<p>Potential interactions with the Project were identified at the Project component or activity level with each of the VCs, as illustrated in Volume 2 Appendix A Project Interaction Matrix, Table 2. The potential interactions with respect to the Current Use of Lands and Resources for Traditional Purposes are included in that table, and those interactions that are identified with a '2' ranking are described in Table 19.2.</p> <p>The list provided in this comment ("new residents, additional locations for recreational use by non-Aboriginal people, additional linear developments into new areas inducing recreational access") does not reflect components of the Project, and as such would not be considered with respect to the potential interactions with Project components or activities.</p> <p>As described in Section 25 of the EIS, camp workers could engage in the recreation activities supported in the region, including fishing, hunting, all-terrain vehicle use, snowmobiling, hiking, and camping. Participation levels in these activities would be low relative to the local population, due to limited free time as a result of working extended shifts, access to recreation facilities at the camp, and limited options for storing or transporting large or specialized outdoor recreation</p>

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			of land and resources for traditional purposes (e.g., new residents, additional locations for recreational use by non-Aboriginal people, additional linear developments into new areas inducing recreational access); b) identify any plans, policies and programs BC Hydro is committed to in order to maximize T8FNs meaningful use of lands and resources for traditional purposes or to minimize the adverse effects of increased recreational use by non-Aboriginal people of areas important to the T8FNs within the general Peace River Valley area; c) identify any plans, policies and programs BC Hydro is committed to in order to reduce incentives for their construction workforce to recreate on the land in the general Peace River Valley area; and d) identify any BC Hydro policies (and those required of its contractors) related to hunting, fishing and recreation by camp-based workers. e) [NTD: text absent in submission]	equipment. Changes in public hunting and fishing areas during construction are described in Section 24.4.1.1 and 24.4.4.1 of the EIS. Associated mitigation measures are described in Section 24.4.3 and 24.4.6
ab_0001-027	Treaty 8 Tribal Association	V.1, S.4.3.6.4 ; page(s) 4-36 ; line(s) 22-27 EISG S.15.2.4 Comment 1-12.	Comments BC Hydro indicates it may “secure use of dedicated long-stay RV spaces” for its project workforce. It is unclear whether this will merely impose constraints on the availability of existing RV sites, increase the total number of RV sites, or both. No details are provided on the specific potential locations or potential impacts of increasing RV spaces in T8FNs traditional territory. Additional RV spaces may require additional physical disturbance of the land, would quite possibly last beyond the construction stage of the proposed Project (inducing additional recreational users to come into the area), and the construction workforce staying there may be much more likely to actively hunt, fish and travel than a camp-based workforce. Information Request The Proponent is requested to: a) identify the expected and maximum number of RV sites BC Hydro may “secure” for its workforce; b) identify any case studies of the effects of – and lessons learned from – major industrial projects that saw a large RV site expansion as a result of workforce accommodation demand; and c) assess the effects of the maximum number of RV sites BC Hydro would consider “securing” in relation to wildlife, fish and current use of lands and resources for traditional purposes.	Section 4.3.6.4, page 4-36 and Section 29.4.2.1, page 29-28 describes BC Hydro's interest in adding long-stay RV spaces in the Fort St. John-Taylor and Hudson's Hope areas, in accordance with local allowable zoning, that would be available for use by the Project workforce. The number of sites, and the specific location of long-stay RV spaces will be determined in Project implementation with local governments and private operators, and any such spaces would be subject to applicable regulations and permits. The use of RVs by workers is common, and the long-term stay use of regional RV sites is commonly observed. BC Hydro has expressed interest in securing long-stay RV spaces for its workforce in order to allow for this type of RV use to be planned and in permitted locations, and it is anticipated that these would be new spaces if permitted. As described in the EIS, “the sites could include temporary camp units and RV spaces. Local site selection would be done to find a suitable and permissible site, which could be on BC Hydro-owned land, Crown land, or leased private land. Camp facilities and utilities would be designed, constructed, operated, decommissioned, and permitted to be compliant with all applicable regulations” (Section 4.3.6.4, page 4-36, lines 11-18).
ab_0001-028	Treaty 8 Tribal Association	V.1, S.4.3.7.1 V.1, S.4.4.3 ; page(s) 4-37 4-43 ; line(s) 25-27 21-23 EISG S.3.2 Comment 1-	Comments The EIS makes reference to areas of “controlled access” (e.g. S.4.3.7.1), “restricted activity zones (e.g. S.4.4.3), and “environmental protection zones”. More detailed information on all access constraints that would occur during both construction and operations is required to understand the effects of the proposed Project on Aboriginal land use. Information Request BC Hydro is requested to: a) provide a map (or series of maps showing changes over time) and accompanying table of all terrestrial “off limits areas” that would be	The scope of the effects assessment is in accordance with the EIS Guidelines and appropriate information is provided in the EIS. The following information is provided for clarification. The overriding objective of restricting access is the safety of the public during construction. The timing of the construction activities is shown on the schedules contained in Section 4.4 Section 4.3.7.1 describes the access to the dam site area from the north bank and Figure 4.34 shows the potential locations of the controlled access points. Controlled access to the dam site area is required throughout construction.

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		13.	associated with the proposed Project, including road checkpoints, gates, security measures, fencing and other access provisions, including the estimated time period during which these areas will be “off limits”, and the rationale for the closure, throughout the construction and operations phases of the proposed Project; b) provide a map (or series of maps showing change over time) and accompanying table of all aquatic “off limits areas” that would be associated with the proposed Project, including the time period when closures would be in effect, type of barriers and warnings to be set up, security measures, and rationale for the closure, throughout the construction and operations phases of the proposed Project; and c) provide a map and tabular description of all “environmental protection zones” proposed in relation to the proposed Project.	<p>As described in Section 4.4.3, within the dam site area (Figure 4.36), environmental protection zones (EPZs) and restricted activity zones (RAZs) would be established to minimize or avoid potential construction effects in those areas. Construction activities would not be conducted within the EPZs, while limited construction activities would be conducted within the RAZs. These zones would apply to the construction contractors to mitigate environmental effects and would be enforced throughout construction. Examples of EPZs and RAZs are given in Section 4.4.3. The intent is to mitigate the environmental effects within the dam site area by limiting construction activities to only those areas that are required. As construction contracts are awarded, additional EPZs and RAZs may be added and the EPZs and RAZs described in Section 4.4.3 may be expanded.</p> <p>Section 4.3.7.2.1 describes that access to the dam site area via the Project Access Road would be controlled 24 hours a day, seven days a week throughout the construction period, so that only authorized traffic would use the road. The Project Access Road would be constructed by BC Hydro for access to the site during construction. Access would be restricted during construction due to the heavy vehicle traffic on the road, construction of the adjacent 500 kV transmission lines and the need to limit access to the dam site area.</p> <p>Access to operating gravel pits and quarries would be restricted for the duration that material extraction activities are underway.</p> <p>Access restrictions during reservoir clearing will be consistent with current forestry practices in those areas where clearing is underway.</p>

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ab_0001-029	Treaty 8 Tribal Association	V.1, S.4.5.1.3 V.1, S.4.5.2.1 ; page(s) 4-66 4-67 ; line(s) 1-5, 12-18 EISG S.3.3.3 Comment 1-14.	<p><i>A drawdown to elevation 442 m for inspection, maintenance, and repairs in the approach channel would likely be scheduled for the summer between the flood hazard season and high winter flows for generation. The approach channel lining would be designed and constructed to have a life of over 100 years; therefore, a drawdown for repairs is unlikely. ...</i></p> <p><i>The reservoir could be drawn down below the minimum normal reservoir level for unusual system requirements or system emergencies. The current expectation is the lowest reservoir level at which the generating station could operate during a system emergency would be elevation 455 m. The spillway undersluices have been designed so that the reservoir could be lowered to an elevation of 440 m for inspection and repairs of the dam, generating station, or spillways, but this would be a rare occurrence.</i></p> <p>Information Request The Proponent is requested to provide further information, based on experience at similar facilities, concerning the potential for drawdown of the reservoir to 442 metres elevation: a) the frequency of reservoir draw down for i) repairs; ii) system emergencies; and iii) inspection or maintenance; b) the typical duration of the drawdowns from initiation to return to normal reservoir operating levels for i) repair, ii) system emergencies, and iii) inspection or maintenance; and c) the potential environmental changes and the effects of these changes as a result of drawdown, including in relation to bank stability.</p>	<p>As stated in the EIS, a drawdown of the reservoir below the minimum normal reservoir level is unlikely. Nevertheless, it is feasible and prudent to incorporate the ability and redundancy in the design. The following information is provided for clarification of why a draw down below the minimum normal reservoir level would be a rare occurrence.</p> <p>Please see the Technical Memo: Dam Safety.</p> <p>Approach Channel Repairs</p> <p>As described in Section 4.5.1.3, the spillway gates and undersluices would be capable of drawing the reservoir down to elevation 442 m so that inspections, maintenance and repairs could be made if required.</p> <p>BC Hydro is aware of two projects in B.C. where drawdowns were required for channel repairs: the Arrow Lakes Generating Station (ALGS) and Kootenay Canal.</p> <p>Repairs at ALGS were required because of damage to the concrete lining caused by a hydraulic condition. The Project has been designed so that a similar hydraulic condition cannot occur in the Project's approach channel.</p> <p>Repairs at Kootenay Canal were required because of damage to the concrete lining caused by seepage through the liner and subsequent fill migration from behind the liner leading to liner settlement. The Project has been designed so that similar damage cannot occur.</p> <p>As described in Section 4.3.1.2, the Project's approach channel has an impervious lining to reduce seepage into the underlying bedrock. The approach channel lining would be designed and constructed to have a life of over 100 years; therefore, a drawdown for inspection, maintenance and repairs would not be a planned event, and is unlikely.</p> <p>The permeability of the intact bedrock is lower than that of the impervious fill used for the lining. The purpose of the lining is to limit inflow into the discontinuities (e.g. joints and fissures) in the bedrock. The design of the impervious lining is redundant with four seepage barriers:</p> <ul style="list-style-type: none"> • A geomembrane • A layer of compacted impervious fill • Discontinuities exposed in excavated rock surfaces would be sealed before placing the impervious fill • A grout curtain from the RCC buttress to seal discontinuities within the bedrock <p>As described in Section 4.3.1.3, the RCC buttress would have a system to drain any seepage from the rock. As described in Section 37.1.8.1.4, the approach channel lining and the drainage system would be designed to be functional after the deformations (movements) expected to occur under all loading conditions, including the earthquake design ground motion. Nevertheless, the buttress</p>

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				<p>has been designed to withstand a severe loading condition, which represents a complete failure of the lining and drainage system.</p> <p>System Emergencies</p> <p>In the context of a reservoir drawdown, unusual system requirements or a system emergency would be a condition on the integrated system, such as outage(s) of major transmission line(s) or generating station(s) at a time when sufficient capacity support was not available through inter-ties with neighboring utilities, so that maximum output from the Project generating station would be required to prevent cascading blackouts of all or a major part of the BC Hydro system. BC Hydro has never experienced a system emergency that led to blackouts of all or a major part of the system. Therefore, it is not possible to state a frequency for such a drawdown and there is no "typical" duration. Such a condition is unprecedented and it would be speculative to provide a probability or frequency.</p> <p>Bank Stability</p> <p>As described in Section 4.5.1.3, drawdown to elevation 442m would take approximately 15 days.</p> <p>A description of the potential influence of emergency reservoir drawdown scenarios on the stability of the reservoir shoreline is described in Volume 2, Appendix B, Part 2, Section 9.0, and in Appendix G of the reservoir impact lines technical report. The influence of drawdown on reservoir shoreline stability is most pronounced in deposits of bedrock colluvium that might experience an increase in landslide activity under drawdown scenarios.</p>
ab_0001-030	Treaty 8 Tribal Association	V.1, S.4.5.2.1 ; page(s) 4-67 ; line(s) 9-11 EISG S.3.3.3 Comment 1-15.	<p><i>In exceptional circumstances such as extreme floods, the proposed reservoir could rise above the maximum normal level for short periods. As described in Section 4.5.1, this would be a very rare occurrence.</i> Comments Section 4.5.1 does not provide the indicated information. Information Request The Proponent is requested to provide the following, based on historical knowledge of extreme flood events: a) the frequency of reservoir rise above maximum normal levels; b) the typical duration of flooding from initiation to return to normal reservoir operating levels; and c) the potential environmental changes and the effects of these changes as a result of flooding, including in relation to bank stability.</p>	<p>Section 4.5.1.3 Spillway operation states: "As described in Section 4.3.1.5, the spillway would have a capacity of 10,100 m³/s at the maximum normal reservoir level. Extrapolation of flood frequency relationships beyond 1,000 years is generally discouraged (CDA 2007); however, extrapolation suggests that the annual probability of exceeding the maximum normal reservoir level with all spillway gates open is less than 1 in 10,000." This means that the probability of the reservoir rising above the maximum normal reservoir level (MNRL) is about 1% in 100 years.</p> <p>Routing of the probable maximum flood through the reservoir indicates that in this extremely unlikely event (see Section 37.1.11.3 for likelihood of the probable maximum flood), the reservoir would be above the MNRL of 461.8 for 3 days. This would consist of one day of rising reservoir levels, peaking at about elevation 466 m, followed by two days of falling reservoir levels until the reservoir is again at the MNRL.</p> <p>The likelihoods of wind-generated waves and reservoir surcharge as a result of floods that cause the water levels to exceed the maximum normal reservoir level on the stability of the reservoir shoreline are described in Volume 2, Appendix B, Part 2 Preliminary Reservoir Impact Lines,</p>

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				<p>Section 6.0. The potential influence of wind-generated waves on the stability of the reservoir shoreline is captured in the erosion modeling and the erosion impact line described in Volume 2, Appendix B, Part 2 Preliminary Reservoir Impact Lines, Sections 7.0 and 11.0, respectively. Floods of sufficient magnitude to cause more than 1 metre of surcharge of the reservoir would have return periods on the order of 1,000 years upstream of River Kilometre 40 and within the Halfway River reach; measureable surcharge is not predicted for 1,000 year floods downstream of River Kilometre 40. Because the probabilities of these flood events are very low, an explicit determination of the influence of such flood events on the stability of the reservoir shoreline has not been made. However, upstream of Hudson's Hope, the proposed reservoir shoreline is in bedrock and changes in stability are expected to be less than those predicted as a result of the creation of the reservoir, as described in Volume 2, Appendix B, Part 2 Preliminary Reservoir Impact Lines, Section 9.0. Downstream of Hudson's Hope, changes in stability are also expected to be low since flooding would be a short-term transient condition with water levels rising faster at the onset of the flood than they would fall while the flood subsides. Such an event is not expected to result in rapidly receding water levels that could result in a reduction in slope stability.</p> <p>The probability of the reservoir exceeding the MNRL is low; therefore, adverse environmental effects of extreme flood events are unlikely and no further assessment is required.</p>
ab_0001-031	Treaty 8 Tribal Association	V.1, S.4.6 ; page(s) 4-69 ; line(s) 20-21 30-32 EISG S.3.3.11 Comment 1-16.	<p><i>BC Hydro expects that the Project would be operated for over 100 years, and that decommissioning of permanent structures is not currently contemplated. Should a proposal be made to decommission the Site C dam and generating facilities in the future, BC Hydro would address a plan for decommissioning and restoration in accordance with the applicable regulations at that time.</i></p> <p>Comments The T8FNs remain concerned that the Proponent has not properly considered the options for dam decommissioning and is not considering the possibility that the dam could be abandoned as a result of it no longer being required by future generations, too expensive to continue to maintain or for other reasons. Increasingly larger dams are being abandoned in North America, including the following in the past two years: §§ Condit Dam, Washington State (144 m long, 38 m high) §§ Elwha Dam, Washington State (33 m high) §§ Glines Canyon Dam, Washington State (64 m high) Information Request The Proponent is requested to: a) provide the range of options that exist for decommissioning hydroelectric facilities, including information on environmental planning and mitigation measures, socio-economic mitigation measures, public health and safety procedures and estimated costs; b) explain how dam decommissioning would change environmental conditions, whether the pre-Project river system and associated habitats could be re-established,</p>	<p>As described in Section 1.1, the EIS Guidelines were developed through a process that included participation by the public, aboriginal groups and agencies.</p> <p>BC Hydro has no plans to decommission the dam. The EIS Guidelines require that the "EIS should state the Proponent's commitment, should a proposal be made in the future to decommission the Site C dam and generating station, to address a plan for decommissioning and restoration in accordance with applicable regulations at that time".</p> <p>Section 4.6 provides the commitment required by the EIS Guidelines and also states: "An Environmental Protection and Monitoring Plan would be developed for decommissioning to implement applicable measures for environmental protection, and to restore the area to conditions deemed acceptable at the time of decommissioning. Further details on decommissioning would depend on regulations and practice at the time of a decision to decommission."</p> <p>As described in Section 5.5.4.3, the financial attributes for the analysis of alternatives to the Project was done "by comparing the present value of the costs between portfolios with and without the Project." Net present values are calculated by discounting future costs based on BC Hydro's cost of capital. This discounting increases for costs that are further into the future.</p> <p>In the present value calculation, costs that may be incurred more than 100 years in the future</p>

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			what enhancement measures could be available to encourage this and how long this might take; and c) explain how project abandonment would change environmental conditions, what safety issues could result, whether the pre-Project river system could be established and how this might occur.	would be discounted by more than 99% when evaluating the Project economics and analysis of alternatives. As a result, any potential decommissioning would not have a material effect on the evaluation of Project alternatives in Section 5.
ab_0001-032	Treaty 8 Tribal Association	V.1, S.5.2 ; page(s) 5-3; line(s) 14-17 EISG S.4.1.1 Comment 1-17.	<p><i>To begin this discussion, it is important to underscore BC Hydro's obligation to serve its customers in accordance with standards established by the British Columbia Utilities Commission (BCUC) pursuant to a number of sections in the B.C. Utilities Commission Act (R.S.B.C., 1996, c.473), including Sections 25, 28, 29, and 30. Comments S.25 empowers the BCUC to order a utility to provide "reasonable, safe, adequate and fair service". S.28 obliges a utility to provide service to a customer whose premises are within 200 m of its supply line, unless the Commission relieves it of this obligation on terms "the commission considers proper and in the public interest". S. 29 empowers the Commission to order a utility to provide service to premises greater than 200 m from a supply line on terms it directs. S. 30 empowers the Commission to order a utility to extend its services to an area it "may properly be considered responsible for developing", if doing so "is feasible and required in the public interest" and if it "will not necessitate a substantial increase in rates to others."</i></p> <p>Information Request Describe BC Hydro's obligations, citing the relevant provisions of the BCUC Act and other statutes and regulations, to serve additional load from existing and new customers, in existing and new premises, indicating any limitations on such obligations, whether based on magnitude of load, distance from supply lines, or any other factors.</p>	<p>The existence of BC Hydro's service obligation is noted in the EIS to assist with understanding why BC Hydro forecasts customer electricity demand and develops energy and capacity load resource balances (LRBs) to determine if new resources are required.</p> <p>BC Hydro serves its customers in accordance with tariffs (rates) filed with and approved by the BCUC pursuant to sections 58-61 of the <i>Utilities Commission Act</i>. The scope of BC Hydro's service obligation, and in particular the manner in which BC Hydro would serve "additional load from existing and new customers, in existing and new premises, indicating any limitations on such obligations, whether based on magnitude of load, distance from supply lines, or any other factors" is outside the scope of the environmental assessment.</p>
ab_0001-033	Treaty 8 Tribal Association	V.1, S.5.2 ; page(s) 5-3; line(s) 39-40 EISG S.4.1.1 Comment 1-18.	<p><i>DSM delivery risk – the risk that the response to DSM is less than planned or required Comments No mention is made of the possibility that response to DSM might be greater than planned. Information Request The Proponent is requested to: a) evaluate the implications of scenarios where response to DSM is greater than planned, including descriptions of these scenarios and detailed results; b) indicate whether and when prior response to DSM in BC Hydro's service territory has been greater than planned, including detailed data, past projections of DSM performance as well as actual response for each year; and c) provide examples of other jurisdictions in Canada or the US where response to DSM has been greater than planned, including details as to the year of the projection, the year-by-year projected results and the corresponding actual results.</i></p>	<p>Past performance with respect to meeting past Demand-side Management (DSM) targets is not likely to be indicative of the delivery risk associated with the current DSM target because the current DSM target is a significant step up from DSM targets BC Hydro set before 2009. Given BC Hydro's reliance on the current DSM target to deliver 1,400 MW of anticipated dependable capacity savings in about an eight year timeframe, there is a greater consequence if the response to DSM programs and other initiatives is less than anticipated, as compared to a scenario where the response is greater than anticipated.</p> <p>The information requested to "provide examples of other jurisdictions in Canada or the US where response to DSM has been greater than planned, including details as to the year of the projection, the year-by-year projected results and the corresponding actual results" is outside the scope of the environmental assessment as it is not relevant to a determination of the need for the Project.</p> <p>Please see the following Technical Memos</p>

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				<ul style="list-style-type: none"> – Project Need – Demand-side Management
ab_0001-034	Treaty 8 Tribal Association	V.1, S.5.2.1.1 ; page(s) 5-5; line(s) 7-8 EISG S.4.1.1 Comment 1-19.	<i>The 2012 Load Forecast has been prepared in accordance with the BCUC's Resource Planning Guidelines (...), using the same methodological approach for the mid-forecast accepted by the BCUC in long-term resource plan proceedings, including a sector-by-sector analysis of load. Information Request The Proponent is requested to: a) provide document(s) presenting in detail the BC Hydro "2012 Load Forecast, including the year-by-year results for each sector and sub-sector, with explanatory text, for the mid-load forecast as well as for the other load growth scenarios prepared"; and b) provide a copy of the 2013 version of the 2011 Electric Load Forecast (Appendix 2A to the 2012 Draft Integrated Resource Plan), if it has been finalized and, if not, provide the 2012 version of this document, if it is different from the document provided in response to part a), and indicate in what month the 2013 version will be finalized.</i>	Refer to the copy of the 2012 Load Forecast, dated December 2012, which is provided as an attachment to the Technical Memo on Project Need. The 2012 Load Forecast is the most recent BC Hydro Load Forecast. The 2013 Load Forecast will likely be finalized in December 2013.
ab_0001-035	Treaty 8 Tribal Association	V.1, S.5.2.1.1 ; page(s) 5-5; line(s) 25-28 EISG S.4.1.1 Comment 1-20.	<i>The BCUC endorsed the use of the mid-load forecast for purposes of determining need in its 2008 Long-Term Acquisition Plan Decision (BCUC Order G-91-09, Reasons for Decision, page 54 and Directive 6). Comments: On page 54, the BCUC rejected a request for an updated load forecast and "accepts the 2008 Load Forecast Update (Exhibit B10) for the purposes of its review of the 2008 LTAP." On p. 48 of Order G-91-09, the BCUC states that: <i>BC Hydro states that its Load Forecast is sensitive to a number of factors, including economic conditions, weather, DSM, electricity rate structures, electricity rates and elasticities. A composite sensitivity analysis using a Monte Carlo model is included in this forecast, the results of which are represented as the High, Medium and Low Load Forecasts (Exhibit B--1--1, Appendix D, pp. 10--12 of 103).</i> On page 10 of the 2008 Load Forecast Update (Exhibit B-10), BC Hydro states: <i>As with the 2007 Load Forecast, the 2008 Load Forecast Update includes uncertainty bands around the mid load forecast estimated using a Monte Carlo model that examines the uncertainty in a set of key drivers including economic activity, weather, electricity rates and rate elasticities. These uncertainty bands represent a reasonable range around the mid 2008 load forecast to account for relatively predictable yearly perturbations in future loads around the mid forecast.</i> Directive 6 of Order G-91-09 reads in full: <i>The Commission Panel accepts BC Hydro's 2008 Load Forecast Update for the purposes of its review of the 2008 LTAP. The Commission Panel also notes that BC Hydro agrees with IPPBC that there is some potential for double counting of DSM in the forecasting</i></i>	<p>The requested "textual cites" are provided in both the quoted EIS reference and the extract set out in the "Comments" leading to this question. The description of BC Hydro's load forecasting methodology can be found on pages 46 to 55 of the BCUC's 2008 LTAP (Long-Term Acquisition Plan) Decision. BC Hydro notes the BCUC statement on page 47 concerning the 2007 and 2008 Load Forecasts:</p> <p><i>"were developed using substantially the same methodology used for the 2006 Load Forecast, which had been the subject of extensive review in the 2006 IEP/LTAP proceeding, and where the Commission had found that "BC Hydro's Load Forecast has generally been prepared in accordance with the [BCUC's] Guidelines and accepts that the results of the 20-year forecast are reasonable for purposes of the 2006 IEP/LTAP".</i></p> <p>Directive 6 states that the BCUC "accepts BC Hydro's 2008 Load Forecast Update for the purposes of its review of the 2008 LTAP". The LRBs, and thus the energy and supply gaps in the 2008 LTAP, were based on the mid-level 2008 Load Forecast Update.</p>

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			<i>coefficients and requires BC Hydro to address this in its next LTAP.</i> Information Request BC Hydro is asked to: a) provide the textual cite from p. 54 of Order G-91-09 to which BC Hydro is referring in the citation, in which “the BCUC endorsed the use of the mid-load forecast for purposes of determining need”; and b) provide the textual cite from Directive 6 of G-91-09 to which BC Hydro is referring in the citation, in which “the BCUC endorsed the use of the mid-load forecast for purposes of determining need.”	
ab_0001-036	Treaty 8 Tribal Association	V.1, S.5.2.1.1 ; page(s) 5-5; line(s) 29 EISG S.4.1.1 Comment 1-21.	<i>Use of the mid-load forecast is consistent with other public electric utilities.</i> Information Request BC Hydro is requested to identify other public electric utilities that use the high and/or low load scenarios as well in their planning processes, if any, and to describe the use of the high and low forecasts in these utilities’ planning procedures.	The requested information is outside the scope of the environmental assessment. The need for the Project is based on the mid-level forecast for the three reasons described in Section 5, page 5-5, including the legally binding requirement set out in the Electricity Self-Sufficiency Regulation (B.C. Reg. 315/2010). The need for the Project is not based on the high or low load bands described in the 2012 Load Forecast (Section 5, ‘Sensitivity Analysis’), a copy of which is attached to the Technical Memo on Project Need. Information concerning which, if any, other public utilities (which would have different service areas, demographics, available resources, etc.) use high and low load scenarios in their planning processes is not relevant to the determination of the need for the Project.
ab_0001-037	Treaty 8 Tribal Association	V.1, S.5.2.1.1 ; page(s) 5-6; line(s) 30-32 EISG S.4.1.1 Comment 1-22.	<i>Liquefied Natural Gas Load The 2012 mid-load forecast presented in this section does not include potential LNG load, which is discussed in Section 5.2.3.</i> Comments The inclusion of this statement and the underlined emphasis implies that there is high potential for inclusion of electricity load from liquefied natural gas export terminals in the load forecast. Also, it is unclear whether “LNG Load” includes load in addition to that required for the liquefaction process such as for extraction, transportation, and other ancillary services. Information Request The Proponent is requested to: a) specify which of the existing LNG liquefaction terminals throughout the world uses grid electricity for the energy-intensive liquefaction process; b) specify whether either the Douglas Channel LNG Project or the Pacific Northwest Gas LNG facility are considering grid electricity; c) estimate the likelihood that LNG liquefaction in British Columbia will be powered by electricity from the grid and justify this estimate; and d) clarify what electric loads, if any, in relation to LNG export are included in the “no LNG” load that has been excluded from the forecast used in the EIS.	As stated in the 2012 Load Forecast, there is currently a single Liquefied Natural Gas (LNG) facility in the world that uses electricity to power liquefaction compressors for making LNG. The information requested in parts (b) and (c) is outside the scope of the environmental assessment. In addition, BC Hydro will not release the information requested in parts (b) and (c) because BC Hydro is currently in negotiations with LNG proponents and the requested information is of a confidential nature and is commercially sensitive. Regarding (d), as set out in Section 5.2, the Project is needed whether or not new LNG projects proceed. Please see the Technical Memo: Project Need.
ab_0001-038	Treaty 8 Tribal Association	V.1, S.5.2.1.1 ; page(s) 5-6; line(s) 1-2 EISG S.4.1.1 Comment 1-23.	<i>Table 5-1 Mid-Energy Load Forecast Before DSM Table 5.2 Mid-Peak Demand Load Forecast Before DSM</i> Information Request The Proponent is requested to: a) provide annual data from F2012 to F2031 on an annual basis for both energy and peak demand; and b) clarify whether the demand includes the entirety of Provincial domestic demand or only demand met by BC Hydro.	The 2012 Load Forecast (both energy and capacity) consists of BC Hydro’s forecasted obligations within its service area, which consists of: (1) the BC Hydro integrated system (interconnected by transmission lines, distribution lines and substations linking generation stations to one another and customers); and (2) non-integrated areas, which are isolated regions not connected directly to the BC Hydro integrated system. BC Hydro’s service area does not include the entirety of the Province, and thus the 2012 Load Forecast is not a forecast of ‘the entirety of Provincial domestic

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				<p>demand’.</p> <p>Annual data from F2012 to F2031 on an annual basis are provided in the 2012 Load Forecast document, a copy of which is attached to the Technical Memo: Project Need.</p>
ab_0001-039	Treaty 8 Tribal Association	V.1, S.5.2.1.1 ; page(s) 5-6; line(s) 10-12 EISG S.4.1.1 Comment 1-24.	<p><i>The drivers of the residential forecast are the average annual use of electricity per account and the number of accounts, which is driven by population growth and housing starts. Information Request BC Hydro is asked to: a) clarify whether electric heating penetration is used as a driver in the residential forecast, and if so, to explain the procedures used, and if not, why not; b) provide annual data with respect to electric heating penetration in B.C. since F1982; and c) provide the forecasts for residential electric heating penetration used in the medium, high and low load forecasts.</i></p>	<p>Electric heating penetration is used as a driver in the residential load forecast. Please see the response to ab_0001-022 and to Section 6 of the 2012 Load Forecast, a copy of which is attached to the Technical Memo: Project Need.</p> <p>The information requested in (b) and (c) is outside the scope of the environmental assessment. As described in the response to ab_0001-022, over the course of the last 30 years (i.e., since F1982), BC Hydro’s load forecasting methodology has changed significantly, thereby making comparisons not instructive. As described in the response to ab_0001-036, the need for the Project is based on the mid-level forecast for the three reasons described in Section 5, page 5-5, including the legally binding requirement set out in the Electricity Self-Sufficiency Regulation. The need for the Project is not based on the high or low load uncertainty bands described in the 2012 Load Forecast document (Section 5 – ‘Sensitivity Analysis’).</p>
ab_0001-040	Treaty 8 Tribal Association	V.1, S.5.2.1.1 ; page(s) 41400; line(s) 17-21 EISG S.4.1.1 Comment 1-25.	<p><i>In addition, trends in residential electricity use per account have been slowing. This is due to several factors that include recent slower economic growth, the effects of conservation, BC Hydro’s electricity rate changes, and an increasingly efficient appliance fleet. The average use per account is expected to grow slowly at less than 1% per year. Information Request The Proponent is asked to provide: a) the average annual residential electricity use per account since F1982; b) the average annual residential electricity use per account used in the medium, high and low load forecasts; and c) the historical and forecast annual residential electricity use per account for major utilities in i) the American Northwest, and ii) Canada.</i></p>	<p>The BC Hydro 2012 Load Forecast document has been attached to the Technical Memo: Project Need. Details on the residential sector load forecast can be found in Chapter 6 of the 2012 Load Forecast. Section 6.4 specifically deals with the trends and factors influencing use per account. All values in the 2012 Load Forecast are before the application of DSM savings reductions.</p> <p>Please see the forecast use per account for the Reference (base) forecast. BC Hydro's high and low forecast bands do not use residential use per account as one of the drivers, nor can this parameter be isolated or reported out from the models used to generate these. Residential use per account is one of the main factors driving the Reference (mid) residential load forecast, but the high and low forecast bands are developed on a more aggregated, top-down basis that does not factor the complete range of variables that drives the mid Forecast.</p> <p>The request for historical information on electricity use is outside the scope of the environmental assessment for the reasons described in the response to ab_0001-022. BC Hydro does not archive information requested on other utilities. Even if this information was available on a consistent basis, each jurisdiction will have unique characteristics such as space heating fuel mix, climate (heating and air conditioning demand), and building practices that would make a useful comparison challenging.</p>
ab_0001-041	Treaty 8 Tribal Association	V.1, S.5.2.1.1 ; page(s) 5-7; line(s) 3-5 EISG S.4.1.1 Comment 1-	<p><i>Sales to the commercial distribution sector before DSM are expected to grow by about 2.0%, 1.9%, and 1.8% over the next five, 10, and 20 years, respectively. Information Request Provide the annual forecast energy and capacity sales for the commercial sector, before and after DSM, from F2012 to F2031, under the medium, high and low load forecasts.</i></p>	<p>The BC Hydro 2012 Load Forecast document has been attached to the Technical Memo: Project Need. Details on the commercial sector load forecast can be found in Chapter 7 of the 2012 Load Forecast. All values in the 2012 Load Forecast are before the application of DSM savings reductions.</p>

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		26.		With respect to 'capacity sales', specific to the Commercial sector, BC Hydro does not prepare a forecast of capacity requirements to this sector. These customers are intermixed with residential and industrial customer loads and are largely but not exclusively served at distribution voltages. For the details of BC Hydro's distribution peak load forecast, please refer to the Load Forecast document referenced above, specifically Section 10.3.1. The transmission peak demand forecast is available in Section 10.3.2.
ab_0001-042	Treaty 8 Tribal Association	V.1, S.5.2.1.1 ; page(s) 5-7; line(s) 5-7 EISG S.4.1.1 Comment 1-27.	<i>This growth reflects relatively stable provincial economic growth and no significant changes in average commercial end use efficiency.</i> Information Request BC Hydro is requested to explain why it has assumed no significant changes in average commercial end use efficiency over the 20-year analysis period.	The BC Hydro 2012 Load Forecast document has been attached to the Technical Memo: Project Need. Details on the commercial sector load forecast can be found in Chapter 7 of the 2012 Load Forecast. All values in the 2012 Load Forecast are before the application of DSM savings reductions. Sections 7.4, 7.5 and 7.6 of the 2012 Load Forecast present the material factors involved in the creation of the commercial forecast. As to the assumptions used in the forecast, BC Hydro has used the most recent available information on sector efficiencies and new electricity uses. Beyond these assumptions, BC Hydro does not further speculate as to future changes in technologies or regulatory standards that may result in changes to future efficiencies. Similarly, BC Hydro does not anticipate unknown technologies or unanticipated new demands that may substantially increase future demand for electricity.
ab_0001-043	Treaty 8 Tribal Association	V.1, S.5.2.1.1 ; page(s) 5-7; line(s) 33-35 EISG section n/a Comment 1-28.	<i>Sales to the forestry sector before DSM are expected to shrink by about 2.4%, 1.2%, and 0.6% over the next five, 10, and 20 years, respectively.</i> Information Request Provide the annual forecast energy and capacity sales for the forestry sector, before and after DSM, from F2012 to F2031, under the medium, high and low load forecasts.	The BC Hydro 2012 Load Forecast document has been attached to the Technical Memo: Project Need. Details on the industrial sector load forecast can be found in Chapter 8 of the 2012 Load Forecast. All values in the 2012 Load Forecast are before the application of DSM savings reductions. Section 8.4.1 of the 2012 Load Forecast presents in detail the material factors involved in the creation of the forestry forecast. BC Hydro's high and low forecast bands are developed on a more aggregated, top-down basis that do not isolate forestry sector load. Therefore, it is not possible to report on these separately.
ab_0001-044	Treaty 8 Tribal Association	V.1, S.5.2.1.1 ; page(s) 5-8; line(s) 15-17 EISG S.4.1.1 Comment 1-29.	<i>Sales to the oil and gas sector before DSM are expected to grow by about 19.0%, 14.3%, and 7.5% over the next five, 10, and 20 years, respectively.</i> Information Request Provide the annual forecast energy and capacity sales for the oil and gas sector, before and after DSM, from F2012 to F2031, under the medium, high and low load forecasts.	The BC Hydro 2012 Load Forecast document has been attached to the Technical Memo: Project Need. Details on the industrial sector load forecast can be found in Chapter 8 of the 2012 Load Forecast. All values in the 2012 Load Forecast are before the application of DSM savings reductions. Section 8.4.2 of the 2012 Load Forecast covers the oil and gas sector forecast. BC Hydro's high and low forecast bands are developed on a more aggregated, top-down basis that do not isolate oil & gas sector load. Therefore, it is not possible to report on these separately.
ab_0001-045	Treaty 8 Tribal Association	V.1, S.5.2.1.1 ; page(s) 5-8; line(s) 15-17 EISG S.4.1.1	<i>Sales to the mining sector before DSM are expected to grow by about 11.8%, 7.1%, and 2.8% over the next five, 10, and 20 years, respectively.</i> Information Request Provide the annual forecast energy and capacity sales for the mining sector, before and after DSM, from F2012 to F2031, under the medium, high	The BC Hydro 2012 Load Forecast document has been attached to the Technical Memo: Project Need. Details on the industrial sector load forecast can be found in Chapter 8 of the 2012 Load Forecast. All values in the 2012 Load Forecast are before the application of DSM savings reductions. Section 8.4.2 of the 2012 Load Forecast covers the mining sector forecast.

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		Comment 1-30.	and low load forecasts.	BC Hydro's high and low forecast bands are developed on a more aggregated, top-down basis that do not isolate mining sector load. Therefore, it is not possible to report on these separately.
ab_0001-046	Treaty 8 Tribal Association	V.1, S.5.2.1.2 ; page(s) 5-9; line(s) 35-40 EISG S.4.1.1 Comment 1-31.	<i>‘Water conditions’ refers to how much water BC Hydro has in its reservoirs, and ‘average water conditions’ refers to the mean output of the BC Hydro Heritage hydroelectric resources over the 60-year recorded period of stream flows between October 1940 and September 2000. Information Request BC Hydro is asked to: a) clarify whether ‘water conditions’ refers to inflows or to the amount of water stored in BC Hydro reservoirs; and b) explain and justify the use of the period 1940 to 2000.</i>	“Water conditions” refers to inflows into the BC Hydro reservoirs. The period 1940 to 2000 includes a wide variation of stream flows (including the “Critical Period” of minimal inflows for the BC Hydro system) and is considered to be representative of the range of inflows that could be expected to occur in the future. In addition, system-wide modeling studies require a consistent set of inflows as well as Columbia River Treaty (CRT) operating plan, which is one of the key factors to the BC Hydro operation and has to be jointly approved by the CRT Operation Committee consisting of members from BC Hydro, Bonneville Power Administration (BPA) and US Army Corps of Engineers (USACE). 1940 is the first year for which BC Hydro has reliable system-wide inflow data, and 2000 was the last year for which BC Hydro has a consistent dataset with BPA and USACE at the time of the FELCC study.
ab_0001-047	Treaty 8 Tribal Association	V.1, S.5.2.1.2 ; page(s) 5-9; line(s) 40-44 EISG S.4.1.1 Comment 1-32.	<i>The energy LRBs in this EIS are based on firm energy capability – for the heritage hydroelectric resources, this capability is defined under average water conditions; for all non-heritage hydroelectric resources, like run-of-river hydro, BC Hydro uses critical water conditions (the most adverse sequence of stream flows occurring within the same 60-year period). Information Request The Proponent is asked to explain why different criteria (average water conditions vs. critical water conditions) are used to evaluate the firm energy capability of heritage and non-heritage hydroelectric resources.</i>	The Clean Energy Act requires BC Hydro to be self-sufficient by meeting its energy supply requirements solely from generating facilities within the Province. For heritage hydro, the “Electricity Self-sufficient Regulation” (B.C. Regulation 315/2010) prescribes heritage energy capability to meet self-sufficiency as being under average water conditions. For IPPs, BC Hydro uses its energy reliability criteria to assess the maximum reliance that can be placed upon IPP output without relying upon the markets. To rely upon IPPs for a volume greater than the firm energy amount, BC Hydro would need to rely on market purchases which would not meet the self-sufficiency requirement.
ab_0001-048	Treaty 8 Tribal Association	V.1, S.5.2.1.2 ; page(s) 5-10; line(s) 19-24 EISG S.4.1.1 Comment 1-33.	<i>BC Hydro used Effective Load Carrying Capability (ELCC) to represent the capacity contribution from intermittent clean or renewable IPP resources such as wind and run-of-river resources in Table 5.5 below, and the capacity LRBs in Tables 5.7 and 5.9. The ELCC method for evaluating wind and run-of-river capacity uses a probabilistic approach that is sensitive to wind and run-of-river availability, rather than relying on a deterministic value for available dependable capacity. Information Request The Proponent is requested to clarify whether the method used for estimating the capacity contribution of wind power explicitly takes into account the observed degree of coincidence of wind generation to system peak, and if so, to explain in detail how and, if not, why not.</i>	The method used for estimating wind capacity contribution (i.e., the ELCC) assumes that wind generation output is independent of either system load requirements or other system generation output. This means that wind could show up at any time with equal probability. BC Hydro continues to gather wind data and analyze its likelihood of being available to meet peak load conditions. Neighbouring jurisdictions have shown that at times very cold weather periods are characterized by low wind conditions and very low wind contribution to system load requirements.
ab_0001-049	Treaty 8 Tribal Association	V.1, S.5.2.1.2 ; page(s) 5-10; line(s) 25-27 EISG S.4.1.1 Comment 1-	<i>The ELCC method may overstate the capacity contribution of these intermittent clean or renewable resources. The incremental ELCC contributions of intermittent clean or renewable resources will decrease as more of these intermittent resources come into service. Information Request BC Hydro is requested to: a) explain why the ELCC method “may overstate the capacity</i>	Please see the response to ab_0001-048.

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		34.	contribution of these intermittent clean or renewable resources”; b) explain whether (and why) it is also possible that the ELCC method may understate their capacity contribution; and c) explain why BC Hydro continues to use this approach, given these uncertainties, and whether other methods for estimating capacity contributions of intermittent resources were considered.	
ab_0001-050	Treaty 8 Tribal Association	V.1, S.5.2.1.2 ; page(s) 5-10; line(s) 33 EISG S.4.1.1 Comment 1-35.	Table 5.4 Energy Capability in F2022 Information Request Present the data described in Table 5.4 for each year from F2012 to F2031.	Please see the Technical Memo: Project Need.
ab_0001-051	Treaty 8 Tribal Association	V.1, S.5.2.1.2 ; page(s) 5-11; line(s) 1 EISG S.4.1.1 Comment 1-36.	Table 5.5 Dependable Capacity in F2022 Information Request Present the data described in Table 5.5 for each year from F2012 to F2031.	Please see the Technical Memo: Project Need.
ab_0001-052	Treaty 8 Tribal Association	V.1, S.5.2.1.2 ; page(s) 5-11; line(s) 1 EISG S.4.1.1 Comment 1-37.	Table 5.5 Dependable Capacity in F2022 Information Request BC Hydro is requested to: a) justify the choice of a 14% reserve requirement; b) justify the choice to subtract reserve requirement from planned capacity, rather than adding it to requirements and c) indicate and justify the reserve requirements applied to each of the three resource categories mentioned in the table (heritage hydro, heritage thermal and IPP supply;	<p>BC Hydro’s generation capacity planning reliability criterion is designed to ensure that there is sufficient installed generation capacity to reliably serve the instantaneous demand of the system. BC Hydro applies a standard Loss of Load Expectancy (LOLE) methodology for its evaluation of capacity reliability. An ‘adequate’ generation system is defined as one that has an annual expectation of being unable to serve the daily peak demand of less than one day in ten years. The one day in ten years LOLE methodology has widespread use in industry. BC Hydro calculates the difference between the system generating capacity and the maximum load that can be carried which results in 14% as a percentage of system generating capacity.</p> <p>The reserve requirement was calculated as a percentage of the system generating capacity; hence, it should be applied as a percentage of the planned system generating capacity.</p> <p>The 14% reserve requirement is derived taking the whole generating system into account including intermittent resource ELCC contribution, and therefore, it is equally applied across all three resource categories.</p>
ab_0001-053	Treaty 8 Tribal Association	V.1, S.5.2.2 ; page(s) 5-11; line(s) 8-9 EISG S.4.1.1 Comment 1-	First, in Section 5.2.2.1, the LRBs are depicted without future DSM or Revelstoke Unit 6. Information Request BC Hydro is requested to: a) explain the reason for presenting LRBs without future DSM; and b) explain the reason for presenting LRBs without Revelstoke 6, given that it is not an alternative to the proposed Project (p. 5-14, line 11).	<p>Consistent with the BCUC’s Resource Planning Guidelines, there are three steps to developing the LRBs:</p> <ul style="list-style-type: none"> • Steps 1 and 2 are to develop LRBs based on the most recent gross load forecast (in this case the 2012 Load Forecast), and existing and committed resources. The result is the LRBs presented in Section 5, Tables 5.6 and 5.7, which do not include any potential future resources such as the

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		38.		<p>current DSM target and Revelstoke Unit 6;</p> <ul style="list-style-type: none"> • Step 3 is to reflect anticipated future DSM savings into the LRBs. BC Hydro also conservatively included Revelstoke Unit 6 in this third step. The need for the Project is established based on the energy and capacity LRBs which include the current DSM target and Revelstoke 6; refer to Section 5.2.2.2 and Tables 5.8 and 5.9. <p>Please also see the Technical Memo: Project Need.</p>
ab_0001-054	Treaty 8 Tribal Association	V.1, S.5.2.2.2 ; page(s) 5-13; line(s) 15-22 EISG S.4.1.1 Comment 1-39.	<p><i>BC Hydro has conservation rates in place (or with planned implementation) for over 90% of its domestic load. Over the past five years, BC Hydro implemented four conservation rate structures for residential, commercial, and industrial customers. Estimates of energy savings from rate structures is uncertain, particularly in a low electricity rate jurisdiction such as BC Hydro's service area.</i></p> <p>Information Request The Proponent is requested to provide a detailed description of the conservation rates that are in place, indicating for each: i) if it is mandatory or optional; ii) how long it has been in place; iii) how much energy savings are estimated to result from it; and iv) whether or not any modifications are under consideration.</p>	<p>There are five classes of conservation rates currently in place:</p> <ul style="list-style-type: none"> - Residential Class rates are composed of a two-step inclining block, and were implemented in October 2008. The GWh savings estimate for F2021 is 1,172 GWh. - Large General Service rates are composed of a two-part baseline rate, and were implemented in January 2011. The GWh savings estimate for F2021 is 1,216 GWh. - Medium General Service rates are composed of a two-part baseline rate, and are planned for implementation in Fiscal 2013/14. The GWh savings estimate for F2021 is 423 GWh. - Small General Service rates are composed of a two-part baseline rate, and are planned for implementation in Fiscal 2018. The GWh savings estimate for F2021 is 95 GWh. - Transmission rates are composed of a customer baseline rate, and were implemented in Fiscal 2006. The GWh savings estimate for F2021 is 199 GWh. <p>The estimates are from the F12-14 DSM section 44.2 Utilities Commission Act expenditure request in BC Hydro's November 2011 Amended Revenue Requirement Application to the BCUC.</p> <p>Whether or not "any modifications are under consideration" to these rate structures is outside the scope of the environmental assessment.</p>
ab_0001-055	Treaty 8 Tribal Association	V.1, S.5.2.2.2 ; page(s) 5-13; line(s) 40-41 EISG S.4.1.1 Comment 1-40.	<p><i>BC Hydro's current DSM target is 7,800 GWh/year of energy savings, with associated capacity savings of 1,400 MW, in F2021. Comments On p. 5-19, lines 39-40, it is indicated that the current DSM target corresponds to Option 2. On p. 5-26, lines 24-25 it is indicated that the information presented in the EIS concerning alternatives derives in large part from the 2010 Resource Options Report. The Draft IRP also presents five DSM options, which are also drawn from the 2010 Resource Options Report. According to Figures 3-1 and 3-2 of the Draft IRP, Option 2 corresponds to targets of approximately 11,000 GWh/year of energy and 1,700 MW of capacity. According to Figures 4-1 and 4-2 of the 2010 Resource Options Report, Option 2 also corresponds to targets of approximately 11,000 GWh/year of energy and 1,700 MW of capacity.</i></p> <p>Information Request BC Hydro is requested to: a) confirm that the current DSM target used in the EIS corresponds to Option 2, and that this corresponds to the same Option 2 of the Draft IRP and of the 2010 Resource Options Report; b) specify any changes in Option 2, compared to the Option 2 presented in i) the</p>	<p>The need for the Project is based on, among other things, BC Hydro's current DSM target. Refer to Section 5.2.2.2 and Tables 5.8 and 5.9.</p> <p>In the EIS there are four alternatives to the current DSM target - DSM Options 1, 3, 4 and 5. The alternatives described are generally equivalent to the DSM Options 1, 3, 4 and 5 as described in BC Hydro's 2010 Resource Options Report, and included in BC Hydro's draft Integrated Resource Plan of May 2012. Differences are generally due to a change from presenting savings with a different base year for calculation of savings. Please note that for the purposes of the EIS, the DSM Options 1, 3, 4 and 5 described in Sections 5.2.2.2 and 5.4.2.3 of the EIS update and replace the DSM Options 1, 3, 4 and 5 described in the 2010 Resource Options Report.</p> <ul style="list-style-type: none"> • The EIS description of DSM Option 1 is found at pages 5-19 and 5-20 of the EIS. The savings associated with DSM Option 1 are lower than the current DSM target – 7,500 GWh/year of energy savings and 1,200 MW of capacity savings by F2021. • DSM Option 3 is described at page 5-20 of the EIS, and is expected to deliver 9,200 GWh/year of energy savings and 1,400 MW of dependable capacity savings in F2021. DSM Option 3 is

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			Draft IRP and ii) the 2010 Resource Options Report; c) explain in detail why the targets of Option 2 have been revised downward from the figures stated in the Draft IRP and the 2010 Resource Options Report; and d) provide a current version of Figures 4-1 and 4-2 of the 2010 Resource Options Report, with a detailed explanation of any variance from that document.	described further in the Technical Memo on Demand-side Management; • DSM Options 4 and 5 are described in Section 5.4.2.3 of the EIS. DSM Option 4 targets 9,500 GWh/year of energy savings and 1,500 MW of dependable capacity savings by F2021; the corresponding figures for DSM Option 5 are 9,600 GWh/year of energy savings and 1,600 MW of dependable capacity savings by F2021. DSM Options 4 and 5 are described further in the Technical Memo on Demand-side Management.
ab_0001-056	Treaty 8 Tribal Association	V.1, S.5.2.2.2 ; page(s) 5-14; line(s) 17-18 EISG S.4.1.1 Comment 1-41.	<i>Table 5.8 Energy Deficit/Surplus (GWh) with DSM Target and Revelstoke Unit 6 (No LNG)</i> Information Request Provide historical energy data for LRB with and without DSM from F1982 through F2011.	The requested information is outside the scope of the environmental assessment. The 2012 Load Forecast reflects the impact of savings from BC Hydro's past DSM initiatives such as energy conservation achieved through F2012. Future projected DSM savings from F2013 onward are accounted for separately in Section 5.2.2.2 of the EIS as part of development of the overall energy and capacity LRBs. As described in the response to ab_0001-033, past performance with respect to meeting past DSM targets is not likely to be indicative of the delivery risk associated with the current DSM target because the current DSM target is a significant step up from DSM targets BC Hydro set before 2009. Please also see the Technical Memo: Demand-side Management.
ab_0001-057	Treaty 8 Tribal Association	V.1, S.5.2.2.2 ; page(s) 5-15; line(s) 1-2 EISG S.4.1.1 Comment 1-42.	<i>Table 5.9 Capacity Deficit/Surplus (MW) with DSM Target and Revelstoke Unit 6 (No LNG)</i> Information Request Provide historical capacity data for LRB with and without DSM from F1982 through F2011.	For the reasons described in the response to ab_0001-056, the requested information is outside the scope of the environmental assessment.
ab_0001-058	Treaty 8 Tribal Association	V.1, S.5.2.3 ; page(s) 5-15; line(s) 9-11 EISG S.4.1.1 Comment 1-43.	<i>Factors that can lead to lower load than forecast include:</i> • <i>An increase in the value of the Canadian dollar, which would slow commodity exports from B.C.</i> Information Request BC Hydro is requested to clarify whether it has carried out sensitivity analyses to understand the effects of different USD exchange rates on its future loads, and if so, to explain these effects in detail, and provide the supporting studies or reports.	BC Hydro has not carried out load sensitivity analyses specifically with respect to the USD exchange rates. BC Hydro's high and low forecasts do incorporate the effect of a stronger or weaker provincial economy, one of the key influences of which is exchange rates. BC Hydro considers the high and low forecasts bandwidth to be sufficiently wide to contain a range of plausible economic outcomes. Please also see the response to ab_0001-142.
ab_0001-059	Treaty 8 Tribal Association	V.1, S.5.2.3 ; page(s) 5-16; line(s) 9-14 EISG S.4.1.1 Comment 1-44.	<i>BC Hydro addresses load forecast uncertainty by developing high and low forecast bands. The intention of this analysis is the creation of high and low forecast bands with approximately 10% and 90% exceedance probabilities, respectively. As stated above, for planning purposes, BC Hydro uses its mid-load forecast. The high and low forecast bands are used to provide an indication of the magnitude of load uncertainty. Figure 5.1 and Figure 5.2 at the end of this section depict the 2012 midenergy and capacity load forecasts, respectively, and the high and low uncertainty band forecasts before DSM.</i> Information Request BC Hydro is requested to: a) provide the data represented in Figure 5.1 and	The data have been provided in a format appropriate for the EIS. Please refer to the copy of the 2012 Load Forecast attached to the Technical Memo on Project Need. The high and low load uncertainty bands are described in Section 5 of the 2012 Load Forecast.

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			Figure 5.2 in Excel format; and b) provide documentation adequate to understand the hypotheses used in producing the high and low forecasts.	
ab_0001-060	Treaty 8 Tribal Association	V.1, S.5.2.3 ; page(s) 5-19; line(s) 26-27 EISG S.4.1.1 Comment 1-45.	<i>This is one of the reasons why BC Hydro develops contingency resource plans that can provide dependable capacity to meet its customers' requirements.</i> Information Request BC Hydro is requested to describe in detail its contingency resource plans, indicating at what frequency they are updated, and provide a copy of the most recent one.	Section 5.2.3 sets out the shortfall risks that drive BC Hydro's Contingency Resource Plans, and have been provided to inform the risks associated with the energy and capacity LRBs set out in Tables 5.8 and 5.9. BC Hydro's Contingency Resource Plans are updated periodically and filed with the BCUC for approval pursuant to Directive 3 of BCUC Order G-58-05 concerning its Open Access Transmission Tariff. The need for the Project is not based on BC Hydro's Contingency Resource Plans, and thus the request to provide a copy of the most recent Contingency Resource Plan is outside the scope of the environmental assessment.
ab_0001-061	Treaty 8 Tribal Association	V.1, S.5.2.3 ; page(s) 5-20; line(s) 10-13 EISG S.4.1.1 Comment 1-46.	<i>BC Hydro notes that DSM Option 3 on its own is not an alternative to the Project because, on its own, Option 3 defers the energy LRB gap by five years and does not defer the capacity LRB gap.</i> Information Request BC Hydro is requested, given that it uses a portfolio analysis approach, to explain the significance of the statement that Option 3 is not, "on its own", an alternative to the proposed Project.	Please see the response to ab_0001-082. Please see the Technical Memo: Demand-side Management.
ab_0001-062	Treaty 8 Tribal Association	V.1, S.5.2.3 ; page(s) 5-20; line(s) 26-29 EISG S.4.1.1 Comment 1-47.	<i>BC Hydro assumes for purposes of the LRBs presented in this EIS that, with the exception of EPAs with bioenergy generation facilities, a portion of the EPAs with IPPs (about 75% of clean or renewable IPPs) will be renewed upon expiry, and that those IPP facilities will continue to provide the same amount of electricity to BC Hydro.</i> Information Request The Proponent is requested to: a) justify the choice of 75% for the portion of EPAs with IPPs that will be renewed upon expiry; and b) confirm that, for the 25% of EPAs with IPPs that will not be renewed upon expiry, it is assumed that these projects will provide no energy to BC Hydro upon expiry.	For a group of run-of-river IPPs which have EPAs expiring over the next 5 years, based on communications with IPP developers and professional investigation and analysis, BC Hydro assessed the likelihood of being able to renew these contracts on a cost-effective basis. Based upon this assessment, BC Hydro estimated that 75% of these EPAs would be renewed (as stated in Section 5.2.3) with the excluded 25% accounting for a reduction in supply of 82 GWh/year. BC Hydro has previously assumed that existing bio-mass EPAs would not be renewed due to fibre supply constraints. To be conservative, BC Hydro has revised this assumption and included renewal for 50% of existing bio-mass EPAs (as stated in Section 5.2.3). BC Hydro will continue to monitor developments that may impact future bio-mass EPA renewals such as the annual allowable cut reductions that could result from the Pine Beetle wood kill.
ab_0001-063	Treaty 8 Tribal Association	V.1, S.5.2.3 ; page(s) 5-21; line(s) 21 EISG S.4.1.1 Comment 1-48.	<i>Figure 5.3 Contingency Resource Plan: capacity shortfall risks (MW)</i> Information Request BC Hydro is requested to present a similar graph showing, in addition, the Capacity Surplus/Deficit with: i) Low Load and Expected DSM Plan; ii) Mid Load and High DSM Deliverability; and iii) Low Load and High DSM Deliverability	BC Hydro plans to a mid-load forecast and develops Contingency Resource Plans (CRPs) to have additional resources available should the 50% risk that the mid-load forecast is exceeded materialize. The BC Utilities Commission is required to approve BC Hydro's CRPs prior to being included in BC Hydro transmission plans and has previously approved both the method (e.g., CRPs are to address shortfall risks) and plans, most recently in the 2008 Long-Term Acquisition Plan. As such, the requested graphs are not appropriate to be considered as CRPs.
ab_0001-064	Treaty 8 Tribal Association	V.1, S.5.2.3 ; page(s) 5-21; line(s) 23 EISG S.4.1.1	<i>Table 5.12 BC Hydro Contingency Resource Plan Shortfalls</i> Comment According to information presented in BC Hydro's Annual Reports (see Appendix A to this submission), domestic load growth over the past fifteen years has been less than 1.0% per year, four years saw negative load growth, and total domestic	BC Hydro in its 2012 Load Forecast has considered the potential that peak load and energy requirements might decrease as a result of either sustained low growth or moderate to high temperatures at winter peak. Similarly, and equally, the potential for an increase in peak load and energy requirements due to

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		Comment 1-49.	load remains below its peak in 2008. Table 5.12 does not consider the potential that peak load and energy requirements might decrease as a result of either sustained low growth or moderate to high temperatures at winter peak. Information Request BC Hydro is requested to assess the potential that peak load and energy requirements might decrease as a result of either sustained low growth or moderate to high temperatures at winter peak, and to provide indications of the potential additional capacity and energy surpluses that might result in F2022 and F2031.	sustained high growth or low winter temperatures has been considered. The results of these assessments have been included in the results of the Reference (mid) Forecast. BC Hydro considers its Reference (mid) Forecast to be the most likely outcome with a 50% probability of exceedance. That is, this forecast is designed so that the likelihood of actual demand being lower is equal to the likelihood of demand being higher.
ab_0001-065	Treaty 8 Tribal Association	V.1, S.5.2.3 ; page(s) 5-21; line(s) 23 EISG S.4.1.1 Comment 1-50.	<i>Table 5.12 BC Hydro Contingency Resource Plan Shortfalls</i> Information Request BC Hydro is requested to consider the possibility that DSM results might overshoot the results forecasted by the BC Hydro DSM target, and to provide indications of the potential capacity and energy surpluses that might result in F2022 and F2031.	Please see the response to ab_0001-033.
ab_0001-066	Treaty 8 Tribal Association	V.1, S.5.2.3 ; page(s) 5-21; line(s) 24-27 EISG S.4.1.1 Comment 1-51.	Comment As discussed in Section 5.5.2.8 below, if BC Hydro were to choose natural gas-fired generation such as SCGTs in lieu of the proposed Project, it would deprive itself of being able to rely on SCGTs as a contingency resource if, for example, DSM does not deliver the anticipated capacity savings. Information Request BC Hydro is requested to clarify whether it interprets the statement of energy objectives in s. 2(c) of the <i>Clean Energy Act</i> to mean that, if 93% of the electricity in British Columbia is expected to be generated from clean or renewable resources, BC Hydro would be prohibited from relying on gas-fired generation to respond to unexpected contingencies, and if so, to explain in detail its reasons for this interpretation.	As described in Section 5.5.2.8 of the EIS, energy objective s. 2(c) of the <i>Clean Energy Act</i> requires BC Hydro to plan for and operate its system such that 93% of the generation will be from clean or renewable resources. If BC Hydro were to use the full headroom available within the 93% to meet expected loads and a contingency event were to occur that required additional gas, BC Hydro would no longer be planning and operating its system 93% clean. As a result, if BC Hydro uses gas for meeting expected load, it would need to find other contingency resources to meet its need. Other generation is typically less able to provide capacity support and would be expected to take much longer to construct. BC Hydro is of the view that gas-fired generation resources are best left for use in its contingency resource plans.
ab_0001-067	Treaty 8 Tribal Association	V.1, S.5.3.1 ; page(s) 5-23; line(s) 1-2 EISG S.4.1.2 Comment 1-52.	<i>Table 5.13 Energy Surplus/Deficit (GWh) with DSM Target, Revelstoke Unit 6 and the Project (No LNG)</i> Table 5.13 shows an energy surplus with the proposed Project throughout the planning period. Information Request The Proponent is requested to: a) explain in detail the assumptions used in the financial analysis regarding the disposition of the energy surplus identified in Table 5.13; b) specify and explain the revenues associated with the energy surplus identified in Table 5.13; c) clarify whether it has carried out sensitivity analyses concerning the implications of different market price scenarios with respect to the disposition of these surpluses; and d) describe in detail the results of any such sensitivity analyses, and provide copies of the relevant documents.	Please see Section 5.5.3.5, page 5-65, line 6 to 17 for a description of the market energy price assumptions used in the financial analysis regarding the disposition of the energy surplus. BC Hydro used Ventyx's Spring 2012 mid-level (expected) market price scenario, which is closer to the low market price scenario than to the high price scenario. Please see the response to ab_0001-128 for a discussion of market prices. The revenue associated with the energy surplus was evaluated as part of the portfolio analysis described in Section 5.5.3.2 of the EIS. The portfolio model calculates the revenue taking into account factors such as the variation of market prices over different times of the year, the dispatchability of certain generating resources that allows the shaping of energy in to the periods with highest prices or allows them to be shut down during times of unfavorable prices, must run requirements, non-firm energy associated with certain resources, and transmission constraints.
ab_0001-	Treaty 8	V.1, S.5.3.1 ;	<i>Table 5.14 Capacity Surplus/Deficit (MW) with DSM Target, Revelstoke Unit 6</i>	There is no open capacity-only market in the Western Electricity Co-ordinating Council (WECC)

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068	Tribal Association	page(s) 5-23; line(s) 3-4 EISG S.4.1.2 Comment 1-53.	<i>and the Project (No LNG)</i> Comments Table 5.14 shows a capacity surplus with the proposed Project until 2031. Information Request BC Hydro is request to: a) explain in detail the assumptions used in the financial analysis regarding the disposition of the capacity surplus identified in Table 5.14. b) specify and explain the revenues associated with the capacity surplus identified in Table 5.14; c) describe in detail the markets for the sale of surplus capacity, the expected prices in these markets, and the uncertainties surrounding these estimates; d) clarify whether it has carried out sensitivity analyses concerning the implications of different market price scenarios with respect to the disposition of these capacity surpluses; and e) describe in detail the results of any such sensitivity analyses, and provide copies of the relevant documents.	<p>region. Capacity-only sales are infrequent, prices can be unpredictable and capacity contracts are highly customized, as evidenced by the fact that there is no capacity index in the WECC region. BC Hydro has conservatively not attributed a value to surplus capacity in the portfolio analysis. In Certificate of Public Convenience and Necessity (CPCN) applications to the BCUC, BC Hydro noted that there is a broad range of ‘market-based capacity’ values of \$37/kW-year to \$107/kW-year based on recent Bonneville Power Administration tariffs, transactions and market analysis, and potential U.S. market access transmission constraints. Applying even the low end of the capacity market value range would result in the Project portfolio looking even more cost-effective than the Clean and Clean +Thermal portfolios.</p> <p>BC Hydro has not carried out sensitivity analysis regarding the market value of capacity for reasons described above.</p>
ab_0001-069	Treaty 8 Tribal Association	V.1, S.5.3.2 ; page(s) 5-25; line(s) 5-16 EISG S.4.1.2 Comment 1-54. a)	<p><i>BC Hydro developed the Project objectives listed in Table 3.1 in Section 3 Project Overview, from the Clean Energy Act and the 2007 Energy Plan. BC Hydro’s objective to ensure a long-term source of energy and capacity and to optimize existing assets on the Peace River system is supported by the B.C. Government’s reservation of Crown land in the Peace River watershed for the purposes of hydroelectric development through an Order-in-Council in 1957 (further described in Section 6.2 in Section 6 Alternative Means of Carrying Out the Project). This Order-in-Council was subsequently amended and the Site C Flood Reserve described in Section 6.2 of this EIS defines the bounds within which the Project can be developed. <u>As a result, to fulfill the Project objectives, the specific purpose of the Project design is to cost-effectively maximize the development of the hydroelectric potential of the Site C Flood Reserve to meet the need and maximize the benefits to British Columbia.</u> Table 3.1 Site C Clean Energy Project Charter Objectives</i></p> <p>Comments At a meeting with BC Hydro on October 20, 2011, BC Hydro representatives informed the T8FNs that it was “constrained” by Provincial policy direction to consider only those site alternatives that developed the entire available head (i.e. maximize the hydroelectric potential) between Peace Canyon dam and the location of the proposed Project. In a letter to the T8FNs dated March 18, 2013, the BC EAO indicated that it is “not aware of any formal, explicit policy statement [to maximize the hydroelectric potential]”. No evidence is provided in the EIS to indicate that there is any need to “maximize the hydroelectric potential”, and there is no evidence to substantiate such a policy direction. An approach of maximization of the hydroelectric potential on this stretch of the Peace River also precludes – from the outset – the potential to reconcile the rights of the Crown to take up land with the Treaty rights of the</p>	<p>The purpose of the Alternates Study, contained in Volume 1 Appendix E Dam Alternative Means Report, was to analyze alternate means of maximizing the development of the hydroelectric potential of the Peace River within the Site C Flood Reserve in a cost effective manner, taking into account the effects of each alternate site in a multi-attribute analysis.</p> <p>The study of alternate means presented on October 20, 2011 and described in Section 6 was not constrained to develop the entire head. Three alternates were considered that would not fully develop the head in the Site C Flood Reserve, namely a dam at Wilder Creek, a dam at Site C1 and a dam at Site C2. This was done to analyse the costs and benefits of moving the dam upstream and by avoiding flooding of the lower portions of the Moberly River.</p> <p>Reducing the development of the head by lowering the dam at Site C or moving upstream of Wilder Creek would proportionately reduce the generation since the generation is directly related to head. No sites were found upstream of Site C where the reduction in cost due to a lower dam would offset the reduction in generation due to the lower head.</p> <p>The alignment of the Project with the relevant Clean Energy Act objectives is described in Section 5.3.2.</p> <p>As described in Section 5.3.2 the specific purpose of the Project design is to cost-effectively maximize the development of the hydroelectric potential of the Site C Flood Reserve to meet the need and maximize the benefits to British Columbia. The Alternates Study summarized in Section 6 and contained in Volume 1 Appendix E clearly demonstrates that the Project meets the specific purpose as it provides the most amount of energy and the lowest energy cost.</p>

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			<p>T8FNs. The right of the Crown to take up land is maximized, and the rights of the T8FNs under the Treaty are minimized. The Joint Review Panel for the Lower Churchill Hydroelectric Generation Project rejected the Proponent's assertion in that instance that the purpose of that Project was, in part, to develop the available hydroelectric potential of the lower Churchill River: The Panel has also considered the concerns and comments put forward by participants and notes that Nalcor, by including the development of the hydroelectric resources of the river as a need, did not allow for the proper consideration of potential alternatives for addressing the other elements of its stated need. The Panel concludes that, for its assessment, it considers the Project need to consist of three elements: address the future demand for electricity in Newfoundland and Labrador; secure a sustainable future for the Province; and generate long-term revenues for the people of Newfoundland and Labrador. ³ Information Request BC Hydro is requested to indicate the specific requirement in the Clean Energy Act or in any current law, regulation or policy that necessitates the maximization of the hydroelectric potential of the Site C Flood Reserve.</p> <p>3. Joint Review Panel. August 2011. Report of the Joint Review Panel – Lower Churchill Hydroelectric Generation Project, at p.23.</p>	
ab_0001-070	Treaty 8 Tribal Association	V.1, S.5.4.1.2 ; page(s) 5-30; line(s) 16-18 EISG S.4.2 Comment 1-55.	<p><i>In light of these uncertainties, BC Hydro decreased the wind turbine price by 15% from the original assumption used in the 2010 Resource Options Report.</i></p> <p>Information Request Provide the wind turbine prices (in \$/kW, or any other measure used by BC Hydro) used in the 2010 Resource Options Report, as well as those used in the EIS.</p>	The capital cost assumptions for onshore wind projects are described in Appendix 7 of the 2010 Resource Options Report. A wind turbine price of \$1,900/kW and \$1,660/ kW was assumed for the 2010 Resource Options Report and the EIS, respectively.
ab_0001-071	Treaty 8 Tribal Association	V.1, S.5.4.1.2 ; page(s) 5-30; line(s) 19 EISG S.4.2 Comment 1-56.	<p><i>Figure 5.4 Comparison of onshore wind 2010 Resource Options Report and onshore wind supply curve based on updated turbine efficiency and cost information (in \$F2013)</i></p> <p>Information Request BC Hydro is requested to: a) provide the data underlying Figure 5-4 in Excel format; and b) confirm that, according to Figure 5-4, 5100 GWh of wind power can be obtained at a supply cost of approximately \$105/MWh.</p>	<p>The data have been provided in a format appropriate for the environmental assessment.</p> <p>It is confirmed that based on BC Hydro's wind cost update described in Section 5.4.1.2 of the EIS, and according to Figure 5-4, there is about 5,100 GWh of wind power at a POI UEC of approximately \$105/MWh. However, Figure 5-4 may not be indicative of what BC Hydro could secure through a power acquisition process, and the UEC is only one element to determine if wind is an economic alternative to the Project. The cost effectiveness of wind resources should be compared in portfolio analysis, the results of which are summarized in Section 5, Table 5.41 and Table 5.42. For a more realistic comparison of wind UECs to the Project, the POI UEC must be converted to an Adjusted UEC inclusive of delivery to the Lower Mainland, wind integration costs and costs of supplemental dependable capacity.</p> <p>Please see the Technical Memo: Alternatives to the Project.</p>

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ab_0001-072	Treaty 8 Tribal Association	V.1, S.5.4.2.1 ; page(s) 5-31; line(s) 4-5 EISG S.4.2 Comment 1-57.	<i>Sections 10 and 11, and Schedule 2, of the Clean Energy Act prohibit the development of the following large hydroelectric projects: Murphy Creek, Border, High Site E, Low Site E, Elaho, McGregor Lower Canyon, Homathko River, Liard River, Iskut River, Cutoff Mountain, and McGregor Diversion. Information Request BC Hydro is requested to: a) provide its understanding of why the projects mentioned were prohibited in the <i>Clean Energy Act</i>; and b) clarify whether prior to the enactment of the <i>Clean Energy Act</i>, BC Hydro provided any analysis or recommendation to the Government of British Columbia with respect to some or all of these projects, and provide relevant details, dates and relevant documents.</i>	The requested information is outside the scope of the environmental assessment. The B.C. Environmental Assessment Office, the Canadian Environmental Assessment Agency, other government agencies and indeed any Joint Review Panel must recognize existing legislative parameters. Thus, consistent with Section 4.2.1 of the EIS Guidelines, BC Hydro identified those potential resources that are legislatively barred in Section 5.4.2.1 of the EIS, including the large hydro projects prohibited pursuant to Sections 10 and 11, and schedule 2, of the <i>Clean Energy Act</i> .
ab_0001-073	Treaty 8 Tribal Association	V.1, S.5.4.2.1 ; page(s) 5-31; line(s) 30-32 EISG S.4.2 Comment 1-58.	<i>Pursuant to Section 6 of the Clean Energy Act, BC Hydro is required to achieve electricity self-sufficiency by the year 2016 (i.e., F2017) by holding the rights to an amount of electricity that meets its electricity supply obligations, taking into account DSM and electricity 'solely from electricity generating facilities within the Province'. Information Request BC Hydro is request to: a) provide its understanding of why the year F2017 was chosen for the self-sufficiency requirement in the <i>Clean Energy Act</i>; and b) clarify whether prior to the enactment of the <i>Clean Energy Act</i>, BC Hydro provided any analysis or recommendation to the Government of British Columbia with respect to the self-sufficiency requirement, providing relevant details, dates and titles of relevant documents.</i>	The requested information is outside the scope of the environmental assessment, for the reason described in the response to ab_0001-072.
ab_0001-074	Treaty 8 Tribal Association	V.1, S.5.4.2.1 ; page(s) 5-31; line(s) 33-42 EISG S.4.2 Comment 1-59.	<i>As a result of the self-sufficiency legal requirement, the following external market/import energy and capacity resources are not alternatives to the Project because they do not result 'solely from electricity generating facilities within the Province': ... • The Canadian Entitlement, which is the Canadian portion of the additional electricity produced in the Columbia River in the western U.S. as a result of provisions of the Columbia River Treaty of 1961, because the Canadian Entitlement is produced from electricity generating facilities in the U.S. and is delivered to the U.S.-B.C. border. Information Request BC Hydro is requested to: a) clarify whether it or the Province has undertaken any legal analysis as to whether or not the Canadian Entitlement is eligible to contribute to meeting the self-sufficiency requirement under the <i>Clean Energy Act</i>, and if so, to provide copies of the relevant legal opinions; b) clarify whether, prior to the enactment of the <i>Clean Energy Act</i>, BC Hydro provided any analysis or recommendation to the Government of British Columbia with respect to applicability of the self-sufficiency requirement to the Canadian Entitlement, providing relevant details, dates and titles of relevant documents; and c) clarify whether it or the Province</i>	The requested information is outside the scope of the environmental assessment. Please see the response to ab_0004-008.

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			intends to renegotiate or terminate all or portions of the Columbia River Treaty at the earliest opportunity in 2024 by providing the 10-year advance notification to the American parties to the Treaty.	
ab_0001-075	Treaty 8 Tribal Association	V.1, S.5.4.2.2 ; page(s) 5-32 ; line(s) 16-18 EISG S.4.2 Comment 1-60.	<i>There is uncertainty with respect to the cost of carbon capture and storage, and with respect to what impact carbon capture and storage will have on a large coal-fired generating station's efficiency.</i> Information Request BC Hydro is requested to: a) provide its most recent information with respect to the costs of carbon capture and storage (CCS) as of F2020, F2025, F2030 and F2035; b) clarify whether it has carried out any analysis of the application of CCS to natural gas-fired generation, and if so, to describe the work carried out and provide a copy of the resulting study or studies, and if not, to explain why not; and c) clarify whether BC Hydro is aware of any third-party review of the application of CCS to natural gas-fired generation that could be applicable to British Columbia, and if so, to describe the work carried out and provide a copy of the resulting study or studies.	Coal-fired generation with Carbon Capture and Storage (CCS) was a technically screened resource as per page 5-32, lines 1-24 of the EIS. The most recent information on this technology is contained in the 2010 Resource Options Report. Natural gas-fired generation within B.C. is not required to meet a zero greenhouse gas (GHG) emission standard through capture and sequestration of emissions. Per Policy Action No. 18 of the Provincial Government's 2007 Energy Plan, new natural gas-fired generation is required "zero net greenhouse gas emissions", which means that natural new gas-fired generation GHG emissions must be fully offset. This is why BC Hydro has factored in a \$30/tonne offset cost (based on the carbon tax) for natural gas-fired generation in the Section 5.5 EIS portfolio analysis. Additionally, the capture and storage of carbon emissions is still a developing technology that is not currently viable on a large commercial scale. Hence, BC Hydro has not carried out any analysis of the application of CCS to natural gas-fired generation nor is it aware of any substantive third-party review of the application of CCS to natural gas-fired generation that could be applicable to B.C.
ab_0001-076	Treaty 8 Tribal Association	V.1, S.5.4.2.2 ; page(s) 5-33 ; line(s) 1 EISG S.4.2 Comment 1-61.	<i>Table 5.18 Summary of Wave Potential</i> Information Request The Proponent is requested to: a) provide detailed information concerning the 15 wave projects identified in the Vancouver Island region, indicating for each: the installed capacity, the annual energy, the capital cost and the annual O&M cost; b) provide the input data and calculations used to generate the upper and lower UEC values for each line of the table (range from \$479-\$844/MWh); and c) explain the factors that would determine whether the costs of a given project would fall at the low or high end of the range.	The level of detail requested is not material to the environmental assessment. Section 4.2 of the EIS Guidelines provide that the "EIS will contain an analysis of the technically and economically feasible alternatives to the Project". The Unit Energy Cost (UEC) range for wave resources is between \$479/MWh to \$844/MWh; refer to Table 5.18 of the EIS. The wave resource UECs derive from the 2010 Resource Options Report, which was the subject of input from a variety of sources, including members of the independent power producer (IPP) industry; refer to section 5.4.1.1 of the EIS. Even at the low end of this range, wave resources are not an economically feasible alternative to the Project. Inclusion of wave resources in any portfolio would only increase the cost-effectiveness of the Project as compared to the portfolio. Please also see the Technical Memo: Alternatives to the Project.
ab_0001-077	Treaty 8 Tribal Association	V.1, S.5.4.2.2 ; page(s) 5-33 ; line(s) 22 EISG S.4.2 Comment 1-62.	<i>Table 5.19 Summary of Tidal Potential</i> Information Request The Proponent is requested to: a) provide detailed information concerning the 12 tidal projects identified in the Vancouver Island region, indicating for each: the installed capacity, the annual energy, the capital cost and the annual O&M cost; b) provide the input data and calculations used to generate the upper and lower UEC values for each line of the table (range from \$275-\$605/MWh); and c) explain the factors that would determine whether the costs of a given project would fall at the low or high end of the range.	The level of detail requested is not material to the environmental assessment. Section 4.2 of the EIS Guidelines provide that the "EIS will contain an analysis of the technically and economically feasible alternatives to the Project." The Unit Energy Cost (UEC) range for tidal resources is between \$275/MWh to \$605/MWh; refer to Table 5.19 of the EIS. The tidal resource UECs derive from the 2010 Resource Options Report, which was the subject of input from a variety of sources, including members of the independent power producer (IPP) industry; refer to Section 5.4.1.1 of the EIS. Even at the low end of this range, tidal resources are not an economically feasible alternative to the Project. Inclusion of tidal resources in any portfolio would only increase the cost-effectiveness of the Project as compared to the portfolio.

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				Please also see the Technical Memo: Alternatives to the Project.
ab_0001-078	Treaty 8 Tribal Association	V.1, S.5.4.2.2 ; page(s) 5-33 ; line(s) 29-32 EISG S.4.2 Comment 1-63.	<i>Globally, the costs [of solar] have achieved dramatic decline and are projected to continue to decline, but are not expected to become cost-competitive in Canadian jurisdictions over the next 10 years in the absence of price support.</i> Information Request BC Hydro is requested to: a) present the historical evolution of solar power costs and the projections concerning cost competitiveness; b) describe the price support for solar power in other Canadian jurisdictions and in British Columbia (if applicable); c) clarify whether BC Hydro has ever considered offering price support for solar power, and if so, provide details and, if not, why not; and d) clarify, to the knowledge of BC Hydro, whether the British Columbia government ever considered offering price support for solar power, and if so, provide details and, if not, why not.	<p>The historical evolution of solar power costs is not material to the environmental assessment. As described in the response to ab_0001-080, the \$382/MWh to \$879/MWh range of solar resource UECs presented in Section 5, Table 5.20 result from the 2010 ROR, which was the subject of, among other things, third part consultant and industry input. Even at the low end of this range, solar resources are not an economically feasible alternative to the Project. Inclusion of solar resources in any portfolio would only increase the cost-effectiveness of the Project as compared to the portfolio.</p> <p>A proper economic assessment of alternatives should not compare the costs of subsidized resources to resources that are fully costed. As such, the results of feed-in-tariff (FIT) programs should not be compared; rather, the resources composing such a program should be compared as applicable. In assessing the incentive programs in other jurisdictions, the experience in Ontario, with the microFIT program, provides the best insight into the current potential of residential solar power. The microFIT program has been offered since October 2009, initially with an incentive of \$800/MWh, subsequently reduced to \$550/MWh. In approximately 3 ½ years the program has achieved less than 100 MW in contracts or accepted applications for rooftop PV installations. [Source: PUB_0428-004_Attachment: OPA microFIT Report as of April 1, 2013. Based on the PV Rooftop source technology, Version 2.0 progress to target (43 MW) plus Versions 1.3-1.6 projects in the Pending LDC, Conditional Offer, Connected and Contract Executed categories (53 MW)]. Based on this uptake, and recognizing that the B.C. household market is two and a half times smaller than Ontario, this would represent less than 40 MW in the B.C. market. As a result, the current potential for residential PV to be considered as an alternative to the Project is very limited, even at the sizable microFIT incentive levels provided in Ontario and is not an available alternative to the Project.</p>
ab_0001-079	Treaty 8 Tribal Association	V.1, S.5.4.2.2 ; page(s) 5-34 ; line(s) 7-9 EISG S.4.2 Comment 1-64.	<i>The solar resource assessment examined commercial installations on the utility side of the meter with commercial scale solar installations sized at 5 MW.</i> Information Request BC Hydro is requested to: a) clarify whether it considers 5 MW to be an optimal project size, from a cost perspective, in each of the 10 transmission regions mentioned in Table 5.20; and b) indicate the land area required for a 5 MW solar power project in each of the 10 transmission regions mentioned in Table 5.20.	<p>The level of detail requested is not material to the environmental assessment for the reasons set out in response to ab_0001-078.</p> <p>Nevertheless, to be responsive, BC Hydro offers the following: During the 2010 ROR process, BC Hydro examined the operating utility-scale solar projects in the U.S. and found that the average size was approximately 5 MW. The land area required for a 5 MW solar power project is estimated to be about 12.6 Hectares.</p>
ab_0001-080	Treaty 8 Tribal Association	V.1, S.5.4.2.2 ; page(s) 5-34 ; line(s) 11 EISG S.4.2	<i>Table 5.20 Summary of Solar Potential</i> Information Request The Proponent is requested to: a) provide detailed information concerning the 10 solar power sites identified, indicating for each the capital cost and the annual O&M cost; b) provide the input data and calculations used to generate the upper and lower	The level of detail requested is not material to the environmental assessment. Section 4.2 of the EIS Guidelines provide that the “EIS will contain an analysis of the technically and economically feasible alternatives to the Project”. The UEC range for solar resources is between \$382/MWh to \$879/MWh; refer to Table 5.20 of the EIS. The solar resource UECs derive from the 2010

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		Comment 1-65.	UEC values for each line of the table (range from \$382-\$879/MWh); and c) explain the factors that would determine whether the costs of a given project would fall at the low or high end of the range.	<p>Resource Options Report, which was the subject of input from a variety of sources, including members of the IPP industry; refer to s.1 of the EIS. Even at the low end of this range, solar resources are not an economically feasible alternative to the Project. Inclusion of solar resources in any portfolio would only increase the cost-effectiveness of the Project as compared to the portfolio.</p> <p>Please also see the Technical Memo: Alternatives to the Project.</p>
ab_0001-081	Treaty 8 Tribal Association	V.1, S.5.4.2.2 ; page(s) 5-34 ; line(s) 12-14 EISG S.4.2 Comment 1-66.	<p><i>BC Hydro concludes that commercial solar is not an economically feasible alternative to the Project, although solar generation will continue to be used on the customer side of the meter.</i> BC Hydro is requested to: a) explain why solar generation will continue to be used on the customer side of the meter, if it is “not an economically feasible alternative to the proposed Project”; b) provide historical data concerning solar generation in B.C. on the customer side of the meter dating back to F1982 (or to the date when records were first kept); c) clarify whether BC Hydro has prepared projections of the evolution of solar generation use on the customer side of the meter, and if so provide these projections, and if not, explain why not; d) explain how BC Hydro’s planning process more broadly takes into account distributed generation (on the customer side of the meter); e) provide historical data concerning distributed generation in B.C.; f) provide BC Hydro’s past projections concerning distributed generation in B.C.; and g) provide BC Hydro’s most recent projections concerning distributed generation in B.C.</p>	<p>The solar resource option referenced in Section 5.4.2 application focuses on utility-scale photovoltaic (PV) systems, particularly commercial installations sized at 5 MW. As noted in this section, such commercial solar projects are not viewed as being economically feasible given that their Unit Energy Cost (UEC) ranges between \$382 to \$879 per MWh. On the other hand, BC Hydro expects that small-scale solar PV will continue being used on the customer side of the meter given that this has been the primary form of generation (below 50 kW) adopted to date by BC Hydro’s Net Metering Program customers.</p> <p>Since the Net Metering program was implemented in 2004 (via Rate Schedule 1287), a total of 206 solar PV generation projects have been installed by BC Hydro’s residential and commercial customers, including 66 projects that came into service during F2013. These solar PV generators have aggregate installed capacity of 886 kW, or an average of about 4.3 kW for each customer installation.</p> <p>BC Hydro does not have projections regarding the evolution of solar generation on the customer side of the meter. As noted in BC Hydro’s Net Metering Evaluation Report No. 3 (filed with the BCUC on April 30, 2013), its Net Metering uptake to date has been relatively low at 0.01 per cent of total customers. As further stated in the filed Report, BC Hydro expects a steady and modest growth of its Net Metering participation rate and number of small-scale projects (including solar PV) due to the removal of barriers, streamlining of interconnection processes and decreasing cost of distributed generation technologies.</p> <p>BC Hydro defines distributed generation (DG) as smaller-scale electricity generation which is located closed to the load being served, usually located at customer sites and connected to the distribution system. DG is not a single resource type but rather a composite of resource options reviewed in Section 5.4 of the EIS. DG can be either a demand-side or supply-side resource, or a combination of both. For residential customers, DG is typically used to offset some or all of the power provided by BC Hydro for load purposes. For commercial and industrial customers, DG can be used for load displacement and/or the sale of excess generation to BC Hydro.</p> <p>For planning or Load Resource Balance (LRB) purposes, DG is treated in the following ways:</p> <ul style="list-style-type: none"> Existing demand-side DG affects the load in BC Hydro’s Load Resource Balance to the extent that DG reduces the amount of energy delivered by BC Hydro to such customers (and the amount

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				<p>of energy billed at the customer meter). Historical sales to BC Hydro’s customers, including DG customers are one of the key drivers for forecasting future expected electricity demand; refer to Section 5.2.1.1 of the EIS.</p> <ul style="list-style-type: none"> • Future demand-side DG is included in the DSM target which effectively reduces the electricity load that BC Hydro is required to serve. • Existing and committed supply-side DG with industrial customers is reflected in BC Hydro’s existing and committed resources. To date, supply-side DG resources have included contracts signed with customers pursuant to BC Hydro’s power acquisition initiatives such as the Customer-Based Generation Call, the Bioenergy Call and the Standing Offer Program. • Future supply-side DG with industrial customers is not included in the LRB but is considered in the analysis of the various available resource option alternatives described in Section 5.5.2 to the extent that the resource options analyzed are representative of DG. • Existing and committed and future supply-side DG with residential and commercial customers is not reflected in the LRB or in the analysis of alternatives. BC Hydro’s current Net Metering tariff has, to date, resulted in about 1 MW of installed capacity from about 228 projects, and therefore Net Metering is not an alternative to the Project. <p>BC Hydro has not provided DG data or projections on a historical basis because such information is not material to the environmental assessment for the following reasons: (1) as described above, material levels of existing and committed DG have been factored into the Project need analysis set out in the LRB Tables 5.8 and 5.9 of the EIS; and (2) historical data on DG will not further inform the analysis of alternatives set out in Section 5.5.2.</p>
ab_0001-082	Treaty 8 Tribal Association	V.1, S.5.2.3 ; page(s) 5-34 ; line(s) 21-25 EISG S.4.2 Comment 1-67.	<p><i>BC Hydro has developed a number of DSM options. BC Hydro’s traditional DSM initiatives (the DSM target, and DSM Options 1 and 3) are expected to deliver both energy and capacity savings. The following section discusses the two additional, more aggressive DSM options that could deliver both energy and capacity, known as DSM Option 4 and DSM Option 5. Information Request</i> BC Hydro is requested to: a) provide estimated unit energy and capacity costs for the energy and capacity savings under Option 2; and b) provide estimated unit energy and capacity costs for the additional savings of Option 3, compared to Option 2.</p>	<p>As described in the Demand-side Management (DSM) Technical Memo, the current DSM target and information concerning potential DSM alternatives presented in the EIS supplants the 2010 Resource Options Report (ROR):</p> <ul style="list-style-type: none"> • The need for the Project is based on the energy and capacity load resource balances presented depicted in Tables 5.8 and 5.9 of the EIS, which include BC Hydro’s current DSM target of 7,800 gigawatt hours per year and 1,400 megawatts by F2021. Therefore, the unit energy cost (UEC) of the current DSM target is not relevant given that the current DSM target is not an alternative to the Project; • DSM Option 2 is essentially the same DSM Plan as the current DSM target. The alternatives to the current DSM target are DSM Options 3, 4 and 5. Therefore, the UEC of the 2010 ROR “Option 2” is not relevant as it is not an alternative to either the current DSM target or the Project. <p>DSM Option 3 by itself is not an alternative to the Project because on its own, DSM Option 3 cannot meet the need for the Project identified in Section 5.2 of the EIS. DSM Option 3 would need to be combined with supply-side resources to be a potential alternative to the Project. In planning to meet need, BC Hydro first determines the amount of DSM to target; regardless of</p>

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				<p>whether the Project proceeds, it is highly unlikely that BC Hydro would increase its current DSM target. Therefore, the only alternatives to the Project are supply-side resources.</p> <p>Nevertheless, to be responsive BC Hydro offers the following. The incremental cost (in F2013\$) from the current DSM target to Option 3 is about \$102/MWh (with a capacity adder based on pumped storage); and \$96/MWh (with a capacity adder based on a blend of simple cycle gas turbines up to the Clean Energy Act's 93% clean or renewable target and pumped storage for the remainder.</p> <p>Please see the Technical Memo: Demand-side Management.</p>
ab_0001-083	Treaty 8 Tribal Association	V.1, S.5.4.2.3 ; page(s) 5-34 ; line(s) 25-27 EISG S.4.2 Comment 1-68.	<p><i>BC Hydro also examined DSM options specifically designed to deliver capacity savings during BC Hydro's peak load periods on the electrical system through management and control of customers' electricity demand; refer to part 5.4.2.4.</i></p> <p>Information Request The Proponent is asked to: a) explain the relationship between the DSM Capacity Initiatives referred to here, and Capacity-Focused DSM Options in the Draft IRP (s. 3.3.2, pages 3-16 to 3-17); and b) clarify whether Capacity-Focused DSM Options of the Draft IRP are identical to the DSM Capacity Initiatives discussed in s. 5.4.2.4 of the EIS</p>	The DSM Capacity Initiatives described in Section 5.4.2.4 are identical to those described as Capacity-Focused DSM Options contained in the draft Integrated Resource Plan.
ab_0001-084	Treaty 8 Tribal Association	V.1, S.5.4.2.3 ; page(s) 5-35 ; line(s) 9-10 EISG S.4.2 Comment 1-69.	<p><i>DSM Option 4 targets about 9,500 GWh/year of energy savings and 1,500 MW of dependable capacity savings by F2021</i></p> <p>Comments Figure 3-1 of the Draft IRP shows that Option 4 will result in approximately 13,000 GWh/year of energy savings by F2021, and Figure 3-2 of the Draft IRP shows that it will result in approximately 2,000 MW of associated capacity savings by the same year.</p> <p>Information Request BC Hydro is requested to: a) explain in detail why the estimated energy and capacity savings in the Draft IRP for Option 4 have been substantially reduced, for F2021; b) provide estimates of the energy and capacity savings for Option 4 for F2031; c) provide estimated unit energy and capacity costs for the additional savings of Option 4, compared to Option 2; and d) if the current estimates of the energy and capacity savings for Option 4 for F2031 are lower than those in the Draft IRP, explain in detail all the reasons contributing to the changed estimates.</p>	<p>The alternatives described in the EIS are generally equivalent to the DSM Options 1, 3, 4 and 5 as described in BC Hydro's 2010 Resource Options Report, and included in BC Hydro's draft Integrated Resource Plan of May 2012. Differences are generally due to a change from presenting savings with a different base year for calculation of incremental future DSM savings.</p> <p>The F2031 DSM savings forecast for Options 4 and 5 is 14,500 GWh and 15,000 GWh for energy and 2,500 MW and 2,700 MW for capacity respectively.</p> <p>BC Hydro has not calculated the incremental costs of DSM Options 4 or 5 because these options were screened from the analysis of alternatives and are not viable alternatives to the Project based on the reasoning set out in Section 5.4.2.3.</p> <p>Please also see the Technical Memo: Demand-side Management.</p>
ab_0001-085	Treaty 8 Tribal Association	V.1, S.5.4.2.3 ; page(s) 5-35 ; line(s) 10-11 EISG S.4.2 Comment 1-70.	<p><i>DSM Option 5 targets 9,600 GWh/year of energy savings and 1,600 MW of dependable capacity savings by F2021.</i></p> <p>Comments Figure 3-1 of the Draft IRP shows that Option 5 will result in approximately 14,500 GWh/year of energy savings by F2021, and Figure 3-2 of the Draft IRP shows that it will result in approximately 2,350 MW of associated capacity savings by the same year.</p> <p>Information Request BC Hydro is requested to: a) explain in detail why the estimated energy and capacity savings in the Draft IRP for Option 5 have been</p>	Please see the response to ab_0001-084.

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			substantially reduced for F2021; b) provide estimates of the energy and capacity savings for Option 5 for F2031; c) provide estimated unit energy and capacity costs for the additional savings of Option 5, compared to Option 2; and d) if the current estimates of the energy and capacity savings for Option 4 for F2031 are lower than those in the Draft IRP, explain in detail all the reasons contributing to the changed estimates.	
ab_0001-086	Treaty 8 Tribal Association	V.1, S.5.4.2.3 ; page(s) 5-35 ; line(s) 13-22 EISG S.4.2 Comment 1-71.	<p><i>DSM Option 4 is founded on new or more aggressive conservation rate structures, and significant government intervention and regulation in the form of codes and standards, to generate additional savings. For example, all BC Hydro customers would be exposed to a much larger degree to marginal cost price signals, and rate structures may also need to be tied to a house or building's rated energy performance. Each industrial customer would need to meet a government mandated certified plant minimum efficiency level to take advantage of BC Hydro's Heritage hydroelectric lower priced electricity; otherwise, electricity would be supplied at marginal (market-based) rates. These tactics go well beyond the current DSM target, and would be new and untested. It is uncertain whether they would be accepted by government, customers, and the BCUC.</i></p> <p>Comments Section 4.2 of the 2010 Resource Options Report, included as Appendix 3A-1 of the Draft IRP, describes five options of "Energy-Focused Demand-Side Management Options". The section concerning conservation rate structures for Option 4 in the 2010 Resource Options Report reads as follows (page 411): <i>Conservation Rate Structures For residential and industrial distribution customers, conservation rate structures remain the same as in Option 3. For large industrial customers, the TSR changes from a 90/10 to an 80/20 split between Tier 1 and Tier 2 prices, thereby increasing the amount of energy consumption that is subject to the higher Tier 2 price. For commercial customers, two new placeholder concepts are added relative to Option 3:</i></p> <ul style="list-style-type: none"> • <i>Connection fee tied to building energy performance; and</i> • <i>An initial energy baseline rate structure for new buildings.</i> <p>Information Request BC Hydro is requested to: a) clarify whether the five Energy-Focused Demand-Side Management Options described in the 2010 Resource Options Report are the same as the five options described in the EIS, and if not, describe in detail any differences; b) clarify whether Option 4, described in section 4.2.4 of the 2010 Resource Options Report, is the same as Option 4 described in the EIS, and if not, describe in detail any differences; c) confirm whether the conservation rate structures described on page 4-11 of the 2010 Resource Options Report are the same as those described in the quoted passage from the EIS, and if not, describe in detail any differences; d) describe BC Hydro's reasons for believing that the</p>	As described the response to ab_0001-055, the difference between DSM Option 4 as presented in the EIS and the 2010 ROR is the different base year for calculating savings. The description of DSM Option 4 rate structures is as described in the 2010 ROR. DSM Option 4 rate structures are different than the rate structures in DSM Option 3 and the current DSM target for industrial and commercial customers. Industrial and commercial customers would be subject to energy performance and/or increased marginal pricing through DSM Option 4 rate structures. BC Hydro set out its reasons underpinning its view that DSM Option 4 is not viable, including acceptance issues, in Section 5.4.2.3 of the EIS. Please refer also to the Technical Memo: Demand-side Management. The information requested with respect to the cost of implementing the DSM Option 4 rate structures, and the associated energy and capacity savings of only those rate structures, is outside the scope of the environmental assessment given that DSM Option 4 is not a viable alternative. BC Hydro provided the overall energy and capacity savings for DSM Option 4 at page 5-35 of the EIS.

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			more aggressive conservation rate structures included in Option 4 in the EIS would not be accepted at the present time by i) government, ii) customers, and iii) the BCUC; e) describe BC Hydro's reasons for believing that the more aggressive conservation rate structures included in Option 4 of the 2010 Resource Options Report would not be accepted at the present time by i) government, ii) customers, and iii) the BCUC; f) describe BC Hydro's reasons for believing that the more aggressive conservation rate structures described in the 2010 Resource Options Report would not be accepted sometime before 2031 by i) government, ii) customers, and iii) the BCUC; g) estimate the additional energy and capacity savings that would result from implementing the Conservation Rate Structures foreseen in Option 4; h) indicate the cost of implementing the Conservation Rate Structures foreseen in Option 4; and i) estimate the Unit Energy Cost and Unit Capacity Cost of the Conservation Rate Structures foreseen in Option 4.	
ab_0001-087	Treaty 8 Tribal Association	V.1, S.5.4.2.3 ; page(s) 5-35 ; line(s) 13-14 20-22 EISG S.4.2 Comment 1-72.	<i>Option 5 includes a fundamental shift in BC Hydro's approach to saving electricity, one that places much greater emphasis on government regulation and rate structures to change market parameters and societal norms and patterns that influence electricity consumption and conservation. As a new and untested approach to saving electricity, Option 5 is subject to considerable uncertainty regarding government, customer, and BCUC acceptance and, ultimately, its effectiveness at generating additional cost-effective electricity savings.</i> Comments Section 4.2 of the 2010 Resource Options Report, included as Appendix 3A-1 of the Draft IRP, describes five options of "Energy-Focused Demand-Side Management Options". Table 4-4 of the 2010 Resource Options Report (page 4-15) presents the Codes and Standards Changes for Option 5. Table 4-5 (page 4-16) presents the Conservation Rate Structure Changes for Option 5. Table 4-6 (page 4-17) presents the Program Changes for Option 5. Information Request BC Hydro is requested to: a) clarify whether the conservation rate structures described in Table 4-5 on page 4-16 of the 2010 Resource Options Report are the same as those referred to in the quoted passage from the EIS, and if not, describe in detail any differences; b) describe BC Hydro's reasons for believing that the more aggressive conservation rate structures included in Option 5, as described in the EIS, would not be accepted at the present time by i) government, ii) customers, and iii) the BCUC; c) describe BC Hydro's reasons for believing that the more aggressive conservation rate structures included in Option 5 of the 2010 Resource Options Report would not be accepted at the present time by i) government, ii) customers, and iii) the BCUC; d) describe BC Hydro's reasons for believing that the more aggressive	As described in the response to ab_0001-055, the difference between DSM Option 5 as presented in the EIS and the 2010 ROR is the different base year for calculating savings. The description of DSM Option 5 rate structures is as described in the 2010 ROR. DSM Option 5 rate structures are different than the rate structures in DSM Option 3 and the current DSM target for BC Hydro's residential, commercial and industrial customers. BC Hydro customers would be subject to energy performance and/or increased marginal pricing through DSM Option 5 rate structures. BC Hydro describes the reasons underpinning its view that DSM Option 5 is not viable, including acceptance issues, in Section 5.4.2.3 of the EIS. Please also see the Technical Memo: Demand-side Management. The information requested with respect to the cost of implementing the DSM Option 5 rate structures, and the associated energy and capacity savings of only those rate structures, is outside the scope of the environmental assessment given that DSM Option 5 is not a viable alternative. BC Hydro provided the overall energy and capacity savings for DSM Option 5 in Section 5, page 5-35 of the EIS.

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			conservation rate structures described in the 2010 Resource Options Report would not be accepted sometime before 2031 by i) government, ii) customers, and iii) the BCUC; e) estimate the additional energy and capacity savings that would result from implementing the Conservation Rate Structures foreseen in Option 5; f) indicate the cost of implementing the Conservation Rate Structures foreseen in Option 5; and g) estimate the Unit Energy Cost and Unit Capacity Cost of the Conservation Rate Structures foreseen in Option 5.	
ab_0001-088	Treaty 8 Tribal Association	V.1, S.5.4.2.3 ; page(s) 5-36 ; line(s) 39-43 EISG S.4.2 Comment 1-73.	<i>BC Hydro has implemented a load curtailment program targeted at shorter term (one to three years) capacity needs in recent years, and customers have delivered as requested. However, it is not clear how easily these can be translated into long-term agreements that can reliably reduce peak demand over the long-term when needed. Information Request</i> The Proponent is requested to: a) indicate the amount of industrial capacity under load curtailment programs in 2012; b) indicate BC Hydro's estimation of the industrial load which is or will be technically suitable to participate in a load curtailment program, in F2012, in F2021 and in F2031; c) indicate the price offered by BC Hydro for participation in industrial load curtailment programs in F2012; and d) indicate BC Hydro's estimation of the industrial load that would likely participate in load curtailment programs if the price offered were increase by i) 10%, ii) 25%, iii) 50% and iv) 100%.	As described in Section 5.4.2.4 of the EIS, DSM capacity initiatives are not viable alternatives to the Project. As a result, the information requested in items b), c) and d) is not material to the environmental assessment. Please see the Technical Memo: Demand-side Management for a description of the current industrial capacity under load curtailment programs.
ab_0001-089	Treaty 8 Tribal Association	V.1, S.5.4.2.3 ; page(s) 5-36; 537 ; line(s) 44-45; 1-7 EISG S.4.2 Comment 1-74.	<i>Capacity programs: This DSM option contains programs that leverage equipment and load management systems to enable peak load reductions to occur automatically or with intervention. Programs may involve payment for customer equipment and a financial payment for participation in the program. ... Thus capacity-focused programs are a collection of several activities; both demand response and load control, spread across different customer classes. The participation rates and savings per participant are key aspects of the uncertainty of capacity savings. Information Request</i> BC Hydro is requested to: a) define clearly the distinction between demand response and load control; b) indicate separately, for demand response and load control, the prices offered by BC Hydro in 2012 in kW-yr and, if appropriate, program costs in kW-yr; c) indicate separately, for demand response and load control, the capacities contracted in 2012; d) indicate separately, for demand response and load control, its estimation of the capacities which are or will be technically suitable to participate in such programs, in F2012, in F2021 and in F2031; e) indicate separately, for demand response and load control, its estimation of the capacities which would likely participate in such programs if the price offered	Capacity programs include both demand response and load control components. Demand response activities are those which rely on a customer initiated response (or intervention), while load control activities leverage equipment that is automated or pre-programmed. Capacity programs are in the concept exploration phase, so BC Hydro has not yet launched capacity programs. BC Hydro has studied the capacity savings potential, but pilot initiatives would be required to determine the savings achieved through individual components of programs and adjustments. There was no capacity program offer in 2012. See the Technical Memo: Demand-side Management in regard to BC Hydro's experience with load curtailment programs. Comparison to other jurisdictions is not material to the environmental assessment because performance within one jurisdiction is not necessarily an indication of the potential within another jurisdiction given differing demand profiles, demographics, etc. BC Hydro's reasons for concluding the DSM capacity initiatives are not a viable alternative to the Project are described in Section 5.4.2.4 of the EIS.

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			were to increase by i) 10%, ii) 25%, iii) 50% and iv) 100%; and f) provide separately, for demand response and load control, comparisons to the forecasts used by major utilities in i) the American Northwest, and b) elsewhere in Canada, including Ontario.	
ab_0001-090	Treaty 8 Tribal Association	V.1, S.5.4.2.3 ; page(s) 5-37 ; line(s) 10 EISG S.4.2 Comment 1-75.	Table 5.21 Savings from Capacity DSM and Uncertainty Information Request Provide the source document from which Table 5.21 was drawn.	The source document from which Table 5.21 was drawn from is Chapter 5 of the May 2012 draft 2012 Integrated Resource Plan (Table 5-13).
ab_0001-091	Treaty 8 Tribal Association	V.1, S.5.4.2.3 ; page(s) 5-37 ; line(s) 21-23 EISG S.4.2 Comment 1-76.	<i>BC Hydro concludes that DSM capacity options are not viable alternatives to the Project, given the number of significant uncertainties underlying such DSM initiatives described above. Information Request BC Hydro is requested to clarify whether it has also concluded that a supply-and demand-side portfolio including DSM capacity options could not constitute a viable alternative to the proposed Project and, if so, on what basis has it reached this conclusion.</i>	As provided in both the quoted EIS reference and the extract set out in the comments leading to this question, the DSM initiatives described in Section 5.4.2.4 are not viable alternatives to the Project for the reasons stated Section 5, page 5-37, lines 11-20. Please see the Technical Memo: Demand-side Management for a review of BC Hydro’s experience with load curtailment.
ab_0001-092	Treaty 8 Tribal Association	V.1, S.5.5.1 ; page(s) 5-1 5-38 ; line(s) 10-14 21 EISG S.4.2 Comment 1-77.	<i>The definitions of “need for”, “purpose of” and “alternatives to”, and the following discussions, are consistent with the Agency’s “Policy Statement – Addressing the Need for, Purpose of, Alternatives to and Alternative Means under the Canadian Environmental Assessment Act” (Agency Need/Alternatives Operational Policy Statement).</i> Comments In its Introduction to Section 5 of the EIS and again in sub-section 5.5.1, the Proponent makes reference to the Agency’s policy statement ⁴ concerning Alternatives. This policy statement includes both general and specific direction concerning the conduct of the alternatives analysis in environmental assessment. In general, the policy notes that the consideration of "need for" the project, "purpose of" the project, "alternatives to" the project and "alternative means" of carrying out the project will <i>help to establish the conditions under which significant adverse environmental effects may or may not be justified in the circumstances, should such a determination subsequently be required.</i> [our emphasis] Specifically, recommendations concerning the approach to addressing “alternatives to” a project are as follows: • "alternatives to" a project should be established in relation to the project need and purpose and from the perspective of the proponent; and • analysis of "alternatives to" a project should serve to validate that the preferred alternative is a reasonable approach to meeting need and purpose and is consistent with the aims of the Act. [our emphasis] Section 4.1 of CEAA 2012 lists nine (9) aims, the first two of	The comment suggests that the scope of the alternatives analysis be broadened in a manner that is untenable. The scope of the assessment of the alternatives to the Project described in Section 5 meets the requirements of Section 4.2 of the EIS Guidelines and the Canadian Environmental Assessment Agency’s Operational Policy Statement for alternatives analysis. Please see the Technical Memo: Alternatives to the Project for additional detail. No explanation is given for how such an analysis would be undertaken for alternatives that are not being proposed by the Proponent. Further, given the many assessments that have been conducted without such a hypothetical exercise, it cannot be said it is required to determine whether the Project is likely to result in a significant adverse effect. The consideration of the effects of the Project is provided in Volumes 2, 3, 4, and 5 of the EIS.

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			<p>which are most relevant to the assessment of alternatives: 4. (1) The purposes of this Act are (a) to protect the components of the environment that are within the legislative authority of Parliament from significant adverse environmental effects caused by a designated project; [our emphasis] (b) to ensure that designated projects that require the exercise of a power or performance of a duty or function by a federal authority under any Act of Parliament other than this Act to be carried out, are considered in a careful and precautionary manner to avoid significant adverse environmental effects; [our emphasis] All of the above is to emphasize that the consideration of the potential significant environmental effects of the proposed designated Project and alternatives to the Project is central to an alternatives assessment within an environmental assessment under CEAA 2012. It appears that the Proponent has instead used an “environmental attributes” approach that is not consistent with Agency policy. Information Request The Proponent is requested to: a) compare how the portfolio containing the proposed Project and alternative portfolios protect the components of the environment from significant adverse environmental effects; and b) explain how the proposed Project, which is identified as the preferred alternative, has been considered in a careful and precautionary manner to avoid significant adverse environmental effects making reference to the findings of the comparison carried out in part a)</p> <p>4. Canadian Environmental Assessment Agency. November 2007. Addressing “Need for”, “Purpose of”, “Alternatives to” and “Alternatives Means” under the Canadian Environmental Assessment Act. www.ceaa-acee.gc.ca/default.asp?lang=En&n=5C072E13-1 (accessed March 15, 2013)</p>	
ab_0001-093	Treaty 8 Tribal Association	V.1, S.5.5.1 ; page(s) 5-38 ; line(s) 22-24 EISG S.4.2 Comment 1-78.	<p><i>Attributes are the measurement criteria by which impacts of resource alternatives are measured. There are several reasons why BC Hydro considered a broad set of attributes for purposes of the EIS: • ... • As part of the IRP and Project-related First Nations and public engagement processes, BC Hydro found that First Nations and the public are interested in a broad set of effects beyond financial impacts</i> Comments The Proponent is correct in noting that First Nations are interested in a broad set of comparative attributes. However, this knowledge does not seem to have held much sway with the Proponent. During the consultation on the Draft IRP, the T8FNs provided the following comments to BC Hydro in a letter dated August 13, 2012: <i>The attributes appear be almost entirely biophysical in nature. For example, no attributes address matters related to heritage, First Nation land use and rights, or agricultural lands. This is</i></p>	<p>The analysis of alternatives in Section 5 meets the requirements of Section 4.2 of the EIS Guidelines. Environmental and economic development attributes were developed for resource options as a way of characterizing and comparing, at a high level, different portfolios. These high-level environmental footprints and economic development attributes are used for comparison of resource options across provincial-scale portfolios, and act as proxies for more detailed environmental, social, and heritage effects of potential projects. Since detailed site-specific information is unknown for the majority of the potential sites in the database, detailed environmental, social, and heritage attributes are not possible, appropriate, or intended to be used, for individual site-specific resource option evaluations and comparisons. Please note that the financial attributes are a component of the economic costs and benefits of the alternatives. Please see the Technical Memo: Alternatives to the Project.</p> <p>A regional evaluation of attributes is not relevant to the environmental assessment. The BC</p>

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			<p><i>the result of the criteria for attribute selection being limited to attributes that can be quantitatively measured. In addition, no consideration appears to have been given to equitable distribution of adverse environmental effects of the resource options into the future or to consideration of adverse environmental effects already incurred. The authors argue that the selected “high-level environmental footprints are appropriate for comparison of resource options across provincial-scale portfolios.” (p. 3-8 [of the Draft IRP]). However, it appears that there is sufficient information to predict with considerable accuracy which regions of the Province are most adversely affected by which resource options. ... Overall, the use of the attribute approach only indicates how to minimize adverse quantifiable effects. The approach does not indicate what needs to be protected in the Province or within regions of the Province. As indicated above, the outcome of this kind of approach is incremental and continual environmental degradation. Looked at another way, the use of attributes to compare alternatives is relativistic, and tells us which resource options or portfolios are better than others – it does not tell us whether any of them are good enough to meet the requirements of sustainability. To summarize, the approach to multi-attribute comparison used in the draft IRP and brought forward into the EIS suffers from many shortcomings: §§ there are no attributes addressing heritage, social, First Nation land use, agricultural or other VCs used to assess the proposed Project in the EIS; §§ there are few attributes to address the VCs proposed by the T8FNs in the T8FNs Community Assessment Baseline Profile; §§ issues of equity – a central component of sustainability – including between local and Provincial residents, current and future generations, and Aboriginal and non-Aboriginal people are not addressed in the comparative analysis; and §§ there is no consideration of limits or thresholds for determining whether any of the alternative portfolios meet the requirements of sustainability. We note that S.4.2 of the EIS Guidelines requires the Proponent to: Develop criteria to identify the major environmental, economic and technical costs and benefits of the alternatives To these criteria, the Proponent has seen fit to add a “financial” criterion, which is a useful addition and also confirms that the three criteria in S.4.2 were not intended to be exhaustive, but that other criteria could be included by considering the broader context, including the EIS Guidelines, the requirements of the CEAA 2012 and the BCEAA, and obligations to consultation and accommodation of Aboriginal peoples. As noted later in S.4.2 of the EIS Guidelines: This analysis must be done to a level of detail which is sufficient to compare the proposed project with its alternatives. The approach used by the Proponent does not</i></p>	<p>Hydro system is an integrated system that serves load throughout BC Hydro’s service area, with the exception of isolated non-integrated areas, and provides benefits to all BC Hydro customers.</p>

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			achieve this objective. Information Request The Proponent is requested to: a) develop a comprehensive set of attributes to an appropriate level of detail to allow comparison of the proposed Project (or portfolios containing the proposed Project) with alternatives to the proposed Project (or alternative portfolios excluding the proposed Project); b) give consideration to the following in the set of attributes developed in part a), explaining in each instance how the proposed attribute was accepted or rejected: §§ the VCs identified in the EIS, including (intangible and tangible) heritage resources and First Nations land use, rights and interests; §§ the VCs identified by the T8FNs (in the T8FNs Community Assessment Baseline Profile); §§ ecosystem resilience and current stresses; §§ equitable distribution of adverse and beneficial effects (i.e. between generations, regions of the Province, Aboriginal and non-Aboriginal peoples, etc. §§ financial, including inter-generational financial benefits and risks; §§ technical considerations, including system adaptability and reliability; and §§ establishment of a culture of conservation and efficiency.	
ab_0001-094	Treaty 8 Tribal Association	V.1, S.5.5.1.2 ; page(s) 5-41 ; line(s) 11 EISG S.4.2 Comment 1-79.	<i>Table 5.23 Generation Reliability Assumptions and Methods</i> Comments The table indicates that the ELCC of onshore and offshore wind is equal to 24% of installed capacity. Information Request BC Hydro is requested to: a) provide a detailed explanation, including underlying data, methodology and specific calculations, of the value used of 24% of installed capacity; and b) clarify whether historical data concerning the coincidence of wind production and system peak in British Columbia were used in determining this value and, if so, explain in detail how they were used and, if not, why not.	<p>ELCC, the Effective Load Carrying Capability, is the maximum peak load that a system of generating units can supply such that the loss of load expectation will be no greater than one day in ten years. Typically, the ELCC calculation uses the dependable capacity rating and forced outage rates of various generators to establish the likelihood that the system can meet peak load on each day. Using this method for calculating the contribution of wind results in a very low capacity contribution. As an alternative method to assess what wind resources might be able to contribute, BC Hydro and other utilities have calculated the ELCC contribution from wind by combining the availability of wind resources with the forced outage rates and assessing how much wind may add to the overall system. By combining wind resources with a large and reliable system the analysis indicated the 24% result. The more wind that is added, the less it will contribute as the overall system becomes less reliable.</p> <p>This wind ELCC analysis is based upon the limited wind resource data that BC Hydro has either collected itself or obtained from IPPs and assumes that the wind resource is completely independent of the timing of load requirements and the availability of any other generation.</p> <p>Please also see the response to ab_0001_048.</p>
ab_0001-095	Treaty 8 Tribal Association	V.1, S.5.5.1.2 ; page(s) 5-42 ; line(s) 41498 EISG S.4.2 Comment 1-80.	<i>As described below in Section 5.5.2, run-of-river and wind resources provide very little dependable capacity. For example, run-of-river and wind resources made up virtually all of the 25 EPAs awarded pursuant to BC Hydro's most recent power acquisition process, the Clean Power Call. While these resources are to provide over 3,000 GWh/year of firm energy, they only provide 9 MW of dependable capacity.</i> Information Request BC Hydro is requested to provide the	<p>BC Hydro's system peak demand typically occurs in the 4-month period from November to February between the hours of 6 am to 10 pm. In its long-term planning, BC Hydro requires an hourly firm commitment during this period for an IPP project to be considered to provide dependable capacity.</p> <p>In the Clean Power Call, hourly firm commitments were sought for sub-periods in each month: off-peak (10 pm – 6 am); peak (6 am – 4 pm and 8 pm – 10 pm); and super peak (4 pm – 8 pm).</p>

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			data and calculations underlying the statement that “While these resources are to provide over 3,000 GWh/year of firm energy, they only provide 9 MW of dependable capacity.”	Consistent with the winter peak period defined above and the minimum hourly firm commitment during that period, only one of the accepted 2010 Clean Power Call projects provides dependable capacity, and the amount of this capacity is about 9 MW.
ab_0001-096	Treaty 8 Tribal Association	V.1, S.5.5.2.1 ; page(s) 5-46 ; line(s) 8 EISG S.4.2 Comment 1-81.	<i>Table 5.26 Summary of Run-of-River Potential</i> Comments Technical and financial results concerning run-of-river potential are presented in the 2010 Resource Options Report, S.5.2.7.3, and in the Draft IRP, S.3.4.1.6. Supply curves per region are presented in both documents. Information Request The Proponent is requested to: a) explain the differences between the data presented here and those found in the 2010 Resource Options Report, Table 5-8, p. 5-49; b) present a cumulative supply curve (for all regions combined); c) provide the input data and calculations used to generate the upper and lower UEC values for each line of the table (range from \$82-\$600/MWh); and d) explain the factors that would determine whether the costs of a given project would fall at the low or high end of the range.	<p>Please see the Technical Memo: Alternatives to the Project for a description of the differences between the 2010 Resource Options Report and the EIS, as well as the requested supply curve.</p> <p>The factors that would determine whether the costs of a given project would fall at the low or high end of the range are:</p> <ul style="list-style-type: none"> • Underlying hydrologic data used in the resource potential assessment; • Distance to the existing transmission infrastructure; • Distance to the existing road infrastructure; • Remoteness of the construction location; • Terrain of the construction location.
ab_0001-097	Treaty 8 Tribal Association	V.1, S.5.5.2.2 ; page(s) 5-47 ; line(s) 15-18 EISG S.4.2 Comment 1-82.	<i>Figure 5.6 Sample wind generation during freshet period (June 2011) Figure 5.7 Sample wind generation during wintertime (January 2012) Wind generation resources can have highly variable output over a time frame of minutes, hours, and days. Figures 5.6 and 5.7 show a sample wind resource generation profile over a sample eight-day period in June 2011 and January 2012, respectively.</i> Information Request BC Hydro is requested to: a) provide the source of the data presented in Figure 5.6 and Figure 5.7; b) if the data presented in Figure 5.6 and Figure 5.7 are actual production data from one or more operating wind farms, identify these wind farms, indicating the size and the degree of geographic diversity they contain (if any); c) if the data presented in Figure 5.6 and Figure 5.7 consist of simulation data, provide the underlying data and describe in detail its source, as well as the simulation methodology and calculations used; d) present graphs showing the estimated production during the months of June 2011 and January 2012 of the wind fleet used in the Clean Generation and Clean and Thermal Generation portfolios, assuming substantial geographical diversity; and e) present historical wind data, produced by the same method as Figure 5.6 and Figure 5.7, for the months of January and June, in order to put the data presented into context.	<p>The data presented in Section 5, Figure 5.6 and Figure 5.7, are actual production data from one of the operating wind farms in BC.</p> <p>Production data from independent power producers are confidential because the data are commercially sensitive. The wind production data in Figures 5.6 and 5.7 were presented in such a way to make the wind project unidentifiable.</p> <p>As described in the Technical Memo on Alternatives to the Project, almost all wind projects in the Clean Generation and Clean and Thermal Generation portfolios are located in the Peace Region; as such, there is minimal geographical diversity in the wind production modelled in the portfolios.</p> <p>BC Hydro does not understand the question posed in part e.</p>
ab_0001-098	Treaty 8 Tribal Association	V.1, S.5.5.2.1 ; page(s) 5-47 ; line(s) 19-23 EISG S.4.2 Comment 1-	<i>Due to this variability and the difficulty of accurately forecasting wind energy output, wind resources that are acquired by BC Hydro will result in new operating requirements and procedures. While BC Hydro has a large, flexible hydroelectric-based generation system that can manage this variability, the total system flexibility is limited. As a result, there are costs associated with</i>	As described in Section 7.4.3.1, a preliminary analysis has been completed to determine the maximum amount of wind power that can be integrated into the BC Hydro system without impacting the reliability and security of the system. The analysis assumes that only dispatchable generation from automatic generation control (AGC) plants can be used to manage wind variability and ramps and that there are no restrictions on being able to export power to the US

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		83.	<p><i>managing wind variability that need to be recognized.</i> Information Request The Proponent is requested to: a) indicate, on a quantitative basis, the limits to the flexibility of BC Hydro's large, flexible hydroelectric-based generation system for managing the variability of wind power output; b) specify the costs incurred by BC Hydro in 2012 to manage this variability; and c) estimate these costs in the event that wind outputs were to grow by i) 25%, ii) 50%, iii) 100% or iv) 200%.</p>	<p>either for transmission availability or market adequacy reasons. The analysis is based on actual hourly system operations data for the period October 2007 to September 2008 including load, generation, max/min generation limits, outages and tie line schedules. Actual wind data are not used in this analysis, but instead the assumption is made that the intra-hour wind power fluctuations may range from minimum to maximum output (worst case scenario) and that the dispatchable resources have to be able to respond to these fluctuations. The analysis shows the BC Hydro system to be most constrained during the freshet period, when the available dispatchable AGC generation drops to approximately 3,000 MW. Hence, 3,000 MW has been assumed as the wind integration limit for the existing BC Hydro system.</p> <p>Since the analysis is based on historical data, it does not include the more recent addition of Revelstoke Unit 5 which would likely increase the available dispatchable AGC. However, the analysis also does not include any limits on the transmission interties with the US and Alberta, or the impacts of wind penetration level on market depth or electricity prices. It is expected that the inclusion of the existing intertie limits in the analysis would lower the 3,000 MW wind integration limit, or require wind curtailment at certain periods. The wind integration limit will be updated as further studies are completed and BC Hydro's experience with integrating wind energy continues to evolve.</p> <p>As described in Section 7.4.3.1, additional analysis has been completed to determine the amount that the Project could increase the maximum amount of wind power that can be integrated into the BC Hydro system without affecting the reliability and security of the system. The results of the analysis show that the wind integration limit could increase up to 900 MW with the addition of the Project.</p> <p>Based on system modelling studies, BC Hydro assumes a wind integration cost of \$10/MWh. This cost is added to wind UECs in planning studies and acquisition processes to recognize the cost of managing wind variability and to place all resource options on equal footing. Once wind projects become operational, the cost of managing the associated variability is internalized.</p> <p>In 2011, BC Hydro completed a detailed wind integration study. This study considered 12 wind integration scenarios, consisting of:</p> <ul style="list-style-type: none"> • Two study years, F2011 and F2021, representing different load and system generation configurations. • Two wind diversity levels: Economic Dispatch and High Diversity. For the Economic Dispatch case, wind farms are ranked and chosen according to their estimated cost. As the lowest cost wind resources generally come from the Peace River region, this case also represents low wind diversification. In the High Diversity case, wind farms are chosen equally from all regions in B.C. • Three wind penetration levels: 15 per cent, 25 per cent, and 35 per cent corresponding to 1,500MW, 2,500MW and 3,500MW of wind respectively. The wind penetration level is defined as the percentage of installed wind capacity to peak load.

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				<p>The total wind integration costs for the twelve scenarios are shown below in \$/MWh for two study years – F2011 and F2021.</p> <ul style="list-style-type: none"> • Economic dispatch scenario, 15% wind penetration: \$10.79 (F2011), \$12.75 (F2021) • High diversity scenario, 15% wind penetration: \$5.39 (F2011), \$6.02 (F2021) • Economic dispatch scenario, 25% wind penetration: \$15.63 (F2011), \$19.44 (F2021) • High diversity scenario, 25% wind penetration: \$6.35 (F2011), \$7.26 (F2021) • Economic dispatch scenario, 35% wind penetration: \$13.57 (F2011), \$16.54 (F2021) • High diversity scenario, 35% wind penetration: \$7.64 (F2011), \$8.52 (F2021)
ab_0001-099	Treaty 8 Tribal Association	V.1, S.5.5.2.2 ; page(s) 5-47 ; line(s) 24-33 EISG S.4.2 Comment 1-84.	<p><i>Adding wind resources will require the carrying of appropriate additional reserves to compensate for sudden fluctuations in wind power in three different planning horizons: 1) regulation (minute to minute), 2) load following (minutes to hours), and (3) unit commitments/scheduling (hours to days). BC Hydro estimates that the wind integration cost is about \$10/MWh generated. This total wind integration cost estimate is slightly higher than that used by Manitoba Hydro, but is comparable to the total wind integration cost estimates proposed by Hydro Quebec, the U.S. Pacific Northwest electric utility PacifiCorp, and the Bonneville Power Administration. Information Request Provide breakdowns of the wind integration costs cited from Hydro-Quebec, PacifiCorp and BPA, indicating which of the cost elements are relevant to BC Hydro.</i></p>	<p>Due to differences in cost component assumptions and study parameters, it is difficult to draw exact comparisons between different jurisdictional studies. However, at a high level, the wind integration cost of \$10/MWh used by BC Hydro is within the range of costs which have been considered by other jurisdictions.</p> <p>BC Hydro's total wind integration cost of \$10/MWh is similar to the transmission integration and wind balancing integration fee of \$9/MWh originally proposed by Hydro-Quebec Production in 2004. Hydro-Quebec Production subsequently reduced the fee to \$5/MWh after receiving considerable negative feedback from the wind industry regarding the high cost.</p> <p>Bonneville Power Administration, in its 2010 Rate Case, proposed a total cost of \$1.29/kW per month for regulating, following and imbalance reserves. Assuming a capacity factor of 30%, this translates to an operating reserve cost of \$5.89/MWh. In the BC Hydro Wind Integration Study Phase II, the operating reserve costs varied between \$3.24/MWh to \$7.68/MWh, depending on study year, diversification scenario, and wind penetration level.</p> <p>In its 2008 Wind Integration Study, PacifiCorp estimated its total wind integration costs to range between \$9.95/MWh and \$11.85/MWh, depending on the cost of CO2. This is again similar to the \$10/MWh assumed by BC Hydro.</p> <p>BC Hydro notes that PacifiCorp has recently dropped their integration tariff to reflect market surpluses, but this may be a short term phenomena and not be reflective of longer term price decreases. BC Hydro will continue to monitor and review wind integration practices and studies from other jurisdictions.</p>
ab_0001-100	Treaty 8 Tribal Association	V.1, S.5.5.2.2 ; page(s) 5-48 ; line(s) 1 EISG S.4.2 Comment 1-85.	<p><i>Table 5.27 Summary of Onshore Wind Potential Comments Technical and financial results concerning onshore wind potential are presented in the 2010 Resource Options Report, section 5.2.4, and in the Draft IRP, s. 3.4.1.4. Supply curves per region are presented in both documents. Information Request The Proponent is requested to: a) explain the differences between the data presented here and those found in the 2010 Resource Options Report, Table 5-</i></p>	<p>The 2010 ROR was the source report for the identification of alternatives to the Project. Source information for the 2010 ROR is described in Section 5.4.1.1 of the EIS.</p> <p>This EIS supplants information presented in the 2010 Resource Options Report. For additional information, including a summary of the differences between the EIS and 2010 Resource Options Report (2010 ROR), please see the Technical Memo: Alternatives to the Project.</p>

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			5, p. 5-28, and in the Draft IRP, Table 3-10, page 3-32; b) present a cumulative supply curve (for all regions combined); c) provide the input data and calculations used to generate the upper and lower UEC values for each line of the table (range from \$96-\$332/MWh); d) explain the factors that would determine whether the costs of a given project would fall at the low or high end of the range; and e) provide the average wind speed of the underlying resource in each line of Table 5.27.	<p>Please see Figure 5.4 of the EIS for the cumulative supply curve for onshore wind resources.</p> <p>The factors determining whether the costs of a given on-shore wind project fall at the low or high end of the range are:</p> <ul style="list-style-type: none"> • Wind resource potential, and • Remoteness of project (road and transmission costs). <p>Mean wind speeds (at 80 m) for onshore wind projects by transmission region are provided below.</p> <p>Annual wind speed by transmission region:</p> <ul style="list-style-type: none"> • Peace River: 6.4 – 9.9 m/s • North Coast: 6.9 – 7.2 m/s • Central Interior: 6.3 – 7.2 m/s • Kelly/Nicola: 6.4 – 7.7 m/s • Revelstoke: 6.4 – 7.3 m/s • Vancouver Island: 6.3 – 8.2 m/s • Lower Mainland: 7.2 m/s • Selkirk: 6.4 – 6.9 m/s • East Kootenay: 6.5 – 6.7 m/s
ab_0001-101	Treaty 8 Tribal Association	V.1, S.5.5.2.2 ; page(s) 5-47 ; line(s) 37-40 EISG S.4.2 Comment 1-86.	<p><i>As noted above in Section 5.4.1.2, the 2010 Resource Options Report wind UECs have been revised (lowered) to take into account the changes in turbine efficiencies and wind turbine prices that have occurred over the past three years.</i></p> <p>Comments The Unit Energy Costs shown in Table 5.27 are in many cases higher than those found in the 2010 Resource Options Report, Table 5-5, p. 5-28.</p> <p>Information Request BC Hydro is asked to explain all differences between Table 5.27 of the EIS and Table 5-5 of the 2010 Resource Options Report.</p>	Please see the Technical Memo: Alternatives to the Project for a summary of the differences between the EIS and 2010 Resource Options Report (2010 ROR).
ab_0001-102	Treaty 8 Tribal Association	V.1, S.5.5.2.2 ; page(s) 5-47 ; line(s) 37-40 EISG S.4.2 Comment 1-87.	<p><i>As noted above in Section 5.4.1.2, the 2010 Resource Options Report wind UECs have been revised (lowered) to take into account the changes in turbine efficiencies and wind turbine prices that have occurred over the past three years.</i></p> <p>Comments The Unit Energy Costs shown in Table 5.28 are in many cases higher than those found in the 2010 Resource Options Report, Table 5-6, p. 5-32.</p> <p>Information Request Explain all differences between Table 5.28 of the EIS and Table 5-6 of the 2010 Resource Options Report.</p>	Please see the Technical Memo: Alternatives to the Project for a summary of the differences between the EIS and 2010 Resource Options Report (2010 ROR).
ab_0001-103	Treaty 8 Tribal Association	V.1, S.5.5.2.3 ; page(s) 5-48 ; line(s) 15 EISG S.4.2	<p><i>Table 5.28 Summary of Offshore Wind Potential</i> Technical and financial results concerning off-shore wind potential are presented in the 2010 Resource Options Report, section 5.2.5, and in the Draft IRP, s. 3.4.1.5. Supply curves per region are presented in both documents. Information Request The Proponent is</p>	<p>Please see the Technical Memo: Alternatives to the Project for a description of the differences between the 2010 Resource Options Report and the EIS, as well as the requested supply curve.</p> <p>The factors determining whether the costs of a given off-shore wind project fall at the low or high</p>

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		Comment 1-88.	requested to: a) explain the differences between the data presented here and those found in the 2010 Resource Options Report, Table 5-6, p. 5-32, and in the Draft IRP, Table 3-11, page 3-33; b) present a cumulative supply curve (for all regions combined); c) provide the input data and calculations used to generate the upper and lower UEC values for each line of the table (range from \$190-734/MWh); and d) explain the factors that would determine whether the costs of a given project would fall at the low or high end of the range.	end of the range include: <ul style="list-style-type: none"> • Wind resource potential; • Water depth, as project costs are assumed to be a function of water depth. This is described in Section 5.2.5.2 of the 2010 Resource Options Report; and • Remoteness of project (transmission and access costs).
ab_0001-104	Treaty 8 Tribal Association	V.1, S.5.5.2.4 ; page(s) 5-50 ; line(s) 1 EISG S.4.2 Comment 1-89.	<i>Table 5.29 Summary of Wood-Based Biomass Potential</i> Comments Technical and financial results concerning wood-based biomass potential are presented in the 2010 Resource Options Report, section 5.2.1, and in the Draft IRP, s. 3.4.1.1. Supply curves per region are presented in both documents. Information Request The Proponent is requested to: a) explain the differences between the data presented here and those found in the 2010 Resource Options Report and in the Draft IRP; b) present a cumulative supply curve (for all regions combined); c) provide the input data and calculations used to generate the upper and lower UEC values for each line of the table; and d) explain the factors that would determine whether the costs of a given project would fall at the low or high end of the range.	Please see the Technical Memo: Alternatives to the Project for a description of the differences between the 2010 Resource Options Report and the EIS, as well as the requested supply curve. The key factors that would affect the cost of wood based biomass energy projects include distance from the fuel source, the price of fuel supply which varies by types and by region, and the size of the project.
ab_0001-105	Treaty 8 Tribal Association	V.1, S.5.5.2.5 ; page(s) 5-51 ; line(s) 1 EISG S.4.2 Comment 1-90.	<i>Table 5.30 Summary of MSW Biomass Potential</i> Comments Technical and financial results concerning MSW biomass potential are presented in the 2010 Resource Options Report, section 5.2.3, and in the Draft IRP, s. 3.4.1.3. Supply curves per region are presented in both documents. Information Request BC Hydro is requested to: a) explain the differences between the data presented here and those found in the 2010 Resource Options Report and in the Draft IRP; b) present a cumulative supply curve (for all regions combined); c) provide the input data and calculations used to generate the upper and lower UEC values for each line of the table; and d) explain the factors that would determine whether the costs of a given project would fall at the low or high end of the range.	Please see the Technical Memo: Alternatives to the Project for a description of the differences between the 2010 Resource Options Report and the EIS, as well as the requested supply curve. The factors determining whether the costs of a given MSW project fall at the low or high end of the range are <ul style="list-style-type: none"> • Project size, as both capital and O&M costs are modelled as functions of plant size; and • Tipping fee (cost for lumber), as a function of region.
ab_0001-106	Treaty 8 Tribal Association	V.1, S.5.5.2.6 ; page(s) 5-51 ; line(s) 11 EISG S.4.2 Comment 1-91.	<i>Table 5.31 Summary of Biogas Potential</i> Comments Technical and financial results concerning biogas potential are presented in the 2010 Resource Options Report, section 5.2.2, and in the Draft IRP, section 3.4.1.2. Supply curves per region are presented in both documents. Information Request BC Hydro is asked to: a) explain the differences between the data presented here and those found in the 2010 Resource Options Report and in the Draft IRP; b) present a cumulative supply curve (for all regions combined); c) provide the input data and calculations used to generate the upper and lower UEC values for each line	Please see the Technical Memo: Alternatives to the Project. Note that biogas was not a resource included in the portfolio analysis in Section 5.5 of the EIS for reasons set out in Section 5.5.2.6. Please also refer to the response to ab_0001-107. As a result, BC Hydro has not provided a cumulative supply curve for biogas. There is a wide range of variability in the cost of biogas projects due to variations in site locations, site configurations and gas production ranges. Biogas projects with existing

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			of the table; and d) explain the factors that would determine whether the costs of a given project would fall at the low or high end of the range.	capture/flare systems generally have lower costs than those without. Biogas projects with microturbine equipment generally have higher costs than those with internal combustion turbines. Please see Chapter 5 of the 2010 Resource Options Report for more details.
ab_0001-107	Treaty 8 Tribal Association	V.1, S.5.5.2.6 ; page(s) 5-51 ; line(s) 41622 EISG S.4.2 Comment 1-92.	<i>Biogas is not included in the portfolio analysis in Section 5.5.4 because there has been only one biogas project with a small volume of energy bid into a 2003 BC Hydro power acquisition process, resulting in two EPAs. Information Request Explain in detail why, in BC Hydro's view, the fact that only one biogas project with a small volume of energy was bid into a 2003 BC Hydro power acquisition process means that biogas should not be considered in a portfolio analysis for the period 2012-2031.</i>	The energy and capacity potential identified for biogas is small, totally only 134 GWh of firm energy and 16 MW of dependable generating capacity across the Province. The biogas potential, if included in the Section 5.5 EIS portfolio analysis, would not have material impact to the analysis.
ab_0001-108	Treaty 8 Tribal Association	V.1, S.5.5.2.7 ; page(s) 5-51 5-52 ; line(s) 24-26 1-2 EISG S.4.2 Comment 1-93.	<i>Only conventional hydrothermal resources using flash or binary technologies are considered within BC Hydro's resource option assessment. There may be potentially significant unconventional resources that could increase the potential geothermal resource base of B.C., including hot dry rock or low temperature hydrothermal resources in the sedimentary basin. Information Request The Proponent is asked to explain in detail the reasons for excluding unconventional geothermal resources from its resource assessment.</i>	Unconventional geothermal resources are a developing technology that are not readily available, face the same constraints as conventional geothermal development in terms of proving out the energy source, and are expected to be more expensive than conventional technologies. See the Technical Memo: Alternatives to the Project. <ul style="list-style-type: none"> • The Hot Dry Rock (HDR) resource was excluded because the enhanced geothermal system (EGS) required to tap into this resource was currently in the early phases of development with only a largely speculative timeline for its technical viability. • The co-produced fluids resource was excluded because the presence of geo-pressured fluid resource is currently unknown in B.C.
ab_0001-109	Treaty 8 Tribal Association	V.1, S.5.5.2.7 ; page(s) 5-52 ; line(s) 19 EISG S.4.2 Comment 1-94.	<i>Table 5.32 Summary of Geothermal Potential Comments Technical and financial results concerning geothermal potential are presented in the 2010 Resource Options Report, S.5.2.6, and in the Draft IRP, S.3.4.1.8. Supply curves per region are presented in both documents. Information Request BC Hydro is requested to: a) explain the differences between the data presented here and those found in the 2010 Resource Options Report and in the Draft IRP; b) present a cumulative supply curve (for all regions combined); c) provide the input data and calculations used to generate the upper and lower UEC values for each line of the table; and d) explain the factors that would determine whether the costs of a given project would fall at the low or high end of the range.</i>	Please see the Technical Memo: Alternatives to the Project. Note that geothermal was not a resource in the portfolio analysis in Section 5.5 of the EIS for the reasons set out in Section 5.5.27. As a result, BC Hydro has not provided a cumulative supply curve for geothermal. The factors that would determine whether the costs of a given project would fall at the low or high end of the range are the number of wells that would be needed to confirm and develop the resource (if at all successful), whether the site has sufficient temperature to use flash vs. binary technology, and remoteness (proximity to the existing transmission infrastructure).
ab_0001-110	Treaty 8 Tribal Association	V.1, S.5.5.2.7 ; page(s) 5-52 ; line(s) 26-31 EISG S.4.2 Comment 1-95.	<i>Despite its relatively low cost (an unadjusted UEC of \$88/MWh in \$F2013), geothermal resource developers have never bid into BC Hydro's power acquisition processes. From the 2010 Resource Options Report, BC Hydro understands that there are some challenges with geothermal development in B.C. related to the risk/reward of making a significant upfront capital investment at the early exploration and initial production drilling stages.</i>	BC Hydro has been previously involved in the exploration and development of the South Meager Creek geothermal resource dating to the 1970s and 1980s. BC Hydro is not currently considering any new direct investment in further exploration activities. BC Hydro is currently providing financial support to the B.C. Ministry of Energy, Mines and Natural Gas for creation of a geothermal expert position whose 2-year workplan includes: <ul style="list-style-type: none"> • Refining the Geothermal Resources Map of British Columbia, working with Geological Survey of

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			Comments It is not unusual for utilities and governments to undertake or contract studies, field investigations or other activities designed to encourage the development of a new energy industry. In the case of run-of-river hydroelectric development, these activities included, among many other initiatives: §§ Development of a “Handbook for Developing Micro Hydro in British Columbia” (BC Hydro); §§ Creation of an “Inventory of Undeveloped Opportunities at Potential Micro Hydro Sites in British Columbia (BC Hydro); §§ Maintenance of a network of climate and hydrometric stations (Environment Canada); §§ Creation of geological mapping (Natural Resources Canada); and §§ Creation of topographical mapping (BC Ministry of Forests). Information Request BC Hydro is requested to: a) clarify whether it has considered investing in an initial exploration of potential geothermal sites within the Province as part of an effort to overcome the “significant upfront capital investment costs” in order to identify an inventory of sites for development by the geothermal industry; and b) describe specific steps taken in the past decade by the utility and, to the extent known by BC Hydro, by others to support the development of a geothermal electricity industry in British Columbia.	<p>Canada and other researchers to develop a better quality updated digital product;</p> <ul style="list-style-type: none">• Publishing and updating geothermal activities maps and land sale results;• In advance of future land sales compiling available digital data for distribution for industry evaluation of tenure available;• Publishing geothermal resource potential map of Northeast British Columbia;• Developing resource estimate of Geothermal Energy in Northeastern British Columbia;• Compiling historical data sets relevant to geothermal exploration for digital delivery via the web. <p>BC Hydro is also currently co-sponsoring with Geoscience BC the development of a BC geothermal favourability map that will help identify an inventory of sites for development by the geothermal industry.</p>																														
ab_0001-111	Treaty 8 Tribal Association	V.1, S.5.5.2.8 ; page(s) 5-56 ; line(s) 25-29 EISG S.4.2 Comment 1-96.	<i>Because there is future natural gas price uncertainty, BC Hydro does not rely on a single natural gas price forecast. Rather, BC Hydro uses a scenario-based approach employing a range of future natural gas prices developed by Ventyx. The mid Ventyx forecast for natural gas at the Sumas, B.C., hub price is between about \$3 per gigajoule (GJ) to \$7/GJ (\$F2013) over the next 30 years and is used in the portfolio analysis in Section 5.5.4.</i> Information Request Provide, in Excel format, the year-by-year gas price forecast for each gas price scenario used in the portfolio analysis.	<p>BC Hydro uses a scenario approach in the development of its IRP. For the EIS, BC Hydro based the analysis on the mid-gas price forecast, which is closer to the low gas price forecast than the high gas price forecast. Below is this year by year gas forecast as used in the portfolio analysis in F2013 Canadian dollars/GJ.</p> <p>Sumas Gas forecast (Calendar Average Real F2013 CAD/GJ)</p> <table><tr><td>2014</td><td>3.60</td></tr><tr><td>2015</td><td>3.66</td></tr><tr><td>2016</td><td>3.77</td></tr><tr><td>2017</td><td>3.91</td></tr><tr><td>2018</td><td>3.99</td></tr><tr><td>2019</td><td>4.10</td></tr><tr><td>2020</td><td>4.14</td></tr><tr><td>2021</td><td>4.25</td></tr><tr><td>2022</td><td>4.39</td></tr><tr><td>2023</td><td>4.51</td></tr><tr><td>2024</td><td>4.72</td></tr><tr><td>2025</td><td>4.82</td></tr><tr><td>2026</td><td>4.94</td></tr><tr><td>2027</td><td>5.00</td></tr><tr><td>2028</td><td>5.04</td></tr></table>	2014	3.60	2015	3.66	2016	3.77	2017	3.91	2018	3.99	2019	4.10	2020	4.14	2021	4.25	2022	4.39	2023	4.51	2024	4.72	2025	4.82	2026	4.94	2027	5.00	2028	5.04
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				2029 5.06 2030 5.09 2031 5.17 2032 5.29 2033 5.43 2034 5.58 2035 5.73 2036 5.83 2037 5.89 2038 5.95 2039 6.01 2040 6.07 2041 6.13 2042 6.19 2043 6.25 2044 6.32
ab_0001-112	Treaty 8 Tribal Association	V.1, S.5.5.2.8 ; page(s) 5-56 ; line(s) 31-40 EISG S.4.2 Comment 1-97.	<p><i>The financial risks associated with GHG regulatory actions – the market price for GHG offsets – turns on the flexibility of compliance mechanisms. For example, is there flexibility to offset GHG emissions outside the Province of British Columbia? While the B.C. Greenhouse Gas Reduction (Cap and Trade) Act (S.B.C. 2008, c.32) contemplates such flexibility through eventual linkage of a B.C.-based cap-and-trade system (the B.C. cap-and-trade system would come into force by issue of a government regulation, which is currently in the consultation stage) to other systems, to date there is no western regional or continent-wide GHG cap-andtrade system. A GHG market confined to B.C. is likely to be more costly than a larger market.</i></p> <p>Information Request The Proponent is requested to: a) clarify whether it views the Western Climate Initiative (WCI) as a regional GHG cap-and-trade system; b) describe the relationship, if any, between British Columbia and the WCI; and c) clarify whether full participation in the WCI would permit participation in a larger GHG market.</p>	Yes, in theory the Western Climate Initiative (WCI) could be considered a regional greenhouse (GHG) cap-and-trade system. However, all the original western U.S. state founding members other than California have decided not to implement GHG cap-and-trade at this time. BC Hydro monitors developments regarding the WCI, the Regional Greenhouse Gas Initiative, California and other jurisdictions that may adopt or implement GHG cap-and-trade, such as Quebec.
ab_0001-113	Treaty 8 Tribal Association	V.1, S.5.5.2.8 ; page(s) 5-56 557 ; line(s) 40-46 1-2 EISG S.4.2 Comment 1-98.	<p><i>BC Hydro adopted a scenario approach to the impact of GHG offset price variability based on Ventyx’s GHG price forecast. The GHG price forecasts provide a wide range of possible future GHG offset prices that capture a range of economic and policy scenarios. The low GHG price is the carbon tax at \$30/metric tonne of CO2e, and is used in the portfolio analysis in Section 5.5.4. The high GHG price is about \$173/metric tonne of CO2e (\$F2013, levelized between 2022 and 2046) and is reflected in the upper financial attribute values</i></p>	<p>BC Hydro uses a scenario approach in the development of its IRP. The carbon costs and GHG offset prices as used in the EIS are at the lower end of the spectrum of what might be seen given the abundant shale gas and slow movement on managing carbon emissions. To the extent that carbon and GHG costs had been higher, the costs of the Clean + Thermal portfolios would have increased relative to the Clean and Site C portfolios.</p> <p>The carbon dioxide equivalent (CO2e) price of \$30 per metric tonne is the BC Carbon tax. The CO2e price of \$173 per metric tonne is the levelized price of the GHG price in Market Scenario D</p>

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			<i>for CCGTs (UEC, Table 5.34) and SCGTs (UCC, Table 5.35). Information Request BC Hydro is asked to: a) explain in detail how the values of \$30 and \$173 per metric tonne of CO2e for low and high prices were obtained, and what hypotheses underlie each; and b) explain in detail how these scenarios were used to project resource costs for natural gas-fired generation.</i>	as described in Chapter 4 of the draft IRP. These CO2e prices were used to give a range of UEC and UCC prices in Table 5.34 and 5.35. Note that the Section 5.5 EIS portfolio analysis used the lower \$30/tonne B.C. carbon tax-based GHG cost.
ab_0001-114	Treaty 8 Tribal Association	V.1, S.5.5.2.8 ; page(s) 5-57 ; line(s) 9-10 EISG S.4.2 Comment 1-99.	<i>Table 5.34 Summary of CCGT and Small Cogen Gas-Fired Generation Potential</i> Comments Technical and financial results concerning CCGT and small cogen gas-fired generation potential are presented in the 2010 Resource Options Report, S.5.2.11, and in the Draft IRP, S.3.4.1.9. Information Request BC Hydro is requested to: a) explain the differences between the data presented here and those found in the 2010 Resource Options Report and in the Draft IRP; b) provide the input data and calculations used to generate the upper and lower UEC values for each line of the table; and c) explain the factors that would determine whether the costs of a given project would fall at the low or high end of the range.	Please see the Technical Memo: Alternatives to the Project. The factors that would determine whether the costs of a given project would fall at the low or high end of the range are fuel price and GHG cost. <ul style="list-style-type: none"> • Note that the Section 5.5 portfolio analysis for clean and thermal is based on the mid gas price forecast and low end \$30/tonne GHG cost. Please see the response to ab_0001-113. • The UECs in Table 5.34 of the EIS reflect the \$30/tonne to \$173/tonne GHG cost range.
ab_0001-115	Treaty 8 Tribal Association	V.1, S.5.5.2.8 ; page(s) 5-57 ; line(s) 15 EISG S.4.2 Comment 1-100.	<i>Table 5.35 Summary of SCGT Potential</i> Comments Technical and financial results concerning SCGT potential are presented in the 2010 Resource Options Report, section 5.2.11, and in the Draft IRP, s. 3.4.2.2. Information Request The Proponent is requested to: a) explain the differences between the data presented here and those found in the 2010 Resource Options Report and in the Draft IRP; b) provide the input data and calculations used to generate the upper and lower UEC values for each line of the table; c) explain the factors that would determine whether the costs of a given project would fall at the low or high end of the range; d) explain why the option of a 100 MW SCGT on Vancouver Island, included in the ROR and the draft IRP, was excluded from the EIS; e) explain why the unit capacity cost of 100 MW SCGT in Kelly-Nicola increased from 70\$ (2011\$) in the draft IRP to \$89-121 (2013\$) in the EIS; and f) provide the capital cost per MW.	Please see the Technical Memo: Alternatives to the Project. The factors that would determine whether the costs of a given project would fall at the low or high end of the range are fuel price and GHG cost. <ul style="list-style-type: none"> • Note that the Section 5.5 portfolio analysis for clean and thermal is based on the mid gas price forecast and low end \$30/tonne GHG cost. Please see the response to ab_0001-113. • The UECs in Table 5.34 reflect the \$30/tonne to \$173/tonne GHG cost range. <p>The 100 MW SCGT on Vancouver Island is significantly higher in cost compared to a 100 MW SCGT located at Kelly Nicola. This is primarily due to the cost of contracting for firm gas transportation costs to a gas-fired generator on Vancouver Island.</p> <p>The direct capital cost per MW is approximately F2013\$ 830,000.</p>
ab_0001-116	Treaty 8 Tribal Association	V.1, 5.5.2.8 ; page(s) 5-57 ; line(s) 15 EISG S.4.2 Comment 1-101.	<i>Table 5.35 Summary of SCGT Potential Notes: UCCs for SCGTs are based on an 18% capacity factor and include associated fuel and GHG costs</i> Information Request BC Hydro is asked to explain and justify the choice of an 18% capacity factor for capacity resources.	BC Hydro's load is at its highest during the four month period from November through February, between 6 am to 10 pm during weekdays and Saturday. A capacity resource should at a minimum be capable of meeting BC Hydro's load during this peak load period. A generator running at full capacity during this time period would have a capacity factor of 18%. While resources such as gas-fired generation can run uninterrupted during this time period, Pumped Storage facilities with daily storage would not be able to do the same due to the need to pump and recharge the upper reservoir. BC Hydro assumed a similar 18% capacity factor both to make the resources comparable. In addition, it would be expected that the pumped storage

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				could operate at other times of the year.
ab_0001-117	Treaty 8 Tribal Association	V.1, S.5.5.2.10 V.1, S.4.3.1.1.1 ; page(s) 5-59 ; line(s) 31-32 EISG S.4.2 Comment 1-102.	<p><i>There are no commercial pumped storage facilities in B.C., and only one pumped storage facility operating in Canada, which was permitted in the 1950s. Table 4.2 Earthfill Dams Built on Bedrock Similar to Site C</i> Comments The Proponent's comments seem to imply that the lack of pumped storage facilities in Canada may be a reason to discount this capacity alternative. It is important to note that Table 4.2, a list of shale foundation dams provided in support of the proposed Project also contains only a single dam in Canada, constructed in 1967. Interestingly, the first dam listed in Table 4.2, the Bath County Upper Dam, is a pumped storage facility. The number and total installed capacity of large-scale pumped storage facilities throughout the world ⁵ vastly exceeds the number and installed capacity of shale foundation facilities. Information Request BC Hydro is requested to: a) confirm that the location of the pumped storage facility operating in Canada is at the Sir Adam Beck II Generating Station; and b) describe other pumped storage projects that are under study in Canada, including an overview of the projects currently in the planning or review stage, indicating i) the project stage of each, and ii) the expected capital costs and unit capacity costs.</p> <p>5. www.eia.gov/cfapps/ipdbproject/iedindex3.cfm?tid=2&pid=82&aid=7&cid=ww,&syid=2004&eyid=2010&unit=MK</p>	<p>It is confirmed that the Sir Adam Beck II Generating Station is the only pumped storage facility known to be operating in Canada.</p> <p>Note that the Sir Adam Beck II Generating Station in Ontario: (1) has a nameplate capacity of 174 MW, which is smaller than the Pumped Storage resources that would be required to meet the need identified in Section 5.2 of the EIS. In the Clean Generation portfolios, the Pumped Storage resource is 1,000 MW; in the Clean + Thermal portfolios, the Pumped Storage resource is 500 MW); and (2) was constructed prior to 1958. BC Hydro notes that Pumped Storage technology is mature and available, but that the permitting of upper and lower reservoirs is untested and could be time consuming.</p> <p>BC Hydro has not conducted a review of Pumped Storage projects in Canada in the development process given that BC Hydro commissioned studies to identify Pumped Storage potential in the Lower Mainland, Vancouver Island, and North Coast regions of B.C., as well as at BC Hydro's Mica generating station. Refer to Section 5.4.1.1 of the EIS for a list of the three pumped storage studies. The studies conducted by third party consultants describe expected costs and development timelines of the potential Pumped Storage sites. BC Hydro notes that there is currently no pumped storage proposal in the B.C. Environmental Assessment Office's Project Registry. BC Hydro is also aware that FortisBC had been considering Pumped Storage in the Nicola Lake region in its 2009 resource plan.</p>
ab_0001-118	Treaty 8 Tribal Association	V.1, S.5.5.2.10 ; page(s) 5-60 ; line(s) 9 EISG S.4.2 Comment 1-103.	<p><i>Table 5.37 Summary of Pumped Storage Potential</i> Comments Technical and financial results concerning pumped storage potential are presented in the 2010 Resource Options Report, section 5.2.10, and in the Draft IRP, s. 3.4.2.1. Information Request BC Hydro is requested to: a) explain the dramatic increases in costs in the EIS, compared to those found in the draft IRP; b) provide the input data and calculations used to generate the upper and lower UEC values for each line of the table; c) explain the factors that would determine whether the costs of a given project would fall at the low or high end of the range; and d) provide the capital cost for each entry in \$/MW.</p>	<p>The pumped storage costs in the EIS are comparable to those shown in the 2010 ROR and the Draft 2012 IRP. However, in the EIS the costs to operate the pumped storage units have appropriately included the 30% loss of energy between storing and releasing the energy, which was not reflected in the 2010 ROR and draft IRP. Please see the Technical Memo: Alternatives to the Project.</p> <p>Data for a total of 194 potential pumped storage sites are summarized in Table 5.37 of the EIS. The capital costs of the potential sites depend on factors such as whether the sites are freshwater or saltwater sites, the distance and elevation difference between the upper and lower reservoir, the extent of the dams required, and the distance to roads and existing transmission infrastructure. The variation in capital cost determines the upper and lower end of the Unit Capacity Costs (UCC) shown in Table 5.37. The capital costs of some of the most economical sites are shown in Appendix 3 of BC Hydro's 2010 Resource Options Report.</p>
ab_0001-119	Treaty 8 Tribal Association	V.1, S.5.5.3.1 ; page(s) 5-61 ; line(s) 16-17	<p><i>In general, portfolios were created in this analysis for the planning period from F2015 to F2041. Each portfolio contains BC Hydro's current DSM target.</i> Information Request The Proponent is requested to: a) explain in detail the</p>	<p>In general, the suite of models and the approach taken in creating the portfolios in the EIS analysis and in the Draft IRP are the same. The major differences are 1) updated input data was used in the EIS analysis, and 2) BC Hydro has enhanced the modeling of pumped storage in the</p>

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		EISG S.4.2 Comment 1-104.	similarities and differences, if any, between the portfolios created in this analysis and those examined in the Draft IRP; b) explain in detail why no DSM scenarios other than the current DSM target were used in these portfolios; and c) explain how portfolios which are all constructed with the same DSM scenario can help BC Hydro and the reader understand the consequences if, in the future, DSM performance is greater or less than this scenario.	<p>Site C EIS analysis, reflecting the cost of the 30% energy loss associated with operating pumped storage.</p> <p>Please see the Technical Memo: Demand-side Management. In particular, with the exception of DSM Option 3, the alternatives to the current DSM target are not viable and therefore not included in the Section 5.5 EIS portfolio analysis. As set out in the Technical Memo: Demand-side Management, the consequences associated with the current DSM target not delivering the anticipated 1400 MW of dependable capacity savings are greater than any potential for the current DSM target to over-deliver.</p> <p>Regardless of whether the Project proceeds, it is unlikely that BC Hydro would increase its current DSM target due to the corresponding increase in deliverability risk. Therefore, the only alternatives to the Project are supply-side resources. Please also refer to BC Hydro's response to ab-0001-142</p>
ab_0001-120	Treaty 8 Tribal Association	V.1, S.5.5.3.1 ; page(s) 5-61 ; line(s) 19-21 EISG S.4.2 Comment 1-105.	<p><i>This analysis was conducted by comparing portfolios including the Project against portfolios of resources that excluded the Project but combining available resources that provide approximately the same amount of energy and capacity.</i></p> <p>Information Request Explain how an analysis conducted in this manner can exclude the possibility that a portfolio with greater or lesser amounts of energy or capacity might meet reliability and other constraints at a lower cost and/or in terms of other evaluation parameters.</p>	Please see the response to ab_0001-142.
ab_0001-121	Treaty 8 Tribal Association	V.1, S.5.5.3.2 ; page(s) 5-62 ; line(s) 7-8 EISG S.4.2 Comment 1-106.	<p><i>Resource portfolios were developed using System Optimizer, a product of Ventyx that has been adopted by several utilities in North America.</i></p> <p>Comments Other Canadian utilities have used a Ventyx product called Strategist. Information Request Describe the differences between System Optimizer and Strategist, explaining the strengths and weaknesses of each.</p>	The requested information is outside the scope of the environmental assessment. There are a number of portfolio modeling tools marketed by several software vendors. BC Hydro has not recently undertaken an evaluation of the differences between portfolio modelling tools nor has it evaluated Strategist.
ab_0001-122	Treaty 8 Tribal Association	V.1, S.5.5.3.4 ; page(s) 5-63 ; line(s) 2 EISG S.4.2 Comment 1-107.	<p><i>BC Hydro used a 6% real discount rate in the portfolio cost assessments.</i></p> <p>Information Request Justify the choice of a 6% real discount rate for the portfolio cost assessments.</p>	The 6% real discount rate is based upon BC Hydro's Weighted Average Cost of Capital (WACC), which is an estimate of the expected future blended cost of equity and of debt.
ab_0001-123	Treaty 8 Tribal Association	V.1, S.5.5.3.4 ; page(s) 5-63 ; line(s) 4-17 EISG S.4.2	<p><i>Policy Action #13 of the Provincial Government's 2002 Energy Plan (page 30) provides that the private sector (i.e., IPPs) will develop new electricity generation, with BC Hydro restricted to improvements at existing plants (such as Resource Smart projects) and the Project. The BCUC in its 2006 IEP/LTAP</i></p>	The B.C. Environmental Assessment Office, the Canadian Environmental Assessment Agency, other government agencies and indeed any Joint Review Panel must recognize existing provincial energy policy, including the 2002 Energy Plan. Section 5, page 5-63 of the EIS refers to a BCUC 2006 decision to indicate that BC Hydro is following germane findings of the BCUC in prior

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		Comment 1-108.	<i>Decision, page 205, found: "...the [BCUC] panel agrees with BC Hydro [and the customer interveners] that project evaluation methodology must consider the actual costs, benefits, risks and other characteristics of individual projects that may be relevant to cost-effectiveness, and should not seek to artificially compensate for real differences in projects costs, including possible differences in the cost of capital between BC Hydro and other developers. With respect to the cost of capital, BC Hydro projects will clearly have an advantage as a result of...access to the Province's high credit rating."</i> [Emphasis added]. Information Request The Proponent is asked to: a) provide context to explain whether and to what extent BC Hydro considers the Provincial Government's 2002 Energy Plan to be binding or in effect in the present environmental assessment process; b) provide context to explain whether and to what extent BC Hydro considers the BCUC decision in the 2006 IEP/LTAP proceeding to be binding or in effect in the present environmental assessment process; c) indicate to whom BC Hydro would communicate its findings, if it were to learn through its planning processes that there existed a superior alternative to the proposed Project that required institutional relationships different from those foreseen in the 2002 Energy Plan d) clarify whether BC Hydro has made such a finding further to part c) and provide copies of all related communications.	proceedings, including the finding that IPPs have a higher cost of capital than BC Hydro. BC Hydro notes that Treaty 8 has referenced prior BCUC findings in its questions, such as the 1983 BCUC's Report & Recommendations. The information requested pursuant to items (c) and (d) is outside the scope of the environmental assessment, which is not a process that can decide on "institutional relationships different from those foreseen in the 2002 Energy Plan".
ab_0001-124	Treaty 8 Tribal Association	V.1, S.5.5.3.4 ; page(s) 5-63 ; line(s) 34-35 EISG S.4.2 Comment 1-109.	<i>Assumptions about the U.S. to Canadian dollar are required for the conversion of market price forecasts. The conversion rate assumption is \$0.97 U.S./Cdn.</i> Information Request BC Hydro is requested to: a) clarify whether any sensitivity analyses were carried out with respect to market price forecasts and, if so, to provide detailed results and, if not, explain why not; b) explain, in the event that the USD/CAD rate varies significantly from \$0.97 USD/CAD during the 2015-2041 planning period, the consequences for the financial analyses presented in the EIS; and c) quantify BC Hydro's degree of confidence that the USD/CAD rate will remain approximately \$0.97 USD/CAD throughout the 2015-2041 planning period.	Please see the response to ab_0001-142.
ab_0001-125	Treaty 8 Tribal Association	V.1, S.5.5.3.4 ; page(s) 5-64 ; line(s) 27-32 EISG S.4.2 Comment 1-110.	<i>BC Hydro has put a cost adder of 5% on available resource portfolios to reflect the fact that implementing the available resource options would entail soft cost expenditures. BC Hydro chose 5% on the basis of its experience; for example, the environmental assessment, First Nation, and stakeholder engagement costs of a sample of recent representative BC Hydro capital projects ranged from 0.02% to about 10%.</i> Information Request List the recent representative BC Hydro capital projects referred to here, indicating the soft costs for each in M\$ and in % of total project costs.	The sample of recent representative BC Hydro capital projects where soft cost expenditures ranged from 0.02% to about 10% is as follows: Generation Projects: <ul style="list-style-type: none"> - John Hart Replacement - Ruskin Dam and Powerhouse Upgrade - Bridge River Townsite Redevelopment - GM Shrum 09 G1-5 Turbine Rehabilitation - Mica Switchgear Replacement

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				<ul style="list-style-type: none"> - Site C Clean Energy Project - Fort Nelson Resource Smart Upgrade - Mica Units 5 and 6 - Revelstoke Unit 5 - Aberfeldie Redevelopment - Waneta Dam Interest Purchase <p>Transmission Projects:</p> <ul style="list-style-type: none"> - Dawson Creek/Chetwynd Area Transmission - Seymour Arm Capacitor Station - Vancouver City Central Transmission - Northwest Transmission Line - Interior to Lower Mainland - Columbia Valley Transmission - Vancouver Island Transmission Reinforcement - Greenfield Substations - System Control Modernization <p>BC Hydro will not provide the breakdown in \$ millions and % of individual project costs given that the soft costs include, among other things, confidential information such as First Nation consultation costs; the release of the requested information could disclose such costs and thereby significantly impact BC Hydro's negotiating position on its various capital projects.</p>
ab_0001-126	Treaty 8 Tribal Association	V.1, S.5.5.3.4 ; page(s) 5-64 ; line(s) 31-32 EISG S.4.2 Comment 1-111.	<i>Accordingly, the Project-related sunk costs (about \$5/MWh) have been removed for purposes of the portfolio analysis. Information Request</i> Quantify and explain the sunk costs for the proposed Project.	The sunk costs for the Project represent those costs spent on Stages 1, 2, and 3 until March 31, 2012. Sunk costs removed for the portfolio analysis were approximately \$215 million.
ab_0001-127	Treaty 8 Tribal Association	V.1, S.5.5.3.5 ; page(s) 5-65 ; line(s) 3-5 EISG S.4.2 Comment 1-112.	<i>Portfolios were created and evaluated across the base LRB gap (Mid-level 2012 Load Forecast, existing and committed resources, the current BC Hydro DSM target, Revelstoke Unit 6; refer to Section 5.2.2.2). Information Request</i> The Proponent is requested to: a) confirm that no portfolios were created or evaluated using the high or low load forecasts. If that is not the case, present detailed descriptions of the additional portfolios evaluated and the results; b) confirm that no portfolios were created or evaluated using any DSM scenarios other than the current BC Hydro DSM target and, if that is not the case, present detailed descriptions of the additional portfolios evaluated and the results; and c) explain why no portfolios were created or evaluated taking into account	Please see the response to ab_0001-142.

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			either the high or low load forecast scenarios or any DSM scenarios other than the current BC Hydro DSM target.																																																			
ab_0001-128	Treaty 8 Tribal Association	V.1, S.5.5.3.5 ; page(s) 5-65 ; line(s) 7-12 EISG S.4.2 Comment 1-113.	<i>Using costs to compare portfolios requires estimating the costs and trade revenues of each portfolio operating over the planning time frame. These operating costs and revenues are affected by market price assumptions, including the market prices of natural gas, GHG, and electricity. BC Hydro used the Ventyx Spring 2012 market price forecast in the portfolio analysis. This Ventyx forecast assumes slower economic growth and is the basis for BC Hydro’s most likely market price forecast.</i> Information Request The Proponent is requested to: a) confirm that no portfolios were created or evaluated taking into account market price scenarios other than the Ventyx Spring 2012 market price forecast and, if that is not the case, present detailed descriptions of the additional portfolios evaluated and the results; b) present year-by-year values for all market prices used in preparing the portfolios; c) present in detail the implications for each portfolio studied if the market prices were systematically 15%, 25% and 50% higher or lower than the Ventyx Spring 2012 market price forecast.	<p>With regards to items a) and c) , while no other portfolio modelling for varying market prices has been undertaken in the section 5.5 EIS portfolio analysis, BC Hydro notes that the Ventyx Spring 2012 mid-level market price scenario is Ventyx’s expected price scenario, and is closer to the low market price scenario than to the high market price scenario. In general, market prices are low today and would not be expected to fall much further. A higher market price scenario would favour the Project. It would be arbitrary to raise and lower the mid-level gas price scenario by 15%, 25% and 50%.</p> <p>With regards to item b), below is the year by year Mid-C electricity forecast used in the portfolio analysis in Real F2013 Canadian dollars / MWh.</p> <p>Mid-C Electricity Forecast (Calendar Average Real F2013 CAD/MWh)</p> <table><tr><td>2014</td><td>26.0</td></tr><tr><td>2015</td><td>26.6</td></tr><tr><td>2016</td><td>26.8</td></tr><tr><td>2017</td><td>28.2</td></tr><tr><td>2018</td><td>28.2</td></tr><tr><td>2019</td><td>29.2</td></tr><tr><td>2020</td><td>29.3</td></tr><tr><td>2021</td><td>30.6</td></tr><tr><td>2022</td><td>31.4</td></tr><tr><td>2023</td><td>33.2</td></tr><tr><td>2024</td><td>34.5</td></tr><tr><td>2025</td><td>35.7</td></tr><tr><td>2026</td><td>36.4</td></tr><tr><td>2027</td><td>37.6</td></tr><tr><td>2028</td><td>37.9</td></tr><tr><td>2029</td><td>38.9</td></tr><tr><td>2030</td><td>39.2</td></tr><tr><td>2031</td><td>40.4</td></tr><tr><td>2032</td><td>41.6</td></tr><tr><td>2033</td><td>43.4</td></tr><tr><td>2034</td><td>44.5</td></tr><tr><td>2035</td><td>46.5</td></tr><tr><td>2036</td><td>47.0</td></tr><tr><td>2037</td><td>47.5</td></tr><tr><td>2038</td><td>48.0</td></tr></table>	2014	26.0	2015	26.6	2016	26.8	2017	28.2	2018	28.2	2019	29.2	2020	29.3	2021	30.6	2022	31.4	2023	33.2	2024	34.5	2025	35.7	2026	36.4	2027	37.6	2028	37.9	2029	38.9	2030	39.2	2031	40.4	2032	41.6	2033	43.4	2034	44.5	2035	46.5	2036	47.0	2037	47.5	2038	48.0
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				2039 48.5 2040 49.0 2041 49.4 2042 49.9 2043 50.4 2044 50.9
ab_0001-129	Treaty 8 Tribal Association	V.1, S.5.5.3.5 ; page(s) 5-65 ; line(s) 26-32 EISG S.4.2 Comment 1-114.	<i>In accordance with the criteria, the System Optimizer identifies where and when incremental transmission capacity will be required for a particular portfolio. System Optimizer first selects a set of applicable wire or non-wire transmission options for removing congestion from an existing transmission path by adding incremental transfer capacity to the constrained path. The result is reviewed and, if needed, the reinforcement requirements are adjusted. The present values of the portfolios reflect these adjustments. Information Request BC Hydro is requested to provide for each instance of transmission congestion identified in each portfolio evaluated: i) the wire or non-wire transmission options evaluated to remove this congestion, indicating present value and year-by-year costs of each; and ii) the wire or non-wire transmission option selected to remove this congestion.</i>	The portfolio model will select the optimal portfolio based upon available generation options and transmission options for the particular assumptions and constraints. Please see the Technical Memo: Alternatives to the Project for the transmission options selected in the portfolio analysis.
ab_0001-130	Treaty 8 Tribal Association	V.1, S.5.5.3.6 ; page(s) 5-65 ; line(s) 38-39 EISG S.4.2 Comment 1-115.	<i>The portfolio attributes are summarized at a level appropriate for comparing the Project against other portfolios using consequence tables. Information Request Present the consequence tables for each portfolio evaluated.</i>	Please see the Technical Memo: Alternatives to the Project.
ab_0001-131	Treaty 8 Tribal Association	V.1, S.5.5.3.7 ; page(s) 5-66 ; line(s) 4-6 EISG S.4.2 Comment 1-116.	<i>Key uncertainties and risks include the following: • Current DSM Target – The portfolio modelling assumes that the current DSM target will deliver the expected energy and dependable capacity savings ...”</i> Information Request BC Hydro is requested to: a) explain how the portfolio analysis takes into account the possibility that actual DSM energy and capacity savings during the period 2012-2041 might be greater than those presumed in the Current DSM Target; and b) clarify whether the Proponent evaluated the risk of investing in oversupply and if so, present its evaluation of this risk and, if not, explain why not.	Please see the response to ab_0001-142.
ab_0001-132	Treaty 8 Tribal Association	V.1, S.5.5.3.7 ; page(s) 5-66 ; line(s) 17-21	<i>IPP Attrition Risk – The portfolio modelling does not reflect the relatively high IPP attrition rate that BC Hydro has observed through its power acquisition processes. If BC Hydro were to pursue some combination of available resources</i>	The portfolio analysis included only the costs of IPP projects needed to deliver the capability of the Project. As described in Section 5, page 5-66, lines 17-21, incremental IPP attrition was not reflected in the portfolio analysis. If BC Hydro were to award EPAs representing more than 5,100

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		EISG S.4.2 Comment 1-117.	<i>instead of the Project, it would likely have to award EPAs representing more energy than the lost Project contribution of 5,100 GWh/year of average energy.</i> Information Request Explain why, if BC Hydro were eventually to award EPAs representing more energy than the lost contribution of 5,100 GWh/year of average energy from the propose Project in order to compensate for the projects that will fail to go forward, this would increase its costs.	GWh/year of firm energy to account for IPP attrition risk similar to what has been experienced historically (which is described in Section 5, page 5-20), and those IPPs were more successful than in the past, this would likely increase the expected total cost of meeting that need for a period of time until the surplus energy is required.
ab_0001-133	Treaty 8 Tribal Association	V.1, S.5.5.3.7 ; page(s) 5-66 ; line(s) 22-28 EISG S.4.2 Comment 1-118.	<i>Regulatory Risk – The portfolio model does not account for available resource development and regulatory risk. If BC Hydro were to pursue available resources, the EPAs with IPPs must be filed with the BCUC for acceptance pursuant to Section 71 of the Utilities Commission Act. BC Hydro qualitatively described available resource development and regulatory risks above in Section 5.5.2; see, for example, SCGTs (air emission permitting) and pumped storage (only one such facility permitted to date in Canada)</i> Comments BC Hydro has chosen to identify only regulatory risks associated with the alternatives. It has not identified the regulatory risks associated with the proposed Project, which include but are not limited to the following: §§ Risks associated with not submitting the proposed Project to review by the BCUC, including matters normally reviewed by the BCUC, such as: the risk of stranded assets; risks of an underutilized system; risk that BC Hydro’s obligations under various statutes will not be met; and uncertainties related to load forecasts and other planning conclusions; §§ Risks associated with constructing a large-scale dam on shale (only one such facility permitted to date in Canada, and relatively few permitted worldwide); §§ Risks associated with insufficient corporate knowledge and experience considering that BC Hydro has not developed a large-scale hydro-electric facility since the Revelstoke Dam in 1984; §§ Risks of construction cost overruns; §§ Risks related to general or skilled labour shortages; and §§ Financial risks (e.g. interest rates, etc.) Information Request The Proponent is requested to: a) indicate which key risks associated with development of the proposed Project are captured by the portfolio modeling process and explain how these risks are addressed; and b) identify any additional regulatory or other risks associated with the development of the proposed Project that are not captured by the portfolio analysis process.	The portfolio analysis does not take into account development risks such as regulatory risk, and therefore regulatory risks are not reflected in the Section 5.5 quantitative portfolio analysis for either the Project or alternatives. As referenced, development and regulatory risks for potential alternatives to the Project are described in Section 5.5.2. The primary regulatory risk associated with the Project is the issuance of the B.C. Environmental Assessment Act Environmental Assessment Certificate and a decision statement under CEAA 2012. BC Hydro has also set out a list of Project-related permitting requirements in Section 8.4 of the EIS.
ab_0001-134	Treaty 8 Tribal Association	V.1, S.5.5.4.1 ; page(s) 5-66 567 ; line(s) 36-42 1-9	<i>To compare the Project to available resources, BC Hydro built a number of portfolios including the Project and excluding the Project. Three categories of portfolios were established, using different assumptions regarding available resources: • Site C Portfolios that include the Project, with the remaining energy</i>	As quoted in the comment and described in Section 5.5.4.1, lines 34-35 on page 5-66, BC Hydro created three categories of portfolios. In total, 8 portfolios were created within these 3 categories to provide the PV differentials shown in Table 5.41 of the EIS. The portfolios created, as well as the resources selected for each, are shown in Appendix 4 of the Technical Memo:

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		EISG S.4.2 Comment 1-119.	<p><i>and capacity gap being filled using clean or renewable generation resources • Clean Generation Portfolios that exclude the Project and fill the energy and capacity gap using clean or renewable generation resources. As referenced in Section 5.5.2, available clean or renewable resources for portfolio purposes are wind, run-of-river, and biomass to provide energy and capacity, with pumped storage providing backup capacity but representing an energy consumer. • Clean + Thermal Generation Portfolios that exclude the Project and fill the energy gap using clean or renewable generation resources as in the Clean Generation Portfolio, while backup capacity is provided by thermal generation (in the form of SCGTs) up to the 93% clean or renewable target, as well as pumped storage. It should be noted that the partial replacement of the dependable capacity provided by the Project with SCGTs would use up all of the 7% non-clean headroom. As a result, BC Hydro's ability to use natural gas-fired generation for contingency resource planning purposes is foregone. This value is not fully represented in the portfolio analysis undertaken. Information Request</i></p> <p>a) BC Hydro is requested to provide detailed descriptions of each of the three portfolios examined, indicating for each supply-side addition in each portfolio: i) the name, type, in-service date, installed capacity and average annual energy (on a year-by-year basis, if appropriate); ii) for BC Hydro installations, the all-in capital cost, the annual fixed and variable O&M costs; iii) for installations owned by third parties, the assumed power purchase cost, on both a levelized and a year-by-year basis. b) BC Hydro is requested to provide, for each portfolio, the current dollar costs on a year-by-year basis, broken down by component project, as well as the present value cost.</p>	<p>Alternatives to the Project.</p> <p>To facilitate a useful comparison to the Project, the resource options selected in the portfolio analysis were used to create a comparable block of energy and capacity to the Project's 5,100 GWh/year of energy and 1,100 MW of dependable capacity for the three portfolio categories. Refer to Section 5.5.4.1 of the EIS and to the Technical Memo: Alternatives to the Project.</p>
ab_0001-135	Treaty 8 Tribal Association	V.1, S.5.5.4.3 ; page(s) 5-68 ; line(s) 23-25 EISG S.4.2 Comment 1-120.	<p><i>The analysis evaluated the cost-effectiveness of the Project by comparing the present value of the costs between portfolios with and without the Project. This represents the financial benefits over the 30-year analysis period. This present value calculation was performed for a range of in-service dates for the Project to evaluate whether the Project was cost-effective both at F2022 and at F2024. Information Request Provide the annual costs of each portfolio, explained in sufficient detail to permit verification of individual amounts.</i></p>	Please see the response to ab_0001-134 and the Technical Memo: Alternatives to the Project.
ab_0001-136	Treaty 8 Tribal Association	V.1, S.5.5.4.3 ; page(s) 5-68 ; line(s) 31 EISG S.4.2 Comment 1-121.	<p><i>Table 5.41 Portfolio Present Value Comparison Information Request Provide, for each portfolio, the total present value costs from F2012 to F2041, from which these differential present value costs are calculated.</i></p>	Please see Appendix 4 of the Technical Memo on Alternatives to the Project.

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ab_0001-137	Treaty 8 Tribal Association	V.1, S.5.5.4.3 ; page(s) 5-69 ; line(s) 6-12 EISG S.4.2 Comment 1-122.	<p><i>In addition to the present value analysis, BC Hydro evaluated the adjusted UEC of the Project against the adjusted UEC of a comparable block of 5,100 GWh/year of energy and 1,100 MW of capacity. This adjusted UEC represents the present value of the amount BC Hydro's customers pay per unit energy delivered, and is a proxy for the financial benefits over project life. Table 5.42 provides the difference in portfolio UEC between portfolios with and without the Project in F\$2013. Table 5.42 Adjusted Unit Energy Cost Comparison</i></p> <p>Information Request The Proponent is requested to: a) provide the detailed calculations underlying the results shown in Table 5.42; b) indicate the in-service date used for the proposed Project (F2022 or F2024) in Table 5.42; c) present results based on the in-service date not presented in Table 5.42 (i.e. either F2022 or F2024); d) clarify whether the timings of the of resource additions in the Clean Generation and Clean + Thermal Generation portfolios synchronized with the in-service date of the proposed Project and, if not, why not, and if so, adjust these values as well to take into account the alternate in-service date examined in response to c); and e) describe in detail the methodology used to calculate the adjusted UEC.</p>	<p>Section 5, Table 5.42 of the EIS conveys the results of the adjusted UEC block analysis. In addition to the portfolio analysis, BC Hydro used the resource options selected in the portfolio analysis to create a comparable block of alternative energy and capacity resources to the Project's 5,100 GWh/year of energy and 1,100 MW of dependable capacity; refer to Section 5.5.4.1 of the EIS and to the Technical Memo: Alternatives to the Project. The energy needs for the portfolios without the Project were provided by: (1) clean and renewable energy resource options consisting mainly of onshore wind, with some run-of-river, municipal solid waste and wood-based biomass; and (2) capacity needs were supplemented by capacity resource options such as pumped storage and simple cycle gas turbines within the Clean Energy Act's 93% clean or renewable target. The block adjusted UEC values are a proxy for the longer term comparison of the Project and the alternatives over their project lives. This simplified longer term analysis assumes consistent resource timing for all options (all in one year, with the actual in-service date not relevant to the analysis) and assesses only some of the operational considerations.</p> <p>The UEC calculation provided in Table 5.42 of the EIS was carried out in the following steps:</p> <ol style="list-style-type: none"> 1) The System Optimizer selected resources in the portfolio analysis for the Clean Generation portfolios and the Clean + Thermal Generation portfolios, refer to Section 5.5.3.2 of the EIS. These resources were sorted in ascending order of Adjusted UEC. 2) BC Hydro used the ranked resources from System Optimizer to create a comparable block of energy and capacity to the Project's 5,100 GWh/year of energy and 1,100 MW of dependable capacity for the two portfolio categories that excluded the Project. A detailed list of the resources is provided in the technical memo on Alternatives to the Project and Planning, Appendix 3. 3) The yearly cost of the clean or renewable resources was calculated by multiplying each resource's adjusted UEC by its firm energy amount. 4) The yearly variable cost of the capacity resources was calculated using a capacity factor of 18-20% for the peak usage. BC Hydro used a slightly higher capacity factor for pumped storage than the 18% used in the portfolio analysis to make the comparable blocks exactly 5,100 GWh per year. Variable costs included variable operations and maintenance costs as well as fuel costs (natural gas or water rentals, depending on the technology). Note: The cost of the 30% energy losses associated with pumped storage, while a variable cost, is reflected in the yearly cost of clean or renewable resources calculated in Step 3). 5) The yearly fixed cost of the capacity resources was calculated by summing the capital and fixed OMA for each capacity facility and levelizing the cost over the project life. 6) Finally, the adjusted UEC is the annualized cash flow (i.e., the sum of the yearly cost of the clean or renewable resources (step 3); the yearly variable cost of the capacity resources (step 4); and the yearly fixed costs of the capacity resources (step 5)) divided by the annual firm energy of the portfolio (i.e. 5,100 GWh).
ab_0001-	Treaty 8	V.1, S.5.5.4.4 ;	<i>Portfolios with and without the Project were compared based on their</i>	It is not necessary to determine the significance of the effects of each of the alternatives to the

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138	Tribal Association	page(s) 5-69 ; line(s) 13-18 EISG S.4.2 Comment 1-123.	<i>environmental attributes. More details of the measures can be found in Section 5.5.1. Table 5.43 shows the differences in the environmental attributes between the Project and a 5,100 GWh/1,100 MW block of power from the Clean Generation and Clean + Thermal Generation portfolios.”</i> Comments One of the primary purposes of environmental assessment is to determine the significance of environmental effects and particularly the potential for significant residual environmental effects following mitigation. The Proponent has tabled an environmental attribute comparison that does not include an analysis of the potential environmental effects following mitigation. The EIS concludes, from the perspective of the Proponent, that the proposed Project will have direct and/or cumulative significant residual adverse environmental effects on the following valued components: §§ fish and fish habitat §§ wildlife resources §§ vegetation and ecological communities §§ current use of lands and resources for traditional purposes §§ greenhouse gas emissions Information Request The Proponent is requested to: a) explain how the portfolio analysis takes Environmental Attributes of each alternative into account; b) indicate specifically how the performance of different portfolios with respect to different environmental attributes is integrated into the larger portfolio analysis; c) indicate how environmental attributes are integrated with the financial and technical attributes in the portfolio analysis; and d) explain why the presence or absence of significant residual environmental effects was not considered in the environmental attribute comparison.	Project in order to meet the requirements of the EIS Guidelines. To facilitate a comparison between the Project, the resource options selected in the portfolio analysis were used to create a comparable block of energy and capacity to the Project’s 5,100 GWh/year of energy and 1,100 MW of dependable capacity for the three portfolio categories (Project, Clean Generation, Clean + Thermal Generation). These blocks were used among other things to calculate the values for the environmental attribute comparison in Table 5.43 of the EIS. Please see the Technical Memo: Alternatives to the Project, which summarizes how the Environmental Attributes factored into the overall conclusion that the Project represents the best combination of financial, technical, environmental and economic development attributes. Knowledge of site-specific conditions and proposed mitigation measures is required to assess the significance of residual environmental effects. Please see the response to ab_0001-093, which highlights that detailed site-specific information is unknown for the majority of the potential resource option sites in the 2010 ROR database.
ab_0001-139	Treaty 8 Tribal Association	V.1, S.5.5.4.4 ; page(s) 5-69 ; line(s) 25 EISG S.4.2 Comment 1-124.	<i>Table 5.43 Environmental Attribute Comparison</i> Comments Table 5.43 shows a zero value for Operational GHG Emissions for the proposed Project. Information Request Explain the zero value shown for Operational GHG Emissions for the proposed Project in Table 5.43, in light of the data presented in Section 15 and Appendix S.	As stated in the footnote to the Environmental Attribute Comparison table on page 9 of the EIS Executive Summary, the values shown are for the comparison of portfolios and include “... GHG emissions due only to fuel combustion during operations.” As stated on page 5-69 of Section 5, “The operating phase GHGs are sufficient for planning-level analysis...” as these are the only material GHG emissions at the level of portfolio comparisons.
ab_0001-140	Treaty 8 Tribal Association	V.1, S.5.5.4.4 ; page(s) 5-70 ; line(s) 19-21 EISG S.4.2 Comment 1-125.	<i>The land and freshwater footprint of the Project reservoir represents a conversion of habitat from terrestrial and river environments to a reservoir environment, and not a loss of productive environment.</i> Information Request BC Hydro is requested to: a) clarify whether, in describing the land and freshwater footprint of the proposed Project reservoir as a conversion of habitat from terrestrial and river environments to a reservoir environment, there are no net ecologically adverse effects; b) reconcile this statement with sections of the EIS, where net residual ecological effects are described, and where several are identified as being significant; and c) indicate how the portfolio analysis takes	An assessment of the changes to aquatic habitat conditions and resulting fish communities that result from the transformation of the river into a reservoir is provided in Section 12.4.2. pages 12-35 to 12-40 of the EIS. More detailed information, analyses and comparison on changes to aquatic productivity resulting from reservoir creation, are found in Volume 2 Appendix P Part 3 Future Conditions in the Peace River. Mitigation measures for changes in habitat changes that result from the creation of the reservoir are found in 12.5.1.2. An assessment of the changes to terrestrial habitat conditions that result from the creation of the reservoir on Vegetation and Ecological Communities and Wildlife Resources are described in Sections 13.3.1 and 14.3.1, respectively. Mitigation measures for Vegetation and Ecological

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			these net residual ecological effects into account.	Communities and Wildlife Resources for habitat changes resulting from reservoir creation are described in Sections 13.3.2 and 14.4.1. Please also see the response to ab_0001-093.
ab_0001-141	Treaty 8 Tribal Association	V.1, S.5.5.5 ; page(s) 5-72 ; line(s) 8-9 EISG S.4.2 Comment 1-126.	<i>BC Hydro has an obligation to meet this customer demand, and has evaluated a range of different options to do so. Information Request</i> BC Hydro is requested to: a) explain under what circumstances, if any, the utility can decline to serve additional load, making reference to the applicable laws, regulations and BCUC decisions; and b) indicate precisely which, if any, of the loads foreseen in the present analysis constitute loads with respect to which BC Hydro and/or the B.C. government has discretion to serve or not.	Please see the response to ab_0001-032.
ab_0001-142	Treaty 8 Tribal Association	V.1, S.5.5.5 ; page(s) 5-72 ; line(s) 10-11 EISG S.4.2 Comment 1-127.	<i>The Project is the most cost-effective manner in which BC Hydro can meet this need, as shown by the portfolio analysis in Section 5.5.4. Information Request</i> BC Hydro is asked to explain how it can be sure that the proposed Project is the most cost-effective manner in which BC Hydro can meet the identified need, given the failure of its portfolio analysis to address key uncertainties with respect to DSM performance, load growth, market price, exchange rates, etc.	<p>BC Hydro sets out its customer's energy and capacity requirements based upon meeting its reliability planning criteria. Portfolios are then created to meet these energy and capacity requirements in the least cost manner.</p> <p>The portfolio modelling described in Section 5.5. of the EIS is based on the expected view of BC Hydro's service area requirements (e.g., mid-level 2012 Load Forecast and the current DSM target):</p> <ul style="list-style-type: none"> • The assessment behind the mid-level 2012 Load Forecast is provided in Section 5.2.1.1 of the EIS and the 2012 Load Forecast document itself, found as an attachment to the Technical Memo on Project Need; • In planning to meet need, BC Hydro first determines the amount of DSM to target. The assessment behind the current DSM target is found in Sections 5.2.2.2 and 5.2.3 of the EIS, and the Technical Memo on Demand-side Management. The current DSM target of 7,800 GWh/year is anticipated to reduce BC Hydro's forecasted demand for energy by 78% in F2021. The current DSM target is aggressive, and is a significant step up from targets prior to 2009. <p>The current DSM target strikes a balance between DSM's relatively low cost and low environmental footprint, and the risk that the current DSM target will not deliver the anticipated energy and capacity savings. Regardless of whether the Project proceeds, it is unlikely that BC Hydro would increase its current DSM target due to the corresponding increase in deliverability risk. Therefore, the only alternatives to the Project are supply-side resources.</p> <p>BC Hydro plans to align the in-service dates of new projects with the need for new energy and/or capacity resources. The portfolio analysis described in Section 5.5 of the EIS examines two Project in-service dates – F2022 and F2024. There is a need for new energy resources in F2024 and a need for new capacity resources in F2025 after taking into account both BC Hydro's current DSM target and proceeding with Revelstoke Unit 6; refer to Tables 5.8 and 5.9 of the EIS.</p>

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				<p>Load Forecast</p> <p>Consistent with good utility practice and previous BCUC decisions, BC Hydro plans to the mid load forecast. The need for the Project is therefore based on the mid load forecast and no portfolios were created or evaluated using the high or low load forecasts. BC Hydro continues to consider the high and low load forecasts – described in Section 5 (‘Sensitivity Analysis’) of the 2012 Load Forecast, a copy of which is attached to the Technical Memo on Project Need – qualitatively in its analysis of uncertainty and in the case of the high load forecast, quantitatively in its contingency resource planning as described in Section 5.2.3 of the EIS. The use of the low and high load forecasts in this manner is consistent with good utility practice and the BCUC’s Resource Planning Guidelines, which provide that “probabilities or qualitative statements may be used to indicate that one forecast is considered more likely than others”:</p> <ul style="list-style-type: none">• BC Hydro would not use the low load forecast, which is a P10 (that is, there is a 90% chance the low load forecast would be exceeded for any given year during the 21 year load forecast period), to make a decision on the need for new resources. Using the low load forecast in this manner would be contrary to good utility practice. In effect, BC Hydro would be planning fail to meet its customers’ forecasted requirements 90% of the time. Among other things, this would be contrary to the legally binding requirements of the Electricity Self-Sufficiency Regulation (B.C. Reg. 315/2010);• BC Hydro only uses the high load forecast, which is a P90 (that is, there is a 10% chance that the high load forecast would be exceeded for any given year during the 21 year load forecast period), as one of the shortfall risks underpinning BC Hydro’s Contingency Resource Plans (CRPs). As set out in the response to ab_0001-060, the BCUC has previously agreed that the high load forecast is one of the shortfall risks that should inform the CRPs. <p>Demand-Side Management</p> <p>As stated above, the current DSM target strikes a balance between DSM’s relatively low cost and low environmental footprint, and the risk that the current DSM target will not deliver the anticipated energy and capacity savings. As such, no portfolios were created or evaluated using any DSM scenarios other than the current DSM target. In the EIS there are four alternatives to the current DSM target as described below. BC Hydro did not consider the DSM options in its portfolio evaluation because these options were screened prior to the portfolio analysis as follows:</p> <ul style="list-style-type: none">• DSM Option 1 is viable, and delivers less energy and capacity than the current DSM target. DSM Option 1 would advance the energy LRB gap (see Table 5.8 of the EIS) by one year and would advance the capacity LRB gap (see Table 5.9 of the EIS) by two years.

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				<ul style="list-style-type: none">• DSM Option 3 by itself is not an alternative to the Project because on its own, DSM Option 3 cannot meet the need for the Project identified in Section 5.2 of the EIS. DSM Option 3 would need to be combined with supply-side resources to be a potential alternative to the Project, please see Section 5.2.3. DSM Option 3 would defer the energy LRB gap by five years and would not defer the capacity LRB gap.• BC Hydro is of the view that DSM Options 4 and 5 are not viable alternatives to the Project for the reasons set out in Section 5.4.2.3. BC Hydro does not undertake portfolio analysis using resources that are not viable. <p>Please also see the Technical Memo: Demand-side Management.</p> <p>Potential Oversupply and Market Pricing</p> <p>The Section 5.5 EIS portfolio analysis examines the consequences of potential oversupply for this expected view of BC Hydro’s service area requirements. In particular, the portfolio analysis addresses a situation where the Project is placed in-service in advance of the need for energy or for capacity:</p> <ul style="list-style-type: none">• If a resource is surplus to the energy LRB set out in Table 5.8 of the EIS, the energy is valued using the mid-level Ventyx spot market forecast, which ranges from about \$25/MWh to \$50/MWh over the next 30 years (refer to Section 5.5.3.5 of the EIS). The mid-level Ventyx spot market forecast is closer to the low market price scenario than to the high price scenario. Refer to the responses to ab_0001-067 and ab_0001-128 for a discussion of spot market prices;• If a resource is surplus to the capacity LRB set out in Table 5.9 of the EIS, the surplus capacity has been given no value in the portfolio evaluations. This is a conservative assumption, because as set out in the response to ab_0001-068, capacity has some albeit varying value in the market. Applying even the low end of the capacity market value range (\$37/kW-year) described in that response would result in the Project portfolio looking even more cost-effective than the Clean and Clean +Thermal portfolios. <p>BC Hydro finds it unlikely that the Ventyx mid-level spot market pricing would move significantly lower if the exchange rate were to vary from the assumed exchange rate of \$0/97 U.S. /Cdn.</p> <p>Potential Undersupply</p> <p>BC Hydro assessed the risk of the load exceeding expectations in qualitative terms in Section 5.2.3 of the EIS. BC Hydro has a legally binding service obligation set out in the Utilities Commission Act; refer to the EIS, page 5-3. The consequences of not being able to meet customer demand at the peak load in particular could be severe. While generally external markets can be counted on to supply energy across the year (albeit with costs), it may not be possible to secure</p>

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				<p>capacity from the external market during winter peaks because: (1) the illiquid (thinly-traded) nature of the market for capacity; (2) insufficient transmission capacity; and/or (3) the U.S. market not having a surplus to sell, Refer to the EIS, Section 5, page 5-19. Consistent with good utility practice and prior BCUC decisions, BC Hydro develops CRPs because the consequences of not being able to meet customer demand at the peak load in particular could be severe. Refer to Table 5.12 and pages 5-20 and 5-12 of the EIS for a description of BC Hydro’s CRPs.</p> <p>Conclusion</p> <p>Based on the Sections 5.4 and 5.5 EIS analysis, BC Hydro concludes that the Project is the most cost-effective resource to meet the need identified in Section 5.2 of the EIS.</p>
ab_0001-143	Treaty 8 Tribal Association	V.1.S.6.4.2.1 ; page(s) 6-5; line(s) 30-38 EISG S.4.3 Comment 1-128.	<p><i>The seven-dam cascade had been previously studied and was updated so that the facility characteristics would be determined on a consistent basis with the other alternates. In particular, allowances were made for increasing the spillway capacity so that the dams could pass the probable maximum flood, and increasing the number of anchors to withstand the new maximum design earthquake. The intent was to undertake a more detailed analysis (increasing the maximum normal reservoir level at the upstream dam and replacing the post-tensioned anchors with mass concrete), only if the initial screening (Section 6.4.5.3) indicated that the seven-dam cascade could be competitive with the Project. Information Request The Proponent is requested to: a) confirm that “increasing the maximum normal reservoir level at the upstream dam” refers to increasing the reservoir level at Site 7a from 460 m as per the 2003 Cascade Study⁶ to 461.8 m in the EIS; and b) explain why the post-tension anchors were replaced with mass concrete; and c) explain the implications of this change for the cost of each of the seven cascade alternatives.</i></p> <p>6. Klohn Crippen Consultants Ltd. and SNC-Lavalin Inc. 2003. Prefeasibility Study for a Cascade of Low Consequence Structures as an Alternative to Site C.</p>	<p>As described in Section 6.1 of the EIS, the Peace Site C Project Application for an Energy Project Certificate submitted to the British Columbia Utilities Commission in 1980 described the maximum normal reservoir level of elevation 461.8 m. Since that time, the maximum normal reservoir level considered has been 461.8 m, except in the 2003 study of a cascade of seven low consequence structures for the reasons described below.</p> <p>The output of a hydroelectric generating station is proportional to the head (the difference between the reservoir level and the downstream water level (tailwater level) at the powerhouse). With the reservoir at 461.8 m the tailwater level at the Peace Canyon generating station is increased from natural conditions, reducing the output of that facility. Studies undertaken in 2010 confirmed that the increase in Project generation offsets the decrease in generation at Peace Canyon Dam. In fact, it would have been economic to increase the reservoir level above 461.8, but BC Hydro decided to forego the additional generation benefits and limit the maximum normal reservoir level to the historically defined one.</p> <p>The 2003 study assumed a reservoir level at 460.0 m at Site 7a to avoid raising the tailwater level at Peace Canyon Dam as the gains from increasing the head on the 77 MW capacity powerhouse at site 7a would be less than the reduction in capacity of the 694 MW powerhouse at Peace Canyon.</p> <p>The 2003 study concluded that the seven low consequence (i.e. higher risk) dams would generate 86% of the average annual energy of a single dam at Site C at 80% greater cost.</p> <p>EIS Section 6.4.2.1 states that a more detailed analysis (increasing the maximum normal reservoir level at the upstream dam [i.e. from 460.0 to 461.8] and replacing the post tensioned anchors with mass concrete) would only be done if the initial screening had demonstrated that the seven dam cascade could be competitive with the Project. The initial screening showed that the seven dam cascade would not be competitive so these changes were not made.</p> <p>EIS Volume 1 Appendix E Dam Alternative Means Report states: "The seven dam cascade is not</p>

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				<p>directly comparable to the Site C Base Case [the Project] for the following reasons:</p> <ul style="list-style-type: none"> • dam 7a has a maximum normal reservoir level of El. 460.0 m, 1.8 m lower than the Site C Base Case, which reduces the energy; and • the stability of the seven dams relies on the use of post tensioned anchors, which means that the longevity of these structures may be less than at Site C where the stability is provided by the weight of the structures." <p>These two differences would be offsetting with respect to the relative energy cost. Increasing the maximum normal reservoir level of dam 7a to El. 461.8 m would increase the gross head to 6.8 m, which would increase the generation from the cascade by about 4% without increasing the cost as the dam components were all sized and coasted based on a gross head of 7.5 m. However, as noted above this would decrease the generation from Peace Canyon Dam. Replacing the post tensioned anchors with concrete so that stability would be provided by weight alone would significantly increase the cost of the dams. The intent was to carry out detailed studies (increasing the maximum normal reservoir level at dam 7a and cost estimates for replacing the anchors), only if the initial screening indicated that the seven dam cascade would be competitive with the Project.</p> <p>Note that the Canadian Dam Association Technical Bulletin: Structural Considerations for Dam Safety 2007 Section 4.9 states "Generally, structural anchors should not be used as a primary stability means in the design of new gravity structures."</p>
ab_0001-144	Treaty 8 Tribal Association	V.1.S.6.4.3 ; page(s) 6-11; line(s) 12 EISG S.4.3 Comment 1-129.	<p>Table 6.1 Energy Cost Ratios Comments In its most recent response to the T8FNs concerning alternative cascade hydro-electric developments on the Peace River, the Proponent indicated the following: <i>The potential run-of-river projects identified on the Peace River system had unit energy costs of more than \$300/MWh, which resulted in them being excluded from further analysis.</i> The T8FNs are unable to reconcile this statement about the cascade alternatives with the information provide in the EIS, including in Table 6.1, which appears to show that the seven dams have an energy cost ratio of 1.76:1, using the value for Site C presented in the EIS (namely \$99/MWh), this places the unit energy cost for the alternatives at \$175/MWh. BC Hydro has provided several energy cost ratios in relation to the proposed Project since 2003. This information is assembled in Appendix B to this submission. Information Request BC Hydro is requested to: a) confirm that, if the energy cost ratio of Project A to Project B is 1.5, that the levelized unit energy cost (in \$/MWh) of Project A will be 50% greater than that of Project B and, if this is not the case, explain in detail the relationship between these two measures of cost; b) provide current cost information for Site 7b and Low Site C developed collectively (presuming that Site 7b is developed first) and individually, presented in the same format as</p>	<p>In accordance with both Sections 4.2 and 4.3 of the EIS Guidelines, and the Canadian Environmental Assessment Agency's Operational Policy Statement: Addressing "Need for", "Purpose of", "Alternatives to" and "Alternative Means", the analysis of "Alternatives To" the Project is a separate process from the analysis of "Alternative Means" of carrying out or implementing the Project. The cascade alternatives were surveyed in the analysis of Alternative Means, rather than in the Analysis of Alternatives to the Project. The analysis of Alternatives to the Project is a planning-level tool for identifying portfolios of preferred resources. The analysis of Alternative Means of carrying out the Project is a part of engineering design to determine the preferred method of implementing or carrying out the Project.</p> <p>As referenced in the comment, as part of the identification of "Alternatives to the Project", the 2010 Resource Options Report (2010 ROR) identifies run-of-river generation potential in the Peace Region. The 2010 ROR does not survey the alternate means of carrying out the Project.</p> <p>BC Hydro has calculated a conceptual-level POI UEC for the 7b option to be \$175 to \$225. This cost is higher than the alternative resource options selected in the portfolio analysis described in Section 5.5 of the EIS, as identified in the Technical Memo: Alternatives to the Project. As a result, the inclusion of option 7b in the portfolio analysis would not change the conclusion of the portfolio analysis.</p>

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			Table 1 of Volume 1, Appendix F as follows: total direct costs, indirect costs, contingencies, total construction and development costs (in real dollars), inflation costs, interest during construction and total construction and development costs (nominal dollars) and total annual operating costs (i.e. the identical costs to those provide for Site C in Volume 1, Appendix F); c) provide current cost and energy information for Site 7a and Site 7b (as contemplated in the 2003 Cascade Study but with the Site 7a reservoir at 461.8 m) in order to	<p>As described in Section 6.4.3 of the EIS, the energy cost ratio was the criterion developed to assess the economic feasibility of alternate means. An energy cost ratio greater than 1.00 indicates that compared to the Project, an alternate produces higher cost energy, or produces less energy, or produces less energy at a higher cost. The energy cost ratio is determined from the capital cost and the annual average energy. Unlike the UEC, sustaining capital, water rentals, operating costs and grants in lieu were not included. Differences in the operating costs were taken into account in the assessment of functionality. For example, the seven dam cascade scored poorly in this category since there would be seven powerhouses with a total of 116 small generating units.</p> <p>As stated in EIS Volume 1 Appendix F Part 1, the Project has “... reached a level of project definition to characterize the [project cost estimate] as a Class 3 cost estimate...” The alternative means of delivery are not at this same level of project definition and it is therefore not appropriate to compare the components of the cost estimates.</p> <p>Section 4.3 of the EIS Guidelines state that:</p> <p>“The EIS must identify and consider the potential environmental effects of alternative means of carrying out the project that are technically and economically feasible. The proponent will complete the following procedural steps for addressing alternative means:</p> <ul style="list-style-type: none">• Identify the alternative means to carry out the Project.<ul style="list-style-type: none">o Develop criteria to determine the technical and economic feasibility of the alternative means; ando Identify those alternative means that are technically and economically feasible, describing each alternative means in sufficient detail.• Identify the environmental effects of each alternative means.<ul style="list-style-type: none">o Identify those elements of each alternative means that could produce effects in sufficient detail to allow a comparison with the effects of the Project.• Identify the preferred means.<ul style="list-style-type: none">o Identify the preferred means based on the relative consideration of environmental effects; and of technical and economic feasibility; ando Determine criteria to examine the environmental effects of each remaining alternative means to identify the preferred means.”<p>The assessment of seven alternates described in EIS Section 6 Alternative Means of Carrying out the Project and EIS Volume 1 Appendix E meet the requirements of the EIS Guidelines and no further work is required.</p><p>For clarification, the use of two 7.5 m high dams at sites 7a and 7b rather than a 15 m high dam at site 7b would likely be less economic since, as described in EIS Section 6.4.3 alternates</p>

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				<p>consisting of two or more dams have two important disadvantages: multiple dams are less energy-efficient and they cost more to build.</p> <p>The contingency for the Project given in EIS Volume 1 Appendix F Project Benefits Supporting Documentation Part 1 Project Cost Estimate is appropriate given the level of design and investigations that have been carried out for the Project.</p> <p>As described in EIS Volume 1 Appendix E appropriate contingencies were applied to each alternate means considered.</p> <p>It is not germane to the environmental assessment to provide an updated UEC for the seven dam cascade as it has been demonstrated in EIS Section 6 Alternative Means of Carrying out the Project and EIS Volume 1 Appendix E that this alternative is uneconomic.</p>
ab_0001-145	Treaty 8 Tribal Association	V.1.S.6.4 V.1.S.6.4.4.3 ; page(s) 6-3, 6-4, 6-14 , 6-15; line(s) 39-41, 1, 16-18, 15-18, EISG S.4.3 Comment 1-130.	<p><i>During the period 2001 to 2006 when BC Hydro was reconsidering development of a hydroelectric project at Site C, four reviews of alternative means of developing the hydroelectric potential in the Site C Flood Reserve were undertaken. These reviews ranged in level from a three-day workshop to prefeasibility studies. The information contained in the Facilities Characteristics Matrix was used to assess the relative differences between the potential effects on the socio-economic environment of each alternate and the Project as follows: ... Construction effects on First Nations, including: • Traditional lands and uses • Economic opportunities • Public interest and quality of life</i></p> <p>Comments The T8FNs note for the consultation record that we had no involvement with the Proponent in the evaluation of alternative means of carrying out the proposed Project, including in relation to: §§ determination of appropriate criteria and indicators; §§ determination of appropriate weighting of criteria and indicators; §§ identification of potential alternative means; and §§ multiple accounts evaluations exercises. A meeting was held to inform the T8FNs of the analysis of alternative means analysis after the fact in October 2011. In response to concerns raised by the T8FNs in relation to the inadequate use of baseline information concerning First Nations and the use by BC Hydro of its consultants as replacements for actual First Nation representatives on the reviews conducted for the alternatives analysis, the Proponent indicated the following: <i>In particular, the analysis was based on existing quantitative and qualitative knowledge of resources that were known to be utilized by First Nations and on information about resources important to First Nations provided by them during Site C Stage 2 engagement. And later: The consultants who prepared the Alternate Sites report were aware from a variety of sources, including BC Hydro, that Treaty 8 First Nations had rights to hunt, fish and trap. BC Hydro had</i></p>	<p>As described in Volume 5 Appendix A06.2 (BC Hydro Consultation Summary), BC Hydro and T8TA engaged in preliminary discussions about the scope and timing of consultations on alternatives to the Project and alternative means of carrying out the Project (alternative sites), at meetings on February 8, February 25, March 8, March 24, and April 11, 2011. At the April 11, 2011 meeting, BC Hydro advised that its consultants had completed a report on alternative sites (Review of Alternate Sites on the Peace River), and requested a meeting with T8TA to discuss the report. In a conference call on April 15, 2011, BC Hydro provided an overview of the process it envisioned for future consultations on alternative sites. A copy of the Alternate Sites report was provided to T8TA on April 29, 2011. At a meeting on September 6, 2011, the parties agreed to schedule a technical meeting on the Alternate Sites report, and a date of October 20 was determined to work for the parties. A final version of the Alternate Sites report, the only substantive change to which was the addition of an addendum, which considered the implications of the updated dam design, was provided on October 13, 2011. A meeting was held on October 20, 2011 with key BC Hydro engineering staff and BC Hydro engineering consultants, as well as T8TA representatives and their technical advisors, to review the findings of the Alternate Sites report.</p> <p>At the October 20, 2011 meeting on the Alternate Sites report, T8TA asked several technical and clarifying questions in the meeting, and followed up with a written list of those and additional questions on December 8, 2012. BC Hydro provided written responses to those questions on February 24, 2012 and April 11, 2012.</p> <p>Pursuant to the Environmental Assessment Participation Agreement, BC Hydro provided funding to T8TA to engage consultants with engineering expertise to support review of the Alternate Sites report.</p> <p>The analysis included in the Alternate Sites report was based on existing quantitative and qualitative knowledge of resources that were known to be utilized by First Nations and on information about resources important to First Nations provided by them during Site C Stage 2</p>

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			<p><i>information from a number of First Nations that indicated that they exercised Treaty rights in the Peace River valley. In the absence of information indicating that certain areas were not used, the underlying assumption was that those rights were exercised throughout the Project area for each of the alternate sites reviewed. The T8FNs are unclear as to what constitutes the information concerning First Nation land use, economy and socio-economic conditions “provided ...during Site C Stage 2 engagement” The T8FNs Community Assessment Baseline Profile and TLUS were not undertaken until Stage 3 and following the conclusion of the alternate sites review. As is evident from the information provided by the T8FNs in Sections 19 and 34 of the EIS, some areas of the Peace River valley are used more than others and the assumption that “rights were exercised throughout the proposed Project area for each of the alternate sites reviewed” is not accurate. Information Request The Proponent is requested to: a) identify the specific “quantitative and qualitative knowledge of resources that were known to be utilized by First Nations” and the “information about resources important to First Nations provided by them during Site C Stage 2 engagement” that was relied upon by BC Hydro; b) indicate how the detailed information pertaining to First Nation land use, economy and socio-economic conditions provided since the conclusion of Stage 2 affects the findings of the alternative means analysis; c) identify the cultural, heritage and First Nation land use criteria that were considered in the multi-attribute analysis, and if none were considered, explain why not; and d) update the multi-attribute decision making framework, including relevant sections of Appendix D – Socioeconomic Environment Matrix to include cultural, heritage and First Nation land use criteria and updated First Nation land use, economic and socio-economic information.</i></p>	<p>consultation. For example, the potential effects of the various alternates on hunting, fishing and trapping were considered in the evaluation process. See the Alternate Sites Report, Appendices C and D, the Biological Environment Matrix and Socio-Economic Environment Matrix, respectively, for a list of sub-accounts related to First Nations values which include, but were not limited to, archaeology sites, fishing, hunting, trapping, and traditional land uses.</p> <p>The Moberly River is known to have importance to the First Nations for its fisheries, hunting, and spiritual importance. In order to take the importance of the Moberly River to First Nations into account in the analysis of alternate sites, a sensitivity analysis, as described in Appendix E Section 12.3.2, which favoured the Moberly River in its weightings was conducted. The conclusions of the study were unchanged even in the extreme case where all of the biological value was placed on the aquatic resources of the Moberly River by weighting them 100% relative to other fish bearing courses (including the main stem of the Peace River) which were thus assumed to have no value, and putting no value on terrestrial resources.</p> <p>Since the conclusion of the Alternate Sites report, BC Hydro has reviewed information received from Aboriginal groups respecting their use of lands and resources. Given that the two significance findings in the EIS relevant to the study – current use of three cultural sites along the Peace River by Aboriginal groups, and the changes to the Moberly River grayling population -- BC Hydro has reviewed the Alternate Sites Report to assess whether the conclusion of the study stays the same. Other potentially-viable alternates for the Project would also have inundated the cultural sites identified at Attachie, Bear Flats and Farrell Creek. The potential effects of the Project on the grayling population were contemplated at the time the study was done, as identified above. As a result, an update of the multi-attribute decision making framework is not warranted.</p>
ab_0001-146	Treaty 8 Tribal Association	V.1.S.6.4.5.6 ; page(s) 6-23 6-24 ; line(s) 42-43 1-4 EISG S.4.3 Comment 1-131.	<p><i>The Alternates Study concluded that: • There are no environmental factors that would eliminate an alternate • The relative differences in environmental effects and functionality between alternates are small • The small relative differences in benefits between the alternates do not justify the greater costs</i> Comments The EIS concludes, from the perspective of the Proponent, that the proposed Project will have direct and/or cumulative significant residual adverse environmental effects on the following valued components: §§ fish and fish habitat §§ wildlife resources §§ vegetation and ecological communities §§ current use of lands and resources for traditional purposes §§ greenhouse gas emissions This is a long list of significant effects requiring justification in order for the Province to issue an environmental assessment certificate and for Canada to issue a Decision Statement. Information Request The Proponent is requested to: a) indicate the</p>	<p>Of the alternates considered by BC Hydro, none were rejected because of environmental effects. The EIS Guidelines do not require the Proponent to speculate on the environmental effects that would eliminate an alternate that has not been considered.</p> <p>Section 6 and Appendix E describe the process that was used to assess the relative differences between the environmental effects of the alternate means. It is not necessary to determine the significance of the effects of each of the alternate means in order to meet the requirements of Section 4.3 of the EIS Guidelines.</p>

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			nature and extent of environmental factors that would have to exist in order for an alternate to have been eliminated (in other words, what in the opinion of the Proponent is an example of an environmental effect in relation to a hydroelectric project that cannot be justified); and b) explain how the conclusion was made that the relative differences in environmental effects between the alternates are small given that the EIS provides no indication as to the potential significance of the adverse environmental effects of the alternates.	
ab_0001-147	Treaty 8 Tribal Association	V.1.S.7.1.2.1 ; page(s) 7-3; line(s) 9-15 EISG S.5 Comment 1-132.	<i>Proceeding with the Project avoids dependable capacity resources such as natural gas-fired SCGTs and/or pumped storage facilities. Therefore the long-term value of the Project's dependable capacity is the avoided cost of a SCGT (within the 97% Clean Energy Act clean or renewable target) and/or pumped storage, which have unit capacity costs of between \$89/kW-year up to \$440/kW-year (refer to Table 5.38, Section 5). Comments</i> Table 5.14 (page 5-23) indicates that, with the proposed Project, there will be a substantial capacity surplus through F2030. Information Request The Proponent is requested to: a) indicate whether the avoided cost of a SCGT or of pumped storage is used to evaluate the capacity value of the surplus capacity provided by the proposed Project and, if so, explain why it makes sense to attribute the value of avoided capacity resources to surplus capacity; b) indicate the value of surplus capacity to B.C. Hydro on the export market; and c) explain why B.C. Hydro would consider pumped storage as the avoided capacity resource, when it is far more expensive than the alternative (SCGT).	No: any capacity surplus is conservatively given no value. Please see the responses to ab_0001-068 and ab_0001-142. BC Hydro can consider SCGTs as the avoided capacity resource only up to the 93% Clean Energy Act clean or renewable target. Therefore, the long-term value of the Project's dependable capacity is the avoided cost of a SCGT (within the 93% Clean Energy Act clean or renewable target) and/or pumped storage.
ab_0001-148	Treaty 8 Tribal Association	V.1.S.7.1.2.2 ; page(s) 7-4; line(s) 1-10 EISG S.5 Comment 1-133.	<i>Proceeding with the Project avoids higher cost clean or renewable intermittent resources (referred to as Available Resources in Section 5). The long-term value of the Project's 5,100 GWh/year of average energy is based on the avoided cost of alternative resources, and falls into the following range (\$F2013): • \$135/MWh (\$F2013), which is the adjusted weighted average price resulting from the most recent, broadly-based BC Hydro energy acquisition process, the Clean Power Call (about 3,000 GWh/year of firm energy) • \$131/MWh (\$F2013), which is the adjusted weighted average price of the clean energy resources that make up the portfolios shown in Table 5.42, Section 5, based on pricing from the 2010 Resource Options Report</i> Information Request The Proponent is requested to: a) indicate if, during the years in which the energy from the proposed Project creates a surplus situation, as indicated in Table 5.13, the avoided cost of alternative resources is nevertheless used to determine the value of the proposed Project's output; b) estimate, for the years when the proposed	The analysis of the cost-effectiveness of the Project against alternatives is predominantly done through portfolio analysis which considers resource timing and electricity market trade value in surplus conditions. In particular, surplus energy is valued using the Ventyx Spring 2012 mid-spot market forecast and surplus capacity is conservatively given no value. Please see the responses to ab_0001-067, ab_0001-068, ab_0001-128 and ab_0001-142 and the Technical Memo: Alternatives to the Project. The adjusted UEC values provided in Section 5, Table 5.42 of the EIS are part of the block analysis and indicate the high-level, long-term benefits of the Project. The block adjusted UEC values are a proxy for the longer term comparison of the Project and the alternatives over their project lives. This simplified longer term analysis assumes consistent resource timing for all options (all in one year, with the actual in-service date not relevant to the analysis) and assesses only some of the operational considerations excluding trade value. Unlike portfolio analysis, UECs do not account for the timing of resources.

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			Project's energy output, or a part thereof, are surplus to B. C. Hydro's energy needs and thus create a surplus in the LRB, the value of the proposed Project's surplus output on the export markets; and c) provide a weighted energy valuation that takes into account the export market valuation for the portion of the proposed Project's output that is surplus to B.C. Hydro's energy needs and the avoided cost valuation described in the citation for the portion of its output that is needed to maintain the LRB.	
ab_0001-149	Treaty 8 Tribal Association	V.1.S.7.1.3 ; page(s) 7-4; line(s) 25-27 EISG S.5 Comment 1-134.	<i>Costs associated with generation projects are recovered from ratepayers based on the revenue requirements collected by BC Hydro, as regulated by the British Columbia Utilities Commission (BCUC).</i> Information Request The Proponent is requested to describe how the BCUC normally takes export revenues into account in determining BC Hydro's revenue requirement.	The requested information is outside the scope of the environmental assessment for the reasons set out in the response to ab_0001-022, namely that the EIS "is not intended to constitute" a CPCN for the Project. Nor is the environmental assessment a revenue requirement/rate recovery review; revenue requirements and rate recovery are decided by the BCUC. Section 7.2.3 of the EIS describes the role of the BCUC with respect to the Project, which is to review the costs associated with the Project should it proceed in the context of BC Hydro's revenue requirements: "Costs associated with generation projects are recovered from ratepayers based on the revenue requirements collected by BC Hydro, as regulated by the [BCUC] ... The manner of cost recovery is determined by the BCUC ...".
ab_0001-150	Treaty 8 Tribal Association	V.1.S.7.1.3 ; page(s) 7-5; line(s) 1-6 EISG S.5 Comment 1-135.	<i>Figure 7.2 provides a directional depiction of the expected annual costs to ratepayers of the Project and a comparable block of either clean or clean plus thermal alternative resources. The Project's annual costs are calculated based on assumptions regarding the expected cost recovery from ratepayers. The manner of cost recovery is determined by the BCUC, and may therefore differ from these assumptions.</i> Information Request The Proponent is requested to describe the assumptions regarding the manner of cost recovery from ratepayers, which underlies Figure 7.2, and indicate the ways in which this manner of cost recovery might vary based on prior decisions of the BCUC.	As indicated in Section 7, Figure 7.2 of the EIS, portfolio costs are recovered over the period that ratepayers would benefit from the energy and capacity provided. Recovery for the Project is assumed to be over the 70-year financial planning period, and is expected to be for the Project's cost of service. Recovery for other portfolios is assumed to be over an average 30-year Electricity Purchase Agreement (EPA) term (based on the results of the Clean Power Call), and would be subject to the terms of the EPA. See Section 7.1.3 (page 7-5) of the EIS. The request to speculate on the manner in which the BCUC may decide Project cost recovery issues is outside the scope of the environmental assessment for the reasons set out in the response to ab_0001-149.
ab_0001-151	Treaty 8 Tribal Association	V.1, S.7.2.2.2 ; page(s) 7-9; line(s) 16-18 EISG S.5 Comment 1-136.	<i>Water rentals are currently indexed to escalate at the rate of Canadian Price Index inflation and are therefore expected to stay constant on a real dollar basis.</i> Information Request The Proponent is requested to clarify whether water rates have been calculated using a different approach in the past 20 years, and whether it anticipates any changes to the current approach.	BC Hydro calculated water rentals in accordance with the Water Regulation; refer to Section 7.2.2.2 of the EIS, which specifically provides that "[w]ater rentals are currently indexed to escalate at the rate of the Canadian Price Index inflation ...". The requested information concerning how approaches to calculating water rentals over the last 20 years may have differed from the current Water Regulation, or speculating on whether the current Water Regulation approach may differ in the future, is outside the scope of the environmental assessment.
ab_0001-152	Treaty 8 Tribal Association	V.1.S.7.2.2.3 ; page(s) 7-9 7-10 ; line(s) 20-25 1 EISG S.5	<i>The Project will provide incremental returns to the provincial government during operations through its contribution to BC Hydro's regulated return on equity and government dividend. Through Heritage Special Direction HC1, the province requires BC Hydro to make annual dividend payments to the province of 85% of BC Hydro's net income, as long as BC Hydro's debt-equity ratio, after deducting</i>	The requested information is not germane to the environmental assessment. The benefits to Government Revenues described in Section 7.2.2.3 are provided by the incremental return on equity.

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		Comment 1-137.	<p><i>the payment, is not greater than 80:20. Table 7.5 Estimated Contribution of the Project to the Province of B.C.'s Return on Equity and Dividend (Selected Years)</i></p> <p>Comments The 2013 Provincial Budget reads as follows: <i>While BC Hydro normally provides an annual dividend to the province equal to 85 per cent of its net income, the amount of the dividends are constrained by a requirement that the corporation maintain an 80:20 debt to equity ratio. As a result of this constraint, the annual dividend payment is forecast to average \$245 million – or approximately 40 per cent of average net income – over the next three years.</i>⁷</p> <p>Comments Table A-17 of the 2013 Provincial Budget projects BC Hydro debt to be \$18,854,000,000 in 2015/16 up from \$12,978,000,000 in 2011/12 or increasing at a rate of nearly 10% per year.⁸</p> <p>Information Request The Proponent is requested to recalculate the contribution to dividend in Table 7.5 based on a contribution of average net income of i) 20%, ii) 40% and iii) 60% at 1, 5, 10, 25 and 50 years from the proposed Project's in-service date.</p> <p>7. Government of British Columbia. February 2013. Budget and Fiscal Plan 2103/14 – 2015/16, at p. 14</p> <p>8. Ibid., at p.140.</p>	
ab_0001-153	Treaty 8 Tribal Association	V.1.S.7.2.2.3 ; page(s) 7-9; line(s) 39-43 EISG S.5 Comment 1-138.	<p><i>For the Project, the incremental return on equity was estimated by taking 30% of the project's depreciated capital asset and calculating an 11.78% return on this amount. This analysis assumes that the sole effect on BC Hydro's return on equity is due to the increase in BC Hydro's capital asset base. Table 7.5 Estimated Contribution of the Project to the Province of B.C.'s Return on Equity and Dividend (Selected Years)</i></p> <p>Comments Presumably, in Year 1 the value of the proposed Project is \$7.9 billion in real dollars. However, 11.78% of 30% of \$7.9 billion is \$279 million, which differs from the value in Table 7.5.</p> <p>Information Request BC Hydro is requested to: a) provide a breakdown of the calculations used to determine the values in Table 7.5; and b) elaborate on what other factors besides the increase in BC Hydro's capital asset base could have an effect on BC Hydro's return on equity.</p>	<p>The value of \$279 million provided in the comment is calculated in dollars at the Project in-service date (i.e. F2022). The amounts in Table 7.5 are provided in 2012 real dollars, and are adjusted for inflation between F2022 and F2012.</p> <p>As described on Page 7-9 (lines 18-22) the incremental return on equity for the Project is based on the capital asset base and the rate of return. The rate of return is determined by the BCUC "on the basis of a comparison with the pre-tax rate of return earned by private utilities in B.C. ..."</p> <p>Should the BCUC modify the rate of return earned by BC Hydro there would be an effect on the incremental return on equity.</p>
ab_0001-154	Treaty 8 Tribal Association	V.1, S.7.3.1.1 ; page(s) 7-11 7-12; line(s) 31-35 39-40 1-2 10-11 EISG S.5 Comment 1-	<p><i>Construction of the Project will provide economic benefits at the local, provincial, and federal level, due to the purchase of goods and services for construction and the resulting increase in output from supplier industries, GDP, and household income. The Project will provide benefits to a range of contractors and consultants supplying direct and indirect goods and services to the Project.... For the Northeast Development Region (NEDR), the increased output would be through the expansion of existing businesses or the establishment of new ones, including branch and subsidiary operations of major</i></p>	<p>Aboriginal-owned businesses in the LAA will have the opportunity to participate on Project contract opportunities at least to the same extent as non-Aboriginal-owned businesses. In addition, BC Hydro's Aboriginal Contract & Procurement Policy is expected to increase Aboriginal participation. Please also see the response to ab_0001-503.</p> <p>The EIS is in accordance with the EIS Guidelines. The requested information is outside the scope of the environmental assessment. The GDP regional estimate is for all businesses in the LAA.</p>

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		139.	<i>suppliers who do not already have offices in the NEDR. Table 7.7 Economic Development Benefits During Construction Period</i> Comments The EIS does not describe the likely relationship between BC Hydro and its prime contractor or major sub-contractors. The possibility that contractors and suppliers that exist in the proposed Project area will not have the capacity to take advantage of major construction opportunities has often been raised by the T8FNs and other Aboriginal groups. Information Request BC Hydro is requested to: a) indicate the number of BC-based companies and of Canadian-based companies that have the capacity to be the prime contractor for the construction of the proposed Project; and b) provide estimates of the proportion of GDP, output or household income associated with the proposed Project will accrue to Aboriginal businesses and workers based in the NEDR.	
ab_0001-155	Treaty 8 Tribal Association	V.1, S.7.3.1.1 ; page(s) 7-13; line(s) 1-2 EISG S.5 Comment 1-140.	<i>Estimated Increases in Output in Top Five Supplier Industries During Construction Phase</i> Information Request The Proponent is requested to: a) estimate the proportion of NEDR region supply capacity for the following five supplier industries that is held within Aboriginal-based companies: §§ 1. Finance, insurance, real estate, and renting and leasing §§ 2. Manufacturing §§ 3. Professional, scientific, and technical services §§ 4. Wholesale trade §§ 5. Operating, office, cafeteria, and laboratory supplies b) identify all BC Hydro plans, policies and programs to support regional Aboriginal-based companies and entrepreneurs gaining entry and expanding market share in the above-noted key supplier industries.	Aboriginal-owned businesses in the LAA will have the opportunity to participate on Project contract opportunities at least to the same extent as non-Aboriginal-owned businesses. In addition, BC Hydro's Aboriginal Contract & Procurement Policy to increase Aboriginal participation. Please also see the response to ab_0001-503. Volume 1 Appendix F Part 1 Local Participation Strategies Section 5.1 describes the current status of the Aboriginal business community in the NEDR. Volume 1 Appendix F Part 1 Sections 5.2 and 5.3 describe the policies and capacity building activities with respect to Aboriginal peoples and businesses. Section 18.4.4.2 describes mitigation measures for economic development associated with local Aboriginal peoples.
ab_0001-156	Treaty 8 Tribal Association	V.1; S.7.3.1.2 ; page(s) 7-13; line(s) 20-21 EISG S.5 Comment 1-141.	<i>Table 7.9 Average Annual Economic Development Benefits During Operations Phase</i> Comments Table 7.9 indicates that the vast majority of economic development benefits will not accrue to the NEDR economy, but to other parts of British Columbia and to a lesser degree, to other parts of Canada. Information Request BC Hydro is requested to: a) identify what key goods and services will be procured during operations, and current regional and Aboriginal-based company capacity to provide those goods and services; and b) identify all targets, preferred procurement strategies, capacity building support or other plans, policies and programs of BC Hydro designed to support engagement of regionally based Aboriginal companies during the operations phase.	Section 4.5.1.4 describes the maintenance activities for the dam, generating station and spillways. Maintenance activities for each of the Site C generating units would be performed during annual outages ranging from a one to two days for each a year to a five to six week outage every six years. Outages would be staggered so that only two units would be taken out of service each year for maintenance. These outages would typically occur consecutively during a period of low demand for energy when the other units would be capable of passing the inflow from upstream, i.e. there would be no spill. Other specific maintenance and capital investment activities will occur at a lower frequency as required. Please see the Technical Memo: Dam Safety for operation, maintenance and surveillance of the reservoir retaining structures. Section 4.5.2.3 describes the maintenance activities for the Hudson's Hope Berm. Section 4.5.3 describes the maintenance activities for the substation and transmission lines.

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				<p>Section 4.5.6 describes the maintenance activities for the access roads. Section 4.5.7 describes sustaining capital expenditures.</p> <p>Volume 1 Appendix F Part 1 Sections 5.2 and 5.3 describe the policies and capacity building activities with respect to Aboriginal peoples and businesses. Section 18.4.4.2 describes mitigation measures for economic development associated with local Aboriginal peoples.</p> <p>Please also see the response to ab_0001-503.</p>
ab_0001-157	Treaty 8 Tribal Association	V.1, S.7.3.1.2 ; page(s) 7-14; line(s) 20-23 EISG S.5 Comment 1-142.	<p><i>BC Hydro has worked to engage local businesses with development work on the Project. To date, more than two dozen companies with local or regional offices are engaged with the Project, with a large number of additional vendors supplying goods and services to the Project.</i> Information Request The Proponent is requested to: a) indicate how many of the “local businesses” engaged to date have their head offices in the Peace River Regional District and in which municipality or First Nation those offices are located; b) identify how many of these more than two dozen companies have been Aboriginal-based businesses; and c) identify what proportion (in dollars) of opportunities to “local businesses” from development work on the proposed Project has gone to Aboriginal-based businesses.</p>	<p>Volume 1 Appendix F Part 2 Local Participation Strategies Section 3.3 describes the local participation to date on the Project.</p> <p>Volume 1 Appendix F Part 2 Section 5.3 describes the directed procurement for Stage 2 general contractor work that was provided to First Nations companies.</p> <p>The requested information on spending is outside the scope of the environmental assessment.</p>
ab_0001-158	Treaty 8 Tribal Association	V.1, S.7.3.2.2 ; page(s) 7-16; line(s) 16-17 22-23 EISG S.5 Comment 1-143.	<p><i>Table 7.13 Estimated Employment Provided by the Project After Project In-Service Date It is expected that approximately 50% of the direct operations jobs on the Project will be located in the NEDR.</i> Information Request BC Hydro is requested to: a) estimate (with assumptions and rationale provided) the proportion of the operations phase employment likely to accrue to regional Aboriginal people; b) identify any BC Hydro targets for operations phase Aboriginal employment c) identify all plans, policies and programs BC Hydro has to maximize Aboriginal operations phase employment; d) identify any long-term training initiatives BC Hydro is committed to in order to build Aboriginal capacity to obtain employment in BC Hydro operations, including the degree and duration of financial commitment; and e) identify whether BC Hydro has a written about strategy and/or Aboriginal labour strategy for the proposed Project and, if so, to provide them for the public record.</p>	<p>Aboriginal people will have the opportunity to participate in Project employment opportunities at least to the same extent as non-Aboriginal people. However, BC Hydro is not in a position to estimate the level of Aboriginal employment during the operations phase.</p> <p>BC Hydro has an Aboriginal Education and Employment Strategy, publicly available at http://www.bchydro.com/content/dam/BCHydro/customer-portal/documents/corporate/community/bc-hydro-aboriginal-education-employment-strategy-brochure.pdf.</p> <p>Volume 1 Appendix F Part 2 Local Participation Strategies, Section 5.3, describes the actions BC Hydro is taking with regard to capacity building for Aboriginal people.</p> <p>Please also see the response to ab_0001-494.</p>
ab_0001-159	Treaty 8 Tribal Association	V.1, S.7.3.2.3 ; page(s) 7-17; line(s) 1-3 EISG S.5 Comment 1-	<p><i>BC Hydro is planning for approximately 15% of workers to live in local communities and commute daily to the work site. If additional workers are available, both locally and regionally, BC Hydro would be able accommodate this increase.</i> Comments Different shift length rotations, especially but not limited to long distance commuters and work camp-based employees, may have</p>	<p>The transportation analysis (Volume 4 Appendix B section 2.1.3) assumes a shift schedule of 5 weeks on and one week off. The requested information on the effects of shift schedules is outside the scope of the environmental assessment.</p>

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		144.	different impact outcomes on workers and their families. Information Request The Proponent is request to: a) provide more information on proposed and acceptable shift schedules for i) camp-based regional workers and ii) long-distance commuters; and b) identify BC Hydro’s understanding, assessment and plans, policies and programs in relation to: §§ the effects of having people work away from their home communities and families for extended periods of time with rotational work; and §§ the beneficial and adverse impacts of the work environment at the proposed Project on T8FNs members. In other words, “What could it be like for T8FNs members to work at constructing the proposed Project, not only economically but also mentally/spiritually/psychologically?”	
ab_0001-160	Treaty 8 Tribal Association	V.1, S.7.3.2.3 ; page(s) 7-17; line(s) 1-3 EISG S.5 Comment 1-145.	<i>BC Hydro is planning for approximately 15% of workers to live in local communities and commute daily to the work site. If additional workers are available, both locally and regionally, BC Hydro would be able accommodate this increase.</i> Comments The Proponent has not described the anticipated sources of local labour or demonstrated an availability of local labour from those sources. For example, the 15% of workers living in local communities could be largely comprised of outside workers who move into the local communities. Information Request The Proponent is asked to: §§ indicate the percentage of employment during construction of the proposed Project expected to be taken by people living within the RAA; §§ explain how it intends to ensure that the percentage of employment taken by local people living within the RAA described in part a) is achieved; §§ describe the availability of potential qualified job-seekers from local communities, including a description of the unemployment rates in the RAA; and §§ indicate the percentage of employment expected during construction of the proposed Project expected to be taken by i) other Canadians from outside of the RAA and ii) foreign workers.	Volume 4 Appendix A Part 3, Table 1, page A-4 describes the portion of Project labour demand expected to be hired locally. Direct, induced and indirect and displacement new population is presented in Table 5, page A-9 and A-10. In accordance with the EIS Guidelines, the labour market baseline for the LAA (PRRD and Northern Rockies Regional Municipality) is described in EIS section 17.3 and the Project labour requirements are compared with labour supply in EIS section 17.4.2. Forecasts indicate the labour force will lack sufficient numbers of suitably qualified individuals to meet Project demand in the LAA as described in EIS section 17.4.2.3, page 17-23. BC Hydro will undertake the mitigation measures presented in EIS section 17.4.3 to augment the labour supply particularly for skill areas in demand by the Project. Contractors would also be encouraged to hire locally available workers with the requisite skills. The request for further details on employment during construction is outside the scope of the environmental assessment.
ab_0001-161	Treaty 8 Tribal Association	V.1, S.7.3.3 ; page(s) 7-17; line(s) 5-7 EISG S.5 Comment 1-146.	<i>BC Hydro is committed to the advancement of economic opportunities for Aboriginal groups, both to build their capacity and to develop more sustainable long-term relationships.</i> Information Request BC Hydro is requested to: a) identify its understanding of the economic and social benefits most sought by the T8FNs and other Aboriginal groups as noted in the T8TA statement of opposition to the proposed Project, ⁹ and Sections 3.4 and 7.2 of the T8FNs Community Assessment Baseline Profile ¹⁰ ; b) identify how it considered these economic and social benefit goals/aspirations of the T8FNs and other Aboriginal groups in its impact assessment of the proposed Project; and c) provide in tabular format an initial estimate of the degree to which the proposed Project will beneficially or adversely affect the economic and social goals/aspirations	The EIS Guidelines do not require BC Hydro to present its understanding of the economic and social benefits most sought by Aboriginal groups. However, BC Hydro notes that: - Information from sections 3.4 and 7.2 of Telling a Story of Change the Dane-zaa Way: A Baseline Community Profile of Four Treaty 8 First Nations – Doig River First Nation, Halfway River First Nation, Prophet River First Nation, and West Moberly First Nations was considered in EIS section 19 current use of lands and resources for traditional purposes, section 33 human health and section 34 Asserted and Established Aboriginal and Treaty Rights, Aboriginal interests and information requirements. The Part 7 Community Baseline Report and EIS Integration Summary Table - Doig River First Nation, Halfway River First Nation, Prophet River First Nation, West Moberly First Nations was omitted from the EIS filing in error, however it was made available to the subject matter experts to assist in the preparation of the EIS. It will be submitted as part of

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			<p>identified by T8FNs and other affected Aboriginal groups.</p> <p>9. T8TA. 2010. <i>WQchiigfi Yededze? Dane Godineh Ya t’a doh aah? Kaa</i>. Declaration of this 17th day of September 2010 of the Doig River First Nations, Halfway River First Nations, Prophet River First Nations, West Moberly First Nations concerning the proposed Site C Dam on the Peace River, British Columbia.</p> <p>10. Treaty 8 First Nations Community Assessment Team and The Firelight Group Research Cooperative. 2012. Telling a Story of Change the Dane-zaa Way: A Baseline Community Profile of Four Treaty 8 First Nations – Doig River First Nation, Halfway River First Nation, Prophet River First Nation, and West Moberly First Nations.</p>	<p>the Aboriginal Group Supplementary Report</p> <p>- Please see Volume 3 Appendix B Part 3, EIS integration Summary Table, for Duncan’s First Nation describing where community profile information for that First Nation was integrated into the EIS.</p> <p>The Aboriginal Group Supplemental Report will include consideration of the Blueberry River and Saulneau First Nations Community Baseline Reports in the findings reported in the EIS. Any reports made available to BC Hydro from McLeod Lake Indian Band and Horse Lake First Nation will be considered if received in a timely fashion. Updated information will be submitted to CEA Agency and BCEAO.</p>
ab_0001-162	Treaty 8 Tribal Association	V.1, S.7.3.3 ; page(s) 7-17; line(s) 7-10 33-35 EISG S.5 Comment 1-147.	<p><i>BC Hydro has an existing Aboriginal Contract and Procurement Policy that is intended to increase the involvement of First Nations in economic opportunities associated with BC Hydro’s business activities by allowing certain procurement practices ... BC Hydro will contribute \$1 million in funding to support trades and skills training bursaries at Northern Lights College, with 50% of the funding for bursaries to be dedicated to Aboriginal students</i> Information Request BC Hydro is requested to: a) provide a copy of BC Hydro’s Aboriginal Contract and Procurement Policy; b) identify how long this Aboriginal Contract and Procurement Policy has been in place, and its success rate in terms of proportion of work that has accrued to Aboriginal-based businesses (and regional Aboriginal-based businesses) since its inception; c) identify barriers that remain to maximization of Aboriginal procurement and further actions being taken by BC Hydro to address these barriers; and d) identify the time period for the \$500,000 for Aboriginal trades and skills training, and how this level of funding was determined to be appropriate.</p>	<p>BC Hydro’s Aboriginal Contract and Procurement Policy is described in Volume 1 Appendix F Part 2 Local Participation Strategies Section 5.2. A link to the policy is provided in the references in the Appendix. Please see the response to ab_0001-503.</p> <p>Section 18.3.4 of the EIS identifies barriers and challenges for Aboriginal persons to start and grow businesses (page 18-16). Mitigation measures to address these barriers and challenges are described in Section 18.4.4.2 of the EIS. Actions being undertaken by BC Hydro with respect to the Project on Aboriginal participation in the Project are also described in Volume 1 Appendix F Part 2 Section 5.3.</p> <p>The requested information on the history and performance of the Aboriginal Contract and Procurement Policy is outside the scope of the environmental assessment.</p> <p>As described in Volume 1 Appendix F Part 2 Section 5.3, the Northern Lights College bursary “will be disbursed over a five-year period.” The appropriateness of the level of funding is outside the scope of the environmental assessment.</p>
ab_0001-163	Treaty 8 Tribal Association	V.1, S.7.4.3 ; page(s) 7-23; line(s) 23-27 EISG S.5 Comment 1-148.	<p><i>A preliminary analysis has been completed to determine the amount that the Project would increase the maximum amount of wind power that can be integrated into the BC Hydro system without affecting the reliability and security of the system. The results of the analysis show that the wind integration limit could increase by up to 900 MW with the addition of the Project.</i> Information Request BC Hydro is requested to: a) indicate the current wind integration limit of B.C. Hydro’s system; b) indicate the current energy storage capacity of B.C. Hydro’s existing hydro facilities; c) indicate the amount of energy storage provided by the proposed Project; d) indicate under what terms B.C. Hydro offers wind integration services to third party wind power developers; e) explain, in detail, how the 1100 MW of the proposed Project could increase the</p>	<p>Please see the response to ab_0001-098 for description of wind integration limits. Wind integration benefits and limits are evaluated on a system-wide basis, and are not determined for projects in specific regions.</p> <p>The current total BC Hydro system energy storage is estimated to be approximately 31,800 GWh. The Project would substantially increase the energy storage content for the upstream Williston and Dinosaur reservoirs and would also add some on-site energy storage capability. It is estimated that total BC Hydro system storage would increase by over 15% due to the Project.</p> <p>Note that Project storage is not the sole driver of the benefits of the Project to wind integration. It is also the dispatchability of the capacity that results in the benefits to wind integration.</p>

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			wind integration limit by up to 900 MW; and f) indicate whether the benefit of the proposed Project with respect to wind integration is as great for wind projects located on Vancouver Island as it is for wind projects in the Peace River area, and to explain the reasons underlying its response.	Item d) is outside the scope of the environmental assessment.
ab_0001-164	Treaty 8 Tribal Association	V.1, S.9.2.3.3.2 ; page(s) 9-33 9-35 ; line(s) 33-37 16-23 EISG S.7.2.1 Comment 1-149.	<p><i>Since 2009, BC Hydro has provided Project Area Aboriginal Groups with regular information on the Project's environmental program. Information provided included proposed study outlines for planned work, status updates for ongoing work, and study summaries for completed work. In each case, Project Area Aboriginal groups were invited to review the information and provide input. ... In some cases, BC Hydro provided Aboriginal groups with funding, available through consultation agreements, to provide for third-party technical support services, if required. BC Hydro requested that the Aboriginal groups provide input regarding the materials presented either verbally or through written follow-up. In instances where BC Hydro received feedback from Aboriginal groups on any of the project components, BC Hydro considered the input and responded in writing regarding how the input was considered and/or incorporated into the Project and/or BC Hydro's assessment.</i></p> <p>Comments Key information provided by BC Hydro to the T8FNs concerning the environmental program, including study outlines, designs and reports was only made available to the T8FNs following completion or after the point at which meaningful changes could be made. On October 19, 2009, the T8FNs provided the Proponent and the Provincial Government with the Treaty 8 First Nations' Report on Stage 2 Consultation. This Report was appended to the Proponent's Stage 2 Consultation Report,¹¹ and noted the following: <i>The T8FNs have consistently informed BC Hydro since first commencing negotiations on the Stage 2 Consultation Agreement that BC Hydro's engagement with the T8FNs came late in the process and that adequate time needed to be provided to the T8FNs to allow them to participate in the consultation process on the basis of free, prior and informed consent.</i>² <i>The T8FNs cannot be reasonably expected to provide community feedback related to the proposed Site C Project prematurely without the full disclosure of BC Hydro Stage 2 reports and studies. To assume otherwise would be to allow BC Hydro to adhere to a timeline that does not recognize the late start that was afforded to the T8FNs in the first place.</i>¹² <i>The T8FNs consistently raised concerns with BC Hydro throughout the negotiation of the Stage Consultation Agreement about the need to work collaboratively with them on study design and the need to incorporate Aboriginal science. BC Hydro representatives' only response was that the T8FNs were welcome to participate in the TAC and, in fact, often expressed their frustration that the T8FNs did not</i></p>	<p>BC Hydro understands the comment respecting written responses being provided to BC Hydro by the T8FNs to refer to several letters received from the T8FNs the week of December 17, 2012. BC Hydro did consider these submissions, and incorporated information from them into the EIS in the characterization of residual effects criteria in Section 19, and in its understanding of Treaty 8 rights in Section 34.</p> <p>As described in the Volume 5 Appendix A06.2 BC Hydro Consultation Summary, BC Hydro first engaged in consultation with the group of First Nations of what is now identified as the T8FNs in December 2007. As described in Section 9.2.3.3.1, BC Hydro and Treaty 8 Tribal Association established a Technical Advisory Representative process in 2009, which, in accordance with a joint work plan, provided a forum to exchange technical information about the Project, seek input from the Treaty 8 Tribal Association on potential environmental and socio-economic issues, and to identify information that would assist in assessing the potential effects of the Project. The TAR process resulted in the parties sharing over 75 documents, including completed studies, proposed study outlines, terms of reference, preliminary wildlife inventory results, mapping, literature summaries, information sheets, and technical presentations.</p> <p>A summary of mitigation measures suggested by Aboriginal groups, including those proposed by the T8TA, is provided in Section 34.4.2 of the EIS. This section also describes where in the EIS these suggestions were given consideration by BC Hydro. BC Hydro is committed to continuing consultation with T8TA to cooperatively explore options for mitigation. As indicated in the Environmental Assessment Participation Agreement, BC Hydro and T8TA will work in good faith to "avoid, mitigate, and manage any potential adverse Environmental Effects of the Project..."</p> <p>As described in Section 9.2.3.3.2, "(f)ollowing the submission of the EIS to the BCEAO and CEA Agency, BC Hydro will continue consultations with Aboriginal groups regarding BC Hydro's effects assessment in key areas of interest... Consultations with Aboriginal groups on potential effects of the Project focused on the following...(r)equisting input from Aboriginal groups on potential mitigation strategies".</p>

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			<p><i>see eye to eye with them on the importance of participating in that broader process.</i>¹³ <i>None of these reports [provided prior to October 2009] pertain to the cumulative socio-economicecological effects or impacts of the proposed project, the potential effects or impacts of infrastructure relating to the proposed project, and no information has been provided to assist with the development of appropriate methods or means for mitigation, accommodation or compensation.</i>¹⁴ Any “information...to assist with the development of appropriate methods or means for mitigation, accommodation or compensation” was only provided to the T8FNs in the summer and fall of 2012. Despite the very tight timeframes, the T8FNs provided written responses to the Proponent, where responses were warranted. However, due to the advanced stage of the Proponent’s EIS and the Proponent’s unwillingness to delay submission of its EIS to permit meaningful consultation, it appears that very few if any of the responses of the T8FNs were incorporated into the EIS.</p> <p>11. BC Hydro. Fall 2009. Peace River Site C Hydro Project: A Potential Source of Clean, Renewable and Reliable Power for Generations. Stage 2 Report: Consultation and Technical Review.</p> <p>12 BC Hydro. Fall 2009. Peace River Site C Hydro Project: A Potential Source of Clean, Renewable and Reliable Power for Generations. Stage 2 Report: Consultation and Technical Review. Appendix: Treaty 8 First Nations’ Report on Stage 2 Consultation, at p.3.</p> <p>13 Ibid., at p.8.</p> <p>14 Ibid., at p.9.</p>	
ab_0001-165	Treaty 8 Tribal Association	<p>V.1, S.9.2.3.3.2 ; page(s) 9-34 9-35 9-36; line(s) 28-35 1-2 42-43 1-4</p> <p>EISG S.7.2.1 Comment 1-150.</p>	<p><i>In 2011 and 2012, a major focus of consultations with Project Area Aboriginal Groups and other interested Aboriginal groups involved specific components of the Project. BC Hydro asked each Project Area Aboriginal Group to provide BC Hydro with their topics of interest to ensure that the information provided by BC Hydro through the consultation process was relevant to each Aboriginal group’s unique areas of interest. Presentation materials were discussed at a variety of venues (Chief and Council meetings, community meetings, and/or with technical representatives) and provided to multiple Aboriginal groups upon request. Presentation topics included: ... • Alternative dam site locations (alternative means of project delivery) </i>Comments With respect to alternative dam site locations, key steps in BC Hydro’s approach included the following: §§ prior to BC Hydro agreeing in April 2011 to a request by the T8FNs in January 2011 to be consulted on these site alternatives, the extent of consultation by the Proponent consisted of an email sent on May 5, 2008 to the T8FNs providing a</p>	<p>BC Hydro disagrees with the assertion that only those site alternatives that maximized the hydroelectric potential of the Peace River were considered. As BC Hydro indicated to the T8FNs in a letter dated February 24, 2012, the purpose of the Alternate Sites Study was to analyze alternate means of maximizing the development of the hydroelectric potential of the Peace River within the existing flood reserve, that is, between Peace Canyon Dam and Site C, in a cost effective manner, taking into account the effects of each alternate site in a multi-attribute analysis.</p> <p>The Alternate Sites Report considers three alternates that would not fully develop the head between Peace Canyon Dam and Site C, namely a dam at Wilder Creek, a dam at Site C1 and a dam at Site C2. This was done to analyse the costs and benefits of moving the dam upstream and by avoiding flooding of the lower portions of the Moberly River.</p> <p>The statement that BC Hydro did not make the addendum to the Alternate Sites study available to T8FNs until the filing of the January 2013 EIS is incorrect. As described in ab_0001-145, a final</p>

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			<p>link to the 2003 Cascade Study; §§ BC Hydro provided a draft of the Alternates Study to the T8FNs in April 2011; §§ BC Hydro submitted its Project Description for its preferred alternative, the proposed Project, to the BC EAO and CEA Agency on May 18, 2011 §§ BC Hydro was unable to meet with the T8FNs to discuss the Study until October 2011, five months following the submission of the Project Description; §§ At the meeting held on October 20, 2011, BC Hydro indicated that it had been instructed by the Province to consider only those site alternatives that “maximized the hydroelectric potential of the Peace River between Peace Canyon Dam and the location of the proposed Site C project”; §§ Despite concluding its addendum to the Alternates Study in August 2011,¹⁵ BC Hydro did not make this information available to the T8FNs until it was filed with the EIS in January 2013.</p> <p>15. Klohn-Crippen Berger et al. August 2011. Optimization of Project Layout and Configuration of Structures: Review of Alternate Sites on the Peace River Addendum 1 Updated Assessment Using New General Arrangement.</p>	<p>version of the report, the only substantive change to which was the addition of an addendum, which considered the implications of the updated dam design, was provided on October 13, 2011. This information is described in Volume 5 Appendix A06.2, on page 122 of 166.</p>
ab_0001-166	Treaty 8 Tribal Association	V.1, Appendix A ; page(s) 57; line(s) 16-19 27-28 EISG S.10.2.4 Comment 1-151.	<p><i>9.2 Waterborne Debris Clearing Strategy During the first five to ten years of reservoir operations additional sites for temporary or seasonal debris collection booms would be identified based on the observation of natural debris movement and collection. These additional reservoir booms would be designed to allow for boat passage. 9.3 Waterborne Debris Clearing Schedule Debris booms would be located in the Peace River in year one of the Project clearing schedule. These booms would be maintained for the duration of the construction schedule.</i></p> <p>Comments These two statements appear contradictory. Information Request Clarify whether debris clearing from the waterway will continue through the operational period, whether debris blockage of small tributaries is anticipated and, if so, whether there are there mitigation measures proposed to deal with this issue.</p>	<p>The statements refer to debris management during the operations phase, and to debris management during construction. During construction debris booms would be placed in year two to minimize downstream passage of debris at the construction site, and will remain in place during the remainder of the construction period. Booms will remain in place during operations on the upstream side of the dam and generation station, and as described in Section 9.2, additional debris booms will be placed as a component of debris management as necessary.</p>
ab_0001-167	Treaty 8 Tribal Association	V.1, Appendix E ; page(s) 74; line(s) n/a EISG S.4.3 Comment 1-152.	<p><i>Dam 7b would be located at river marker 40.5 about 11 km downstream of Hudson’s Hope. It is the most attractive dam site in the river reach located close to the downstream extent of the Gates Formation.</i> Comments The 2003 Cascade Study¹⁶ also made a similar observation: <i>Site 7b, shown on Figure 9.2, is the most attractive dam site in the river reach. p. 9-1.</i> The EIS needs to explain why this “most attractive dam site” is not being considered in greater detail for development on its own without a Low Site C project and as part of an alternative portfolio that does not include Site C. Information Request BC Hydro is requested to: a) revise the estimate of mean annual flow at Site 7b to include the inflow downstream of PCN (i.e. Maurice Creek, Lynx Creek, etc.); b) discuss</p>	<p>On its own, a dam at Site 7b would have a capacity of 238 MW, an average annual generation of 1210 GWh and a firm annual energy of 1052 GWh. Site 7b would not meet the need described in Section 5.2 of the EIS. As shown in the Facilities Characteristics Matrix in Volume 1 Appendix E, the reservoir volume at 7b would be 114 million m³, which is less than 5% of the volume for the Project. As a result 7b would have little dispatchable capacity.</p> <p>Please see the Technical Memo: Hydro-Electric Storage and Dispatchable Capacity.</p> <p>Please see the response to ab_0001-144.</p> <p>The following information is provided for clarification:</p>

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			the potential for and benefits of synchronous generation of flows with PCN at Site 7b; c) confirm that the Site 7b was developed based on the assumption of a reservoir elevation of 461.8 metres and, if not, explain why not; d) discuss the technical end economic potential for tailrace improvements at Site 7b assuming that Site Low C is not developed or is not developed until much later; e) determine the maximum available net head at Site 7b based on the findings from parts a) through d); f) determine the mean annual energy, firm energy, total capacity and firm capacity at Site 7b and Low Site C based on the findings from parts a) through e); f) discuss the contingencies and risk allowances assumed for Site 7b, the influence of these contingencies on the direct cost of Site 7b, and the information that would need to be gathered in order to lower these contingencies, including in relation to the foundation conditions at Site 7b; and g) recalculate the energy ratio, cost ratio, energy cost ratio and UEC in \$/MWh for Site 7b and for Low Site C developed individually and collectively (assuming Site 7b is developed first) based on the findings from parts a) through f).	<p>In the Alternates Study the generation of 7b was based on the mean annual flow at Peace Canyon Dam. As shown in EIS Volume 2 Appendix I Fluvial Geomorphology and Sediment Transport Technical Data Report, Table 3.3, the mean annual discharge of Lynx Creek is 1% of the mean annual discharge between Peace Canyon Dam, and the Project and the mean annual discharge from the residual drainage area (i.e. excluding Halfway River, Moberly River, Cache Creek, Farrell Creek and Lynx Creek) would be 5%. Adjusting the mean annual discharge at Site 7b to include Lynx Creek and the other minor tributaries would increase the generation at 7b by about 2.25% which would not materially change the results of the Alternates Study.</p> <p>As described in EIS Volume 1 Appendix E Section 6.6 synchronous generation with Peace Canyon Dam was assumed. As shown in the Facilities Characteristics Matrix in EIS Volume 1 Appendix E the assumed reservoir elevation for 7b was 461.8 m. Optimization of the reservoir level for site 7b could result in a lower reservoir level, installed capacity and generation than given in the study.</p> <p>The slope of the river at site 7b is approximately 0.84m/km. This means that a 1 m increase in gross head would require dredging several million m3 or material from the river for over distance of several km.</p>
ab_0001-168	Treaty 8 Tribal Association	V.1, AppendixE V.1, Appendix E – Addendum 1 ; page(s) 89 12; line(s) n/a n/a EISG S.4.3 Comment 1-153.	<p><i>Figure 12-2 Initial Screening of Alternates The expected energy cost ratio for the two dam cascade is higher than Site C because: • 1. the annual generation of the two dam cascade would be 4% less than at Site C due to higher head losses (see Appendix E); • 2. the direct construction cost of the two dam cascade would be 34% higher than for Site C; • 3. higher amounts were included in the estimate for the two dam cascade to allow for additional site investigations, engineering, contingency and risk since the foundation conditions at site 7b are unknown; and • 4. interest during construction is higher due to the longer overall construction schedule. As detailed in Section 4 above, the energy cost ratio for this alternate reduced from 1.55 to 1.37. The 37% greater energy cost relative to the updated base case site C3 alternate represents a loss in value of approximately \$2.9 billion. With only a marginal increase in the local dam site footprint for the revised Site C Base Case arrangement at site C3, it is concluded that the overall impact to the results of the alternates study assessment for the two dam cascade would not change. The 2 dam cascade (7b/low C3) would still not be considered preferable to the project being constructed as a single dam at site C3. Comments Figure 12-2 indicates that Site 7b / Low Site C has a more optimal footprint ratio compared to all of the other alternates studied, including the proposed Project. The analysis undertaken by the Proponent appears to assume that Site 7b and Lower Site C would be constructed immediately in</i></p>	Please see the response to ab_0001-144.

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			sequence. Based on the information in Table 5.13 and Table 5.14 for Site C, and considering that Site 7b / Low Site C provides nearly as much energy and capacity as Site C, the Site 7b / Low Site C alternate would also result in surpluses throughout the planning period. However, delaying the development of Low Site C until it is needed would result in a reduction of surpluses. As well, considering that the rate of inflation is less than the discount rate, there could also be increases in value associated with delaying Low Site C. Information Request The Proponent is requested to: a) analyze the implications of developing Site 7b in F2022 and delaying Low Site C; and b) provide Energy and Capacity Surplus/Deficit Tables, as in Tables 5.13 and 5.14, without the proposed Project and with Site 7b in service in F2022; c) assuming that Site 7b is commissioned in F2022, indicate in what year Low Site C would be required to maintain the Load Resource Balance; d) provide Energy and Capacity Surplus/Deficit Tables, as in part c), with Low Site C commissioned in the year indicated in response to part c); e) describe the methodology it has used, or would use, in the Site 7b / Low Site C scenario to take into account the financial benefits of deferring the construction of Low Site C; and f) determine the lowest UEC of a Clean Energy Portfolio containing Site 7b alone and Site 7b and Low Site C, making explicit the capacity credits for both scenarios.	
ab_0001-169	Treaty 8 Tribal Association	V.1, Appendix F, Part 1 ; page(s) 2; line(s) n/a EISG S.5 Comment 1-154.	<i>Table 1 Project Cost Estimate Breakdown</i> Comments The costs in Table 1 are in \$2010 real dollars. Information Request The Proponent is asked to indicate when the next project cost estimate is anticipated given that the cost estimate in the EIS is out-dated by three years.	<p>While the Project cost estimate was developed in 2010, it is not “out-dated by three years”:</p> <ul style="list-style-type: none"> • As described in Volume 1, Appendix F, Part 1, the Project cost estimate is a Class 3 cost estimate as defined by the Association for the Advancement of Cost Engineering, and includes inflation; • BC Hydro notes that Project UECs have been presented in \$F2013 in Chapter 5 of the EIS for comparison to potential alternatives. <p>The requested information is outside the scope of the environmental assessment.</p>
ab_0001-170	Treaty 8 Tribal Association	V.1, Appendix F, Part 1 ; page(s) 2; line(s) n/a EISG S.5 Comment 1-155.	<i>Due to engineering, environmental, and consultation work done in previous stages of the Project, the Project had reached a level of project definition to characterize the \$7.9 billion project cost estimate as a Class 3 cost estimate as defined by the Association for the Advancement of Cost Engineering (AACE 2012).</i> Information Request The Proponent is asked to provide: a) the range of accuracy of a Class 3 cost estimate; and b) the upper and lower bounds of this Class 3 capital cost estimate.	From the AACE classification, "Typical accuracy ranges for Class 3 estimates are -10% to -20% on the low side, and +10% to +30% on the high side, depending on the technological complexity of the project, appropriate reference information, and other risks (after inclusion of an appropriate contingency determination)."
ab_0001-171	Treaty 8 Tribal Association	V.1, Appendix F, Part 1 ; page(s) 2-3;	<i>While the final costs for any capital project can only be known after a competitive procurement process is complete and a final bid is accepted, BC Hydro expects project costs will be to be within the bounds of the current capital</i>	Ordinary market conditions refer to reasonably expected variability in cost drivers that would be included in contingency amounts. This would reflect variability in items such as (but not limited to) labour costs, commodity prices, quantities, and schedule.

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		line(s) n/a EISG S.5 Comment 1-156.	<i>cost estimate in ordinary market conditions.</i> Information Request Explain what is meant by “ordinary market conditions” and provide an example or examples of unordinary market conditions.	Ordinary market conditions would not include extreme variability in these factors, such as due to a market disruption.
ab_0001-172	Treaty 8 Tribal Association	V.1, Appendix F, Part 1 ; page(s) 4; line(s) n/a EISG S.5 Comment 1-157.	<i>Table 2 Annualized Operating Costs</i> Information Request The Proponent is requested to: a) break down the Grants-in-lieu and School Taxes line into its components; and b) indicate the amounts and years for major sustaining capital investments that, when annualized, result in the amount indicated for Annualized Sustaining Capital.	Grants-in-lieu are estimated to be \$1.3 million (as per Section 7.2.1.2), school taxes are estimated to be \$0.8 million, \$0.5 million is carried as contingency amount included for the calculation of the Project unit energy cost and the evaluation of Project economics in Section 5. This contingency is associated with the following uncertainties: - The amount of grants-in-lieu BC Hydro may be directed to pay by the Province. - The capital cost amounts that are subject to school taxes, as well as the school tax rates. The level of detail requested on sustaining capital is not material to the environmental assessment. Please see the response to ab_0001-156 for details on maintenance and capital additions.
ab_0001-173	Treaty 8 Tribal Association	V.1, Appendix F, Part 1 ; page(s) 4; line(s) n/a EISG S.5 Comment 1-158.	<i>The actual costs of the project to ratepayers will vary year-to-year and will be subject to policy decisions by the B.C. Utilities Commission regarding the scope and timing of cost recovery from ratepayers. These decisions are expected to be part of a future BC Hydro revenue requirements application.</i> Information Request The Proponent is requested to: a) describe the approach used by the BCUC in its recent rate decisions regarding cost recovery from ratepayers of the costs of B.C. Hydro’s existing hydro generating stations; b) indicate whether or not it has any reason to expect this approach to change with respect to the proposed Project, and, if so, to indicate why, and the nature of the anticipated changes; c) indicate whether or not B.C. Hydro intends to ask the BCUC to modify its current approach regarding cost recovery from ratepayers; and d) confirm that these decisions will be part of future BC Hydro revenue requirements applications, for the life of the proposed Project.	The request to speculate on the manner in which the BCUC may decide Project cost recovery issues is outside the scope of the environmental assessment for the reasons set out in the response to ab_0001-149.
ab_0001-174	Treaty 8 Tribal Association	V.1, Appendix F, Part 1 ; page(s) 4; line(s) n/a EISG S.5 Comment 1-159.	<i>Levelized unit energy costs are calculated by taking the present value of the annual costs of an energy resource and dividing by the present value of its annual energy benefit.</i> Information Request The Proponent is requested to: a) explain why future energy benefits should be subject to discounting; and b) indicate whether the discount rates applied to costs and energy benefits are always the same, and, if so, why.	The levelized unit energy costs (UECs) are computed such that if all the energy from a resource were sold at that price, the present value of the revenue generated would be exactly equal to the present value of all project costs. In order for this UEC to be determined, the energy must be discounted. Mathematically, this can be expressed as follows: Present value of revenue based on UEC = Present value of all costs If: E _y = energy generation in any year

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				<p>D = annual discount rate y denotes the year, and Y denotes the number of years of cost and revenue streams Then the above equation can be expressed as follows:</p> $\text{Equation 1: } \sum_{y=1}^Y \frac{E_y \times UEC}{(1 + D)^y} = \text{Present value of cost}$ <p>Since the UEC is, by definition, a constant, it can be taken outside of the summation, leaving:</p> $\text{Equation 2: } UEC * \sum_{y=1}^Y \frac{E_y}{(1 + D)^y} = \text{Present value of costs}$ <p>Or: UEC * Present value of energy = Present value of costs UEC = Present value of costs / Present value of energy Effectively, the formula is present valuing revenue, but because the UEC is constant and can be removed outside the summation, the formula appears to be present valuing energy. It is assumed that “energy benefits” in the comment refers to the actual physical energy. The discount rate that is applied in a calculation, be it to calculate a real levelized or nominal levelized UEC, must be the same for the costs and energy.</p>
ab_0001-175	Treaty 8 Tribal Association	V.1, Appendix F, Part 1 ; page(s) 4-5; line(s) n/a EISG S.5 Comment 1-160.	<p><i>Cost of Incremental Firm Transmission: The cost of incremental firm transmission provides a general indication of the long term unit cost of bulk transmission system reinforcement from one region to the next, and is expressed as a region-to-region bulk transmission capacity cost. </i>Comments Table 3 indicates a Cost of Incremental Firm Transmission of \$5/MWh. Information Request The Proponent is requested to: a) indicate the source of the value used for the Cost of Incremental Firm Transmission; and b) provide a copy of the document from which this value is drawn or, if no such document exists, provide a detailed explanation of the derivation of this value.</p>	<p>The Cost of Incremental Firm Transmission (CIFT) was based on the BC Transmission Corporation report: Bulk Transmission System Cost of Incremental Firm Transmission for BC Hydro’s 2008 LTAP Base Plan and Contingency Resource Plans CRP1 and CRP2 (January 15, 2009). This document is available on the BC Hydro website. The level of detail provided by the report is not required for the purposes of environmental assessment.</p> <p>The \$5/MWh value is consistent with the cost adjustment process used in the Clean Power Call and is determined as follows. The CIFT factors used were from the Contingency Resource Plan 2 (CRP2), CIFT 2008 – F2010 Stage as shown on Page 2 of the above-referenced report:</p> <ul style="list-style-type: none"> • as the Project is located in the Peace River (PR) region, it was assigned CIFT costs from PR to Central Interior (CI) of \$6.1k/MW-yr, CI to Kelly Nicola (KN) of \$2.2k/MW-yr, and KN to Lower Mainland (LM) of \$15.4k/MW-yr;

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				<ul style="list-style-type: none"> • these CIFT factors are additive and expressed in real \$2008. This results in a total CIFT factor of \$25k/MW-yr in Real \$2013 assuming 2% annual inflation; • finally, the \$25/MW-yr is converted to \$5/MWh based upon the Project Capacity of 1100 MW and Project Energy of 5100 GWh/yr.
ab_0001-176	Treaty 8 Tribal Association	V.1, Appendix F, Part 1 ; page(s) 5; line(s) n/a EISG S.5 Comment 1-161.	<i>Line Losses Adjustment: This adjustment reflects the cost of losses associated with delivering energy from the project location to the Lower Mainland, on a stand-alone basis. Information Request The Proponent is requested to: a) indicate the average line losses associated with the proposed Project, distinguishing between transmission and distribution losses; and b) indicate the peak capacity line losses associated with the proposed Project, distinguishing between transmission and distribution losses.</i>	<p>Losses associated with transmission from the Project point of interconnection to the lower mainland would vary across the year depending on environmental conditions (ambient air temperature, for example) and the overall system status. An average line loss of 10% is assumed for the purposes of calculating the Project UEC adjusted to the lower mainland, and is included in the evaluation of the Project compared to alternatives.</p> <p>Distribution losses would not vary between the Project and the alternatives.</p>
ab_0001-177	Treaty 8 Tribal Association	V.1, Appendix F, Part 1 ; page(s) 5; line(s) n/a EISG S.5 Comment 1-162.	<i>Capacity Credit: To reflect the value of dependable capacity to the BC Hydro system, a capacity credit is applied to projects with an hourly firm product (such as the large hydro-electric facilities). The composition of the unit energy cost at the point of interconnection (using a 6.0% real discount rate) as well as adjustments to reflect the cost of delivering the energy to the Lower Mainland, is shown in Table 3 below. Capacity credits are provided for the low (\$89/kW-yr) and the high (\$440/kW-yr) ends of the range of capacity value from Section 7.1.2.2, as well as a mid-level capacity credit based on the cheapest pumped storage capacity identified (\$216/kW-yr). All capacity credit scenarios assume capacity resources operate at an 18% load factor. Comments Capacity value is addressed in Section 7.1.2.1 of the EIS. Information Request The Proponent is requested to: a) explain why B.C. Hydro would consider pumped storage as the avoided capacity resource, when it is substantially more expensive than the alternative (SCGT); b) explain why it is assumed that capacity resources operate at an 18% load factor; and c) indicate whether or not the capacity credit is applied to surplus capacity and, in the affirmative, to explain why it is appropriate to do so.</i>	<p>In Section 5.5, BC Hydro considers both portfolios with pumped storage as the avoided capacity resource and portfolios with pumped storage and SCGTs as the avoided capacity resource. SCGTs are available only within the 93% Clean or Renewable target described in Section 5.5.2.8. Please also see the response to ab_0001-147.</p> <p>Please see the response to ab_0001-116 for discussion of the 18% load factor.</p> <p>Capacity adjustments are applied to unit energy costs to reflect the value of dependable capacity for a resource option. These are not applicable to capacity resources such as pumped storage. The analysis of alternatives in Section 5.5 recognized the value of pumped storage capacity. Please also see the response to ab_0001-178.</p>
ab_0001-178	Treaty 8 Tribal Association	V.1, Appendix F, Part 1 ; page(s) 5; line(s) Note 2 EISG S.5 Comment 1-163.	<i>Table 3 Project unit energy cost at 6.0% real dollar discount rate Portfolios that require capacity back-up have a cost added to reflect this, rather than providing a credit to resources that provide capacity as in this table. Information Request The Proponent is requested to: a) explain in detail the reasoning underlying the approach described in the citation, where portfolios that provide firm capacity are awarded a capacity credit, and portfolios that require capacity back-up have a cost added to reflect this; b) describe other approaches used by utilities to take capacity into account in determining project costs; and c) describe, in order to clarify the approach described in part a), the characteristics of a hypothetical</i>	<p>The statement cited is intended to clarify the difference between the UEC methodology used in the Section 5.5 EIS portfolio analysis and the UEC build-up used in Volume 1 Appendix F Part 1 Table 3. The statement references that in the portfolio analysis: “Portfolios with alternative resources that require capacity back-up have these resources and the related costs added to reflect this”. This is the same approach used in Table 5.42 for the comparable block UEC calculations. This contrasts what was done in Table 3 of the citation where the Project was given a credit.</p> <p>It is not the case that both methods are used at the same time. The value of capacity must be</p>

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			project which neither provides firm capacity nor requires capacity backup.	<p>recognized in the comparison of alternatives; it is clear that if BC Hydro were to pursue intermittent clean or renewable resources it must acquire dependable capacity and such capacity would equally clearly come at a cost. There is no double counting of capacity-related costs.</p> <p>BC Hydro is not aware of any resources that neither provide firm capacity nor require capacity backup.</p> <p>Taking into account the value of dependable capacity is not a new methodology and has been used by BC Hydro in its CPCN applications to the BCUC, for example. The request for information on approaches used by other utilities is outside the scope of the environmental assessment.</p>
ab_0001-179	Treaty 8 Tribal Association	V.1, Appendix F, Part 2 ; page(s) 9-14; line(s) n/a EISG section n/a Comment 1-164.	<i>The Site C team has sought to support capacity building opportunities for Aboriginal people in the planning and construction phases of the Project through the directed procurement, support for education and training, and business outreach activities described below. Information Request</i> BC Hydro is requested to identify the total dollar value, and over what time period, it has currently committed for: a) education and training programs for Aboriginal peoples, identified in the EIS; and b) business capacity building for Aboriginal peoples, as noted in sub-section 34.6.3.3 of the EIS.	<p>Volume 1 Appendix F Part 2 Local Participation Strategies Section 5.3 describes BC Hydro actions related to capacity building for Aboriginal peoples. Timing of activities is provided where available.</p> <p>Section 17.4.3.2.2 describes mitigation measures for labour participation associated with local Aboriginal peoples.</p>
ab_0001-180	Treaty 8 Tribal Association	V.2, S.10.1 ; page(s) 10-1 ; line(s) 19-20 EISG S.20.5, S.20.6 Comment 2-1.	Comments BC Hydro notes that planning and technical studies, including a review of background information, were completed as a preliminary step in the effects assessment process. We note the following: §§ T8FNs technical studies in the form of the T8FNs Community Assessment, were received by BC Hydro in December 2012; §§ Other Aboriginal group technical studies remain outstanding and the results of those technical studies are not included in the EIS; and §§ BC Hydro submitted its EIS on January 25, 2013. Information Request BC Hydro is requested to: a) justify the submission of a partial EIS without several of the technical reports required by the EIS Guidelines; and b) describe the process by which BC Hydro integrated T8FNs Community Assessment submissions into its EIS within such a short time frame, and whether T8FNs were involved in reviewing the results of this integration for appropriateness and accuracy prior to the submission of the EIS.	<p>BC Hydro understands the comment regarding "technical reports" to refer to First Nation community baseline reports. The EIS Guidelines did not require these technical studies. Rather, as described in Volume 3, Appendix B, "Approach to Gathering and Integrating Community Baseline Information", BC Hydro first approached Aboriginal groups, including the Treaty 8 Tribal Association, in May of 2011 to participate in gathering baseline information to support the Socio-Economic Assessment.</p> <p>As described in Volume 5, Appendix A06, BC Hydro and the T8FNs finalized a First Nation Community Assessment terms of reference (ToR) on March 8, 2012 which set out the key deliverables and funding associated with each. The key deliverable for consideration in the EIS was the Community Baseline Profile report for each First Nation, and the T8FNs collectively, due July 3, 2012. Due to delays encountered by T8FNs in completing the work, a first draft of the Community Baseline Report was not received by BC Hydro until October 26, 2012. Additional information was included in the final version which was received on November 28, 2012. A report identifying potential impacts pathways, due August 24, 2012 was not submitted to BC Hydro until November 16, 2012.</p> <p>With respect to consideration of the T8FN report, please see the response to ab_0001-017.</p> <p>As of the filing of the EIS, BC Hydro awaited reports from four First Nations: Sauteau, Blueberry River, McLeod Lake and Horse Lake First Nations. As a result, BC Hydro committed to include the results of these reports if received from the First Nations in a timely manner. Since that time,</p>

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				<p>reports from Saulteau and Blueberry River First Nations have been received and are given consideration in the Aboriginal Group Supplemental Report. With regard to outstanding baseline studies from the other two Aboriginal groups, should additional information be received from the Aboriginal groups, BC Hydro will consider and incorporate it into the EIS, as appropriate, during the EIS review phase.</p> <p>To date, BC Hydro has not received feedback from the T8TA regarding the integration of the results into the EIS. Feedback will be considered if received in a timely fashion. Updated information will be submitted to CEA Agency and BCEAO.</p>
ab_0001-181	Treaty 8 Tribal Association	V.2, S.10.2 ; page(s) 10-1 ; line(s) n/a EISG S.18 Comment 2-2.	<p><i>For the purpose of formal effects assessment in British Columbia, VCs are categorized under five pillars: 1) environmental, 2) economic, 3) social, 4) heritage, and 5) health, which are referred to in BCEAA. Comments Culture is noticeably absent from these pillars, and the BCEAO's guidance on the heritage pillar arguably does not reflect good practice for cultural impact assessment, which would include all tangible and intangible elements of culture. However, the EIS Guidelines require the EIS to include presentation of the interests of Aboriginal groups, including intangible heritage resources. On December 18, 2012, the T8FNs provided BC Hydro with some guidance on its understanding of intangible heritage resources. In addition, the Baseline Profile and Impact Pathways reports of the T8FNs Community Assessment refer specifically and extensively to intangible heritage resources. On January 31, 2013, BC Hydro indicated it had received the information and welcomed further discussion. Notably, the BC Hydro response did not refer to integration of intangible heritage resources in the EIS, and the EIS contains no substantive references to intangible heritage resources other than in documents submitted by the T8FNs. Information Request BC Hydro is request to: a) indicate where and how it identified in the EIS: §§ indicators of intangible heritage resources of the T8FNs; §§ baseline and trend conditions for the indicators of intangible heritage resources of the T8FNs; §§ the role of the Peace River valley in the protection and promotion of intangible heritage resources of the T8FNs, §§ impact pathways, impact characterization, and significance prediction for intangible heritage resources of the T8FNs (and other Aboriginal groups) in relation to the proposed Project. b) identify how, in what form, and when, BC Hydro plans to integrate into the EIS an assessment of the effects of the proposed Project on intangible Aboriginal heritage resource.</i></p>	<p>Section 19, page 19-14 provides information on the importance of the Peace River Valley for Aboriginal groups and the relationship between engaging in traditional activities and Aboriginal people's well-being and quality of life, including promotion of the use of traditional language, retention of knowledge, traditions and values, and other intangible heritage resources. This consideration provided context for the assessment of potential Project effects on other cultural and traditional uses (Sections 19.4 and 19.5) and was taken into account in the determination of significance.</p> <p>The EIS Guidelines do not direct BC Hydro to conduct an effects assessment on intangible heritage resources. Section 18 of the EIS Guidelines, at page 98, notes that Aboriginal interests, including intangible heritage resources, will be presented in the EIS in accordance with Section 20 of the EIS Guidelines. As noted in Section 34.6.1 of the EIS, BC Hydro included an Aboriginal Issues, Concerns and Interests Tracking Table in Volume 1 Appendix H.</p>
ab_0001-183	Treaty 8 Tribal Association	V.2, S.10.3.1 ; page(s) 10-4 ; line(s) n/a	<p><i>Table 10.1 Spatial Boundary Descriptors Notes: Transportation infrastructure that will be used without modification to transport materials or personnel required for the Project is excluded from the Project activity zone because</i></p>	<p>The noted-transportation infrastructure lies outside the Project activity zone, in accordance with Table 8.2 of the EIS Guidelines.</p>

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		EISG S.3.3 Comment 2-4.	<p><i>Project-related traffic will be within the design capacity of that infrastructure.</i></p> <p>Comments The EIS is required to describe the project components and activities. Thus, the geographic scope of assessment should include, within the appropriate VCs, not only all newly built physical structures, but also all areas where the proposed Project will have activities or activity levels that differ from the base case. In the case of transportation, increased Project-related traffic may have effects on public safety, road maintenance costs, travel time, wildlife collisions and disturbance, and use of lands and resources, among other factors. These changes will occur within a defined geographic area, which should be included in the spatial boundary for the effects assessment. Information Request The Proponent is requested to: a) clarify whether the above-noted transportation infrastructure is included in the LAA or the RAA for the effects assessment; and b) clarify how existing transportation infrastructure that will be used by the proposed Project will be included in the geographic scope of the assessment.</p>	Where no Project-specific modifications are required, Project-related traffic is assumed to be within the design capacities – and therefore design operating range – of existing transportation infrastructure. The use of such infrastructure is subject to applicable regulations regarding licencing, speed, condition of motor vehicles, handling of dangerous goods, and other matters aimed at protecting public health and safety and the environment. Project-related traffic using existing unmodified transportation infrastructure will be subject to the same requirements as all other traffic using that infrastructure.
ab_0001-184	Treaty 8 Tribal Association	V.2, S.10.4.2.3, V.2, S.14.4.3, V.4, S.14.5.1.1 ; page(s) 10-10, 14-63, 14-69 ; line(s) 13, 1, 1-2 EISG S.8.5.2.3 Comment 2-5.	<p><i>The significance determination for residual adverse effects, and its rationale, has been evaluated by taking into account the objective characterization of each criteria described above and other factors including relevant guidance published by the Agency and the BCEAO (FEARO 1994, Agency 1999, Hegmann et al. 1999, and BCEAO 2010).</i></p> <p><i>Table 14.17 Mitigation Measures for Mortality</i></p> <p><i>Table 14.19 Summary of Characterization of Residual Effects: Habitat Alteration and Fragmentation – Butterflies and Dragonflies</i></p> <p>Comments The process for calculating the level of significance for individual residual effects is not transparent. It is clear that the potential effect is first characterized by a set of standard criteria (e.g., Table 14.19, p.14-69) but it is less clear how the levels of each criterion are then synthesized together and weighed or balanced against the proposed mitigations (e.g., those presented in Table 14.17, p.14-63) to arrive at an assessment of mitigation effectiveness (e.g., as presented in Table 14.17, p.14-63). The actual residual effect and the derivation of its significant are also unclear and not articulated in any explicit manner. Information Request The Proponent is asked to present a more transparent methodology for deriving the significance of residual effects.</p>	Section 8.5.2.4 and Section 8.5.3.3. of the EIS Guidelines require BC Hydro to provide its assessment of the significance of residual adverse effects and cumulative effects that may result from the Project. The thresholds for determination of significance took into consideration the 9 objective criteria in the determination of significance. Where residual adverse effects and cumulative effects have been predicted, BC Hydro has provided its assessment for significance and its rationale for that determination.
ab_0001-185	Treaty 8 Tribal Association	V.2, S.10.5 ; page(s) 10-5 ; line(s) n/a	Comments Efforts have been made by the Fish and Wildlife Compensation Program for the Columbia Basin (FWCP:CB) to begin to compile a better understanding of pre-hydroelectric development habitats throughout the BC	Please see the Technical Memo: Cumulative Effects Assessment, which demonstrates that the potential cumulative effects of the Project have been assessed in a reliable, scientifically sound manner that meets the requirements of the EIS Guidelines.

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		EISG S.8.5.3 Comment 2-6.	portion of the river basin over which the FWCP:CB has some jurisdiction. This will contribute to an improved appreciation of the effects of multiple dams and impoundments on habitat conversion and biodiversity. A central focus of this preliminary work is mapping of pre-dam aquatic, wetland/floodplain and terrestrial ecosystems using data including historic aerial photographs, topographic maps and land class mapping. This mapping is able to provide a meaningful level of detail to characterise the range of habitat diversity that previously existed in the areas impounded. The results include estimates of total habitat losses of various types relative to what exists there now. The work also evaluated species impacts based on habitat loss information and species-habitat associations. Ecological functions and processes were investigated based on what is known of altered hydrological regimes and floodplain processes. Although land class mapping in the upper Peace was not conducted prior to the Williston and Dinosaur reservoirs, there is adequate historic aerial photography, topographic mapping, hydrometric data and other sources of information descriptive of the pre-existing river reaches that can be used in cumulative effects analysis. The long-term goal of taking this watershed approach to cumulative effects is the maintenance of biodiversity in the Columbia Basin. This is the also the goal of environmental assessment for the Peace River and the central point of doing cumulative effects assessment. The arguments made in the EA methodology for excluding the upper watershed from the assessment of the proposed Project are not consistent with current, state-of-the-art work based on principles of landscape ecology in other river basins in BC.	In the Columbia Basin Report referenced in the Information Request, predictions of impacts were limited and uncertain given a lack of pre-dam information, uncertainty in the ecological processes and relationships, the confounding effects of other anthropogenic developments in the region, and the confounding effects of other changes in the terrestrial and aquatic environment since construction of the dams in the Columbia Basin. A similar analysis in the Peace would be subject to the same uncertainty and of no utility for this environmental assessment.
ab_0001-186	Treaty 8 Tribal Association	V.2, S.10.3.1.1 ; page(s) 10-5 ; line(s) 10 EISG S.8.4.1 Comment 2-7.	<i>Table 10.2 Local Assessment Areas</i> Comments The LAA is defined as the maximum geographic extent of the potential for the proposed Project to cause an adverse effect. For wildlife, this extent has been arbitrarily restricted to the same LAA as for vegetation and ecological communities – basically the proposed Project Activity area plus a 1,000m buffer. If the project were to have an effect on wildlife, the effect would permeate directly over the animals' home range and indirectly into adjacent home ranges. There are many species of wildlife that range further than 1km. As defined, the proposed LAA for wildlife is inadequate for the environmental assessment. Information Request The Proponent is requested to redefine the LAA for wildlife based on the maximum geographic extent of the potential for the proposed Project to cause an adverse effect and, if not, to explain why not.	Please see the Technical Memo: Spatial Boundary Selection.
ab_0001-	Treaty 8	V.2, S.10.4 ;	Comments No reference is made in the EIS to any guidance documents on	The social and economic effects assessment is in accordance with the EIS Guidelines and

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187	Tribal Association	page(s) 10-7 ; line(s) n/a EISG S.14.2.4 Comment 2-8.	socio-economic impact assessment (SEIA) or community impact assessment (CIA). Information Request BC Hydro is requested to identify what SEIA and/or CIA guidelines or codes of practice were used in preparing the EIS.	appropriate information is provided in the EIS.
ab_0001-188	Treaty 8 Tribal Association	V.2, S.10.4.2.2 ; page(s) 10-9 ; line(s) 16 EISG S.8.3.1, S.8.5 Comment 2-9.	Comments BC Hydro claims to have identified and characterized effects of changes to the environment on Aboriginal peoples in the EIS. It is unclear whether BC Hydro consulted the affected parties themselves in the definition of residual effects criteria for specific VCs, the residual effects characterization process, or residual effects significance definition (e.g., thresholds) or estimation. Information Request BC Hydro is requested to: a) describe how it consulted Aboriginal groups, if at all, in its characterization of effects and determination of significance; and b) identify whether it verified its characterization or estimation of significance of effects of changes to the environment on Aboriginal peoples with representatives of those Aboriginal peoples prior to submitting the EIS and, if not, explain why not and discuss what implications this absence has for levels of confidence in the effects characterization and significance determination.	Please see the response to ab_0001-189.
ab_0001-189	Treaty 8 Tribal Association	V.2, S.10.4.2.3 ; page(s) 10-10 ; line(s) 2-5 EISG S.8.3.1, S.8.5 Comment 2-10.	<i>The significance determination for residual adverse effects, and its rationale, has been evaluated by taking into account the objective characterization of each criteria described above and other factors including relevant guidance published by the Agency and the BCEAO (FEARO 1994, Agency 1999, Hegmann et al. 1999, and BCEAO 2010).</i> Information Request The Proponent is requested to: a) describe how it incorporated First Nation values in the significance determination; and b) describe how it used traditional knowledge in significance determination.	Section 8.5.2.4 of the EIS Guidelines requires BC Hydro to provide its assessment of the significance of any residual effects and its rationale for reaching that determination. However, in determining its findings respecting the significance of any residual effects, BC Hydro can take into consideration the views of Aboriginal groups. In a letter to BC Hydro dated December 21, 2012, T8TA included a suggestion of four additional criteria respecting the characterization of residual effects in addition to those criteria outlined in Table 8.3 of the EIS Guidelines. BC Hydro considered the suggested criteria, and took them into account in developing specific sub-criteria for the general “Context” criterion required by Table 8.3. These sub-criteria are set out in Table 19.13 of Section 19 of the EIS. One of the two standards or thresholds identified in Section 19.5.4 is described as follows: “the current use and area is indicated to be of high value or importance among 8 Aboriginal groups for traditional purposes”. As such, the information provided by Aboriginal groups with respect to the high value or importance of an area was a key factor in making the significance determination.
ab_0001-190	Treaty 8 Tribal Association	V.2, S.10.5.1. ; page(s) 10-12, 10-13 ; line(s) 5-7 3-7 EISG S.8.5 Comment 2-	<i>BC Hydro states that its Baseline Case – baseline being defined as September 5, 2012 – describes the current status of the VC. In doing so, it reflects the residual effects of projects and activities that have been and are being carried out.</i> Comments Technically, this is correct. What BC Hydro neglects to note is that the actual amount of cumulative effects loading – the most relevant consideration – cannot be determined without reference to trend-over-time	The environmental assessment, including the description of baseline conditions, has been conducted in accordance with the EIS Guidelines and appropriate information is provided in the EIS. Information provided by Aboriginal groups, including the T8FNs Community Assessment Baseline Profile report, as was made available, has been taken into account in the environmental assessment. This information was incorporated in the description of baseline conditions for the environmental, social, economic, heritage and health VCs, including in the Current Use of Lands

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		11.	data. T8FNs have provided a plethora of contextual information on cumulative effects on Treaty rights, way of life and well-being over time to BC Hydro, especially but not limited to information provided in the T8FNs Community Assessment Baseline Profile Report (see for example Sections 3 and 4). Much of this information has not been incorporated into the effects assessment proper, which allows BC Hydro to avoid discussing the specific cumulative effects contributions of its own two prior hydroelectric projects on the Peace River (described in some detail from the T8FNs' perspectives in Section 4.3 of the T8FNs Community Assessment Baseline Profile Report). In addition, BC Hydro's rationales for its decision to demarcate the Baseline Case as September 5, 2012 are not credible or justified. The date of the EIS Guidelines being released has no relevance, and the statement that: "by this date, BC Hydro had already substantially developed the assessment of potential effects and cumulative effects of the Project" rings false given that BC Hydro had not yet received most of the baseline information from Aboriginal groups by that date. Information Request BC Hydro is requested to: a) identify appropriate historical time frames for the collection of additional trend-over-time data for each VC in the EIS; b) gather additional trend-over-time data and include it in revised baseline conditions profiling for each VC in the EIS; and c) identify how the cumulative effects context and contributions to total effects loading of BC Hydro's two previous hydroelectric projects on the Peace River were considered in the impact assessment, and where these effects are characterized in the EIS.	and Resources for Traditional Purposes VCs. Please also see the following Technical Memos: - Consideration of Historical Context in the Assessment of Potential Effects and Impacts to Aboriginal Groups - Cumulative Effects Assessment
ab_0001-191	Treaty 8 Tribal Association	V.2, S.10.5.1.2 ; page(s) 10-12 ; line(s) n/a EISG S.9.1, 8.5.3.1 Comment 2-12.	<i>Future Case without the Project:</i> To identify the potential adverse effects of projects and activities that will be carried out, the Future Case without the Project will be developed to predict the status of the VC by taking into account the Baseline Case and projects and activities that are at least as foreseeable as the Project. This will demonstrate the potential residual effects of projects and activities that have been and will be carried out. Comments On December 21, 2012, the T8FNs reiterated concerns that: • a baseline case reflecting the effect of all projects and activities that have been carried out is not appropriate for the environmental assessment of the proposed Site C Project as it will not adequately consider the historical context necessary to determining the implications of the proposed Project for the T8FNs Aboriginal and Treaty rights. Specifically, the T8FNs are of the view that the description of the prior effects of the WAC Bennett Dam and Peace Canyon Dam required in section 9 of the EIS Guidelines is not sufficient to understanding the historical context and that the effects of the baseline conditions should be described prior to the development of these two projects; and • the Future Case without the Project must consider	Please see the following Technical Memos: - Consideration of Historical Context in Assessment of Potential Effects and Impacts on Aboriginal Groups - Flood Reserve - Cumulative Effects Assessment

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			<p><i>the removal of the existing flood reserve from within the Peace River valley. In its recent response of March 18, 2013, BC Hydro refers to a letter dated August 9, 2012 from the government agencies to the T8FNs, which reads as follows: In order to inform assessments of how serious potential adverse impacts from the proposed Site C project could be, the Crown will consider the historical context of the potential impacts on Aboriginal or Treaty rights when appropriate. The information on the context of past impacts to elements of the environment can be gathered, through the environmental assessment process. The T8FNs anticipate, based on the above reference, that the Crown has given direction to the Proponent on when it is “appropriate” to consider the historical context of the potential impacts of the proposed Project on Aboriginal or Treaty Rights. The Proponent also noted in response to our concern regarding the flood reserve that: With respect to consideration of the existing Flood Reserve, the potential effects of the Project on the current and reasonably anticipated future use of lands and resources for traditional purposes have been assessed in the Section 19 Effects Assessment on the basis that if the proposed Project does not proceed, the lands within the Flood Reserve will, for the reasonably anticipated future, remain in the same state as they are found in today, whether or not the Flood Reserve is removed. Information Request</i> The Proponent is requested to:</p> <p>a) provide its understanding or the direction it has received from the Crown concerning the circumstances under which it is appropriate for the Crown to consider the historical context of the potential impacts on Aboriginal or Treaty Rights; b) gather and provide the information (or identify its location in the EIS) that it believes is necessary to assist the Crown in its consideration of the historical context identified in part a); c) explain on what basis it has reached the conclusion that the lands within the Flood Reserve would remain within the same state as they are today; and d) explain, why the Proponent has maintained and continues to maintain the Flood Reserve if there is no prospect of significant land use change within the Flood Reserve.</p>	
ab_0001-192	Treaty 8 Tribal Association	V.2, S.11.1.1 ; page(s) 11-2 ; line(s) 4-6 EISG S.8.4.1, S.8.5 Comment 2-13.	<p><i>Understanding environmental changes, in particular those associated with previous hydroelectric development, provides context for the environmental assessment of the Project. Comments</i> The Proponent has provided no analysis of the implications of the prior hydroelectric developments for the development of a third hydroelectric development on the Peace River. Information Request The Proponent is requested to extend the RAAs for the VCs to include the existing hydroelectric projects in order that they can be assessed as part of a cumulative effects assessment in relation to the proposed Project.</p>	<p>The matter raised in the Information Request is outside the scope of the environmental assessment. As per the EIS Guidelines, the effects of previous developments are reflected in the baseline for the assessment and accordingly appropriate information has been included in the assessment.</p> <p>Please see the Technical Memo: Cumulative Effects Assessment.</p>

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ab_0001-193	Treaty 8 Tribal Association	V.2, S.11.1.2.1 ; page(s) 11-3 ; line(s) 27-36 EISG S.9.3.6 Comment 2-14.	<i>Assessment of methylmercury concentrations in environmental receptors was first conducted in the Peace River system in 1980, following the development of existing hydroelectric facilities. Methylmercury levels in key environmental receptors (i.e., water, sediment, invertebrates, fish) were observed to be elevated above that expected in lakes in the region; and, in some species of fish, methylmercury levels exceeded some Health Canada guidelines for consumption. However, follow-up assessments have demonstrated that, as expected, the increase in methylmercury levels in environmental receptors following reservoir development was not permanent. Concentrations have declined and are expected to continue to decline to levels reflective of expected pre-regulation conditions (EVS Environment Consultants 1999).</i> Information Request The Proponent is requested to provide further information concerning existing methylmercury levels in the Williston and Peace Canyon reservoirs and tributaries to the reservoirs, including methylmercury trends by species and location.	Section 11.9 Table 11.9.1 provides recent data on methylmercury in fish (by species) in the study area, including Williston and Dinosaur Reservoirs. Please also see the Technical Memo: Methylmercury.
ab_0001-194	Treaty 8 Tribal Association	V.2, S.11.1.2.2 ; page(s) 11-6 ; line(s) 34 EISG S.9.1 Comment 2-15.	<i>The construction and operation of the hydroelectric facilities have resulted in some changes to biological conditions in the Peace River relative to that which occurred prior to hydroelectric developments.</i> [our emphasis] Comments The EIS gives inadequate attention to the extensive habitat conversion that has been caused by the existing hydroelectric facilities upstream. This characterisation minimises the widespread and permanent effects of those projects that are ongoing and will continue long into the future, concurrent with the additional effects of the proposed Project. Information Request The Proponent is requested to describe the scale of the prior changes resulting from the development of the WAC Bennett and Peace Canyon Dams, including an estimate of the area of habitat types lost to the extent that they can be classified from aerial photography.	Please see the response to ab_0001-192.
ab_0001-195	Treaty 8 Tribal Association	V.2, S.11.1.2.2 ; page(s) 11-6 ; line(s) 38-40 EISG S.9.1 Comment 2-16.	<i>However, there is limited information that describes biological conditions prior to the construction of the W.A.C. Bennett dam. Therefore, it is not possible to describe species composition, distribution, and productivity in biological resources that existed in the time prior to construction of W.A.C. Bennett dam from recorded observations.</i> Comments Modern methods are available for describing biological conditions prior to the construction of hydroelectric projects using mapping, hydrological data, aerial photography, existing literature, site series determination and traditional knowledge. These methods can be used to map river morphology, measure what has been lost or converted in terms of general habitat types, and describe seasonal flow patterns that	Please see the response to ab_0001-192.

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			directly influence river habitats. As mentioned in other comments above, the position that the RAA for all ecological values does not need to extend into the upper watershed due in part to a lack of quantitative data is not a defensible argument. In fact, data for many VC's in the Peace River reaches that would be directly affected by the proposed Project are also inadequate for quantitative measurement and monitoring over the long term. Information Request The Proponent is requested to: a) make available or identify the storage location of this limited information that describes biological conditions prior to the construction of the W.A.C. Bennett Dam; b) provide a rationale as to why the information referred to in part a) is limited; and c) explain what efforts, if any, have been made to date to describe biological conditions prior to the construction of the existing hydroelectric projects on the Peace River; and d) explain why this would not contribute to a much more meaningful cumulative effects assessment.	
ab_0001-196	Treaty 8 Tribal Association	V.2, S.11.1.2.2 ; page(s) 11-7 ; line(s) 15 EISG S.1.3 Comment 2-17.	<i>Reduction in diversity of the types of habitat available for fish and aquatic organisms</i> Information Request The Proponent is requested to explain in some detail about what is known of the effects of the dams and reservoirs on fish species, including harvested species and species of special conservation concern, such as arctic grayling.	Refer to Volume 2 Appendix P Aquatic Productivity Reports, Part 3, Section 2.0 for a review of available literature on ecological changes after a river is dammed to form a reservoir.
ab_0001-197	Treaty 8 Tribal Association	V.2, S.11.1.2.2 ; page(s) 11-7 ; line(s) 23, 27 EISG S.9.1 Comment 2-18.	<i>Similarly, replacement of riverine habitats with pelagic habitats and lower suitability littoral habitats (due to seasonal drawdown) supported a shift in the fish community to species that can exploit pelagic habitats for food resources and still meet life history requirements in unaffected portion of reservoir tributaries.</i> <i>In Williston Reservoir, the development of littoral trophic and fish communities is also currently limited by seasonal drawdowns.</i> Comments The language used by the Proponent is inaccurate in many instances throughout this description of previous hydroelectric developments on the Peace River. For example, the seasonal drawdown results in littoral habitats that are more accurately described as “poor quality littoral habitats”. To suggest that the fish community is currently limited by seasonal drawdowns is misleading since the quality of the habitat will be poor to non-existent so long as the reservoir is seasonally operated.	The scope of the narrative on Previous Developments is in accordance with, and is provided for the purposes set out in, Section 9.1 of the EIS Guidelines, and appropriate information is provided in the EIS.
ab_0001-198	Treaty 8 Tribal	V.2, S.11.1.2.2 ; page(s) 11-7 ;	<i>Passage of reservoir fish through discharge structures of the dams still occurs but also causes injury or mortality to some fish and, in general, reduces the</i>	The matter raised in the Information Request is outside the scope of the environmental assessment.

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	Association	line(s) 37-40 EISG S.9.1, S.10.2.3 Comment 2-19.	<i>potential productivity of upstream fish populations.</i> Information Request The Proponent is requested to provide more quantitative data about fish entrainment and rates of survival through the WAC Bennett and Peace Canyon dams in order to be able to draw more accurate predictions related to recruitment of fish to the proposed reservoir.	Please see the response to ab_0001-230.
ab_0001-199	Treaty 8 Tribal Association	V.2, S.11.1.2.2 ; page(s) 11-8 ; line(s) 27 EISG S.9.1, S.8.5.3 Comment 2-20.	<i>Upstream of the W.A.C. Bennett Dam, the formation of the reservoir inundated river valley bottoms in portions of the Peace, Findlay and Parsnip rivers, as well as lower reaches of tributary confluences to these rivers.</i> Information Request BC Hydro is asked to: a) provide the area of inundated valley bottom habitats; and b) determine the approximate linear extent of inundated river shoreline habitat including islands and back channels, etc. that has been replaced by the 1,770 km shoreline of the storage reservoir	Please see the response to ab_0001-192.
ab_0001-200	Treaty 8 Tribal Association	V.2, S.11.1.2.2 ; page(s) 11-8 ; line(s) 29-30 EISG S.9.1, S.8.5.3 Comment 2-21.	<i>Flooding in the Williston Reservoir resulted in some loss of vegetation communities occupying river floodplains, and riparian features such as wetlands.</i> Comments The area of riverine aquatic, riparian and wetland habitats lost is one parameter that can be measured using pre-development air photos. This is a rough measure of habitat capability, which can be compared to current habitats and with the conversions that would take place with future hydroelectric development in this river system. Information Request The Proponent is requested to indicate approximately the area of vegetation communities occupying river floodplains, and riparian features such as wetlands, that was lost as a result of inundation from the prior hydroelectric developments on the Peace River.	Please see the response to ab_0001-192.
ab_0001-201	Treaty 8 Tribal Association	V.2, S.11.1.2.2 ; page(s) 11-8 ; line(s) 34-35 EISG S.9.1, S.8.5.3 Comment 2-22.	<i>The composition and productivity of riparian communities colonizing this drawdown zone is now regulated by patterns of reservoir level variation.</i> Information Request BC Hydro is asked to: a) describe the current vegetation communities in the drawdown zone including such parameters as species richness, vegetation cover and structure of riparian communities; and b) indicated species presence/absence compared to reference areas.	Please see the response to ab_0001-192.
ab_0001-202	Treaty 8 Tribal Association	V.2, S.11.1.2.2 ; page(s) 11-8 ; line(s) 37-39 EISG n/a Comment 2-23.	<i>Topography and physiography of the canyon, and the operational strategy of limited variation in surface water levels (3 m) limited the extent to which riparian vegetation communities were changed.</i> Information Request BC Hydro is requested to describe the riparian communities that existed in the Peace River prior to inundation and what exists in the Dinosaur Reservoir now.	Please see the response to ab_0001-192.

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ab_0001-203	Treaty 8 Tribal Association	V.2, S.11.1.4 ; page(s) 11-12 ; line(s) 30-41 EISG S.9.1, S.8.5.3 Comment 2-24.	<i>Since the development of the existing hydroelectric facilities on the Peace River, some Aboriginal groups have asserted claims or raised concerns, through the commencement of litigation or otherwise, that the creation and operation of the dams and associated reservoirs has created impacts to their communities, and the exercise of their Aboriginal or treaty rights. ... To date, BC Hydro has resolved historic grievances associated with the existing facilities with three Aboriginal Groups in B.C. and Alberta. These include the Athabasca Chipewyan First Nation, the Kwadacha First Nation and Tsay Keh Dene. BC Hydro's historic grievances group is currently addressing other outstanding claims and concerns from Aboriginal groups regarding the existing hydroelectric facilities. Comments The grievances of Aboriginal peoples are not only historic, but they are ongoing, as are the effects of the existing hydroelectric projects. This is an important factor in conceptualising the approach to cumulative effects assessment. The proposed Project will add to the numerous ecological, social, cultural and economic effects of the existing projects currently experienced by Aboriginal peoples, and the consequent effects on land use and implications for Aboriginal and Treaty rights. This constitutes a spatial and temporal overlap in effects from multiple developments in the same region. Information Request The Proponent is requested to explain how the EIS addresses the ongoing environmental effects and Aboriginal and Treaty rights implications of the prior hydroelectric developments that overlap spatially and temporally with the potential environmental effects and implications for Aboriginal and Treaty rights of the proposed Project.</i>	The EIS is not intended to address any potential environmental effects and any related Aboriginal and treaty right implications to prior hydroelectric developments. Please see the Technical memo on Cumulative Effects Assessment.
ab_0001-204	Treaty 8 Tribal Association	V.2, 11.2.3.7 ; page(s) 11-27 ; line(s) 31 EISG S.9.2.1 Comment 2-25.	<i>Table 11.2.2 Summary of Average Predicted Shoreline Erosion Distances</i> Information Request BC Hydro is requested to provide a map or series of maps, depicting the substrates of the entire reservoir, illustrating both the 5-year and 100-year beach lines.	Shoreline geology and predicted shoreline erosion distances for the 100-year 'beach line' are shown on cross sections contained in EIS Volume 2, Appendix B, Part 2 Preliminary Reservoir Impact Lines Appendix A. Additional information on shoreline geology is presented in fence diagrams contained in EIS Volume 2, Appendix B, Part 2 Preliminary Reservoir Impact Lines. Approximate 5-year beach lines can be interpolated for each of the cross sections based on the geological unit present at the maximum normal reservoir level shown on the cross section and fence diagrams and the associated erosion distances presented in EIS Volume 2 Table 11.2.2.
ab_0001-205	Treaty 8 Tribal Association	V.2, 11.2.3.10 ; page(s) 11-30 ; line(s) 40-44 EISG S.9.2.1 Comment 2-26.	<i>The impact lines are considered 'preliminary' because they currently do not take into account the potential benefits associated with erosion protection and/or slope stabilization measures that could be incorporated into the final designs for the proposed Highway 29 realignment sections. Additionally, small changes to the position of the impact lines could be made based on information that becomes available through additional geotechnical investigations carried out to support the final design of the Project. Information Request The reservoir</i>	Please see the Technical Memo: Reservoir Impact Lines

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			impact lines are described as preliminary, and the Proponent is asked to: a) describe the nature, scope and degree of uncertainty associated with the preliminary reservoir impact lines; b) indicate what additional information will be required to finalize the reservoir impact lines and when that information will be collected, analyzed and reported; and c) indicate what the uncertainties mean for the prediction of environmental effects in the EIS.	
ab_0001-206	Treaty 8 Tribal Association	V.2, S.11.4.2.1 ; page(s) 11-63 ; line(s) 33 EISG S.8.5.3, S.9.3.2 Comment 2-27.	<i>Figure 11.4.3 Sub-basins within the Project Watershed</i> Comments Regardless of the artificial boundaries chosen for the environmental assessment areas, the water is still coming from the entire upper basin of the Peace watershed. What occurs in those upper basins can affect the water quality, not to mention the water quantity in the future reservoir, among many other parameters. Information Request The Proponent is requested to complete Figure 11.4.3 by identifying all of the sub-basins within the watershed that contribute water to the proposed Project.	Figure 11.4.1 of the EIS presents the Peace River watershed and that of major tributaries of the Peace River. Figure 11.4.3 of the EIS provides a larger scale view of the sub-basins contributing water to the Peace River between Peace Canyon Dam and the proposed Site C dam.
ab_0001-207	Treaty 8 Tribal Association	V.2, S.11.4.2.3 ; page(s) 11-65 ; line(s) 1-2 EISG S.9.3.1 Comment 2-28.	<i>Table 11.4.2 WSC Stations on Major Tributaries of the Peace River</i> Comments The EIS reports the average annual maximum and minimum daily flow for reaches of the Peace pre-and post-regulation based on available data. Periodic extreme floods can be important for the renewal of flood plain forests and riparian habitat diversity. Changes to the upstream flow regime (i.e. Parsnip and Finlay) are also relevant to assessing feasibility and environmental effects. Information Request BC Hydro is requested to: a) provide data showing the maximum flood events for pre-regulation and post-regulation (i.e. development of the WAC Bennett Dam) in a revised Table 11.4.2; and b) add data for the stations in the watersheds upstream of the Peace Canyon Dam to Table 11.4.2.	Table 11.4.3 of the EIS presents the average annual maximum daily flows pre- and post-regulation. Several of the tributaries of the Williston reservoir are gauged by the Water Survey of Canada (WSC). Data from these stations are available from the WSC website (http://www.wsc.ec.gc.ca/applications/H2O/index-eng.cfm) and are also available through the BC Hydro website (http://www.bchydro.com/energy-in-bc/our_system/transmission_reservoir_data/hydrometric_data/peace.html). Specific analysis of flow data from these stations are outside of the scope of the environmental assessment of the Project.
ab_0001-208	Treaty 8 Tribal Association	V.2, S.11.5.2, V.2, S.11.9.5.2 ; page(s) 11-85, 11-1, 11-152 ; line(s) 20-21, 8-13 EISG S.9.3.2 Comment 2-29.	<i>Table 11.5.1 Water Quality Stations in the Technical Study Area and Sampling Effort</i> <i>Baseline conditions on land, in the water and air are described and predicted changes in the following technical areas are presented: ... • Water Quality</i> <i>Given the short hydraulic residence time of water in the Site C reservoir (approximately 23 days), water discharged from Williston Reservoir will continue to influence downstream water temperature, oxygen, nutrients, suspended solids inputs, and biota, even during operation of the Site C reservoir (Section 11.4 Surface Water Regime, Section 11.5 Water Quality, and Section 11.7 Thermal and Ice Regime).</i> Comments The baseline description of water quality appears sufficiently comprehensive (See summary Table 11.5.1, p. 11-85) to support environmental assessment objectives for the proposed Project. Water	In accordance with the EIS Guidelines, predicted water quality changes in the reservoir and downstream river are described in detail in Volume 2 Appendix P Aquatic Productivity Reports, Part 2 Hydrodynamic, Water Quality and Productivity Modelling for the Site C Project. Estimates of changes in TSS, dissolved oxygen, temperature, phosphorus, and nitrate for the proposed Site C reservoir and downstream of the dam were developed. This information is provided in Volume 2, Appendix P, Part 2, Section 4.5. Flooding of tributary stream mouths and methylation was considered as part of the RESMERC modeling process and was incorporated into the results (see Volume 2 Appendix J Part 3 Mercury Reservoir Modelling).

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			<p>Quality is included in the list of technical areas for which predicted changes were to be provided. However, Section 11.5 Water Quality does not address future conditions during operation of the Site C Reservoir (as stated above). Williston Reservoir water will have less influence on water quality (e.g., dissolved oxygen) in flooded tributary mouths (particularly Halfway River, Cache Creek and Moberly River) than in the mainstem. Conditions at the flooded tributary locations may be conducive to increased mercury methylation.</p> <p>Information Request Provide the predicted changes to water quality that were to be presented in the EIS but were not.</p>	
ab_0001-209	Treaty 8 Tribal Association	V.2, S.11.9.5.2 ; page(s) 11-152 ; line(s) 8-13 EISG S.9.3.2 Comment 2-30.	<p><i>Water discharged from Williston Reservoir is nutrient poor (ultra-oligotrophic), cold (<14oC) and well oxygenated all year (Stockner et al. 2005), of moderate to slightly basic pH (7.8 – 8.2), low in organic carbon content (<2 mg/L), and with low total suspended solids concentrations (<3 mg/L) during all times of the year (Golder 2009a, b). The only exception is during freshet or flood flows from large tributary streams such as Halfway River.</i> Comments Baseline TSS data for the Peace River downstream of Peace 1 (to Peace 3) indicate that TSS may frequently exceed 3 mg/L. Information Request BC Hydro is requested to clarify the baseline TSS data for the Peace River downstream of Peace Canyon Dam to the location of the proposed Project.</p>	<p>See Appendix E Water Quality Baseline Conditions in the Peace River pages 11 to 12 and Tables B2 and B3 for baseline data on TSS in the water quality samples.</p> <p>TSS does exceed 3 mg/l, but typically only from tributary streams, especially during freshet, and in some cases in the mainstem or during rare flood conditions, as occurred in 2011.</p>
ab_0001-210	Treaty 8 Tribal Association	V.2, S.11.9.5.2 ; page(s) 11-152 ; line(s) 32-34 EISG S.9.3.2 Comment 2-31.	<p><i>During most of the year, TSS in the mainstem of Peace River technical study area is below the routine laboratory detection limit of 3 mg/L.</i> Comments TSS levels may be underestimated. See page 11 Vol. 2, Appendix E which suggests that a value of <3 mg/L may not be the appropriate value to characterize the TSS regime of the river.</p>	<p>Appendix E does not suggest that a value of <3 mg/L is inappropriate to characterize TSS of the river. It is evident from the seasonal data that mean concentrations of TSS in the Peace River are higher in the spring as compared to summer or fall (Appendix E Figure 3.6). The baseline report also presents TSS in the Peace River for different seasons. Lowering detection limits from 3 mg/L down to 1 mg/L (for example) would not result in a different TSS regime characterization. This is because the Peace River TSS regime described in the EIS is characterized by order of magnitude differences in TSS concentration between seasons, associated with seasonal run-off patterns; small detection limit changes, in the order of a few mg/L, would not alter this pattern.</p>
ab_0001-211	Treaty 8 Tribal Association	V.2, S.11.9.5.2.1 ; page(s) 11-152 ; line(s) 44-46 EISG n/a Comment 2-32.	<p><i>In the Peace River technical study area, exclusive of high TSS events during freshet, total Hg concentration seldom exceeded 1 ng/L. This low total mercury concentration is a reflection of low Hg water discharged from Williston Reservoir. Similarly low concentrations were measured from Williston Reservoir in the early 2000s (Baker et al. 2002), and these data suggest that conditions have not changed over the last nearly 15 years.</i> Information Request BC Hydro is requested to report the actual MeHg data from the reservoirs and the downstream reaches.</p>	<p>Methylmercury concentration data are provided within the Mercury Technical Data Report, Volume 2 Appendix J, Part 1.</p>
ab_0001-	Treaty 8	V.2,	<i>Mean Hg concentration in mountain whitefish and rainbow trout from Peace</i>	Table 11.9.1 shows mean mercury concentrations for mountain whitefish and rainbow trout. The

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212	Tribal Association	S.11.9.5.2.4 ; page(s) 11-154 ; line(s) 36-37 EISG S.9.3.6 Comment 2-33.	<i>River and Dinosaur Reservoir were low and within a narrow range (0.03 to 0.09 mg/kg) Table 11.9.1 Recent (2008–2011) Peace River Technical Study Area Fish Mercury Concentrations</i> Comments Table 11.9.1 shows a range of mean mercury concentration in mountain whitefish and rainbow trout of between 0.04 and 0.05 mg/kg, which appears to be at odds with the text in this section. Information Request BC Hydro is requested to clarify the mean mercury concentrations in mountain whitefish and rainbow trout.	range in mercury concentrations from raw data from all fish measured is contained within the 2010 Mercury Data Report which is referenced in Appendix L Mercury Technical Reports.
ab_0001-213	Treaty 8 Tribal Association	V.2, S.11.9.5.2.4 ; page(s) 11-154 ; line(s) 38 EISG S.9.3.6 Comment 2-34.	<i>Mercury in longnose sucker downstream of Peace Canyon Dam to the Site C dam was 0.05 mg/kg and 0.06 mg/kg downstream to Many Islands, Alberta</i> Comments Mean mercury concentration in longnose sucker from Dinosaur Reservoir was higher (0.20 mg/kg in Table 11.9.1). Information Request Clarify whether the difference in mean mercury concentration in longnose sucker upstream and downstream of Peace Canyon Dam is related to difference in diet, and whether that might be an indicator of expected mercury levels in longnose sucker in the post-impoundment environment (especially in the upstream reaches)	Based on stable isotope signatures, the one longnose sucker captured in Dinosaur Reservoir with elevated mercury relative to other fish had switched from a benthic diet to fish. Please see the Mercury Technical Data Report Appendix J Part 1 for more information.
ab_0001-214	Treaty 8 Tribal Association	V.2, S.11.9.6.3 ; page(s) 11-164 ; line(s) 1 EISG n/a Comment 2-35.	<i>Table 11.9.3 Canadian Reservoirs Comparison Matrix Summary Site C predicted area = 9.3 km2</i> Correction Should read 93.3 km2. Note that the same error occurs in Vol.2 Appendix J, Part 1, Table 5.3	This update has been added to the List of Errata and Updated Information.
ab_0001-215	Treaty 8 Tribal Association	V.2, S.11.9.6.3 ; page(s) 11-164 ; line(s) n/a EISG n/a Comment 2-36.	<i>Table 11.9.3 Canadian Reservoirs Comparison Matrix Summary Original: Flooded Area</i> Correction Should read ratio of Total Reservoir Area: Original Area	This update has been added to the List of Errata and Updated Information.
ab_0001-216	Treaty 8 Tribal Association	V.2, S.11.9.7.2 ; page(s) 1-169 ; line(s) 4-8 EISG S.9.3.6 Comment 2-37.	<i>For normally non-piscivorous species that switch to a predominantly fish-based diet, their tissue mercury concentrations may increase more than what is seen within the Site C reservoir. This has been observed in Quebec (Schetagne et al. 2003) and Labrador (Anderson 2011), where downstream lake whitefish mercury concentrations were 1.5–2x higher than what was observed in the upstream reservoir.</i> Information Request BC Hydro is requested to comment on whether this might explain the higher mercury levels in longnose sucker from Dinosaur	Please see the response to ab_0001-213.

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			reservoir and suggest potential mercury increases that might be expected in non-piscivorous fish in the downstream vicinity of the Site C tailrace.	
ab_0001-217	Treaty 8 Tribal Association	V.2, S.11.10.2 ; page(s) 11-173 ; line(s) 12 EISG S.9.4.1, S.23.1 Comment 2-38.	<i>Figure 11.10.2 Meteorological Stations in the Vicinity of the Site C Project</i> Comments Meteorological information from the upper watershed and not just the Peace Canyon Dam is of interest to the project engineers. Precipitation in the upper watershed will affect long-term storage in the Williston reservoir. This meteorological information was considered in section 37 in Effects of the Environment on the Project. Information Request The Proponent is requested to clarify why the data from active meteorological stations in the upper watershed are not included in the technical study area in this section of the EIS.	<p>The purpose of the Microclimate study described in Section 11.10 and in Volume 2 Appendix K is to evaluate quantitatively how construction of the proposed Site C dam and formation of the reservoir might influence the local and regional microclimate. The study area is described in Section 1.1.3 of Volume 2 Appendix K.</p> <p>As described in Section 11.10.6, the Microclimate modelling "predicts that there would be no changes more than one kilometre from the proposed reservoir that are statistically distinguishable from year-to-year variations."</p> <p>The climate stations in the upper watershed are outside the Microclimate study area, and outside the 1 kilometre area that would be influenced climatically by the Site C reservoir.</p>
ab_0001-218	Treaty 8 Tribal Association	V.2, S.12.1.1 ; page(s) 12-1, 12-2 ; line(s) 39-41, 1-12 EISG S.1.3 Comment 2-39.	<i>The Draft Fish, Wildlife and Ecosystem Resources and Objectives for the Lower Peace Watershed Site C Project Area (BC Government 2011) provides guidance for the Site C EIS based on the province's mandate to protect and manage fish and fish habitat. The stated purpose of the document is to identify and recommend valued environmental components (VECs) and management objectives for fish, wildlife and ecosystem resources for consideration in assessing the proposed Site C project and its possible development'. The document defines a VEC as 'characteristics or attributes that, if degraded, would compromise the integrity of the key values'. The document and the VECs were taken into account in the identification of species for consideration in this assessment. The assessment of potential effects on fish and fish habitat was designed by taking into account the draft Fish, Wildlife and Ecosystem Resources and Objectives for the Lower Peace River Watershed Site C Project Area (BC Government 2011)</i> Information Request BC Hydro is asked to clarify to what extent the Draft Fish, Wildlife and Ecosystem Resources and Objectives for the Lower Peace Watershed Site C Project Area was taken into account in the design of the assessment of potential effects of the proposed Project on fish and fish habitat.	Please see the response to ab_0001-226.
ab_0001-219	Treaty 8 Tribal Association	V.2, S.12.1.2 ; page(s) 12-3 ; line(s) 18-22 EISG S.10.2.3 Comment 2-40.	<i>....or the Project may alter fish habitat by changing the physical or chemical characteristics of that habitat in such a way as to make it unusable by fish.</i> Comments This appears to be a somewhat extreme definition of habitat alteration. Habitat may be altered and still be usable by fish. Habitat alterations may change fish use of habitats (type of use, season of use, species' use) but habitat alterations does not necessarily or often exclude fish use. Information Request The Proponent is requested to clarify whether the narrow definition of	As described in Section 12 on page 12-3: "The Project has the potential to affect fish habitat in two ways. The Project may destroy fish habitat by placing a permanent physical structure on that habitat, or the Project may alter fish habitat by changing the physical or chemical characteristics of that habitat in such a way as to make it unusable by fish. Destruction or alteration of important habitats may be critical to the sustainability of a species population."

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			habitat alteration suggests that only habitat alterations that render an area unusable to fish are considered in the assessment.	
ab_0001-220	Treaty 8 Tribal Association	V.2, S.12.1.5.1 ; page(s) 12-5 ; line(s) n/a EISG S.8.5.3, S.9.1.3, S.9.2.3 Comment 2-41.	<i>Figure 12.1 Local and Regional Assessment Areas for fish and fish habitat</i> Comments It does not seem possible that the regional assessment area (RAA) for fish and fish habitat could logically not extend into the upstream reaches of the river system above the Peace Canyon Dam. The infrastructure and operations of the upstream facilities currently have many effects on the aquatic habitat in the local area including the obvious ones of flow control, changes in thermal regimes, sediment obstruction, entrainment, and fragmentation of the river corridor. Information Request BC Hydro is requested to explain why the regional assessment area for fish and fish habitat does not include the entire watershed upstream of the proposed Project making reference to the following: §§ the influence of fish passage through the WAC Bennett and Peace Canyon dams on fish populations downstream; §§ the dependence of the proposed Project on the reservoirs and operating regimes of the upstream facilities; §§ the need to coordinate operation of all hydroelectric facilities on the Peace River; and §§ the large number of potential environmental interactions between the existing upstream facilities and the proposed Project.	Regarding the comment, "The infrastructure and operations of the upstream facilities currently have many effects on the aquatic habitat in the local area including the obvious ones of flow control, changes in thermal regimes, sediment obstruction, entrainment, and fragmentation of the river corridor": The effects are accounted for in the baseline. As per the EIS Guidelines, "The Regional Assessment Area, or RAA, is the area within which projects and activities, the residual effects of which may combine with residual effects of the Project, will be identified and taken into account in the cumulative effects assessment". Further, the EIS Guidelines Section 8.5.3.1 states: "The Baseline Case [for cumulative effects assessment] will demonstrate the current status of the VC. In doing so, it will reflect the effect of all projects and activities that have been carried out. Please see the Technical Memo: Cumulative Effects Assessment.
ab_0001-221	Treaty 8 Tribal Association	V.2, S.12.1.5.1 ; page(s) 12-5, 12-16, 12-18; line(s) 14-16, 1, 1-2 EISG S.8.4.1 Comment 2-42.	<i>The Local Assessment Area (LAA) is defined as the Peace River downstream from the Peace Canyon Dam to Many Islands, Alberta and its tributaries entering the proposed reservoir.</i> <i>Table 12.7 Summary of the Ecology of Fish Populations Recorded in the Local Assessment Area</i> <i>Table 12.8 Summary of Large-Fish Population Distribution, Habitat Use, Movement Strategy, and Recruitment Sources in the Local 1 Assessment Area</i> Comments Tributaries downstream of Site C appear not to be considered part of the LAA. Table 12.7 and Table 12.8 include tributaries downstream of the proposed Project as part of the LAA but the definition of LAA in the text excludes these areas. BC Hydro's studies show connectivity for many fish species between the Peace River mainstem and tributaries both upstream and downstream of the proposed Project. Table 12.8 also defines many of these tributaries as recruitment sources for the Peace River populations. Information Request Clarify why the LAA does not include tributaries entering the Peace River downstream as far as Many Islands.	Downstream tributaries have been included in Peace River Inventory Studies, Water Temperature and Water Quality Monitoring Studies, Radio Telemetry Studies, Elemental Signature Studies and Genetic Studies. The Peace River Inventory Studies included fish and fish habitat sampling in the confluences of each tributary downstream to Many Islands. Information in Appendix I Fluvial Geomorphology and Sediment Transport Technical Data Report indicates that there will be no changes to downstream tributary confluences. Based on the baseline information, the Kiskatinaw, Alces, Pouce Coupe and Clear Rivers were not included in the LAA as no physical changes to habitat due to the Project will occur in these systems. The scope of the Fish and Fish Habitat effects assessment is in accordance with the EIS Guidelines and appropriate information is provided in the EIS.
ab_0001-222	Treaty 8 Tribal	V.2, S.12.1.5.1 ; page(s) 12-6 ;	<i>The downstream limit of the LAA was set at a point where the physical changes in the river are expected to diminish to the point where the change could no</i>	For clarification: The downstream boundary of the Fish and Fish Habitat LAA was set where changes to the environment had diminished to a point where the change would not have an

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	Association	line(s) 4-6 EISG S.8.4.1 Comment 2-43.	<i>longer have a measurable effect that would influence fish and fish habitat.</i> Comments By this definition, the Proponent is of the view that there potentially may be a measurable effect on fish and fish habitat as far downstream as Many Islands, Alberta. The fish and fish habitat studies in general, and studies to model downstream fish habitat availability as a function of river discharge were confined to the reach between the proposed Project and Taylor. Fish and fish habitat effects assessments in the Peace River and tributaries downstream of Taylor suffer from the lack of a similar level of investigation. Information Request BC Hydro is requested to clarify why many tributaries downstream of the proposed Project (particularly the lower reaches) as far as Many Islands, Alberta were not studied in relation to fish and fish habitat.	impact on the VC. Please see the Technical Memo: Spatial Boundary Selection. The scope of the Fish and Fish Habitat effects assessment is in accordance with the EIS Guidelines and appropriate information is provided in the EIS. Fish and fish habitat studies were conducted to Many Islands in the Peace River Fish Inventory studies. Detailed Peace River fish habitat mapping was conducted to the Alberta border. Physical environmental modelling (i.e., Mike 11 Telemac2D surface water modelling) was conducted downstream to the Town of Peace River and further in some cases. Please also see the response to ab_0001-221.
ab_0001-223	Treaty 8 Tribal Association	V.2, S.12.1.5.1 ; page(s) 12-6 ; line(s) 7-15 EISG S.8.4.1 Comment 2-44.	<i>For the Regional Assessment Area (RAA), consideration was given to the geographic extent, or maximum distribution, of fish populations residing in the LAA and associated meta-populations in the Peace River and tributaries flowing in the future reservoir. In general, a fish population can be defined as a group of individuals of the same species that live at the same point in time in a geographically defined area (Wooton 1990). For a given species, the meta-population within the geographic boundary of the RAA consists of distinct groups or populations. For meta-populations residing in the Peace River, this geographic boundary (i.e., for the Regional Assessment Area) can be defined as the Peace River downstream from the Peace Canyon Dam and upstream from Vermilion Chutes.</i> Information Request Clarify why Peace River tributaries downstream of the proposed Project to Vermilion Chutes are not included as part of the RAA.	A principal factor supporting the preliminary selection of the spatial boundary for the assessment was the distinct distribution of fish communities in the Peace River in B.C. and Alberta. As described in the EIS (see Section 12.3.2.1), two distinct communities of fish are observed in the Peace River in the LAA. “Coldwater” species typically require low temperature conditions, large-textured sediments and clean, well-oxygenated water to complete their life requisites typical of the Peace River flowing from the Rocky Mountains. “Coolwater” species typically are able to tolerate higher water temperatures and are better adapted to cope with higher suspended sediment loads as found in the Peace River, typical of the reach of the Peace River flowing across the Alberta Plateau. The transition zone for the two distinct fish communities is located near the Pine River, approximately 16 km downstream of the proposed dam site. This zone forms due to the inflow of water, nutrients and suspended sediment from the Pine, Beaton, Kiskatinaw, Alces, Clear and Pouce Coupe Rivers. This transition zone does not act as a complete barrier to movement of fish, but defines distinct habitat conditions which define the typical resident fish communities which inhabit them. Coldwater species dominate the fish community primarily upstream of the Pine River confluence, and are only infrequently found downstream in Alberta. The presence of coolwater species increases downstream of the Pine River with populations residing between the Beaton River and Many Islands. Downstream of Many Islands, fisheries studies associated with the Dunvegan project have demonstrated the general absence of the coldwater species and an overall diminishing abundance of total abundance of the fish community. Some species of coolwater fishes have been observed to undertake extended migrations in the mainstem Peace. Specifically, limited numbers of fish from Goldeye and Walleye populations will migrate as far downstream as Vermilion Chutes to forage, and can temporarily reside upstream of the Many Islands before returning to overwintering and spawning locations farther downstream on the Peace River in Alberta.

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				<p>Based on the distinct differences in the distribution of coldwater and coolwater fish communities in relation to the location of the Project, the movement patterns of the some species of the coolwater community, and the preliminary assessments of predicted changes to the physical environmental resulting from the Project, the downstream boundaries of the LAA and RAA were established at Many Islands and Vermilion Chutes, respectively. The establishment of the RAA boundary at Vermilion Chutes was intended to capture the maximum downstream distribution of potential Peace River fish populations that may be affected by cumulative effects.</p> <p>Based on Project baseline fisheries information and fisheries information from Dunvegan fisheries investigations, Vermillion Chutes was the geographic extent or maximum distribution of fish populations in the LAA. Based on telemetry information, other fisheries information and the effects assessment, no residual effects are expected downstream in the tributaries, therefore were not included in the RAA.</p>
ab_0001-224	Treaty 8 Tribal Association	V.2, S.12.2.1 ; page(s) 12-7 ; line(s) 40 EISG S.8.4.1 Comment 2-45.	<i>In 2005, fish and fish habitat studies on the Peace River and its tributaries were initiated by BC Hydro in support of anticipated regulatory application for the Project. These studies have been multidisciplinary and have encompassed the LAA. Comments Few fish and fish habitat studies were conducted in the lower portion of the LAA from Site C to Many Islands. Some sections of the Peace River in this portion of the LAA appear to have been subject to only one year of study and some tributaries (which potentially might contribute to upstream fish populations) appear to not have been studied. Information Request BC Hydro is requested to explain how its fish and fish habitat studies have encompassed the entirety of the LAA, as per Tables 12.7 and 12.8 (i.e. including tributaries downstream of the Peace River downstream of the proposed Project location).</i>	<p>The scope of the Fish and Fish Habitat effects assessment is in accordance with the EIS Guidelines and the effects assessment information is provided in the EIS.</p> <p>The fish and fish habitat studies conducted for the Project since 2005 have sufficiently covered the LAA. A listing of key studies can be found in Section 12.2.1 (i.e. it is found in the EIS immediately below the section referenced in the comment), and in the reference section of Appendix O.</p> <p>Please also see the response to ab_0001-221.</p>
ab_0001-225	Treaty 8 Tribal Association	V.2, S.12 ; page(s) 12-9 ; line(s) 29-30 EISG S.10.2.3 Comment 2-46.	<i>A total of six species have sensitive designations, including bull trout, Arctic grayling, lake trout, brook stickleback, northern pikeminnow, and northern redbelly dace. Comments The bull trout in Alberta is not listed as sensitive; it is listed as a species of special concern.¹ <i>In 2002, bull trout were listed under the Wildlife Act as a Species of Special Concern because of the declines in distribution and abundance, as well as continued threats from habitat alteration and introduced competitive species.</i> This is important to effects assessment and management as BC Hydro is planning to create a barrier to migration and limit the access of Alberta migrating bull trout into the project area. The EIS does not accurately outline the state of the bull trout in Alberta within the context of the effects assessment and the EIS. This incorrect designation is also present in Table 12.5 of this section. Information Request BC Hydro is requested to correct the conservation designation for bull trout within the assessment area for the</i>	<p>The Alberta provincial status of bull trout will be amended to "species of special concern". This update has been added to the List of Errata and Updated Information.</p> <p>Based on all of the Project fisheries studies, including genetic and elemental signature studies, there has been no indication of Alberta bull trout migrations in the study area. The Site C dam would not prevent Alberta bull trout from completing critical life history requirements (i.e., prevent fish returning to spawning areas in Alberta).</p>

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			<p>EIS.</p> <p>1. Government of Alberta. 2012. Bull Trout Conservation Management Plan 2012-2017. Alberta Conservation Management Plan No. 8, at p.viii.</p>	
ab_0001-226	Treaty 8 Tribal Association	V.2, S.12.3.1 ; page(s) 12-11 ; line(s) 1-7 EISG S.8.3 Comment 2-47.	<p><i>The BC Government has identified six species of interest in the Lower Peace River Watershed Site C Project Area (BC Government 2011). These species are Arctic grayling, bull trout, burbot, goldeye, mountain whitefish, rainbow trout and walleye. Indicator species were identified to represent a variety of ecological communities, thermal regimes, trophic levels, and biogeographical origins and intended to capture potential effects across a wide range of conditions and faunas that may be affected by the Project. Comments It is not clear what the Proponent means by the term “species of interest”. This terminology is not used in BC Government 2011, which uses the terms valued components and indicator species.² BC Government 2011 states that: ...while all species are important, in some cases, it is possible to identify a subset of species that could be used as indicators for the status of the broader community. Managing for and tracking the status of these species, or species assemblages, is expected to provide a picture of progress toward fish, wildlife and ecosystem goals.³ BC Government 2011 also states that the: ...document has not benefited from Aboriginal Groups, public or external peer review and as such, additional/alternative environmental values, objectives and performance measures may be identified during the environmental assessment process.⁴</i></p> <p>Information Request BC Hydro is requested to: a) clarify whether each of the identified indicator species specified in BC Government (2011) that is carried forward into the EIS represents (stands as a proxy for) a particular ecological community, thermal regime, trophic level or biogeographical origin and, if so, identify these ecological communities; b) clarify whether anticipated impacts to these indicator species are expected to apply to the broader ecological community that they represent and, if so, whether these anticipated impacts to the broader ecological community are recognized in the EIS; and c) indicate how species of particular value to Aboriginal groups have been factored into the environmental assessment, given that considerations of Aboriginal groups were not part of the BC Government (2011) process.</p> <p>2. British Columbia Government (B.C. Government). 2011. Draft Fish, Wildlife and Ecosystem resources and Objectives for the Lower Peace River Watershed – Site C Project Area.</p> <p>3. Ibid., at p.19.</p> <p>4. Ibid., at p.5.</p>	<p>The Valued Component for the effects assessment is Fish and Fish Habitat, which was selected as described in Section 10.1 of the EIS Guidelines. The assessment used ecosystem approach to examine potential changes in fish and fish habitat in the LAA. Baseline conditions and potential effects for all fish species are examined. To assist in describing baseline conditions and potential effects, ecological factors and groups such as coldwater and coolwater fish groups, fish size, movement, and habitat use (see sub-section 12.3.2 Fish Ecology).</p> <p>As described in Section 12.1: "The approach to the effects assessment takes into account the regulatory and policy setting for fish and fish habitat, and the results of consultation with the general public, regulators, stakeholders, community members, Aboriginal groups, and governments. In particular, BC Hydro has considered information from Traditional Land Use Studies (TLUS) provided by Aboriginal groups." Collectively, this information informed the effects assessment that took into account effects to fish and fish habitat, identified species, and topics of concern.</p>

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ab_0001-227	Treaty 8 Tribal Association	V.2, S.12.3.1 ; page(s) 12-11 ; line(s) 21-22 EISG S.10.2.3, S.15.2.3 Comment 2-48.	<i>Table 12.6 Summary of Traditional Knowledge Provided in Traditional Land Use Studies Reports</i> Comments Noteworthy in the table is the importance of confluence areas of tributaries to the mainstem Peace River for Aboriginal groups' harvesting. Information Request BC Hydro is requested to clarify how and to what degree fish species identified as being used for traditional purposes and listed in Table 12.6 were considered in the assessment of the potential effects of the proposed Project.	As stated in Section 12.2.2 Traditional Knowledge, Traditional Land Use Studies provided information on the harvest of particular species at particular locations on the Peace River and its tributaries by Aboriginal groups (see Table 12.6 for a summary). This information was taken into account in the assessment of the potential effects of the Project on the Fish and Fish Habitat VC in Section 12, and subsequently used in the assessment of the potential effects of the Project on Current Use of Lands and Resources for Traditional Purposes in Section 19 of the EIS.
ab_0001-228	Treaty 8 Tribal Association	V.2, S.12.3.2.1 ; page(s) 12-25 ; line(s) 1-5 EISG S.10.2.3, S.16.7.3 Comment 2-49.	<i>Seven sport fish species that are part of the fish community belong to the coldwater group. They include Arctic grayling, bull trout, kokanee, lake whitefish, lake trout, mountain whitefish and rainbow trout... Five sport fish species belong to the coolwater group including walleye, goldeye, northern pike, burbot, and yellow perch.</i> Section 12.3.2.1 describes two primary groups of sport fish but does not define sport fish. Information Request The Proponent is requested to: a) clarify whether "sport fish" is consistent with that set out in Section 58 of the BC Sport Fishing Regulations and, if not, to define "sport fish"; and b) explain the importance of this classification of species to the environmental assessment.	In sub-section 12.3 Baseline Conditions, sport fish is one of the species groupings, and is used for the descriptive purposes of communicating information to the broad EIS audience. The species grouped in this category are provided in Table 12.5. The category was not used to confer nor imply differential importance, nor place any specific priority on species grouped in that category for the purposes of the environmental assessment
ab_0001-229	Treaty 8 Tribal Association	V.2, S.12.3.2.1 ; page(s) 12-25 ; line(s) 15-19 EISG S.10.2.3 Comment 2-50.	<i>A number of species recorded in the LAA are rare and are not considered part of the existing fish community. These include brook trout, pygmy whitefish, brook stickleback, finescale dace, northern redbelly dace, peamouth and pearl dace. They are present, but individuals of these species represent transients from populations that reside outside the influence of the LAA.</i> Comments Rarity in the catch may be a reflection of gear used, sampling times, etc. and may not necessarily reflect rarity in the ecosystem. As well, rarity in the catch does not necessarily mean that these represent transients from populations that reside outside of the LAA. In addition, rarity in a community does not equate to unimportance. Information Request The Proponent is requested to clarify why some of the fish species recorded in the LAA are not considered part of the existing fish community.	The text quoted describes why these species were not considered part of the existing fish community. To expand and to clarify the comments: As summarized in Volume 2 Appendix O, the baseline fish sampling employed a range of gear types during intensive sampling that sampled on the order of 100,000's of fish of all species present throughout the LAA over a period of seven years for Project studies. The information was based on more than two decades of study on the river.
ab_0001-230	Treaty 8 Tribal Association	V.2, S.12.3.2.3 ; page(s) 12-26 ; line(s) 6 EISG n/a Comment 2-51.	<i>Several species demonstrate extended movements, including Arctic grayling, bull trout, mountain whitefish, goldeye, and walleye. Movements by adults involve long distance migrations to tributary spawning habitats and foraging areas.</i> Comments The issue of how existing upstream dams have limited the movements of these species is not addressed in the EIS. Information Request As part of the description of the historical context, the Proponent is requested to describe the potential movement patterns of long-ranging fish species and the	The scope of the narrative on Previous Developments is in accordance with, and is provided for the purposes set out in, Section 9.1 of the EIS Guidelines, and appropriate information is provided in the EIS. The description of potential changes that have resulted from previous developments is provided in Section 11.1 Previous Developments. Section 11.1.2.2 Biological Conditions states: "...there is limited information that describes biological conditions prior to the construction of the W.A.C. Bennett dam. Therefore, it is not possible to describe species composition, distribution, and productivity in biological resources that existed in the time prior to

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			changes in these patterns that would have occurred as a result of the development of the WAC Bennett and Peace Canyon Dams.	construction of W.A.C. Bennett dam from recorded observations. This makes it impossible to measure directly any change to those factors resulting from development of the hydroelectric facilities." This lack of information includes movement patterns of fish in the Peace River prior to hydroelectric development.
ab_0001-231	Treaty 8 Tribal Association	V.2, S.12.3.2.3, V.2, S.12.3.2.4 ; page(s) 12-27, 12-27; line(s) 1-5, 31-40 EISG S.10.2.3 Comment 2-52.	<p>• <i>Juvenile Arctic grayling are recorded immediately downstream of major tributaries from the Halfway River to the Beatton River, indicating downstream dispersal from each system</i></p> <p>• <i>Large numbers of Age 0 mountain whitefish emigrate from rearing tributaries such as the Moberly River and Halfway River</i></p> <p><i>The Peace River fish community is dominated by adults and older juveniles of large-fish species, with a paucity of younger fish in the large-fish species group and most small fish species. This is most apparent upstream of the Halfway River confluence. The mechanism that drives this outcome is the absence of suitable habitats needed by small-sized fish in the Peace River. ...Downstream of the Halfway River, this pattern of large-fish versus smallfish diminishes, but still remains the primary feature of the Peace River fish community.</i></p> <p>Comments The above comments concerning the relative presence of juveniles seem somewhat contradictory. The pilot small fish program conducted as part of the Peace River Fish Community Indexing Program (Phase 5 Studies) and which targeted fish < 200 mm length recorded a total of 18 (<i>sic</i>) species in nearshore areas of the Peace River in the reaches from downstream of the Moberly River confluence to just downstream of the PCN dam. This included 9 species of sportfish, 3 species of sucker, 5 species of cyprinids and 2 species of sculpins. These data suggest that nearshore areas provide important nursery areas for large fish species (i.e., sport fish and suckers) as well as important habitat for small fish species (i.e., cyprinids and sculpins). These areas would be subject to inundation as a result of the proposed Project.</p>	<p>For clarification: The quoted text is consistent.</p> <p>See Volume 2 Appendix O for a full description of the spatial patterns of abundance and habitat use in nearshore and side channel habitat of the Peace River in the LAA.</p>
ab_0001-232	Treaty 8 Tribal Association	V.2, S.12.3.2.4 ; page(s) 12-27 ; line(s) 27 EISG S.10.2.4 Comment 2-53.	<p><i>Recruitment via entrainment maintains the rainbow trout, kokanee and lake trout populations.</i></p> <p>Comments Other species including bull trout, lake whitefish and Peamouth are also maintained via entrainment.</p> <p>Information Request BC Hydro is requested to discuss any effects that recruitment via entrainment may have on populations upstream of Peace Canyon Dam, and WAC Bennett Dam, given that individuals are not able to travel back upstream past the dams and are therefore lost to the upstream populations.</p>	<p>Please see the Technical Memo: Cumulative Effects Assessment.</p> <p>For clarification: Bull trout in the Local Assessment Area are maintained by recruitment from the Halfway River watershed, as "The upper Halfway River watershed provides spawning and rearing habitats for the Peace River bull trout population." (Section 12)</p>
ab_0001-233	Treaty 8 Tribal Association	V.2, S.12.3.2.5 ; page(s) 12-27 ; line(s) 31-38 EISG S.10.2.3,	<p><i>The Peace River fish community is dominated by adults and older juveniles of large-fish species, with a paucity of younger fish in the large-fish species group...The mechanism that drives this outcome is the absence of suitable habitats needed by small-sized fish in the Peace River. This is caused by the</i></p>	<p>The matter raised in this comment is outside the scope of the environmental assessment. The scope of the Fish and Fish Habitat effects assessment is in accordance with the EIS Guidelines and appropriate information is provided in the EIS. The effects of previous developments are reflected in the baseline for the assessment.</p>

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		S.8.5.3 Comment 2-54.	<i>regulated flow regime of the Peace River and life history strategies that rely on tributary habitats for the life requisites spawning and early rearing.</i> Information Request The Proponent is requested to explain in more detail the impacts of existing upstream dams on habitat characteristics important to fish populations (e.g., the predominance of adults and juveniles might indicate reduction in quality spawning habitat that was previously available prior to upstream dam creation).	Please see the Technical Memo: Cumulative Effects Assessment.
ab_0001-234	Treaty 8 Tribal Association	V.2, S.12.3.2.5 ; page(s) 12-28 ; line(s) 5-11 EISG S.10.2.3 Comment 2-55.	<i>Smaller tributaries and the lower sections of larger tributaries have limited coldwater fish habitats due to water flow regimes that are dominated by large spring freshets, low summer and winter flows, high summer water temperatures, and elevated suspended sediment loads caused by watercourse down-cutting through the Peace River valley wall. Areas such as the Lynx Creek, Farrell Creek, lower Halfway River, and Cache Creek support populations of minnows and suckers, which use tributary confluence areas as population focal points.</i> Comments While it appears to be correct that smaller tributaries and the lower sections of larger tributaries have limited coldwater fish habitats to sustain these species, the Peace River Inventory reports conducted by Mainstream (2009, 2010) suggest that most species in the study area are represented by viable, self-sustaining fish populations and that the majority of these likely spawn and rear in tributaries before recruiting to Peace River populations. The magnitude and timing of spawning runs as well as the locations of critical habitats within, and relative importance of, various tributaries to Peace River fish populations appears to have not yet been determined. In particular, the importance of the lower portions of tributary streams as well as nearshore areas of the Peace River to the maintenance of Peace River mainstem fish populations appears to be not well understood. Information Request The Proponent is asked to comment on the seasonal importance of smaller tributaries and the lower sections of larger tributaries to particular life history stages (i.e., spawning and rearing) of coldwater fish species in the Peace River	The scope of the Fish and Fish Habitat effects assessment is in accordance with the EIS Guidelines and appropriate information is provided in the EIS. Please refer to Appendix O Fish and Fish Habitat Technical Data Report for detailed information on seasonal fish habitat use in small and large tributaries. Individual studies conducted for the Project and for other purposes by other investigators are also referenced in that Appendix.
ab_0001-235	Treaty 8 Tribal Association	V.2, S.12.3.3 ; page(s) 12-29, 12-30 ; line(s) 31-44 1-4 EISG S.10.2.3 Comment 2-56.	<i>In general, the lower sections of Peace River tributaries provide important spawning and early rearing habitats for suckers and minnows. Important spawning and rearing for sport fish have been recorded only in the upstream areas of large tributaries.</i> Comments Small tributaries appear to have not been as comprehensively studied as large tributaries with respect to their use by Peace River fish for spawning. Efforts to document fish spawning in the lower reaches of larger tributaries appear to have been hampered by flow conditions.	Please refer to Appendix O Fish and Fish Habitat Technical Data Report and additional individual studies referenced in that Appendix. The Peace River system has comprehensive literature on fish studies conducted over the last several decades, including studies which demonstrate the spawning tributaries. Studies conducted for the Project built upon those studies and used them to derive the most effective approach to understanding fish ecology of the system. Many studies were conducted in small tributaries; however, the majority of Peace River fish species spawn in the larger tributaries, so more effort was directed at the larger tributaries. The studies on the

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			The relative importance of mountain whitefish spawning habitat in the lower section (compared with the upper portion) of Halfway River seems to be underestimated. Refer to Halfway River and Moberly River Fall Mountain Whitefish Migration and Spawning Study 2009 by Mainstream Aquatics 2010 in Table 3.4 (p.24) and Figure 3.10 (p.25).	larger tributaries have been effective in understanding the importance of the large tributaries for spawning purposes, not only in the lower sections but also the upper sections of these tributaries. Therefore, the basis for assumption made in the comment that the importance of the lower sections of the large tributaries for spawning is uncertain is not apparent. Thus, the scope of the Fish and Fish Habitat effects assessment is in accordance with the EIS Guidelines and the appropriate information is provided in the EIS.
ab_0001-236	Treaty 8 Tribal Association	V.2, S.12.4.1.1., V.2, S.12.1.2 ; page(s) 12-31, 12-4 ; line(s) 22-25, 1 EISG S.10.2.4 Comment 2-57.	<i>The following sections discuss each of the potential changes to fish habitat, fish health and survival, and fish movement resulting from effects of the construction and operation phases of the Project resulting from the key issues identified in Section 12.1.2 above and interactions summarized in Table 12.11 below.</i> Table 12.2 Interaction of the Project with Fish and Fish Habitat Comments Table 12.2 lists Level 2 construction phase component level interactions, which were to be further analysed and evaluated in the effects assessment. Information Request The Proponent is requested to a) provide a more detailed analysis of the Level 2 construction phase component level interactions that informs the reader as to the magnitude, scope and severity of impacts; and b) provide appropriate references to details in the relevant technical documents	Project components and activities are described in Section 4, Project Description, and Section 12, Fish and Fish Habitat, of the EIS. Please also see the Volume 1 Appendices A, B, and C. The scope of the Fish and Fish Habitat effects assessment is in accordance with Section 8.3.2 of the EIS Guidelines and appropriate information is provided in the EIS.
ab_0001-237	Treaty 8 Tribal Association	V.2, S.12.4.1, V.2, Appendix A, V.2, S.12.1.1 ; page(s) 12-32, 12-4 ; line(s) 1-12 EISG S.10.2.4 Comment 2-58.	<i>Table 12.11 Interaction of the Project by Phase, Project Component and Category of Effects Table 2 Interaction matrix used to evaluate project interactions with valued components Table 12.2 Interaction of the Project with Fish and Fish Habitat</i> Comments Potential category 2 effects on the Fish and Fish Habitat VC associated with temporary and permanent access road construction activities are identified in Volume 2, Appendix A Project Interaction Matrix, Table 2. Similarly Table 12.2 of this Section identifies a level 2 interaction potential between temporary and permanent access road construction and the Fish Habitat and Fish Health and Survival VC categories. However, Table 12.11 shows no interaction potential between Access Roads and fish and fish habitat. Nevertheless, following Table 12.11, Section 12.4.1.1 indicates effects on fish habitat that would result from construction of a 2.95 km North Bank haul road. The potentially affected area is described as providing high-quality rearing habitats for Arctic grayling, bull trout, mountain whitefish, and rainbow trout and also providing high-quality feeding habitats for Arctic grayling, bull trout, rainbow trout, and walleye. The surface area potentially affected is not provided in Table 12.12. Surface areas of fish habitat potentially affected by construction components and activities are not explicitly identified	Interactions between access roads and fish and fish habitat are taken into account in the assessment. Temporary off site access roads were determined to be a category "1" not "2". The footprint of the entire dam and generating station construction zone includes the north bank haul road. The large scale permanent and temporary access roads considered as category "2" interactions (north bank haul road, temporary Peace River crossing, and temporary Moberly River access road) were included in the dam and generating station construction footprint, which is a category "2" interaction, and hence in the fish habitat in Table 12.11.

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			in Table 12.12. Consequently, it is not possible to fully understand the potential magnitude or severity of associated impacts on fish habitat, fish health and survival and fish movement. Section 12.4.1.1 has not considered sediment effects during construction on fish habitat (see Table 12.11). Sediment effects during construction have only been dealt with as they relate to construction effects on fish health and survival (Section 12.4.3.1). Correction Table 12.11 should be corrected to indicate the potential interactions between Access Roads and the Fish and Fish Habitat VC.	
ab_0001-238	Treaty 8 Tribal Association	V.2, S.12.4.1.2 ; page(s) 12-34 ; line(s) 27-29,42-44 EISG S.10.2.4 Comment 2-59.	<i>Both stages of construction (channelization and diversion) would lead to an increase in the water levels upstream of the construction site, which would provide additional fish habitat. The increase in wetted surface area of the headpond would potentially provide additional fish habitats; however, water levels would fluctuate. This fluctuation would limit the ability of fish to utilize the newly formed habitats in the headpond.</i> Comments The initial sentence above is misleading. The second second sentence provides a better description of the potential effect of headpond creation on the availability and suitability of fish habitat.	For clarification: The text appropriately describes the prediction that increased water levels will result in wetted area of fish habitat. See Table 12.22 Characterization of Residual Fish and Fish Habitat Effects, which summarizes the characterization of residual effects.
ab_0001-239	Treaty 8 Tribal Association	V.2, S.12.4.1.2 ; page(s) 12-35 ; line(s) 4-7 EISG S.10.2.4 Comment 2-60.	<i>Filling of the Site C reservoir would result in the loss of 28.0 km2 of Peace River fish habitat area and 1.63 km2 of tributary fish habitat area. The lotic habitat areas would be replaced by 9.42 km2 of littoral area (defined as water depth < 6 m) and 83.57 km2 of limnetic area.</i> Information Request BC Hydro is asked to make reference to Vol. 2 Appendix P, Part 3, and to make the above statement more specific with regard to the type of Peace River habitat loss as per the following suggestion: <i>Filling of the Site C reservoir would result in the loss of 28.0 km2 of Peace River lotic fish habitat area and 1.63 km2 of tributary fish habitat area. The lotic habitat areas would be replaced by 9.42 km2 of littoral area (defined as water depth < 6 m) and 83.57 km2 of limnetic area.</i>	This information is derived from Volume 2 Appendix P, Part 3. The addition of the term 'lotic' would not change the meaning of this text, as habitat in the Peace River is necessarily lotic.
ab_0001-240	Treaty 8 Tribal Association	V.2, S.12.4.2.1 ; page(s) 12-35 ; line(s) 28-30 EISG S.10.2.4 Comment 2-61.	<i>Changes in fish habitat are based on calculations that quantify conversions of lotic habitats in the existing Peace River and its tributaries to lacustrine habitats in the Site C reservoir.</i> Comments A cumulative effects study would also include the area upstream of existing dams in these calculations of changes to fish habitat. A CEA would incorporate habitat conversions that have occurred in the past due to upstream dams, and would incorporate these totals to the Site C LAA to have a clearer overall picture of what has been converted.	Please see the Technical Memo: Cumulative Effects Assessment and the response to ab_0001-185.
ab_0001-241	Treaty 8 Tribal	V.2, S.12.4.2.1 ; page(s) 12-	<i>The short-term (10 years), medium-term (10 to 30 years), and long-term fish communities (> 30 years) would reflect the transition in ecological conditions of</i>	Recruitment sources downstream of the reservoir refers to fish that may be transported upstream under the Fish Passage Management Plan (Volume 2 Appendix Q).

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	Association	35, 12-36 ; line(s) 41-42, 1-6 EISG S.10.2.4 Comment 2- 62.	<i>the Site C reservoir and tributaries flowing into the reservoir, including: ... Recruitment from sources outside of the reservoir (i.e., upstream and downstream)</i> Information Request Clarify the means by which recruitment from downstream may occur.	
ab_0001-242	Treaty 8 Tribal Association	V.2, S.12.4.2.1 ; page(s) 12-36 ; line(s) 23-27 EISG S.10.2.4, S.9.3.1, S.9.3.2 Comment 2- 63.	<i>The food web that supports the fish community, in turn, is affected by many physical and chemical factors including the rate at which water moves through a river or reservoir, and the quality of that water, particularly its sediment and nutrient content, which affects primary production.</i> Comment The Proponent is asked to discuss sediments and suspended sediments in a similar manner to that provided in Section 12.4.2.2 in order to better understand the predicted changes in reservoir biota.	<p>Predictions of total suspended solids and nutrient concentration in the proposed Site C reservoir and the Peace River downstream the Site C dam were produced and presented in Volume 2, Appendix P, Part 2 Hydrodynamic, Water quality, and Productivity Modelling for the Site C Project.</p> <p>The predictions were made with the CE-QUAL-W2 model. Total suspended solids (TSS) and nutrient concentrations in the proposed Site C reservoir and the Peace River, during the operation of that reservoir, are described in Volume 2, Appendix P, Part 2, Sections 4.4 and 4.5, respectively. Changes in TSS and nutrients can potentially affect CE-QUAL-W2 predictions of periphyton and phytoplankton concentrations (Volume 2, Appendix P, Part 2, Sections 4.6 to 4.8).</p>
ab_0001-243	Treaty 8 Tribal Association	V.2, S.12.4.2.1 ; page(s) 12- 37, 12-38 ; line(s) 15, 16, 1-2 EISG S.10.2.4 Comment 2- 64.	<i>The lotic areas would be replaced by 9.42 km2 of littoral area (defined as < 6 m) and 83.57 km2 of limnetic area. It is expected that littoral habitats within the inundated areas would provide new spawning and juvenile rearing habitats, both for some riverine (but adaptable) fish species found in the Peace River, as well as for lake-adapted species that would become more common in the reservoir.</i> Information Request BC Hydro is asked to: a) clarify the timeframe for new spawning and juvenile rearing habitats to become established; and b) clarify how the potential effects of water level fluctuation (amplitude, frequency and duration) have been factored in to modeled predictions regarding productivity (e.g., benthic biomass density, fish use, etc.) of 9.42 km2 littoral habitat in the reservoir	<p>As described in Section 11.4.4.2.1 of the EIS, the daily range of water levels in the Site C reservoir is expected to be less than 0.6 m at least 60% of the time, and less than 1.0 m at least 75% of the time. A 0.6 m drawdown is equivalent to 10% of the estimated vertical extent of the littoral zone and the area affected is approximately less than 2% of total littoral area.</p> <p>This amount is typical of natural lakes and was considered too small to affect overall modeling conclusions.</p>
ab_0001-244	Treaty 8 Tribal Association	V.2, S.12.4.2.1 ; page(s) 12-38 ; line(s) 16-17 EISG S.1.3, S.10.2.4 Comment 2- 65.	<i>Phytoplankton biomass densities ($t \cdot km^{-2}$ or $g \cdot m^{-2}$) are expected to increase about 30X relative to current biomass densities, in both the early and long term.</i> Comments A 30X increase in phytoplankton biomass density relative to current densities seems high. The creation of LG2 in Quebec resulted in an approximate 3-4X increase in phytoplankton biomass density. A ten-fold increase in phytoplankton biomass was observed in the Experimental Lakes Area (ELA) reservoir experiment between 2 and 3 years post-impoundment (Paterson et al. 1998). Information Request BC Hydro is asked to provide any examples of where a 30X increase in phytoplankton has been observed when a river has been transformed into a reservoir.	<p>For the purposes of the assessment, the important metric from this component of the CE-QUAL-W2 analysis is the estimated phytoplankton biomass in the proposed Site C reservoir, not the ratio of future to current phytoplankton biomass, as this metric is used in the subsequent modeling of the foodweb.</p> <p>The CE-QUAL-W2 most likely estimates of phytoplankton biomass per unit area in the early stage and longer term in the Site C reservoir are 3.48 and 3.50 t/km², respectively. These estimates are derived from an extensive modeling process (Appendix P), are within the range of comparable reservoirs and are similar to values measured in Williston and Dinosaur reservoirs (Appendix P3 Table 3.1, and Appendix P3 Section 2.0 Literature Review). This weight-of-evidence provides confidence in the estimate of phytoplankton biomass in the proposed Site C reservoir. Further,</p>

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				<p>sensitivity analysis of Ecopath (most likely, long term CE-QUAL-W2 and Ecopath scenarios) shows that zooplankton and phytoplankton biomass per unit area in the post-Project reservoir can be lowered to one third of their input values without creating a shortage of zooplankton for planktivorous fish (i.e. ecotrophic efficiencies for phytoplankton and zooplankton remain < 1.0). Therefore, the phytoplankton biomass per unit area could be one third the predicted values and still provide enough primary production to support the input biomasses of fish.</p> <p>The ratio of future to current phytoplankton biomass per unit area referred to in the Information Request is a metric that is less informative to the assessment given several factors. This metric is reported, but not required for subsequent modelling of the foodweb. The ratio reflects uncertainty in both the numerator (future reservoir) and denominator (current river). With respect to the denominator, short residence of phytoplankton in rivers provides limited time for phytoplankton growth, as described for the Peace River (Appendix P2 Section 4.2.2). Measurements of phytoplankton in rivers such as the Peace River are also affected by sloughing of periphyton. Phytoplankton estimates for the current Peace River were not reported in Appendix P1 of Volume 2 (“n.m.” in Table 3.1 of Appendix P3 in Volume 2). CE-QUAL-W2 predictions of pre-Project river phytoplankton biomass per unit area (Appendix P2 in Volume 2) relied on chlorophyll-a concentrations in tributaries and Dinosaur Reservoir outflow, and were calibrated to within an order of magnitude of measured chlorophyll-a concentrations in the Peace River. These limitations for the ratio metric may contribute to both the range of estimates (3 to 10-fold increase) reported in the Information Request for other location, and to the value reported in this analysis.</p>
ab_0001-245	Treaty 8 Tribal Association	V.2, S.12.4.2.1 ; page(s) 12-39 ; line(s) 7-12 EISG n/a Comment 2-66.	<p><i>Results for the most likely fish community scenario indicate about a 3-fold increase in the total biomass of harvestable fish in the Site C reservoir relative to what currently exists in the Peace River, though with a very different species composition. Group 1 fish (burbot, lake trout, rainbow trout, walleye, northern pike) are expected to increase in their overall biomass, as increases in burbot, lake trout, northern pike, and rainbow trout offset decreases in walleye.</i></p> <p>Correction Text suggests that walleye will both increase and decrease in biomass. Consider rewording.</p>	BC Hydro has reviewed this suggestion and will leave the wording that relates to walleye and Group 1 fish biomass unchanged. The overall biomass of Group 1 fish is expected to increase, as increases in burbot, lake trout, northern pike, and rainbow trout more than offset decreases in walleye.
ab_0001-246	Treaty 8 Tribal Association	V.2, S.12.4.2.1 ; page(s) 12-39, 12-40; line(s) 7-19, 29-32 EISG S.10.2.4, S.8.5.3 Comment 2-	<p><i>Results for the most likely fish community scenario indicate about a 3-fold increase in total biomass of harvestable fish in the Site C reservoir relative to what currently exists in the Peace River, though with a very different species composition. ... The changes in overall biomass are driven most strongly by a substantial increase in group 3 planktivorous fish species (kokanee and lake whitefish) over both the near and long term. There would be limited or no kokanee spawning habitats in the reservoir and limited accessible spawning habitats in tributaries (i.e., kokanee spawning habitats are available in the</i></p>	<p>The models and methods used to estimate kokanee abundance in the proposed Site C reservoir are described in Section 6.4 and Appendix 6F.1 of Volume 2 Appendix P3, with more details in Section 2.7 of Volume 2 Appendix Q3.</p> <p>As described in these sections, for the purposes of modelling, the primary source of adult kokanee into the proposed Site C reservoir is assumed to be entrainment. The potential for kokanee spawning in tributaries to the proposed Site C reservoir is described on page 33 of Volume 2 Appendix Q3. Entrainment rates out of the proposed Site C reservoir are modelled as</p>

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		67.	<i>Halfway River system starting at least 100 km upstream of the Site C reservoir.</i> Comments The predicted increase in kokanee is based in part on assumptions of recruitment by entrainment through upstream dams. Information Request BC Hydro is asked to clarify: a) how there could be a significant increase in kokanee biomass over the long term with limited accessible spawning habitat after dam creation; b) the extent of entrainment and survival rates of kokanee at upstream dams; c) the impacts of upstream entrainment on populations in upstream reservoirs; and d) how entrainment of kokanee through the proposed Project could impact the kokanee population in the proposed reservoir.	shown in Table 6F.1 of Volume 2 Appendix P3. The impacts of entrainment from upstream reservoir on upstream populations are outside the scope of the environmental assessment.
ab_0001-247	Treaty 8 Tribal Association	V.2, S.12.4.2.2 ; page(s) 12-42 ; line(s) 26-35 EISG S.3.3.3, S.10.2.4 Comment 2-68.	<i>The timing of releases from Site C would be expected to follow the daily load pattern and would be similar to the timing of releases from the Peace Canyon Dam today. Due to the travel time required for water to flow between the Peace Canyon outlet and the location of the proposed Site C tailrace, operational changes at points downstream of Site C would occur approximately 10 to 12 hours sooner with Site C. Under the existing conditions at the Site C Dam site, discharge is highest during hours of darkness (6:00 pm to 6:00 am) and lowest during hours of daylight (6:00 am to 6:00 pm). The reverse would occur with Site C operation.</i> Comments This represents a notable change in timing of flows downstream of the proposed Project and may have implications for fish fauna in these downstream areas.	The predicted diel pattern of flows is typical downstream of hydroelectric facilities and is taken into account in the effects assessment.
ab_0001-248	Treaty 8 Tribal Association	V.2, S.12.4.2.2 ; page(s) 12-43 ; line(s) 9-12 EISG S.3.3.3, S.10.2.4 Comment 2-69.	<i>The increase in the daily range of water levels due to the Project would be on the order of 0.5 m at the location of the Site C tailrace and reducing to approximately 0.3 m near the Alces River confluence.</i> Comments The text suggests that important effects may be manifest downstream at least as far as Alces River. The effects of changes in downstream flow conditions on fish habitat and fish use of the mainstem and tributaries seems to have been limited to the reach between Site C and Pine River. Information Request Provide an assessment of the effects of changes in flow conditions downstream of Pine River (as far as the Alces River) on fish habitat and fish use of the Peace River mainstem and tributaries.	The scope of the Fish and Fish Habitat effects assessment is in accordance with the EIS Guidelines and appropriate information is provided in Section 12.4.2.2 Downstream Habitat Changes of the EIS. Please also see the response to ab_0001-281.
ab_0001-249	Treaty 8 Tribal Association	V.2, S.12.4.2.2 ; page(s) 12-43 ; line(s) 31-35 EISG S.3.3.3, S.10.2.4 Comment 2-70.	<i>The Site C Dam tailrace would have a predicted maximum rate of change for increasing flows of 46.7 m³/15 min and a predicted maximum rate of change for decreasing flows of -54.0m³/15 min. These values are higher than maximum rates of change under existing conditions at the Site C dam site (7.4 m³/15 min for increasing and -3.2 m³/15 min for decreasing).</i> Comments This represents considerable change from present and might create a stranding hazard for fish.	Sections 12.4.3.2 and 12.4.4.1 describe the potential for changes in health and survival of fish associated with fish stranding during the construction and operations phases of Project, respectively.

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ab_0001-250	Treaty 8 Tribal Association	V.2, S.12.4.2.2 ; page(s) 12-44 ; line(s) 3-12 EISG S.3.3.3, S.9.3.1, S.10.2.4 Comment 2-71.	<i>Changes to the flow regime would affect the temporal and spatial availability of Peace River fish habitats. The effects would be highest in the 15.9 km section of Peace River between the Site C Dam and the Pine River confluence because there are no large tributary inputs that would attenuate the flows. During periods of low tributary flows (i.e., late summer, fall and winter) the changes would extend farther downstream. Under present conditions, habitat availability in the vicinity of the Site C Dam is greatest during hours of darkness when fish species require feeding habitats. Availability of habitats located in shallow water areas (i.e., main channel margins and side channels) would be most affected by flow changes. A portion of these habitats would not be available during hours of darkness, depending on Site C operations.</i> Information Request The Proponent is asked to: a) indicate how the proposed flow regime would affect the temporal and spatial availability of Peace River fish habitats downstream of the proposed Project to as far as Many Islands; and b) explain what is known with respect to shallow water habitats, particularly at tributary mouths downstream	<p>Section 12 Fish and Fish Habitat, Subsection 12.4.2.2 Downstream Habitat Changes describes the potential effects of the Project flow regime on fish habitat in the Peace River downstream of the Project in the LAA. It states:</p> <p>"The change in range of daily flow caused by Site C operation would potentially alter habitat availability. Habitat availability was examined by comparing the wetted surface area at minimum and maximum operational flows under existing Peace Canyon Dam and predicted Site C operations (BC Hydro 2012). Wetted surface area for the Peace River from the Site C dam site to the Pine River confluence was calculated using hydrodynamic modelling assuming steady state flow and 10 percentile tributary discharges for each scenario (Table 12.15). With 10 percentile tributary inputs, the increase in the minimum flow from 294 m3/s (existing) to 390 m3/s (Site C operation) would improve habitat availability during low flow conditions. The increase in wetted surface area would be 29.7 ha or a 5.4% increase compared to existing conditions. There would also be an increase in wetted surface area at the upper range of flow: 1,993 m3/s (existing) versus 2,540 m3/s (Site C operation). The increase in wetted surface area would be 115.0 ha or a 13.7% increase compared to existing conditions. However, this potential positive effect could be effected by daily flow regulation (i.e., additional habitat surface would be subjected to dewatering).</p> <p>The rate at which habitats become dewatered due to daily flow regulation would diminish downstream of the Site C dam site during operations. Habitat types most affected by dewatering would be shallow-water rearing habitats used by large-fish species and shallow-water habitats used by small-fish species."</p> <p>Shallow water habitats and tributary confluences are described in Volume 2 Appendix O.</p> <p>Please also see the response to ab_0001-426.</p> <p>Please see the Technical Memo: Spatial Boundary Selection.</p>
ab_0001-251	Treaty 8 Tribal Association	V.2, S.12.4.2.2 ; page(s) 12-44 ; line(s) 31-44 EISG S.3.3.3, S.10.2.4 Comment 2-72.	<i>The rate at which habitats become dewatered due to daily flow regulation would diminish downstream of the Site C Dam site during operations. Habitat types most affected by dewatering would be shallow-water rearing habitats used by large-fish species and shallow-water habitats used by small-fish species.</i> Information Request BC Hydro is asked to clearly indicate that this statement applies only to the reach between Site C and Pine River and is a function of the change in minimum and maximum allowable flows.	<p>Fish stranding risk downstream of the Project would be most prominent between the dam and the confluence with the Pine River. Water level changes and fish stranding risk during the operation phase of the Project are described in Section 12.4.4.1. This section describes the risk of fish stranding downstream of the dam, including implications downstream of the Pine River confluence.</p> <p>As stated in Section 12.5 Follow-up program for stranding include surveillance of fish habitat areas where periodic exposure of channel margins occurs as a result of flow fluctuation; as feasible, salvage and relocation of fish trapped in potholes, side channels, or other habitat area at risk of dewatering. See Also Section 12.8 Follow-up Programs.</p>

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ab_0001-252	Treaty 8 Tribal Association	V.2, S.12.4.2.2 ; page(s) 12-45 ; line(s) 26 EISG S.9.3.2, S.10.2.4 Comment 2-73.	<i>Table 12.16 Expected Median Daily Suspended Sediment Concentration Immediately Downstream of the Site C Dam Site (Baseline and Operations Phase)</i> Comments In Table 12.16, Winter is defined as Jan-March, Spring as April-June, Summer as July-Sep, and Fall as Oct-Dec. However, Vol. 2, Appendix E, p. 9) groups seasonal water quality (incl. TSS) data as follows: Winter (Nov-April); Spring (May-June); Summer (July-August) and Fall (Sept-Oct). This difference in seasonal definition leads to quite different calculations of means of seasonal TSS loadings and/or concentrations. Information Request Provide the rationale for presenting median (as opposed to Mean ± SE) TSS data in Table 12.16.	The description of TSS concentrations in the EIS include presentation of mean and median (Volume 2, Appendix E Table B-3) or median (Section 12, Table 12.16) values. Both the mean and the median are common and acceptable statistical measures of central tendency.
ab_0001-253	Treaty 8 Tribal Association	V.2, S.12.4.2.2 ; page(s) 12-45, 12-46 ; line(s) 6, 5 EISG S.9.3.2 Comment 2-74.	<i>Table 12.16 Expected Median Daily Suspended Sediment Concentration Immediately Downstream of the Site C Dam Site (Baseline and Operations Phase)</i> <i>The sediment transport regime predicted for the operation of the Project would cause higher suspended sediment concentrations during the fall and winter periods and lower concentrations during the spring and freshet than presently occurs.</i> Comments Summer TSS concentrations would also be elevated (Table 12.16).	As confirmed by Table 12.16 in Section 12, the expected median concentration in the summer during operations of the proposed Site C reservoir (11.6 mg/L) is predicted to be higher than that of the baseline conditions (3.2 mg/L).
ab_0001-254	Treaty 8 Tribal Association	V.2, S.12.4.2.2 ; page(s) 12-46 ; line(s) 26-28 EISG S.9.3.2, S.10.2.4 Comment 2-75.	<i>Operation of the Project would alter the Peace River water temperature regime at least to the Alces River, but the changes are within the annual range of water temperatures of fish habitats under existing conditions.</i> Comments Changes to the water temperature regime may have important impacts to fish populations, even if within the current annual range – depending on timing and magnitude of changes.	Changes to downstream water temperature are described in Volume 2 Appendix P Part 2 Hydrodynamic, Water Quality and Productivity Modelling for the Project. The magnitude of the differences in water temperature at the Alces River is one degree C or less on annual and seasonal basis, therefore meeting the CCME guideline for that water quality parameter.
ab_0001-255	Treaty 8 Tribal Association	V.2, S.12.4.2.2 ; page(s) 12-46 ; line(s) 29-33 EISG S.9.3.4, S.9.1, S.8.5.3 Comment 2-76.	<i>The ice regime of the Peace River would change due to the Project. The following changes would occur with respect to the baseline conditions:</i> • <i>The maximum extent of the ice front would move farther downstream compared to existing conditions</i> • <i>The change may improve existing wintering fish habitats.</i> Comments This is misleading. Rather than improving the situation overall in the region, dam construction would increase the challenges for several species in accessing quality habitat for all life history stages. This again raises the question of how upstream developments have changed fish habitat throughout the river system and how a more comprehensive cumulative affects assessment would shed some light on this.	The text is not misleading. The process referred to in this section is that ice conditions can reduce the overwinter survival of fish. If 'The maximum extent of the ice front would move farther downstream compared to existing conditions', existing wintering fish habitats may improve in this corresponding section. See also see the Technical Memo: Cumulative Effects Assessment.
ab_0001-256	Treaty 8 Tribal	V.2, S.12.4.2.2 ; page(s) 12-47	<i>The following changes are expected to other ecosystem components downstream of the Site C Dam relative to current conditions in the Peace River: a</i>	Factors determining benthic invertebrate biomass are explained in Volume 2, Appendix P, Part 3, Section 5.1.2.1. The Peace River data are consistent with the literature in showing low biomass

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	Association	; line(s) 18-20 EISG S.9.3.2 Comment 2-77.	<i>3.7-fold increase in periphyton; a 3-fold decrease in benthic biomass, and..</i> Comments The simultaneous 3.7 fold increase in periphyton and similar decrease in benthic biomass seems unusual. Information Request Provide an explanation of what factors are driving the simultaneous/coincidental increase in periphyton and the decrease in benthic biomass.	downstream of a dam due to the dam blocking recruitment from upstream. Factors determining periphyton biomass are explained in Volume 2, Appendix P, Part 3, Section 5.1.2.2. In addition, periphyton biomass is expected to increase immediately downstream of the dam due to enrichment from water discharged from the newly formed reservoir, but this enrichment effect is expected to decline over time as explained in Volume 2, Appendix P, Part 3, Section 3.0.
ab_0001-257	Treaty 8 Tribal Association	V.2, S.12.4.2.2 ; page(s) 12-48 ; line(s) 4-6 EISG S.10.2.3, S.10.2.4 Comment 2-78.	<i>The fish community that utilizes those habitats of the Peace River downstream of the Site C Dam would be similar to what presently occurs downstream of the Peace Canyon Dam.</i> Comments The present day fish community downstream of the Moberly River (Site C location) differs from the upstream fish community. Evidence/predictions so far appear to indicate that Fish Groups 1 and 2 would most likely decline downstream of the proposed Project (Table 6.7, V.2, App. P, Part 3).	To clarify, as described in Section 12.3.2 Fish Ecology: "The transition zone for cool and coldwater fish is within the LAA. Coldwater species dominate the fish community primarily upstream of the Pine River confluence; however, coolwater fish also migrate or reside in the coldwater type habitat upstream of the Pine River. The abundance of the coolwater fish increases downstream of the Pine River confluence and becomes the dominant fish group at the B.C./Alberta boundary." To clarify results of Appendix P3: Sub-section 6.6.2 Results for the Area Downstream of Site C states: "Fish Biomass. The downstream model suggests a 1.2 to 1.4-fold increase in the total biomass of fish in the three groups of fish (total height of bars in Figure 6.5). This increase in total biomass is composed of a 45% to 80% decrease in the biomass of group 1 fish (burbot, lake trout, rainbow trout, walleye, northern pike; bottom bars in Figure 6.5), counteracted by a 1.8 to 1.9-fold increase in the biomass of group 2 fish (Arctic grayling, mountain whitefish, bull trout; top bars in Figure 6.5). The increase in group 2 fish is due primarily to a doubling of mountain whitefish, which are assumed to benefit from increased water clarity downstream of the Site C dam. Bull trout and Arctic grayling are expected to decline downstream of Site C dam under the most likely and minimum scenarios (B and C) for the fish community (Table 6B.2). Group 3 fish (kokanee and lake whitefish) contribute a negligible amount of biomass to the river, as is the case in the current Peace River. These species do not compete well in riverine environments."
ab_0001-258	Treaty 8 Tribal Association	V.2, S.12.4.2.2 ; page(s) 12-48 ; line(s) 12-14 EISG S.10.2.3, S.10.2.4, S.10.2.5 Comment 2-79.	<i>The Pine River would be the only potential natural downstream tributary recruitment source for Arctic grayling, bull trout, and mountain whitefish.</i> Comments The above statement infers that if Halfway and Moberly spawning fish migrate downstream through the proposed dam, their only spawning opportunity will be in the Pine River. Information Request Clarify: a) the quantity of spawning habitat that will be lost by the restricted upstream access to historical spawning grounds; and b) the implications on the survival and health of fish populations downstream of the proposed Project	For clarification: This statement refers to the recruitment of fish from the Pine River to the Peace River, and not fish spawning in the Moberly and Halfway Rivers. The potential effects of the Project are described for the key aspects of Changes to Fish Habitat, Changes to Fish Health and Fish Survival and Changes to Fish Movement in the Local Assessment Area (Section 12).
ab_0001-259	Treaty 8 Tribal	V.2, S.12.4.2.2 ; page(s) 12-48	<i>Operations of the Project would result in ecological conditions that would allow Arctic grayling, bull trout, mountain whitefish and rainbow trout populations to</i>	Regarding the comment that "What is not mentioned in this context is that once fish migrate downstream through the proposed Project, they would be restricted in their upstream

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	Association	; line(s) 15-24 EISG S.10.2.3, S.10.2.4, S.10.2.5 Comment 2-80.	<i>persist and potentially extend their distribution further downstream in Alberta. Other species such as kokanee and lake trout would establish distributions immediately downstream of the Site C Dam, similar to the pattern that presently exists downstream of the Peace Canyon Dam. Most of these populations would be maintained by recruitment from the Site C reservoir. There would be the potential for these populations to access spawning and rearing habitats in the Pine River system in order to generate natural recruitment; however, this outcome cannot be predicted with certainty. Some limited natural recruitment of mountain whitefish would occur directly from the Peace River.</i> Comments What is not mentioned in this context is that once fish migrate downstream through the proposed Project, they would be restricted in their upstream movements by the dam. Information Request The Proponent is asked to: a) provide an assessment of the anticipated direct effects on fish species composition of the extension of Arctic grayling, bull trout, mountain whitefish, kokanee and lake trout into areas downstream of the proposed Project; and b) explain the source of the kokanee that would be recruited.	movement by the dam", please note that the quoted Section 12.4.2.2 refers to Changes in Habitat. Section 12.4.6 describes in detail the relevant context regarding the potential for the Project to result in Changes in Movement. Regarding the source of kokanee to the reservoir, please see the response to ab_0001 -246.
ab_0001-260	Treaty 8 Tribal Association	V.2, S.12.4.2.2 ; page(s) 12-48 ; line(s) 33-36 EISG S.10.2.3, S.10.2.4, S.10.2.5 Comment 2-81.	<i>The extent of the change on all fish populations downstream of the Pine River would be based primarily on the degree to which Pine River and other tributary inputs (i.e., Beatton River, Kiskatinaw River, Clear River, and Pouce Coupe River) would attenuate the flow and thermal and ice regime as a result of the operations of the Project.</i> Information Request Provide an assessment of the nature and degree of this attenuation on fish populations downstream of the Pine River.	The nature of the downstream attenuation of the thermal and ice flow are described in Volume 2 Appendix D Surface Water Regime Technical Memos, Appendix G Downstream Ice Regime Technical Data Report, Appendix P Part 2, Hydrodynamic, Water Quality and Productivity Modelling for the Site C Project. Please also see the Technical Memo: Spatial Boundary Selection.
ab_0001-261	Treaty 8 Tribal Association	V.2, S.12.4.3.1 ; page(s) 12-49 ; line(s) 25 EISG S.9.3.2 Comment 2-82.	<i>With mitigation, the simulated total suspended sediment (TSS) increases could be reduced to below 25 mg/l above background concentrations for the majority of dam construction activities listed in Table 5.1.</i> Information Request Indicate whether this represents a commitment on the part of the proponent to maintain increases in TSS to below 25 mg/l for the majority of dam construction activities.	Refer to Section 35 Summary of Environmental Management Plans. BC Hydro is developing environmental management plans and will work with appropriate regulatory authorities to finalize them.
ab_0001-262	Treaty 8 Tribal Association	V.2, S.12.4.3.1 ; page(s) 12-50, 12-51 ; line(s) 24-31, 4-10 EISG S.9.2.3 Comment 2-	<i>Table 12.18 Severity of Ill Effects Based on Predicted Suspended Sediments a Caused by Construction Activities of the Dam and Generation Station Using predicted TSS concentration at 50% exceedence flows, severity of ill effects rating indicate that adult and juvenile salmonid fish would be subjected to lethal concentrations of sediments for 11 of the 18 activities for which TSS concentrations were predicted (Table 12.18). The remaining seven activities would cause sublethal TSS concentrations for adult and juvenile salmond fish.</i>	The approach to the prediction of TSS levels associated with various construction activities is described in detail in Volume 2 Appendix I Section 5.1.1. TSS concentration was computed analytically based on assumptions regarding the construction activities. In reference to the use of the word "assumed", the basis for the assumption is provided in the next sentence in the text which states: "This assumption is based on no major tributary inputs in the river section between the construction area and the Pine River that would

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		83.	<i>Severity of ill effects ratings indicate that salmonid fish eggs and fry would be subjected to lethal concentrations of sediments for 16 of the 18 activities for which TSS concentrations were predicted. The remaining two activities would cause sublethal TSS concentrations. It is assumed that the effect of elevated TSS concentrations caused by activities in the dam and generating station construction zone would extend to the Pine River confluence, or a distance of 15.9 km. This assumption is based on no major tributary inputs in the river section between the construction area and the Pine River that would dilute TSS concentrations. Based on the Site C Dam construction schedule, the TSS effects would occur continuously or near continuously in Year 1 and continuously for four years from Years 4 to 7. Information Request Indicate whether the prediction of the effect of elevated TSS concentration extending a distance of 15.9 km downstream from the proposed dam site is based on modelling, as it is not clear what is meant by “assumed”.</i>	dilute TSS concentrations."
ab_0001-263	Treaty 8 Tribal Association	V.2, S.12.4.3.1 ; page(s) 12-51 ; line(s) 11-14 EISG S.9.2.3, S.10.2.3, S.10.2.4, S.10.2.5 Comment 2-84.	<i>Adults and juveniles of salmonid populations that are present between the Site C Dam site and the Pine River confluence are Arctic grayling, bull trout, mountain whitefish, and rainbow trout. Mountain whitefish eggs and fry are also abundant and widely distributed in this river section. Comments The implications of elevated TSS concentrations on all life stages of fish appear to be potentially significant. Information Request Provide an assessment of the anticipated population level impacts of elevated TSS levels on Arctic grayling, bull trout, mountain whitefish and rainbow trout in the area between the proposed Project dam and the Pine River confluence.</i>	The scope of the Fish and Fish Habitat effects assessment is in accordance with the EIS Guidelines and appropriate information is provided in Section 12.4 of the EIS.
ab_0001-264	Treaty 8 Tribal Association	V.2, S.12.4.3.1 ; page(s) 12-52 ; line(s) 32-33 EISG n/a Comment 2-85.	<i>Reservoir filling would increase water levels, resulting in bank instability and bank erosion, potentially resulting in sediment inputs. Correction Increased water levels resulting in bank instability and bank erosion will certainly (not potentially) result in sediment inputs.</i>	BC Hydro has reviewed this suggestion and will leave the wording in this section unchanged. The use of "potentially" is intended to mean "have the capacity to", and is appropriate in this case.
ab_0001-265	Treaty 8 Tribal Association	V.2, S.12.4.3.1 ; page(s) 12-53 ; line(s) 8-11 EISG S.10.2.3, S.10.2.4, S.10.2.5 Comment 2-86.	<i>The Peace River in the vicinity of the construction activities provides several types of high-quality fish habitats. These include high-quality rearing habitats for bull trout and rainbow trout, and high-quality feeding habitats for bull trout, mountain whitefish, and rainbow trout. Lake trout also use this area for rearing and feeding. Comments This indicates the high value of Peace River nearshore habitats for a variety of fish species. These areas would be inundated by the proposed Project.</i>	The near shore habitats referred to in the comment are associated with the proposed Hudson Hope Berm. A portion of the mentioned high quality nearshore habitat will be replaced by the Hudson Hope Berm. The Hudson Hope Berm will have high quality fish habitat features incorporated into the berm design. BC Hydro will work with appropriate regulatory authorities in the development of mitigation measures.

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ab_0001-266	Treaty 8 Tribal Association	V.2, S.12.4.3.3 ; page(s) 12-55 ; line(s) 2-3 EISG S.10.2.4, S.10.2.5 Comment 2-87.	<i>Fish that are entrained are expected to have high survival and can reside in the Peace River downstream of the diversion tunnel. Comments While this may be accurate, the statement does not seem to take into consideration the important and perhaps adverse implications this may have to existing fish populations both above and below the proposed Project dam.</i>	<p>The potential effects of fish entrained from the Site C reservoir on the fish community downstream of the Site C dam is taken into account in the effects assessment. In particular, the Ecopath model in Appendix P3 considers:</p> <p>"While the upstream and downstream Ecopath models are not formally connected, the input assumptions for both sets of models recognize entrainment from the proposed Site C reservoir to the downstream section (Tables 6D.3 and 6D.4 in Appendix 6D)."</p> <p>The Ecopath model of the fish community and foodweb in the Peace River downstream of the Site C dam takes into account the input of fish entrained from the Site C reservoir.</p>
ab_0001-267	Treaty 8 Tribal Association	V.2, S.12.4.3.3 ; page(s) 12-55 ; line(s) 4-15 EISG S.10.2.3, S.10.2.4, S.10.2.5, S.9.1, S.8.5.3 Comment 2-88.	<i>The survival of fish entrained over the spillway and spillway undersluices is estimated to be high...The survival of fish entrained in the Project spillway undersluices is a configuration similar to Removable Spillway Weir systems that have been installed at several dams in the Columbia River system dams. Fish survival measured at Removable Spillway Weir systems is in the range of 98% to 99%. Site C has higher head than the Columbia River facilities where these studies occurred. Therefore, survival is likely lower at Site C than the Columbia River facilities. Information Request The Proponent is asked to: a) provide the frequency and rates of survival for fish that are entrained upstream in Peace Canyon and Bennett dams; and b) provide more detail on expected survival rates at the proposed Project, including an estimate of how much lower than those at the Columbia River facilities.</i>	<p>Please see the Technical Memo: Cumulative Effects Assessment.</p> <p>As with the estimates for fish survival through the diversion tunnels (Volume 2 Appendix Q4 Attachment C-4), there are no models or methods available to directly calculate the survival of fish entrained over the Site C spillway. Therefore, fish passage experts assessed the factors which might result in fish injury and mortality that have been identified in available literature, including the factors of shear, pressure changes, strike, and turbulence. They also took into account information from dams with similar spillway configurations and where intensive survival investigations have been conducted. Most of these investigations have occurred at projects on the mainstem Columbia and Snake Rivers. At these Columbia River system dams, spillway passage (vs. turbine passage) is commonly preferred as the highest survival route for migrating juvenile salmonids passing dams. In recent years the technical capacity to measure survival at these dams has increased substantially through the development of new tags (PIT tags, and HI-Z Turb'N tags), as well as tag detection techniques. These changes have resulted in more accurate and precise measures of fish survival during spillway passage. Fish survival at these spillways is frequently approaching 100 % (range 92-100%) for juvenile salmonid smolts, which are relatively sensitive fish. The design of the proposed Site C spillway has no unique features that would produce shear, pressure changes, strike, or turbulence more severe than those dams. Therefore, the effects assessment used a conservative estimate of 90% for the survival of fish entrained over the spillway.</p>
ab_0001-268	Treaty 8 Tribal Association	V.2, S.12.4.3.3 ; page(s) 12-55 ; line(s) 23-26 EISG S.10.2.4, S.10.2.5 Comment 2-89.	<i>Fish survival through the modified diversion tunnel is estimated to be low, given the hydraulic impacts of the energy dissipating devices(s) that will be installed in the modified tunnel. The modified tunnel is expected to be operated for one to two weeks, depending on reservoir inflow. Information Request The Proponent is asked to provide any available estimates of fish survival/mortality through the diversion tunnel and the expected numbers of fish (by species) that will be injured/killed.</i>	<p>Table 12.22 Characterization of Residual Fish and Fish Habitat Effects, in Section 12 characterizes the potential effect of 'reduced fish health and survival due to fish entrainment' during the activity of 'reservoir filling', and operation of the modified diversion tunnel occurs during a one to two week period of reservoir filling. The resulting 'magnitude' of the residual effect on fish health and survival is 'Low' (Table 12.22).</p> <p>The estimated survival of fish passing through the unmodified diversion tunnels is described in</p>

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				the Vol. 2 Appendix Q4 Attachment C-4 Fish Mortality During River Diversion. The estimated survival of fish passing through the unmodified diversion tunnels was based on the approach used in Vol. 2 Appendix Q4 Attachment C-4. The studies from other hydroelectric facilities show that passage through turbines with pressure changes and velocities similar to those predicted for the modified diversion tunnels have produced survival rates generally in the range of 85-90 %, however, there are no models to support a reliable estimate of survival rates during passage through the modified tunnel. Therefore, for the purposes of the Fish and Fish Habitat Effects Assessment (Section 12), a conservative survival rate <50% was used.
ab_0001-269	Treaty 8 Tribal Association	V.2, S.12.4.4.1 ; page(s) 12-58 ; line(s) 37-29 EISG S.9.3.1, S.10.2.4 S.10.2.5 Comment 2-90.	<i>No detailed studies of the risk of fish stranding or observations of fish stranding are available to quantify the level of fish stranding that occurs under the baseline condition in the Peace River system.</i> Comments The EIS fails to quantify fish stranding due to flow changes downstream of the Peace Canyon dam. Information Request The Proponent is requested to measure the level of fish stranding that is the result of upstream dams.	As stated in the EIS, BC Hydro is not aware of detailed studies that sufficiently quantify fish stranding due to flow changes downstream of the Peace Canyon. Measurement of stranding now occurring below the Peace Canyon Dam will not assist in the understanding of fish stranding associated with the Site C reservoir because of inherent differences in expected changes in water level fluctuations and form of the river channel. This also applies to the river downstream of the Project. Fish standing is highly site and flow regime specific. As stated in Section 12.5 follow-up programs are required to conduct surveillance to assess stranding. BC Hydro will work with appropriate regulatory authorities in the development of mitigation measures and appropriate follow-up requirements for fish stranding associated with the Project.
ab_0001-270	Treaty 8 Tribal Association	V.2, S.12.4.4.2 ; page(s) 12-60 ; line(s) 10 EISG S.10.2.3, S.10.2.4, S.10.2.5, S.9.1, S.8.5.3 Comment 2-91.	Comments Models are used in the EIS to predict entrainment rates. Since entrainment is frequently cited as a factor in the success of some fish species in the Site C reservoir and further downstream, some documentation of the extent of this occurring in upstream dams must be investigated in order to understand cumulative effects. Information Request The Proponent is requested to investigate and provide entrainment and survival rates of fish from Peace Canyon and WAC Bennett dams.	Please see the response to ab_0001-269.
ab_0001-271	Treaty 8 Tribal Association	V.2, S.12.4.4.2 ; page(s) 12-60 ; line(s) 17-20 EISG S.10.2.4, S.10.2.5 Comment 2-92.	<i>Annual entrainment rates estimated by the heuristic model are low (<10% of the population) for all species except for bull trout, kokanee, lake whitefish and lake trout.</i> Information Request Provide estimated entrainment rates for bull trout, kokanee, lake whitefish and lake trout.	Volume 2 Appendix Q2 Attachment A, Fish Passage Alternatives Assessment, predicts the effects of entrainment for all species, including lake whitefish and lake trout
ab_0001-272	Treaty 8 Tribal Association	V.2, S.12.4.4.2 ; page(s) 12-60 ; line(s) 28-34	<i>The population-level consequences to bull trout of these entrainment rates, as well as the subsequent return of entrained bull trout upstream via trap and haul mitigation are examined in more detail in a population model (see Volume 2</i>	This question refers to the potential effects of the Project on bull trout from entrainment and blocked upstream movement, and requests that potential population-level effects on bull trout be included in Section 12, sub-section 12.4.6 Effects Assessment – Operations – Change in Fish

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		EISG S.10.2.4, S.10.2.5 Comment 2-93.	<i>Appendix Q Fish Passage Management Plan, Part 3 Technical Report: Using Single Species Population Models of Bull Trout, Kokanee and Arctic Grayling to Evaluate Site C Passage Alternatives), and summarized in the section on upstream passage below. Comments The summary provided in the existing section on upstream passage is not sufficiently informative to understand population consequences. Information Request Provide information and assessments of potential entrainment rates and population consequences in the section on upstream passage.</i>	Movement. Sub-section 12.4.6 describes the potential population-level effects on bull trout: "The combined effects of entrainment and blocked upstream movement have a potential effect on the abundance of bull trout, but would not affect population-level conservation objectives." Please also see Volume 2 Appendix Q3 Using Single Species Population Models of Bull Trout, Kokanee and Arctic Grayling to Evaluate Site C Passage Alternatives.
ab_0001-273	Treaty 8 Tribal Association	V.2, S.12.4.4.2 ; page(s) 12-60 ; line(s) 42-44 EISG S.10.2.4, S.10.2.5 Comment 2-94.	<i>Fish entrained through the generating station and turbines during operations will have a fish size-dependent survival rate calculated to be greater than 90% for small fish (100 mm fork length) and greater than 60% for the largest fish (750 mm fork length). Information Request The text suggests a significant mortality rate as a consequence of entrainment through the generating station and turbines, particularly for large fish. Information Request Provide an assessment of the anticipated long-term effect of fish mortality resulting from entrainment through the generating stations and turbines (coupled with unknown success in ability to return fish back upstream by means of trap and truck technologies) on upstream fish populations.</i>	Information Request #1: The potential effects of fish entrainment during construction and operation of the Project on the key aspect of Fish Health and Survival are 'not significant', as summarized in Table 12.23 Summary of Assessment of Potential Significant Residual Adverse Effects on Fish and Fish Habitat (Section 12). Information Request #2: The potential effects of entrainment and hindered upstream passage are described in Section 12, and Volume 2 Appendix Q.
ab_0001-274	Treaty 8 Tribal Association	V.2, S.12.4.4.3 ; page(s) 12-61 ; line(s) 28-30 EISG S.3.3.1.2, S.10.2.4, S.10.2.5 Comment 2-95.	<i>During occasional low flow conditions, a turbine may be operated in a manner that introduces dissolved gas. Information Request Quantify what is meant by the term “occasional” in relation to low flow conditions introducing dissolved gas.</i>	Occasionally means infrequently. Occasionally, individual turbines are operated in manner that produces TDG supersaturation for brief periods. These synchronous-condense cycles occur during low power demand and low discharge periods. The individual turbine’s chamber is closed to inflow, and the water within the turbine pushed out by compressed air. This allows the turbine blades to spin in air allowing the unit to be brought back online quickly to respond to rapid changes in energy demand. Typically, some water leaks into the turbine and becomes supersaturated. A small volume of supersaturated water is released when generation resumes. Synchronous-condense operation produces only small volume of supersaturated water that will be rapidly diluted by other turbine discharge.
ab_0001-275	Treaty 8 Tribal Association	V.2, S.12.4.4.3 ; page(s) 12-62 ; line(s) 17 EISG n/a Comment 2-96.	<i>(120% saturation when fish remain near the water surface or > 2 m compensating depths are available) (Weitkamp 2008). Correction Should this not read ...or > 2 m compensating depths are not available</i>	This update has been added to the List of Errata and Updated Information.
ab_0001-276	Treaty 8 Tribal Association	V.2, S.12.4.5 ; page(s) 12-64 ; line(s) 13-17	<i>The channel area that meets these criteria is reduced during channelization because i) the total channel area is reduced, since the Peace River is confined to a single channel, and ii) average water velocities increase. However, during</i>	The channel area that meets these depth and velocity criteria for upstream fish passage during the channelization stage of construction was estimated to be 20 to 45% of the channel area that is present under baseline conditions, from estimates measured at discharges at the 5, 50 and

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		EISG S.10.2.4, S.10.2.5 Comment 2-97.	<i>channelization, there is sufficient channel area that meets the depth and velocity criteria for fish to continue to move upstream. Therefore, no effect on upstream passage is anticipated. Information Request</i> To support the conclusion of no effect on upstream passage, provide some understanding (quantification) of the size of the passable channel area (absolute or relative to the pre-channelized river) that is available to upstream fish passage.	95% exceedance flows.
ab_0001-277	Treaty 8 Tribal Association	V.2, S.12.4.5 ; page(s) 12-64 ; line(s) 19-30 EISG S.10.2.4, S.10.2.5 Comment 2-98.	<i>The upstream movement patterns during the river diversion period are predicted to be similar to baseline conditions (baseline conditions are described in Section 12.3.2.3 above), since much of the LAA remains as river habitat. Blocked upstream movement would potentially affect those species with an extended (upstream) movement strategy and a core or extended distribution that extends upstream and downstream of the Site C Dam location. Species that make extended movements and seasonal migration (e.g., Arctic grayling, bull trout) are expected to continue these movement patterns. Thus, a portion of the population is expected to attempt to move upstream of the diversion dam to return to spawning habitats upstream. Species with local movement patterns, (e.g., small-fish species) would not be affected by blocked upstream passage because they can complete their life history in habitats downstream of the diversion dam. Comments</i> The Peace River Fisheries Investigation, Peace River and Pine River Radio Telemetry Study 2008 documented the following species moving past the Site C dam: §§ Arctic grayling – more likely to pass Site C than any other species studied (72% and 29% of the Peace River-tagged Arctic grayling in 2006 and 2007 respectively) Mountain whitefish – movement past Site C included 29% (32 fish) in 2006 and 8% (8 fish) in 2007 §§ Rainbow trout – movement past Site C included 15% (4 fish) and 3% (1 fish) in 2006 and 2007 respectively §§ Walleye –less that10% of the population moves past Site C §§ Bull trout – approximately 5% are migratory, migratory population migrates past Site C between the Pine, Peace and Halfway rivers. Even those species that can (theoretically) or do complete their life history in habitats downstream of the proposed Project may potentially be affected. There will be multiple stressors including changes in flow pattern and stage. Upstream movements of all fish species past Site C will be prevented during river diversion. Population level consequences will generally be confined to those species that make extended movements and seasonal migrations (e.g., Arctic grayling, bull trout, mountain whitefish, goldeye and walleye) (Table 12.7).	For clarification: Volume 2 Appendix O summarizes information from all telemetry studies in the Local Assessment Area. This includes many studies as well as the one telemetry study referenced in the comment. For clarification: As per the Assessment Approach for Fish and Fish Habitat (Section 12.1) , the section referred to in the Information Request is specific to the key aspect of Changes to Fish Movement. Potential effects of Changes to Fish Habitat and Changes to Fish Health and Fish Survival are described in the respective sections of Section 12. For further clarification, please also see the response to ab_0001-292.
ab_0001-278	Treaty 8 Tribal	V.2, S.12.4.6 ; page(s) 12-65 ;	<i>Species with local movement patterns would not be affected by blocked upstream passage because they can complete their life history in habitats</i>	As described in Section 12.3 Baseline conditions: "The transition zone for cool and coldwater fish is within the LAA. Coldwater species dominate

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	Association	line(s) 8-20 EISG S.10.2.4, S.10.2.5 Comment 2- 99.	<i>downstream of the Site C dam. Species with extended movement strategies may attempt to move upstream past the dam. In the cold/clear water sport fish group, adult Arctic grayling, bull trout, and mountain whitefish that originated from upstream of the Site C Dam may be motivated to move upstream past the Site C Dam in an attempt to return to spawning tributaries (i.e., Moberly River for Arctic grayling and mountain whitefish; Halfway River for bull trout and mountain whitefish). In the cool/turbid group, walleye, burbot, northern pike, and the three sucker species may be motivated to move upstream of Site C. However, the future distribution of the cool/turbid group in the Peace River is expected to be restricted primarily to downstream of the Pine River confluence, thereby reducing their motivation to move upstream as far as or past the Site C Dam</i> Information Request BC Hydro is requested to: a) clarify whether it is expected that the distribution of cool water species downstream of the proposed Project will be restricted to downstream areas; and b) indicate whether this is reflected elsewhere as an impact of the proposed Project.	the fish community primarily upstream of the Pine River confluence; however, coolwater fish also migrate or reside in the coldwater type habitat upstream of the Pine River. The abundance of the coolwater fish increases downstream of the Pine River confluence and becomes the dominant fish group at the B.C./Alberta boundary." The predicted distribution of coolwater species downstream of the Site C dam and the Pine River confluence is further described in sub-sections 12.4.2.2 Downstream Habitat Changes and 12.6 Residual Effects.
ab_0001-279	Treaty 8 Tribal Association	V.2, S.12.4.6 ; page(s) 12-65 ; line(s) 25-32 EISG S.10.2.4, S.10.2.5 Comment 2- 100.	<i>Single species population models examined the potential effects fish entrainment and blocked upstream passage for those species predicted to continue to attempt upstream movements past the Site C Dam; bull trout that spawn in the halfway River and inhabit the Peace River, and Arctic grayling that spawn in the Moberly River downstream of the Moberly Lake and inhabit the Peace River. The combined effects of entrainment and blocked upstream movement have a potential effect on the abundance of bull trout, but would not affect population-level conservation objectives. Habitat change from reservoir formation may restrict Arctic grayling movements...</i> Information Request BC Hydro is asked to clarify whether the bull trout, Arctic grayling and mountain whitefish populations upstream and downstream of the proposed Site C dam are expected to increase or decrease and, if so, by how much.	Predicted changes in bull trout and Arctic grayling populations are provided in Volume 2 Appendix Q3, applying single species models for a range of assumptions about both passage mitigation and population characteristics. The outputs of these single species models were used to provide a range of inputs to Ecopath for bull trout and Arctic grayling, as shown in Table 6D.4 in Appendix 6D of Volume 2, Appendix P3. The overall effects on the upstream and downstream biomass densities (t/km2) of all major fish species (including bull trout, Arctic grayling and mountain whitefish) are summarized for a range of Ecopath and CE-QUAL-W2 scenarios (over both the early and longer term stages) in Appendix 6B of Volume 2, Appendix P3. The outcomes vary by location, scenario and species.
ab_0001-280	Treaty 8 Tribal Association	V.2, S.12.5.1.2 ; page(s) 12-67 ; line(s) 13-17 EISG S.10.2.4, S.10.2.5, S.23.5 Comment 2- 101.	<i>As a result of the nature and uncertainty of future habitat changes in the reservoir during the operation, it is not technically feasible to propose effective mitigation options. Future mitigation and compensation options will be evaluated after reservoir development and follow-up monitoring. Compensation options that are technically and economically feasible will be implemented.</i> Information Request BC Hydro is asked to: a) outline the process and timeline that it intends to follow in translating the results of follow-up monitoring into development and implementation of compensation work; b) define what is meant by ""technically and economically feasible"" compensation options; c) provide a better explanation of what habitat improvements may benefit (i.e.,	As per Section 12.8, a follow-up plan will be implemented to address uncertainty in the prediction of the effects assessment and the effectiveness of mitigation. Depending on the outcome of verification, additional follow-up programs, including mitigation may be required. BC Hydro will work with appropriate regulatory authorities in the development of mitigation measures.

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			increased health and survival) future reservoir fish populations; and d) describe the monitoring programs that will be put in place to identify fish species habitat needs and shortcomings in the reservoir.	
ab_0001-281	Treaty 8 Tribal Association	V.2, S.12.5.1.2, V.2, S.12.6 ; page(s) 12-67 , 12-81 ; line(s) 19-27, 17-25 EISG S.3.3.3, S.10.2.4, S.10.2.5 Comment 2-102.	<p><i>Operation of the Project will result in limited changes to the pattern of flow released and the changes to fish habitat downstream of the Project. Potential effects will be limited to the section of the river between the dam and Pine River confluence. To mitigate for these potential effects the proposed measures would include:</i> • <i>The enhancement of side channel complexes (e.g., Old Fort) in the reach between the dam site and the confluence of the Peace and Pine rivers to increase wetted habitat during low flows.</i> • <i>Creation of wetted channels and back channel restoration on the south bank island downstream of the dam to create off channel and back channel habitat.</i></p> <p><i>Downstream of the Project, incremental changes in habitat will be observed during construction and operation. Limited changes to fish habitat will occur during construction, due to flow changes during diversion and reservoir filling stages. Operation of the dam and generating station would modify the surface water regime, temperature and ice regime, and sediment regime, as well as other physical characteristics of the Peace River aquatic ecosystem, ecological productivity, and fish communities downstream of the dam. Changes to the habitat would be most evident between the Site C Dam and the confluence of the Pine River, and the magnitude of changes would diminish downstream of the Pine River.</i> Information Request Indicate how effects to habitat in river sections between the Pine River and the Alces River will be mitigated?</p>	<p>The potential for effects to Fish and Fish Habitat in the Peace River between the Pine River confluence and the Alces River confluence is not anticipated. However, as stated in Section 12.8, follow-up programs for fish and fish habitat will be required to verify the accuracy of the effects assessment. Depending on the outcome of verification, additional follow up programs, including mitigation may be required.</p> <p>BC Hydro will work with appropriate regulatory authorities in the development of mitigation measures and appropriate follow-up requirements.</p>
ab_0001-282	Treaty 8 Tribal Association	V.2, S.12.5.1.2 ; page(s) 12-67 ; line(s) 30 EISG S.9.2.1., S.9.3.2, S.10.2.4, S.10.2.5 Comment 2-103.	<p><i>The introduction of sediment to fish habitat as a result of construction activity associated with the dam and generating station has the potential to impair fish health and survival. The following mitigation measures are proposed:</i> • <i>Erosion prevention and sediment control plan.</i> Comments The Erosion Prevention and Sediment Control Plan does not include any thresholds or decision points that would require a corrective action should monitoring indicate potentially lethal or sub-lethal TSS exposure levels for fish.</p>	<p>Please see Section 35 Summary of Environmental Management Plans. Detailed environmental management plans are being developed and will be finalized in association with appropriate regulatory authorities.</p> <p>Please also see the Technical Memo: Environmental Management Plans.</p>
ab_0001-283	Treaty 8 Tribal Association	V.2, S.12.5.1.2 ; page(s) 12-68 ; line(s) 36-39 EISG S.10.2.4,	<p><i>Stranding of Fish -A program of fish salvage and fish relocation is recommended to mitigate for the potential effects of stranding due to water fluctuation on the health and survival of fish during construction.</i> Information Request BC Hydro is asked to clarify why it has “recommended” a fish salvage and relocation</p>	<p>The term "recommend" was used in this instance to mean to put forward as being suitable for achieving the purpose of mitigating effects of potential stranding.</p> <p>BC Hydro will work with appropriate regulatory authorities in the development of appropriate follow-up requirements for fish stranding prior to construction.</p>

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		S.10.2.5 Comment 2-104.	program as opposed to committing to undertake one and providing the appropriate design details in the EIS.	
ab_0001-284	Treaty 8 Tribal Association	V.2, S.12.5.2.1 ; page(s) 12-69 ; line(s) 22-26 EISG S.3.3.3, S.10.2.4, S.10.2.5 Comment 2-105.	<i>During reservoir filling, the potential effects of injury or mortality of entrained fish during reservoir filling will be mitigated by operating the modified diversion tunnel for a short duration. The mitigation will be applied to the diversion tunnels (described above under river diversion), since fish will pass through the diversion tunnels at times during reservoir filling.</i> Comments It appears the modified tunnel would be in service for a period of 2-3 weeks (V.1, App B, Reservoir Filling Plan). Information Request Elaborate on the operation of the modified diversion tunnel and its expected effects on entrained fish.	Please see the response to ab_0001-268.
ab_0001-285	Treaty 8 Tribal Association	V.2, S.12.5.2.2 ; page(s) 12-70, 12-71 ; line(s) 35-41, 1-3 EISG S.9.3.1, S.10.2.4, S.10.2.5 Comment 2-106.	<i>The operation of the Project will result in increased daily changes in water level and rates of water level change downstream of the Project. Potential increases to the risk of fish stranding will be limited to the section of the river between the dam and Pine River confluence. To mitigate for these potential effects, the proposed measures would include: • Surveillance of fish habitat areas where periodic exposure of side channel and mainstem margins occurs as a result water fluctuations. • The enhancement of side channel complexes (e.g., Old Fort) in the reach between the dam site and confluence of the Peace and Pine rivers to increase wetted habitat and reduce stranding potential during low flows.</i> Information Request Provide an indication whether daily/hourly surveillance of fish habitat areas will be conducted as may be required in an attempt to mitigate risk of fish stranding.	As per Section 12.8, follow-up monitoring will be implemented to verify the effectiveness of the effects assessment, and to determine the effectiveness of mitigation. Surveillance of fish habitat areas will be conducted to verify effects assessments and used to develop mitigation. BC Hydro will work with appropriate regulatory authorities in the development of mitigation measures and appropriate follow-up requirements.
ab_0001-286	Treaty 8 Tribal Association	V.2, S.12.5.3.2 ; page(s) 12-73 ; line(s) 3 EISG n/a Comment 2-107.	<i>Environmental Monitoring</i> Correction This sub-section is misplaced in the document as it refers only to environmental monitoring during construction.	The purpose of placing the “Environmental Monitoring” sub-section in that location was to make clear the link between the uncertainty about the effectiveness of the proposed mitigation with the follow-up measure, monitoring, proposed to address that uncertainty.
ab_0001-287	Treaty 8 Tribal Association	V.2, S.12.5.3.2 ; page(s) 12-73 ; line(s) 20 EISG S.10.2.4, S.10.2.5 Comment 2-108.	<i>A Site C Habitat Compensation Plan will be developed in accordance with the Fisheries Act Section 35(2) Authorization.</i> Comments Some discussion of the anticipated requirement for habitat compensation and conceptual plans for habitat compensation would be useful towards having a better understanding of the residual effects of the proposed Project (i.e., effects that remain after taking both mitigation and compensation measures into account).	BC Hydro is currently developing conceptual habitat compensation plans. BC Hydro will work with the appropriate regulatory authorities in the finalization of compensation plans.

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ab_0001-288	Treaty 8 Tribal Association	V.2, S.12.5.3.2 ; page(s) 12-74, 12-79 ; line(s) n/a EISG S.10.2.4 Comment 2-109.	<i>Table 12.19 Summary of Potential Project Effects and Mitigation Measures on Fish and Fish Habitat</i> Comments Statements that recommended measures would “fully mitigate” potential effects of both construction and operation with respect to reduced fish health and survival due to stranding seem overly optimistic.	As per Section 12.8, follow-up monitoring will be implemented to verify the effectiveness of the effect assessment, and to determine the effectiveness of mitigation. BC Hydro will work with appropriate regulatory authorities in the development of mitigation measures and appropriate follow-up requirements. Please also see the Technical Memo: Uncertainty and Precaution.
ab_0001-289	Treaty 8 Tribal Association	V.2, S.12.6, V.2, S.12.1.2 ; page(s) 12-80, 12-4 ; line(s) 2-5, 1 EISG S.10.2.4, S.10.2.5 Comment 2-110.	<i>Table 12.20 Summary of Residual Effects on Fish and Fish Habitat</i> <i>Table 12.20 summarizes the residual effects after the implementation of mitigation measures describe above. Activities that have residual effects will be carried through the residual effects characterization in the next sections.</i> <i>Table 12.2 Interaction of the Project with Fish and Fish Habitat</i> Comments Table 12.20 summarizing residual effects would be more useful if it were to mirror Table 12.2 which presents the interactions of proposed Project activities and physical works with fish habitat, fish health and survival and fish movement. Also, the residual effects summary has been completed in the absence of any specific plans for habitat compensation that would be implemented and could be taken into account. With respect to reduced fish health and survival due to fish stranding, Table 12.20 indicates that mitigation eliminates potential effects. It is unlikely that mitigation (i.e., surveillance and collection and relocation of stranded fish) will eliminate potential effects of fish stranding on fish health and survival. Information Request The Proponent is requested to clarify whether there are any risks of fish stranding downstream of the Pine River.	Fish stranding during the construction and operation phases of the Project are described in Section 12.4.3.2 and 12.4.4.1, respectively. These sections describe the risk of fish stranding downstream of the dam, including implications downstream of the Pine. As stated in Section 12.5, the follow-up program for stranding includes surveillance of fish habitat areas where periodic exposure of channel margins occurs as a result of flow fluctuation, and salvage and relocation of fish trapped in potholes, side channels, or other habitat area at risk of dewatering. Please also see Section 12.8 Follow-up Programs.
ab_0001-290	Treaty 8 Tribal Association	V.2, S.12.6 ; page(s) 12-81 ; line(s) 19-33 EISG S.3.3.3, S.10.2.4, S.10.2.5 Comment 2-111.	<i>Operation of the dam and generating station would modify the surface water regime, temperature and ice regime, and sediment regime, as well as other physical characteristics of the Peace River aquatic ecosystem, ecological productivity, and fish communities downstream of the dam. Changes to the habitat would be most evident between the Site C Dam and the confluence of the Pine River, and the magnitude of changes would diminish downstream of the Pine River. The aquatic habitat between the dam and Pine River would provide conditions that support a productive fish community similar to what presently occurs downstream of the Peace Canyon Dam. These same conditions would be unfavourable to other species, primarily due to changes to the flow, water temperature, and sediment regimes. Small-bodied fish, sucker species, burbot, goldeye, northern pike and walleye might remain in the downstream areas of the Peace River that provide more favourable cool turbid water conditions.</i>	The comment has been reviewed and BC Hydro disagrees that conflicting or contrary statements have been made.

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			<i>Mitigation activities will be effective in reducing the magnitude of effects; however, they will not eliminate them. Residual effects to habitat are therefore carried forward for characterization. Comments This seems contrary to statements elsewhere that effects will be evident only as far downstream as the Pine River.</i>	
ab_0001-291	Treaty 8 Tribal Association	V.2, S.12.6 ; page(s) 12-81, 12-82 ; line(s) 45-47, 1-2 EISG S.10.2.4, S.10.2.5 Comment 2-112.	<i>Water level fluctuations in the headpond during the diversion stage of the construction phase, and in the reservoir and downstream area during operations phase of the Project have the potential to impair the health and survival of fish through stranding, but mitigation measures would be implemented to eliminate potential for residual effects. Comments It seems unlikely that mitigation strategies will eliminate the potential for residual effects (i.e., impaired health and survival of fish through stranding). Mainstream et al. (2012) reports (p.52, para. 4) that in total, 1,136 ponds >5 m2 were recorded within the active river channel that was exposed between 283 cms and 1,982 cms.</i>	The 1,136 ponds referred to in Mainstream (2102) were located in the Peace River from Peace Canyon Dam to the Highway 29 bridge. The fluctuating head pond area will be considerably smaller. The Mainstream report will assist in providing information when developing the follow-up program. An appropriate follow-up program to monitor stranding and mitigate stranding effects will be developed in consultation with the appropriate regulatory agencies.
ab_0001-292	Treaty 8 Tribal Association	V.2, S.12.6 ; page(s) 12-82 ; line(s) 4-12 EISG S.10.2.4, S.10.2.5 Comment 2-113.	<i>Effects to fish movement are predicted during both the construction and operation phases of the Project. The construction of the dam will present a barrier that would physically delay or obstruct movements of some fish on the Peace River. Fish species affected may include bull trout and Arctic grayling. In addition, the creation of the reservoir itself may impede movement of fish from tributaries to other habitats in the reservoir or downstream river that are required to fulfill life history requirements. Mitigation actions (i.e., trap and haul) are proposed to reduce effects of impeded movement on bull trout past the dam, but there is uncertainty whether these measures are technically feasible and whether they will be biologically effective for other species such as Arctic grayling. Comments The Proponent's tagging studies have shown that Arctic grayling, mountain whitefish, rainbow trout, walleye and bull trout all currently migrate past the proposed dam location. Elsewhere the Fish and Fish Habitat Technical Data Report indicates (pg. iii) that goldeye is a migratory species that travels approximately 500 km from winter habitats downstream of the Town of Peace River to as far upstream as the Moberly River. The movements of other species (particularly those not subject to tagging studies) past the proposed dam site are not provided and appear to be unknown. Mitigation measures appear to be primarily designed for bull trout. Obstructions to fish movement during construction and operation would affect all species. The potential for population level consequences will generally be confined to those species that make extended movements and seasonal migrations (e.g., Arctic grayling, bull trout, mountain whitefish, goldeye and</i>	<p>The movements of fish species in the Local Assessment Area are described in Section 12 subsection 12.2 Baseline Conditions, as well as in Appendix O and Appendix Q. Specifically, Table 12.8 and 12.9 summarize the 'Distribution, Habitat Use, Movement Strategy, and Recruitment Sources in the Local Assessment Area' for all fish species.</p> <p>The potential effects of the Project on fish movement for all fish species whose movement could potentially be affected is described in Section 12 and Volume 2 Appendix Q.</p> <p>For clarification on Goldeye migration: Table 12.8 describes the section of the Peace River between in the Pine River and Moberly River as an area of 'Extended population, defined as area of infrequent occurrence and low abundance relative to remainder of population in LAA.'</p>

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			walleye (Table 12.7)).	
ab_0001-293	Treaty 8 Tribal Association	V.2, S.12.6 ; page(s) 12-82 ; line(s) 10 EISG S.10.2.4, S.10.2.5 Comment 2-114.	<i>Mitigation actions (i.e., trap and haul) are proposed to reduce effects of impeded movement on bull trout past the dam, but there is uncertainty whether these measures are technically feasible and whether they will be biologically effective for other species such as Arctic grayling.</i> Comments The vague language around this mitigation measure as well as the uncertainty as to whether it is even technically feasible is not adequate reassurance. Information Request The Proponent is requested to: a) provide more details and evidence concerning the potential effectiveness and feasibility of the proposed trap and haul mitigation; and b) identify other mitigations considered for addressing the environmental effects intended to be addressed by the trap and haul mitigation.	Volume 2 Appendix Q describes the potential effectiveness of trap and haul mitigation, as well as other mitigation measures considered to mitigate potential effects of the Project on fish movement. This assessment concluded that: "Predicted total bull trout abundance varied by less than 10% across the different fish passage alternatives that were modelled, including the alternative involving no mitigated fish passage." (Volume 2 Appendix Q). While these results suggested that fish passage mitigation may not be required to maintain the abundance of bull trout, trap and haul mitigation is recommended as a precautionary measure, and the fish Passage Management Plan is an adaptive approach to deal with uncertainty in the prediction of effects and effectiveness of mitigation. See also Technical Memo: Uncertainty and Precaution.
ab_0001-294	Treaty 8 Tribal Association	V.2, S.12.6.1 ; page(s) 12-82 ; line(s) 16-17 EISG S.10.2.4, S.10.2.5 Comment 2-115.	<i>Table 12.21 Characterization Criteria for Residual Effects on Fish and Fish Habitat Magnitude of Effects on Fish Movement • Low -hinder movement of small portion of the fish population; • Moderate – hindered movement of a portion of the fish population; • High – hindered movement of a portion of an entire life stage of a fish population</i> Information Request The Proponent is requested to explain in further detail the definition of High Magnitude effects on fish movement, as what is currently written seems to be an error .	The portion of Table 12.21 defining the High category of Magnitude for fish movement should read "... hindered movement of an entire life stage of a fish population", rather than "...hindered movement of a portion of an entire life stage of a fish population" This update has been added to the List of Errata and Updated Information.
ab_0001-295	Treaty 8 Tribal Association	V.2, S.12.6.1 ; page(s) 12-82 ; line(s) 17 EISG S.10.2.5 Comment 2-116.	<i>Table 12.21 Characterization Criteria for Residual Effects on Fish and Fish Habitat Frequency Description – The number of times during a project or a specific project phase that a heritage effect may occur. Definition of Criteria • Frequently: occurs frequently (on a regular basis and at regular intervals, but with extended rest periods) • Continuous: occurs on a regular basis and at regular intervals</i> Correction The term “heritage” in this table appears to be a cut and paste error. Information Request The Proponent is requested to: a) revise the definition of “frequently” to address the contradiction with “extended rest periods” in this definition; and b) provide the interval for the “continuous” definition (i.e. daily, weekly, every spring)	The word "heritage" should be removed from the Geographic Extent and Frequency Criterion descriptions, and be replaced with the words "fish and fish habitat" in Table 12.21. This update has been added to the List of Errata and Updated Information. BC Hydro has reviewed the additional suggested wording changes and will leave the wording in this table unchanged.
ab_0001-296	Treaty 8 Tribal Association	V.2, S.12.6.1 ; page(s) 12-84, 12-82 ; line(s) 1 16-17 EISG S.10.2.5 Comment 2-	<i>Table 12.22 – Characterization of Residual Fish and Fish Habitat Effects Residual Environmental Effect Criteria – Geographic Extent</i> <i>Table 12.21 Characterization Criteria for Residual Effects on Fish and Fish Habitat</i> Comments The letters used in Table 12.22 do not correspond with the terminology in Table 12.21. Information Request The Proponent is requested to clarify the meaning of the letters used in Table 12.22 and how these correspond with the terminology in	The letters used in Table 12.22 are as follows: Geographic Extent: L = Site-specific, M = Local, H = LAA Frequency: L = Once, M = Frequently, H = Continuous Duration: L = Short term, M = Medium term, H = Long term

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		117.	Table 12.21, including in relation to geographic extent and frequency.	
ab_0001-297	Treaty 8 Tribal Association	V.2, S.12.6.2 ; page(s) 12-86 ; line(s) 18 EISG S.10.2.5, S.15.2.4, S.16.6 Comment 2-118.	<i>Significance criterion “b” is consistent with the goal of supporting long-term recreational opportunities. Information Request BC Hydro is requested to explain why significance criterion “b” is not also consistent with the objective of supporting long-term harvesting by Aboriginal groups.</i>	Section 12.6.2 Standards or Thresholds for Determining Significance page 12-86 line 37-40 states: "Criterion "b" acknowledges the public interest in fish and fish habitats and, accordingly, the societal benefits of recreational, commercial and Aboriginal fisheries."
ab_0001-298	Treaty 8 Tribal Association	V.2, S.12.6.3, V.5, S.38 ; page(s) 12-87, 38-2 ; line(s) 7-8 1 EISG S.10.2.5 Comment 2-119.	<i>Table 12.23 Summary of Assessment of Potential Significant Residual Adverse Effects on Fish and Fish Habitat Table 38.1 Summary of the Potential Residual Effects of the Project Key Mitigation Measures -Construction of the dam and generating station, Highway 29, and Hudson's Hope shoreline Incorporate fish habitat features into the final capping of material relocation sites upstream of the dam. Contour and cap with gravels and cobble substrate the spoil area between elevations 455 m and 461 m to provide a productive fish habitat that will be available to fish during the operation phase Comments As no indication of the size and surface area of the enhancement sites are provided, it is not possible to understand the potential effectiveness of this mitigation/compensation measure. Information Request BC Hydro is requested to provide information on the size and surface area of the proposed enhancement sites.</i>	BC Hydro will work with appropriate regulatory authorities in the development of mitigation measures and appropriate follow-up requirements. As noted in Section 12.8 "the environmental monitoring and follow-up program details and reporting requirements will be part of the Fisheries Act 35(2) authorization", if the Project proceeds. Please also see the Technical Memo: Uncertainty and Precaution.
ab_0001-299	Treaty 8 Tribal Association	V.2, S.12.6.3, V.5, S.38 ; page(s) 12-87, 38-2 ; line(s) 7-8 1 EISG S.10.2.5 Comment 2-120.	<i>Table 12.23 Summary of Assessment of Potential Significant Residual Adverse Effects on Fish and Fish Habitat Table 38.1 Summary of the Potential Residual Effects of the Project Section 12 – Fish and Fish Habitat Proposed Mitigation - Operation of the Reservoir Manage reservoir fluctuation within a 1.8 m maximum normal operating range to reduce effects to the shoreline fish habitat. Comments The effect of fluctuating water levels on fish habitat productivity and fish use in the drawdown (intermittently exposed) zone has not been evaluated. Information Request BC Hydro is requested to provide an evaluation of the effect of fluctuating water levels on fish habitat productivity and fish use in the drawdown (intermittently exposed) zone.</i>	Please see the responses to ab_0001-243 and ab_0001-439.
ab_0001-300	Treaty 8 Tribal Association	V.2, S.12.6.3, V.5, S.38 ; page(s) 12-87, 38-2 ; line(s) 7-	<i>Table 12.23 Summary of Assessment of Potential Significant Residual Adverse Effects on Fish and Fish Habitat Table 38.1 Summary of the Potential Residual Effects of the Project Section 12 – Fish and Fish Habitat Proposed Mitigation – Construction of the dam and generating station Adjust the timing of</i>	The rationale for adjusting the timing of construction to periods of high background sediment levels is based on advice provided by CCME on water quality guidelines for the protection of aquatic life. As described in Volume 2 Appendix E, the CCME protection of aquatic life guideline for total

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		8 1 EISG S.10.2.5 Comment 2-121.	<i>construction activities to coincide with periods of high background sediment levels where feasible.</i> Comments Would this not increase the risk of exposing fish to lethal or sublethal doses of suspended solids? See Vol. 2, Section 12, Table 12-18. Information Request BC Hydro is requested to provide its assessment of the risk to fish of adjusting the timing of construction activities to periods of high background sediment levels.	<p>suspended solids (TSS) recognizes the natural adaption of aquatic life to natural changes in TSS. The guideline describes two separate flow regimes: clear flow and high flow, with concentrations in downstream areas compared to upstream or background concentrations. This will account for spatial variability in TSS, but also for aquatic biota adapted to areas of naturally high TSS. For the clear flow period, the recommended guideline is a maximum increase of 25 mg/L from background levels for any short-term exposure (e.g., 24 h period), and a maximum average increase of 5 mg/L from background levels for longer term exposures (e.g., inputs lasting between 24 h and 30 d). For the high flow period, the recommended guideline is a maximum increase of 25 mg/L from background levels at any time when background levels are between 25 mg/L and 250 mg/L, and a maximum increase of less than or equal to 10% of background levels when the background concentration is \geq 250 mg/L. To place the guideline into perspective within the technical study area, measured TSS concentrations from the Project data ranged from 1.5 to 2,760 mg/L, which is well below anticipated levels that are predicted during construction or operational phases of the Project.</p> <p>With regard to the proposed mitigation of adjusting the timing of construction activities to mitigate potential changes to the health and survival of fish during construction, Table 12.19 provides the statement that "recommended mitigation measures will reduce but not fully mitigate the potential effects of the Project"; accordingly, a residual effect is classified (Table 12.20). BC Hydro will work with appropriate regulatory authorities in the development of mitigation measures.</p>
ab_0001-301	Treaty 8 Tribal Association	V.2, S.12.6.3, V.5, S.38 ; page(s) 12-87, 38-2 ; line(s) 7-8, 1 EISG S.10.2.5 Comment 2-122.	<p><i>Table 12.23 Summary of Assessment of Potential Significant Residual Adverse Effects on Fish and Fish Habitat</i> <i>Table 38.1 Summary of the Potential Residual Effects of the Project</i> Section 12 – Fish and Fish Habitat Comments It is not clear how the conclusion of “Not significant” was reached in a number of cases with respect to fish and fish habitat during both the construction and operation phases. It is not clear what the test of non-significance is in each case and how this conclusion was reached. As one example, Volume 12, Section 12.4.4.2, page 12-60, line 42-44 indicates that: <i>fish entrained through the generating station and turbines during operations will have a fish size-dependent survival rate calculated to be greater than 90% for small fish (100 mm fork length) and greater than 60% for the largest fish (750 mm fork length).</i></p> <p>Despite the conclusion that, for example, the largest fish will have a mortality of up to 40% as a result of downstream passage through the generating station, Table 38-1 in indicates a Significance of “Not Significant” for the Potential Residual Effect of “reduced health and survival due to fish entrainment”. This</p>	<p>The scope of the Fish and Fish Habitat effects assessment is in accordance with the EIS Guidelines and appropriate information is provided in Section 12.4 of the EIS.</p> <p>The significance of Potential Effects is described in sub-section 12.6.3.1 Discussion of the Significance of Residual Adverse Effects.</p>

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			requires further justification and explanation, particularly with respect to the anticipated entrainment rate (is a large or a small proportion of the population expected to be entrained?). With respect to fish and fish habitat, conclusions of “Not significant” were reached in the following cases. Justification for this conclusion in each case should be clearly articulated. Construction: §§ Loss of fish habitat due to construction of the dam and generating station, Highway 29, and Hudson’s hope shoreline §§ Reduced fish health and survival due to sediment inputs due to construction of the dam and generating station §§ Reduced health and survival due to entrainment due to construction headpond and reservoir filling §§ Reduced fish health and survival due to increased total dissolved gas supersaturation due to construction headpond and reservoir filling Operations: §§ Altered fish habitat due to transformation of reservoir habitat due to operation of the reservoir §§ Altered fish habitat downstream of Site C dam due to operation of the reservoir §§ Reduced fish health and survival due to fish entrainment §§ Reduced fish health and survival due to increased total dissolved gas supersaturation.	
ab_0001-302	Treaty 8 Tribal Association	V.2, S.12.6.3, V.5, S.39 ; page(s) 12-87, 39-2 to 39-5 ; line(s) 7-8 1 EISG S.10.2.5 Comment 2-123.	<i>Table 12.23 Summary of Assessment of Potential Significant Residual Adverse Effects on Fish and Fish Habitat</i> Table 39.1 Complete List of Mitigation Measures Comments Table 39.1 is largely identical to Table 38.1 provided in Section 38 with the following exceptions (included in Table 39.1 with a conclusion of “No Residual Effect”, not included in Table 38.1). §§ Reduced fish health and survival due to sediment inputs by Highway 29 realignment and construction of Hudson’s Hope shoreline protection during construction; §§ Reduced fish health and survival due to stranding during construction; and §§ Reduced fish health and survival due to stranding during operations. It is not clear from the information provided that there will be no potential residual effects of these activities on fish populations. Note, for example, that Mainstream (2012), p.52, para. 5 reported that “In total, 1,136 ponds > 5 m2 were recorded within the active river channel that was exposed between target flows of 383 cms and 1,982 cms”. It is not clear that the proposed mitigation i.e., “monitor fish habitat areas where periodic exposure of side channel and mainstem margins occurs as a result of water fluctuations” will be sufficient to lead to no potential for residual effect, particularly given the number of ponds recorded and the fact that many cases of stranding may occur during hours of darkness. Information Request BC Hydro is requested to provide additional information and analysis in support of the conclusion of “No residual effect” in respect of each of the following; §§ Reduced fish health and survival due to sediment inputs by	As described in Section 12.4 of the EIS, the assessment demonstrates that there would be no residual effects. As described in Section 12.8 of the EIS, where there is uncertainty, an appropriate follow-up monitoring and mitigation program will be developed in consultation with the appropriate regulatory agencies. Please see the Technical Memo: Uncertainty and Precaution.

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			Highway 29 realignment and construction of Hudson's Hope shoreline protection during construction; §§ Reduced fish health and survival due to stranding during construction; and §§ Reduced fish health and survival due to stranding during operations	
ab_0001-303	Treaty 8 Tribal Association	V.2, S.12.6.3 ; page(s) 12-88, 12-84 ; line(s) 7-8, 1 EISG S.10.2.5 Comment 2-124.	<i>Table 12.23 Summary of Assessment of Potential Significant Residual Adverse Effects on Fish and Fish Habitat Table 12.22 – Characterization of Residual Fish and Fish Habitat Effects</i> Comments Loss of habitat due to construction headpond and reservoir filling are predicted to Result in Loss of Distinct Fish Group (criterion a) and have thus been determined to cause a Significant Adverse Residual Effect. Information Request BC Hydro is requested to: a) provide some brief explanatory notes in the table regarding the predicted loss of distinct fish groups (i.e., what species and for how long?); and b) clarify how the duration of this effect is categorized as M (Table 12.22), which implies the effect will be of medium term duration, and how the effect is also described as irreversible.	<p>The significance of residual adverse effects is described in sub-section 12.6.3.1 of the EIS.</p> <p>As listed in Table 12.23 and described in sub-section 12.6.3.1 Discussion of the Significance of Residual Adverse Effects: Several Potential effects contribute to the loss of distinct groups as a whole.</p> <p>"Based on criteria "a", the Project is predicted to have a significant adverse effect on the Fish and Fish Habitat VC as a result of the potential for the loss of indigenous fish populations or distinct groups of fish. The three distinct groups of fish that may be lost are the adfluvial component of the Moberly River Arctic grayling, migratory (adfluvial) bull trout that spawn in the Halfway River, and mountain whitefish that rear in the Peace River and spawn in tributaries of the Peace River or the Peace River mainstem upstream of the Site C dam. The loss of these distinct groups occurs because of loss of river habitat, reduced fish health and survival during construction and reservoir filling, and hindered fish movement. Although these distinct groups will be affected, the species as a whole of Arctic grayling, bull trout and mountain whitefish will continue to be present in Peace River tributaries and downstream of the reservoir and may persist in the reservoir"</p> <p>The duration of the Potential Effect of 'Loss of habitat due to construction headpond and reservoir filling' was medium term because the headpond is in during 3 to 4 years during construction, and was classified as Irreversible because there was not plan to remove the construction headpond, but rather fill the reservoir.</p>
ab_0001-304	Treaty 8 Tribal Association	V.2, S.12.6.3 ; page(s) 12-88 ; line(s) 7-8 EISG S.10.2.5 Comment 2-125.	<i>Table 12.23 Summary of Assessment of Potential Significant Residual Adverse Effects on Fish and Fish Habitat</i> Comments Reduced fish health and survival due to sediment inputs from construction headpond and reservoir filling are predicted to Result in Loss of Distinct Fish Group (criterion a) and has thus been determined to cause a Significant Adverse Residual Effect. Information Request BC Hydro is requested to: a) provide some brief explanatory notes in the table regarding the predicted loss of distinct fish groups (i.e., what species and for how long?); and b) clarify how the duration of this effect is categorized as M (Table 12.22), which implies the effect will be of medium term duration, and how the effect is also described as irreversible.	Please see the response to ab_0001-303.
ab_0001-305	Treaty 8 Tribal Association	V.2, S.12.6.3 ; page(s) 12-88 ; line(s) 7-8	<i>Table 12.23 Summary of Assessment of Potential Significant Residual Adverse Effects on Fish and Fish Habitat</i> Comments Hindered fish movement due to obstruction to fish passage is predicted to Result in Loss of Distinct Fish Group	Please see the response to ab_0001-303.

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		EISG S.10.2.5 Comment 2-126.	(criterion a) and has thus been determined to cause a Significant Adverse Effect. Information Request BC Hydro is requested to: a) provide some brief explanatory notes in the table regarding the predicted loss of distinct fish groups (i.e., what species and for how long?); and b) clarify how the duration of this effect is categorized as M (Table 12.22), which implies the effect will be of medium term duration, and how the effect is also described as irreversible.	
ab_0001-306	Treaty 8 Tribal Association	V.2, S.12.6.3.1 ; page(s) 12-92 ; line(s) 1-2 EISG n/a Comment 2-127.	<i>Table 12.24 Summary of Residual Effects During Construction and Operation Phases of the Project (Significant Residual Effects in Boldface Type) Construction Phase • Loss of habitat due to construction headpond and reservoir filling • Reduced fish health and survival due to sediment inputs from construction headpond and reservoir filling • Hindered fish movement due to obstruction to fish passage • Operations Phase • Hindered fish movement due to obstruction to fish passage</i> Correction Significant effects were not bolded as specified in the table title.	The significant residual effects are listed in Table 12.23 and should have been presented in bold in Table 12.24.
ab_0001-307	Treaty 8 Tribal Association	V.2, S.12.6.3.1 ; page(s) 12-93, 12-94 ; line(s) 24-30, 1-4 EISG S.10.2.4, S.10.2.5 Comment 2-128.	<i>Operation of the Project will result in modest changes to fish habitat downstream of the dam. These changes to habitat have been assessed to be of low magnitude and limited in the proximal reach of the Peace River between the Project and the Pine River confluence. Downstream of the Pine River, changes diminish as a result of flow attenuation and tributary inflows. The changes to habitat would include increases in the range of flow fluctuations, and limited changes to temperature and water quality. These changes are not large enough to cause a loss in distinct groups of fish or to result in a reduction in the long term standing stock biomass of downstream fish populations. The cool turbid water fish species that inhabit the Peace River would be able to complete their entire life histories downstream of the Project and would not be significantly affected by the Project.</i> Comments The Proponent indicates that physical changes (e.g., flow, water temperature, water quality) are not large enough to cause a loss in distinct groups of fish or to result in the reduction in the long term standing stock biomass of downstream fish populations. Information Request The Proponent is requested to elaborate on what changes may be anticipated to fish populations downstream of the Pine River confluence, given the expected physical changes outlined.	Section 12.4.2.2 Downstream Habitat Changes describes anticipated changes to fish populations downstream of the Project.
ab_0001-308	Treaty 8 Tribal Association	V.2, S.12.6.3.1 ; page(s) 12-93 ; line(s) 29 EISG S.10.2.4, S.10.2.5	<i>Downstream of the Pine River, changes diminish as a result of flow attenuation and tributary inflows. The changes to habitat would include increases in the range of flow fluctuations, and limited changes to temperature and water quality. These changes are not large enough to cause a loss in distinct groups of fish or to result in a reduction in the long-term standing stock biomass of</i>	The text quoted from the EIS in this Information Request is accurate. This Information Request is from sub-section 12.6.3.1 Discussion of the Significance of Residual Adverse Effects, under the heading Effects on Habitat. As described in the Conclusion of this section: "The three distinct groups of fish that may be lost

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		Comment 2-129.	<i>downstream fish populations. The cool turbid water fish species that inhabit the Peace River would be able to complete their entire life histories downstream of the Project and would not be significantly affected by the Project. Comments</i> This is misleading, as in another portion of the report it is clearly stated that bull trout, Arctic grayling and mountain whitefish populations may be at risk if the dam is built, as their upstream movements will be hindered, and their spawning habitat in the Moberly and Halfway Rivers might be inaccessible.	are the adfluvial component of the Moberly River Arctic grayling, migratory (adfluvial) bull trout that spawn in the Halfway River, and mountain whitefish that rear in the Peace River and spawn in tributaries of the Peace River or the Peace River mainstem upstream of the Site C dam site. The loss of these distinct groups occurs because of loss of river habitat, reduced fish health and survival during construction and reservoir filling, and hindered fish movement. Although these distinct groups will be affected, the species as a whole of Arctic grayling, bull trout and mountain whitefish will continue to be present in Peace River tributaries and downstream of the reservoir and may persist in the reservoir."
ab_0001-309	Treaty 8 Tribal Association	V.2, S.12.6.3.1 ; page(s) 12-94 ; line(s) 13-18 EISG S.9.3.2, S.10.2.4, S.10.2.5 Comment 2-130.	<i>However, suspended sediment inputs resulting from the construction headpond and reservoir filling would be of sufficient magnitude and duration to cause significant adverse effects. These effects would contribute to the loss of distinct groups of fish that exclusively inhabit existing clear water habitats, use the Peace River in the region that would be transformed into reservoir and immediately downstream of the dam. Information Request</i> BC Hydro is requested to determine and state what species will be affected and where, and indicate the predicted population level effects.	The distinct groups of fish are described in sub-section 12.6.3.1 Discussion of the Significance of Residual Adverse Effects. Please also see the response to ab_0001-303.
ab_0001-310	Treaty 8 Tribal Association	V.2, S.12.6.3.1 ; page(s) 12-94 ; line(s) 34-43 EISG S.10.2.4, S.10.2.5 Comment 2-131.	<i>The three distinct groups of fish that may be lost are the adfluvial component of the Moberly River Arctic grayling, migratory (adfluvial) bull trout that spawn in the Halfway River, and mountain whitefish that rear in the Peace River and spawn in tributaries of the Peace River or the Peace River mainstem upstream of the Site C Dam site. The loss of these distinct groups occurs because of the loss of river habitat, reduced fish health and survival during construction and reservoir filling, and hindered fish movement. Although these distinct groups will be affected, the species as a whole of Arctic grayling, bull trout and mountain whitefish will continue to be present in Peace River tributaries and downstream of the reservoir and may persist in the reservoir. Information Request</i> Indicate whether these are the only populations that may be lost as a result of the proposed Project or whether they each represent (i.e. as indicator species) a broader community of fish species that may be lost.	These distinct groups do not represent a broader community. See also response ab_0001-226.
ab_0001-311	Treaty 8 Tribal Association	V.2, S.12.6.3.2 ; page(s) 12-95 ; line(s) 5 EISG S.10.2.4, S.10.2.5 Comment 2-132.	<i>The report states that the loss of distinct groups of Arctic grayling in the upper Peace River watershed was observed following the construction of the Williston Reservoir. As a result, the maintenance of distinct groups of Arctic grayling in the Peace watershed is a species conservation concern. Arctic grayling are abundant in other Peace River tributaries, which may provide recruitment to the Peace River. This is one of the few occasions in the EIS report where impacts on Arctic Grayling resulting from the Bennett dam and creation of the Williston reservoir are mentioned. This statement acknowledges the cumulative effects of</i>	Please see the Technical Memo: Spatial Boundary Selection.

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			<p><i>multiple dams which have led to the conservation concern for this species.</i></p> <p>Information Request Explain why the EIS has chosen to restrict the RAA for fish and fish habitat to the reaches downstream of the existing impoundments.</p>	
ab_0001-312	Treaty 8 Tribal Association	V.2, S.12.6.3.2 ; page(s) 12-95 ; line(s) 19 EISG S.10.2.4, S.10.2.5 Comment 2-133.	<p><i>The report states that there is uncertainty in the extent to which bull trout will continue to migrate downstream past the dam site, and whether upstream passage mitigation at the Site C Dam site will be required for bull trout. Given the habitat available in the reservoir, the potential available habitat downstream of the dam site, and the potential for fish passage, the probability of loss of the migratory component of the Halfway bull trout population is low.</i></p> <p>Comments Unless there is a trap and haul program, bull trout that migrate downstream (entrainment once the dam is built), do not have the option to migrate back upstream. Bull trout have been documented to migrate between the Halfway River and the Pine River below Site C (Appendix O). Information Request The Proponent is requested to: a) provide more information on the potential adverse effects of the proposed dam on bull trout; b) more support for the conclusion that the probability of loss of the migratory component of the Halfway River bull trout population is low;; and c) if no further information is available in relation to part a) and part b), state this as a limitation of the EIS.</p>	<p>Further information on the potential effects of the Project on bull trout are described in Section 12, and Volume 2 Appendix Q.</p> <p>Potential effects of the Project on the migratory component (i.e., those bull trout that spend a portion of their life history outside of the Halfway watershed) of the bull trout population in the Halfway watershed is described in Volume 2 Appendix Q3. This Appendix includes a detailed population model that is based on information for bull trout in Peace River, supported by information from reservoirs across North America that have bull trout that spend a portion of their life history in the reservoir, and includes sensitivity analyses for key uncertainties. As well, the Fish Passage Management Plan describes the adaptive approach to address uncertainty.</p>
ab_0001-313	Treaty 8 Tribal Association	V.2, S.12.6.3.2 ; page(s) 12-95 ; line(s) 24-34 EISG S.10.2.4., S.10.2.5 Comment 2-134.	<p><i>Mountain whitefish are abundant in the Peace River and its tributaries. Mountain whitefish are not adapted to reservoir habitats, which creates a risk for the loss of distinct groups of mountain whitefish that rear in the Peace River and spawn in the Peace River mainstem or tributaries upstream of the Site C Dam. The report then states that over the long term, standing stock biomass in the reservoir and Peace River downstream of the Project in the LAA is predicted to be equal to or greater than baseline conditions.</i></p> <p>Comments The report acknowledges that there will be adverse effects on mountain whitefish as they are not adapted to reservoir habitats. The modeling that predicts an increase in standing stock biomass assumes that kokanee biomass will increase over the long term. As noted in previous comments, it is not clear how biomass of kokanee is expected to increase with lack of spawning opportunities available in the proposed reservoir.</p>	<p>To clarify: As stated in the quoted text "loss of distinct groups of mountain whitefish that rear in the Peace River and spawn in the Peace River mainstem or tributaries upstream of the Site C Dam."</p> <p>Regarding the predicted productivity of kokanee populations in the Site C reservoir, please see the response to ab_0001-246.</p>
ab_0001-314	Treaty 8 Tribal Association	V.2, S.12.7 ; page(s) 12-96 ; line(s) 3 EISG S.10.2.5, S.8.5.3 Comment 2-	<p><i>The Dunvegan Project assessment concluded that a significant residual effect would be restricted to the local project area and limited to three fish species.</i></p> <p>Information Request The Proponent is requested to identify the three species that would be adversely affected by the proposed Dunvegan Project, and to identify whether these species each represent (i.e. as indicator species) a broader community of fish species that may be lost.</p>	<p>According to the Dunvegan EIS Section 4.8.7.1, burbot and mountain whitefish populations have a high potential for significant adverse effects at the local level, while walleye have a moderate potential for significant adverse effects at the local level.</p> <p>As stated in Section 12.6.3.1, the cool turbid water fish species that inhabit the Peace River would be able to complete their entire life histories downstream of the Project and would not be</p>

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		135.		<p>significantly affected by the Project. Also, as stated in Section 12.6.3.2, over the long term, standing stock biomass in the reservoir and Peace River downstream of the Project in the LAA is predicted to be equal to or greater than baseline conditions.</p> <p>None of these downstream fish species populations are expected to be negatively affected by the Project.</p>
ab_0001-315	Treaty 8 Tribal Association	V.2, S.12.7 ; page(s) 12-96 ; line(s) 5 EISG S.10.2.5, S.8.5.3 Comment 2-136.	<i>Dunvegan’s local area residual effect is limited to the headpond area, 161 km downstream of the Site C Dam site. Site C has no overlapping residual effects with the Dunvegan Project.</i> Information Request BC Hydro is requested to provide the findings of fish migration studies that support the conclusion that the proposed Project has no overlapping residual effects with the proposed Dunvegan Project.	<p>Reports describing fish migration studies can be found at: http://www.bchydro.com/energy-in-bc/projects/site_c/document_centre.html</p> <p>Refer to Section 12.3 Baseline Conditions for the description of fish movement patterns in and related to the LAA of the Project. Also refer to Volume 2 Appendix O Fish and Fish Habitat Technical Data Report, Section 6.1 for more information on fish migration.</p>
ab_0001-316	Treaty 8 Tribal Association	V.2, S.12.8 ; page(s) 12-97, 12-98, 12-67 ; line(s) 8-26 7-8 15-17 EISG S.10.2.5 Comment 2-137.	<i>The environmental monitoring and follow-up program details and reporting requirements will be part of the Fisheries Act 35 (2) Authorization. Future mitigation and compensation options will be evaluated after reservoir development and follow-up monitoring. Compensation options that are technically and economically feasible will be implemented.</i> Comments Plans for the development and implementation of habitat compensation measures are not specifically mentioned in this section except as stated on page 12-98 (line 7). Information Request BC Hydro is requested to provide conceptual habitat compensation plans that would better inform their assessments of potential residual effects and would be part of any Fisheries Act authorization submissions.	<p>BC Hydro will work with appropriate regulatory authorities in the development of compensation plans required for the Fisheries Act Authorization.</p> <p>The scope of the Fish and Fish Habitat effects assessment is in accordance with the EIS Guidelines and appropriate information is provided in the EIS.</p>
ab_0001-317	Treaty 8 Tribal Association	V.2, S.13.1.2.2 ; page(s) 13-3 ; line(s) 23-28 EISG S.11.2.3, S.15.2.3, S.15.2.4 Comment 2-138.	<i>Food plants identified by Aboriginal groups were not included within the assessment as plant species [and?] are not being assessed individually; instead, effects to ecosystems that contain described plant assemblages are assessed under terrestrial ecosystems, including those that are rare, sensitive, or of conservation concern. Harvesting of plants for traditional purposes is considered in the assessment of the potential effects of the Project on Current Use of Lands and Resources for Traditional Purposes, which is found in Section 19.</i> Comments The ecosystem-based approach glosses over the real information required, and does not address specific site or gathering places important to the Aboriginal peoples. Looking at this issue from the ecosystem level does not allow for a sufficient inventory or data collection to take place. This presents a data gap for effects determination. Information Request The Proponent is requested to describe the rare and medicinal plant studies, if any, that were carried out with	<p>As described in Section 19.2.3.3.2, “BC Hydro has negotiated Traditional Land Use Study (TLUS) agreements with those Aboriginal groups located immediately downstream of the Project or who may exercise rights within the area that is now defined as the Project activity zone...Each of the TLUS agreements is unique and reflects the interests of both parties.” Some of the Traditional Land Use reports received by BC Hydro contained information respecting rare and medicinal plants. The Traditional Land Use Studies received by BC Hydro are included in Volume 5, Appendix A. BC Hydro did not enter into agreements with Aboriginal groups to conduct studies specific to rare and medicinal plants. BC Hydro will consider additional baseline information from Aboriginal groups with respect to rare and medicinal plants if it is made available.</p>

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			any of the Aboriginal groups affected by the proposed Project.	
ab_0001-318	Treaty 8 Tribal Association	V.2, S.13.3.1.1 ; page(s) 13-16 ; line(s) 10-11 EISG S.9.2.1, S.9.3.2, S.11.2.4, S.12.2.4 Comment 2-139.	<i>Additional ecological community loss would also occur during operation, with bank erosion along the reservoir. Information Request</i> The Proponent is requested to explain why bank erosion is pertinent to the study of the effects of the proposed Project on vegetation but not wildlife resources.	Bank erosion was considered in the assessment of potential Project effects on wildlife resources under the key aspect of habitat alteration and fragmentation. Please see Section 14, page 14-26, line 29 in the EIS.
ab_0001-319	Treaty 8 Tribal Association	V.2, S.13.4.1 ; page(s) 13-34 ; line(s) 14-15 EISG S.11.2.3, S.11.2.4 Comment 2-140.	<i>As a result, the construction and operation of the Project is likely to result in a residual adverse effect on vegetation and ecological communities by the alteration and fragmentation of habitat for the terrestrial ecosystems and rare plants discussed above, Comments</i> There is a data gap with regards to the inventory, identification and quantity of available rare medicinal plants within the project area. Information Request The Proponent is requested to explain why rare plants are not discussed in the EIS within the context of use by Aboriginal people.	Information on plant use by Aboriginal people was provided in TLUS studies prepared for BC Hydro. Plants identified in the TLUS available at the time that the assessment was prepared were taken into account whether they were rare or common. However, it is noted that none of the species were defined as rare plants, as defined by the provincial Conservation Data Center and under the Species at Risk Act. Plant species of interest identified in the TLUS are summarized in Section 13.2.3, Table 13.6, page 13-12. Loss of these plants is considered in the assessment of potential effects of the Project on vegetation and ecological communities.
ab_0001-320	Treaty 8 Tribal Association	V.2, S.13.4.1 ; page(s) 13-34 ; line(s) 25-26 EISG S.11.2.4, S.11.2.5 Comment 2-141.	<i>The characterization of the residual Project effect assumes that the specific mitigation measures described above are all implemented. Information Request</i> Considering that the residual effects in the conclusions are quantified, and that there is uncertainty with the mitigation measures proposed, the Proponent is asked to explain the success of the mitigation measures when the effectiveness of each mitigation effort proposed is not quantified.	The effectiveness of proposed mitigation measures is qualified in Section 13.3.2, Table 13.15 under mitigation effectiveness. Please also see the Technical Memo: Uncertainty and Precaution.
ab_0001-321	Treaty 8 Tribal Association	V.2, S.13.4.3 ; page(s) 13-38 ; line(s) 23-24 EISG n/a Comment 2-142.	<i>The available measures to mitigate the potential effects on rare plants and ecological communities may not be fully effective. Comments</i> This statement solidifies the fact that the proposed Project would have significant adverse residual effects on threatened and endangered species and would violate the objectives of the Species Act Risk Act (SARA), which are to provide for the recovery of endangered or threatened species, and encourage the management of other species to prevent them from becoming at risk (Government of Canada 2012). Recovery and management cannot be successful when mitigation will not be effective. From Appendix O: <i>Although certain rare plant species might survive, it is expected that habitat suitability would be reduced within the immediate area around construction sites, leading to reduced viability for any</i>	No rare plant species on the SARA list have been documented in the LAA. The potential effects of the Project on vegetation and ecological communities would result in a significant adverse residual effect in part due to the effects on provincially listed rare plants (Section 13.4.1 page 13-34). For clarification: Appendix O refers to the Fish and Fish Habitat Technical Data Report. Please see the Technical Memo: Uncertainty and Precaution.

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			<i>rare plant occurrences present. (p. 92).</i>	
ab_0001-322	Treaty 8 Tribal Association	V.2, S.13.4.3 ; page(s) 13-39,13-40 ; line(s) 14-16 1-2 EISG S.11.2.4, S.11.2.5, S.12.2.4 Comment 2-143.	<i>The federal government has an interest in preserving wetlands as habitat for wildlife, notably migratory birds and SARA-listed species, but the residual effect is not considered significant due to wetland loss, since the magnitude is not High and numerous wetland complexes occur in upland forests and plateaus removed from the Project. Comments This statement appears to lump together the main stem river riparian wetlands with other upland wetlands. Since there is typically higher species richness in large river riparian habitats, and many differences in species composition and habitat structure with other wetland types, this approach requires more explanation. The section on vegetation and ecological communities does not appear to provide sufficient information to assess the significance of the loss of these communities as wildlife habitat, and does not assess these losses in the context of previous losses from the upstream reservoirs. Information Request The Proponent is asked to: a) describe what is known about the plant species composition of the upland wetlands located outside of the study area and those that would be adversely affected by the proposed Project; and b) describe what is known of the use of upland wetlands by wildlife compared to those in the main stem of the Peace River and tributaries that would be adversely affected by the proposed Project.</i>	Volume 2, Appendix R, Part 1, Appendix A provides plant species composition of wetlands in the LAA. Section 14 and Appendix R, Parts 2 through 7 describe use of wetland habitats in the LAA
ab_0001-323	Treaty 8 Tribal Association	V.2, S.13.5.2 ; page(s) 13-40 ; line(s) 25-26 EISG S.11.2.1, S.9.1, S.8.5.3 Comment 2-144.	<i>Figure 13.2 Projects and Activities Within the Regional Assessment Area Figure 13.2 shows the locations of all of the projects and activities occurring in the RAA for which spatial information is available. Information Request The Proponent is asked to explain and justify why it has chosen a methodology that completely excludes the existing hydroelectric projects on the Peace River.</i>	Please see the Technical Memo: Cumulative Effects Assessment.
ab_0001-324	Treaty 8 Tribal Association	V.2, S.13.5.4 ; page(s) 13-48 ; line(s) 15-16 EISG n/a Comment 2-145.	<i>The majority of the Project disturbance is within the Peace River valley, affecting riparian habitats that are generally removed from most other developments (Project Case). Comments The EIS recognises that the proposed Project will have a selective and concentrated effect on these riparian habitat types – those of a large alluvial river valley that are rare across the landscape as a whole. They are connected to those riparian habitats of the major tributaries of the upper Peace that have been lost to reservoirs. These are habitat types that are formed by the natural hydrological regime of a large river system. This is an important example of why the upper watershed should be included in a quantitative and qualitative analysis of cumulative ecological effects on this river system. There is a clear overlap of effects on valued ecosystem components. In this case, the</i>	Please see the Technical Memos on Cumulative Effects Assessment and Spatial Boundary Selection.

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			effects of additional river regulation are in the context of the extensive loss of relatively rare upstream riparian and aquatic habitats in the same river system.	
ab_0001-325	Treaty 8 Tribal Association	V.2, S.14 ; page(s) n/a; line(s) n/a EISG S.1.3, S.12.2.5 Comment 2-146.	Information Request Provide a summary of the study limitations and levels of uncertainty related to wildlife resources for each section that may be relevant to the determination of residual environmental effects.	Levels of confidence for residual effects are described in Section 14, Table 14.19. Please also see Volume 2, Appendix R, Parts 2-7. Please see the Technical Memo: Uncertainty and Precaution.
ab_0001-326	Treaty 8 Tribal Association	V.2, S.14.1 ; page(s) 14-1 ; line(s) 12 EISG S.12.1 Comment 2-147.	<i>The wildlife resources VC includes the following key species groups: butterflies and dragonflies, amphibians and reptiles, migratory birds, non-migratory game birds, raptors, bats, fur-bearers, ungulates, and large carnivores.</i> Information Request Provide a rationale and describe the process for selecting species groups as VC representatives.	Please see Section 8 of the EIS Guidelines and Section 14.1.4, Table 14.4 and Table 14.2.
ab_0001-327	Treaty 8 Tribal Association	V.2, S.14.1.2 ; page(s) 14-6 ; line(s) 28 EISG S.12.1 Comment 2-148.	<i>Table 14.1 Aboriginal Key Issues: Wildlife Resources Key Issues ... Loss of ungulate rutting ground Approach to Addressing Key Issues The focus of the assessment on habitat use by ungulates is on winter use.</i> Comments In order to fully understand the adverse effects of the proposed Project on ungulates, a detailed study of all important habitat features during the life cycle of a specific species is required. Only focusing on winter habitat does not give a complete picture of the habitat requirements of the animal and does not adequately inform decision makers about impact severity. Using winter habitat use alone results in a significant data gap for effects assessment purposes.	As described in Section 14.3.1.6.4, the assessment focused on loss of winter range because winter range is known to be critical habitat for ungulates, and is aligned with approaches used by provincial regulatory authorities. In association with habitat use of ungulates, winter is defined as November through April (Volume 2, Appendix R, part 7, Section 1.4.2.6, page 130). The analysis focused on winter habitat use as it was viewed as the most limiting habitat in the area. Winter is considered the critical season for ungulates because forage is scarce and of poor quality, energetic demands are high-due in part to cold temperatures and snow restricts movement. These stressors also increase risk of predation. Forage during the growing season is abundant, but its accessibility is limited during the winter due to snow cover. As the regulatory authority, the provincial government recognizes that winter is the critical period for ungulates in the implementation of ungulate management programs (see Scheck, J. 2005. South Peace Elk Ungulate Winter Range (UWR) Proposal. Peace Forest District, Northern Interior Forest Region). Thus, focusing the assessment on the winter period and provision measures, including designating and managing winter habitat for many ungulate species, is appropriate for the purposes of environmental assessment in the Peace region.
ab_0001-328	Treaty 8 Tribal Association	V.2, S.14.1.2 ; page(s) 14-7 ; line(s) n/a EISG S.12.1	<i>Table 14.1 Aboriginal Key Issues: Wildlife Resources</i> Comments According to the EIS, caribou are not found in the portion of the Peace River to be directly affected by the proposed Project. Caribou habitat loss and degradation have been attributed to the existing hydroelectric developments upstream: <i>The</i>	Please see the Technical Memo: Caribou. BC Hydro has also repeatedly requested that Aboriginal groups share traditional knowledge to inform the proposed Project. These requests were made through the scoping of traditional land use studies with various Aboriginal groups, the terms of the Environmental Assessment

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		Comment 2-149.	<p><i>Finlay herd experienced a steep decline largely due to human caused habitat change related to the Williston Dam, encroachment of industry, recreation activities and associated access. Predation may also have contributed to the decline of the herd but has become less of a factor in recent years.</i>⁵ Information Request The Proponent is requested to: a) indicate what efforts were made to locate any historical records, or oral history accounts that describe the presence of caribou in the areas that would be affected by the proposed Project; b) provide any information concerning the presence or absence of caribou in the areas that would be affected by the proposed Project pursuant to part a)</p> <p>5 .Environment Canada. 2012 Management Plan for the Northern Mountain Population of Woodland Caribou (<i>Rangifer tarandus caribou</i>) in Canada. Species at Risk Act Management Plan Series. Environment Canada, Ottawa. vii + 79 pp. http://www.sararegistry.gc.ca/virtual_sara/files/plans/mp_woodland_caribou_northern_mountain_population_e.pdf</p>	Participation Agreement between BC Hydro and the T8TA, as well as throughout the consultation process beginning in Stage 2. Several instances of such requests are described in Section 9 and Volume 5, appendix A06.
ab_0001-329	Treaty 8 Tribal Association	V.2, S.14.1.2 ; page(s) 14-8 ; line(s) 5 EISG n/a Comment 2-150.	<p><i>Table 14.2 Rationale for the Exclusion of Suggested Species Squirrel Considered to be abundant and a forested habitat generalist. Resilient to disturbance. The Project is not expected to result in a change in the population in the LAA.</i></p> <p>Comments If we assume the population of squirrels within the LAA to be at ecological carrying capacity, then the population will be reduced by an amount equivalent to the population density multiplied by the amount of habitat area within the footprint that will be lost. Animals will either die directly on site as habitat is flooded or will die after moving to adjacent areas as a result of intra-specific competition. Correction Modify the wording in Table 14.2 to reflect the reality concerning changes to the population of squirrels that would result from the proposed Project.</p>	<p>BC Hydro has reviewed this suggestion and will leave the wording in this section unchanged.</p> <p>BC Hydro does not agree with the assumption that the squirrel population in the LAA is at ecological carrying capacity.</p>
ab_0001-330	Treaty 8 Tribal Association	V.2, S.14.1.2 ; page(s) 14-8 ; line(s) 5 EISG n/a Comment 2-151.	<p><i>Table 14.2 Rationale for the Exclusion of Suggested Species Snowshoe hare A common species with cyclical population fluctuations. Tends to prefer younger forest types for forage and security, which is not limited on the landscape. The Project is not expected to result in a change in the regional population.</i></p> <p>Comments If we assume the population within the RAA to be at ecological carrying capacity then the population will be reduced by an amount equivalent to the population density multiplied by the amount of habitat area within the footprint that will be lost. Animals will either die directly on site as habitat is flooded or will die after moving to adjacent areas as a result of intra-specific competition. Correction Modify the wording in Table 14.2 to reflect the reality concerning changes to the population of snowshoe hare that would result from the proposed Project.</p>	<p>BC Hydro has reviewed this suggestion and will leave the wording in this section unchanged.</p> <p>The RAA was established and used for the assessment of potential cumulative effects of the Project. The Project is not expected to result in measurable changes to the regional snowshoe hare population within the normal cyclical fluctuations of this species.</p>

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ab_0001-331	Treaty 8 Tribal Association	V.2, S.14.1.2 ; page(s) 14-8 ; line(s) 5 EISG n/a Comment 2-152.	<i>Table 14.2 Rationale for the Exclusion of Suggested Species Canada Lynx A species whose population and density is strongly linked to cyclical fluctuations in prey (especially snowshoe hare). Since changes to snowshoe hare are not expected, the same is assumed for Canada lynx. Comments The assumption is invalid as per reasons stated above. Animals will die after moving to adjacent areas as a result of intra-specific competition. Correction Modify the wording in Table 14.2 to reflect the reality concerning changes to the population of lynx that would result from the proposed Project.</i>	BC Hydro has reviewed this suggestion and will leave the wording in this section unchanged. The Project is not expected to result in measurable changes to the regional lynx population within the normal cyclical fluctuations of this species.
ab_0001-332	Treaty 8 Tribal Association	V.2, S.14.1.2 ; page(s) 14-8 ; line(s) 5 EISG S.12.1 Comment 2-153.	<i>Where Project components do occur in recognized caribou herd ranges (e.g., West Pine Quarry), a review of existing data has determined that there will be no direct Project interactions on caribou, and that sites can be operated in such a way as to have no indirect interactions on caribou. Information Request BC Hydro is requested to provide evidence and rationale for the determination that the proposed Project will have no interactions with caribou.</i>	Please see the Technical Memo: Caribou.
ab_0001-333	Treaty 8 Tribal Association	V.2, S.14.1.4 ; page(s) 14-10 ; line(s) 14 EISG S.12.1 Comment 2-154.	<i>The key species groups have been further divided into key indicators, including down to the species level in some instances, following Section 12.2.3 of the EIS guidelines. Information Request Provide a rationale for the process of selecting species group indicators.</i>	Please see Table 14.4, Section 14, page 14-11 for the rationale for indicator selection.
ab_0001-334	Treaty 8 Tribal Association	V.2, S.14.1.4 ; page(s) 14-11 ; line(s) 1 EISG S.12.1 Comment 2-155.	<i>Table 14.4 Key Indicators for Wildlife Resources Comments Given that amphibians are generally in decline in many places, this group of species may have a general sensitivity to disturbance. Indicators are generally chosen under a variety of criteria (e.g., abundant, easily monitored, sensitive to change, etc.). Information Request BC Hydro is asked to: a) clarify whether consideration was given to the species that might best function as indicators in a typical BACI design; and b) elaborate on why, for example, amphibians were considered.</i>	Please see Table 14.4, Section 14, page 14-11 for the rationale for indicator selection. BACI design is not appropriate. The scope of the Wildlife Resources assessment is in accordance with the EIS Guidelines and appropriate information is provided in the EIS.
ab_0001-335	Treaty 8 Tribal Association	V.2, S.14.1.5.1 ; page(s) 14-12 ; line(s) 19-27 EISG S.12.2.1 Comment 2-156.	<i>• Regional Assessment Area (RAA): the area within which projects and activities – the residual effects of which may combine with residual effects of the Project – are identified and taken into account in the cumulative effects assessment. The proposed dam, reservoir, transmission line, Highway 29 realignment, temporary access roads, and quarries occur within five Wildlife Management Units – designated 7-31, 7-32, 7-33, 7-34, and 7-35 (Figure 14.1). The Wildlife Management Unit boundaries provide a larger RAA boundary than what was suggested in Table 11.2 of the EIS Guidelines. The updated boundary includes most of the Peace Lowlands ecosection and incorporates all Project components</i>	The RAA boundary extends to the boundary of the Wildlife Management Units listed. The Upper Peace Watershed is outside the scope of the environmental assessment. Please see the Technical Memo: Cumulative Effects Assessment.

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			<p><i>and activities.</i> Comments It is unclear whether the RAA is the footprint of the infrastructure listed within the WMUs or is it the entire WMUs. Many VCs have experienced habitat loss and degradation in this watershed due to prior developments. For example there is clearly spatial and temporal overlap of similar effects on fish and fish habitat and riparian vegetation communities of the Peace River system that are causing incremental habitat loss. Diminished habitat availability for many species of aquatic and riparian flora and fauna in the watershed is a cumulative effect of multiple dams and impoundments in a river system. This is important for dispersal, maintenance of genetic diversity, and resilience in the face of multiple stressors, including climate change, and stochastic events. Information Request The Proponent is requested to: a) restate the definition of the RAA so it is more explicit and clear; b) explain why the regional study area for all ecological components does not extend into the upper watershed when the proposed Project will adversely affect many of the same VCs that have been disturbed by existing hydroelectric development upstream; and c) explain why the issue of diminished habitat availability is not addressed in the cumulative effect assessment.</p>	
ab_0001-336	Treaty 8 Tribal Association	V.2, S.14.2 ; page(s) 14-13 ; line(s) 6 EISG S.12.2.3 Comment 2-157.	<p>Comments In general, there is no mention of capability modeling for the indicators. The suitability modeling that was done represents a planning scenario characterized by current baseline conditions. An ecological baseline (i.e., capability modeling) will be required in order to address the criteria of magnitude (i.e., ...comparison to natural...variation) and context (i.e., ...already been adversely affected...) in the assessment matrix. Information Request BC Hydro is requested to conduct capability modeling for each of the proposed indicators.</p>	<p>The effects assessment describes the potential effects of the Project on Wildlife Resources by examining how the existing baseline could be changed by the Project.</p> <p>Suitability modeling was conducted for species for which habitat modeling was conducted because it reflects the value of habitats under baseline conditions to Wildlife Resources. Capability is used to assign value to habitats in their pristine conditions which are not being considered in the EIS. An analysis of capable habitat would indicate a smaller magnitude than using current suitability. This is because the surrounding habitat, which has a considerable amount of anthropogenic disturbance currently, has high capability for many wildlife species. Much of this surrounding capable habitat would not be affected by the Project.</p> <p>Based on Resources Inventory Committee guidance, suitability assessments are more appropriate given the context for the assessment. As per RIC (1999):</p> <p>"Capability is defined as the ability of the habitat, under the optimal natural (seral) conditions for a species to provide its life requisites, irrespective of the current condition of the habitat. It is an estimate of the highest potential value of a particular habitat for a particular species and is useful in providing predictive scenarios for various habitat management options. Capability assumes non-intensive management and does not apply where the inherent soil characteristics and productivity have been artificially enhanced, as commonly occurs with irrigation or fertilization. The capability classification of these areas is based on what the ecosystems would be like if they reverted from their present state back to a non-intensive management state."</p>

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				<p>and</p> <p>"Suitability is defined as the ability of the habitat in its current condition to provide the life requisites of a species. It is an estimate of how well current habitat conditions provide the specified life requisite(s) of the species being considered."</p> <p>Therefore, the scope of the Wildlife Resources assessment is in accordance with the EIS Guidelines and appropriate information is provided in the EIS</p>
ab_0001-337	Treaty 8 Tribal Association	V.2, S.14.2 ; page(s) 14-13 ; line(s) 7-8 EISG S.12.2.3 Comment 2-158.	<i>Baseline conditions were characterized using information from existing literature and field studies that were conducted from 2005 to 2012. Comments</i> Baseline conditions going back to 2005 are not satisfactory within the context of assessing direct and cumulative effects. A preindustrial baseline (pre-Bennett and Peace Canyon Dams) would inform decision makers of the effects of prior projects on the Peace River Valley and inform a cumulative effects assessment of the adverse effects of proposed Project. Information Request The Proponent is requested to develop a pre-industrial baseline (prior to the development of the WAC Bennett and Peace Canyon dams) for the proposed indicators.	<p>The scope of the Wildlife Resources effects assessment is in accordance with the EIS Guidelines and appropriate information is provided in the EIS.</p> <p>Please see the Technical Memo: Cumulative Effects Assessment.</p>
ab_0001-338	Treaty 8 Tribal Association	V. 2, S.14.2.3 ; page(s) 14-14 ; line(s) n/a EISG S.12.2.1 Comment 2-159.	Information Request The Proponent is requested to: a) indicate to what extent the known ranges of the various species of migratory birds found in the LAA for the proposed Project overlap with the regions of the upper watershed of the Peace River including the Finlay and Parsnip river basins; and b) indicate to what extent migratory bird habitat has been lost or converted in the Peace River watershed in British Columbia as a whole.	<p>The scope of the Wildlife Resources effects assessment is in accordance with the EIS Guidelines and appropriate information is provided in the EIS.</p> <p>Please see the Technical Memos on Cumulative Effects Assessment and Spatial Boundary Selection.</p>
ab_0001-339	Treaty 8 Tribal Association	V.2, S.14.2.7.1 ; page(s) 14-18 ; line(s) 29 EISG S.12.2.3 Comment 2-160.	Comments The number of animals is better expressed as population density (e.g., see Section 14.2.7.2) so that an assessment can be made about the number of animals influenced by the project (i.e., population density multiplied by the affected habitat area). Information Request Express population estimates as population density.	BC Hydro has reviewed this suggestion and will leave the wording in this section unchanged. The population estimate is appropriate given the context.
ab_0001-340	Treaty 8 Tribal Association	V.2, S.14.2.8 ; page(s) 14-19 ; line(s) n/a EISG S.12.2.3, S.8.5.3, S.9.1 Comment 2-161.	Comments Valley bottom habitats, specifically deciduous riparian and floodplain vegetation complexes are important for ungulates. Information Request The Proponent is asked to: a) provide the estimated area of habitat with high and medium quality ungulate capability that has been flooded or otherwise lost as a result of by the Williston and Dinosaur reservoirs; and b) provide the net area of high and medium quality ungulate habitat that has been created or lost through other disturbances within the upper Peace River watershed since the Williston reservoir was flooded.	Please see the response to ab_0001-327.

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ab_0001-341	Treaty 8 Tribal Association	V.2, S.14.2.8 ; page(s) 14-20 ; line(s) 4-5 EISG S.12.2.3 Comment 2-162.	<i>All were classified as non-migratory. Mule deer were classified as non-migratory, short-movement individuals, and long-migration individuals.</i> Comments This sequence represents a contradiction and creates confusion. Information Request Clarify movement classifications for ungulates.	"All were classified as non-migratory" refers to moose and white-tailed deer (see text lines 3-4, page 14-20, Section 14.2.8).
ab_0001-342	Treaty 8 Tribal Association	V.2, S.14.2.8 ; page(s) 14-20 ; line(s) 9-10 EISG S.12.2.3 Comment 2-163.	<i>All species crossed the Peace River; only a few crossings were recorded during the winter season by elk or mule deer.</i> Comments This is an important point in the context of the Peace Break migration corridor. Due to the presence of the Williston reservoir and the subsequent barrier to wildlife migration it has created, the proposed Project reservoir area is currently an important unobstructed link for wildlife travelling/migrating through the Peace Break.	This statement refers to the observations movement of study animals during field studies and indicates that few animals crossed the Peace River during winter. Please see the Technical Memo: Movement of Grizzly Bears and Large Carnivores.
ab_0001-343	Treaty 8 Tribal Association	V.2, S.14.2.8 ; page(s) 14-20 ; line(s) 13 EISG S.12.2.3 Comment 2-164.	<i>Of the 90 potential sites, equal numbers of sites were suspected to be moose or elk (n = 38 each) and 14 were suspected to be mule deer birthing sites.</i> Comments The Proponent is asked to clarify why no information was collected in order to confirm species (e.g., material for conducting DNA analysis e.g., hair fragments, etc.) since collection of evidence at birthing sites would have been relatively straightforward.	Potential birthing sites were identified using locations and movement patterns from radio collared study animals. Collection of genetic material was not required as the collar frequency was associated with a specific female study animal whose species was known.
ab_0001-344	Treaty 8 Tribal Association	V.2, S.14.2.8 ; page(s) 14-20 ; line(s) 14 EISG S.12.2.3 Comment 2-165.	<i>Habitat types observed at birthing sites were highly variable. The majority of birthing sites were located in deciduous-dominated seral units – 31 ap:At, 11 in ac:Ac, and six in Balsam poplar –White spruce/Mountain alder– red-osier dogwood – Fm02. Of the 19 birthing sites identified in the Peace River valley, three sites – two moose and one mule deer – were identified on islands in the Peace River completely surrounded by flowing water. In general, moose sites were mostly on the plateau, elk favoured valley slopes, and mule deer used the plateau, slopes, and riparian habitats equally.</i> Comments The birthing sites were apparently “highly variable”, yet 48 of 90 sites were in deciduous-dominated forests. Furthermore, the last line of the paragraph suggests that there were recognizable patterns in birthing sites. This indicates unreliable interpretation, poor analytical techniques or both. Information Requests The Proponent is requested to rewrite this section of the EIS so that a proper review can be conducted.	BC Hydro has reviewed this suggestion and will leave the wording in this section unchanged. The analysis is appropriate. Lines 20-21 on page 14-20 summarize patterns of use in relation to features on the landscape.
ab_0001-345	Treaty 8 Tribal Association	V.2, S.14.2.8 ; page(s) 14-20 ; line(s) 22-24 30-32	<i>Habitat use by moose was within the mesic deciduous forest most – 30 to 40% – of the time. Other forested habitats were used at similar rates in proportion to their availability. Elk spent most – 20 to 40% – of their time in the flat mesic deciduous forest. Habitat selection was most evident in winter, when elk</i>	BC Hydro has reviewed this suggestion and will leave the wording in this section unchanged.

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		EISG S.12.2.3 Comment 2-166.	<i>increased use of moist deciduous and coniferous forests, riparian forests, and shrublands on warm aspects.</i> Comments The text concerning moose is confusing because the first sentence only addresses use and not availability of habitat types. The material regarding elk lacks clarity. Every time an animal uses habitat it selects it – so why was this most evident in winter? Information Requests The Proponent is requested to rewrite this section of the EIS so that a proper review can be conducted.	
ab_0001-346	Treaty 8 Tribal Association	V.2, S.14.2.8 ; page(s) 14-20 ; line(s) 43 EISG S.12.2.3 Comment 2-167.	<i>All ungulates captured upstream of the proposed dam site were classified based on the proportion of time they spent in the proposed reservoir area. Of the study animals, few – two moose and four mule deer – spent the majority of their time in the proposed reservoir area, most upstream moose (11 of 15) used the proposed reservoir area more than 10% of the time, four of the 21 elk were in the proposed reservoir area greater than 10% of the time, and 16 of 24 mule deer and one of nine white-tailed deer used the proposed reservoir area more than 10% of the time.</i> Comments This section is written in a way that seems to present the view that use of the proposed reservoir area was relatively low. Actually, the question should really be, did any of the study animals completely avoid any use in the area proposed to be flooded? If an animal spent any time in the LAA at all then it will be affected. The relative amount of time spent in the LAA is irrelevant. Every choice an individual animal makes is significant. It is rare and extremely unlikely that an individual will have such a plethora of options that if one is not available, it can simply move on to another choice of equal suitability (i.e., review the theory of Ideal Free Distributions). Information Request The Proponent is requested to write this section in a manner that provides the technical results without bias.	BC Hydro has reviewed this suggestion and will leave the wording in this section unchanged. The results are presented in an unbiased manner.
ab_0001-347	Treaty 8 Tribal Association	V.2, S.14.2.8 ; page(s) 14-21 ; line(s) 8-9 EISG S.12.2.3 Comment 2-168.	<i>The 2011 estimates within the Peace River valley are 900 moose, 8 1,100 elk, and 3,500 mule deer.</i> Comments Number of animals is better expressed as population density (e.g., see Section 14.2.7.2) so that an assessment can be made about the number of animals influenced by the project (i.e., population density multiplied by the affected habitat area). Information Request Express population estimates as population density.	BC Hydro has reviewed this suggestion and will leave the wording in this section unchanged.
ab_0001-348	Treaty 8 Tribal Association	V.2, S.14.2.8 ; page(s) 14-21 ; line(s) 24 EISG S.12.2.3 Comment 2-169.	Comments There was no mention of habitat modeling or population density estimation for either wolves or black bears. Lack of both estimates (or at worst case, either one or the other of the estimates) makes it impossible to conduct the required assessment – data and information upon which to address the assessment criteria are lacking. Conclusions with regards to wolf populations cannot be established from a literature review alone and are unfounded	Black bears and wolves were not selected as key indicator species for the Wildlife Resources VC. Table 14.2, Section 14.1.2 provides the rationale for their exclusion. The effects of habitat alteration and fragmentation of habitat on wolves is described in Volume 2 Appendix R Part 7, Section 1.5. A residual effect of habitat alteration and fragmentation from the Project was not found as road densities already exceed published thresholds for wolf persistence

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			without data. As for ungulates, telemetry data is required in order to understand the impacts of the proposed Project on predator-prey relationships. The lack of data or any study related to wolves within the LAA and RAA is a substantial data gap. Information Request BC Hydro is requested to undertake proper baseline studies on wolves and black bears in order to address estimation of population density for these species, prey selection patterns (i.e., types of prey use by season) and prey consumption rates.	<p>for much of the area and the Project is not expected to change this.</p> <p>Further, the wolf management plan includes provisions for wolf control to protect domestic stock and species at risk. Based on Ministry of Environment unpublished data there were 165 wolves killed as a result of predator control actions within the Peace Region between 2003 and 2012. Given the information above it was determined that the Project would not have a measureable effect of Mortality to the wolves, compared with mortality already occurring and provisions for wolf control in the future.</p> <p>The scope of the Wildlife Resources effects assessment is in accordance with the EIS guidelines and appropriate information is provided in the EIS.</p>
ab_0001-349	Treaty 8 Tribal Association	V.2, S.14.2.9 ; page(s) 14-21 ; line(s) 25-26 EISG S.12.2.3 Comment 2-170.	<i>Habitat values for wolves are dependent on a good supply of ungulate prey, combined with low amounts of human disturbance.</i> Information Request Given the large home range of wolves, the Proponent is requested to provide and summarize the available information concerning the movement of wolves between the LAA and the upper watershed of the Peace River.	<p>The analysis of potential effects of the Project on wolf is sufficient. The scope of the Wildlife Resources effects assessment is in accordance with the EIS guidelines and appropriate information is provided in the EIS.</p> <p>For clarification: The Upper Peace watershed is outside Local Assessment Area.</p>
ab_0001-350	Treaty 8 Tribal Association	V.2, S.14.2.9 ; page(s) 14-22 ; line(s) 17-31 EISG S.12.2.3 Comment 2-171.	Comments The author is making a conclusion (i.e., based on published literature alone) that reduces the significance of predation in the natural regulation of prey populations. However, the presentation of the literature is biased by way of avoiding some of the most seminal publications on the matter (e.g., Messier, Hayes, Boetje, Gasaway, etc.). These authors have published strong scientific evidence that predators play a significant role in regulating prey. Information Request The Proponent is requested to research this section in a broader way and to present unbiased arguments that are representative of the predominate understanding from historic research.	<p>Predation is described in Section 14.2.9, page 14-22 and is sufficient.</p> <p>The works of the authors listed in the comment does not change the conclusion that there is a lack of a consensus regarding the regulation of ungulate populations by wolves.</p> <p>The scope of the Wildlife Resources effects assessment is in accordance with the EIS guidelines and appropriate information is provided in the EIS</p>
ab_0001-351	Treaty 8 Tribal Association	V.2, S.14.2.9 ; page(s) 14-22 ; line(s) 32-38 EISG S.12.2.3 Comment 2-172.	<i>Current provincial management of grizzly bears is within Grizzly Bear Population Units (GBPU) drawn along natural and ecological boundaries. Grizzly Bear Population Units within the Peace River valley include the Rocky, with a population estimated at 538 bears, and the Moberly, with an estimated 71 bears. These units include portions of the Peace River between Hudson's Hope and Bear Flat. The remainder of the Peace River valley is not included in a GBPU, but is classified as an area where grizzly bears are extirpated.</i> Comments Given the requirement of grizzly bears for relatively large, intact territories, and given the relative lack of suitable habitat to the east of the study area, further information is required concerning the population health and movement of grizzly bears within the entire watershed. Information Request The Proponent is asked to: a) elaborate on the possible reasons for the apparent extirpation of	<p>Elaboration or speculation on the potential cause of the extirpation of grizzly bear in the Peace River valley is outside the scope of the effects assessment on the Wildlife Resources VC.</p> <p>The analysis of grizzly bear is sufficient and is in accordance with the EIS guidelines and information is provided in the EIS.</p> <p>Please also see the Technical Memo: Movement of Grizzly Bears and Large Carnivores.</p>

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			grizzlies from certain regions of the Peace River valley; b) discuss current knowledge of grizzly population health in the upper Peace River watershed; and c) discuss current knowledge of movement and dispersal of grizzlies within the entire Peace River watershed upstream of the proposed Project area.	
ab_0001-352	Treaty 8 Tribal Association	V.2, S.14.2.9 ; page(s) 14-22 ; line(s) 39-40 EISG S.12.2.3 Comment 2-173.	<i>The frequency of grizzly bear dispersal through the Peace River valley has not been well documented, but is infrequent based on the province's population and habitat data. Comments</i> A lack of data cannot be used as an excuse to avoid discussing impacts on a species. A detailed study on the presence/absence of grizzly bears within the LAA is required, as conclusions on effects cannot be made without data. Provincial data is out of date. There is no reference to provincial data or prove that it actually exists. There is also an absence of relative data within the baseline of 2005 – 2012. This is another example where a conclusion is being made in the absence of data to back up the conclusion.	The scope of the assessment of large carnivores is in accordance with EIS Guidelines and appropriate information is provided in the EIS. The large carnivore assessment was conducted in accordance of Section 12.2.3.9 of the EIS, which states: "The baseline conditions will be characterized using information from published studies and information made available to the Proponent from local, regional and provincial organizations and governments."
ab_0001-353	Treaty 8 Tribal Association	V.2, S.14.2.9 ; page(s) 14-23 ; line(s) 7-8 EISG S.12.2.4 Comment 2-174.	<i>The large unroaded areas south of the Peace River will remain virtually the same once temporary construction roads are removed. Comments</i> This statement does not take into account the fact that the area south of the Peace River or the Peace-Moberly Tract is under constant pressure from oil and gas activities, and it is impossible for the area to remain “virtually the same” within the context of cumulative effects in the area.	For clarification: The statement quoted refers to roads associated with the Project, Section 14.2.9, page 14-23, lines 7-8. The Project will result in 63.7 km of new permanent roads in the LAA.
ab_0001-354	Treaty 8 Tribal Association	V.2, S.14.3 ; page(s) 14-25 ; line(s) 5-6 EISG S.12.2.4 Comment 2-175.	<i>The number of individuals hunted, poached, hit by vehicles, or lost due to construction and filling of the reservoir is difficult to quantify. Comments</i> Perhaps, but no more so than constructing and validating habitat models or estimating population density. If both of the latter tasks were completed (as has been done for some of the indicators), then the impact of the proposed Project is, in many cases, simply the density multiplied by habitat loss (except perhaps in the case of beaver – see below). This is because the animals that use the area proposed to be impacted will eventually die either from direct interaction with the project (e.g., flooding) or by indirect interaction with predators in adjacent areas or through intra-specific competition with members of the same species in adjacent areas. Somewhat less clear is the alteration (as opposed to direct loss) of habitat but such reduction in quality could be prorated to predict a proportional effect on population density. In the case of beaver, loss of current habitat may be compensated by creation of new habitat but occupation of new habitat is likely to undergo a time lag while new individuals or those who survived the flooding recolonize the area. Information Request The Proponent is requested to undertake an assessment to determine the number of animals likely to be lost due to the proposed Project.	A habitat based approach was used to assess the effects of the Project on Wildlife Resources. Population estimates were provided for those indicator species for which estimates could be generated with a reasonable degree of confidence. Population estimates were not created for the remaining species as the very wide margins of error associated with them would not add any rigour to the assessment. Please see the Technical Memo: Uncertainty and Precaution.

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ab_0001-355	Treaty 8 Tribal Association	V.2, S.14.3.1 ; page(s) 14-26 ; line(s) 3 EISG S.12.2.4 Comment 2-176.	<i>Specific to the Project, roads are considered to be a leading cause of fragmentation</i> Comments Roads are the secondary cause of fragmentation. The creation of the reservoir will fragment the connectivity between the North and South bank of the Peace. The existing reservoirs have already created very large barriers to the movement of some species of wildlife. Additional reservoir development constitutes further fragmentation that must be considered in a cumulative effects assessment. Information Request Why is there no text on this subject? This is a very important issue that is not being addressed within the EIS.	Creation of the reservoir and construction of access roads that will result in habitat alteration and fragmentation are taken into account in the effects assessment, and described in lines 28-29, page 14-26, Section 14.3.1 of the EIS. Please see the Technical Memo: Cumulative Effects Assessment.
ab_0001-356	Treaty 8 Tribal Association	V.2, S.14.3.1 ; page(s) 14-26, 14-27 ; line(s) 38-44 1-3 EISG S.12.2.4 Comment 2-177.	<i>Species with smaller home ranges or that have specific habitat requirements tied to the Peace River valley – especially riparian habitat – would be affected the most. Suitable habitat, defined as moderate-and high-value habitat, has been selected for key indicators based on needs for sensitive life history requirements. Suitable habitat for most key indicators has been selected for reproduction needs. Winter habitats have also been selected for garter snakes, bats (hibernacula), and Sharp-tailed Grouse. Winter habitat for ungulates is considered the most important habitat for ungulate survival, especially during severe winters, and was chosen for representing suitable habitats for the moose, elk, and mule-deer. The amount of designated Ungulate Winter Range that would be lost as a result of the Project is also included.</i> Comments There are two troubling statements that indicate bias and improper assessment of wildlife resources: 1) that species with smaller home ranges ...would be affected most and 2) winter habitat for ungulates is considered the most important habitat for ungulate survival. It is true that animals with smaller home ranges will have more of their range affected but this does not equate to larger significance compared to an animal with a larger home range that is only partially affected. In both cases, there will be habitat loss that has to be compensated for at a cost to the species population. From an ecological perspective, both species lose significantly – which loss is more important is not immediately clear and difficult to determine. Regardless, it is apparent that none of this has been considered in the effects assessment. Similarly, it may be true that ungulates do go through the winter period in their lowest physiological condition. But even winter survival rates cannot be isolated from the relative benefits received from summer range (i.e., condition going into the winter) or from the potentially restoring value of spring range. It is quite simply wrong to restrict an effects assessment to any single range type until it has been proven that other seasonal ranges and life requisites will be unaffected. Information Request The	For clarification: the assertion in the comment regarding bias is unfounded. The assessment has been conducted in a manner that meets the requirements of the EIS Guidelines and appropriate information is provided in the EIS. BC Hydro selected key seasons for each key species group/indicator species to complete the effects assessment. Table 14.5, Section 14.3, page 14-24 indicates which seasons (aspect) were selected to assess potential effects of the Project on species for which habitat suitability models were used. Ecologically based criteria were used and are discussed throughout Section 14 for each key indicator group/ key indicator species. Foraging habitat is not considered critical ungulate habitat. Foraging habitat will be lost, but it is not considered limiting in the LAA. The assessment of potential effects on ungulates focused on winter range as it was considered the critical habitat.

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			Proponent is requested to: a) restructure the impact assessment to consider potential adverse effects to all seasonal ranges of wildlife species; and b) develop ecologically based criteria as appropriate to determine significance	
ab_0001-357	Treaty 8 Tribal Association	V. 2, S.14.3.1.3 ; page(s) 14-31 ; line(s) 20-23 EISG S.12.2.4 Comment 2-178.	<i>The loss of valley bottom forest that overlaps the proposed reservoir will have an effect on a number of songbird species. The valley has the greater songbird diversity compared to upland habitats and contains some of the rare forested ecosystems that are unique to riparian floodplains. Comments Due to data limitations, a substantial amount of qualitative analysis was done to assess the effects of the proposed Project on wildlife habitats. Information Request BC Hydro is asked to: a) explain why a qualitative analysis cannot be done in the upper Peace River watershed for habitats important for groups of migratory birds as well as other wildlife using the available data in combination with reference data from proxy areas in the region; and b) explain why such an analysis would not be relevant to assessing cumulative habitat loss in the region from successive hydroelectric and other developments.</i>	The Upper Peace watershed is outside the LAA and is outside the scope of the environmental assessment. Please see the Technical Memo: Cumulative Effects Assessment.
ab_0001-358	Treaty 8 Tribal Association	V.2, S.14.3.1.3 ; page(s) 14-33 ; line(s) 1-7 EISG S.12.2.4, S.9.1, S. 8.5.3 Comment 2-179.	<i>While habitat suitability mapping was not completed for waterfowl and shorebird species the change in general habitat classes (river, backchannel, lake and wetland) are used as a proxy for habitat use. The reservoir will convert approximately 83 km of river and associated backchannel habitat into a reservoir. The waterfowl species assemblage are expected to change, and overall productivity will be dependent on forage potential and the availability of both security cover and nesting substrates (e.g., dense wetland vegetation or older forests with suitable nest cavities). Comments This is another good example of how limited data were used to develop a general understanding of effects on waterfowl and shorebirds in the study area. Information Request Given the relative rarity of large river riparian habitats across the landscape, explain why mapping of the changes in general habitat classes using aerial photography from the upper Peace watershed prior to development would not be a useful exercise to begin to understand cumulative habitat degradation in the region due to river regulation.</i>	For clarification: The comment that "This is another example how limited data were to be used to develop an understanding of the effects on waterfowls and shorebirds in the study area" is not well founded. Please refer to Volume 2 Appendix R Part 4 for a detailed description of the field studies and analyses conducted for waterfowl and shorebirds for the environmental assessment. The scope of the Wildlife Resources effects assessment is in accordance with the EIS Guidelines and appropriate information is provided in the EIS. The Upper Peace watershed is outside the LAA and outside the scope of the Wildlife Resources effects assessment. Please see the Technical Memo: Cumulative Effects Assessment.
ab_0001-359	Treaty 8 Tribal Association	V.2, S.14.3.1.6.4 ; page(s) 14-39 ; line(s) 13 EISG S.12.2.4 Comment 2-180.	Information Request Clarify and provide data and historical evidence to support the following statement: "Larger mortality events are consistently in winter..."	Please see Volume 2, Appendix R, part 7, page 161. Mortality data are provided in Tables 1.4.7 and 1.4.8 Volume 2, Appendix R, part 7. The remainder of the sentence places this statement in context: "and government habitat management programs focus on maintaining ungulate winter ranges to reduce foraging stresses on ungulate populations."

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ab_0001-360	Treaty 8 Tribal Association	V.2, S.14.3.1.6.4 ; page(s) 14-39 ; line(s) 15-16 EISG S.12.2.4 Comment 2-181.	<i>Changes to habitat in other seasons are unlikely to influence moose, elk, and mule deer survival, productivity, or population size.</i> Comments This sentence is not consistent with most ecological theory. Information Request Provide the rationale for the determination that: “Changes to habitat in other [non-winter] seasons are unlikely to influence moose, elk, and mule deer survival, productivity, or population size.”	Please see the response to ab_0001-0327.
ab_0001-361	Treaty 8 Tribal Association	V.2, S.14.3.1.6.4 ; page(s) 14-39 ; line(s) 21-23 EISG S.12.2.5, S.8.5.2.3 Comment 2-182.	<i>White-tailed deer rarely use wintering habitats that would be affected by the Project, so effects on that species are expected to be minimal.</i> Comments The EIS Guidelines require quantitative analyses where possible and, in the case of ungulates, sufficient baseline data were collected to allow for such analyses. Information Request The Proponent is requested to undertake a quantitative analysis, similar to that undertaken for fisher, and for each ungulate species.	The sentence quoted provides the rationale for not carrying out an assessment of potential effects of the Project on white-tailed deer. This determination was based on quantitative habitat use data in relation to the Project Activity Zone. The text in lines 24-29 on page 14-39 describes the quantitative analysis performed. Table 14.14, page 14-39, Section 14.3.1.6.4 quantifies habitat loss for each ungulate species by Project component.
ab_0001-362	Treaty 8 Tribal Association	V.2, S.14.3.1.6.4 ; page(s) 14-39 ; line(s) 24-26 EISG S.12.2.3 Comment 2-183.	<i>Based on habitat mapping, hectares of suitable winter habitat and Ungulate Winter 24 Range (UWR) were quantified within the LAA for moose, elk, mule deer, and white-tailed 25 deer (Table 14.14).</i> Information Request Provide impact figures for other seasonal ranges and life requisites other than winter range.	Please see the response to ab_0001-327.
ab_0001-363	Treaty 8 Tribal Association	V.2, S.14.3.1.6.4 ; page(s) 14-40 ; line(s) 6-9 EISG S.12.2.3 Comment 2-184.	<i>Islands in the Peace River valley and in the reservoir area in general were rarely used for birthing by collared moose, elk, mule deer, or white-tailed deer. Potential effects of the Project on reproduction of ungulates are expected to be low, since only a small proportion of habitats used for birthing will be influenced by the Project.</i> Comments However, only 81 of a predicted 5,500 ungulates (i.e., 1.5% sampled) were collared and followed for a relatively low number of birthing seasons. This determination is a result of low numbers of animals being collared in the LAA. Information Request Considering that the focus of the studies was on winter range, the Proponent is requested to: a) indicate how these determinations can be made without the appropriate data collected to support them; and b) explain how this conclusion can be made with such a limited amount of data.	For clarification: The objectives of the ungulate study were not on winter range. Volume 2, Appendix R, part 7, Section 1.4.1, page 122 lists the 12 objectives of the ungulate study. The assessment of potential Project effects took into account the loss of winter range and was informed in part on data collected from the ungulate study. Regarding the number of animals collared for investigation of patterns of movement, the proportion of the population collared exceeds that generally undertaken for any management applications undertaken by regulatory authorities or by any proponent conducting environmental assessment investigations, and are therefore sufficient for the purposes of the environmental assessment. The determination of use and importance of islands in the Peace River was made using data collected from collared animals. Collared animals were assumed to represent the larger population.
ab_0001-	Treaty 8	V.2,	<i>The reservoir would be relatively narrow, and it is expected that most individuals</i>	Effects of erosion on ungulates were considered under the key aspects of habitat alteration and

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364	Tribal Association	S.14.3.1.6.4 ; page(s) 14-40 ; line(s) 27-30 EISG S.12.2.4, S.9.2.1 Comment 2-185.	<i>would continue to swim across during the spring, summer, and fall seasons, although debris levels within the reservoir and bank stability may hamper movement.</i> Comments The EIS makes a number of predictions about how ungulates will use the proposed reservoir post construction. However, predictions in relation to the potential effects of erosion on ungulate movements are not substantiated with evidence from other studies. Information Request BC Hydro is requested to provide a rationale and analysis as to why erosional factors were not used when considering adverse effects on ungulate movements.	fragmentation and mortality.
ab_0001-365	Treaty 8 Tribal Association	V.2, S.14.3.2.6.5 ; page(s) 14-44 ; line(s) 37-38 EISG S.12.2.4 Comment 2-186.	<i>Disturbance and displacement of large carnivores due to Project activities is not expected.</i> Comments There are data gaps with respect to the grey wolf and grizzly bear populations within the LAA. Until this data gap is addressed with sufficient information these statements cannot be substantiated.	Please see Section 14.3. The scope of the Wildlife Resources effects assessment and the large carnivore indicator species group is in accordance with the EIS Guidelines and appropriate information is provided in the EIS. Based on Ministry of Environment unpublished data there were 165 wolves killed as a result of predator control actions within the Peace Region between 2003 and 2012. Given the information above it was determined that the Project would not have a measureable effect of mortality to the wolves, compared with mortality already occurring and provisions for wolf control in the future.
ab_0001-366	Treaty 8 Tribal Association	V.2, S.14.3.3.6.4 ; page(s) 14-49 ; line(s) 11-15 EISG S.12.2.4 Comment 2-187.	<i>Adult ungulates are highly mobile and are also adept at swimming, although debris, ice shelves, riprap, and other barriers may prevent ungulates from leaving the water after swimming and may result in drowning. Juveniles, within the first month of life, may be vulnerable to drowning if the areas they occupy are flooded in the spring (LeResche 1968; Ballard et al. 1981).</i> Information Request The Proponent is requested to explain why general bank instability and localized erosion are not discussed as barriers preventing ungulates from leaving the proposed Project reservoir.	Please see the response to ab_0001-364.
ab_0001-367	Treaty 8 Tribal Association	V.2, S.14.3.3.6.5 ; page(s) 14-49, 14-40 ; line(s) 25-28 35-36 EISG S.12.2.3 Comment 2-188.	<i>Improper handling of waste disposal and treatment is known to create nuisance wildlife and negative human-bear interactions. This is more of a concern with black bears, but could also occur with grizzly bears, where they occur in the LAA. Resident grizzly use within much of the Project activity zone is considered to be scarce or nonexistent. Thus, habitat loss to the species was not considered.</i> Comments The Proponent seems uncertain as to whether and to what degree grizzly bears utilize the LAA. Information Request The Proponent is requested to: a) provide an annotated bibliography summarizing the key literature related to grizzly bears used in the EIS; b) explain and justify the suitability of the available literature for drawing conclusions about the potential effects of the proposed Project on grizzly bears.	The Province considers grizzly bears to be extirpated in the Peace area, with only occasional presence of non-resident individuals. The assessment used the most recent data provided by the Province. Literature used to inform the assessment is provided in Volume 2, Appendix R, part 7, Section 5. The available literature on grizzly bear is sufficient for the purposes of the assessment.

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ab_0001-368	Treaty 8 Tribal Association	V.2, S.14.4.1 ; page(s) 14-50 ; line(s) 1 EISG S.12.2.4 Comment 2-189.	<i>Table 14.15 Mitigation Measures for Habitat Alteration and Fragmentation</i> Comments The wildlife management plan should not be considered a mitigation statement. The plan has not been developed and so the level to which the proposed Project effects can be mitigated by the plan remain unknown. Inventory inputs to the final project design are largely focused on avoidance of habitat or animals (e.g., leks, wet lands, hibernacula, beaver lodges, etc.), which is not mitigation. Similarly, protection zones are avoidance and not mitigation. Creation of new wetlands for migratory birds, “fish free” areas for amphibians and birds, bat roosting sites, bat boxes, artificial snake dens, nest boxes for cavity-nesting waterfowl, CWD recruitment, arboreal resting sites for fisher, artificial den boxes for fisher, construction of nest sites for bald eagles, and supplemental feeding are all compensation measures (most of them of unproven effectiveness) and not mitigation. The mitigation against habitat loss reduces to: maintenance of hydrological flow (where possible), retention of vegetation on steep and unstable slopes, retention of non-merchantable trees and vegetation in riparian areas, development of a human-to-bear conflict management plan, reducing light pollution, and restricting access on roads. Information Request BC Hydro is requested to distinguish between avoidance measures, compensation measures, and mitigation measures.	BC Hydro has considered the request and will not be making the suggested change. The definition of “mitigation measures” is set out in Section 2 of CEAA 2012: “mitigation measures” « mesures d’atténuation » “mitigation measures” means measures for the elimination, reduction or control of the adverse environmental effects of a designated project, and includes restitution for any damage to the environment caused by those effects through replacement, restoration, compensation or any other means. In the EIS, the terms, “mitigation” and “mitigation measures” are used in accordance with this definition.
ab_0001-369	Treaty 8 Tribal Association	V.2, S.14.4.3 ; page(s) 14-62 ; line(s) 2 EISG S.12.2.4 Comment 2-190.	<i>Mortality related to habitat loss cannot be fully avoided for the entire Project...</i> Comments In fact, mortality related to habitat loss cannot be avoided at all, neither can it be mitigated. The one example provided, ... <i>can be reduced with wetland avoidance</i> ... is avoiding habitat loss and not mitigating mortality due to habitat loss. The other mitigations provided are simply delaying the inevitable for animals that have not suffered direct mortality from flooding or lethal contact with humans. These displaced animals are forced to undergo intra-or inter-specific competition until adjacent areas have stabilized back to their original population density. For example, timing of works mitigations simply means that there will be less direct mortality and more indirect mortality. Avoiding the release of deleterious hydrocarbons, limiting sedimentation, and fencing along roads are all examples of limiting the area affected by the proposed Project, not mitigating against habitat loss. Mortality due to habitat loss cannot be mitigated. The extent to which the proposed Project can affect animals in adjacent habitats can be mitigated to varying levels of success. Information Request The Proponent is requested to rewrite this section of the EIS so that it is clear what the proposed mitigations are designed to achieve.	BC Hydro has reviewed this suggestion and will leave the wording in this section unchanged. Please see Table 14.17, Volume 2, page 14-63 of the EIS for a description of mitigation measures proposed to address the effects of mortality on wildlife resources. BC Hydro will work with appropriate regulatory authorities in the development of mitigation measures.
ab_0001-	Treaty 8	V.2, S.14.5.1 ;	<i>Residual effects are not expected for large carnivores during construction or</i>	The analysis of large carnivores is described in Section 14 of the EIS.

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370	Tribal Association	page(s) 14-66 ; line(s) 15-16 EISG S.12.2.5 Comment 2-191.	<i>operations and are not discussed further.</i> Comments The conclusion that the proposed Project is not expected to have residual effects on large carnivores cannot be substantiated based on the available data and information presented in the EIS.	Please see the response to ab_0001-365.
ab_0001-371	Treaty 8 Tribal Association	V.2, S.14.5.1 ; page(s) 14-66 ; line(s) 18 EISG S.12.2.5 Comment 2-192.	<i>Table 14.18 Characterization Criteria for Residual Effects on Wildlife Resources Magnitude – The amount of change in a key indicator or variable relative to baseline case.</i> Comments Table 8.3 of the EIS Guidelines reads as follows: <i>Magnitude – This refers to the amount of change in a key indicator or variable relative to baseline case (low, moderate, high), consideration is given to factors such as the uniqueness of the effect, and the comparison to natural or background variation.</i> The descriptions of criteria contained in Table 14.18 do not parallel the definitions presented in the EIS Guidelines to the extent that the proposed quantitative measure is either incomplete or misleading. The description of “magnitude” contains only part of the requested characterization of magnitude as there is also the need for a comparison to natural or background variation which can only be done by considering hypothetical unmanaged (i.e., potential) ecological conditions. There is no measure associated with unmanaged ecological conditions. Information Request In characterizing the magnitude of the residual effects on wildlife resources, the Proponent is asked to include a measure associated with comparisons to natural, unmanaged ecological conditions.	Table 14.18 in Section 14 defines the level of change that was used to characterize the magnitude of the residual effect. In the characterization of residual effects of the Project on Wildlife Resources the criteria for magnitude took into account the magnitude of change in relation to the "uniqueness of the effect, and the comparison to natural or background variation", as directed by Table 8.3 of the EIS guidelines. It is therefore unnecessary to develop additional criteria to be used in the characterization of residual effects that draws comparison to "natural, unmanaged ecological conditions".
ab_0001-372	Treaty 8 Tribal Association	V.2, S.14.5.1 ; page(s) 14-66 ; line(s) 18 EISG S.12.2.5 Comment 2-193.	<i>Table 14.18 Characterization Criteria for Residual Effects on Wildlife Resource</i> Comments Duration is not independent of geographic extent and the definition in the EIS Guidelines and the description in the EIS do not explicitly state the spatial context under which duration is considered. For example, removal of habitat will be permanent for the footprint but the indirect effect on adjacent animals may dissipate over the longer-term. Information Request Provide clarification as to how the “duration” criterion was considered.	As per Table 8.3 of the EIS Guidelines, "duration" is defined as "the period of time required until the Valued Component returns to its baseline condition..." Table 14.18 in Section 14 defines the criteria that were used to characterize the duration of the residual effect.
ab_0001-373	Treaty 8 Tribal Association	V.2, S.14.5.1 ; page(s) 14-66 ; line(s) 18 EISG S.12.2.5 Comment 2-194.	<i>Table 14.18 Characterization Criteria for Residual Effects on Wildlife Resource Context – The extent to which the area effected has already been adversely affected by human activities, and is ecologically fragile with little resilience and resistance to imposed stresses.</i> Comments To judge resilience as a means of addressing the “context” criterion requires an understanding of the natural, unmanaged conditions and the condition of the indicator in relation to the ecological baseline and any threshold that may exist that, if exceeded, would result in relative instability. There is little to no discussion on the methods used	As per the definition in Table 8.3 of the EIS Guidelines, context is defined as "the extent to which the area within which an effect may occur; has already been adversely affected by human activities..." Table 14.18 in Section 14 defines the criteria that were used to characterize the context of the residual effect, and established definitions for "high resilience" and "low resilience". Please see the response to ab_0001-371.

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			to determine resilience. The issue of context is also incomplete. Species rarity and the amount of range in the LAA relative to the RAA are important considerations that help characterise context. For example, 30% removal of habitat is vastly different in a situation where habitat is largely located within the LAA relative to the RAA. Information Request Clarify the methods used to establish resilience (hence extent) and give consideration to broadening the definition of context.	
ab_0001-374	Treaty 8 Tribal Association	V.2, S.14.5.1 ; page(s) 14-69 ; line(s) 1-2 EISG S.12.2.5 Comment 2-195.	<i>Table 14.19 Summary of Characterization of Residual Effects: Habitat Alteration and Fragmentation – Butterflies and Dragonflies</i> Comments There is no description of how effects criteria ratings are compiled across individual species to derive a single result for each indicator in Table 14.19. There are quantitative techniques available to help maintain consistency and transparency in this process. In this case, it is assumed that all means to maintain a transparent process would be used. Despite the lengthy discussion about why certain rankings are given to individual species, the lack of transparency in how these rankings are combined makes the resulting table of residual effect of limited value. Information Request Clarify quantitative methods used to derive single indicator values for each effect criterion and, if this method was not quantitative, explain why not.	Please see Section 14.5.1.1.1 on page 14-68 for an explanation of the characterization of residual effects for butterflies and dragonflies. Please also see Volume 2 Appendix R.
ab_0001-375	Treaty 8 Tribal Association	V.2, S.14.5.3 ; page(s) 14-88 ; line(s) 1-2 EISG n/a Comment 2-196.	<i>Table 14.22 Summary of Assessment of Potential Significant Residual Adverse Effects</i> Comments In the case of the assessment of residual effects on wildlife, it is difficult to understand the conclusion of a significant alteration of habitat followed by insignificant disturbance and displacement and insignificant direct or indirect mortality. If significant habitat is removed for wildlife then, it follows from ecological theory that a proportionate and significant number of animals will either die directly or will be displaced into adjacent habitats where, over time, through competition with predators or with other species, they or others of their species will die. The way the assessment for wildlife resources is presented in Table 14.22, it is as if the Proponent recognizes that the proposed Project will result in significant alteration of habitat but that this will not manifest in any harm to wildlife. That's like taking a slice off an apple and trying to stick the slice somewhere else so that it actually looks like a whole apple again – it just doesn't work. Information Request The Proponent is requested to redo the assessment of significance in a clear and transparent manner based on principles of rigorous ecological theory.	Section 14, Table 14.22 provides a summary of the assessment of the potential significant residual effects. Section 14.3 describes the factors considered in the effects assessment of the key aspects. Sections 14.5.2 and 14.5.3, page 14-87 describes the significance of residual effects. Please also see the response to ab_0001-365.
ab_0001-376	Treaty 8 Tribal	V.2, S.14.7 ; page(s) 14-101	Comments The list of proposed follow-up studies for wildlife is inadequate and tends to focus only on relatively inexpensive and easily measured indicators	Monitoring and follow-up studies are described in Section 14.7 of the EIS.

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	Association	; line(s) 1 EISG S.12.2.4 Comment 2-197.	(i.e., bald eagle nest success, waterfowl use of habitat, effectiveness of artificial fisher dens, effectiveness of toad migration crossings, dynamics of songbird populations, and the distribution of toad and snakes downstream). Information Request The Proponent is asked to: a) broaden the list of proposed follow-up studies to include all those species that will be adversely affected by the proposed Project; b) discuss its commitment to structure the design of these studies in a scientifically defensible manner.	BC Hydro will work with appropriate regulatory authorities in the development of mitigation measures and appropriate follow-up requirements. Please also see the Technical Memo: Uncertainty and Precaution.
ab_0001-377	Treaty 8 Tribal Association	V.2, S.15.1 ; page(s) 15-1 ; line(s) 30-33 EISG S.13.2.3 Comment 2-198.	<i>This specific carbon model was developed for the Project to simulate and estimate carbon flows over the lifecycle of the Project (Jacques Whitford Axys 2009), and has been updated for this assessment to reflect the current Project Description (Section 4).</i> Information Request Provide a copy of the Jacques Whitford Axys 2009 Peace River Site C Hydro Project, Stage 2, Baseline Greenhouse Gas Emissions Report.	The Peace River Site C Hydro Project Stage 2 "Baseline Greenhouse Gas Emissions Report (Jacques Whitford, 2009) is available on the BC Hydro website: http://www.bchydro.com/content/dam/hydro/medialib/internet/documents/planning_regulatory/site_c/2010Q2/peace_river_site_c17.pdf
ab_0001-378	Treaty 8 Tribal Association	V.2, S.15.2.2 ; page(s) 15-8 ; line(s) 8-17 EISG S.13.2.3 Comment 2-199.	<i>In British Columbia, mean values from one literature source for measured CO2 emissions were approximately 250 (+/-800) mg CO2/m2/day and 500 (+/-650) mg CO2/m2/day, for old reservoirs and natural lakes, respectively (Tremblay et al. 2004a). Measured CO2 emissions from another literature source ranged from 1,786 mg CO2/m2/day to 3,666 mg CO2/m2/day (mean of 198 mg CO2/m2/day) and -419 mg CO2/m2/day to 2,780 mg CO2/m2/day (mean of 706 mg CO2/m2/day) for reservoirs and natural lakes, respectively (Tremblay et al. 2005). Overall, the measured data for British Columbia reservoirs indicate less CO2 emissions and slightly higher CH4 emissions when compared to other boreal reservoirs in Canada of similar age (Tremblay et al. 2005).</i> Comments In many of the values reported here, the error bars are of greater magnitude than the mean values. Information Request BC Hydro is asked to: a) comment on the factors that result in reported values where the error bars are of greater magnitude than the mean values; and b) comment on the probative value of results of this nature.	Reported emissions from lakes and reservoirs are daily estimates averaged over the open water period during which surface to air emission rates can vary greatly from spring to fall. The ranges provided are standard deviations (SD) of the mean, which, as the mean approaches zero, the SD would naturally be a larger absolute value, but does not indicate that the estimate is inaccurate. While there may be variation within an annual timeframe, these annual mean values are valid for comparing results from modeling on an annual basis over the long-term (100 years).
ab_0001-379	Treaty 8 Tribal Association	V.2, S.15.2.3 ; page(s) 15-9 ; line(s) 1-8 EISG S.13.2.4 Comment 2-200.	<i>Once the carbon model was calibrated and the N2O model constructed, it was possible to estimate the annual net GHG emissions of the system. Under current conditions, the Site C study area is a weak source of GHGs, at approximately 5,700 t/year CO2e. The landscape on its own is a carbon sink. However, the agricultural activities in the area release GHGs that are greater in magnitude than those from the sequestration processes of the landscape. These agricultural releases arise from the methylation of biomass carbon into CH4, largely through ruminants, and the anthropogenic emissions of N2O (Volume 2 Appendix S Greenhouse Gases Technical Report).</i> Comments The text does not indicate	Modeling assumptions related to greenhouse gas emissions related to ruminants (livestock and wildlife) and agricultural activities can be found in Section 8 of Volume 2 Appendix S of the EIS. The model assumes that the agricultural emissions would not be relocated as predicting potential decisions of landowners is not feasible. The model was designed to estimate the changes in emissions within the reservoir area due to the Project.

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			whether it assumes that the agricultural activities currently underway in the proposed Project area will move elsewhere, or will cease entirely. Information Request The Proponent is requested to: a) provide details as to the baseline conditions, indicating the specific contributions resulting from ruminants and other livestock as well as the other anthropogenic emissions; b) indicate whether, in calculating the net GHG emissions of the system, it was assumed that the livestock-related agricultural activities in the proposed Project area will move elsewhere, or simply cease to exist; c) provide alternate calculations, in the event that it was assumed that the livestock-related agricultural activities in the proposed Project area would cease to exist, based on the assumption that the activities would instead relocate to another area; and d) specify the anthropogenic activities resulting in the emissions of N ₂ O, and quantify those emissions.	An alternate calculation, as described in the comment, would simply add the annual GHG emissions associated with agricultural lands and ruminant emissions, as found in Section 8.2 of Volume 2, Appendix S, to the annual emission results of each of the likely and conservative scenarios. As the net emissions associated with this assumption is low, changing the assumption about relocation of agricultural emissions would not change the outcome of the assessment of Project effects on greenhouse gas emissions. N ₂ O emissions were estimated for agricultural activities under current conditions. These can be found in Section 8.3 of Appendix S.
ab_0001-380	Treaty 8 Tribal Association	V.2, S.15.3.1.1 ; page(s) 15-11 ; line(s) 28-30 EISG S.13.2.4 Comment 2-201.	<i>The total direct and indirect emissions of GHGs from the dam and generating station, spillway, and quarried and excavated material activity over the eight-year construction period are estimated to be 304,163 t CO₂e and 2,597 t CO₂e, respectively.</i> Information Request Explain the distinction used here between direct and indirect emissions of GHGs.	Direct emissions are from construction activities within the LAA associated with the direct construction of the Project. Indirect emissions are from sources, also within the LAA, that are indirectly incurred during construction of the Project, for example emissions associated with energy used in operation of the worker accommodation facilities.
ab_0001-381	Treaty 8 Tribal Association	V.2, S.15.3.2 ; page(s) 15-15 ; line(s) 12 EISG S.13.2.4 Comment 2-202.	<i>Figure 15.2 Current Condition, Likely Scenario and conservative Scenario Annual Emission Estimates Figure 15.3 Annual Reservoir Emission Estimates (tonnes CO₂e)</i> Information Request Provide in Excel format the data underlying Figures 15.2 and 15.3.	The information from the model is provided in Volume 2 Appendix S Sub-appendix 2 of this report provides the data results from the model in Table C1, Table C2 and Table C4.
ab_0001-382	Treaty 8 Tribal Association	V.2, S.15.3.2 ; page(s) 15-15 ; line(s) 27-28 EISG S.13.2.4 Comment 2-203.	<i>These results are consistent with the observations of Bastien et al. (2007) that the GHG fluxes in Smallwood reservoir 30 years post-inundation are similar to those of natural lakes in the region.</i> Information Request BC Hydro is asked to: a) specify the typical GHG emissions rate for natural lakes in the region of the proposed Project; and b) compare the typical GHG emissions rate for natural lakes in the region of the proposed Project to those of typical dry land in the proposed Project area, disregarding anthropogenic and agricultural emissions.	This information is available, with further context, in Volume 2 Appendix S Section 6.3 and 10.1 These Sections describe the model results that show a decline to a long-term equilibrium, and compare the model results to empirical studies that have shown emissions declining over time to a long-term equilibrium level similar to natural lakes. It would not be appropriate to describe a typical dry land emission rate for the region as emissions depends on the specific cover type and can therefore vary greatly from landscape to landscape. The modeling undertaken for the Project is site-specific, taking into account the specific areas that would be inundated by the reservoir to determine the emissions source or sink associated with this land.
ab_0001-383	Treaty 8 Tribal	V.2, S.15.3.2 ; page(s) 15-16 ;	<i>These model estimates were also comparable to observed emission intensity trends observed for Eastmain-1, a boreal hydroelectric reservoir in Québec</i>	This information is available in the Section 10.3 of the GHG Technical Data Report, found in Volume 2 Appendix S of the EIS.

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	Association	line(s) 4-6 EISG S.13.2.4 Comment 2-204.	<i>(Teodoru et al. 2012).</i> Information Request Elaborate on the relative emissions in the proposed Project area compared to those reported by Teodoru et al.	
ab_0001-384	Treaty 8 Tribal Association	V.2, S.15.3.3 V.2, S.15.4.3 ; page(s) 15-16, 15-23 ; line(s) 8-9 19-20 EISG S.13.2.4 Comment 2-205.	<i>A summary of estimated GHG emissions from Construction and Operation using Tier 3 and the associated GHG emission intensities are provided in Table 15.8. The plan is for these facilities to continue operating in perpetuity.</i> Information Request The Proponent is requested to: a) identify where in its analysis the direct and indirect emissions related to the following activities are to be found: i) regular operations and maintenance activities for the Site C powerhouse over the life of the proposed Project; ii) regular operations and maintenance activities for the related transmission lines and corridors over the life of the proposed Project; iii) periodic refurbishment and replacement of electrical equipment over the life of the proposed Project; iv) civil engineering works required over the life of the proposed Project and b) present revised calculations in the event that one or more of the categories of emissions in part a) were excluded from the initial analysis.	<p>The model captures the major sources of total emissions associated with the Project, including emissions associated with the reservoir during the operation phase. Emissions associated with routine operations and maintenance activities were not included as these emissions are expected to be a small fraction of the total emissions, based on the types of activities and the amount of energy (fuel and or electricity) being consumed; emissions from these activities were therefore not expected to add substantively to the total and were not estimated for the analysis.</p> <p>The emissions associated with the Project, during both construction and operations phases, would be reported, and managed, in accordance with BC Hydro's corporate program. BC Hydro has proposed monitoring in order to collect information to support the required reporting.</p>
ab_0001-385	Treaty 8 Tribal Association	V.2, S.15.3.3 ; page(s) 15-16 ; line(s) 10 EISG S.13.2.4 Comment 2-206.	<i>Table 15.8 GHG Emissions Estimates – Site C Clean Energy Project</i> Comments The last rows of Table 15.8 indicate average emissions intensity (including construction) of 13.3 gCO ₂ e/kWh in the conservative scenario and 9.7 gCO ₂ e/kWh in the likely scenario. Information Request The Proponent is requested to: a) confirm that these are average values over a 100-year period; b) provide equivalent values averaged over 20, 30 and 50 years; and c) clarify whether any discounting been applied to the later-year emissions and, if not, why not.	<p>The purpose of reporting emissions as "emission intensity" is to allow comparison with other energy generation technologies. Emission intensity divides total emissions in a period by total energy produced in the same period. Section 15, Table 15.8, per the table notes, presents emissions intensity for the operating period (second last row), and for the construction and operating period (last row). These consider total emissions over the relevant period, divided by total energy produced over the period. The values in the last row are revised to 14.3 and 10.5 due to initial consideration of power generation over 108 years when the basis is 100 years. This update has been added to the List of Errata and Updated Information. This update does not change the outcome of the assessment of greenhouse gas emissions. For example, in comparing Project emission intensity as shown in Table 15.11, the Project remains comparable to wind and much below other forms of electricity generation.</p> <p>If averaged over the alternate suggested periods, the average emissions intensity of the total construction emissions, plus the first 20, 30, and 50 years of operation emissions, would be 40.0, 27.5, 17.3 g CO₂e/kWh for the likely scenario and 58.4, 39.8, and 24.7 CO₂e/kWh, respectively, for the conservative scenario. The emissions intensity associated with the latter years, for example from Year 50 - 100, would be approximately 1.0 g CO₂e/kWh for both the conservative and likely scenarios.</p> <p>Later year emissions are summed in the calculation of emissions intensity in the same manner as earlier year emissions.</p>

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ab_0001-386	Treaty 8 Tribal Association	V.2, S.15.3.3 ; page(s) 15-16 ; line(s) Note b EISG S.13.2.4 Comment 2-207.	<i>Table 15.8 GHG Emissions Estimates – Site C Clean Energy Project CO2 equivalents (CO2e) calculated on a 100-year global warming potential of 21 for CH4 and 310 for N2O</i> Information Request BC Hydro is requested to: a) describe the assumptions with respect to pulse emissions underlying the 100-year global warming potential; and b) considering these assumptions, clarify what measures, if any, were undertaken to take into account the continuous nature of reservoir emissions.	These assumptions are described in Volume 2, Appendix S, Sections 7 and 8; Figures 8.5 and 8.6 show trends in annual emission estimates.
ab_0001-387	Treaty 8 Tribal Association	V.2, S.15.3.6 ; page(s) 15-18 ; line(s) 3-8 EISG S.13.2.4, S.4.3 Comment 2-208.	<i>Other mitigation measures have been considered by BC Hydro, including evaluating design options that would result in little reduction in generating potential, yet reductions in GHG emissions, as well as options for transmission lines and roads that would minimize the amount of land conversion, thus reducing GHG emissions.</i> Information Request BC Hydro is asked to clarify whether any effort has been made to evaluate the reduction in GHG emissions that would result from the various alternate designs presented in section 6.4.1, to present the results of any evaluation and, if not, to explain why not.	GHG was an environmental parameter considered in the review of the alternate sites contained in EIS Volume 1 Appendix E.
ab_0001-388	Treaty 8 Tribal Association	V.2, S.15.4.1 ; page(s) 15-19 ; line(s) 1-7 EISG S.13.2.4 Comment 2-209.	<i>The net emissions of the Site C reservoir operation, over the 100-year operating lifespan of the project, would be approximately 58,200 t CO2e/year under the conservative scenario, and 43,400 t CO2e/year under the likely scenario, with an additional emission of approximately 45,329 t CO2e/year for the fuel use during construction. This represents 0.2% and 0.01% of provincial and national emission, respectively (conservative operation plus construction). In the global context, these net emission rates represent a tiny fraction (0.002%) of the net anthropogenic emissions (5.5 to 6.3 billion t CO2e/year).</i> Information Request Describe annual project GHG emissions as a percent of provincial annual GHG emissions in: i) Year 1 of operations (i.e. 2022, ii) Year 10 of operations, iii) Year 30 of operations, and iv) Year 50 of operations.	The following estimates, as a percentage of provincial emissions as requested in the comment, are computed from the predicted values shown in Section 15 of the EIS in Figure 15.2. These are reported as two values one for conservative scenario and one for the likely scenario, respectively : i) Year 1: 1.93%, 1.33%, ii) year 10: 0.21%, 0.15%, iii) year 30: 0.02%, 0.02%, iv) year 50: 0.02%, 0.02%
ab_0001-389	Treaty 8 Tribal Association	V.2, S.15.4.3 ; page(s) 15-23 ; line(s) 22-25 EISG S.13.2.4 Comment 2-210.	<i>The average GHG emissions over the first 50 years of operation, taking into account the high rates in the early years, will fall into the range of 76,100 to 105,800 t CO2e per year (likely to conservative). The average over the first 100 years will be between 43,400 and 58,200 t CO2e per year.</i> Information Request Provide average emissions, in t CO2e per year and in g CO2e/kWh, for the first 10 and 20 years.	These are described in Volume 2, Appendix S, Sections 7 and 8; Figures 8.5 and 8.6 show annual emission estimates by year.
ab_0001-390	Treaty 8 Tribal Association	V.2, S.15.4.3 ; page(s) 15-23 ; line(s) 37-41 EISG S.13.2.4	<i>This intensity is much lower when compared to emission intensities of other generation types such as: 545 g CO2e/kWh (natural gas), 1,000 g CO2e/kWh (coal), and 717 g CO2e/kWh (diesel) for other competing types of electricity generation (Table 15.10 and Figure 15.5) (IRN 2006).</i> Information Request BC	IRN 2006 included the results of life-cycle assessments of a range of electricity generation technologies, which describes construction and operation emissions, and provides a range of 469 - 622 t CO2e/GWh for combined-cycle gas plants, sourced from the following technical literature as referenced in IRN 2006.

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		Comment 2-211.	Hydro is asked to: a) verify, making reference to more recent and more technical sources, that 545 g CO2e/kWh is an appropriate emissions figure for modern combined-cycle gas plants; and b) describe the expected evolution of GHG emission rates for state-of-the-art natural gas plants over the next: i) 10 years, ii) 20 years, iii) 50, and iv) 100 years.	<p>- Spath, P.L. and M.K. Mann (2000) Life Cycle Assessment of a Natural Gas Combined-Cycle Power Generation System. National Renewable Energy Laboratory [NREL], Colorado. NREL is a United States federal research laboratory.</p> <p>- Meier, P.J. (2002) Life Cycle Assessment of Electricity Generation Systems and Applications for Climate Change Policy Analysis. Fusion Technology Institute, University of Wisconsin, Madison.</p> <p>Life cycle emission intensity of natural gas plants is higher than those associated with operating fuel combustion emissions alone, Meier (2002) found they were about 23% higher, and similarly Spath and Mann (2000) found they were about 34% higher. Each plant will have a different life cycle emission rate depending on the specific design, source of fuel and other site-specific factors; therefore, for a LCA approach the cited literature presents a representative range.</p> <p>In August 2012 Environment Canada set a performance standard for operating emissions from the combustion of fossil fuels in coal-fired generation based on the emissions intensity of new high-efficiency Natural Gas Combined Cycle (NGCC) technology at 420 t CO2e/GWh. Canada's approach was developed in consideration of approaches taken in the United States, where in 2012 the EPA set an emission limit for new fossil-fuel fired plants at 454 t/GWh. BC Hydro's 2010 Resource Options Report, Appendix 3 Resource Options Database Summary Sheets, prior to these new federal regulations, set for comparative purposes a more conservative value of 365 t CO2e/GWh for operating emissions from new gas generation technologies.</p> <p>Applying the above estimates from Meier (2002) and Spath and Mann (2000), life cycle emissions may be between 23% and 34% higher than operating emissions alone, the recently set benchmark in Canada of 420t / GWh for operation of a new high-efficiency gas plant would be adjusted to between 517 - 563 t / GWh to represent life cycle emissions. This lies in the range presented in the EIS from the above literature. The emissions intensity associated with the Project would be many times less than estimated emissions intensity from a new gas plant, considering either life cycle or operating emissions alone.</p> <p>Commentary or research into the future potential GHG emission rates for gas plants is outside the scope of the environmental assessment.</p>
ab_0001-	Treaty 8	V.2, Appendix	Comments On December 18, 2012, the T8FNs provided comments on the	BC Hydro will provide a response to the December 18, 2012 letter submitted by T8FN. BC Hydro

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391	Tribal Association	A; page(s) 10-3; line(s) 1-23 EISG S.8.3.1, S.8.3.2 Comment 2-212.	project screening and interaction matrices to BC Hydro. Considering BC Hydro's submission date of January 25, 2013 it appears that this material has not been incorporated into the matrices. Information Request BC Hydro is requested to: a) address the comments provided by the T8FNs in the letter to Hydro of December 18, 2013 in relation to the interaction matrices and revise the matrices accordingly; b) identify whether BC Hydro received comments on draft versions of the Project Interaction Matrix from other Aboriginal groups, a list of recommended changes from those Aboriginal groups, and whether these recommended changes were made to the matrices and, if not, why not; and c) provide a list of all candidate VCs identified by Aboriginal groups during the pre-Application phase of the assessment (specified by Aboriginal group), and describe whether they were accepted or rejected as VCs, with a rationale for each decision.	did not receive comments on the Project Interaction Matrix from other Aboriginal groups. T8FN provided an issues scoping document to BC Hydro which identified issues and concerns. These concerns were taken into account in the identification of valued components.
ab_0001-392	Treaty 8 Tribal Association	V.2, Appendix E ; page(s) 11 of 79 ; line(s) n/a EISG S.9.3.2 Comment 2-213.	Comments The reported four to five-fold increase in annualized mean TSS at station Peace 5 (compared to upstream stations) is likely a result of a difference in different flow conditions during the sampling periods (Peace 05 was sampled in 2007/08 and Peace 15 was sampled in 2010/11) as opposed to any local fluvial/geomorphological processes.	Thank you for your comment.
ab_0001-393	Treaty 8 Tribal Association	V.2, Appendix E ; page(s) 13 of 79 ; line(s) n/a EISG S.9.3.2 Comment 2-214.	Comments The summer median ammonia value reported for the reservoir water samples appears to be incorrect (should be 0.0067 mg/L not 0.067 mg/L) and is, therefore, not consistent with the text.	The error is noted. In Volume 2 Appendix E, page 13, third paragraph, the last sentence should read: Seasonal (spring, summer, and fall) median concentrations of ammonia were similar in the Peace River (0.01 mg/L, 0.01 mg/L, and 0.0034 mg/L, respectively) and tributaries (0.01 mg/L, 0.01 mg/L, and 0.0043 mg/L, respectively), and were lower in the reservoir (0.0024 mg/L, 0.0067 mg/L, and 0.0029 mg/L, respectively).
ab_0001-394	Treaty 8 Tribal Association	V.2, Appendix E ; page(s) 16 of 79 ; line(s) n/a EISG S.9.3.2 Comment 2-215.	<i>For metals such as chromium, copper, iron, and zinc, there were more samples at Peace-14 (downstream of the Pine but upstream of the Beaton River), as compared to Peace-04 (upstream the Pine River), with metal concentrations that exceeded guidelines. This would suggest that the Pine River is a major source of these four metals to the Peace River.</i> Comments The frequency with which an exceedance may occur (i.e., in Pine River) does not explain changes in concentrations of these metals that were observed between Peace 04 and Peace 14.	Point source loadings from tributaries contribute to the natural loadings to a river and thus the concentration of various parameters. The statement was based on observed data; it does not preclude other factors from influencing water quality nor ascribe causes for the observations.
ab_0001-	Treaty 8	V.2, Appendix	<i>In the summer, Figure 7.3, the water warms as it moves downstream through</i>	Section 7.2.1 of Volume 2 Appendix H (Reservoir Water Temperature and Ice Regime Technical

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395	Tribal Association	H ; page(s) 21 of 78 ; line(s) n/a EISG S.9.3.2 Comment 2-216.	<i>the reservoir, and averages 3.2°C warmer at the intake of the Site C generating station than at the tailrace of the Peace Canyon Dam in the month of June.</i> Comments Figure 7.3 presents simulated Site C reservoir water surface temperatures for July 16, 2004 at which time surface water temperatures appear to be 10 to 12 °C warmer at the Site C intake than at the Peace canyon dam tailrace.	Data Report) describes the simulated warming of water as it moves downstream through the Site C reservoir. As described in that section, the water temperature averaged over the depth of the Site C generating station intakes for the month of June is predicted to be 3.2 degrees C warmer than at the tailrace of the Peace Canyon Dam, whereas the surface water temperature (shown in Figure 7.3 for simulated day July 16, 2004) is predicted to be between 8 and 10 degrees warmer at the Site C generating station than at the tailrace of the Peace Canyon Dam.
ab_0001-396	Treaty 8 Tribal Association	V.2, Appendix H ; page(s) 25 of 78 ; line(s) n/a EISG S.9.3.2 Comment 2-217.	<i>The time lags indicate that seasonal temperatures in the Peace River with the reservoir in place would be approximately one to two weeks behind existing conditions.</i> Information Request Clarify whether the potential effects of predicted seasonal temperature lags on fish spawning activities have been considered and, if so, how these effects are expected to affect fish populations in the LAA.	Downstream seasonal water temperatures were modelled and can be found in Volume 2 Appendix P Hydrodynamic, Water Quality and Productivity Modelling for the Site C Project and it was found that the difference in average water temperature was less than 1 degree C. These changes have been considered in Section 12.6.3.1 and are not large enough to cause a loss in distinct groups of fish or to result in a reduction in the long-term standing stock biomass of downstream fish populations.
ab_0001-397	Treaty 8 Tribal Association	V.2, Appendix J Part 1 ; page(s) 34 ; line(s) n/a EISG S.9.3.6 Comment 2-218.	<i>Methylmercury generation is generally not favored in riverine environments that are nutrient poor, have low productivity and ecological diversity and a simple trophic structure (Schetagne and Verdon 1999b; Schetagne et al. 2003). These conditions are expected to persist to some degree within the Site C reservoir because of the strong hydrological influence of water discharged from Williston Reservoir that will strongly influence conditions within the evolving reservoir downstream.</i> Information Request BC Hydro is requested to confirm whether the above statement is consistent with the output of the Aquatic Productivity Future Conditions model.	Appendix P3 Future Aquatic Conditions in the Peace Rivers describes the predicted nutrient levels, productivity and trophic structure of the proposed Site C Reservoir, as well as the hydrological inputs from upstream reservoirs to the proposed Site C reservoir.
ab_0001-398	Treaty 8 Tribal Association	V.2, Appendix J Part 1 ; page(s) 36 ; line(s) n/a EISG n/a Comment 2-219.	<i>However, some researchers have shown that increasing DOC concentrations can lower methylation, possibly by complexing with inorganic mercury and sequestering it, making it less available (Miskimmin et al. 1992). Thus, baseline DOC concentrations and forecast elevations in DOC after flooding are positively correlated with the magnitude of elevation in mercury concentrations in aquatic biota.</i> Correction The above statement appears to be inherently contradictory.	As described in the quoted section there is contradictory evidence in the literature regarding the role of DOC in methylation. Depending on the system there is a positive correlation, while in others, it is negative; however, the degree of influence is relatively small regardless of direction of influence.
ab_0001-399	Treaty 8 Tribal Association	V.2, Appendix J Part 1 ; page(s) 41 ; line(s) n/a EISG S.9.3.2 Comment 2-220.	<i>At most times of the year, TSS concentration in the Peace River mainstem is below the laboratory detection limit of 3 mg/L or 1.0 mg/L, depending on the laboratory. In general, the TSS concentration in Peace River downstream of the Peace Canyon Dam ranges from <1 mg/L to about 4 mg/L, due to the very large settling capacity of Williston Reservoir upstream, that contributes very little in the way of suspended solids.</i> Comments This information reflects baseline conditions in the Williston and Peace Canyon reservoirs and at Peace 01	BC Hydro has reviewed this comment and cannot find inconsistencies. For clarification: Samples for TSS analysis were collected from various locations and at various times. The data collected from the 7 stations on the Peace River from downstream of the Peace Canyon Dam (upstream of a major tributary) to upstream of the confluence with the Alces River, show the spatial and temporal variability in TSS in the Peace River mainstem. At station Peace-01 (downstream of Peace Canyon Dam, upstream of a major tributary), TSS concentrations ranged from <3 to 135 mg/L (n=27 samples, collected between April 2007 and September 2011). As

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			immediately downstream of the Peace Canyon tailrace. However, data provided in Appendix E: Water Quality Baseline Conditions indicate a much higher range of TSS in the mainstem Peace River below Peace 01 (as is demonstrated in Table 4.1; p 39-40). Information Request BC Hydro is requested to comment on the inconsistencies in reported TSS concentrations upstream of the proposed Project.	described in the baseline water quality report (Volume 2 Appendix E), there is sequestration of particulate matter in the still water of the reservoirs, and concentrations of particulate matter (and associated parameters) are lower in the upper as compared to lower reaches of a river downstream of a dam.
ab_0001-400	Treaty 8 Tribal Association	V.2, Appendix J Part 1 ; page(s) 55 ; line(s) n/a EISG S.10.2.3 Comment 2-221.	<i>Adult Arctic grayling are most abundant between the confluences of the Pine and Halfway Rivers (RL&L 1991) and are particularly abundant in these tributary streams, as well as in Farrell Creek where their spawning habitat lies.</i> Comments There is scant evidence that Arctic grayling spawn in Farrell Creek. Information Request BC Hydro is requested to substantiate the statement that Arctic grayling use spawning habitat in Farrell Creek.	Information on potential recruitment of Arctic grayling from Farrell Creek is described in Volume 2 Appendix O, Table 9.2.2. Information from Traditional Land Use Studies (summarized in Section 12 Table 12.6) indicates traditional use of Arctic grayling at Farrell Creek. Further information on fish sampling and the fish community in Farrell Creek is described in Volume 2 Appendix O Section 5.3 Tributaries.
ab_0001-401	Treaty 8 Tribal Association	V.2, Appendix J Part 1 ; page(s) 55 ; line(s) n/a EISG n/a Comment 2-222.	<i>The Peace River fish community within the technical study area as far downstream as Many Islands Alberta is dominated by cool-water species. Longnose sucker and mountain whitefish are most abundant, although their abundance decreases with increasing distance downstream, while other sportfish such as goldeye, burbot, and walleye become increasingly common. Coldwater species, such as Arctic grayling, rainbow trout and bull trout, are rarely encountered in the reaches near the BC-Alberta border (AMEC 2008; Mainstream Aquatics 2009, 2010).</i> Correction Coldwater sport fish species include mountain whitefish (Vol 2., Section 12, Fish and Fish Habitat)	Mountain whitefish are considered cold-water sport fish, as described in Section 12 Fish and Fish Habitat. Clarification: With regard to the statement "Coldwater species such as Arctic grayling, rainbow trout and bull trout, are rarely encountered in the reaches near the BC-Alberta border": Mountain whitefish were omitted from the sentence because they are regularly encountered in Alberta, as stated in the previous sentence.
ab_0001-402	Treaty 8 Tribal Association	V.2, Appendix J Part 1 ; page(s) 61, 58 ; line(s) n/a EISG S.9.3.6 Comment 2-223.	<i>In general, historic mercury concentrations in most fish species from the Peace River within British Columbia were less than 0.10 mg/kg, except for bull trout, which ranged up to 0.2 mg/kg. Mercury concentrations in Dinosaur Reservoir whitefish were slightly higher 0.03 – 0.17 mg/kg, while rainbow trout was low (0.04 mg/kg). Mercury concentrations in Williston Reservoir mountain whitefish (0.03 – 0.43 mg/kg), rainbow trout (0.03 – 0.35 mg/kg) and bull trout (0.03 – 2.2) were higher than in Dinosaur Reservoir or from the Peace River upstream of the Site C dam.</i> <i>Table 4.4 Historic (pre-2001) Peace River fish mercury concentrations</i> Comments The above summary of historic mercury data does not reflect results presented in Table 4.4. Also, it is not clear whether the data described above refer to sample means, or to the range of individual sample measurements. For example, there are no historic mercury measurements presented in Table 4.4 for mountain whitefish taken from Williston Reservoir. Information Requests Clarify the species of Dinosaur Reservoir whitefish referred to above.	All whitefish captured within Dinosaur Reservoir were mountain whitefish. A complete set of raw data for all species captured in 2010 can be found in the report '2010 Status of Mercury in Environmental Media from the Peace River and Dinosaur Reservoir' (Azimuth 2011). This report can be found on the BC Hydro Site C Web Site (http://www.bchydro.com/energy-in-bc/projects/site_c/document_centre.html)

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ab_0001-403	Treaty 8 Tribal Association	V.2, Appendix J Part 1 ; page(s) 63 ; line(s) n/a EISG n/a Comment 2-224.	<i>Mean mercury concentrations of all fish species in the Peace River within the technical study area of the Site C Project were less than 0.08 mg/kg with nearly all fish less than 0.20 mg/kg. Correction Mean mercury concentrations of all fish species in the Peace River within the technical study area of the proposed Project were less than 0.24 mg/kg (goldeye) Table 4.5.</i>	Goldeye are rarely encountered within the mercury technical study area and are therefore not included in that summary statement. In the 2011 study, particular effort was made to capture goldeye from the Peace River but were captured downstream of Many Islands, downstream of the study boundary. Please also see Volume 2 Appendix O and Section 12.3 Baseline Conditions in the EIS.
ab_0001-404	Treaty 8 Tribal Association	V.2, Appendix J Part 1 ; page(s) 84 ; line(s) n/a EISG n/a Comment 2-225.	<i>Site C predicted area = 9.3 km2 and falls into LOW increase category Correction Site C predicted area should read 93.3 km2</i>	This update has been added to the List of Errata and Updated Information.
ab_0001-405	Treaty 8 Tribal Association	V.2, Appendix J Part 1 ; page(s) 86 ; line(s) n/a EISG n/a Comment 2-226.	<i>Physically, the Site C reservoir is considered a run-of-river reservoir that has a relatively low flooded area (9.3 km2).... Correction The total area of the proposed Site C reservoir is planned to be 93.3 km2 and the proposed flooded area would be 53.4 km2.</i>	This update has been added to the List of Errata and Updated Information.
ab_0001-406	Treaty 8 Tribal Association	V.2, Appendix J Part 1 ; page(s) 87 ; line(s) n/a EISG S.9.3.6 Comment 2-227.	<i>In summary, given the expected or predicted physical, chemical and ecological conditions for the proposed Site C reservoir, there is a low potential for mercury methylation and bioaccumulation of mercury in all aquatic environmental media. Comments The foregoing statement seems to overstate the low risk/potential for mercury increase. See below from page 86: <i>Among the physical, chemical and ecological factors primarily responsible for mercury methylation in new reservoirs, the Site C reservoir was clearly classified as having a strong likelihood of producing a less than 3x increase in fish mercury concentrations for all parameters that were considered (Table 5.4).</i></i>	A 3x or less increase in fish mercury concentration would be considered very low relative to all other reservoirs compared in Canada using the Canadian Reservoirs comparison matrix (Volume 2 Appendix J, Part 1). Please also the Technical Memo: Methylmercury.
ab_0001-407	Treaty 8 Tribal Association	V.2, Appendix J Part 2 ; page(s) ii ; line(s) n/a EISG n/a Comment 2-	<i>The most popular fish species targeted by Aboriginal Groups and sport fishers were evaluated including, rainbow trout, bull trout and lake trout within the Peace River upstream of the proposed Site C dam location and walleye, goldeye and northern pike downstream of this location, into Alberta. Correction Mountain whitefish are also a traditional food source (Volume 3 Appendix F Current Use of Lands and Resources for Traditional Purposes-Summary).</i>	This update has been added to the List of Errata and Updated Information.

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ab_0001-408	Treaty 8 Tribal Association	V.2, Appendix J Part 2 ; page(s) 6 ; line(s) n/a EISG S.9.3.6 Comment 2-229.	<i>The main exposure pathway to downstream fish is when normally non-piscivorous fish (e.g., lake whitefish, longnose sucker) switch their diet to feed on injured or dead fish below the tailrace of large reservoirs. Comments A similar and likely/possibly as important pathway leading to Hg increase in downstream fish occurs when normally piscivorous downstream fish feed on injured, dead or healthy fish that have originated from upstream affected reservoirs.</i>	This is correct and is stated as such in Section 11.9.7.2 of the EIS.
ab_0001-409	Treaty 8 Tribal Association	V.2, Appendix J Part 2 ; page(s) 14 ; line(s) n/a EISG S.9.3.6 Comment 2-230.	<i>In either case forage species such as reidside shiner, sucker and rainbow trout that consume lower mercury dietary items will return to a baseline more quickly that omnivorous whitefish and piscivorous bull trout. Comments Rainbow trout are not normally referred to as a forage species. Information Request Provide diet data for rainbow trout that supports the contention that they consume lower mercury dietary items.</i>	Volume 2 Appendix P Aquatic Productivity Report Part 1, Section 3.7, page 69 of 102 describes the stomach analysis of fish food organisms, including rainbow trout.
ab_0001-410	Treaty 8 Tribal Association	V.2, Appendix J Part 2 ; page(s) 17 ; line(s) n/a EISG S.9.3.6 Comment 2-231.	<i>Birds that do not eat fish, including ducks and geese, will not be exposed to increased MeHg concentrations in their food, so mercury levels will not change in these species. Comments Waterfowl that do not eat fish, eat aquatic vegetation and associated epifauna and benthic invertebrates, thus creating a pathway for increased (albeit a small increase) dietary exposure to MeHg. This is likely not a human health (or duck health) issue.</i>	Thank you for your comment. Please see the Technical Memo: Methylmercury.
ab_0001-411	Treaty 8 Tribal Association	V.2, Appendix J Part 2 ; page(s) 19 ; line(s) n/a EISG S.10.2.3 Comment 2-232.	<i>However, Arctic grayling and mountain whitefish abundance is expected to diminish or be reduced in the reservoir. Species such as walleye, northern pike, goldeye, burbot and yellow perch occur in low abundance in the technical study area downstream of the proposed Site C dam. (Mainstream Aquatics 2010; 2011). Correction The Proponent is requested to check references – they do not appear to be correct.</i>	The citation should be to "(Mainstream Aquatics 2010 a and b, 2011)", not "(Mainstream Aquatics 2010, 2011)". Since the outcome of this change will not alter the reader's capability to understand where the information came from, and will not change the outcome of the analysis, this approach to referencing the studies will remain unchanged.
ab_0001-412	Treaty 8 Tribal Association	V.2, Appendix J Part 2 ; page(s) 19 ; line(s) n/a EISG n/a Comment 2-233.	<i>While the HHRA includes risk estimates for consumption of goldeye and walleye, these species are not expected to be abundant or resident in the proposed reservoir area of the technical study area following construction of the Project. Correction This statement should be referenced.</i>	Section 12 Fish and Fish Habitat, Section 12.4.2.1 provides a prediction of fish species composition in the reservoir over time.

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ab_0001-413	Treaty 8 Tribal Association	V.2, Appendix J, Part 3 ; page(s) 10 ; line(s) n/a EISG S.9.3.2 Comment 2-234.	<i>Suspended solids in water column <3 (mg/L) except freshet or storms</i> Comments See page 11 Vol. 2, Appendix E (below) which suggests that a value of <3 mg/L may not be the appropriate value to characterize the TSS regime of the river. <i>In the Peace River, mean TSS was highest in spring (178 mg/L) as compared to summer (27 mg/L) or fall (4.4 mg/L), and there was a noticeable increase in mean TSS from upstream of the Halfway River (Station Peace-02; overall mean = 17 mg/L) to downstream of the Halfway River (Peace-03; overall mean = 75 mg/L). Mean TSS concentrations were similar in the Peace River from downstream of the Halfway River (Peace-03) to downstream of the Beatton River (Peace-15), with mean values of 75 mg/L (Peace-03)...</i>	BC Hydro disagrees with the suggestion that the TSS detection limit may be too low. Please see the response to ab_0001-210.
ab_0001-414	Treaty 8 Tribal Association	V.2, Appendix O ; page(s) i ; line(s) n/a EISG S.10.2.1 Comment 2-235.	<i>The technical study area used for the information synthesis includes the mainstem Peace River from Peace Canyon Dam to Many Islands Area located 121 km downstream of the provincial boundary. ...These spatial boundaries were established for the technical study area to ensure that the biological boundaries of fish populations (i.e., spatial distributions) potentially affected by the Project are included in the information analysis. The study period encompasses information collected from the early 1970s up to and including 2011.</i> Comments The Proponent uses different terms to describe the study area. The lower portion of the technical study area appears to have been an add-on to the original study area and subject to only one year of study. Information Request BC Hydro is requested to: a) clarify the boundaries of the study area; and b) explain the (apparently) varying levels of effort afforded different portions of the study area.	Volume 2 Appendix O is a compendium of fish and fish habitat studies in the Peace River. Each of these studies will have its own study area specific to individual purpose, scope and the objective. Studies related to the Project were initiated in the most probable areas that would be affected by the Project (i.e. reservoir area and tributaries). Based on results from the initial studies, the specific study area boundaries remained the same, were expanded or led to completely other studies with their own boundaries. For example, over the duration of the Peace River Fish and Fish Habitat Inventory, studies were spatially expanded to account for the anticipated physical changes associated with the Project.
ab_0001-415	Treaty 8 Tribal Association	V.2, Appendix O ; page(s) iii ; line(s) n/a EISG n/a Comment 2-236.	<i>Coolwater fish species that are part of the fish community include the three sucker species and nine species listed in the minnow group. They include largescale sucker, longnose sucker, white sucker, flathead chub, lake chub, longnose dace, northern pikeminnow, redbelly shiner, spottail shiner, and trout-perch. The three sculpin species appear to do well in both types of environments. Slimy sculpin and prickly sculpin do better in cold, clear water systems, while spoonhead sculpin prefer cool, turbid water systems A number of species recorded in the technical study area are rare and are not considered part of the existing fish community. These include brook trout, pygmy whitefish, brook stickleback, finescale dace, northern redbelly dace, peamouth and pearl dace.</i> Correction There are species missing from this discussion that appear elsewhere in the report. A total of 32 species are reported whereas the above discussion refers only to 27.	For Clarification: This is not an error. The quoted text referenced in this Information Request is from the Executive Summary from Volume 2 Appendix O, which for purposes of practical necessity cannot summarize all of the information contained in the body of that Appendix. Please refer to the body of the Volume 2 Appendix O.

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ab_0001-416	Treaty 8 Tribal Association	V.2, Appendix O ; page(s) iii ; line(s) n/a EISG S.10.2.4 Comment 2-237.	<i>Within the technical study area, several species demonstrate extended upstream movements. These include Arctic grayling, bull trout, and mountain whitefish. Arctic grayling migrate to the Moberly River where they spawn. Bull trout migrate to the upper Halfway River tributaries to access spawning habitats. Walleye undertake post-spawning feeding upstream movements in the Peace River from spawning areas in the lower portion of the technical study area. Goldeye is a migratory species that travels approximately 500 km from winter habitats downstream of the Town of Peace River to as far upstream as the Moberly River. The goldeye population spawns in the Peace River and in several tributaries, primarily in Alberta. Goldeye spawning and early rearing has been confirmed in the Beatton River. Some species residing in the Peace River technical study area utilize both local and extended movement strategies depending on the availability of important habitats. These include all three sucker species and mountain whitefish. Mountain whitefish may complete all life history activities within a 1 or 2 km section of the Peace River, or mountain whitefish migrate many kilometres (from upstream and downstream) in order to access tributary spawning habitats in the Pine River, Moberly River and Halfway River. Comments A number of species are noted here as undertaking upstream migrations/movements in the vicinity of the proposed Project. Information Request Provide an assessment of the population-level effects of the proposed Project on these species if trap and truck technologies are unsuccessful or species are subject to high mortality rates during either upstream or downstream passage of the Site C facilities.</i>	Section 12 in the EIS and Volume 2 Appendix Q Fish Passage Management Plan, Part 3 describe population evaluation effects associated with unsuccessful fish passage.
ab_0001-417	Treaty 8 Tribal Association	V.2, Appendix O ; page(s) iv ; line(s) n/a EISG S.10.2.3 Comment 2-238.	<i>The Peace River fish community in much of the technical study area is dominated by adults and older juveniles of large-fish species, with a paucity of younger fish in the large-fish species group and most small-fish species. This is most apparent upstream of the Halfway River confluence. The mechanism thought to drive this outcome is the absence of suitable habitats needed by small-sized fish in the Peace River. Comments As part of the Peace River Community Indexing Program (Phase 5), Mainstem and Gazey (2006) reported on the small fish community in nearshore areas of the Peace River from downstream of the Moberly River confluence to just downstream of the PCN dam. In total, 19 species were recorded including 9 sportfish, 3 sucker, 5 cyprinid and 2 sculpin species.</i>	Mainstream and Gazey (2006) included small fish data in the Peace River. Additional studies on small fish include Mainstream (2006) and the Site C Peace River fish inventories in 2009-2011 which included small fish data as well.
ab_0001-418	Treaty 8 Tribal Association	V.2, Appendix O ; page(s) vi ; line(s) n/a	<i>A source of recruitment for some fish populations in the technical study area is entrainment from upstream sources. Recruitment via entrainment likely maintains the rainbow trout, kokanee, and lake trout populations. Other species</i>	The importance of lower portions of tributaries and tributary confluences has not been understated as these habitats are discussed throughout Volume 2 Appendix O of the EIS.

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		EISG S.10.2.3, S.15.2.3 Comment 2- 239.	<p><i>known to recruit from sources upstream of the Peace Canyon Dam include bull trout, lake whitefish, and peamouth. Comments Rainbow trout are also reported to recruit from Maurice Creek. In general, smaller tributaries in the technical study area contain fish communities numerically dominated by suckers and minnows. Spring trapping studies recorded several thousands of fish belonging to these groups in monitored streams. These included Lynx Creek, Farrell Creek, and Cache Creek. An exception is Maurice Creek, which supports a rainbow trout population. The lower portions of larger tributaries contain fish communities dominated by suckers and minnows, but the upper watersheds also support coldwater sportfish such as Arctic grayling, bull trout, and rainbow trout. Important habitats are present throughout the technical study area. Depending on the species, important habitats are located on the Peace River upstream and downstream of the Site C dam location and in Peace river tributaries within and outside of the Site C reservoir inundation zone. In general, the lower sections of Peace River tributaries provide spawning and early rearing habitats for suckers and minnows. Important spawning and rearing habitats for sportfish have been recorded only in upstream areas of large tributaries. The relative importance of mountain whitefish spawning habitat in the lower section (compared with the upper section) of Halfway River seems to be underestimated. Refer to Halfway River and Moberly River Fall Mountain Whitefish Migration and Spawning Study 2009 by Mainstream Aquatics 2010: The upper Halfway River watershed provides spawning and rearing habitats for the Peace River bull trout population. The Moberly River provides spawning and rearing habitats for the Peace River Arctic grayling population. Maurice Creek provides spawning and rearing habitats for the Peace river rainbow trout population. The Halfway, Moberly, and Pine rivers provide spawning habitats for Peace River mountain whitefish population. The Beatton River provides spawning and rearing habitats for walleye. All tributaries to the Peace River provide spawning and rearing habitats for suckers, minnows, and sculpins. The Peace River downstream of the Halfway River confluence provides rearing habitat for mountain whitefish. Side channels provide habitats for several fish species, in particular northern pike, yellow perch, and spottail shiner. Finally, the mainstem Peace River is a migration area for several species by providing an upstream and/or downstream movement corridor. Several populations require the Peace River as a movement corridor. They include Arctic grayling, bull trout, mountain whitefish, burbot, goldeye, walleye, largescale sucker and longnose sucker. The importance of the lower portions of tributaries and particularly tributary mouths and confluence areas with the mainstem Peace River</i></p>	<p>The scope of the Fish and Fish Habitat effects assessment is in accordance with the EIS Guidelines and appropriate information is provided in the EIS.</p>

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			upstream of Site C appears to be understated here. Such areas are often highly productive and will be inundated by the proposed Project. For e.g., on p.68 of this Appendix, the Proponent states that: <i>The cool-turbid water fish assemblage contains a diverse group of large-fish and small-fish species that reside in the mainstem river, but most of these fish are largely restricted to tributary confluence areas and/or the lower portion of the study area (i.e., downstream of the Pine River confluence)</i> . Also see Section 5.2, Appendix O (this report) p. 81-96. Tributary confluence areas have also been cited by many Aboriginal groups as important fishing locations e.g. see Section 12, Table 12.6.	
ab_0001-419	Treaty 8 Tribal Association	V.2, Appendix O, S.1.0 ; page(s) 1 ; line(s) n/a EISG S.10.2.1, S.10.2.3 Comment 2-240.	<i>AMEC (2008) completed the most recent review of fish and fish habitat studies related to the Project (to 2006) The technical study area used for the information synthesis extends along the mainstem Peace River from Peace Canyon Dam to the Many Islands Area located in Alberta, 59 km downstream of the provincial boundary. These spatial boundaries were established for the technical study area to ensure that the biological boundaries of fish populations potentially affected by the Project are included in the information analysis.</i> Comments Establishment of the technical study area extending downstream as far as Many Islands appears to recognize that fish populations have the potential to be affected in that area.	The text from Appendix O states "potentially affected by the Project are included in the information synthesis". Please see the Technical Memo: Spatial Boundary Selection.
ab_0001-420	Treaty 8 Tribal Association	V.2, Appendix O, S.3.0 ; page(s) 9 ; line(s) n/a EISG S.10.2.3 Comment 2-241.	<i>In 2001, BC Hydro initiated a multi-year, annual large River Fish Community Indexing Program on the Peace River. The purpose was to quantify large-fish (i.e., >250 mm length) population characteristics (i.e., abundance, growth, and population structure) that were to be used to monitor effects of flow manipulations. ...Though this study has concentrated on three target species (bull trout, mountain whitefish, and Arctic grayling), it provides yearly data describing abundance and distribution on all large-fish species in the Peace River</i> Comments This program was designed and initiated to help define the effects of existing dam and reservoir operations on mountain whitefish, Arctic grayling and bull trout in the Peace River mainstem. The study provides quantitative information but is based on only fall sampling using one gear type in select reaches of only a portion of the study area. The study was not designed to, and does not provide yearly data describing abundance and distribution on all large-fish species in the Peace River.	For clarification: The Peace River Fish Community Indexing Program was established by BC Hydro in 2001 prior to initiation of Site C studies in 2005. It was established to provide index information to monitoring interannual changes in abundance of three target fish species (bull trout, Arctic grayling and mountain whitefish); however, extensive fish capture data on all fish species were reported for the more than 12 years of sampling and provided data (e.g. catch rates, distribution, species composition) associated with the methods used. This study provided valuable information that was used in the fish and fish habitat effects assessment.
ab_0001-421	Treaty 8 Tribal Association	V.2, Appendix O, S.4.1.2 ; page(s) 13 ; line(s) n/a	<i>RL&L (2001) concluded that small fish habitat was limited due to flow regulation which restricted the amount of habitat available in side channels and in near-shore areas of the Peace River. However, despite the absence of small fish habitat, the large fish community appeared to consist of several viable species</i>	Thank you for your comment. For clarification: the Mainstream et al (2012) report was conducted under the Water Licence Requirements Program at BC Hydro, not specifically for the Project. The scope of that work was

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		EISG S.10.2.3 Comment 2-242.	<i>populations. The authors hypothesized that the large fish community was maintained, at least in part, by the recruitment from tributaries, which were not affected by the operational flow regime of BC Hydro facilities. Comments</i> The existence of a viable piscivorous large fish community in the Peace River suggests that a viable small fish community may also exist in the same location, particularly at tributary confluence areas. See also p.68 of this Appendix. The cool-turbid water fish assemblage contains a diverse group of large-fish and small-fish species that reside in the mainstem river, but most of these fish are largely restricted to tributary confluence areas and/or the lower portion of the study area (i.e., downstream of the Pine River confluence). <i>Use of physical characteristics to classify fish habitat was chosen for three reasons. Firstly, fish community investigations on the Peace River indicate that there are differences in species composition, fish abundance, and life stage use based on the physical characteristics of the channel and the river banks... Secondly, physical characteristics are identifiable on large scale colour air photos. Thirdly, the use of physical characteristics to describe fish habitat allow the quantification of habitat availability within the same habitat unit at different water levels.</i> Note that Mainstream et al. (2012) reports in the third paragraph on p.3 that fish habitats (unexposed at the lowest study flow of 283 cms) were not identified and classified.	dictated by the WLR group and was designed to address different objectives. Information in that report was taken into account in the EIS and in describing fish habitat conditions in Volume 2 Appendix O Fish and Fish Habitat Technical Data Report. The scope of the Fish and Fish Habitat effects assessment is in accordance with the EIS Guidelines and the appropriate information is provided in the EIS.
ab_0001-422	Treaty 8 Tribal Association	V.2, Appendix O, S. 4,2,1; page(s) 36 ; line(s) n/a EISG S.10.2.1 Comment 2-243.	<i>In total, ten named tributaries to the Peace River between the Peace Canyon Dam and the BC/AB boundary were investigated. They include seven tributaries upstream of the Site C dam location and three main tributaries downstream of the Site C dam location. A fourth tributary located downstream of the Site C dam location was not investigated (Alces River which flows into the Peace River 142.4 km downstream of the Peace Canyon Dam). From upstream to downstream the tributaries are – Maurice Creek, Lynx Creek, Farrell Creek, Halfway River, Cache Creek, Wilder Creek, Moberly river, Pine River, Beaton River, and Kiskatinaw River Comments</i> It appears that several tributaries to the lower portion of the study area were not investigated, e.g., Alces River, Pouce Coupe River, Clear River. Information Request Clarify why Alces River, Pouce Coupe River, and Clear River were not considered part of the study area.	Please see the responses to ab_0001-414 and ab_0001-420.
ab_0001-423	Treaty 8 Tribal Association	V.2, Appendix O, S.4.2.2 ; page(s) 38 ; line(s) n/a EISG S.10.2.3	<i>Habitats in Peace River tributaries upstream of the Site C dam were inventoried in 2005f by AMEC and LGL (2008a). Surveyed sections were separated into a lower and upper area of approximately equal length separated by the predicted upstream limit of Site C reservoir at full supply level. Mainstream (2009c) completed similar work on smaller tributaries in 2008 and then expanded the</i>	Descriptions of the Pine, Beaton and Kiskatinaw Rivers are included in the Section 4 of the EIS. Additional information is available in Volume 2 Appendix O Fish and Fish Habitat Technical Data Report, Section 4.2.

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		Comment 2-244.	<i>study are in 2010 to include upper watersheds of smaller tributaries though to support coldwater sportfish (Mainstream 2011e). Information Request Provide studies of a similar nature (if any) that were conducted on tributaries downstream of the proposed Project within the technical study area.</i>	
ab_0001-424	Treaty 8 Tribal Association	V.2, Appendix O, S.4.2.3.4 ; page(s) 60 ; line(s) n/a EISG S.10.2.3 Comment 2-245.	<i>Beatton River...Habitat data have not been collected in the Lower and Middle mainstem regions. Information Request Clarify why Beatton River habitat data have not been collected, particularly at the river mouth.</i>	Habitat data for the Beatton River confluence were collected during the Peace River Fish Inventory (2009-2011). A fish and fish habitat survey of the lower 100 km of the Beatton River was conducted in 2012. This information was taken into account in the assessment of the effect of the Project on fish and fish habitat.
ab_0001-425	Treaty 8 Tribal Association	V.2, Appendix O, S.5.1.1 ; page(s) 65 ; line(s) n/a EISG S.10.1 Comment 2-246.	<i>The DRAFT Fish, Wildlife and Ecosystem Resources and Objectives for the Lower Peace River Watershed Site C Project Area (BC Government 2011) identified six Indicator Species that are useful to monitor the environmental sustainability and ecological integrity of Key Values... Comments BC Government (2011) identifies 7 species (not 6) that are termed valued components and river/stream indicator species. The BC Government (2001) report recognizes that species of particular value to Aboriginal Groups may not have been recognized in the process of defining valued components. Information Request BC Hydro is requested to: a) define the term “indicator species” as this is used in the assessment; and b) clarify whether the term implies that each of the recognized species represents a broader suite of species that may be impacted by the proposed Project and, if so, indicate the species that are included in each suite.</i>	The EIS Guidelines Section 10.2.3 did not direct BC Hydro to use indicator species in the assessment of the effects of the Project on fish and fish habitat, nor was it used in the assessment. Refer to the BC Government (2011) for the definition of indicator species used in that document. For some analyses a broader suite of species was used. See Appendix P Part 3, Future Conditions Report.
ab_0001-426	Treaty 8 Tribal Association	V.2, Appendix O, S.5.1.2 ; page(s) 68 ; line(s) n/a EISG S.10.2.3 Comment 2-247.	<i>The cool-turbid water fish assemblage contains a diverse group of large-fish and small-fish species that reside in the mainstem river, but most of these fish are largely restricted to tributary confluence areas and/or the lower portion of the study area (i.e., downstream of the Pine River confluence). The only exceptions to this pattern are reidside shiners, which are abundant and widely distributed throughout the study area. Comments This statement recognizes the importance of tributary confluence areas, yet these seem not to have been intensively studied by the Proponent, particularly in the portions of the study area downstream of the proposed Project.</i>	All tributary confluence areas downstream to Many Islands were studied during the Peace River Inventory studies. These studies were conducted over three seasons, and multiple sampling methods were used to describe fish and habitat conditions. Refer to Volume 2 Appendix O Fish and Fish Habitat Technical Data Report.
ab_0001-427	Treaty 8 Tribal Association	V.2, Appendix O, S.5.1.2 ; page(s) 69 ; line(s) n/a	<i>The study area extended from the Peace Canyon Dam to as far downstream as 63 km downstream of the BC/Alta boundary and included a total of nine sections. Study sections in Alberta were added to the program each year as follows: 2009 – 0 sections, 2010 – one section, 2011 – 2 sections. Comments</i>	Please see the responses to ab_0001-414 and ab_0001-420.

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		EISG S.10.2.1 Comment 2-248.	This is different from the technical study area defined earlier, which extends to 121 km downstream of the boundary. Information Request Clarify why there are two study areas defined (i.e. 'technical study area' and 'study area'), whether they are different and, if so, whether each was subject to a different level of sampling effort, etc.	
ab_0001-428	Treaty 8 Tribal Association	V.2, Appendix O, S.5.2.1 ; page(s) 72 ; line(s) n/a EISG n/a Comment 2-249.	<i>Table 5.2.2 Composition of enumerated fish species, Peace River Fish Inventory</i> Correction Brook trout is missing from Table 5.2.2	Brook trout is missing because none have been captured during sampling during the last ten years. The single record of brook trout is suspected to be a transplanted fish or misidentification.
ab_0001-429	Treaty 8 Tribal Association	V.2, Appendix O, S.5.2.1 ; page(s) 73 ; line(s) n/a EISG S.10.2.3 Comment 2-250.	<i>Burbot numbers were higher in 2011 due to the expansion of the study area downstream to Many Islands, Alberta.</i> Information Request Clarify whether the lower portion of the study area, i.e. from approx. 63 km downstream of the boundary to 121 km downstream of the boundary, was subject to only one year of study.	The referenced section of the Peace River was sampled in 2011. This sampling updated the fish sampling that was conducted during the Dunvegan Project.
ab_0001-430	Treaty 8 Tribal Association	V.2, Appendix O, S.5.2.1 ; page(s) 75 ; line(s) n/a EISG S.10.2.3 Comment 2-251.	<i>Results indicate that there has been a shift in the recruitment source of Arctic grayling from the Halfway River in the late 1980s to the Moberly River.</i> Comments There appears to be insufficient data collected and analyzed (and cited) to reasonably reach this conclusion.	Baseline studies conducted since 2005 using a range of sampling approaches and summarized in Volume 2 Appendix O Fish and Fish Habitat Technical Data Report, that infer that the Moberly River is the primary source of recruitment for Arctic Grayling the Peace River. This information is sufficient for the purposes of the assessment and the EIS Guidelines. Information on Arctic grayling recruitment sources from earlier investigations is provided for context, and is appropriately presented as a hypothesis, rather than a statement of fact, in the text immediately prior to the text quoted in this Information Request: "In 1989 and 1990, tagable Arctic grayling (≥ 250 mm fork length) were found primarily in the section of the Peace River between Farrell Creek to approximately 10 km upstream of the Moberly River (Figure 4.7 in Pattenden et al. 1991). The authors hypothesized that the Halfway River was the primary recruitment source of Arctic grayling recorded in the study area."
ab_0001-431	Treaty 8 Tribal Association	V.2, Appendix O, S.5.2.4.1 ; page(s) 81-96 ; line(s) n/a EISG S.10.2.4	<i>Bull trout were encountered in main channel areas, side channel areas, and tributary confluence areas Burbot was recorded in main channel and tributary confluence areas. Goldeye – Highest catch rates were recorded at tributary confluences in spring. Northern pike – Small and large fish were recorded in all three habitats, but catch rates of both groups were higher in side channel and</i>	As described in Section 11.8.5.3 of the EIS, the Project is not expected to result in any changes in erosional or deposition patterns, including downstream tributary mouths. The tributary mouths in the reservoir would be re-established at the upstream end of the inundation area and no migratory barriers in the confluences are anticipated. A majority of the fish species in the Peace River are tributary spawners. The congregation of fish in the tributary

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		Comment 2-252.	<p>tributary confluence areas than in main channel areas Walleye – Catch rates in main channel and side channels areas were low (<3.1 fish/km) compared to catch rates in tributary confluence areas (up to 55.6 fish/km). Longnose sucker – High catch rates of large longnose suckers were recorded at tributary confluence habitats (38.6 fish/km). Largescale sucker – Large fish catch rates were higher in tributary confluence areas compared to main channel areas. White sucker – Catch rates of large white suckers were low in main channel areas (approx. 0.5 fish/km), intermediate at tributary confluences (approx. 2.0 fish/km) and highest in side channel areas (approx.. 5.0 fish/km) Northern pikeminnow – Large fish catch rates typically were highest in tributary confluence areas (up to 10.0 fish/km), but rarely exceeded 0.5 fish/km in main channel and side channel areas. Small fish catch rates were also higher at tributary confluence areas (beach seine catch up to 10.0 fish/100m²). Redside shiner. Catch rates of redside shiner often exceeded 20 fish/100 m² in the beach seine samples from all three habitat types. Spottail shiner. Catch rates of spottail shiner often exceeded 10 fish/100 m² in the beach seine samples. Spottail shiners were most numerous in side channel areas. Spottail shiner catch rates were high in main channel areas of Section 6 and tributary confluence areas in Section 7. Comments As above, (from Mainstream, 2011f and Mainstream 2010a, 2012a) a number of species showed high catch rates in and near tributary confluences indicating the importance of these areas to the fish fauna of the Peace River. These areas are expected to be highly impacted by the proposed Project, and it is not clear what the impact will be on fish species that utilize these areas. Information Request The Proponent is requested to provide an assessment of the effects of the proposed Project on fish populations that concentrate in tributary confluence areas as reported by Mainstream 2011f, Mainstream 2010a and Mainstream 2012a.</p>	<p>mouths are juvenile and sub-adult outmigrants as indicated by seasonal catch data. This congregation at the re-established tributary mouths will continue to occur once the reservoir is formed.</p>
ab_0001-432	Treaty 8 Tribal Association	V.2, Appendix O, S.5.3.2.2 ; page(s) 118 ; line(s) n/a EISG S.10.2.3 Comment 2-253.	<p><i>Of the 20 fish species recorded on the Halfway River, no more than 17 species were located in any one reach or section. The lowermost Reaches 1 and 2 had more species (16 and 17, respectively) than the uppermost Reaches 3 and 4, (12 species in each). Species diversity was highest in lowermost Sections 8, 9 and 10 (13 to 16 species).</i> Comments Again, this is suggestive of high species diversity and use of habitats in the lower portion of the Halfway River, particularly near the confluence with the Peace River.</p>	<p>High species diversity in the lower portion of the Halfway River, particularly to the Cameron River (approximately 50 km upstream of the Peace River), is well understood. The formation of the reservoir will inundate approximately 10 km of the lower section of the Halfway River, which roughly corresponds to Section 10 in the referenced study.</p> <p>Please also see the response to ab_0001-431.</p>
ab_0001-433	Treaty 8 Tribal Association	V.2, Appendix O, S.6.1.1.3 ; page(s) 131 ;	<p><i>AMEC and LGL(2010a) The overall results of three years of tracking of the Pine-tagged fish populations suggest: • It is very unlikely that Arctic grayling will exit the Pine River and move past the Site C dam location; • A few rainbow trout may</i></p>	<p>The results are not contradictory and they accurately document the findings of the two different studies.</p> <p>The AMEC and LGL 2008 study included fish that were collected in the Peace River, tagged, and</p>

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		line(s) n/a EISG S.10.2.3 Comment 2-254.	<i>exit the Pine, but in most instances will probably not move upstream past the Site C dam location; • Movement past the Site C dam location may be limited to a few bull trout that move between the Pine and Halfway River in either direction to complete their life cycle. Comments These results do not seem consistent with the results from the Peace River Fisheries Investigation – Peace River and Pine River Radio Telemetry Study 2008 (AMEC Earth and Environmental and LGL Ltd, 2009, p.ii and p.iii) that documented passage of Arctic grayling, mountain whitefish, rainbow trout, walleye and bull trout past Site C.</i>	then tracked. Collection of fish from the Peace River means fish could originate from a number of tributaries. The AMEC and LGL 2010a study differed because fish were collected in the upper Pine River and then tracked. This later study allowed understanding of the movement of fish that originate in Pine River.
ab_0001-434	Treaty 8 Tribal Association	V.2, Appendix O, S.6.3 ; page(s) 141 ; line(s) n/a EISG S.10.2.3 Comment 2-255.	<i>A number of fish fence and trap studies were completed on Peace River tributaries. AMEC and LGL (2008b) used block nets and hoop traps in several tributaries during spring 2006 to document fish use. In 2008, the spring work was duplicated by Mainstream (2009b) and expanded to include fall use of tributaries by fish. The fall program undertaken by Mainstream (2009b) on the Moberly River and Halfway River was repeated in 2009 by Mainstream (2010c). Comments A number of problems were identified with respect to the use of fish fences and traps to document fish use in some Peace River tributaries. For example, Mainstream 2009b reported (p.1 at paragraph 3) a number of sampling difficulties related to high flows with respect to baseline Peace River tributaries fish use assessments in spring 2008. As a result, data from this study may not be adequate to develop conclusions regarding fish use of large tributaries in spring.</i>	The comment mischaracterizes the value of information collected in these studies and the adequacy of conclusions about fish use of tributaries. It is recognized that there are limitations with sampling large systems during temporary periods of high flows. For that reason, several different approaches are used and multiple years of sampling are conducted to inform the use of large tributaries in the spring.
ab_0001-435	Treaty 8 Tribal Association	V.2, Appendix O;S.6.3.2 ; page(s) 146 ; line(s) n/a EISG S.10.2.3 Comment 2-256.	<i>Adult mountain whitefish in spawning condition were recorded throughout the surveyed area to the upper extent of sampling, which was 23 km from the Peace River. This included sections of the Halfway River upstream and downstream of the Site C reservoir inundation level. Boat electrofisher sampling in the lower 4 km of the Halfway River in October 1989 also recorded large numbers of adult mountain whitefish (Pattenden et al. 1991). Of the 395 captured fish 340 fish (86% of the sample) were in spawning condition. The mountain whitefish egg survey data contradicted the boat electrofisher results. Very few surveyed sites contained mountain whitefish eggs and all eggs were located in the lower section of the river. These results indicated either the survey was not able to locate mountain whitefish eggs or that fish in spawning condition move upstream outside the sampled area before they initiated spawning. Comments Data from the mountain whitefish egg survey suggests importance of the lower section of the Halfway River for mountain whitefish spawning.</i>	The entire Halfway River, including the lower section which was the focus of the quoted study, is important for mountain whitefish spawning. Data collected during fisheries studies indicate that they spawn throughout the mainstem and in its tributaries. Mountain whitefish are broadcast spawners so it was recognized that mountain whitefish eggs would drift and make it difficult to identify specific spawning areas.
ab_0001-	Treaty 8	V.2, Appendix	<i>In the Moberly River the mountain whitefish egg survey data supported the</i>	As described in Volume 2 Appendix O Fish and Fish Habitat Technical Data Report in the EIS,

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436	Tribal Association	O, S.6.3.2 ; page(s) 146 ; line(s) n/a EISG S.10.2.3 Comment 2-257.	<i>findings of the fish trap study. Mountain whitefish eggs were recorded at numerous sites distributed upstream and downstream of the Site C reservoir inundation level. Comments Suggests mountain whitefish spawning may currently occur in areas of the Moberly River to be inundated by the proposed Project.</i>	mountain whitefish spawn upstream and downstream of the point of inundation that would result from the creation of the reservoir .
ab_0001-437	Treaty 8 Tribal Association	V.2, Appendix O, S.6.3.3 ; page(s) 147 ; line(s) n/a EISG S.10.2.3 Comment 2-258.	<i>Individuals of the Peace-Halfway bull trout population migrate up to 280 km from over-wintering areas in the lower Halfway River and the Peace River mainstem as far downstream as the Clear River in Alberta. Comments Suggestive of annual migrations past Site C to/from habitats in and around the Halfway River to as far as the Clear River in Alberta.</i>	As described in the EIS Section 12 Fish and Fish Habitat; Volume 2 Appendix O Fish and Fish Habitat Technical Data Report, and Volume 2 Appendix Q Fish Passage Management Plan, a proportion of the Halfway River bull trout migrate past the Site C dam.
ab_0001-438	Treaty 8 Tribal Association	V.2, Appendix P – Part 3 ; page(s) v ; line(s) n/a EISG n/a Comment 2-259.	<i>The changes in overall biomass were driven most strongly by a substantial increase in group 3 planktivorous fish species (kokanee and lake whitefish) over both the early stage and long term. Information Request Provide any available diet data for lake whitefish in the study area.</i>	Diet data are provided for kokanee, lake trout, longnose sucker, mountain whitefish, rainbow trout and Arctic grayling in Table 3.25, on page 70 of Volume 2 Appendix P1. As described in Table 6A.4 of Volume 2 Appendix P3, Ecopath assumptions on the diets of lake whitefish relied on Roberge et al. (2001), Roberge et al. (2002), and Carl et al. (1967).
ab_0001-439	Treaty 8 Tribal Association	V.2, Appendix P – Part 3 ; page(s) 10 ; line(s) n/a EISG S.10.2.4 Comment 2-260.	<i>The proposed Site C reservoir is expected to have a similar benthic community and ecology to Dinosaur Reservoir, due to the large influence of water discharged from that waterbody. Comments The proposed reservoir benthic community and ecology development are also likely to be influenced by the hydraulic regime in the reservoir (water velocity, depth, water level fluctuation), substrates, ice scouring and the influence of tributary flows on water quality (e.g., TSS) and invertebrate introductions.</i>	Drawdown is expected to influence benthic communities in relation to dewatering and re-watering frequencies and extent. Benthic biomass is expected to be greatest in the littoral zone that is defined in Volume 2, Appendix P, Part 3, Section 4. This littoral zone is where drawdown will affect benthic communities. As described in Section 11.4.4.2.1, the daily range of water levels in the Site C reservoir is expected to be less than 0.6 m at least 60% of the time, and less than 1.0 m at least 75% of the time. This amount of drawdown is very small and typical of a run-of-river reservoir and seasonal variation in natural lakes.
ab_0001-440	Treaty 8 Tribal Association	V.2, Appendix P – Part 3 ; page(s) 11 ; line(s) n/a EISG S.10.2.4 Comment 2-261.	<i>An alternative hypothesis (which can operate at the same time as the barrier effect) is that benthic biomass may be low immediately downstream of dams due to presence of fish attracted to food that is entrained in water passing power turbines or other outlets. These fish may feed on available benthos below the dam, decreasing the abundance of the benthic invertebrates. Information Request Provide any observations in the Peace River or elsewhere that might support the hypothesis that fish may feed on available benthos below the dam, decreasing the abundance of the benthic invertebrates.</i>	Fish feeding alone cannot be attributed to the common observation of low biomass of benthic invertebrates downstream of dams. Fish feeding may contribute, but the larger factor is interruption of the river continuum (i.e., recruitment of invertebrates) by a dam. The literature outlining the evidence is described in Volume 2, Appendix P, Part 3, Section 5.1.2.1. Given this information, this hypothesis was appropriately presented as an alternative hypothesis.
ab_0001-	Treaty 8	V.2, Appendix	<i>Table 3.1: Field measurements and CE-QUAL-W2 predictions of periphyton and</i>	Field measurements of periphyton and phytoplankton in Table 3.1 of Volume 2, Appendix P, Part

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441	Tribal Association	P – Part 3 ; page(s) 14 ; line(s) n/a EISG S.10.2.4 Comment 2-262.	<i>phytoplankton</i> Comments Phytoplankton biomass predictions for the proposed reservoir differ considerably throughout Appendix P. For example: 3.50 t/km2 in Table 3.1 App. P, Part 3; 0.272526 t/km2 in Table 6D.1 App. P, Part 3, Appendix D, and between 0.15 and 0.88 t/km2 in Figure 4.6.3, App. P, Part 2. Information Request The Proponent is requested to: a) identify the source of field measurements for periphyton and phytoplankton in Table 3.1, as they do not appear to reflect data points presented in Figures contained in Appendix P, Part 2; and b) clarify phytoplankton biomass density units, since it is variously expressed as g/m2 wet weight (Table 3.1), mg/L dry weight (Table 3.3) and mg chlorophyll-a/m2 (Table 3.10 V.2, App. P, Part 1)	<p>3 were derived from the data presented in Section 3.5 of Appendix P1, through methods described below.</p> <p>Page 12 of Appendix P Part 3 states: “Ecopath expresses all ecosystem components in units of wet weight (five times the dry weight values used in CE-QUAL-W2).” Appendix 6C of Appendix P3 explains how CE-QUAL-W2 predictions of phytoplankton in units of mg/L dry weight were converted to estimates in t/km2 (also dry weight) before converting to wet weight for Ecopath. As stated in the footnote to Table 3.1 in Appendix P3: “all units are in biomass densities (t•km-2 of wet weight, which is equivalent to g•m-2 of wet weight. Dividing wet weight by five gives dry weight in g•m-2.”</p> <p>Appendix P Part 1 (pg 17) describes the conversion of phytoplankton and periphyton measurements to wet weight units for Ecopath: “Wet weight algal biomass was calculated because it was needed for simulation modelling that is reported in Volume 2 Appendix P Aquatic Productivity Reports Part 3 Future Conditions in the Peace River. Methods for calculation of phytoplankton wet weight biomass are provided in Section 2.6. Periphyton biovolume (µm3•m-2) was multiplied by 10-12, to convert µm3 to cm3. Volume (cm3) was converted to mass (1 cm3 is equal to 1 gram, the specific gravity of water). Mass in grams was then multiplied by 1000 to convert to milligrams, which resulted in final wet weight biomass units of mg•m-2.</p>
ab_0001-442	Treaty 8 Tribal Association	V.2, Appendix P – Part 3 ; page(s) 32 ; line(s) n/a EISG n/a Comment 2-263.	<i>the estimated periphyton biomass for the proposed Site C reservoir (early stage) from CE QUAL W2 is 0.6 t/km2</i> Correction Table 3.1 (page 14) provides a periphyton biomass value for the Site C reservoir (early and long term) of 0.23 t/km2.	<p>This update has been added to the List of Errata and Updated Information.</p> <p>The value of 0.6 t/km2 on page 32 is a transcription error. The estimates and analysis were checked and are correct. The value of 0.6 t/km2 on page 32 is the periphyton reference biomass density used for Ecopath simulations of the reservoir (second column of Table 6B.1 in Volume 2 Appendix Part 3); this number should be changed to 0.23 t/km2, matching the reservoir biomass density value shown in Table 3.1 for both early and long term conditions. The biomass densities derived from CE-QUAL-W2 output for a given Ecopath run can be calculated from Table 6B.1 in Volume 2 Appendix Part 3 by multiplying the reference biomass density (0.6 t/km2 for periphyton), by the relative change for a given scenario (e.g., 0.23 t/km2 = 0.6 t/km2 * 0.38 for the early stage most likely scenario).</p>
ab_0001-443	Treaty 8 Tribal Association	V.2, Appendix P – Part 3 - Appendix 6 A ; page(s) 3 ; line(s) n/a EISG S.10.2.4 Comment 2-264.	<i>Phytoplankton -Based on outputs from CEQUAL-W2 and field data from Volume 2 Appendix P Aquatic Productivity Reports, Part 1 Baseline Aquatic Productivity in the Upper Peace River Biomass = 2.25 t/km2 in proposed Site C reservoir and 0.3 t/km2 in current Peace River</i> Information Request The Proponent is requested to reconcile the variety of phytoplankton biomass estimates that exist in this report.	<p>Estimates of phytoplankton biomass density and their calculations are clarified below.</p> <p>The phytoplankton biomass densities listed on pg. 3 of Appendix 6A of Volume 2 Appendix Part 3 (2.25 t/km2 and 0.3 t/km2) are the reference biomass densities shown in the second column of Tables 6B.1 and 6B.2 in Volume 2 Appendix Part 3, which are then multiplied by a factor for each scenario, as described in the response to ab_0001-442. The phytoplankton biomass density derived from CE-QUAL-W2 output shown in Table 3.1 can be calculated from Table 6B.1 in Volume 2 Appendix Part 3 (e.g., 3.48 t/km2 = 2.25 t/km2 * 1.545 for the early stage most likely scenario).</p>

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ab_0001-444	Treaty 8 Tribal Association	V.2, Appendix P – Part 3 - Appendix 6 A ; page(s) 3 ; line(s) n/a EISG S.10.2.4 Comment 2-265.	<i>Benthic Algae -Based on outputs from CEQUAL-W2 and field data from Volume 2 Appendix P Aquatic Productivity Reports, Part 1 Baseline Aquatic Productivity in the Upper Peace River. Biomass = 0.6 t/km2 in proposed Site C reservoir and 3.77 t/km2 in current Peace River</i> Information Request The Proponent is requested to reconcile the variety of periphyton biomass estimates that exist in this report.— see Table 3.1, App. P, Part 3.	Please see the responses for ab_0001-442 and ab_0001-443. The value of 0.6 t/km2 is the periphyton reference biomass density used for Ecopath simulations of the reservoir (second column of Table 6B.1 in Appendix P3); and the value of 3.77 t/km2 is the periphyton reference biomass density used for Ecopath simulations of the Peace River downstream of the proposed Site C dam (second column of Table 6B.2 in Appendix P3). The value 3.77 is also listed in row 1b of Table 3.1 under Current “Downstream Reach of Peace River”.
ab_0001-445	Treaty 8 Tribal Association	V.2, Appendix Q1 ; page(s) 1 ; line(s) n/a EISG S.10.2.4 Comment 2-266.	<i>The key considerations for fish passage for hydroelectric developments are:</i> • <i>Upstream passage: Provide safe movement of fish upstream past the dam.</i> • <i>Downstream passage: For fish that may pass downstream through the dam facilities (commonly termed ‘entrainment’ of fish through the facility), to a) minimize injury or mortality, and b) manage loss of ‘productive capacity’ and fisheries in upstream water bodies due to the entrainment of fish into downstream water bodies.</i> Comments Fish under existing conditions that use habitat in the portion of the river that will be downstream of the generating station may also be dependent on habitat that in future will be upstream of the generating station, so a broader consideration is maintaining connection between the upstream and downstream environments, to the extent that this is required to maintain upstream and downstream populations and to the extent that it is feasible.	Maintaining the connection between habitats is included in the considerations listed, and is addressed explicitly in the objectives for Meta-population Structure in the fish passage assessment (Volume 2, Appendix Q2).
ab_0001-446	Treaty 8 Tribal Association	V.2, Appendix – Q2 ; page(s) 6 ; line(s) n/a EISG S.10.2.4 Comment 2-267.	<i>The alternatives assessment investigated the need for and suitability of fish passage technologies at the Project. It investigated expected biological requirements for fish passage based on predictions of habitat status after the creation of the dam. It assessed a full range of technological solutions for fish passage used at other hydroelectric facilities for their potential applicability at the Project.</i> Information Request BC Hydro is asked to: a) provide a discussion that links the assessment of effects to the fish community – i.e., discuss what would happen if fish passage is not provided, and what are the potential benefits of providing fish passage; and b) provide a discussion of what has happened at other locations on the Peace River where fish passage has not been provided as well as a clear articulation of the basis for recent decisions to provide fish passage (e.g., Dunvegan).	Volume 2, Appendix Q2 Section 3 Results and Discussion, describes the potential benefits of providing versus not providing upstream fish passage mitigation for the range of fish passage alternatives examined, and makes reference to population modelling in Volume 2 Appendix Q3. Section 12 further describes the potential effects of the Project on 'Changes to fish movement', which is one of three 'categories of potential effects' in the assessment of the Fish and Fish Habitat VC. Information on fish passage decisions at the Dunvegan Project is available on the CEA Agency registry and Report of the Joint Review Panel.
ab_0001-447	Treaty 8 Tribal Association	V.2, Appendix – Q2 ; page(s) 38-40 ; line(s)	<i>Section 2.3.5 Heuristic Model for Other Fish</i> Information Request BC Hydro is asked to provide some rationale as to the inputs into the heuristic model (i.e., probability of fish occupying certain parts of the reservoir).	The inputs to the Heuristic model are outlined in Section 2.3.5 of Appendix Q2. For the parameter D3, fraction near the approach channel over a year: "This parameter was based on a function of estimated movement patterns for each species. Fish

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		n/a EISG S.10.2.4 Comment 2-268.		<p>known to move extensively were given a 100% probability of being in the vicinity of the approach channel over the course of a year; fish with only local movements were assigned a 20% probability of being close to the channel. Note these numbers were selected to err towards higher entrainment rates and could be tested via sensitivity analysis."</p> <p>This movement and life history information was obtained from standard fisheries references for BC (e.g., McPhail et al. 2007 The Freshwater Fishes of British Columbia., Ford et al. 1995 Literature Reviews of the Life History, Habitat Requirements and mitigation/compensation strategies for thirteen sport fish species in the Peace, Liard, and Columbia River drainages of British Columbia) and supplemented with information from baseline studies described in Volume 2 Appendix O.</p> <p>Species were classified with 'Extensive movement' if they: a) undertake long distance directed movements upstream or downstream from their usual station in the river, usually at a particular time of year and life stage, b) move moderate distances in random directions in the course of their daily activities, often varying with season (e.g. sedentary in winter, mobile in summer), c) normally orient to other fish or items (e.g. zooplankton) in the water column rather than fixed structures (bottom, weeds), or d) prefer reservoir habitats and especially the type of habitat exists at entrance to the approach channel and turbine intakes.</p>
ab_0001-448	Treaty 8 Tribal Association	V.2, Appendix – Q2 ; page(s) 43 ; line(s) n/a EISG n/a Comment 2-269.	<i>The percentage of adults with access to spawning habitat (a measure of spatial distribution and an indicator relating to adult spawning) varies between 75% and 88%. Correction</i> Under Hypothesis 1 the percentage of adults with access to spawning habitat does not match the table.	The values listed in Table 8 are correct. This text should read "...between 75 and 99%."
ab_0001-449	Treaty 8 Tribal Association	V.2, Appendix – Q2 ; page(s) 44 ; line(s) n/a EISG S.10.2.4 Comment 2-270.	<i>During the workshop the view was expressed that a75% tributary collection efficiency is highly unlikely without an extreme and undesirable intervention in the Moberly River to screen for juveniles. A 25% collection rate was therefore considered to be a more likely value for this parameter. The view was also expressed that the population in the Moberly River may not be sustainable over the long term given these loss rates and associated 68% reduction in abundance under this scenario. Information Request</i> Provide a rationale for the statement that Arctic Grayling in the Moberly River may not be sustainable over the long-term.	An objective of this appendix (Volume 2 Appendix Q2) is to document the assessment process and outcomes (as per Section 1.2 Context for this Report). For the text referenced in this Information Request, the appendix documents the view expressed by workshop participants, which included experts in stock assessment and population dynamics. Population modelling for Arctic grayling in the Moberly River is further described in Volume 2 Appendix Q3. Specifically, Section 4.2 describes the potential effectiveness of mitigation options. Potential effects of the Project on the persistence of Arctic grayling in the Moberly river are further described in the effects assessment for fish and fish habitat (Section12).
ab_0001-450	Treaty 8 Tribal Association	V.2, Appendix – Q2 ; page(s) 52 ; line(s) n/a EISG S.10.2.4	<i>Modelling results indicate that fish passage mitigation is not expected to be biologically necessary to maintain population-level conservation values of any species of fish in the Peace River under the range of biological assumptions examined. Comments</i> The conclusions rely on modeling – as discussed above.	Experience from reservoirs and downstream environments at other generating stations is incorporated throughout the fish passage assessment. Input from external fish passage experts brought experience from fish passage assessments and facilities across North America and Europe (Volume 2 Appendix Q2, Section 2.2). These experts provided input and authored key

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		Comment 2-271.	Information Request BC Hydro is asked to: a) provide a description of experience from other generating stations for both reservoirs and downstream environments for additional information on the risks and benefits of providing fish passage; and b) include in the assessment in part a) the effects to the downstream fish community (not just the reservoir).	components of the assessment in Volume 2 Appendix Q4 Fish Passage Management Plan, Attachment C Fish Passage Expert Reports, which include historical perspectives for the provision of upstream and downstream fish passage in North America. Population modelling is based on information from other facilities for parameters such as passage efficiency (Volume 2 Appendix Q3). The Fish Passage Management Plan is an adaptive, consistent with adaptive approaches employed at other generating facilities.
ab_0001-451	Treaty 8 Tribal Association	V.2, Appendix – Q2 ; page(s) 52 ; line(s) n/a EISG S.10.2.4 Comment 2-272.	<i>Modelling results indicate that fish passage mitigation is not expected to be biologically necessary to maintain population-level conservation values of any species of fish in the Peace River under the range of biological assumptions examined. Comments This quote does not seem to match the subsequent statement with respect to Arctic grayling: <i>There are potential impacts of the Project on Arctic grayling from the creation of the reservoir. An alternative was examined that combines downstream tributary collection of Arctic grayling in the Moberly River with upstream passage for Arctic grayling. Biological modeling estimated 68% reduction in abundance under this scenario, using a likely downstream collection efficiency of 25%. Some workshop participants expressed doubt as to whether this would maintain a sustainable population over the long term. Thus, it is uncertain whether fish passage could maintain Arctic grayling in the Moberly.</i> Comments If Arctic grayling are not expected to persist, and fish passage is not a suitable mitigation measure, then this should be reflected in the overall conclusion.</i>	These quotes are consistent. Fish passage alternatives were not predicted to mitigate the potential effects of the Project on Arctic Grayling in the Moberly River. These potential effects on Arctic grayling in the Moberly river are described in this section on Conclusions.
ab_0001-452	Treaty 8 Tribal Association	V.2. Appendix -Q3, Attachment B ; page(s) n/a; line(s) n/a EISG S.10.2.4 Comment 2-273.	Comments Reporting on bull trout model results (Section 3.1.2) should always separate upstream and downstream populations to distinguish fish in the reservoir from those below the generating station. Is it realistic to assume (as done in the model) that adults downstream of the GS will have no access to alternate spawning habitats?	Section 2.5 of Volume 2 Appendix Q3 describes all of the assumptions for the single species model of bull trout, which does distinguish between upstream and downstream populations of bull trout. The model uses a conservative assumption that spawning will only occur in the Halfway River, based on the review of information presented on page 18 of Volume 2 Appendix Q3.
ab_0001-453	Treaty 8 Tribal Association	V.2. Appendix -Q3, Attachment B ; page(s) n/a; line(s) n/a EISG S.10.2.4 Comment 2-274.	Comments The analysis of Kokanee provided in this appendix references other reservoirs, which increases confidence in the results. Information Request BC Hydro is requested to: a) indicate whether model results are realistic in comparison to what has been observed in existing reservoirs; b) indicate whether it is realistic to assume that the number of Age 3 juveniles is not dependent on the number of eggs produced (and therefore the number of spawners) as shown on Figure 3.1; and c) provide any examples where Arctic grayling have either persisted or not persisted in rivers tributary to reservoirs	It is not clear which specific model result in the EIS this Information Request regarding comparing is referring to. The kokanee model was developed on information from kokanee populations residing in reservoirs and lakes in British Columbia and the Pacific Northwest. Refer to Section 4.3 Kokanee for a description of model results. The modelling approach and model parameterization are based on baseline information from the Local Assessment Area as well as information from populations in other watersheds and reservoirs (e.g., sub-sections 2.5.3 for bull trout, and 2.6 for Arctic Grayling).

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			with a trap and haul program as being examined here.	<p>Sub-section 2.5.3 of Volume 2 Appendix Q3 describes the stock productivity and the Beverton-Holt stock recruitment model for bull trout that spawn in the Halfway River, and compares these with information from other bull trout populations. Model results include sensitivity analyses for stock productivity (i.e., the parameters in the Beverton-Holt stock recruitment model).</p> <p>Tributary-based collection systems with downstream transport are described in Volume 2 Appendix Q4 Attachment C-2. The fish passage assessment (Volume 2 Appendix Q2) concluded that tributary-based collection and downstream transport would not be effective to mitigate risks to Arctic grayling in the Moberly River. Therefore, the Project does not propose tributary-based collection to mitigate the potential effects of the Project on Arctic grayling in the Moberly River.</p>
ab_0001-454	Treaty 8 Tribal Association	V.2, Appendix Q5, Attachment D-1 – Trap and Haul Conceptual Design ; page(s) 1 ; line(s) n/a EISG S.10.2.4 Comment 2-275.	Information Request Provide the rationale for the upstream migration window, April 1October 31.	The expected upstream migration window is based on fish movement information from telemetry studies, which are summarized in Section 6.1 of Volume 2 Appendix O.
ab_0001-455	Treaty 8 Tribal Association	V.2, Appendix Q5, Attachment D-1 – Trap and Haul Conceptual Design ; page(s) 2 ; line(s) n/a EISG S.10.2.4 Comment 2-276.	<i>Mature bull trout completing their upstream spawning migration are the primary target fish for upstream passage.</i> Information Request BC Hydro is asked to clarify whether these bull trout are from downstream or those that left the reservoir and are now planning to return.	The Fish Passage Management Plan (Volume 2 Appendix Q1) states that management and transportation plans will be developed for each species, including bull trout. These plans may include input from a technical advisory committee and would be adaptive, based on information collected under Follow-up programs in the Fish Passage Management Plan.
ab_0001-456	Treaty 8 Tribal Association	V.2, Appendix Q5, Attachment D-	<i>The trap and haul facilities that would be in operation during diversion have been located on the left bank at the outlet of the diversion tunnel on spoil area L6. The facilities would be in operation during the target fish migration window,</i>	As described in the Introduction for this Appendix (Appendix Q5), designs of the trap and haul facilities (both during diversion and the permanent facility) are based on information from the fish passage assessment process, particularly the Upstream Fish Passage Assessment (Volume 2

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		1 – Trap and Haul Conceptual Design ; page(s) 4 ; line(s) n/a EISG S.10.2.4 Comment 2-277.	<i>after the river has been diverted. See Figure 1 for location and layout of the facilities during diversion. Information Request BC Hydro is asked to: a) provide the basis for the trap and haul operation entry location during the diversion portion of the proposed Project; and b) clarify whether the hydraulic modeling to locate the entrance indicated by the Upstream Fish Passage Assessment has been completed.</i>	Q4 Attachment C-1). The Upstream Fish Passage Assessment describes the basis for selecting the entrance locations. Hydraulic modelling (2D) results were used to select these entrance locations. More detailed hydraulic modelling is ongoing as part of the Definition Design phase for the trap and haul facilities. The Definition Design phase is described in Volume 2 Appendix Q1, Section 2.2.2.
ab_0001-457	Treaty 8 Tribal Association	V.2, Appendix Q5, Attachment D-1 – Trap and Haul Conceptual Design ; page(s) 8 ; line(s) n/a EISG S.10.2.4 Comment 2-278.	Information Request As for construction, BC Hydro is asked to: a) provide the basis for the trap and haul operation entry location during the operations portion of the proposed Project; and b) clarify whether the hydraulic modeling to locate the entrance indicated by the Upstream Fish Passage Assessment has been completed	Please see the response to ab_0001-456.
ab_0001-458	Treaty 8 Tribal Association	V.2, Appendix Q5, Attachment D-3 Engineering Feasibility of Angled Bar Racks for Downstream Fish Passage ; page(s) 13 ; line(s) n/a EISG S.10.2.4 Comment 2-279.	<i>The purpose of this memorandum was to complete a pre-screening exercise to determine if further design was required to assess angled bar trash racks as a viable option for Site C. Angled bar trash racks are not considered suitable downstream fish passage technology Comments Overall conclusion that this is not feasible for a large generating station is in agreement with conclusions at other sites.</i>	Thank you for your comment.
ab_0001-459	Treaty 8 Tribal	V.2, Appendix Q4,	<i>Fish Mortality During River Diversion for Construction of Peace River Site C Clean Energy Project Comments The assessment of fish mortality during river</i>	The authors of this appendix (Q4 Attachment C-4) and the fish passage expert panel were not aware of information on fish survival through diversion tunnels or low-level outlets with physical

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	Association	Attachment C-4 ; page(s) n/a; line(s) n/a EISG S.10.2.4 Comment 2-280.	diversion for construction appears reasonable but there would be greater confidence if there were some actual measurements. Information Request Provide any available measurements of fish mortality during passage through similar diversion tunnels located elsewhere.	characteristics comparable to the tunnels proposed for the construction of the Project. The approach in the assessment (Appendix Q4 Attachment C-4) was: "While there are no models available to directly calculate survival through such systems, the authors, in consultation with Mike Ramey of R2, have assessed the factors which might result in fish injury and mortality with reference to the literature and provided our judgment on the likelihood of their occurrence."
ab_0001-460	Treaty 8 Tribal Association	V.2 Appendix R – Part 1 ; page(s) 79 ; line(s) n/a EISG S.11.2.4, S.9.1, S.8.5.3 Comment 2-281.	<i>Once established, seeds from new populations may be carried by wildlife, domestic stock, wind and water to new locations. Invasive exotic species can often out-compete native vegetation, especially on disturbed sites.</i> Comments The EIS does not appear to make any mention of the potential cumulative effects of multiple reservoirs on the spread of invasive plant species in the river system. Information Request BC Hydro is requested to: a) clarify whether there is any data and analysis regarding introduced plant species in the Dinosaur and Williston reservoirs and surrounding other hydroelectric infrastructure in the upper watershed; and b) clarify whether there are any invasive species of concern in the upper watershed.	The scope of the Vegetation and Ecological Communities assessment was conducted in accordance with the EIS Guidelines and appropriate information was provided in the EIS. BC Hydro manages invasive plant species at all its facilities, and will do so for the Project. BC Hydro will work with appropriate regulatory authorities in the development of management plans for invasive species.
ab_0001-461	Treaty 8 Tribal Association	V.2 Appendix R – Part 1 ; page(s) 80 ; line(s) n/a EISG S.3.3.3, S.11.2.4 Comment 2-282.	<i>Some ecosystems, such as the floodplain and riparian communities, are adapted to fluctuating flows and periodic inundation (Rood and Goater 2007; Whited et al. 2007) and it is difficult to predict the effects of reservoir operations on them.</i> Information Request BC Hydro is asked to: a) provide more information about the relationship between the expected operating regime of the new reservoir and predicted shoreline vegetation development (including species richness and structure of vegetation communities) based on references from other boreal hydroelectric reservoirs; and b) although the operating regimes are not the same, describe the riparian vegetation communities that have developed post-inundation in the Dinosaur and Williston reservoirs.	The scope of the Vegetation and Ecological Communities effects assessment is in accordance with the EIS Guidelines and information is provided in the EIS The upper Peace Watershed is outside the LAA and the scope of the environmental assessment.
ab_0001-462	Treaty 8 Tribal Association	V.2 Appendix R – Part 1 ; page(s) 449 ; line(s) n/a EISG S.11.2.4 Comment 2-283.	<i>Appendix H Conceptual Mitigation Plan for BC Hydro Lands West of Wilder Creek</i> Comments This mitigation plan presents no supporting evidence to suggest the results that it may achieve. Information Request BC Hydro is requested to: a) provide references to documentation detailing similar wetland habitat creation initiatives in similar environments including discussion of vegetation species richness and diversity attained relative to wetlands lost from the system, as well as relative habitat use by wildlife; and b) provide updates on wetland habitat creation efforts adjacent to the Williston reservoir.	The requested information is outside the scope of the environmental assessment. The plan presented in Appendix H is conceptual. BC Hydro will work with appropriate regulatory authorities in the development of mitigation measures.
ab_0001-463	Treaty 8 Tribal	V.2, Appendix S ; page(s) 45 ;	<i>Wetlands take in approximately 4.3 Pg C/yr due to net photosynthesis, and are thought to release between 0.08 and 0.11 Pg C/yr to the atmosphere as CH₄,</i>	"Wetlands" as noted, is a very broad term, but generally wetlands are locations that accumulate large quantities of carbon. Flooding wetlands can result in the decomposition of large quantities

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	Association	line(s) n/a EISG S.13.2.3 Comment 2-284.	<i>and about 0.325 Pg C/yr to rivers and lakes as DOC. Information Request Explain the implications for net GHG emissions resulting from the flooding of wetlands.</i>	of biomass that have accumulated over centuries. Modelling of such areas with the Project activity zone was included and presented in Volume 2, Appendix S, Section 8.2.5.
ab_0001-464	Treaty 8 Tribal Association	V.2, Appendix S ; page(s) 46 ; line(s) n/a EISG S.13.2.4 Comment 2-285.	<i>Tremblay et al. (2004a) reported on CO2 fluxes from over 280 locations in Canadian reservoirs, rivers, and natural lakes. Their results indicated that water quality and the input of carbon from terrestrial systems affected CO2 fluxes from water bodies, and that reservoirs older than about 10 years had CO2 fluxes comparable to those of natural ecosystems. They concluded that the higher emissions associated with flooding in young reservoirs would last approximately six to eight years. In an old Quebec reservoir, mean measured emission rates of CO2 were around 1.6 g CO2/m2/day, whereas natural lakes had emission rates around 0.74 g CO2/m2/day. Information Request The Proponent is asked to: a) clarify, given the evolution of flux measuring methods in recent years, how much weight should be given to the values reported by Tremblay et al. (2004a); and b) if it is true that the higher emissions associated with flooding in young reservoirs last only six to eight years, explain how, in an old Quebec reservoir, mean measured emission rates of CO2 were more than twice as high as those of natural lakes.</i>	Emissions from reservoirs over time will vary between reservoirs, based on their specific conditions. Similarly emissions from natural lakes may vary by orders of magnitude. Higher emissions from reservoirs in the first few years are relative. Information relevant to this process and relative values is provided in Volume 2 Appendix S, Section 8.
ab_0001-465	Treaty 8 Tribal Association	V.2, Appendix S ; page(s) 47 ; line(s) n/a EISG S.13.2.4 Comment 2-286.	<i>the potential effects of drawdown configurations (i.e., bottom or mid-depth drawdown scenarios may involve water that has elevated GHG concentrations in comparison with surface drawdown scenarios); Information Request Clarify whether the effects of drawdown configurations on GHG emissions are addressed in the EIS and, if not, comment on the potential effects of different drawdown scenarios for the proposed Project.</i>	Drawdown configurations for the Project would have no effect on the emission estimates from the GHG modelling, as emissions are modelled from flooded biomass based on decomposition rates and include emissions based on atmospheric release of GHGs upstream and downstream of the reservoir.
ab_0001-466	Treaty 8 Tribal Association	V.2, Appendix S ; page(s) 67 ; line(s) n/a EISG S.13.2.4 Comment 2-287.	<i>However, due to the lack of information on CO2 concentrations in the Peace River, a review of the CO2 surface to air emission fluxes was carried out. Information Request Clarify whether this was a literature review and, if not, describe the measurements carried out.</i>	Values were estimates based on a literature review and comparison of specific system characteristics (pH, Temperature) that would affect values used. The approach and results of the review are described in Volume 2 Appendix S Section 8.2.6.
ab_0001-467	Treaty 8 Tribal Association	V.2, Appendix S ; page(s) 67 ; line(s) n/a EISG S.13.2.4 Comment 2-	<i>Therefore, it was assumed that the 462 mg CO2/m2/d would be representative of the summer period (223 d) and the winter period (142 d) would have an emission flux equal to ½ the summer flux. After the calibration process, the summer period emission flux was equal to 615 mg CO2/m2/d, which is slightly higher than the mean for BC rivers, but well within the range of values and also</i>	This section of the technical report does not describe emissions flux for the proposed reservoir; it describes the approach taken to determining emissions from lakes and rivers under current conditions within the study area.

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		288.	<p><i>closer to the value of 920 mg CO₂/m²/d reported by Tremblay et al. (2005) for the Williston reservoir directly upriver. The winter period flux was then equal to 308 mg CO₂/m²/d. Comments The post-calibration emission flux value of 615 mg/m²/d is only 67% of the 920 mg reported for the Williston reservoir.</i></p> <p>Information Request Explain why, in your view, it is plausible that the emissions flux in the proposed reservoir should be 1/3 lower than that of the Williston reservoir.</p>	
ab_0001-468	Treaty 8 Tribal Association	V.2, Appendix S ; page(s) 67 ; line(s) n/a EISG S.13.2.4 Comment 2-289.	<p><i>For lakes in the Site C Study Area, a value of 763 mg CO₂/m²/d was used to represent the lake CO₂ diffusive fluxes. This value is based on nearby Charlie Lake, as reported in Tremblay et al. (2005). As this value is based on the summer diffusive flux, and lakes in this area are ice-covered during winter, this rate was assumed to apply to the summer period of 223 d only. While it is acknowledged that some decomposition occurs during winter and ice-breakup results in a significant immediate release of gases that have accumulated over the winter, this flux rate is based on the summer period and applied to the spring and fall when it would be somewhat lower than 763 mg CO₂/m²/d. This compensates for the gases released from winter decomposition. Information Request Indicate your degree of confidence in the assumption that the lower flux rates in spring and fall compensate for the accumulated emissions during the winter.</i></p>	This assumption is reasonable based on the fact that temperature drives emission rates, and rates based on summer temperatures would be relatively high compared to spring and fall temperatures, and because winter decomposition and emissions would be relatively low.
ab_0001-469	Treaty 8 Tribal Association	V.2, Appendix S ; page(s) 72, 60, 72; line(s) n/a EISG S.13.2.4 Comment 2-290.	<p><i>LARGE RUMINANTS: As the above water land of the Site C Study Area post-inundation is reduced to a 30 m buffer beyond the maximum flood level, it was assumed that all livestock within the Study Area would be removed from the Study Area and that wild ruminant populations would be reduced to approximately 13% of current condition population levels in a manner proportional to the reduction in land surface area post-inundation (Table 8.6).</i></p> <p><i>Table 8.3 Estimated Number of Wild Ruminants and Livestock Within the Site C Study Area and Estimated Emissions per Animal for each Species</i></p> <p><i>Table 8.6 Methane Emissions of Ruminant Vertebrates in the Site C Study Area Postinundation Comments The net Project-related emissions for ruminants are based on the difference between Table 8.3 and Table 8.6. In the latter table, emissions from domestic ruminants are zero. If livestock within the Study Area are relocated away from the Study Area, rather than being slaughtered, their GHG emissions remain unchanged. Transfers of emissions from within a study area to outside the study area are commonly referred to as leakage.</i></p> <p>Information Request The Proponent is asked to: a) confirm that the reduction in emissions from domestic livestock observed between Table 8.3 and Table 8.6</p>	<p>The modeled assumption of reduction in emissions from domestic livestock does reduce the modeled net Project emissions. Conversely, had the baseline model assumed expanded domestic livestock use within the Project activity zone over the next 100 years, as described in Section 20 future agricultural use without the Project, the effect on modeled net Project emissions would have been greater than the effect of assuming livestock were not relocated. Therefore, assumptions about future livestock use overall are conservative.</p> <p>If, as the comment suggests, ruminants were simply relocated outside of the Project activity zone then their emissions would not change. However, to do so, these areas would currently have to have excess capacity to receive these ruminants regardless of the Project. If these lands have excess capacity then ruminant use of land outside the Project activity zone may reasonably be expected to increase in these areas in the future. Therefore, in the future with the Project, emissions from ruminants in the study area are reasonably assumed to be 0, and the Project would not change the capacity of land outside the study to support an increased ruminant population.</p> <p>For wild ruminant populations, it is assumed that over a short period of time some individuals from within the study area would die because displaced animals would mean rises in densities of the surrounding landscape, which could likely not support all of the additional animals; however,</p>

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			has the effect of reducing net emissions from the proposed Project; b) confirm that, insofar as domestic livestock populations are relocated away from the study area, this reduction constitutes leakage, and, if so, restate the conclusions, taking into account the fact that methane emissions from livestock are not actually reduced, but only displaced out of the study area; c) clarify whether the assumption that wild ruminant populations within the study area will be reduced to 13% of current condition population levels implies that the remaining 87% will die, or that they will migrate out of the study area; d) if it is assumed that the populations will migrate out of the study area, explain why they should not also be considered leakage, and excluded from the analysis; and restate your conclusions, taking into account the fact that methane emissions from wild ruminants are not actually reduced, but only displaced out of the study area.	over time the populations would return to natural carrying capacity through natural mortality factors (disease, starvation, predation). This would not be leakage for the reasons above.
ab_0001-470	Treaty 8 Tribal Association	V.2, Appendix S ; page(s) 77 ; line(s) n/a EISG S.13.2.4 Comment 2-291.	<i>The final fate of all carbon flooded during inundation is unknown and hard to predict. Information Request</i> Describe the assumptions regarding the final fate of carbon flooded during inundation that underlie the analysis.	The assumptions used to predict the final fate of carbon are described in the GHG Technical Data Report Volume 2 Appendix S Section 8.4, and a sensitivity analysis on the assumptions made for biomass burial and emissions from merchantable timber are described in Section 8.7 of Appendix S.
ab_0001-471	Treaty 8 Tribal Association	V.2, Appendix S ; page(s) 78 ; line(s) n/a EISG S.13.2.3 Comment 2-292.	<i>This volume of cleared vegetation outside the reservoir area is considerably higher than the 2009 estimate of 184,906 m3. Information Request</i> Explain the reasons for the change in the volume of cleared vegetation outside the reservoir.	More precise clearing estimates were provided for clearing requirements associated with all areas within the Project activity zone. The vegetation inventory update is described in Volume 1 Appendix A Vegetation, Clearing and Debris Management Plan, Appendix B.
ab_0001-472	Treaty 8 Tribal Association	V.2, Appendix S ; page(s) 81 ; line(s) n/a EISG S.13.2.3 Comment 2-293.	<i>The calibrated value of 615 mg CO2/m2/d is likely a conservative estimate given that the mean emission flux for BC reservoirs greater than 29 years old is 198 mg CO2/m2/d, though the Williston reservoir averages 920 mg CO2/m2/d (Tremblay et al., 2005). Information Request</i> Explain the reasons why the emission flux from the Williston reservoir should be more than 7 times greater than the mean emission flux for BC reservoirs greater than 29 years old.	Commentary on the reasons for the sampled emission flux rate from the Williston Reservoir and other sampled BC reservoirs is outside the scope of the environmental assessment.
ab_0001-473	Treaty 8 Tribal Association	V.2, Appendix S ; page(s) 83-84 ; line(s) n/a EISG S.13.2.4 Comment 2-	<i>The gross nitrous oxide emissions factor from crop production is estimated to be 6.49x10⁻³ tonnes N2O/ha/yr; of which 27.1% originated from soil, 65.6% from crop residue and 7.3% from fertilizer application (Sauvé, 2000). Post-inundation N2O emissions from crop production (57.6 ha) are estimated to be 116 tonnes CO2e/yr. Information Request</i> The Proponent is asked to: a) state the pre-and	Nitrous oxide emissions are available in Volume 1 Appendix S, Section 8.3, page 71 and Section 8.5, page 83, stated as pre-inundation emissions 6.59 t N2O/year, and post-inundation emissions are 0.37 t N2O/year. Agricultural operations were not assumed to relocate outside of the Project area. Predicting the effect of a relocation of agriculture would require knowing exactly to where it would be

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		294.	post-project values of nitrous oxide emissions in both tonnes N2O/yr and in tonnes CO2e/yr; b) make explicit the assumptions with respect to the percentage of agricultural activity currently within the proposed Project area that will move to other areas that are not now in cultivation, versus the percentage that will cease entirely; and c) In the event that it is estimated that a certain percentage of agricultural activity currently within the proposed Project area will in reality move to other areas that are not now in cultivation, restate the conclusions taking into account this leakage.	relocated. Further, similar to response to ab_0001- 469, agricultural operation on land not currently in use for agricultural purposes may expand in areas outside of the Project, regardless of the Project. Changing the assumptions about relocated agricultural operations would not change the outcome of the assessment of Project effects on greenhouse gas emissions.
ab_0001-474	Treaty 8 Tribal Association	V.2, Appendix S ; page(s) 85 ; line(s) n/a EISG S.13.2.4 Comment 2-295.	<i>Beyond year 30, under both scenarios, emission rates completely stabilize at approximately 10,730 tonnes CO2e/yr and fall just over current conditions estimates of 5,700 tonnes CO2e/yr compared to initial emission estimates of two orders of magnitude higher (Figure 8.5).</i> Information Request Confirm that the post-Project emissions beyond year 30 are almost 90% higher than the current emissions.	The current emission rate predicted in the carbon model is about 5,700 tonnes CO ₂ e/year. The Project contribution for both scenarios (conservative and likely) beyond year 30 is about 10,700 tonnes CO ₂ e/yr, which is about 90% greater than the current value.
ab_0001-475	Treaty 8 Tribal Association	V.2, Appendix S ; page(s) 85 ; line(s) n/a EISG S.13.2.4 Comment 2-296.	<i>Surface water CO2 fluxes were not directly compared to those reported in the literature. It was considered unreasonable to compare absolute emission rates from one reservoir to another, as each system is unique and emission rates depend on the method used for sampling, the residency time and mass of biomass buried, and on the limnological conditions of the system (e.g., pH; Soumis et al., 2004). Furthermore, given that this model does not divide emissions into emissions from vegetation cleared outside the reservoir, reservoir surface emissions, turbine and spillway degassing emissions, and emissions downstream of the dam, CDOX3 (water:air diffusive fluxes) estimates post-inundation would be higher than those measured only from the reservoir surface. Therefore, a direct comparison would be misleading.</i> Information Request Justify the frequent use of data from Tremblay et al., in light of this citation.	Comparing overall emission rates from the Project, including all the various sources of emissions, would not be comparable to estimates of emissions from simply the surface of the reservoirs, as is measured in various studies. However, these data are used in appropriate contexts where relevant.
ab_0001-476	Treaty 8 Tribal Association	V.2, Appendix S ; page(s) 94 ; line(s) Table 9.2 EISG S.13.2.4 Comment 2-297.	Comments A value of 32 g/kWh is used for Electricity Consumption. Information Request BC Hydro is asked to: a) explain the justification for the value of 32 g/kWh used for Electricity Consumption in B.C.; and b) provide the CO2e emissions value applied to B.C. hydropower.	This value is reported in Environment Canada 2012, National Inventory Report, Part 3, Table A13-11, for the province of B.C. (not only for BC Hydro), and this report does not distinguish emissions from BC hydroelectric generation. This table does report that, in 2010, 44,440 of the total 48,200 GWh generated in BC is hydroelectric. This document notes that in BC and Quebec, electricity generation emissions are low due to over 95% hydroelectric generation. In 2010, BC Hydro reported an emission intensity of 6 g/kWh associated with its total BC Hydro electric generation, (available at: http://www.bchydro.com/about/accountability_reports/2011_gri/f2011_environmental/f2011_environmental_EN16_2.html).

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ab_0001-477	Treaty 8 Tribal Association	V.2, Appendix S ; page(s) 103-104, 77 ; line(s) n/a EISG S.13.2.4 Comment 2-298.	<i>Post-inundation, there would also be erosion of new shorelines, particularly if the reservoir banks are primarily formed of sedimentary materials and have relatively steep slopes. This erosion would deposit large quantities of sandy sediment over the organic horizon of the flooded area, and would potentially bury and permanently store some of this organic matter beneath sediment. The timing, magnitude, and spatial extent of this process are difficult to forecast precisely, but the sensitivity of the model to this process was assessed by examining the effects of biomass burial of up to 20% of flooded biomass. Coincidentally, with the multitude of processes and pathways modeled, reservoir net emissions (not including construction or fuel consumption) were directly proportional to the fraction of biomass that was buried (Table 8.10). This underlines the magnitude of effect that biomass decomposition plays in the emissions from reservoirs. However, the proportion of biomass that may become buried as a result of sedimentation and shoreline erosion, particularly mass failures (Kondratjev, 1966; Holmstead, 2001), is unknown. Therefore, it was conservatively assumed that under the conservative scenario no biomass burial would occur, though the effect of this was assessed in the sensitivity analysis (Section 8.7).</i> Information Request The Proponent is requested to: a) clarify whether reservoir net emissions (not including construction or fuel consumption) were directly proportional to the fraction of biomass that was buried or indirectly proportional; and b) confirm that, in the conservative scenario, it was assumed that there would be no biomass burial.	Page 103, last line, should read as follows: The net emissions are inversely proportional to the fraction of biomass that was buried. This update has been added to the List of Errata and Updated Information. The conservative scenario was modeled with the assumption of zero biomass burial.
ab_0001-478	Treaty 8 Tribal Association	V.2, Appendix S ; page(s) 105 ; line(s) n/a EISG S.1.3, S.13.2.4 Comment 2-299.	<i>This type of reservoir is characterized as a run-of-river type project rather than a traditional reservoir hydro project. The IEA (2000) reported that run-of-river hydro projects are among the lowest emitting of all generating types, which is consistent with this study's results.</i> Comments The information from IEA (2000) is taken out of context. Table 11 of the IEA (2000) report includes projects less than 10 MW, projects for which reservoir emissions were not included, and true run-of-river projects that involve a river diversion and not a reservoir. The information is not comparable to the proposed Project. Information Request The Proponent is requested to either provide the proper context for the information from IEA (2000) report or remove it from the EIS.	BC Hydro has considered the suggestion, and due to the Project having a very small inundation area compared to the energy generated, and minimal fluctuation in water levels planned for operation, the citation remains appropriate in the context used.
ab_0001-479	Treaty 8 Tribal Association	V.2, Appendix S ; page(s) 105 ; line(s) n/a EISG S.13.2.3 Comment 2-	<i>In contrast to these figures, IRN (2006) estimated that, among other sources of electricity, modern coal-fired generating stations emit approximately 1,000 g CO₂e/kWh, and existing natural gas combined cycle generators emit approximately 545 g CO₂e/kWh (Table 10.1).</i> Information Request BC Hydro is requested to: a) comment on the credibility of IRN (2006) as a source for	Sources for thermal emission factors within IRN (2006) are credible, see also ab_0001-390. Each coal or gas plant will have different emission rates depending on the specific design, and the cited literature presents representative ranges. Other lower values for gas plants may be reported in other references; however, they would still by many times greater than the average annual emissions associated with the Project, and therefore would not change the outcome of

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		300.	thermal emissions factors; and b) confirm the value of 545 g CO2e/kWh for modern natural gas combined cycle generators.	the assessment of the effects of the Project on greenhouse gas emissions. Commentary or research into the future potential GHG emission rates for gas plants is outside the scope of the environmental assessment.
ab_0001-480	Treaty 8 Tribal Association	V.2, Appendix S ; page(s) 107 ; line(s) n/a EISG S.13.2.3 Comment 2-301.	Information Request Confirm that the annual energy production used to calculate unit emissions in Teodoru et al., 2012 corresponds to the energy produced by the Eastmain-1 reservoir.	Teodoru et al, 2012, cites, in section 3.4 of that article, that the net carbon emissions per energy generation used the currently installed capacity of 2.7 TWh.
ab_0001-481	Treaty 8 Tribal Association	V.2, Appendix S V.2, Appendix D – Part 1 ; page(s) 109, 47, 9 ; line(s) 2-7 EISG S.13.2.4, S.3.3.3 Comment 2-302.	<i>Mitigation of emissions resulting from operational activities is limited and has received very little attention in the literature. ...the key issues raised by the IRN that are relevant to the Project, and which will be addressed in this report, include the following: • the potential effects of drawdown configurations (i.e., bottom or mid-depth drawdown scenarios may involve water that has elevated GHG concentrations in comparison with surface drawdown scenarios); The simulated operation of the Project shows that the Site C reservoir would be operated within the top 0.6 m, between elevations 461.8 and 461.2 m, over 99 per cent of the time. Similarly, daily reservoir level fluctuations would be less than 0.6 m over 99 per cent of the time. The use of the full 1.8 m normal reservoir operating range, between elevations 461.8 and 460.0 m, would still be required, but the duration of time the reservoir is drafted to the lower levels would be less than 1 per cent of the time. Information Request BC Hydro is requested to: a) indicate how many times per year the full 1.8 metre reservoir operating range will be used; b) provide a histogram or other chart indicating the frequency of different levels of drawdown; c) comment on the potential differences in GHG emissions of 1) operation of the proposed reservoir at a constant level, and 2) operation of the proposed reservoir with drawdown frequencies as indicated in the histogram provided in part b); d) confirm that the analysis presented here is coherent with the assumption of constant operating levels; e) elaborate on the factors that would contribute to determining the GHG emissions in a scenario of fluctuating reservoir levels; and f) provide references to the scientific literature that addresses this question.</i>	As described in Section 11.4.4.2.1 of the EIS, it is expected that the Site C reservoir levels would be maintained within the top 1.2 m at least 94% of the time, and within the top 0.6 m at least 83% of the time. Information on the daily range of water levels (within the 1.8 m normal operating range) is also provided in this section. BC Hydro does not have a histogram for this data. Based on the modelling, drawdown frequency would not result in a materially different GHG estimate given that emissions are primarily based on decomposition of flooded organic matter and not on GHG concentrations in water at different levels. This method allowed for any potential emissions from water downstream of the dam to be included in the GHG emissions, though most studies do not include this in their measurements. Changes in reservoir levels that are typical of the Project operation would not result in material changes to the generation and release of GHGs, and would not change the result of the assessment of the effects of the Project on greenhouse gas emissions
ab_0001-482	Treaty 8 Tribal Association	V.2, Appendix S ; page(s) 110 ; line(s) n/a EISG S.13.2.4,	<i>Land conversion as a result of reservoir impoundment is principally based on engineering design and requirements to maximize the generating capacity of the facility. However, evaluating cost-benefit trade-offs from optional design and generation specifications may identify design options that would result in little</i>	GHG was an environmental parameter considered in the review of the alternate sites contained in Volume 1 Appendix E.

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		S.4.3 Comment 2-303.	<i>reduction in generating potential, yet significant reductions in land conversion and concomitant GHG emissions from loss of carbon stocks. Information Request</i> Describe in quantitative terms the comparative GHG emissions of the proposed Project and the alternate designs presented in section 6.4.1 of the EIS or, if is not possible to make this comparison in quantitative terms at this time, provide it in qualitative terms.	
ab_0001-483	Treaty 8 Tribal Association	V.2, Appendix S ; page(s) 110 ; line(s) n/a EISG S.13.2.4 Comment 2-304.	<i>By comparison, the values obtained from the 2012 revised carbon model are similar, but higher than the values from 2009 (Table 10.3). Comments</i> The emissions intensities reported in Table 10.3 for the 2012 study are 30-35% higher than those of the 2009 study. Information Request Explain the reasons that contribute to an estimate of emissions intensities 30-35% higher than those reported in 2009.	As described in Volume 2 Appendix S the modeling was updated in consideration of: - updated information associated with the updated Project design that resulted in updates to the areas needing to be cleared, and to construction material estimates, - more precise and lower estimates of sedimentation within the reservoir - adjustments to some emissions values based on more recently published literature As described in Section 10.5 of the appendix, the increase in the estimate is largely due to more precise and higher estimates of biomass removed, as well as more precise and lower estimates of sedimentation within the reservoir.
ab_0001-484	Treaty 8 Tribal Association	V.2, Appendix T ; page(s) 4 ; line(s) n/a EISG S.23.1 Comment 2-305.	<i>There are two broad categories of downscaling methods: statistical downscaling and dynamical downscaling (Buerger et al., 2012). Statistical downscaling uses models that are based on relationships between largescale atmospheric variables and local-scale variables. In dynamic downscaling, finer scale regional climate models are nested within coarse global climate models over the region of interest. Information Request</i> Describe the strengths and weaknesses of both statistical downscaling and dynamic downscaling.	Strengths and weaknesses of statistical and dynamic downscaling are described in Section 2.3 of the report "BCSD Downscaled Transient Climate Projections for Eight Select GCMs over British Columbia, Canada" (Pacific Climate Impacts Consortium (PCIC), 2011). This report was one of four PCIC reports which summarize the results of the collaboration with BC Hydro on investigating the future impact of climate change on stream flow in BC Hydro managed regions. All four reports are referenced in Volume 2 Appendix T (Climate Change Summary Report) of the EIS and are available on the PCIC website (http://pacificclimate.org/).
ab_0001-485	Treaty 8 Tribal Association	V.2, Appendix T ; page(s) 4 ; line(s) n/a EISG S.23.1 Comment 2-306.	<i>The Pacific Climate Impacts Consortium used a statistical downscaling method that is based on the common Bias-Correction Spatial Disaggregation technique (Wood et al., 2004). Information Request</i> Explain the choice of the statistical method.	Please see the response to ab_0001-484.
ab_0001-486	Treaty 8 Tribal Association	V.2, Appendix T ; page(s) 5 ; line(s) n/a EISG S.23.1 Comment 2-307.	<i>For the assessment of historical changes in climate, observed temperature and precipitation station data were transformed into high-resolution (4 km) gridded temperature and precipitation data sets using the (Parameter-elevation Regressions on Independent Slopes Model) methodology. Information Request</i> Provide a brief explanation of the Parameter-elevation Regressions on Independent Slopes Model methodology.	Please see references provided in "Hydrologic Impacts of Climate Change in the Peace, Campbell and Columbia Watersheds, British Columbia, Canada" (PCIC 2011). This report is referenced in Volume 2 Appendix T (Climate Change Summary Report) of the EIS and is available on the PCIC website (http://pacificclimate.org/).
ab_0001-487	Treaty 8 Tribal	V.2, Appendix T ; page(s) 6 ;	<i>Pacific Climate Impacts Consortium quantified the hydrological impacts of climate change in selected watersheds that reflect BC Hydro's power generation</i>	Climate projections for the Campbell and Columbia River watersheds are outside of the scope of the environmental assessment.

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	Association	line(s) n/a EISG S.23.1 Comment 2-308.	<i>assets. The resulting data set (Schnorbus et al., 2011) covers the Peace, Campbell, and Columbia River basins. Information Request Provide the median projected precipitation changes for the Campbell and Columbia River basins for the 2030s, 2050s and 2080s under the A2 and the A1B emission scenarios.</i>	
ab_0001-488	Treaty 8 Tribal Association	V.2, Appendix T ; page(s) 13 ; line(s) n/a EISG S.23.1 Comment 2-309.	4.1.1 2050s Future Period Information Request Clarify whether the modelling allows conclusions to be drawn for the 2030s concerning the same parameters reported for the 2050s and the 2080s and, if not, why not.	Projections for the 2030s period were not made and are not pertinent for the environmental assessment considering the proposed in-service date of the Project of 2022 (as shown in Figure 3.1 of the EIS). Projections of future climate change typically increase with time; therefore, projections for the 2050s and 2080s periods are more conservative estimates of future climate change.
ab_0001-489	Treaty 8 Tribal Association	V.2, Appendix T ; page(s) 14 ; line(s) n/a EISG S.23.1 Comment 2-310.	Comments Provide results similar to Table 4 and Table 5 for the 2030s.	Please see the response to ab_0001-488.
ab_0001-490	Treaty 8 Tribal Association	V.2, Appendix T ; page(s) 17 ; line(s) n/a EISG S.23.1 Comment 2-311.	<i>For the study area, projected changes in snow water equivalent indicate that higher elevated areas of the Williston basin will remain snow dominated with only minor changes to peak snow water equivalent (Figure 9). Areas further downstream, including the Taylor local basin, would transition to a largely rainfall dominated regime in the next 50 years. In these areas, a reduction of -30 to -50% in peak snow water equivalent is projected (Figure 9). Comments Figure 5 shows the Williston basin monthly average precipitation and runoff (1989-2004). Changes to the snow water equivalent ratio will affect the timing of inflows into Williston and Site C reservoirs. Information Request Provide figures similar to Figure 5 for: §§ a) The Williston basin in 2030 §§ b) The Williston basin in 2050 §§ c) The Williston basin in 2080 §§ d) The Site C local basin in 2030 §§ e) The Site C local basin in 2050 §§ f) The Site C local basin in 2080</i>	2050s median seasonal projected precipitation changes for the study area are shown in Figure 8 of Volume 2 Appendix T (Climate Change Summary Report). Williston basin and Site C local basin inflow projections for the 2050s are presented in Figures 11 and 12, respectively. Williston basin and Site C local basin inflow projections for the 2080s are presented in Figures 13 and 14, respectively of the same Appendix. Regarding projections for the 2030s period, please see the response to ab_0001-488.
ab_0001-491	Treaty 8 Tribal Association	V.2, Appendix T ; page(s) 20 ; line(s) n/a EISG S.23.1 Comment 2-312.	<ul style="list-style-type: none"> For both the Williston basin and the Taylor local basin, the median projected precipitation changes for the 2050s range from increases of 11% under the A2 emission scenario to 14% under the A1B emission scenario. For both the Williston basin the Taylor local basin, the median precipitation changes for the 2080s range from increases of 14% under the B1 emission scenario to 19% under the A1B emission scenario. Information Request Provide the median projected precipitation changes for the Williston and the Taylor local basin for the 2030s, under the A2 and the A1B emission scenarios.	Please see the response to ab_0001-488.

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ab_0001-492	Treaty 8 Tribal Association	V.3, S.16.1.5.1 ; page(s) 16-4 ; line(s) 13-14 EISG S.14.2.1 Comment 3-1.	<i>This is the area where physical and workforce effects would impact local government revenues and expenditures. First Nation communities are excluded from this analysis. Comments BC Hydro identifies its capacity to pay grants-in-lieu of general municipal, regional, district and local improvement taxes. Such taxation measures are partially designed to ensure that the governance costs of new developments (e.g., administrative burden, increased pressures on social and physical infrastructure) are compensated for, as well as ensuring that industrial projects contribute to the betterment and quality of life of the community or communities. Information Request BC Hydro is requested to: a) clarify why it excluded First Nation governments from the analysis of impacts on local government revenues and expenditure; and b) assess, in consultation with area First Nations, the potential effects of the proposed Project on governance capacity and expenditures on these First Nations.</i>	<p>The local and regional assessment areas for the local government revenue valued component are described in EIS Guidelines Table 14.2 as the City of Fort St. John, District of Taylor, District of Hudson's Hope, District of Chetwynd, City of Dawson Creek and the Peace River Regional District. The assessment considers the potential for the Project to adversely affect local government revenues such as changes in taxable land base. The assessment of changes in demand for infrastructure and services is described in EIS Section 30 Community Infrastructure and Services.</p> <p>The Hydro and Power Authority Act authorizes BC Hydro to pay grants-in-lieu of general municipal, regional district and local improvement taxes. Order-In-Council 1218/65 and Order-In-Council 510/07 set out the formula used to calculate the grant payments. Pursuant to the direction in Section 20.6 of the EIS Guidelines, "BC Hydro secured a mandate to enter into impact benefit agreement (IBA) negotiations with First Nations that, in BC Hydro's view, are likely to be adversely affected or impacted by the Project and where BC Hydro considers that accommodation beyond the mitigations listed in the EIS is warranted" (EIS Section 34.7.1, page 34-27, lines 31-34).</p>
ab_0001-493	Treaty 8 Tribal Association	V.3, S.17.1 , V.1, S.7.3.2.1 ; page(s) 17-1 , 7-15 ; line(s) 3-9 , 6-9 EISG S.14.3.3 Comment 3-2.	<i>The labour market is the exchange of the supply of labour by workers for the demand of labour by employers. The potential labour supply for the Project is those workers with the required skills and occupational training. The labour supply may be drawn from residents living close by the Project, as well as persons throughout B.C., Canada, or internationally. Labour demand corresponds to the number of positions of the requisite skills at the required time to build and operate the Project, plus demand by supplier (i.e., indirect) and consumer (i.e., induced) industries supported by project expenditures. Approximately 70% of the construction employment would involve trade occupations, 18% would involve contractor supervisors, and 11% would involve BC Hydro personnel. Of the trades occupations employment, 60% would be equipment operators, labourers, and truck drivers. Comments Nowhere in the EIS are these skills and estimated job numbers by category and required skill sets estimated in detail, hampering the ability of other parties to assess the credibility of BC Hydro's estimates of the ability of the local and regional labour market (and Aboriginal sub-populations) to take advantage of job opportunities likely to accrue from the proposed Project. Information Request BC Hydro is requested to: a) provide a tabular and graphical depiction of the labour requirements, by proposed year of work, for the proposed Project construction phase, including job types by skill level designation; b) provide a breakdown of the total number and percentage of direct (BC Hydro and contractor) jobs by skills designation; c) identify minimum skills requirements for each designation (e.g., is high school completion a requirement for an unskilled labourer?); d)</i>	<p>Project labour demand is provided in Volume 4 Appendix A Part 3, Table 1, page A-4 on a yearly basis by the following employment categories: crafts, contractor supervision and construction management. The additional detail requested was not necessary to complete the EIS in accordance with the EIS Guidelines. BC Hydro has previously shared with the regional workforce table, and with T8TA, a preliminary summary of the construction phase workforce by craft, for the purposes of supporting job readiness initiatives (August of 2012). BC Hydro will continue to share updated relevant workforce information as available to support job readiness and training initiatives.</p> <p>The Industry Training Authority (ITA) is the provincial crown agency responsible for overseeing BCs industry training and apprenticeship system. Information with respect to the education and training requirements for each skilled trade can be found on the ITA website.</p> <p>Section 17.4.2 provides information on the comparison of Project labour requirements with the labour supply for the general population and for Aboriginal peoples.</p> <p>The information requested regarding data for the previous five years for Aboriginal employment as a percentage of total employment for all BC Hydro construction and operations activities for the statistical area including the Peace River Regional District is outside the scope of the environmental assessment.</p>

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			provide a detailed estimation of the number of RAA workers – Aboriginal, non-Aboriginal and/or combined – that have the “required skills and occupational training” at present to take advantage of the proposed Project; and e) provide data for the previous five years for Aboriginal employment as a percentage of total employment for all BC Hydro construction and operations activities for the statistical area including the Peace River Regional District.	
ab_0001-494	Treaty 8 Tribal Association	V.3, S.17.1.1 ; page(s) 17-2 ; line(s) 17-26 EISG S.14.3.3 Comment 3-3.	<p><i>Under the federal Canadian Human Rights Act and the B.C. Human Rights Code, it is not a discriminatory practice for an employer to give preferential treatment to Aboriginal persons in hiring, promotion, or other aspects of employment, when the primary purpose of the employer is to serve the needs of Aboriginal people. In 2006, BC Hydro’s Board of Directors adopted a 10-year Aboriginal Education and Employment Strategy. The corporation supports the recruitment, education, and job skills development of Aboriginal persons as an element of its ongoing provincially applicable initiatives in these areas; an example is its Trades Trainee Program. It also operates initiatives specifically targeted at the province’s Aboriginal population, such as its Aboriginal Scholarships program.</i></p> <p>Comments BC Hydro does not identify in the EIS much in the way of preferential treatment plans, policies and programs for Aboriginal workers and would-be workers for the proposed Project, including Aboriginal employment targets. Data on the success of prior training initiatives or hiring of Aboriginal people is also not provided. Information Request BC Hydro is requested to: a) identify Aboriginal employment targets for the proposed Project (as a proportion of the total construction and operations stage workforce); b) identify all plans, policies and programs for the preferential recruitment, retention and advancement of Aboriginal workers to work at the proposed Project; c) provide a copy of BC Hydro’s Aboriginal Education and Employment Strategy for the public record, along with any associated specific plans, policies and programs to support the implementation of this strategy; and d) identify current and trend-over-time data on the proportion of BC Hydro’s workforce that is Aboriginal: i) in the NEDR; and ii) Provincially.</p>	<p>BC Hydro has not set employment targets for the Project, but has identified mitigation to support Aboriginal employment as described in Section 17.4.3, Section 28.4.3, and Section 34.6.3.</p> <p>As described in Section 3.1.2, the Project would implement and respect BC Hydro's corporate policies. The Aboriginal Education and Employment strategy is publicly available at: http://www.bchydro.com/community/aboriginal_relations/key_initiatives/education_employment.html</p> <p>The request for BC Hydro employment data is outside the scope of the environmental assessment.</p>
ab_0001-495	Treaty 8 Tribal Association	V.3, S.17.1.2 , V3, S17.3.5.1 ; page(s) 17-3 , 17-12 17-14 ; line(s) 6 , 15-17 31-36 EISG S.14.3.3	<p><i>Table 17.2 Key Issues: Labour Market First Nations’ concern that “boom and bust” cycle of a project creates difficulties in developing skills and sustaining lifestyles (SFN, T8TA) ... First Nations’ concern that the Project would result in a medium-term (5–10 years) growth cycle in the local economy; could contribute to inflation (T8TA). The Aboriginal population accounted for 10.4% of the labour force in the LAA in 2006, with an unemployment rate of the Aboriginal labour force (14.6%) over three times more than the rate for the non-Aboriginal labour</i></p>	<p>BC Hydro reviewed the community baseline profile report and integrated information into Section 17, Labour Market, from Volume 3 Appendix B7, Sections 5.1.5; 5.1.12; 5.2.5; 5.3.5; 5.4.5; 5.5; 6.4.2.7; 6.5, and Appendix D – p. 286-289.</p> <p>A labour demand "bust" is not predicted, as workers will be able to respond to the regional growth in labour demand forecast to occur. Figure 17.5 of the EIS shows the monthly labour demand, by job category, for Project construction. Future economic and employment growth in the LAA is projected to be strong (Sections 17.3.4, 17.4.2.2, and 18.3.3) even without the Project.</p>

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		Comment 3-4.	<p><i>force in the LAA. The earnings of well-qualified Aboriginal persons (age 35 to 54 with college credentials, working 40+ weeks per year, mostly full time) in the LAA are less than their comparable non-Aboriginal counterparts in the LAA. There is also a large difference in earnings in favour of Aboriginal persons living off-reserve (80.9% of the earnings of non-Aboriginal persons) compared to those living on-reserve (54.8% of the earnings of non-Aboriginal persons) (BC Stats No date). Comments Research, including research¹ reported in Section 6.5.2 of the T8FNs Community Assessment Baseline Profile, indicates that First Nations disproportionately suffered from job losses during the economic downturn of the late 2000s. This quantitative data is supported by testimony of T8FNs members, who often suggest that First Nations are the first people let go when the resource economy that drives the region slows down. In addition, the possibility that the proposed Project will lead to increased cost of living, including for goods and services and housing, would likely create a higher level of impact on the Aboriginal sub-population in the RAA than the non-Aboriginal majority given the lower socio-economic status of First Nations people in comparison to non-Aboriginal populations. These two issues (exposure to boom and bust effects and exposure to increase inflationary pressures) require closer examination in the EIS, specifically in relation to impacts on Aboriginal peoples.</i></p> <p>Information Request BC Hydro is requested to: a) review Section 6.5 of the T8FNs' Community Assessment Baseline Profile Report and the T8FNs' Community Assessment Impact Pathways Report (e.g., impact pathways # 53, 55, 58, and 60-61); b) assess the potential for boom and bust effects, regional and local inflation in relation to the proposed Project; c) incorporate, into the analysis in part b), case studies from previous large scale construction projects in rural Canadian regions with relatively large Aboriginal sub-populations; and d) provide a graphic and tabular comparison of trends over time in average employment income at the LAA and BC level, among: §§ Non-Aboriginal working age people; §§ Aboriginal on-reserve working age people; and §§ Aboriginal off-reserve working age people.</p> <p>1. Zietsma, D. 2010. Aboriginal People Living Off-reserve and the Labour Market: Estimates from the Labour Force Survey, 2008-2009. Statistics Canada Catalogue No. 71-588-X, no. 2. Ottawa: Statistics Canada. http://www.statcan.gc.ca/pub/71-588-x/71-588-x2010001-eng.pdf</p>	<p>Therefore, similar to the Project effect on population (Section 28), the Project will elevate demand for labour during construction over the baseline, with a return to the regional baseline as regional growth replaces the Project labour demand. Therefore, a "bust" is not predicted, and workers will be available to respond to the regional growth in labour demand forecast to occur. Proposed mitigation measures, focused on increasing the skill level of the local and Aboriginal workforce, will support workers in retaining employment during economic downturns, and in transitioning to new opportunities.</p> <p>Local and regional inflation is outside the scope of the environmental assessment. Specific effects of Project-related changes in demand on Housing (Section 29) and Community Infrastructure and Services (Section 30), in relation to population increases due to labour demand, have been assessed by VC in accordance with the EIS Guidelines.</p> <p>The information presented in Section 17 is sufficient to meet the requirements of Section 14.3 of the EIS Guidelines. Information on wages in the LAA is presented from a survey of employers based in the LAA, conducted by Statistics Canada in April 2009 that explored employment conditions for the major occupational categories (BC Stats and Statistics Canada 2009). The survey found that the highest hourly wage rates were in the trades occupations, that wage rates in the LAA for trades were higher than provincial rates, and that the average work week for people working in the LAA exceeded the provincial average. This information is relevant to both Aboriginal and non-Aboriginal workers.</p>
ab_0001-496	Treaty 8 Tribal Association	V.3, S.17.3.2 ; page(s) 17-10 ; line(s) 5-13	<p><i>Figure 17.3 shows the annual average unemployment rate for B.C., in the LAA, and in the B.C. construction industry from 1995 to 2010, along with the natural rate of unemployment. Unemployment in the LAA shows considerable year-to-</i></p>	<p>According to BC Stats, unemployment data for Aboriginal on and off reserve employment for the region is not available for the years 1995 through 2010 as requested. Information on Aboriginal employment in the LAA is provided in the EIS in Table 17.8, and shows comparisons regionally</p>

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		EISG S.14.3.3 Comment 3-5.	<i>year variation but, in most years, it was less than the provincial rate. The average unemployment rate in the LAA over the 15-year period was 6.2%, compared to 7.3% in B.C. The unemployment rate in the LAA was below the natural rate of unemployment in 1998, 2005, and 2008, while the province was below that level from 2006 to 2008, and the construction industry was below that level from 2005 to 2008. Information Request BC Hydro is requested to provide a breakdown and comparison of regional and provincial: §§ Non-Aboriginal unemployment; §§ Aboriginal on-reserve unemployment; and §§ Aboriginal off-reserve unemployment; in tabular and graphic formats over the time period 1995 to 2010.</i>	between non-Aboriginal and Aboriginal populations using information available from BC Stats and Statistics Canada, and where available information from baseline community profiles.
ab_0001-497	Treaty 8 Tribal Association	V.3, S.17.3.3 ; page(s) 17-11 ; line(s) 35-38 EISG S.14.3.3 Comment 3-6.	<i>Temporary residency, for example in hotels or work camps, is not captured in the census. An anecdotal estimate indicates this non-permanent resident labour force [living in hotels and work camps] could be between 10,000 to 15,000 persons in the Fort St. John and Dawson Creek areas (NPEDC, Economic Development Officers 2011 pers. comm.). This non-resident labour force is an indication of local labour and skills shortages. Comments A large number of camp residents requires additional linear and areal disturbance to T8FNs traditional territory. These camps do not appear to be included in the cumulative effects assessment. Information Request BC Hydro is requested to provide a map identifying the number and location of work camps within the RAA.</i>	Northern Health recently completed a study identifying the location of camps, which include the capacity of each camp, but not the occupancy at a given point in time. It is available publicly at: https://www.northernhealth.ca/Portals/0/About/NH_Reports/documents/2012%2010%2017_In_d_Camps_Background_P1V1Comb.pdf The scope of the Labour Market effects assessment is in accordance with the EIS Guidelines and has used information as available and appropriate information is provided in the EIS. Temporary accommodation is described in Section 29.3.1.4 and Table 29.9.
ab_0001-498	Treaty 8 Tribal Association	V.3; 17.3.5.1 ; page(s) 17-13 ; line(s) 17-21 EISG S.14.3.3 Comment 3-7.	<i>For example, the First Nations communities [sic] of the West Moberly First Nations are currently experiencing strong employment... There is an anecdotal reference in the Baseline Community Profile of Doig River First Nations, Halfway River First Nation, Prophet River First Nation and West Moberly First Nations that the current unemployment rate in the West Moberly First Nations community is low, "...everybody that wants to work is working and almost all of them have good jobs" (T8FNs Community Assessment Team and The Firelight Group Research Cooperative 2012a:124). Comments This singular statement from an individual is used rather than deeper analysis of the baseline statistics and systemic barriers identified in the T8FNs Community Assessment Baseline Profile Report. As a result of taking material out of context, BC Hydro downplays the remaining economic gaps between the T8FNs and their non-Aboriginal counterparts in the LAA. Information Request The Proponent is requested to describe the steps taken, if any, with the T8FNs to incorporate materials contained in the T8FNs Community Assessment into the EIS, including discussion of whether the materials chosen for inclusion in the EIS were verified</i>	BC Hydro did not have an opportunity to verify information with T8TA prior to filing of the EIS. As described in Volume 3, Appendix B Part 1, BC Hydro approached T8TA and other First Nation communities in May 2011 to seek their participation in gathering community baseline information for the socio-economic assessment. BC Hydro and each First Nation came to the agreement that the First Nation would each develop their own community baseline report, funded by BC Hydro. Although earlier dates were initially agreed upon, BC Hydro received T8TA's Community Baseline Report, in draft and not complete, October 26, 2012, followed by a final report November 28, 2012. BC Hydro reviewed the information for integration into the socio-economic study, alongside information already gathered from other sources, when these reports were received. The EIS Guidelines (Preface and elsewhere) required that BC Hydro incorporate additional baseline information as made available based on concerns raised by Aboriginal groups. The EIS includes information that was made available to BC Hydro by First Nations at the time of writing of the EIS. BC Hydro's efforts to obtain baseline information from First Nations with respect to the socio-economic effects assessment are outlined in Volume 3 Appendix B1 - First Nations Community Baseline Reports - Approach to Gathering and Integrating Community Baseline

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			with the T8FNs for contextual accuracy and comprehensiveness.	<p>Information.</p> <p>Pursuant to the direction in Section 20.6 of the EIS Guidelines, "BC Hydro secured a mandate to enter into impact benefit agreement (IBA) negotiations with First Nations that, in BC Hydro's view, are likely to be adversely affected or impacted by the Project and where BC Hydro considers that accommodation beyond the mitigations listed in the EIS is warranted" (EIS Section 34.7.1, page 34-27, lines 31-34). BC Hydro will continue to seek to continue discussions with Treaty 8 First Nations.</p>
ab_0001-499	Treaty 8 Tribal Association	V.3, S.17.3.5.2 ; page(s) 17-16 ; line(s) 12-22 EISG S.14.3.3 Comment 3-8.	<p><i>The Baseline Community Profile of Doig River First Nations, Halfway River First Nation, Prophet River First Nation and West Moberly First Nations cited the following employment barriers: lack of child care, lack of education and training, isolated location and poor transportation options, emotional health issues, alcohol and drug problems, lack of life skills, higher-than-average health concerns and disabilities, racism/discrimination at work sites, destructive nature of resource extraction jobs, and greater exposure to economic downturns.</i></p> <p>Comments As a general critique, the EIS does little to follow up on any of these employment barriers, merely restating them and not examining them. BC Hydro chose to expedite the issuance of its EIS within about a month of receipt of the T8FNs Community Assessment Baseline Profile and Impact Pathways reports, which allowed for very little time for examination or follow up on the materials with the T8FNs. No employment barrier information is provided in the EIS from any other area Aboriginal groups. It is inappropriate to rely on the inputs of only four First Nations out of 29 required Aboriginal groups. Information Request BC Hydro is request to: a) identify whether and when it intends to provide additional baseline and trend data on the employment prospects, status and barriers for other affected First Nations and Aboriginal groups; b) indicate whether and how it plans to revisit its employment effects assessment upon receipt of outstanding information; c) identify what information other than the T8FNs Community Assessment materials BC Hydro considered when assessing the employment prospects, status and barriers currently in place and over time for area First Nations and Aboriginal groups, and when it conducted its initial effects assessment on labour; d) describe plans, policies and programs for training, recruitment, retention and advancement of women in relation to the proposed Project, for both the construction and operations stages; and e) identify whether and what information BC Hydro gathered from the Northeast Native Advancing Society and other non-aligned Aboriginal economic development and support groups in the development of Section 17 of the EIS.</p>	<p>As described in Volume 3, Appendix B Part 1, BC Hydro approached T8TA and other First Nation communities in May 2011 to seek their participation in gathering community baseline information for the socio-economic assessment. BC Hydro and each First Nation came to the agreement that the First Nation would each develop their own community baseline report, funded by BC Hydro. Although earlier dates were initially agreed upon, BC Hydro received T8TA's Community Baseline Report, in draft and not complete, October 26, 2012, followed by a final report November 28, 2012. BC Hydro reviewed the information for integration into the socio-economic study, alongside information already gathered from other sources, when these reports were received.</p> <p>The EIS Guidelines (Preface and elsewhere) required that BC Hydro incorporate additional baseline information as made available based on concerns raised by Aboriginal groups. The EIS includes information that was made available to BC Hydro by First Nations at the time of writing of the EIS. BC Hydro's efforts to obtain baseline information from First Nations with respect to the socio-economic effects assessment are described in Volume 3 Appendix B1 - First Nations Community Baseline Reports - Approach to Gathering and Integrating Community Baseline Information.</p> <p>The Aboriginal Group Supplemental Report will include consideration of the Blueberry River and Saulteau First Nations Community Baseline Reports in the findings reported in the EIS. Any reports made available to BC Hydro from McLeod Lake Indian Band and Horse Lake First Nation will be considered if received in a timely fashion. Updated information will be submitted to CEA Agency and BCEAO.</p> <p>Labour market mitigation is described in EIS Section 17.4.3. The request for information regarding policies for training, recruitment, retention and advancement of women is outside the scope of the environmental assessment.</p> <p>Please see Section 17.2 for the information sources and methodology for the section as well as the reference section on page 17-27. Citations are provided throughout the sections.</p>
ab_0001-	Treaty 8	V.3, S.17.4.2.2	<i>Adverse effects would occur if members of the Aboriginal labour force in the LAA</i>	The scope of the Labour Market effects assessment is in accordance with the EIS Guidelines and

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500	Tribal Association	; page(s) 17-21 ; line(s) 15-16 EISG S.14.3.4 Comment 3-9.	<i>were unable to access, fairly and equitably, Project employment opportunities.</i> Information Request BC Hydro is requested to: a) explain why no effects characterization or significance determination was conducted on the identified potential adverse effects on the local and Aboriginal employment sector; and b) conduct the required effects characterization and significance determination, preferably with inputs from the would-be affected Aboriginal group.	appropriate information is provided in the EIS. No residual adverse effects are anticipated following the proposed mitigation; therefore, characterization of effects was not necessary. Please see Sections 17.4.3, Section 28.4.3, and Section 34.6.3 for information regarding proposed mitigation which would support Aboriginal members of the workforce.
ab_0001-501	Treaty 8 Tribal Association	V.3, S.17.4.2.2 ; page(s) 17-21 ; line(s) 15-16 37-40 EISG S.14.3.4 Comment 3-10.	<i>Adverse effects would occur if members of the Aboriginal labour force in the LAA were unable to access, fairly and equitably, Project employment opportunities. Data are not available on the occupational skills of the Aboriginal unemployed in the LAA, but if their occupational distribution is the same as for the whole Aboriginal labour force in the LAA, then, at this time, approximately 100 unemployed Aboriginal persons in the LAA may have suitable skills to fill crafts positions in the Project's labour force. This amount or capacity will vary with the number of unemployed in the Aboriginal labour force and the composition of their capabilities.</i> Comments The EIS does not examine impact equity and distributional equity, does not identify the nature of the adverse impacts or what remedial measures would need to be put in place, and does not characterize these potential adverse effects. Monitoring of the labour market is also not proposed, so it is unclear how BC Hydro would know that these adverse effects were occurring, when to take remedial action or what remedial action to take. Information Request The Proponent is requested to: a) characterize the nature and significance of the “adverse effects” that BC Hydro asserts would occur if the Aboriginal labour force in the LAA was unable to fairly and equitably take advantage of Project employment opportunities; and b) identify required mitigation, monitoring and adaptive management mechanisms related to these potential adverse effects.	No residual adverse effects are anticipated following the proposed mitigation; therefore, characterization of effects was not necessary. Monitoring is not proposed because no residual adverse effects are anticipated. Section 17.4.2.2 describes labour market effects and assumptions for Aboriginal peoples, and mitigation measures are identified in Section 17.4.3 that are focused on mitigating potential adverse effects identified in Section 17.4.2.2. Pursuant to the direction in Section 20.6 of the EIS Guidelines, “BC Hydro secured a mandate to enter into impact benefit agreement (IBA) negotiations with First Nations that, in BC Hydro’s view, are likely to be adversely affected or impacted by the Project and where BC Hydro considers that accommodation beyond the mitigations listed in the EIS is warranted” (Section 34.7.1, page 34-27, lines 31-34). These negotiations may result in additional measures related to Aboriginal employment or monitoring.
ab_0001-502	Treaty 8 Tribal Association	V.3, S.17.4.2.2 ; page(s) 17-21 ; line(s) 23-25 EISG S.14.3.4 Comment 3-11.	<i>Although the Aboriginal labour force is a small proportion (approximately 10%) of the total labour force in the LAA, it has historically comprised a much higher portion, one-fifth to one-third, of the total unemployed in the LAA.</i> Information Request BC Hydro is asked to: a) identify what percentage of jobs from the proposed Project will require: §§ High school graduation or equivalency §§ Journeyman trades status §§ Trades or technical school certificates §§ University degree b) identify whether the direct job hiring process for the proposed Project will be run by BC Hydro, its prime contractor, or some other organization; <i>identify any relaxation of typical requirements of work experience BC Hydro will consider for Aboriginal employment applicants, or other forms of rules relaxation BC Hydro is adopting to maximize equitable Aboriginal</i>	Approximately 71% of the total person-months of direct Project labour would involve trades occupations. Within the trades component, operating engineers, labourers, and truck drivers would account for 60% of the person-months (EIS Section 17.4.1, page 17-18). The Industry Training Authority (ITA) is the provincial crown agency responsible for overseeing BC's industry training and apprenticeship system. Information with respect to the education and training requirements for each skilled trade can be found on the ITA website. BC Hydro has proposed mitigation for the labour market in EIS Section 17.4.3. Pursuant to the direction in Section 20.6 of the EIS Guidelines, “BC Hydro secured a mandate to enter into impact benefit agreement (IBA) negotiations with First Nations that, in BC Hydro’s view, are likely to be adversely affected or impacted by the Project and where BC Hydro considers that accommodation beyond the mitigations listed in the EIS is warranted” (EIS, Section

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			<i>participation in the proposed Project workforce.</i>	<p>34.7.1, page 34-27, lines 31-34). These negotiations may result in additional measures related to Aboriginal employment.</p> <p>It is not relevant who runs Project hiring processes as all terms and conditions resulting from the environmental assessment and any other agreements relevant to the Project will be met by BC Hydro and its contractors.</p>
ab_0001-503	Treaty 8 Tribal Association	V.3, S.18.1.1 , V.3, S.18.4.1 ; page(s) 18-1 , 18-20 , 18-20 ; line(s) 25-29 , 15-17 , 26-29 EISG S.14.4.3 Comment 3-12.	<p><i>BC Hydro's Aboriginal Contract and Procurement Policy is consistent with the Agreement on Internal Trade and the New West Partnership Trade Agreement, as Article 1802 states that it does not apply to any measure adopted with respect to Aboriginal peoples. This policy provides for the use of several procurement practices to increase the involvement of First Nations in economic opportunities associated with the business of the organization. The proportion of that spending that would accrue to companies in the LAA would be determined by their capacity, expertise, and willingness to participate in project construction, but it is expected to be in the range of 10%, or \$170 million. An indication of the interest in the Project from local businesses and contractors is the composition of the Site C business directory – approximately 50% of all registrants are from the NEDR, and of those local registrants, 25% are businesses owned by either Aboriginal persons or organizations. Comments</i></p> <p>Given that preferential treatment for First Nations is not prohibited, BC Hydro could confidently predict the proportion of and/or set targets for construction stage benefits likely to accrue to LAA-based First Nations businesses</p> <p>Information Request BC Hydro is requested to: a) provide a copy of BC Hydro's Aboriginal Contract and Procurement Policy and any related policies, plans and programs, for the public record; b) identify targets for the proportion and total dollar value of Aboriginal procurement for the construction stage of the proposed Project, broken down into regional and extra-regional Aboriginal: §§ Direct income §§ Indirect income §§ Direct purchases of BC Hydro from suppliers c) identify any information constraints or other factors limiting the confidence BC Hydro has in the estimates in part b) or, if such estimates cannot be provided, indicate what additional work BC Hydro is committed to undertake during the technical stage of the EA to fill these gaps and make an informed estimate; d) provide targets for the proportion and total dollar value of Aboriginal procurement for similar projects developed elsewhere in British Columbia or Canada; and e) provide a record (preferably including tabular and graphic representations) of the proportion of business procurement over time (including construction and operations level goods and services) from BC Hydro-related projects that has accrued to Aboriginal businesses: §§ at the Provincial</p>	<p>The BC Hydro Aboriginal Contract and Procurement Policy is publicly available at: http://www.bchydro.com/content/dam/hydro/medialib/internet/documents/about/company_information/partners_vendors/PV_aboriginal_contract_policy.pdf</p> <p>BC Hydro does not have targets for the proportion and total dollar value of Aboriginal procurement for the construction stage of the proposed Project and the information is outside the scope of the environmental assessment.</p> <p>The EIS Guidelines (Preface and elsewhere) required that BC Hydro incorporate additional baseline information as made available based on concerns raised by Aboriginal groups. The EIS includes information that was made available to BC Hydro by First Nations at the time of writing of the EIS. BC Hydro's efforts to obtain baseline information from First Nations with respect to the socio-economic effects assessment are described in Volume 3 Appendix B1 - First Nations Community Baseline Reports - Approach to Gathering and Integrating Community Baseline Information.</p> <p>The Aboriginal Group Supplemental Report will include consideration of the Blueberry River and Saulteau First Nations Community Baseline Reports in the findings reported in the EIS. Any reports made available to BC Hydro from McLeod Lake Indian Band and Horse Lake First Nation will be considered if received in a timely fashion. Updated information will be submitted to CEA Agency and BCEAO.</p> <p>Please also see the response to ab_0001-162.</p> <p>The request for information regarding the proportion and total dollar value of Aboriginal procurement for similar projects developed elsewhere in British Columbia or Canada is outside the scope of the environmental assessment.</p> <p>The request for information regarding the proportion of business procurement over time (including construction and operations level goods and services) from BC Hydro-related projects that has accrued to Aboriginal businesses is outside the scope of the environmental assessment.</p>

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			level; and §§ in relation to the LAA (Peace River area operations).	
ab_0001-504	Treaty 8 Tribal Association	V.3, S.18.1.2 ; page(s) 18-2 ; line(s) 9-15 EISG S.14.4.4 Comment 3-13.	Comments BC Hydro identifies only beneficial effects likely to occur from increased business activity in the LAA as a result of the proposed Project. BC Hydro did not examine the possibility that increased business activity in the LAA may have both positive and adverse effects, especially among that proportion of the population that does not receive economic opportunities from the proposed Project. Information Request The Proponent is asked to conduct a re-examination of both positive and adverse effect outcomes from increased business activity in the LAA resulting from the proposed Project, including in relation to: a) outside companies coming in and taking not only Project jobs but market share in the LAA away from local companies; b) increased price competition marginalizing Aboriginal businesses; c) the need for capital disadvantaging Aboriginal businesses; d) a greater proportion of non-Aboriginal workers in Aboriginal companies; e) a greater number of Aboriginal joint ventures; f) inflation, cost of living and access to services and affordable housing; g) exposure to boom and bust fluctuations in the local economy; and h) contribution to futures foregone (economic activities that can no longer be practiced or are constrained should the proposed Project proceed)	<p>The scope of the regional economic development effects assessment is in accordance with the EIS Guidelines and appropriate information is provided in the EIS. Baseline information related to concerns by Aboriginal groups has been included as made available to BC Hydro.</p> <p>The statements made in the comment about adverse effects from increased business activity are speculative. The regional economic development assessment has considered the capacity of the regional business contracting community, and has reasonably assumed that the local contracting community would be able to fairly compete for work associated with the Project commensurate to their capacity. BC Hydro has proposed measures to support regional contractors to the extent it can within the provincial procurement context, including initiated and proposed to continue implementation of a business participation strategy, including regional business liaison, work with local economic development commissions, and implementation of BC Hydro's Aboriginal business policy including seeking information on Aboriginal business capabilities, as described in Section 18.5. Section 34.6.3 proposes an approach to building capacity among Aboriginal groups that may be affected by the Project.</p>
ab_0001-505	Treaty 8 Tribal Association	V.3, S.18.1.2 ; page(s) 18-2 ; line(s) 19-21 EISG Comment 3-14.	<i>A main concern of Aboriginal communities was that Aboriginal businesses and contractors in the region have a fair and equitable opportunity to obtain Project-associated contracts.</i> Comments The EIS makes no commitment related to the need for prime and sub-contractors to adhere to a set of principles and policies for procurement and employment, despite the virtual certainty that a large multi-national construction company will be the prime contractor. Information Request BC Hydro is requested to: a) identify what policies and principles for employment and procurement will apply to contractors (including the prime contractor and sub-contractors) working on the proposed Project; b) identify how it will ensure compliance of its contractors to the policies and principles identified in part a), and c) explain any complaint and dispute resolution mechanisms that will be implemented in relation to employment and procurement issues.	<p>Project work would be contracted on the basis that contractors must commit to compliance with all policies specified by BC Hydro. All construction contracts would contain terms mandating compliance with the commitments made in the contractor's proposal or tender, as applicable.</p> <p>The scope of the Labour Market and Regional Economic Development effects assessments is in accordance with the EIS Guidelines and appropriate information is provided in EIS Sections 17 and 18. Please see Sections 17.4.3.2, 18.4.2, 18.4.4 and 34.6.3 for proposed mitigation and the approach to building capacity among Aboriginal groups that may be affected by the Project.</p>
ab_0001-506	Treaty 8 Tribal Association	V.3, S.18.1.2 ; page(s) 18-2 ; line(s) 22 EISG S.14.4.3 Comment 3-15.	<i>Table 18.1 Key Issues: Regional Economic Development</i> Comments BC Hydro refers to the following as a "key mitigation measure" for regional economic development: "seek information on Aboriginal businesses and capabilities." This is neither mitigation nor monitoring, as it is not linked to any preferential "capture" of procurement opportunities by Aboriginal companies of BC Hydro-related work, specified targets, or monitoring systems during Project	<p>The mitigation measures in this section include implementation of BC Hydro's Aboriginal procurement policy to increase Aboriginal participation in Project business opportunities. The Aboriginal Contract and Procurement Policy (available at http://www.bchydro.com/content/dam/hydro/medialib/internet/documents/about/company_information/partners_vendors/PV_aboriginal_contract_policy.pdf) provides BC Hydro with the ability to utilize a number of procurement practices to create greater access for Aboriginal</p>

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			<p>construction. It is actually a requirement for baseline and trend conditions profiling, which should have been completed prior to filing of the EIS.</p> <p>Information Request BC Hydro is requested to: a) identify all means by which data has been collected to date on local and regional Aboriginal businesses, and any gaps that remain in BC Hydro's knowledge of these key criteria, and how BC Hydro plans to fill those gaps; and b) estimate what proportion of current LAA business revenues accrue to Aboriginal-owned companies, and trends over time, using quantitative information where possible and qualitative information where necessary.</p>	<p>businesses or service providers. The policy states that "procurement practices may include set-asides, direct awards, select tenders and Aboriginal Content in bidding documents". The measure cited in the comment is an important step that will help BC Hydro identify the capacity and capability of Aboriginal businesses relevant to implementation of the policy.</p> <p>EIS Section 34.6.3.3, page 34-27, lines 2-28 describes how BC Hydro has actively pursued opportunities to engage directly with the Aboriginal business community in the Peace Region and beyond. BC Hydro is continuing to engage the Aboriginal business community.</p> <p>Estimating accrual of revenues within the LAA to Aboriginal-owned companies is not necessary for the assessment of Project effects on Regional Economic Development, and is outside the scope of the environmental assessment.</p>
ab_0001-507	Treaty 8 Tribal Association	V.3, S.18.2.4 ; page(s) 18-6 ; line(s) 20-34 EISG S.14.4.3 Comment 3-16.	<p><i>Aboriginal community and traditional knowledge related to regional economic development was gained through review of results of BC Hydro's consultation with Aboriginal groups and review of First Nations community baseline studies prepared by the following First Nations in the LAA: • Doig River First Nation • Halfway River First Nation • Prophet River First Nation • West Moberly First Nations While the communities of the Blueberry First Nations and Sauleau First Nations and traditional territory and certain offices associated with the McLeod Lake Indian Band are also within the boundaries of the LAA, BC Hydro had not received community baseline information from them at the time of writing. Baseline information and data as well as First Nations concerns and interests relevant to regional economic development are incorporated in the baseline and effects assessment sections below.</i></p> <p>Comments A reading of Appendix B-3 for Duncan's First Nation also indicates potentially relevant economic information that is not referred to in the main sections of the EIS. In addition, materials from the T8FNs Community Assessment Baseline Profile and Impact Pathways reports on regional economic development issues appears to have been only very selectively integrated into the main sections of the EIS. Information Request The Proponent is asked to: a) identify why economic information from the Duncan's First Nation submission was not included in the EIS Section 18; b) identify whether, when and how BC Hydro plans to integrate the missing community baseline information on Aboriginal business, and what effect this missing information has on the confidence BC Hydro places in its effects characterization and significance estimations concerning Aboriginal economic development prospects in relation to the proposed Project; and c) identify what sections of the T8FNs Community Assessment Baseline Profile Report and what numbered impact pathways from the T8FNs Community Assessment Impact Pathways Report were integrated into BC Hydro's assessment of effects on</p>	<p>The EIS Guidelines (Preface and elsewhere) required that BC Hydro incorporate additional baseline information as made available based on concerns raised by Aboriginal groups. The EIS includes information that was made available to BC Hydro by First Nations at the time of writing of the EIS. BC Hydro's efforts to obtain baseline information from First Nations with respect to the socio-economic effects assessment is described in Volume 3 Appendix B1 - First Nations Community Baseline Reports - Approach to Gathering and Integrating Community Baseline Information</p> <p>Duncan's First Nation is outside the geographic area of the LAA; therefore, it is not missing from the baseline. Economic information from Duncan's First Nation was integrated into EIS Section 34 as referenced in Volume 3 Appendix B Part 3 Community Baseline Report and EIS Integration Summary Table – Duncan's First Nation, page B-3.</p> <p>Information from Telling a Story of Change the Dane-zaa Way: A Baseline Community Profile of Doig River First Nation, Halfway River First Nation, Prophet River First Nation, West Moberly First Nations Sections 5.1.5, 5.1.12, 5.2.5, 5.2.12, 5.3.5, 5.3.12, 5.4.5, 5.4.12, and 5.4.5 were taken into account in EIS Section 18 Regional Economic Development. Please see EIS Section 18.2 for information regarding information sources and methodology for the Regional Economic Development effects assessment.</p> <p>The Part 7 Community Baseline Report and EIS Integration Summary Table - Doig River First Nation, Halfway River First Nation, Prophet River First Nation, West Moberly First Nations was omitted from the EIS filing in error; however, where relevant, the information was taken into account in the environmental assessment. The omission of the table has been included in the List of Errata and Updated Information.</p>

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			regional economic development, and how.	
ab_0001-508	Treaty 8 Tribal Association	V.3, S.18.3.1.1 ; page(s) 18-7 ; line(s) 29 EISG S.14.4.3 Comment 3-17.	<p>Table 18.5 Number of Business Establishments by Location Comments Table 18.5 does not contain a separation of Aboriginal vs. non-Aboriginal owned companies. It is important to understand shifts in Aboriginal business capacity over time, and effects of the late 2000s recession on Aboriginal vs. non-Aboriginal business ventures. BC Hydro indicated it has had some consultations with NENAS and other industry associations and economic development agencies that may have relevant additional information about the number of Aboriginal-owned businesses in the NEDR over time. Level of entrepreneurial activity per capita is a relevant indicator of business acumen and capacity.</p> <p>Information Request BC Hydro is requested to: a) gather additional information about the number of Aboriginal-owned businesses in the NEDR over the same time period depicted in Table 18.5; b) present a revised Table 18.5 with information gathered in part a) or, if data constraints are identified, provide qualitative description of changes over time; and c) provide data on the proportions (respectively) of Aboriginal and non-Aboriginal residents of the NEDR that own businesses.</p>	The EIS Guidelines (Preface and elsewhere) required that BC Hydro incorporate additional baseline information as made available based on concerns raised by Aboriginal groups. Please see Section 18.3.4 for the Business Profile – Aboriginal Peoples which describes information received regarding potential Aboriginal business ownership. Please see Volume 3 Appendix B1 - First Nations Community Baseline Reports - Approach to Gathering and Integrating Community Baseline Information for a description of BC Hydro's efforts to obtain baseline information from First Nations with respect to the socio-economic effects assessment.
ab_0001-509	Treaty 8 Tribal Association	V.3, S.18.3.1.1 , V.3, S.18.3.2.2 , V.3, S.18.3.4 ; page(s) 18-8 , 18-12 , 18-16 18-17 ; line(s) 6-11 , 27-29 , 26-44 1 EISG S.14.4.3 Comment 3-18.	<p><i>The data also demonstrates the preponderance of small businesses in the regional and provincial economies. In the NEDR, firms with less than 50 employees made up 96.2% of all establishments, identical to the B.C. percentage. The PRRD economy had no large businesses (i.e., establishments with greater than 500 workers), while only 16 businesses had more than 200 employees. Nine of the 16 businesses involve publicly funded services, such as education and health, and retail trade operations. Capacity limitations among regional supplier industries, including limited contractor experience, expertise, or credentials for meeting industry bid or performance standards (NPEDC, Economic Development Officers 2011 pers. comm.)</i> Comments The information presented above along with that in the T8FNs Community Assessment Baseline Profile Report (Section 6.5) and Impact Pathways Report (impact pathways #50-51) raises doubts about the ability of small enterprises to “capture” substantial portions of the construction phase of the proposed Project. BC Hydro identifies a series of barriers and challenges for Canadian Aboriginal (p.18-16) and T8FNs (p.18-17) businesses. Information Request BC Hydro is requested to: a) identify all plans, policies and programs to which BC Hydro is committed for developing and supporting small business capacity and encouraging entrepreneurialism among LAA-based First Nations peoples and businesses b) indicate how it will address or has addressed the specific barriers highlighted for Aboriginal</p>	<p>Please see mitigation proposed in Sections 18.4.2 and 18.4.4 as well as Section 34.6.3, which describe the Proponent’s approach to building capacity among Aboriginal groups.</p> <p>Although the Aboriginal Contracting and Procurement Policy itself does not specify monitoring provisions, BC Hydro would include reporting requirements for contractors for Aboriginal participation and contracting outcomes in contracts.</p> <p>Please also see the responses to ab_0001-155 and ab_0001-156.</p>

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			businesses as described in the EIS and T8FNs Community Assessment Baseline Profile and Impact Pathways reports sections noted above; and c) identify what provisions its Aboriginal Contract and Procurement Policy has in relation to monitoring of Aboriginal procurement initiatives during the construction and operation of the proposed Project, including among its prime and sub-contractors.	
ab_0001-510	Treaty 8 Tribal Association	V.3, S.18.3.3 ; page(s) 18-14 ; line(s) 30-32 EISG S.14.4.3 Comment 3-19.	<i>Temporary workers from other parts of B.C., Alberta, and the rest of Canada will continue to be an important component of the future regional labour market.</i> Comments Without significant increases in the commitment of B.C. Hydro to remove barriers and fund programs to maximize Aboriginal engagement in the economy, patterns of short-term regional in-migration and economic inequality for regional Aboriginal people will remain. BC Hydro makes financial commitments to training/education programs focused on Aboriginal people in the EIS, totaling approximately \$600,000 over an unknown length of time. This level of commitment represents less than 1/10,000th of the expected capital cost of the proposed Project and less than 1/4000th of the expected direct non-labour expenditures in BC. Information Request The Proponent is requested to: a) identify how it determined the current expenditures for promotion of Aboriginal education and training in the LAA; b) demonstrate how this level of commitment will make a substantial contribution to the ability of Aboriginal people to take advantage of the proposed Project; c) identify the time frame over which the current financial commitments to education and training of Aboriginal people in the LAA will occur, including amounts committed per annum; and d) identify, given all current BC Hydro sponsored training programs, how many Aboriginal trainees, with what training and at what time, are expected to enter the job market.	BC Hydro is a participant in Northern Opportunities, the Northeast Regional Workforce Table, and has supported North East Native Advancing Society (NENAS) trades training. The NENAS mission is to "To provide opportunities to improve the quality of life of First Nations and Inuit people in North Eastern British Columbia by holistically advancing their health, wellness, education, and economic self-sufficiency" (NENAS 2013). BC Hydro has also contributed \$1 million in funding to a Northern Lights college bursary described in EIS Section 34.6.3.2 with 50% of the funding dedicated to Aboriginal students. Through this participation, as well as through engagement with Aboriginal communities, BC Hydro is aware that an increase over current programs to support Aboriginal education and training in the region would support improved Aboriginal employment outcomes. Please see Sections 17.4.3, 18.4.4 and Section 34.6.3.2 for information on proposed mitigation and capacity building measures, including the timeframes and amount of financial commitments. As above, the actual number of individuals who would enter the job market would also depend on the efforts of the individuals who take training; therefore, an estimate cannot be provided. Please also see the response to ab_0001-162.
ab_0001-511	Treaty 8 Tribal Association	V.3, S.18.3.4 , V.3, S.18.4.3.2 ; page(s) 18-15 , 18-24 , 18-25 ; line(s) 10-17 , 38-45 , 1-2 EISG S.14.4.3 Comment 3-20.	<i>The main source of data to assist with identifying the number, size, and industry of businesses for geographic areas in Canada is Statistics Canada's Business Register. The Business Register data for the LAA cited in Section 18.3.1.1 includes businesses owned by Aboriginal persons and organizations, as well as non-Aboriginal persons and organizations. However, there is no ownership breakdown in this data, as Aboriginal identification of ownership is not collected for the Business Register initiative. Survey data to track the basic features of Aboriginal businesses is not regularly collected in B.C. or Canada. Although the Project's construction phase will create substantial construction products supply and contracting activity and spending over an eight-year period in the LAA, businesses in the LAA owned by Aboriginal persons or organizations</i>	Please see Section 18.2 for a description of the information sources and the methodology used for the Regional Economic Development effects assessment. Also see the reference section on page 18-28. The Regional Economic Development effects assessment was completed in accordance with the EIS Guidelines and the effects assessment methodology presented in EIS Section 10. Section 18.4.3.2 includes an effects assessment on Aboriginal Peoples in the LAA and Section 18.4.4.2 cites specific mitigation measures that address the potential effects on Aboriginal Peoples in the LAA. BC Hydro would include reporting requirements for contractors for Aboriginal participation and contracting outcomes in contracts.

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			<p><i>are unlikely to secure a commensurate portion of this activity and spending without measures to help address their specific challenges and barriers. To ensure equity in Project procurement and supply for Aboriginal businesses in the LAA, comprehensive planning is needed to identify and remove discrimination in procurement and award policies and practices. Effects of social and historical barriers and challenges need remedying through targeted measures, and appropriate representation of Aboriginal suppliers should be planned for throughout the Project during its construction phase.</i> Comments Similar to the discussion around the “adverse effects” on Aboriginal labour market participants BC Hydro identifies in the case of inequitable engagement, the Proponent identifies that “adverse effects” would accrue on Aboriginal businesses and owners if they do not receive an equitable share of business procurement from the proposed Project (p.18-19), but declines to further characterize these potential “adverse effects”. In addition, BC Hydro commits to no monitoring or follow-up programs for regional economic development (i.e., business procurement). Information Request BC Hydro is asked to: a) identify all sources on Aboriginal business capacity information in the LAA used in the EIS; and b) conduct an effects characterization exercise, preferably with the involvement of First Nations, on the “adverse effects” discussed above.</p>	
ab_0001-512	Treaty 8 Tribal Association	V.3, S.18.3.4 ; page(s) 18-18 ; line(s) 2-10 EISG S.14.4.4 Comment 3-21.	<p>Information Request Identify what proportion (and associated dollar amount) of total contracting expenditures for the planning stage of the proposed Project has accrued to First Nations owned companies.</p>	<p>Please see EIS Section 34.6.3.2 for a description of capacity building opportunities through directed procurement for Stage 3 general contractor work for the Project. The additional requested information is outside the scope of the environmental assessment.</p> <p>Please also see the response to ab_0001-157.</p>
ab_0001-513	Treaty 8 Tribal Association	V.3, S.18.4 ; page(s) 18-19 ; line(s) 36-37 EISG S.14.4.4 Comment 3-22.	<p>Information Request BC Hydro is requested to a) explain why no effects characterization or significance determination was conducted on the identified potential adverse effects on the local and Aboriginal business sector; and b) conduct the required effects characterization and significance determination, preferably with inputs from the would-be affected Aboriginal groups.</p>	<p>Section 18.4.3.2 does not identify that potential adverse effects would occur to the local and aboriginal business sector. Rather, the EIS states that an adverse effect would occur if Aboriginal owned businesses were unable to fairly and equitably access Project contracting opportunities, and describes the types of barriers that may exist for Aboriginal businesses in the region. Therefore, the proposed mitigation is directed at measures that would help address Aboriginal businesses specific challenges and barriers, as described in Section 18.4.4. With mitigation, the Project is expected to increase business procurement opportunities for local companies during construction of the Project, including for Aboriginal businesses. As the Project effects on Regional Economic Development are expected to be beneficial, there are no anticipated residual adverse effects to characterise, or on which to determine significance.</p>
ab_0001-514	Treaty 8 Tribal	V.3, S.18.4.2 ; page(s) 18-22 ;	<p><i>BC Hydro has a Project objective to create lasting economic and social benefits for communities, Aboriginal groups, and the province.</i> Comments It is unclear</p>	<p>BC Hydro has a Project Charter, described in Section 3.1.4 of the EIS, that states the Project objective cited in the comment. Communities are the municipal, regional district and Aboriginal</p>

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	Association	line(s) 7-9 EISG S.14.4.4 Comment 3-23.	how BC Hydro weighted the competing interests in evaluating economic and social benefits between “communities, Aboriginal groups and the province.” Information Request BC Hydro is requested to: a) describe its methodology for evaluating the economic and social benefits of the proposed Project for communities, Aboriginal groups and the Province; b) define what is meant by a “lasting economic and social benefit” for each of “communities, Aboriginal groups and the province”; and c) define what “communities” means.	communities in the vicinity of the Project. Table 3.1 in Section 3.1.4 further describes this Project objective as: <ul style="list-style-type: none"> • create construction-related jobs and business opportunities, • consult and work with communities about regional benefits such as upgrades to infrastructure including roads, bridges and parks, and • work with Aboriginal communities to identify and create opportunities for skills training, jobs and economic development. <p>Benefits would include Impact Benefit Agreements, a legacy benefit agreement and mitigation agreements, where appropriate. Project benefits are further described in Section 7 of the EIS under the following Sections: Ratepayer Benefits; Taxpayer Benefits; Economic Benefits; Environmental, and Social and Sustainability Benefits.</p>
ab_0001-515	Treaty 8 Tribal Association	V. 3, S.19.1.2 ; page(s) 19-2 ; line(s) 13-14 EISG S.15.1 Comment 3-24.	<i>Table 19.1 Key Issues: Current Use of Lands and Resources for Traditional Purpose</i> Comments Table 19.1 includes in the first column numerous specific issues raised by the T8FNs. In contrast, the second column entitled “approach to Addressing Key issues” is broad, unspecific, and in several cases refers the reader to portions of the EIS that do not address the issues raised. Also, numerous specific key issues raised by the T8FNs are not listed, or addressed. Information Request BC Hydro is requested to: a) explain the steps taken to confirm that the ‘key issues’ listed in table 19.1 actually reflect all of the Key Issues raised by the T8FNs in their various submissions, including the Sept. 17, 2010 <i>First Nations Declaration concerning the proposed Site C Dam</i> (T8TA 2010); b) provide the criteria for determining a “key issue” and identify any other issues that were excluded; c) explain the steps taken, if any, to consult with Aboriginal groups on the content of the “Key Issues” list, prior to its inclusion in the EIS; and d) revise the list based on any subsequent consultation undertaken with Aboriginal groups or as a result of information provided by Aboriginal groups since the filing of the EIS.	As noted in Section 19.1.2, the purpose of the "Key Issues" tables used in each of the VC sections of the EIS, including Section 19, is to guide the scope of the assessment for each VC. The key issues are not meant to be a list off all of the issues, concerns and interests that may have been raised by a particular group, but rather to provide a summary of those that relate to the VC. Issues attributed to the T8FNs in the Key Issues Table as well as the Aboriginal Group Issues, Concerns and Interests Tracking Table (Volume 1 Appendix H) were identified from a number of sources, including community and consultation meetings, phone calls, emails, submissions such as the Traditional Land Use Study, Community Baseline Report and T8FN Issues Report, the "97 Questions", as well as letters provided to BC Hydro since 2007. The key issues included in the table were those that aligned with the description of the VC as set out in Section 15 of the EIS Guidelines. As consultations continue with T8FN and other Aboriginal groups, BC Hydro continues to track and consider issues related to mitigation measures being raised in the environmental assessment.
ab_0001-516	Treaty 8 Tribal Association	V. 3, S.19.1.2 ; page(s) 19-4 ; line(s) Row 5 EISG S.15.1 Comment 3-25.	<i>Table 19.1 Key Issues: Current Use of Lands and Resources for Traditional Purpose</i> <i>The potential effects of the Project on the current and reasonably anticipated future use of lands and resources for traditional purposes have been assessed in Section 19 Effects Assessment on the basis that if the proposed Project does not proceed, the lands within the Flood Reserve will, for the reasonably anticipated future, remain in the same state as they are found in today, whether or not the Flood Reserve is removed.</i> Information Request BC Hydro is requested to: a) explain the steps taken to understand the current and historical effects of the flood reserve on the use of lands and resources by the T8FNs; b) provide a detailed description of BC Hydro’s understanding of the	Provision of an understanding of the potential effects of the flood reserve on the use of lands and resources by the T8FNs, or the perspectives of the T8FNs concerning the flood reserve, is outside the scope of the environmental assessment as set out in the EIS Guidelines. The flood reserve does not preclude the ability of those Aboriginal groups with asserted Aboriginal or established treaty rights in the area covered by the flood reserve, including the T8FNs, to use the area in their use of lands and resources for traditional purposes. Consequently, removal of the flood reserve from this area would not necessarily change the state of activity. Please also see the Technical Memo: Flood Reserve.

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			perspectives of the T8FNs concerning the influence of the existing flood reserve on land use and other cultural activities, including the selection of lands for treaty land entitlement or other purposes; and c) explain the basis of its assumption that removal of the flood reserve would not change the state of activity.	
ab_0001-517	Treaty 8 Tribal Association	V.3, S.19.1.2 ; page(s) 19-5 ; line(s) Row 9 EISG S.15.1 Comment 3-26.	<i>Table 19.1 Key Issues: Current Use of Lands and Resources for Traditional Purpose Where information respecting traditional knowledge has been made available to BC Hydro by Aboriginal groups, it has been incorporated into the baseline for those VCs to which it applies. Comments</i> Aboriginal groups may hold Aboriginal Traditional Knowledge regarding things like the influence of past reservoirs on wolf-caribou dynamics, or the incidence of wildlife mortality due to hanging ice and reservoir operations. The focus of BC Hydro’s efforts with the T8FNs to date has been on use and occupancy information and not traditional knowledge. Information Request BC Hydro is requested to: a) provide a full list of all places where traditional knowledge from the T8FNs was considered in preparing the EIS; b) describe, for each instance where Traditional Knowledge was considered, how it influenced the findings of the EIS; and c) provide a list of key gaps in the Aboriginal traditional knowledge identified to date and how BC Hydro proposes to address those gaps.	<p>Information from traditional land use and community baseline reports prepared by the T8FNs was considered in Sections 12-14, in Sections 17-26, Sections 28-30, and Section 34.</p> <p>The objective of the TLUS Agreement entered into by BC Hydro, the T8TA and the T8FNs in December 2010 was to “identify, map, and record the Traditional Knowledge, Use and Occupancy of the Study Area by the Member First Nations”, however little information identified as Traditional Knowledge was included in the TLUS final report. On September 21, 2012, BC Hydro sent a letter to all 29 Aboriginal groups, including the T8FNs requesting that they provide information respecting traditional knowledge for consideration in the EIS.</p> <p>Where information respecting traditional knowledge was made available by Aboriginal groups and where applicable to each of the noted VCs, information made available to BC Hydro was considered in the baseline.</p>
ab_0001-518	Treaty 8 Tribal Association	V.3, S.19.1.2 , Executive Summary ; page(s) 19-6 , 34 ; line(s) Row 12 EISG S.15.1 , S.15.2.4 Comment 3-27.	<p><i>Table 19.1 Key Issues: Current Use of Lands and Resources for Traditional Purpose Changes in the use of and access to culturally important places and valued landscapes is also considered in the assessment. An assessment on culture is not within the scope of the assessment on current use of lands and resources for traditional purposes.</i></p> <p><i>The creation of the reservoir would result in the loss of some important multi-use, cultural areas and valued landscapes.</i></p> <p>Comments Assessing changes to “culturally important places and valued landscapes” is not the same as assessing impacts of those changes on other matters such as culture, customary law, and inter-generational transmission of knowledge. These impacts are essential factors in determining the significance/seriousness of the effects of losing access to lands and resources. Section 15.2.4 of the EIS Guidelines reads as follows: The potential to adversely affect current use of lands and resources by Aboriginal persons for traditional purposes will be assessed by taking into account the potential for the Project to result in changes to key aspects: • Use of and access to lands used for traditional purposes; • Availability of harvested species based on the results of</p>	<p>Section 15 of the EIS Guidelines did not require that an effects assessment be carried out with respect to potential effects of the Project on culture, customary law, or inter-generational transmission of knowledge. However, in the EIS, BC Hydro included an assessment on the key aspect of other cultural and traditional uses of the land in order to consider changes to the use of and access to culturally important places and valued landscapes.</p> <p>The baseline information considered in the assessment of other cultural and traditional uses of the land was sourced from information provided by Aboriginal groups in traditional land use and community baseline reports. Much of the terminology used in the assessment was drawn from these sources.</p> <p>The assessment considered changes to cultural, sacred and teaching areas identified by Aboriginal groups as places where inter-generational knowledge transfer occurs, such as was noted about Bear Flats for the T8TA.</p> <p>Key issues identified in Table 19.1 were used to determine the key indicators ultimately used in the assessment. Given the issues raised by Aboriginal groups, BC Hydro identified the key indicators initially described in the EIS Guidelines to more accurately reflect the issues raised by Aboriginal groups.</p>

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			<p>the assessment of the potential effects of the Project on fish and fish habitat, vegetation and ecological communities, and wildlife resources; and • Other relevant considerations raised by Aboriginal groups. Culture is intricately connected to the exercise of treaty rights, and the Treaty promised that the First Nations could continue their “mode and way of life” after Treaty.</p> <p>Information Request The Proponent is requested to: a) identify how it defines the term “cultural areas” and whether this includes both tangible and intangible elements of culture; b) explain any differences between “cultural areas” and “culturally important places”; c) identify how it defines the term “valued landscapes”; d) indicate whether it is familiar with the concept of cultural landscapes and whether and how it considered the concept of cultural landscapes in its impact assessment; e) explain, despite the raising of culture by the T8FNs as a relevant consideration, why it was excluded from the assessment of the effects of the proposed Project on the current use of lands and resources for traditional purposes; f) explain why it did not assess effects related to all ‘key issues’ identified in Table 19.1, and other relevant considerations raised by Aboriginal groups that are not included in Table 19.</p>	
ab_0001-519	Treaty 8 Tribal Association	V.3, S.19.1.3 ; page(s) 19-9 ; line(s) 4-8 EISG S.15.1 Comment 3-28.	<p><i>...a “1” ranking was given where an adverse effect may result from an interaction, but standard mitigation measures to avoid or minimize the potential effects are available and well understood to be effective, and any residual effect is negligible.</i> Comments It is not clear in the EIS, how “standard mitigation measures” for effects on Treaty rights were identified and “proven to be effective”. Information Request BC Hydro is asked to identify what specific, well understood and effective “standard mitigation measures” it is referring to in relation to the mitigation of effects on current use of lands and resources for traditional purposes, and how they have been proven to work on previous projects affecting the T8FNs.</p>	<p>This comment relates to Section 19, which considers potential effects of the Project on the Current Use of Lands and Resources for Traditional Purposes, not effects on treaty rights. As identified in Volume 2 Appendix A Project Interaction Matrix, no rankings of “1” were given for interactions of the Project with the Current Use of Lands and Resources VC. As such, no standard mitigation measures were considered.</p> <p>The effectiveness of standard mitigation measures on previous projects affecting the T8FNs is outside the scope of the environmental assessment.</p>
ab_0001-520	Treaty 8 Tribal Association	V.3, S.19.1.3 , V.3, S.19.4.1 , V.3, S.19.4.4 ; page(s) 19-9, 19-10 , 19-72 , 19-82 ; line(s) 13-15, 1-3 , 1-5 , 31-33 EISG S.15.1 Comment 3-	<p><i>Interactions with the following activities were ranked “0”:</i> • <i>Hudson’s Hope shoreline protection maintenance</i> • <i>Operation of the 500 kV lines</i> • <i>Operational use of Portage Mountain and West Pine Quarries as required, including transportation of materials to the site.</i></p> <p><i>Construction of the Hudson’s Hope shoreline protection will destroy 6.12 ha of fish habitat along the Peace, including high-quality rearing, feeding, and/or spawning habitats for bull trout, rainbow trout, mountain whitefish, and rainbow trout. The Fish and Fish Habitat effects assessment notes that this section of the Peace River is used by lake trout for rearing, feeding, and/or spawning.</i></p>	<p>Section 19, Table 19.2 of the EIS presents the interactions of the Project with the Current Use of Lands and Resources for Traditional Purposes for both the construction and operation phases. All interactions presented in Table 19.2 were ranked as “2” in Volume 2 Appendix A Project Interactions Matrix, Table 2, and were carried through the effects assessment. The construction of the Hudson’s Hope Shoreline Protection, which includes relocation of overhead utilities; relocation of underground utilities; transportation of construction materials and supplies; and construction of shoreline protection berm, is considered in Table 19.2 under Project Activity “Construction of Reservoir”. This effect of the construction of the Hudson’s Hope shoreline protection is considered in the effects assessment of Section 19 (see page 19-72).</p> <p>Hudson’s Hope shoreline protection maintenance was ranked as a "0" because there is no</p>

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		29.	<i>Areas in the path of the future transmission line (moose) near the Peace Canyon Dam would be affected by increased access and competition from non-Aboriginal hunters. Information Request</i> BC Hydro is requested to: a) explain how it reached the conclusion that the Hudson's hope shoreline protection, transmission line operations and quarry operations would have no interactions with current use of lands and resources for traditional purposes by Aboriginal peoples; b) indicate what steps were taken and what information was used to confirm with the T8FNs that no potential interactions exist between the activities in part a) and T8FNs use of lands and resources; and c) explain how chemical spraying and brushing of transmission lines, quarry blasting, crushing, extraction and hauling, and shoreline protection were considered in determining no interaction between the activities described in part a).	<p>interaction between maintaining the shoreline protection and the Current Use of Lands and Resources for Traditional Purposes.</p> <p>The operation of the 500 kV line, as described in Volume 2 Appendix A Project Interactions Matrix, Table 2, does not have activities associated with it, but rather is listed in consideration of increases in EMF relative to the 138 kV lines. The interactions between the operation of the 500 kV lines and health are described in Section 33 Human Health. Activities pertaining to the transmission line, including right-of-way vegetation maintenance, are ranked "2" in Volume 2 Appendix A Project Interactions Matrix, Table 2 for the Current Use of Lands and Resources for Traditional Purposes VC and carried forward to Table 19.2 under "Transmission Line Operations".</p> <p>Operational use of Portage Mountain and West Pine Quarries is considered to have no interaction with Current Use of Lands and Resources for Traditional Purposes as the footprints were accounted for in the construction phase and would not change during operation.</p>
ab_0001-521	Treaty 8 Tribal Association	V.3, S.19.1.4 ; page(s) 19-10 ; line(s) 14 EISG S.8.5.3.1 S.15.1 Comment 3-30.	<i>Table 19.3 Key Indicators for Current Use of Lands and Resources for Traditional Purposes</i> Comments The RAA for current use of lands and resources for traditional purposes is the same as for Fish and Fish Habitat; Vegetation and Ecological Communities; and Wildlife Resources. It does not extend into the upper Peace River watershed. Key aspects of the indicators for this VC are listed as: §§ changes in fishing opportunities and practices; §§ changes in hunting and trapping opportunities and practices; and §§ changes in cultural and traditional uses of the land. It is important to document and consider the incremental and cumulative changes in opportunities for traditional pursuits that have occurred as a result of the previous hydroelectric development, in addition to the proposed Project. These prior developments in the watershed have influenced the current use of the T8FNs. Information Request The Proponent is requested to explain how it can reach defensible conclusions in its assessment of the cumulative effects of the proposed Project on the current use of lands and resources for traditional purposes without extending the spatial boundaries of the RAA to include the upper Peace watershed when use of lands and resources by the T8FNs continues to be affected by the prior hydroelectric developments.	<p>Please see the following Technical Memos:</p> <ul style="list-style-type: none"> - Spatial Boundary Selection - Cumulative Effects Assessment
ab_0001-522	Treaty 8 Tribal Association	V.3, S.19.1.5.1 ; page(s) 19-10 19-11 ; line(s) 17-21 1-15 EISG S.15.2.1 Comment 3-31.	<i>Table 19.4 Spatial Assessment Areas for Current Use of Lands and Resources for Traditional Purposes Vegetation and Ecological Communities, and Wildlife Resources LAA • Project activity zone buffered by 1,000 m, including a 1,000m buffer around the erosion impact line</i> Comments Both an LAA and an RAA are identified, but only the LAA receives meaningful attention in section 19. The T8FNs use of lands and resources is sensitive to sensory disturbance, air, water and noise pollution, changes in terrain and access, and other factors that may	<p>With respect to the comment that "only the LAA receives meaningful attention in section 19", as described in Volume 2 Table 10.1, the RAA is the area within which projects and activities, the residual effects of which may combine with residual effects of the Project, will be identified and taken into account in the cumulative effects assessment. The RAA identified for the Current Use of Lands and Resources for Traditional Purposes VC was used in the cumulative effects assessment in Section 19.6.</p> <p>Please see the following Technical Memos:</p>

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			<p>influence use at a distance. For example, an easy day trip through the bush when hunting from a particular camp may be approximately 5km, so the use of that camp relies upon success at hunting within 5km or so. If lands between 2km and 5km of the camp were inundated or significantly altered, the ecological basis for ongoing use of that camp would be significantly undermined, even though the camp would be outside the LAA for the proposed Project.</p> <p>Information Request The Proponent is asked to: a) explain why it chose such a limited area on which to focus its assessment, considering the input received from the T8FNs and the identified potential sensitivity of First Nations current use of lands and resources for traditional purposes within an area larger than the LAA for wildlife, fish, or vegetation and ecological communities; and b) provide an assessment of the potential effects of landslide-generated waves, and of the risk of landslide-generated waves, on the use of lands and resource by the T8FNs, particularly along tributaries to the Peace River.</p>	<p>- Cumulative Effects Assessment - Spatial Boundary Selection</p> <p>With respect to the area identified for the effects assessment, please see the response to ab_0012-012.</p> <p>The position of the landslide-generated wave impact line, as described in Section 11.2.3.9 of the EIS, is based on combinations of landslide volumes and velocities that are extremely unlikely to occur. As a result, that line was not considered in the effects assessment.</p>
ab_0001-523	Treaty 8 Tribal Association	V.3, S.19.1.5.1 ; page(s) 19-11 ; line(s) 19-22 EISG S.15.2.2 Comment 3-32.	<p><i>The temporal description of the VC itself centres on the seasonality of the current use of lands and resources for traditional purposes – i.e., the “seasonal round” – and was based on Aboriginal traditional knowledge, as communicated in consultation and through Project-specific Traditional Land Use Studies, and ethnohistorical and other reports.</i> Comments The seasonal round is an important concept for understanding project interactions, but this would usually be considered through characterizing the frequency or seasonality of effects. Information Request BC Hydro is asked to clarify what is meant by: <i>The temporal description of the VC itself centres on the seasonality of the current use of lands and resources for traditional purposes – i.e., the “seasonal round”</i></p>	<p>Where information was made available by Aboriginal groups with respect to the seasonal nature of their use of lands and resources, it was considered in the baseline description for Section 19. Baseline descriptions for Saulteau, Blueberry and Dene Tha’ First Nations include this information.</p>
ab_0001-524	Treaty 8 Tribal Association	V.2, S.19.2.1 ; page(s) 19-12 19-13 ; line(s) 33 4 EISG S.15.2.3 Comment 3-33.	<p><i>The following information was used to formulate the baseline and assist with assessment of potential effects on the current use of lands and resources for traditional purposes VC: • ... • Readily available Traditional Land Use and knowledge studies for other projects • ... • Ethnohistorical, anthropological, and geographical literature</i> Information Request BC Hydro is requested to: a) list the “readily available Traditional Land Use and knowledge studies for other projects” used in the EIS; b) list the ethnohistorical, anthropological, and geographical literature used in the EIS; and c) indicate how the information sources identified in a) and b) were incorporated into the EIS.</p>	<p>Please see the reference section for each VC for a complete list of the information sources for that section. Citations have been provided in the text. A complete list of references is also included in the Aboriginal Land and Resource Use Summaries included in Volume 5 Appendix A Part 3 for all 29 Aboriginal groups.</p> <p>The information identified was integrated in the Aboriginal Land and Resource Use Summaries included in Volume 5 Appendix A Part 3 for all 29 Aboriginal groups and in turn summarized in Section 19.3 Baseline Conditions and considered in the Section 19 Effects Assessment.</p> <p>Please see Volume 3 Appendix B Part 1 Section 4 for information regarding the approach taken to integrate First Nations community baseline information into the EIS.</p>
ab_0001-525	Treaty 8 Tribal Association	V. 3, S.19.2.2 ; page(s) 19-13 ; line(s) 9-23	<p>Comments BC Hydro indicates that Traditions Consulting Services summarized baseline information from the four T8TA First Nations. Traditions Consulting Services is well known for its work on the west coast, and especially with</p>	<p>Traditions Consulting summarized baseline information from the four T8TA First Nations derived from or related to traditional use study data. Traditions Consulting has extensive experience in the conduct of traditional use studies, and in the analysis of information from such studies.</p>

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		EISG S.15.2.3 Comment 3-34.	heritage and museum interpretation. Information Request BC Hydro is requested to: a) indicate the experience and credentials of Traditions Consulting and its staff in relation to environmental assessment in northeast BC, and in understanding the land use patterns, treaty rights, and cultural histories of boreal Dane-zaa; and b) clarify the roles and responsibilities for this section of the EIS in addition to the authorship of Pascale Méra of Big Sky Consulting	Traditions Consulting has worked on many projects related to land use patterns, treaty rights and cultural histories, and on projects that involve First Nations in the northern and interior parts of British Columbia. Pascale Méra, Big Sky Consulting, was the Discipline Lead for Section 19. She was responsible for overseeing and managing the preparation of Section 19, including integrating baseline information summarized by Traditions, integrating results of BC Hydro's Aboriginal consultation, developing the assessment framework (including defining residual effects criteria and significance thresholds) and assessing effects of the Project on Current Use of Lands and Resources for Traditional Purposes. She co-authored Section 19 with Peter Evans.
ab_0001-526	Treaty 8 Tribal Association	V.3, S.19.2.2 ; page(s) 19-13 ; line(s) 22-23 EISG S.15.2.3 Comment 3-35.	<i>Where First Nations submitted TLUS reports, these were used as the primary source of information for the baseline information presented in Section 19.2.2.</i> Correction We assume BC Hydro is referring in the excerpt above to “information presented in Section 19.3 of the EIS”. Comments It is not clear what other materials were integrated into the traditional use information baseline. No reference is made to the extensive qualitative information on traditional use and occupancy provided in the T8FNs’ Community Assessment Baseline Profile Report, for example. Information Request The Proponent is requested to identify whether and how it incorporated traditional land use and occupancy materials from the T8FNs’ Community Assessment Baseline Profile Report into Section 19 of the EIS, including from the Preamble and Sections 3, 4, 5 (5.1.3, 5.1.4, 5.2.3, 5.2.4, 5.3.3, 5.3.4, 5.4.3, 5.4.4), and 6.1.	The reference to Section 19.2.2 on line 23 of Page 19-13 is incorrect. This update has been added to the List of Errata and Updated Information. The detailed list of information sources used in Section 19 are listed in the References, on pages 19-115 through 19-123. The Aboriginal Land and Resource Use Summary for the T8FNs, in Volume 5 Appendix A06.3 also includes a list of sources used in the development of that summary. The T8FN Community Assessment Baseline Profile Report was considered in the development of the baseline for the T8FNs used in Section 19.
ab_0001-527	Treaty 8 Tribal Association	V.3, S.19.2.3 ; page(s) 19-13 ; line(s) 25-26 EISG S.15.2.3 Comment 3-36.	<i>A spatial analysis was undertaken to identify the overlap between the Project activity zone and areas that are currently used by Aboriginal groups for traditional purposes.</i> Information Request The Proponent is requested to: a) provide further details on the spatial analysis undertaken to identify overlap between the “activity zone” and Aboriginal land use areas; and b) clarify whether this overlap included the LAA and the RAA or just the “activity zone”.	In developing the Aboriginal Land and Resource Use Summary documents for each of the 29 Aboriginal groups, Traditions Consulting used maps included in traditional land use studies carried out for the Project and compared those with the LAA and RAA identified for the Current Use of Lands and Resources VC. Where a use identified on the map was located on the boundary of the LAA, a conservative approach was used and that use was included as taking place within the LAA. Where information from sources other than a Project-specific TLUS was considered in developing the baseline information, uses were similarly identified as being located within the LAA or RAA, as applicable.
ab_0001-528	Treaty 8 Tribal Association	V.3, S.19.2.3 ; page(s) 19-13 ; line(s) 29-37 EISG S.8.5.2, S.8.5.3, S.15.2.3 Comment 3-	<i>Integration of the TLUS data posed a number of challenges. To begin with, the study areas defined in the Project-specific TLUS reports submitted to BC Hydro, and other reports reviewed, do not align precisely with the LAA or RAA. Interpretation of various TLUS and other maps was necessary in an attempt to discern the location of activities in relation to the LAA or RAA. Similarly, the spatial information supplied by Aboriginal groups was frequently buffered, or redacted, for purposes of confidentiality or sensitivity, making it difficult to</i>	As described in Section 9.2.3.3.2 of the EIS, in order to integrate traditional land use data made available by Aboriginal groups through Project-specific TLUS reports, BC Hydro hired Traditions Consulting Services to review the completed TLUS reports and related materials, and to consider where additional information would be beneficial. After an initial review of the TLUS reports by Traditions Consulting, BC Hydro responded to the Aboriginal groups with specific questions, clarifications, or requests for additional information. As described in the BC Hydro Consultation Summary: Doig River First Nation, on June 19, 2012 BC Hydro sent letters to the T8TA and T8FN

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		37.	<i>identify specific locations in relation to the LAA for this VC. It is BC Hydro's understanding that the results of the TLUS are representative of the appropriate land uses in the respective TLUS areas. Information Request</i> The Proponent is requested to explain how it addressed the challenges relating to the integration of TLUS data.	<p>Chiefs advising that it had retained Traditions Consulting to review the T8TA's Data and Methodology Report. The letters enclosed a report assessing the completeness of the deliverables set out in the TLUS Agreement, and a report identifying potential information gaps in the TLUS. The letters invited T8TA and the T8FNs to provide any comments on the enclosed reports, any answers to the questions raised in the reports, or, any additional traditional knowledge or TLUS information. T8FNs responded to the June 19 letter on July 30, 2012.</p> <p>The TLUS agreement between BC Hydro, T8TA and the T8FNs includes a section identifying the treatment of buffered land use information, which was to be included in the TLUS deliverables and could be, at BC Hydro's request and with the agreement of the T8FNs, provided in an unbuffered format in accordance with a process set out in that agreement. BC Hydro made requests for this information from the T8FNs on May 1, 2012 and September 27, 2012. To date, the information has not been provided. The TLUS agreement provides that if the T8TA and T8FNs in their discretion refuse to supply the buffered information to BC Hydro, they shall not be entitled to utilize such information in a manner or purpose contrary to the interests of BC Hydro or the development of the Project in any regulatory proceeding, hearing, assessment or application.</p> <p>BC Hydro has considered ways to further integrate TLUS data, should the Project proceed to construction. Included in the mitigation measures proposed to address potential changes in cultural and other traditional uses of the land is a measure to work with Aboriginal groups to ground truth traditional land use information for specific areas prior to commencing construction, e.g. when determining the exact location of an access road.</p> <p>Please also see the response to ab_0001-527.</p>
ab_0001-529	Treaty 8 Tribal Association	V.3, S.19.3 ; page(s) 19-17 ; line(s) 2 EISG S.15.2.3 Comment 3-38.	<i>Table 19.8 Resource Use by Aboriginal Groups -Plants</i> Comments The T8FNs TLUS (included as Appendix A05, Part 5, in Volume 5 of the EIS) refers to the following as some of the 368 traditional use and occupancy values mapped by the T8FNs within the local study area for the TLUS: <i>145 reported subsistence values including a large number of fish harvesting sites including bull trout, dolly varden, rainbow trout, grayling, whitefish, and other fish, as well as preferred harvesting areas for berries, plant foods and wood materials, preferred drinking water sources, and kill sites for moose, deer, black bear, small birds and furbearers.</i> Despite this, Table 19.8 does not list berries, even "unspecified" berries, as an identified resource use by T8TA. This causes doubt about the analysis that underlies Tables 19.5 through 19.10 inclusive. Information Request Revise Tables 19.5 through 19.10 and resubmit them in light of all TLUS information brought forward to date by the T8FNs.	T8FN identification of the use of berries or wild fruit is described in Section 19.3.1.3.5, and is carried through the effects assessment on cultural or other traditional uses of land and resources in Section 19.4.6. The omission of this information from Table 19.8 was an error. This update has been added to the List of Errata and Updated Information. This update does not change the results of the effects assessment.
ab_0001-	Treaty 8	V.3,	Comments Throughout the assessment, BC Hydro discusses T8TA as if it is a	In Section 9.2.2.1, BC Hydro has provided some of the history of discussions with the entity

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530	Tribal Association	S.19.3.1.3.1 ; page(s) 19-33 ; line(s) 5-7 EISG S.15.2.3 Comment 3-39.	single First Nation entity. Information Request Provide clarification regarding BC Hydro's understanding of the relationship between T8TA and the T8FNs for the purpose of the environmental assessment.	referred to throughout the EIS as the Treaty 8 Tribal Association. Specifically, on page 9-23, lines 8-16, the following is noted: "Section 20.1 of the EIS Guidelines does not specifically include Tribal Associations, however, on March 24, 2008, the Saulteau, West Moberly, Halfway River, Fort Nelson, Doig River, and Prophet River First Nations indicated to BC Hydro that they wished to be consulted respecting the Project through a tribal council entity originally called the Council of Western Treaty 8 Chiefs and later referred to as the Council of B.C. Treaty 8 Chiefs. On January 25, 2010, Saulteau First Nations informed BC Hydro that it was no longer represented by the Tribal Council. Beginning in April 2010, Fort Nelson First Nation was no longer represented by the Tribal Council. After April 2010, the Tribal Council was referred to as the Treaty 8 Tribal Association (T8TA). BC Hydro understands the entity identified as T8TA in the EIS materials to be, from April 2010 on, representative of the Doig River First Nation, Halfway River First Nation, Prophet River First Nation, and West Moberly First Nations. In much of the documentation submitted by those First Nations to BC Hydro, they identify themselves as T8FNs.
ab_0001-531	Treaty 8 Tribal Association	V.3, S.19.3.1.3.2 ; page(s) 19-34 ; line(s) 16-17 EISG S.15.2.3 Comment 3-40.	<i>In addition, a range of publicly available published and unpublished studies was reviewed for information on traditional land and resource use by T8TA members.</i> Information Request BC Hydro is asked to list all reports reviewed on T8TA land and resource use.	The sources used in the assessment on Current Use of Lands and Resources for Traditional Purposes are listed on page 19-115 through 19-123 of Section 19. The Aboriginal Land and Resource Use Summary document prepared for Treaty 8 Tribal Association (Doig River, Halfway River, Prophet River and West Moberly First Nations) also includes references for materials considered in the preparation of that summary, and is found in Volume 5 Appendix A06.4.
ab_0001-532	Treaty 8 Tribal Association	V.3, S.19.3.1.3.2 ; page(s) 19-34 19-35 ; line(s) 23-42 1-21 EISG S.15.2.3 Comment 3-41.	Comments The BC Hydro summary of land use patterns in this section is selective and emphasizes areas away from the Peace River. It seems to ignore, or misinterpret, detailed submissions provided by the T8FNs, particularly as these relate to the unique importance of the Peace River valley. In addition, while "land alienation" is noted by the Proponent as the primary factor for loss of use to date in the Peace River area, the Proponent does not incorporate any of the extensive materials from Section 4 of the T8FNs Community Profile Report into the baseline conditions profile or into the later section on cumulative effects. Information Request The Proponent is requested to: a) reissue S.19.3.1.3 of the EIS, providing page citations for direct quotations from submissions made by the T8FNs; b) indicate which specific sections of the T8FNs Community Assessment Baseline Profile and Impact Pathways reports were used in preparing the materials in S.19.3.1.3; and c) provide further contextual information of loss of use and alienation that have contributed to current baseline use and occupancy issues for the T8FNs in the Peace River Valley.	BC Hydro's assessment of the potential adverse effects of the Project on the Current Use of Lands and Resources for Traditional Purposes, in particular that part of the assessment that considered changes to cultural and traditional uses of the land, did consider information from the TLUS and community baseline reports with respect to the importance of the Peace River Valley to the T8FNs.

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ab_0001-533	Treaty 8 Tribal Association	V.3, S.19.3.1.3.4 ; page(s) 19-37 ; line(s) 24-33 EISG S.15.2.3 Comment 3-42.	Comments This description presents the T8FNs current fishing in the study areas without regard to historical context. Information Request The Proponent is requested to provide its understanding of the ongoing factors, including methylmercury contamination from prior hydroelectric developments, that influence the extent of current fishing by the T8FNs in the studies areas.	<p>The baseline information set out in Section 19.3.1.3.4 was drawn from the information provided by the Treaty 8 Tribal Association on their current fishing practices and other sources listed in Section 19.2. Section 19 presents information on the factors that Aboriginal groups have identified as constraining their ability to use the lands and resources of the Peace River basin for traditional purposes, including changes in the overall health of the Peace River from development activities in the region (see, for example, page 19-14 and 19-35).</p> <p>Please refer to the following Technical Memos:</p> <ul style="list-style-type: none"> - Consideration of Historical Context in Assessment of Potential Effects and Impacts on Aboriginal Groups - Cumulative Effects Assessment - Methylmercury
ab_0001-534	Treaty 8 Tribal Association	V.3, S.19.4 ; page(s) 19-65 ; line(s) 35-40 EISG S.15.2.3 Comment 3-43.	<i>However, this section presents the assessment of the potential to adversely affect current use of lands and resources for traditional purposes by taking into account the potential for the Project to result in changes to the following key aspects: • Changes in fishing opportunities and practices • Changes in hunting and trapping opportunities and practices • Changes in other cultural and traditional uses of the land</i> Comments Section 15.2.4 of the EIS Guidelines reads as follows: <i>The potential to adversely affect current use of lands and resources by Aboriginal persons for traditional purposes will be assessed by taking into account the potential for the Project to result in changes to key aspects: • Use of and access to lands used for traditional purposes; • Availability of harvested species based on the results of the assessment of the potential effects of the Project on fish and fish habitat, vegetation and ecological communities, and wildlife resources; and • Other relevant considerations raised by Aboriginal groups.</i> The Proponent is not at liberty to rewrite the EIS Guidelines, and then conduct the effects assessment on current use of lands and resources for traditional purposes based on its revised set of EIS Guidelines. Information Request The Proponent is requested to discard the entirety of section 19.4 of the EIS, and conduct a new effects assessment in accordance with section 15.2.4 of the EIS Guidelines.	<p>The assessment of potential effects on the Current Use of Lands and Resources for Traditional Purposes, including consideration of the key aspects, was conducted in accordance with Section 15 of the EIS Guidelines, and appropriate information is provided in the EIS.</p> <p>The use of access to lands for traditional purposes, the availability of harvested species, and other relevant considerations raised by Aboriginal groups, were considered in the assessing the potential for the Project to change the three key aspects. As described in Section 19.1.2, the organization of key aspects in the EIS differs from the EIS Guidelines in order to facilitate an analysis of specific current use of lands and resources for traditional purposes (e.g., fishing, hunting, and cultural and traditional uses) separately. Additionally, "Changes to cultural and traditional uses of the land" was added as a potential effect to take into account key aspects, including cabins and campsites, drinking water, firewood, feather gathering, trails and water routes, cultural and spiritual places, collection of food and medicinal plants, and use of and access to culturally important places and valued landscapes. These key aspects were designed to respond to concerns raised by Aboriginal groups.</p>
ab_0001-535	Treaty 8 Tribal Association	V.1, S.19.4.1 , V.3, S.19.4.2 ; page(s) 19-71 , 19-76 ; line(s) 14-20 , 22-31 EISG S.15.2.4	<i>Construction activities are anticipated to result in a net increase of approximately 416 anglers by the end of Year 5 (a yearly average of 69 licenses) This is anticipated to decline thereafter, resulting in a net increase of 112 anglers over the entire construction period (See Table 24.18 Section 24 Harvest of Fish and Fish Habitat). This potential adverse effect, noted as a concern by T8TA, BRFN, DFN, and SFN, may be offset during operation by enhanced fishing</i>	<p>As described in Section 12.6.3.1, the new reservoir ecosystem is predicted to support equal or greater levels of long-term standing stock biomass of fish populations, and is expected to change the relative species composition.</p> <p>The assessment on potential effects of the Project on Human Health (Section 33) considered changes in country foods, specifically the effects of methylmercury in fish. Results from the Human Health Risk Assessment for Methylmercury and Fish (Volume 2 Appendix J Mercury</p>

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		Comment 3-44.	<p><i>opportunities that may develop at the reservoir.</i></p> <p><i>In the long term, all harvesters using the reservoir could be expected to adjust to the predicted dominance of kokanee or whitefish, reported to be harvested by T8TA and BRFN, although the timing of such an adaptation is uncertain.</i></p> <p><i>... The adaptation of a new reservoir fishery may mirror the development of the fish community within the reservoir in terms of the time it takes to adapt.</i></p> <p>Comments As evidenced in the T8FNs TLUS, the existing reservoirs do not provide the “enhanced fishing opportunities” claimed by the Proponent in the EIS. The statements about adjustment and adaptation do not clearly express conclusions as to whether adaptability in the long term is possible, and under what circumstances. Information Request BC Hydro is requested to present available research from British Columbia and elsewhere in Canada concerning the use of hydroelectric reservoirs for fishing by Aboriginal people, addressing the following: §§ the role of the presence and perception of elevated levels of methylmercury and methylmercury health advisories; §§ preferred species availability and abundance; §§ declines in fish biomass following inundation; §§ adverse effects related to loss of cultural sense of place and changes to the Aboriginal cultural landscape due to inundation, and associated reduction in the ability to pass on place-based traditional knowledge.</p>	<p>Technical Reports, Part 2 Mercury Human Health Risk Assessment) identify safe fish consumption levels for fish from the Site C reservoir and downstream of the Site C dam, during post construction periods (i.e., at peak methylmercury levels). Please also see the Technical Memo: Methylmercury</p>
ab_0001-536	Treaty 8 Tribal Association	V.3, S.19.4.1 ; page(s) 19-73 ; line(s) 27-42 EISG S.15.2.4 Comment 3-45.	<p><i>Aboriginal groups have expressed concern that the Project would cause contamination of fish in the Peace River and its tributaries. This concern is noted several times in TLUS reports, and draws on experiences with earlier hydroelectric projects on the Peace. The Human Health Assessment (Section 33) which draws upon the results of the Human Health Risk Assessment of Methylmercury in Fish Technical Data Report (Volume 2, Appendix J, Part 2) indicates that commonly consumed species of fish upstream of the dam site (e.g. rainbow trout, bull trout), could be consumed by the most sensitive age groups (toddlers and children and women of childbearing age) one -two times a week without exceeding Health Canada’s Tolerable Daily Intake for methylmercury. Fish species downstream of the dam site (e.g. goldeye, walleye) could be consumed by the most sensitive age groups one time per week and bull trout downstream of the dam site could be consumed two times per week. Comparing these results to reported baseline consumption frequencies of fish caught in the LAA (which indicate a relatively low frequency), the assessment concludes that people will not be required to change the frequency of consumption of fish that are caught from the LAA. This finding took into account results of Aboriginal</i></p>	<p>BC Hydro relied on Country Food Survey questionnaires/surveys completed as part of the First Nation Community Assessments (Volume 3, Appendix B, Part 1, Page B-2) and the results of a recent dietary study of BC First Nations to understand the dietary patterns of First Nations peoples within the Project area. Country Food questionnaires/surveys had not been completed as requested by BC Hydro by several First Nations in the Project area at the time of the EIS submission. The Aboriginal Group Supplemental Report will include consideration of the Blueberry River and Saluteau First Nations Community Baseline Reports in the findings reported in the EIS.</p> <p>As described in Section 33.2.2.3 Exposure Pathway Screening, lines 10 -14, with the possible exception of piscivorous birds, fish are expected to be the only country food item that will increase in methylmercury concentration as a result of the Project. Potential risks from consumption of piscivorous wildlife are expected to be lower than from fish consumption, as available data suggest that humans rarely consume piscivorous wildlife within the LAA (refer to Volume 3 Appendix J Mercury Technical Data Reports, Part 2 Mercury Human Health 13 Risk Assessment).</p> <p>The following Health Canada guidance was taken into account: Health Canada. 2007. Human</p>

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			<p><i>harvest and consumption studies.</i> Comments BC Hydro seems to indicate that aboriginal wild food consumption studies were undertaken. Information Request BC Hydro is requested to: a) clarify where information on methods, and particularly whether and how BC Hydro identified and characterized the most sensitive receptor(s) for the four T8FNs communities, as required by good practice for human health risk assessment (e.g., Health Canada, 2010);² b) provide references and explain the scope, methods and detailed findings of Aboriginal wild food consumption studies carried out in relation to the proposed Project; and c) identify and integrate, if Project-specific wild food consumption studies were not undertaken, the findings from previous country food production, consumption and sharing studies among Treaty 8 First Nations in BC, Alberta, and the NWT as necessary, noting comparison limitations.</p> <p>2 Health Canada. 2010. Federal Contaminated Site Risk Assessment in Canada: Supplemental Guidance on Human Health Risk Assessment for Country Foods. Accessed at http://www.hc-sc.gc.ca/ewh-semt/pubs/contamsite/country_foods-aliments_locale/index-eng.php</p>	Health Risk Assessment of Mercury in Fish and Health Benefits of Fish Consumption. Health Canada, Health Products and Food Branch, Food Directorate, Bureau of Chemical Safety, Ottawa, ON.
ab_0001-537	Treaty 8 Tribal Association	V.3, S.19.4.2 ; page(s) 19-76 ; line(s) 11-42 EISG S.15.2.4 Comment 3-46.	<p><i>Changes in species availability may affect Aboriginal communities at different times after the reservoir has been created. ...</i> Comments It is not clear how the “adaptability” of First Nations’ rights means that loss of an important area is not significant. It is also unclear whether BC Hydro has followed applicable legal principles in determining significance / seriousness of impacts, such as considering the “preferred means” of exercising the right (<i>Sparrow</i>), the meaning of the right and impacts to the First Nation (<i>Haida</i>, para. 43-44); and considered the fact that this analysis is akin to telling the First Nation to simply “hunt elsewhere” which was condemned in the <i>Mikisew</i> and <i>West Moberly</i> cases.³ Information Request BC Hydro is requested to provide information regarding the extent to which it has examined the historical context of the treaty right and the nature of Treaty 8 harvesting rights in coming to its determination that the right can adapt from a riverine to reservoir environment.</p> <p>3 R. v. Sparrow, [1990] 1 S.C.R. 1075; Mikisew Cree First Nation v. Canada (Minister of Heritage), [2005] 3 S.C.R. 388; West Moberly First Nations v. British Columbia (Chief Inspector of Mines), 2011 BCCA 247.</p>	<p>Please see the Technical Memo: Consideration of Historical Context in Assessment of Potential Effects and Impacts on Aboriginal Groups, as well as the response to ab_0004-089.</p> <p>Residual effects characterization criteria are defined in Section 19.5, Table 19.13. “Preferred means” is considered in the criteria for “context” which explicitly considers the importance of the use and the importance of the area (page 19-100). The value and importance of the current use and area is also included as one of the thresholds for determining significance.</p> <p>With respect to changes in fishing opportunities and practices, BC Hydro has noted that increases and decreases in availability of certain species would require adaptation of fishing practices by Aboriginal harvesters (page 19-76). This is not “akin to telling the First Nation to simply ‘hunt elsewhere’”.</p>
ab_0001-538	Treaty 8 Tribal	V.3, S.19.4.3 , V.3, S.19.4.5 ,	Comments The proposed mitigation measures are not associated with the effects they are intended to mitigate. Several items are not mitigation measures	The information required by Section 8.5.2.2 of the EIS Guidelines is described in Section 19 of the EIS.

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	Association	V.3, S.19.4.7 ; page(s) 19-77 , 19-83, 19-94 19-95 ; line(s) 1-19 , 12-24 , 5-24 1-35 EISG S.8.5.2.2 Comment 3-47.	but supportive measures, involving ‘consultation’ or ‘seeking input’. The materials required by the EIS Guidelines in S.8.5.2.2 Mitigation Measures have not been provided. Information Request The Proponent is requested to: a) indicate, for each mitigation measure, the effect that is intended to be mitigated, the timeline in which this mitigation will be achieved, and the measurable outcomes; b) provide greater specificity regarding how the supportive measures involving consultation and seeking input will be implemented and what is expected to be achieved; c) discuss the potential for and scope of any unintended adverse environmental effects of the proposed mitigation measures; and d) provide the materials required by S.8.5.2.2 of the EIS Guidelines.	<p>Table 19.12 Project Effects and Mitigation Measures -- Current Use of Lands and Resources for Traditional Purposes aligns the proposed mitigation measures to each of the three potential effects. Provision of information regarding timelines and measurable outcomes respecting mitigation measures was not a requirement of the EIS Guidelines.</p> <p>For those measures where consultation with and seeking input from Aboriginal groups has been identified, BC Hydro intends to continue to consult with Aboriginal groups, as described in Section 9.2.4, in order to answer questions and address issues, interests, and concerns from Aboriginal groups by identifying appropriate mitigation measures and/or other appropriate means by which to address or resolve potential impacts. This process could include the review of proposed mitigation measures described in Section 19.</p> <p>Discussion of the potential for, and scope of any unintended adverse environmental effects of the proposed mitigation measures, is outside the scope of the environmental assessment.</p>
ab_0001-539	Treaty 8 Tribal Association	V.3, S.19.4.4 ; page(s) 19-80 ; line(s) 10 EISG S.15.2.4 Comment 3-48.	Information Request The Proponent is requested to: a) provide the actual quantities of wildlife habitat alteration, disruption and destruction result from the proposed Project; and b) estimate and provide the relative changes in fish populations by species.	<p>Quantification of ecosystem loss associated with the Project is provided in Section 13. Section 14 quantifies habitat loss by wildlife groups/indicator species and discusses these losses. Section 12.3 provides an assessment of the effects of changes to habitat, changes to health and survival, and changes to movement.</p> <p>The scope of the effects assessments for Fish and Fish Habitat, Vegetation and Ecological Communities and Wildlife Resources is in accordance with the EIS Guidelines and appropriate information is provided in the EIS.</p>
ab_0001-540	Treaty 8 Tribal Association	V.3, S.19.4.6 ; page(s) 19-84 ; line(s) 31-36 EISG S.15.2.4 Comment 3-49.	<i>No physical indications of burial sites have been found at these locations (Section 32 Heritage Resources Effects Assessment); however, an oral tradition about burial sites may be of cultural heritage value, and would be changed by the Project. It is uncertain how Aboriginal community members will respond to the submergence of the areas believed, traditionally, to hold graves belonging to their ancestors.</i> Comments BC Hydro appears to presume that, since its heritage resource assessment has been unable to locate burial sites, such sites must exist only in “oral tradition”. Information Request BC Hydro is requested to: a) explain how, based on consultations to date, the T8FNs will likely respond to the flooding of burials known through oral history; b) discuss potential alternative meanings of the oral traditions concerning burial sites if they do not indicate the presence of actual burial sites; c) discuss the measures taken to date to locate burial sites identified by oral tradition; and d) identify any additional measures to identify burial sites that would be taken prior to construction of the proposed Project.	<p>As stated in Section 19.4.6 of the EIS, it is uncertain how Aboriginal community members will respond to the submergence of the areas believed, traditionally, to hold graves belonging to their ancestors.</p> <p>While no physical indications of burial sites have been found through the heritage program, BC Hydro does not state that burial sites do not exist or that they may not be discovered in future.</p> <p>As noted in Section 19.4.7 in the EIS, BC Hydro will work with Aboriginal groups to ground truth traditional land use information for specific areas within the Project activity zone prior to commencing construction, which could include burial sites, and establish a Culture and Heritage Resources Committee to provide advice and guidance on the mitigation of specific effects of the Project on culture and heritage resources.</p> <p>Please also see the response to ab_0001-628.</p>
ab_0001-	Treaty 8	V.3, S.19.5.3 ;	<i>Criteria used to characterize residual effects [on current use of lands and</i>	Section 8.5.2.4 of the EIS Guidelines requires BC Hydro to provide its assessment of the

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541	Tribal Association	page(s) 19-99 ; line(s) 31-32 EISG S.15.2.5 Comment 3-50.	<i>resources for traditional purposes], presented in Table 19.13 were defined based on experience and results of consultation with Aboriginal groups. Table 19.13 Characterization Criteria for Residual Effects on Current Use of Lands and Resources for Traditional Purposes</i> Information Request BC Hydro is requested to describe how and to what extent Aboriginal groups were specifically asked to contribute to the identification of residual effects characterization criteria, their descriptions and related quantitative measures and definitions.	significance of any residual effects and its rationale for reaching that determination. However, in determining its findings respecting the significance of any residual effects, BC Hydro can take into consideration the views of Aboriginal groups. In a letter to BC Hydro dated December 21, 2012, T8TA included a suggestion of four additional criteria respecting the characterization of residual effects in addition to those criteria outlined in Table 8.3 of the EIS Guidelines. BC Hydro considered the suggested criteria, and took them into account in developing specific sub-criteria for the general “Context” criterion required by Table 8.3. These sub-criteria are set out in Table 19.13 of Section 19 of the EIS.
ab_0001-542	Treaty 8 Tribal Association	V.3, S.19.5.3 ; page(s) 19-100 ; line(s) 1-3 EISG S.15.2.5 Comment 3-51.	<i>Table 19.13 Characterization Criteria for Residual Effects on Current Use of Lands and Resources for Traditional Purposes Magnitude The amount of change in a measurable parameter or variable relative to baseline case • Low: current use of lands and resources for traditional purposes is adaptable and may be readily transferred elsewhere without undermining the traditional purpose • Moderate: current use of lands and resources for traditional purposes is adaptable and may be readily transferred, however, the traditional purpose is undermined • High: current use of lands and resources for traditional purposes is highly impaired and is not adaptable or readily transferrable elsewhere</i> Comments The consideration of magnitude has not provided for the historical context respecting adaptability of the land users. There are limits to adaptation and existing impacts since the signing of Treaty 8 pushed the T8FNs towards, and in some cases beyond, those limits. Future reasonably foreseeable projects and activities will contribute to this situation. While the context criterion considers the adaptability of the land, no consideration appears to be given to the adaptability of the T8FNs culture or people. Information Request The Proponent is requested to: a) explain why it did not consider limits to the potential adaptability of the T8FNs and other Aboriginal groups; b) discuss, based on dialogue with the T8FNs and other Aboriginal groups as well as research into this concept of adaptability, what adverse effects have been associated with continual requirements for adaptation and alteration of harvesting location and patterns on Aboriginal peoples; c) propose specific limits to adaptability in the context of fishing, hunting, knowledge transmission and other aspects of land use; d) summarize what has been learned from the various land use and community assessment studies carried out to date with respect to the limits of adaptability of Aboriginal groups; and e) identify and describe the contribution of additional factors that could further limit the potential for adaptation, including climate change.	The discussion of adaptability of aboriginal land use practices in Section 19 is not based on a theoretical model that predicts the ability of Aboriginal hunters to transfer their practices from affected areas to unaffected areas, but on an analysis of the current land use spatial data and other information provided directly by the Aboriginal groups themselves, as well as other available sources. BC Hydro recognizes that there are multiple developments in Treaty 8 territory and that T8TA, like the area’s other Aboriginal groups, is concerned about the accumulative effect of development. For a discussion of the cumulative effects methodology, see the Technical Memo: Cumulative Effects Assessment. Describing a likely threshold or proposing limits for adaptability of Aboriginal land use practices is outside the scope of the environmental assessment.
ab_0001-	Treaty 8	V.3, S.19.5.3 ;	<i>The effect would be of ... moderate magnitude for SFN and T8TA, as the affected</i>	BC Hydro's review of the material made available by the T8FNs and from publicly available

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543	Tribal Association	page(s) 19-102 ; line(s) 14-17 EISG S.15.2.5 Comment 3-52.	<i>areas are within their core current use hunting areas. The geographic extent of the effect would be local, as it is confined within the LAA. Comments It is unclear why the magnitude is not high since the proposed Project is being constructed and operated within the core hunting area of the T8FNs, with large areas of lost habitat and expected reductions in populations of moose, a primary species of sustenance. It is also unclear how the geographic extent is limited to the LAA, given that the actual effect would be to push both Aboriginal and non-aboriginal harvesters into areas outside the LAA, and to reduce the numbers and health of harvested species like moose that travel outside the LAA. Information Request The Proponent is requested to: a) describe the quantitative and qualitative characteristics of a high magnitude effect on current use of lands and resources for traditional hunting of moose; and b) explain how the geographic extent of the effect would be local when resources users would be forced into greater competition outside of the proposed LAA.</i>	<p>sources does not support the statement that the LAA is the T8FN core hunting territory.</p> <p>Magnitude is characterized in Table 19.3 on page 19-100. A High Magnitude effect is described as one where “current use of lands and resources for traditional purposes is highly impaired and is not adaptable or readily transferrable elsewhere.” The assessment was based on the current land use spatial data and other information provided directly by the Aboriginal groups themselves, as well as other available sources, Project information, and results of environmental effects assessments in Sections 12, 13, and 14.</p> <p>The Local Assessment Area (LAA) and the Regional Assessment Area (RAA) for the Current Use of Lands and Resources for Traditional Purposes VC are described in Section 19.1.5.1. “The LAA was defined in consideration of the expected maximum geographic extent of the potential for the Project to cause an adverse effect on the VC current use of lands and resources for traditional purposes”.</p> <p>BC Hydro has proposed the consideration of community-based monitoring related to the potential effect of the Project on current use of lands and resources (Section 19.7 page 19-114). Please also see the Technical Memo: Spatial Boundary Selection.</p>
ab_0001-544	Treaty 8 Tribal Association	V. 3, S. 19.5.3 ; page(s) 19-104 ; line(s) 1 EISG Comment 3-53.	<i>Table 19.14 Characterization of Residual Effects: Current Use of Lands and Resources for Traditional Purposes Comments Table 19.14 indicates that the anticipated duration of effects in all three parameters is “long-term and continuous”. Table 19.13 indicates that effects longer than 10 years are considered ‘permanent’. Information Request BC Hydro is requested to correct table 19.14 to indicate that “duration and frequency “ is ‘permanent and continuous” or, if not, explain why not.</i>	<p>Based on the effects assessment in Section 19.4, the residual effect on changes to cultural and traditional uses of the land should be characterized in Table 19.14 page 19-104 as "Permanent and Once", as described in the text in Section 19.5.3, page 19-102. This update has been added to the List of Errata and Updated Information. This update does not change the results of the effects assessment.</p> <p>For clarity, the definition of Permanent, following on the definition of “Long-Term”, should read “effect extends beyond 10 years of the operation phase”. This change has been added to the List of Errata and Updated Information.</p>
ab_0001-545	Treaty 8 Tribal Association	V. 3, S. 19.5.4 ; page(s) 19-105 ; line(s) 1-9 EISG S.15.2.5 Comment 3-54.	<i>The significance of each residual effect is evaluated taking into consideration the criteria provided in Table 19.13, existing knowledge about current use of lands and resources for traditional purposes, and the likely effectiveness of mitigation. A determination of significance will be made where: • a current use of lands for traditional purposes would be permanently undermined and its practice cannot be readily reproduced elsewhere; and • the current use and area is indicated to be of high value or importance among Aboriginal groups for traditional purposes Comments While BC Hydro states that the Project is likely to result in a residual adverse effect on the Current Use of Lands and Resources for Traditional Purposes, the EIS finds that the effects on hunting, fishing and trapping are not significant. In coming to this conclusion, BC Hydro has used a threshold for determining significance that does not rely on standard practice^{4, 5} or legal</i>	<p>With respect to the comment “BC Hydro makes a claim that practices of Aboriginal peoples are ‘adaptable’ (essentially implying that there is no significance to particular locations when assessing impacts to hunting, fishing, and trapping)” BC Hydro notes the following:</p> <p>1) The discussion of adaptability of aboriginal land use practices in Section 19 is not based on a theoretical model that predicts the ability of Aboriginal hunters to transfer their practices from affected areas to unaffected areas, that are unknown or new to them or where they have not harvested before, but on an analysis of the current land use spatial data and other information provided directly by the Aboriginal groups themselves, as well as other available sources.</p> <p>2) BC Hydro specifically considered areas identified by Aboriginal groups as being of high value in its assessment. The criteria for “context” explicitly consider the importance of the use and the importance of the area (Table 19.13 page 19-100). The value and importance of the current use</p>

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			<p>justification. <i>CEAA, 2012</i> provides that adverse environmental effects are used to determine significance in federal environmental assessments. <i>Mikisew</i> stated that impacts are assessed in terms of each First Nation's traditional territory, and rejected the Crown's argument that the First Nation could simply take their practices elsewhere in the Treaty territory. Here, as in <i>Mikisew</i>, BC Hydro makes a claim that practices of Aboriginal peoples are 'adaptable' (essentially implying that there is no significance to particular locations when assessing impacts to hunting, fishing, and trapping). Information Request BC Hydro is requested to:</p> <p>a) indicate what consultation it undertook with the T8FNs, regulators or others in developing its threshold for significance; and b) provide the basis, scholarly or otherwise, for an assumption that an effect on use of lands or resources for traditional purpose must 'permanently undermine' the use to be significant.</p> <p>4 Hegmann, G., C. Cocklin, R. Creasey, S. Dupuis, A. Kennedy, L. Kingsley, W. Ross, H. Spaling and D. Stalker (1999). Cumulative Effects Assessment Practitioners Guide. Prepared by AXYS Environmental Consulting Ltd. and the CEA Working Group for the Canadian Environmental Assessment Agency, Hull, Quebec.</p> <p>5 Vanclay, F. 2003. "SIA Principles: International principles for social impact assessment. Impact Assessment and Project Appraisal, 21(1), March 2003, p. 5-11.</p>	<p>and area are also included as one of the thresholds for determining significance.</p> <p>With respect to the information request with respect to development of the threshold for significance, please see the response to ab_0001-189.</p>
ab_0001-546	Treaty 8 Tribal Association	V. 3, S. 19.5.5 , V.3, S.19.4.1 ; page(s) 19-105 , 19-71 ; line(s) 17-22 , 9-11 EISG S.15.2.5 Comment 3-55.	<p><i>The effect on current use of lands and resources for fishing would be adversely altered by the Project. Although some aspects of the traditional purpose of the activity may be altered by transferring them to another location, fishing practices of Aboriginal people are adaptable, spatially and temporally. The effect on current use of lands and resources for fishing is not significant. Aboriginal fishers may adapt to Project-related restrictions on access by using other access points and fishing areas, such as the Peace River downstream of the Project dam site, the Pine River, Dinosaur Reservoir, or other areas in the region.</i></p> <p>Comments In section 19.5.3, BC Hydro recognizes that impacts on fishing by members of the T8FNs would be adverse, continuous, long-term, and irreversible, with uncertainty as to whether a stable fisheries resource can be established. Yet, in section 19.5.5 BC Hydro asserts that 'because fishing practice of Aboriginal people are adaptable, spatially and temporally', the effects on fishing are "not significant". The basis for the assumption or conclusion that Aboriginal fishers can "go elsewhere" is not provided in the EIS.</p> <p>Information Request The Proponent is requested to: a) provide a map and evaluation matrix of all comparable 'alternative' locations where the practice of</p>	<p>The discussion of adaptability of aboriginal land use practices is not based on a theoretical model that predicts the ability of Aboriginal fishers to transfer their practices from affected areas to unaffected areas, that are unknown or new to them, or where they have not harvested before, but on an analysis of the current land use spatial data and other information provided directly by the Aboriginal groups themselves, as well as other available sources.</p> <p>The effects assessment in Section 19 is not derived from the identification of specific other fishing, hunting and trapping sites by BC Hydro or its consultants. The assessment drew on information obtained from Aboriginal groups themselves with respect to areas where they currently hunt, fish and trap. Maps identifying use of lands and resources outside of the LAA are included in the following parts of Volume 5 Appendix A: A03 Part 5, A04 Part 5, and A06 Part 5.</p>

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			<p>fishing may be transferred at an equivalent or better level based on the following criteria developed in consultation with the T8FNs and other Aboriginal groups, as appropriate: §§ ecological similarity to the Peace River Valley (including south facing banks and similar flow and freeze/thaw profile); §§ temporal similarity to the Peace River in species patterns (seasonal presence, spawning, feeding, etc.); §§ similar or greater abundance of each species; §§ capability of fish populations at alternate locations to sustain additional harvesting; §§ potential for conflicts with other resource users; §§ similar or greater quality of fish within species (size, taste, other factors); §§ similar or greater replacement rates (able to sustain use over the long term); §§ similar or greater diversity, abundance, and quality of other fished species; §§ similar or better catch rate (rod and reel, or net); §§ similar or better road and trail access; §§ similar or better environmental features such as fishing rocks, accessible pools or ‘fishing holes’, etc.; §§ similar or better proximity to First Nation reserve lands and First Nation residences; §§ similar or better degree of traditional knowledge or familiarity of First Nations harvesters; §§ similar or better distance away from nearest industrial disturbance, traffic, or pollution source; §§ perceptions of the health of fish species (e.g. methylmercury or other contaminants) in the alternative locations; §§ similar or better proximity to ancillary resources (clean drinking water, traditional camps and habitation areas); §§ potential effects of the Project on the alternative locations outside the LAA; and b) reconsider the determination of significance based on the availability, proximity and suitability of alternative fishing locations determined in part a).</p>	
ab_0001-547	Treaty 8 Tribal Association	V. 3, S. 19.5.5 , V.3, S.19.4.4 , V.3, S.19.4.4 ; page(s) 19-105 , 19-81 , 19-82 ; line(s) 24-27 , 31-34 , 40-41 EISG S.15.2.5 Comment 3-56.	<p><i>The effect on hunting and trapping opportunities and practices would be adverse, however, the traditional purpose of the activity would not be undermined. The Project effect on current use of lands and resources for hunting and trapping (non-tenured) is not significant. Loss of furbearers and small game could affect Aboriginal harvesters who have indicated current use overlapping the LAA, including SFN and T8TA members. However, these effects would be confined to the construction period. In addition, other harvesting areas are identified outside the LAA. However, T8TA has identified in its TLUS additional moose hunting areas that lie outside the LAA.</i> Comments In section 19.5.3, BC Hydro estimates that impacts on hunting and trapping by members of the T8FNs would be adversely affected by the proposed Project. However, the effects are stated to be temporary and reversible. This statement only seems to refer to access to hunting areas. Whether the effects are temporary depends on the ability of “animals and Aboriginal hunting and nontenured trapping</p>	Please see the response to ab_0001-546.

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			practices to adapt to the post-project environment.” Information Request The Proponent is requested to: a) provide a map and evaluation matrix of all comparable ‘alternative’ locations where the practice of hunting or trapping may be transferred at an equivalent or better level based on the following criteria developed in consultation with the T8FNs and other Aboriginal groups, as appropriate: §§ ecological similarity to the Peace River Valley (including south facing banks); §§ temporal similarity to the Peace River in species patterns (seasonal presence, feeding, nesting, etc.); §§ similar or greater abundance of each species; §§ capability of wildlife populations at alternate locations to sustain additional harvesting; §§ potential for conflicts with other resource users; §§ similar or greater quality of wildlife within species (size, taste, other factors); §§ similar or greater replacement rates (able to sustain use over the long term); §§ similar or greater diversity, abundance, and quality of other hunted or trapped species; §§ similar or improved hunting or trapping success rate; §§ similar or better road and trail access; §§ similar or better environmental features such as mineral licks, look-out points, fields of view, browsing areas, calving areas, or other features; §§ similar or better proximity to reserve lands and First Nation residences; §§ similar or better degree of traditional knowledge or familiarity of First Nations harvesters regarding the area; §§ similar or better distance away from nearest industrial disturbance, traffic, or pollution source; §§ perceptions of the health of wildlife species (e.g. presence of contaminants) in the alternative locations; §§ similar or better proximity to ancillary resources (clean drinking water sources, traditional camps and habitation areas); §§ potential effects of the proposed Project on the alternative locations outside the LAA; and b) reconsider the determination of significance based on the availability, proximity and suitability of alternative hunting and trapping locations determined in part a).	
ab_0001-548	Treaty 8 Tribal Association	V.3, S.19.5.5 ; page(s) 19-106 ; line(s) 10-11 EISG S.15.2.5 Comment 3-57.	<i>Table 19.15 Summary of Assessment of Potential Significant Residual Adverse Effects Changes in Hunting and Trapping Opportunities and Practices</i> • <i>Implement of all mitigation measures set out in the Wildlife Resources VC and those set out in Harvest of Fish and Wildlife Resources VC, pertaining to trapping.</i> • <i>Consult with Aboriginal groups respecting the development of wildlife habitat compensation projects that align with BC Hydro compensation programs.</i> • <i>Seek input from Aboriginal groups respecting mitigation strategies, such as mitigation measures related to trap lines in the Project activity zone.</i> • <i>Continue to consult with Aboriginal groups on clearing plans and protocols.</i> • <i>Develop a communications program to inform harvesters of planned or unplanned events related to construction activities that may affect hunting</i>	For those measures where consultation with and seeking input from Aboriginal groups has been identified, BC Hydro intends to continue to consult with Aboriginal groups, as described in Section 9.2.4, in order to answer questions and address issues, interests, and concerns from Aboriginal groups by identifying appropriate mitigation measures and/or other appropriate means by which to address or resolve potential impacts. This process could include the review of proposed mitigation measures described in Section 19.

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			<i>opportunities or access.</i> Comments Consulting, seeking input and developing a communications plan are not mitigation measures.	
ab_0001-549	Treaty 8 Tribal Association	V.3, S.19.6 ; page(s) 19-108 ; line(s) 2-10 EISG S.15.2.5 Comment 3-58.	<p><i>The assessment of the cumulative effects of the Project on the current use of lands and resources for traditional purposes VC has been conducted subject to limitations in the information relied upon. Information about the potential effects of other projects and activities often did not include a comprehensive analysis of potential residual effects on Aboriginal current use of lands and resources for traditional purposes. As described in Section 19.2.1, the spatial information supplied by Aboriginal groups was frequently limited to areas adjacent to the Project activity zone, buffered, or redacted for purposes of confidentiality or sensitivity, making it difficult to identify specific locations or to determine the geographic extent and range of current uses.</i> Comments BC Hydro neglects to note that the “limitations in the information relied upon” are largely of its own making, including as follows: §§ Other projects. The WAC Bennett Dam and the Peace Canyon Dam – planned, constructed, operated and monitoring by BC Hydro – are two of the primary projects for which a “comprehensive analysis of potential residual effects on Aboriginal land and resource use has yet to be carried out”; §§ Spatial limitations to land use information. Negotiations regarding the spatial scope of land use studies were negotiated by the T8FNs (and presumably other Aboriginal groups) in good faith and agreed to by BC Hydro. Provision of more time and resources by the Proponent would have contributed to greater spatial coverage in the information. §§ Buffered and redacted information. The T8FNs and BC Hydro are presently engaged in a process to facilitate the provision of further information on the buffered cultural sites to BC Hydro. §§ Incomplete EIS. BC Hydro neglects to note that another primary reason that it cannot conduct an adequate cumulative effects assessment is that it failed to complete land use and community assessment studies for several Aboriginal groups. §§ Lack of incorporation of qualitative inputs. Pages 65 to 99, 105-106, 122-123, 138-140, and 154-157 of T8FNs’ Community Profile Report, more than 45 pages in this one document alone, focus on cumulative effects causes and outcomes on the T8FNs’ traditions and mode of life, as noted by approximately 70 interview respondents. The EIS main sections ignore this material in its entirety. §§ Trend over time analysis. Contextual baseline and trend-over-time data, including maps of changing land tenure and other factors affecting meaningful access to traditional lands for the practice of Treaty and Aboriginal rights, is essential but not provided in the EIS. The T8FNs consistently raised concerns about the lack of cumulative effects assessment in their traditional territories, and about the</p>	<p>With respect to the comments outlined in this IR, BC Hydro notes the following:</p> <p>As noted in the EIS, BC Hydro entered into TLUS Agreements with several First Nations, including the T8TA and T8FNs. BC Hydro and the T8FNs entered into an agreement to negotiate a TLUS agreement in December 2009, and a TLUS agreement was concluded a year later and two years prior to submission of the EIS. As of November 20, 2012 BC Hydro had made \$1.3 million available to Aboriginal groups, including funding provided to the T8FNs, to support traditional land use studies.</p> <p>With respect to BC Hydro’s efforts to secure buffered information from the T8FNs, please see response to ab_0001-528.</p> <p>Concerns raised by the T8FNs respecting cumulative effects are described on pages 17 and 18 of the Volume 1 Appendix H Aboriginal Issues, Concerns and Interests Tracking Table, as well as in the Volume 5 Appendix A06 Part 2 BC Hydro Consultation Summary. With respect to consideration of information from the community baseline report, please see the response to ab_0001-017.</p> <p>With respect to the information request, the projects and activities to be taken into account in the cumulative effects assessment, and the information about the residual effects of those projects and activities, where available, were identified using the method described in Section 10.5.2 of the EIS. Information about the residual effects of those projects and activities on i) lands and resources and, ii) where available, on the Current Use of Lands and Resources for Traditional Purposes, has been taken into account in the assessment of cumulative effects in Section 19 of the EIS. Comments on the adequacy of the information for the purpose of assessing the potential cumulative effects of the Project on Current Use of Lands and Resources for Traditional Purposes are provided on page 19-108, in Section 19.6 of the EIS.</p> <p>Please also see the following Technical Memos:</p> <ul style="list-style-type: none"> - Cumulative Effects Assessment - Spatial Boundary Selection

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			extent of adverse effects caused by industrial development, extending back well over a century. BC Hydro makes no reference to any of this context in the EIS and provides no references to the T8FNs Community Assessment Baseline Profile and Impact Pathways reports that focus on these issues. The EIS provides an illusory picture of First Nations true status and vulnerability to future change. Information Request BC Hydro is requested to: a) list and describe the information available for use in the cumulative effects assessment of the proposed Project on the current use of lands and resources for traditional purposes by Aboriginal peoples; b) identify the gaps in this information; and c) identify the preferred means for filling those gaps.	
ab_0001-550	Treaty 8 Tribal Association	V.3, S.19.6.1.1 ; page(s) 19-109 ; line(s) 21-27 EISG S.9.1 S.15.2.5 Comment 3-59.	<i>Two projects, the Dunvegan Hydroelectric Project and the Montney Gas Play, were considered in the assessment of the potential cumulative effects of the Project on fish and fish habitat VC (Section 12 Fish and Fish Habitat). Neither has been assessed as likely to have effects that would combine with those of the Project to produce a cumulative effect on fish and fish habitat. For the full cumulative effects assessment, see Section 12. Given these results, the Project is unlikely to result in cumulative effects on fishing for traditional purposes.</i> Comments The assessment has not addressed the historical context respecting cumulative effects of the WAC Bennett Dam and Peace Canyon Dam on fishing for traditional purposes by Aboriginal people. Information Request BC Hydro is requested to: a) provide its understanding of the environmental changes respecting fish and fish habitat, and the current use of lands and resources for fishing by Aboriginal people that resulted from the WAC Bennett and Peace Canyon Dams; b) describe the mitigation measures employed at the WAC Bennnett and Peace Canyon Dams in relation to fish and fish habitat, and the current use of lands and resources by Aboriginal people; and c) describe the residual environmental effects of the WAC Bennett Dam and Peace Canyon Dam in relation to fish and fish habitat, and the current use of lands and resources for fishing by Aboriginal people.	The requested information is outside of the scope of the environmental assessment. Please also see the Technical Memo: Cumulative Effects Assessment.
ab_0001-551	Treaty 8 Tribal Association	V.3, S.19.6.2.2 ; page(s) 19-110 ; line(s) 36-43 EISG S.15.2.5 Comment 3-60.	<i>The Project Description is available but no potential effects on current use of lands and resources for traditional purposes have yet been identified. ... With a planned open-pit surface and underground coal mine, reductions in forests and possibly wetlands are anticipated. However, measureable reductions in the regional populations of ungulates, waterfowl, nonmigratory game birds, and fur-bearers are not expected.</i> Comments Since no effects assessment has yet been undertaken on the Carbon Creek Coal Mine, it is unclear how BC Hydro can confidently report that: “measureable reductions in the regional	The projects and activities to be taken into account in the cumulative effects assessment, and the information about the residual effects of those projects and activities, where available, were identified using the method described in Section 10.5.2 of the EIS. Information about the residual effects of those projects and activities on i) lands and resources and, ii) where available, on the Current Use of Lands and Resources for Traditional Purposes, has been taken into account in the assessment of cumulative effects in Section 19 of the EIS. Comments on the adequacy of the information for the purpose of assessing the potential cumulative effects of the Project on Current Use of Lands and Resources for Traditional Purposes are provided on page 19-108, in

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			populations of ungulates, waterfowl, non-migratory game birds, and fur-bearers are not expected”. Information Request BC Hydro is asked to explain how it can confidently draw conclusions about the effects of the Carbon Creek Coal Mine with only a Project Description available.	Section 19.6 of the EIS. Please also see the Technical Memo: Cumulative Effects Assessment.
ab_0001-552	Treaty 8 Tribal Association	V.3, S.20.6 ; page(s) 20-77 ; line(s) 4-7 EISG S.16.2.1 S.16.2.4 Comment 3-61.	<i>The adverse effect related to the permanent loss of agricultural land does not have spatial and temporal overlaps with residual effects of any other current or reasonably foreseeable projects or activities and therefore no further assessment of cumulative effects related to agriculture was conducted.</i> Comments If agricultural lands are flooded (i.e. completely destroyed) this represents a net loss for agriculture forever, regardless of financial compensation, or increased production on unaffected lands. The EIS lists other projects, but states that they are not in the LAA and there is no spatial overlap with the proposed Project. Therefore any losses of agricultural land or productivity are not counted in the cumulative effects assessment. First, the RAA should be used for the cumulative effects assessment. According to the approach used in this EIS, if each project proposed in the RAA were to destroy a separate block of agricultural land, there would be no cumulative effects recorded as long as there was no spatial overlap. Overlap is irrelevant when lands (and habitats) are flooded or otherwise completely destroyed. Theoretically BC Hydro could obliterate all the agricultural land in the RAA, compensate the farmers and have “no significant cumulative effects”. Information Request The Proponent is requested to: a) demonstrate its understanding of the purpose of cumulative effects assessment for agricultural lands; and b) explain the role of cumulative effects assessment for regional development planning in the Peace River Regional District and as it applies to hydroelectric development on the Peace River.	In accordance with the EIS Guidelines, the loss of agricultural land in the context of the valley, the regional and the province was provided, as described in Section 20.3.3.1 and in Table 20.17. The permanent loss of land in a regional and provincial context was taken into consideration in determining the residual effects of the Project on agriculture, and the significance of those effects. The consideration included the proposed implementation of a regional agricultural compensation fund as summarised in Section 20.4.1 of the EIS. Section 20.3.11 takes into account the effects of the permanent loss of land due to the Project on the ability of the region to be self-reliant in locally grown crops. Changes to the agricultural economy were considered within a local assessment area that was the Peace Agricultural Region. Section 20.6 describes the approach and results of the cumulative effects assessment on agriculture, and follows the methods prescribed in Section 10.5 of the EIS. Please also see the Technical Memo: Cumulative Effects Assessment.
ab_0001-553	Treaty 8 Tribal Association	V.3, S.22.1.2 ; page(s) 22-3 ; line(s) 1 EISG S.16.4 Comment 3-62.	<i>Table 22.1 Key Issues: Oil, Gas and Energy Project would limit fracking activity in the vicinity of the Site C dam site due to seismic concerns. • BC Hydro will not be requesting restrictions on fracking activity in the Site C reservoir or Site C dam site area.</i> Information Request BC Hydro is requested to: a) provide further details as to how it would limit fracking activity in the vicinity of the dam site, the duration and geographical extent of these limits and other pertinent details; and b) clarify what appears to be a contradiction in “limiting fracking activity” while “not requesting restrictions on fracking activity”.	There is no contradiction. In Section 22, Table 22.1, the left column identifies issues raised, and in the second column BC Hydro provides a response that BC Hydro will not be requesting restrictions on fracking activity in the Site C reservoir or Site C dam site area. See page 6 of the Technical Memo: Seismic Considerations for a current understanding of how petroleum industry-related activities may affect seismicity.
ab_0001-554	Treaty 8 Tribal Association	V.3, S.22.3.5 ; page(s) 22-10 ; line(s) 24-30	<i>In North Dakota, oil companies have begun tapping crude oil and gas underneath Lake Sakakawea (the state’s biggest lake) using advanced horizontal drill techniques. The federal government created the 180-mi.-long</i>	The Project effects on oil, gas and energy are assessed as described in Section 22.1.2 and Table 22.1. The Province has the authority for issuance of oil and gas tenures. The information is provided to support the determination that, if the Project proceeds, the status of oil and gas

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		EISG S.16.4.4 Comment 3-63.	<i>reservoir when the Garrison Dam was built on the Missouri River in the 1950s. The lake flooded more than 60,703 ha and has more than 2,736 km of shoreline. With the new technologies, wells can be situated at an environmentally safe distance from shore, drilled vertically to about 3,048 m, and then pushed an equal distance horizontally to reach the resource (MacPherson 2008).</i> Information Request BC Hydro is requested to: a) clarify whether it is suggesting that the BC Government would allow horizontal drilling for oil and gas under the proposed Project reservoir; and b) identify technical and environmental risks that would be associated with horizontal drilling under the potential reservoir.	tenures within the local assessment would remain largely unaffected and licensees would likely continue to have access to subsurface resources through deployment of horizontal drilling methods as described in Section 22.4.4.1 of the EIS. The assessment considers the Project effects on the oil and gas industry. Technical and environmental risks associated with directional drilling are outside the scope of the environmental assessment and are not identified.
ab_0001-555	Treaty 8 Tribal Association	V.3, S.22.4.1 ; page(s) 22-13 ; line(s) 37-42 EISG S.8.5.3 S.16.4.3 Comment 3-64.	<i>The Project would create new, and use existing, transportation routes, including petroleum development roads, to transport materials, equipment, and worker vehicles to work areas in the LAA. Conflicts with the oil and gas infrastructure could occur if a Project component or activity were to directly cross a gas pipeline, be within a prescribed distance of a pipeline, or encroach on the site of an oil and gas company (referred to as pipeline permit holder), such as a well site or a right-of-way.</i> Comments The EIS does not address the effects of new Project-related aggregate resource access roads to permit easier accessibility at a lower cost for oil and gas exploration activities. Information Request BC Hydro is requested to: a) identify and discuss the implications of pathways by which Project-related physical works and activities may increase rather than decrease oil and gas development potential in the LAA; and b) assess whether some of the roads being created open up difficult to reach areas for hydrocarbon drilling, especially on the south shore of the Peace River.	The effects on oil and gas activities associated with the construction of new Project access roads, including aggregate resource access roads, are described in Section 22.4.1 of the EIS. Easier accessibility for the oil and gas industry due to the Project is considered a beneficial effect for the oil and gas industry. The Project access roads do not create new access into areas not currently accessible by road.
ab_0001-556	Treaty 8 Tribal Association	V.3, S.24.3.1.1 ; page(s) 24-12 ; line(s) 1 EISG S.16.6.3 Comment 3-65.	<i>Table 24.6 Fishing Licence Sales for Region 7B and British Columbia 2000 to 2009</i> Comments Table 24.6 indicates a modest increase in the number of fishing licences sold in the Peace Region in the period 2000 to 2007. Recent data is not provided. The growth trend suggests increasing pressures on regional fish and game populations, already in long-term decline, according to traditional knowledge of area First Nations. Information Request BC Hydro is requested to provide more recent data on fish licence sales in Region 7B and in British Columbia or to explain why such data is either unavailable or cannot be provided.	BC Hydro requested fish license sales data from the Ministry of Environment, and has used the information provided by the Ministry of Environment. 2007 is the most recent year provided.
ab_0001-557	Treaty 8 Tribal Association	V.3, S.24.3.3.1 ; page(s) 24-24 ; line(s) 7-9 EISG S.16.6.3	<i>Traplines typically cover a large land area, and there are 16 traplines overlapping with the LAA (Figure 24.2), half of which are held by or used by Aboriginal trappers through agreements with the registered trapline owners.</i> Information Request BC Hydro is asked to: a) provide a map showing the	The First Nation registered traplines identified in Section 19 are included on Figure 24.2 of the EIS. A link to a map of traplines in the Project Area, categorized by First Nation, was also provided to T8TA on Nov 1, 2012 as described in Volume 5 Appendix A06.2

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		Comment 3-66.	locations of the eight traplines in the LAA either held or otherwise used officially by Aboriginal trappers; b) identify its understanding of the relationship between the Treaty right to trap and the tenured trapline system, including any conflicts between them; and c) assess the potential implications of increased non-Aboriginal recreational and harvesting activities on traplines in the LAA and Aboriginal trapping activities resulting from the construction and operation of the proposed Project.	<p>Request b is outside the scope of the environmental assessment.</p> <p>Section 19.4 of the EIS presents the assessment of the potential to adversely affect Current Use of Lands and Resources for Traditional Purposes by taking into account the potential for the Project to result in changes to hunting and trapping opportunities and practices. This assessment considered the potential for increased non-Aboriginal recreation and harvesting activities on hunting and trapping opportunities. Section 34.3.3 provides an assessment of the potential impacts of the Project on the exercise of asserted or established Aboriginal and treaty rights, including the right to hunt and trap.</p> <p>Project effects on harvesting activities on registered traplines are described in Sections 24.4.9 and 24.4.10 of the EIS.</p>
ab_0001-558	Treaty 8 Tribal Association	V.3, S.24.4.2.1 ; page(s) 24-32 ; line(s) 12-13 EISG Comment 3-67.	<i>The Site C reservoir would support a wider variety of boats than the river does today, and would also be expected to offer new winter ice fishing opportunities.</i> Information Request BC Hydro is asked to identify any public safety risks that would be associated with ice fishing on the reservoir and all plans, programs and policies to avoid injury or death as a result of ice fishing on the reservoir.	Reservoir ice safety would be considered as a component of the operations phase Public Safety Management Plan described in Section 35.3.1.2 of the EIS.
ab_0001-559	Treaty 8 Tribal Association	V.3, S.24.4.7 ; page(s) 24-37 ; line(s) 1 EISG S.16.6.4 Comment 3-68.	<i>Table 24.28 Estimated Changes in Use of Harvesting Areas</i> Comments This table estimates change in use of harvesting areas using some assumptions about the proportion of camp workers and in-migrants associated with the proposed Project that will engage in outdoor recreation and harvesting activities. This seems reasonable for Project-specific analysis. However, increased cumulative use of harvesting areas is also expected from natural population growth and in-migration into the growing region from other sources. The significant role that non-Aboriginal recreational and harvesting activities have on meaningful land access, harvesting success, wildlife population status and other factors related to meaningful practice of Treaty rights is an important issue that is not examined in the EIS. Information Request BC Hydro is request to: a) expand the scope of Table 24.18 to include the other non-Aboriginal population factors that could increase use of harvesting areas; and b) present the results over the eight years of construction of the proposed Project.	<p>The analysis of construction workforce related changes in the use of harvesting areas is described in Section 24.4.7 of the EIS. The analysis considers Project-related population growth and in-migration associated with direct, indirect and induced Project employment in the context of expected population growth in the absence of the Project, as described in Section 28.3.3. The results are considered for all years of construction.</p> <p>The information in Section 24, Table 24.18, does not distinguish between aboriginal and non-aboriginal populations.</p>
ab_0001-560	Treaty 8 Tribal Association	V.3, S.24.6.1 , V.3, S.24.7.4 , V.3, S.24.8 ; page(s) 24-50 ,	<i>The <u>level of confidence</u> in the adverse [residual] effects is moderate based on the reliability of effects on fish and fish habitat and the schedule for changes in access.</i> <i>The <u>level of confidence</u> in the [residual] effects is moderate based on the</i>	As described in the text supporting EIS Section 24.6, the Table 24.23 level of confidence identified for the characterization of residual effects on the Harvest of Fish and Wildlife Resources should read moderate. This update has been added to the List of Errata and Updated Information. This revision does not change the result of the effects assessment for the Harvest of Fish and Wildlife

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		24-51 , 24-52 , 24-56 , 24-58 ; line(s) 17-19 , 8-10 , 1 , 30-32 , 6-7 EISG S.16.6.5 Comment 3-69.	<i>reliability of effects on wildlife resources and the schedule for changes in access. Table 24.23 Characterization of Residual Effects on Harvest of Fish and Wildlife Resources</i> <i>Changes in Fishing Opportunities</i> <u>Level of Confidence -High</u> <i>Changes in Hunting Opportunities</i> <u>Level of Confidence -High</u> <i>Due to the lack of ample data regarding footprints and effects on access of the reasonably foreseeable projects, the level of confidence in estimating this cumulative effect is <u>low</u>.</i> <i>As the level of confidence in residual effects predicted for harvest of fish and wildlife resources is <u>high</u>, there are no monitoring or follow-up programs proposed for this VC. Information Request BC Hydro is requested to: a) explain what appear to be differences in the text of section 24.6.1 and Table 24.23 concerning the level of confidence in residual adverse effects for this VC; b) explain what appear to be incongruities between the moderate (or high) high level of confidence in the residual adverse effects, the low level of confidence in estimating the cumulative effects, and the conclusion that no monitoring program is required; and c) correct any errors, clarify potential inconsistencies and revise the relevant sections and conclusions, as appropriate.</i>	Resources. As described in Section 24.7.4, the low level of confidence described for the characterization of residual cumulative effects on changes in hunting opportunities is related to a lack of available data regarding project footprints and specificity of effects on access of reasonably foreseeable projects. Project monitoring is not proposed as the uncertainty is associated with information available about other projects, and not with the Project. Monitoring proposed for Wildlife Resources, and Fish and Fish Habitat would provide information relevant to the continued availability of harvestable species for the province to consider in their ongoing management of harvesting.
ab_0001-561	Treaty 8 Tribal Association	V.3, S.24.6.1 ; page(s) 24-51 ; line(s) 18-19 EISG S.16.6.5 Comment 3-70.	<i>Table 24.22 Characterization Criteria for Residual Harvest of Fish and Wildlife Resources Effects</i> Comments BC Hydro refers to resilience and vulnerability in the EIS in a number of places, often in defining some of the criteria considered in residual effects characterization. It is unclear how BC Hydro defines and understands these terms. Information Request BC Hydro is asked to discuss its understanding of the terms “resilience” and “vulnerability”, and their role in predicting residual effects significance, both for ecological valued components and human environment valued components (meanings may differ).	Resilience is an aspect of the context criteria used to characterize residual effects, and refers to the ability of an area affected by a VC to be resilient to change and able to respond to imposed stresses, as described in Section 10.4.2.2 of the EIS. Resilience is therefore used as a criterion to characterize effects on the Harvest of Fish and Wildlife Resources; vulnerability is not used in Section 24. The area is considered resilient to changes, as alternative opportunities are available outside the LAA and within the RAA, and the Peace River is also already a regulated river.
ab_0001-562	Treaty 8 Tribal Association	V.3, S.24.6.2 ; page(s) 24-53 ; line(s) 11-13 EISG S.16.6.5 Comment 3-71.	<i>Anglers and hunters can adapt their hunting and fishing locations to unaffected and accessible areas, and to places away from large construction zones.</i> Comments The increasing movement of non-Aboriginal harvesters into areas previously enjoyed by the T8FNs is an ongoing issue for local First Nations (see Sections 4.2, 5.1.4, 5.2.4, 5.3.4, 5.4.4 and 6.1 of the T8FNs Community Assessment Baseline Profile Report). BC Hydro is effectively saying that should the proposed Project proceed, not only would Aboriginal people be asked to “go somewhere else” – to adapt and artificially limit their locations for meaningful practice of Treaty rights – but BC Hydro would likely be sending additional non-	The LAA for the assessment of Harvest of Fish and Wildlife Resources was determined based on a consideration of the areas that may be directly changed due to the Project, where those changes in the land or setting would affect harvesting activities. The LAA includes the Project activity zone, the area within the preliminary reservoir impact lines, and the Peace River downstream to the Alberta border (for fishing activities). In addition, the assessment considered the availability of harvested species based on the results of the Fish and Fish Habitat and Wildlife Resources assessments, and any changes to the availability of harvested species was done in consideration of the LAAs for those respective valued components. The information in Section 24 does not distinguish between aboriginal and non-aboriginal

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			Aboriginal harvesters out in the same direction. Information Request BC Hydro is requested to: a) determine whether the LAA captures all the locations that non-Aboriginal harvesters would, as a result of effects from the proposed Project, travel out to as replacement harvesting areas and, if not, expand the LAA for this VC to the area where Project-specific effects will be measureable; and b) clarify whether its surveys of recreational users and harvesters determined where they might likely go if they were constrained from their activities in the area affected by the proposed Project and, if so, provide the results and, if not, explain why not.	populations except in the case of aboriginal involvement in tenured activities, including trapping and guide outfitting. As described in Section 24.4 of the EIS, it is expected that harvesting activities would be displaced within and outside the LAA into the RAA. This effect is therefore taken into account in the assessment of cumulative effects. Recreational interviewees in the Peace River Angling and Recreational Use Survey undertaken for the assessment (LGL 2010) were asked: Where else have you recreated or planned to recreate this year? The top 10 responses, accounting for 75% of the choices, were all within the Peace region and included: the Peace region; the Peace River; Peace Island Park; and Halfway, Pine, Murray and Moberly rivers (LGL 2010, Table 17). It was therefore reasonably assumed that willingness to pay would limit the displacement of demand into reasonably accessible and cost-effective fishing and hunting areas.
ab_0001-563	Treaty 8 Tribal Association	V.3, S.24.7.1 ; page(s) 24-55 ; line(s) 6-7 EISG S.16.6.5 Comment 3-72.	<i>Table 24.25 Projects that could Interact with the Harvest of Fish and Wildlife Resources Residual Effects</i> Comments This table focuses on potential cumulative effects contributors at the LAA scale. Our understanding is that cumulative effects assessment is more appropriately conducted at the RAA level for each VC. Information Request BC Hydro is requested to: a) explain BC Hydro's understanding of the roles of the LAA and RAA in cumulative effects assessment; and b) revise the cumulative effects assessment in relation to this VC to include assessment of the contribution of the proposed Project to RAA cumulative effects.	Please see the Technical Memo: Cumulative Effects Assessment. The Harvest of Fish and Wildlife Resources cumulative effects assessment included in Section 24.7 was completed in accordance with Section 10.5 of the EIS.
ab_0001-564	Treaty 8 Tribal Association	V.3, S.24.7.1 ; page(s) 24-55 ; line(s) 6-7 EISG S.16.6.5 Comment 3-73.	<i>Table 24.25 Projects that could Interact with the Harvest of Fish and Wildlife Resources Residual Effects</i> Comments BC Hydro suggests that the Montney Gas Play is "not expected to result in adverse residual cumulative effects on harvest of fish and wildlife". The basis for this statement is unclear. The T8FNs traditional land users are already encountering adverse effects in a number of ways from the Montney Gas Play, e.g., as noted in Table 3, pg. 97 of the T8FNs' Community Assessment Baseline Profile Report). Information Request BC Hydro is requested to provide information substantiating its claim that the Montney Gas Play is "not expected to result in adverse residual cumulative effects on harvest of fish and wildlife".	Project effects on the Current Use of Land and Resources for Traditional Purposes, including cumulative effects associated with oil and gas activities, are considered in Section 19 of the EIS. The Montney Gas play is expected to have a positive effect on road and trail access in the local assessment area over time as described in Section 24.7.1 of the EIS; therefore, no residual adverse cumulative effects are expected on the Harvest of Fish and Wildlife Resources.
ab_0001-565	Treaty 8 Tribal Association	V.3, S.25.3.1.1 ; page(s) 25-8 ; line(s) 32-39 EISG S.16.7.3 Comment 3-74.	Comments BC Hydro enumerates the quantity of recreational activity but no information is provided on the quality of the recreational opportunities. Information Request BC Hydro is requested to: a) identify any information from Aboriginal and non-Aboriginal sources in relation to the existing quality of the recreational opportunities; b) identify any information concerning factors influencing the current quality of the recreational opportunities either positively	The scope of the Outdoor Recreation and Tourism effects assessment is in accordance with the EIS Guidelines and appropriate information is provided in the EIS. Quality of experience varies with the preferences of individuals; therefore, the availability of areas to support recreational activity is an objective measure to assess changes resulting from the Project.

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			or negatively; and c) identify any information that discusses the potential change in quality of recreational and tourism experiences resulting from the proposed Project, including changes in quality resulting from conversion from a river to a reservoir environment.	
ab_0001-566	Treaty 8 Tribal Association	V.3, S.25.3 ; page(s) 25-10 ; line(s) 1 EISG S.16.7.3 Comment 3-75.	<i>Table 25.6 Managed and Unmanaged Recreation Sites in the Project Activity Zone</i> Comments Greater clarity and detail are required concerning the location of existing recreational sites and their access locations, and recreational sites and related access that would be created by the proposed Project. Information Request BC Hydro is asked to: a) provide a map or series of maps showing the existing managed and unmanaged recreation sites, and other recreational features in the RAA; b) identify any new access locations created by the proposed Project that may induce additional recreational or harvesting activities (roads, expanded RoWs, clearings, etc.), and c) estimate the potential level of recreational and harvesting activity induced by the access locations discussed in part b); d) provide a map or series of maps showing the new access locations discussed in part b); e) predict the duration of these new access locations (i.e. temporary, long-term, permanent); f) discuss plans to decommission and rehabilitate access locations following construction; and g) discuss the potential success, referencing available literature, of road and other linear disturbance decommissioning in reducing or removing access, and associated cumulative effects on fish, wildlife and current use of lands and resources by Aboriginal people.	<p>The scope of the Outdoor Recreation and Tourism effects assessment is in accordance with the EIS Guidelines and appropriate information is provided in the EIS.</p> <p>A detailed description of all baseline outdoor recreation features and amenities, including managed and unmanaged recreation sites, within the Local Assessment Area is provided in Section 25.3.1 of the EIS. The detailed recreation site inventory, including maps, photos and descriptive information of recreation sites, is derived as referenced from LGL 2010.</p> <p>Project effects on Outdoor Recreation and Tourism associated with access road development during construction are described in Section 25 of the EIS. Changes to harvesting activities associated with the Project are described in Section 24 of the EIS. This assessment took into account the temporary and permanent Project access roads, including location maps, as included in Section 4.3.7 of the EIS, and in Volume 1 Appendix A Vegetation, Clearing and Debris Management. Restoration of construction sites and temporary access would be reclaimed and revegetated as described in Section 35.2.2.19 Soil Management, Site Restoration, and Revegetation Plan.</p>
ab_0001-567	Treaty 8 Tribal Association	V.3, S.25.3.1.3 ; page(s) 25-14 ; line(s) 5-6 EISG S.16.7.4 Comment 3-76.	<i>The Peace River Boudreau Lake proposed protected area encompasses a major portion of the south bank of the Peace River valley, the lower Moberly River valley, and the Peace River islands between Maurice Creek and downstream of the Moberly River.</i> Information Request BC Hydro is requested to identify the protection goals for the proposed Peace River Boudreau Lake protected area and discuss their compatibility with the predicted effects of the proposed Project.	The proposed protected area has not been designated, and therefore there is no management plan for the area. Please also see the Technical Memo on the Flood Reserve, which describes the Dawson Creek Land and Resource Management Plan consideration of the proposed protected area in the context of the flood reserve and potential for hydroelectric development.
ab_0001-568	Treaty 8 Tribal Association	V.3, S.25.3.4 ; page(s) 25-17 ; line(s) EISG S.16.7.3 Comment 3-77.	Comments The EIS does not discuss the growing recreational and tourism activity known as “Paddle for the Peace”. Other T8FNs recreational gatherings are also not discussed. Information Request Revise the EIS sections on outdoor recreation and tourism, and current use of land and resources for traditional purposes, to reflect the diversity of T8FNs recreational and cultural land uses on an annual or greater basis in the LAA. Consult Section 6.2.4 of the T8FNs’ Community Assessment Baseline Profile Report.	The scope of the Outdoor Recreation and Tourism effects assessment is in accordance with the EIS Guidelines and appropriate information is provided in the EIS. As such, single events, including the "Paddle for the Peace", were not described. The use of the Peace River for a variety of boating types is described in the EIS. With the Project, as recreational access will continue, special water-based recreation events would be able to take place, both on the reservoir and on the Peace River downstream.

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ab_0001-569	Treaty 8 Tribal Association	V.3, S.25.4.1.1 ; page(s) 25-23 ; line(s) 15-21 EISG S.16.7.3 Comment 3-78.	<i>Table 25.13 shows the area of Use, Recreation, and Enjoyment of the Public (UREP) reserves that would be affected due to Project activities. The Site C dam site, transmission line, and quarried and excavated materials sites would not affect UREP reserves. Access road development during construction would affect 3 ha of UREP reserves. The clearing and filling of the Site C reservoir would affect 111 ha (or 29%) of the area of UREP reserves in the Project activity zone.</i> Information Request Provide a map showing all UREP reserves in the RAA and the portions of them that would be affected by the proposed Project.	The UREP reserves within the RAA are displayed on Figure 25.1 of the EIS.
ab_0001-570	Treaty 8 Tribal Association	V.3, S.25.4.2.1 ; page(s) 25-31 ; line(s) 5-8 EISG S.16.7.3 Comment 3-79.	<i>Participation in nature observation could increase if access to the Site C reservoir was better than it is now to the river, but many outdoor recreation participants have stated a preference for a natural river setting over a reservoir setting by indicating a lower value for the latter.”</i> [our emphasis] Information Request BC Hydro is requested to provide the survey documentation related to preferences for natural river settings over reservoirs.	The statement was from earlier studies related to the Project (Canadian Ressourcecon Ltd. March 1980. Tourism Impact Study) in which, based upon questionnaires undertaken at that time, the value of river recreation was assumed to be 1.2 times as valuable as reservoir recreation. BC Hydro does not have the survey documentation.
ab_0001-571	Treaty 8 Tribal Association	V.3, S.25.4.2.2.1 ; page(s) 25-31 ; line(s) 38-40 EISG S.16.7.4 Comment 3-80.	<i>Improved road conditions along the realigned Highway 29 would reduce travel times, and improve road safety conditions for visitors due to expanded passing lanes and reduced highway slopes.</i> Information Request BC Hydro is requested to clarify whether increases in recreational traffic, Project-related traffic, natural increases in likely traffic due to population growth and improved highway conditions, and cumulative industry related traffic (including for example oil and gas vehicles going to and from the Farrell Creek area) were all included in road traffic modeling.	A forecast of traffic growth rates without the Project was included for every segment included in the Project Traffic Analyses Report (Volume 4, Appendix B of the EIS). Section 1.2 Methodology of this report describes the methodology used to forecast background traffic. Future background traffic was estimated by the application of trend regression analyses. The regression analyses were carried out using available traffic data from the B.C. Ministry of Transportation and Infrastructure (MOTI). Three locations were identified as appropriate for setting growth rates for the roads within the five geographic areas described in Section 1.0. Each location needed to have a reasonable period of data in order for the trend analysis to be statistically significant. Growth forecasts were based on growth of all traffic in the 23 year period from 1989 to 2011 including LNG facility development and its induced effects.
ab_0001-572	Treaty 8 Tribal Association	V.3, S.25.4.4.1 ; page(s) 25-34 ; line(s) 17-20 EISG S.16.7.4 Comment 3-81.	The assumptions used to estimate demand are based on a study of mobile workers, and a survey of residents in the Peace River Regional District (PRRD) and questions regarding their likelihood of using the Site C reservoir for recreation (Nichols Applied Management 2007; Kirk & Co. Consulting Ltd. and Synovate Ltd. 2009) Information Request Place a copy of Nichols Applied Management (2007) on the public record for this EA.	The EIS reference to Nichols Applied Management 2007 study is publically available at the below link: http://www.oilsandsdevelopers.ca/wp-content/uploads/2009/03/final-report-mobile-worker-study.pdf
ab_0001-573	Treaty 8 Tribal Association	V.3, S.25.7 ; page(s) 25-43 ; line(s) 3 EISG S.16.7.5 Comment 3-	<i>A screening of the Project’s potential contribution to the cumulative effects of past, current, and announced future projects was done per the procedures described in Section 10 Effects Assessment Methodology. The screening process establishes two conditions to warrant further assessment. These conditions are:</i> • <i>The Project results in a residual effect</i> • <i>The effect is likely to act in a</i>	Please see the Technical memo on Cumulative Effects Assessment. The Outdoor Recreation and Tourism cumulative effects assessment (Section 25.7) included assessment of potential cumulative effects of the Project on Outdoor Recreation and Tourism where potential residual adverse effects of the Project have a spatial and temporal overlap with a residual effect of another project or activity. The cumulative effects assessment is in

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		82.	<i>cumulative fashion with those of other projects and activities (i.e., spatial and temporal overlap)</i> Comments The application of the cumulative effects assessment screening criteria is incomplete and inconsistent throughout the EIS. Even though the RAA for Outdoor Recreation and Tourism is the Peace River Regional District, the cumulative effects assessment does not include the Williston and Dinosaur reservoirs. Again there is a lack of understanding demonstrated with respect to cumulative effects by restricting the assessment to areas of direct spatial and temporal overlap with the footprint of the proposed Project. The cumulative effects of industrial development that degrades water bodies and shorelines and affects these values throughout the Peace River Regional District are not captured as a cumulative effect in the EIS.	accordance with the EIS Guidelines and Section 10.5 of the EIS.
ab_0001-574	Treaty 8 Tribal Association	V.3, S.26.1.2 ; page(s) 26-3 ; line(s) EISG S.16.8 Comment 3-83.	<i>Table 26.1 Key Issues: Navigation and Aviation The effect of changes to access and boat traffic on Aboriginal land and resource use is discussed in Section 19 Current Use of Lands and Resources for Traditional Purposes.</i> Comments We are unable to locate where in section 19 of the EIS that this issue has been addressed. Information Request The Proponent is requested to: a) describe the current types of boats, frequency and seasonality of trips by non-Aboriginals, and distance travelled up the Halfway and Moberly Rivers; b) predict the future types of boats, frequency and seasonality of trips by non-Aboriginals, and distance travelled up the Halfway and Moberly Rivers following inundation; and c) assess the effects of any changes in access on Aboriginal land use, including in relation to resource competition, noise and other relevant factors.	<p>The scope of the Navigation assessment described in Section 26 is in accordance with the EIS Guidelines and appropriate information is provided in the EIS. The Navigation assessment does not distinguish between aboriginal and non-aboriginal populations.</p> <p>The Peace River Angling and Recreational Use Creel Survey Study 2008–2009 provided insight into current navigation use within the Local Assessment Area, including the lower reaches of the Halfway and Moberly Rivers, as described in Section 26.3.2 of the EIS.</p> <p>Navigation use within the Local Assessment Area, including the reservoir during operations, is described in Section 26.4.2 of the EIS.</p> <p>Project related effects on access and associated effects on aboriginal land and resource use are described in Section 19 of the EIS.</p>
ab_0001-575	Treaty 8 Tribal Association	V.3, S.26.3.1 ; page(s) 26-12 ; line(s) 10-12 EISG S.16.8.3 Comment 3-84.	<i>The Peace River downstream of the Dinosaur reservoir is classified as a class one waterway, with some specific locations classified as class two.</i> Information Request Provide navigation classification information for the would-be inundated portions of tributaries to the Peace River.	<p>Based on the American Whitewater Association river classification system described in Section 26.3.1 of the EIS, the classification of potentially inundated portions of Peace River tributary rivers is described below:</p> <p>1) Halfway River: Predominantly a "class one" waterway at the mouth of the Peace River. Further upstream (6km past the confluence), certain reaches exhibit more difficult class 1 water, and may be considered class 2 due to reduced channel width.</p> <p>2) Moberly River: Predominantly a "class one" waterway consisting of a relatively wide wetted channel and the presence of oxbow features. Significant waterborne debris is evident throughout the entire river, deposited during periods of high flows associated with freshet. The debris creates potential obstacles to navigation, limiting the potential use of the river for navigation.</p> <p>3) Creeks Tributary to Peace River (e.g. Lynx, Farrell, and Cache Creeks): Creeks would be considered as "class one" waterways, although not exhibiting qualities of a good navigable waterway due to the narrow channel width, shallow depth, and the presence of obstacles to</p>

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				<p>navigation (stumps, log jams etc.).</p> <p>This update has been added to the List of Errata and Updated Information.</p>
ab_0001-576	Treaty 8 Tribal Association	V.3, S.26.3.2 ; page(s) 26-13 ; line(s) 13-22 EISG S.16.8.4 Comment 3-85.	<i>The Peace Country River Rats confirmed that a survey of membership was undertaken to ascertain whether members had concerns associated with the proposed Project (survey undertaken in 2010).</i> Information Request Provide a proper citation for the 2010 River Rats survey and provide a copy of the survey for the public record so that the full set of findings is available.	Section 26.3.2 of the EIS describes the information provided to BC Hydro by the Peace Country River Rats based on its own survey of its membership. BC Hydro did not request or commission such a survey, and a copy of a survey or results undertaken by that organisation was not provided to BC Hydro. Therefore, the survey or results cannot be provided by BC Hydro.
ab_0001-577	Treaty 8 Tribal Association	V.3, S.26.4.2 ; page(s) 26-18 ; line(s) 27-29 EISG S.16.8.4 Comment 3-86.	<i>BC Hydro will provide a Community Recreation Site Fund to support development of new shoreline recreation within the Peace River and tributaries through to the Alberta border as well as the Site C reservoir.</i> Comments Some of the areas under consideration for new shoreline recreation, such as the Bear Flats area, are of high importance to the T8FNs for a variety of reasons. The implications for spiritual and cultural use of the area of new or expanded facilities such as parking and day use areas are not discussed in the EIS. Information Request Identify whether BC Hydro held discussions with First Nations groups about the advisability of creating new boat launches and other shoreline recreation in the inundated zone, potential adverse impacts on Aboriginal land use and enjoyment, and appropriate locations for new shoreline recreation facilities, and report on the results of those discussions, if they occurred.	<p>At each proposed boat launch location there would be BC Hydro owned land available on which to develop these sites. Each of these locations already supports public use and access.</p> <p>First Nations groups were provided with the opportunity to consider proposed outdoor recreation mitigation measures, including boat launch locations as described in Section 9.2.3.3.2 of the EIS. BC Hydro met with the leadership of the Saulteau First Nations in meetings held March 19-20, 2012, where BC Hydro presented information and sought input on options for recreational use of the reservoir as described in Volume 5, Appendix A23. As described in Volume 5, Appendix A06, BC Hydro offered to meet with the T8TA to discuss recreation. Increased public access to recreation sites was identified by T8TA as part of their issues scoping table and was discussed in several meetings between BC Hydro and the T8TA.</p> <p>BC Hydro has also repeatedly requested that Aboriginal groups share traditional knowledge to inform the proposed Project. These requests were made through the scoping of traditional land use studies with various Aboriginal groups, the terms of the Environmental Assessment Participation Agreement between BC Hydro and the T8TA, as well as throughout the consultation process beginning in Stage 2. Several instances of such requests are described in Section 9 and Volume 5, appendix A06.</p> <p>The location of shoreline recreation sites funded through the Community Recreation Site Fund has yet to be determined. As described in Volume 3, Appendix E of the EIS, successful fund applicants would be responsible for recreation site development and receipt of necessary permits and approvals. Before issuance of permits the province of British Columbia would refer applications to First Nations in accordance with legislative requirements or other agreements.</p>
ab_0001-578	Treaty 8 Tribal Association	V.3, S.26.4.8.1 ; page(s) 26-20 ; line(s) 29-36 EISG S.16.8.4 Comment 3-87.	Comments BC Hydro identifies potential slope stability areas of concern around the would-be inundated zone. They include areas well known and used by Aboriginal peoples. Information Request BC Hydro is requested to determine and communicate risks related to slope stability, especially in areas of historic significance and those of high current and planned future use by the T8FNs, including a discussion of worst case scenarios.	Please see the Technical memo on Reservoir Impact Lines.

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ab_0001-579	Treaty 8 Tribal Association	V.3, S.27.2.1 V.3, S.27.6 ; page(s) 27-2 27-21 ; line(s) 1 27-10 EISG S.16.9 Comment 3-88.	<i>Table 27.1 Key Issues: Visual Resources</i> Comments The final row in this table identifies “Loss of visual cultural referents in the form of the visual landscape” as a “key issue”. At p.27-21 (Table 27.10), BC Hydro predicts that “changes to visual resources” will have “moderate” effects, although it is not clear whom these effects will be on. If the effects are being predicted for T8FNs members who use and value the Peace River valley, the magnitude of the effect will be “high” based on the evidence submitted by the T8FNs. T8FNs members have indicated T8FNs Community Assessment Baseline Profile Report that they have a strong cultural connection to the Peace River and its valley, and that potential effects of altering the visual nature of this cultural landscape include high anxiety, despair, anomie and possibly adverse health outcomes. Information Request BC Hydro is requested to: a) review the materials submitted by the T8FNs in relation to the effects of the proposed Project on the visual resources of the Peace River valley; b) reconsider the effects characterization of “change to visual resources”; and c) explain why the likely magnitude of this change has not been deemed “high”.	<p>The assessment of the potential changes to cultural and traditional uses of land and resources described in Section 19 considered the changes in use of and access to culturally important places and valued landscapes and identified, from traditional land use studies and community baseline reports, three locations of highest special importance: Bear Flats, Farrell Creek and Attachie.</p> <p>The characterization of residual effects on Visual Resources is described in Section 27.7.1 of the EIS. The magnitude of the change in visual quality was described as moderate, based on the Project being visible from visual receptor sites and scenic values being reduced (i.e., amount of acceptable visible disturbance is exceeded for one or more Visually Sensitive Areas), as based on the level of anthropogenic disturbance remaining within the general (historical) level of existing visible disturbances in the Local Assessment Area.</p>
ab_0001-580	Treaty 8 Tribal Association	V.3, S.27.3.2 ; page(s) 27-6 ; line(s) 6-7 EISG S.16.9.3 Comment 3-89.	<i>According to the Visual Landscape Inventory, there are eight major viewpoints and 27 minor viewpoints within the LAA.</i> Information Request Provide a map showing the “eight major and 27 minor viewpoints within the LAA”.	A Visual Landscape Inventory viewpoints figure displaying major and minor viewpoints within and adjacent to the Visual Resources LAA can be provided. This has been added to the List of Errata and Updated Information.
ab_0001-581	Treaty 8 Tribal Association	V.3, S.27.3.4 V.3, S.27.7.2 ; page(s) 27-8 27-22 ; line(s) 35-37 6-8 EISG S.16.9.4 Comment 3-90.	<i>To determine the effect on visual resources two key indicators, the changes in visibility from receptor sites and changes to scenic values, were assessed. Particular consideration was given to magnitude, duration, and frequency as the relevant criteria for determining significance. These criteria primarily determine how area users would experience the Project. Since visual resources are considered in the context of human perception of aesthetics, the experience of the visual landscape by observers is a key element of the assessment.</i> Comments There is no evidence to suggest that BC Hydro integrated “observers”, including T8FNs members, in its visual effects assessment. The EIS provides a very technical assessment of immediate and objectively measureable changes, while the impact outcomes of those changes on culture, mental health, etc. are not addressed. BC Hydro does not consider that the reservoir itself and its continuous existence may be a source of pain, distress and sorrow for Aboriginal peoples. In addition, no meaningful cumulative effects assessment of total visual changes to the Peace River valley over time is made by BC Hydro, as	<p>The methodology for assessing changes to visual quality is in accordance with provincial methodologies for assessing such changes. These methods were outlined in the EIS Guidelines. The assessment of Project effects on Visual Resources is in accordance with the EIS Guidelines and appropriate information is provided in the EIS.</p> <p>At the request of T8TA, in the fall of 2012 BC Hydro reviewed their suggestion for additional visual receptor locations to be considered in the visual resources assessment. No additional receptor sites were selected from the T8TA suggestion based on consideration of the visual effects assessment criteria described in Section 27.3.4 of the EIS, including available public access. For the publically accessible view areas included in the T8TA list, it was determined that the viewpoints selected for simulation in Section 27 provide an adequate representation of views of the reservoir from Highway 29 and above Hudson's Hope. It is noted that the simulations do not include the dam site as there is not currently a publicly accessible viewpoint with a line-of-sight to this location.</p> <p>BC Hydro would consider adding visual receptor locations to the assessment that would support</p>

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			the contribution of previous BC Hydro hydroelectric projects to visual changes in T8FNs traditional territory is not characterized. Information Request The Proponent is requested to: a) identify indicators, in addition to “the visibility of Project components from selected receptor sites and predicted scenic values” for measuring the ultimate outcomes of a changed visual landscape on Aboriginal socio-cultural wellbeing; b) assess the effects of the visual presence of the proposed Project, including the reservoir and dam, on the Aboriginal people who value the landscape; c) conduct an assessment of the cumulative effects of changes in the visual aesthetics of the Peace River valley, including the visual effects of the W.A.C. Bennett and Peace Canyon dams and reservoirs.	the assessment of effects on Aboriginal use of the land and resources that are not already able to be assessed using the existing visual receptor locations. Please also see the Technical Memo: Cumulative Effects Assessment.
ab_0001-582	Treaty 8 Tribal Association	V.3, S.27.5.1.4 ; page(s) 27-12 ; line(s) 37-41 EISG S.16.9.4 Comment 3-91.	<i>The Site C reservoir would replace the existing river, including a variety of islands and river channels, with a large homogenous water body. This effect could be considered either positive or negative by stakeholders, depending on the values placed on the existing river valley landscape.</i> Comments BC Hydro seems to have assumed that there is a single human archetype, rather than many perspectives (including differences between Aboriginal and non-Aboriginal) on the quality of the visual change. Information Request BC Hydro is requested to: a) identify any issues or concerns of the T8FNs regarding changes to the visual environment resulting from the proposed Project, identified through primary or secondary data collection and consultation; b) identify why the mental health effects on T8FNs of changes to the visual landscape were not considered in the EIS; c) identify any polling results or information from other studies, including case studies of previous hydroelectric developments, upon which BC Hydro based its estimation that a measurable portion of people will view the change from a river valley to a reservoir as positive.	The methodology for assessing changes to visual quality is in accordance with provincial methodologies for assessing such changes. These methods were outlined in the EIS Guidelines, and the assessment of Project effects on Visual Resources was in accordance with the EIS Guidelines. Concerns raised by the T8FNs regarding loss of visual cultural referents in the form of the visual landscape was considered by BC Hydro as described in the Aboriginal Issues, Concerns and Interests Tracking Table in Volume 1 Appendix H of the EIS. In Sections 27.5.1.4 and in 27.7.1 it is stated that the change in the visible landscape from a river valley to a reservoir could be considered either positive or negative by stakeholders depending on the values placed on the existing river landscape. The reservoir landscape itself, based on the simulations and the experience of other reservoirs, will look very similar to a natural lake. The hydroelectric development component, being the dam and generating station, is in a location not generally viewable from a publicly accessible viewpoint. BC Hydro has proposed a new viewpoint of the dam and generating station, and it is reasonably assumed that people choosing to go to this viewpoint would do so for the purpose of viewing the dam site. Those who do not wish to see the dam would be able to avoid seeing it from easily accessible public viewpoints. Please also see the response to ab_0001-581.
ab_0001-583	Treaty 8 Tribal Association	V.3, S.27.6 ; page(s) 27-20 ; line(s) 4-7 EISG S.16.9.5 Comment 3-92.	<i>For both the construction and operations phases, the capacity of the visual landscape to accept change (context) is rated as disturbed, since a considerable amount of visible anthropogenic disturbance already exists within other parts of the LAA, including the Peace River valley.</i> Information Request BC Hydro is requested to clarify whether it is inferring that the would-be affected portion of the Peace River valley is considered a “brownfield”, and that due to existing anthropogenic effects, it is now less important to protect its remaining values than relatively untouched “greenfield” areas.	Section 27.6 of the EIS makes reference to a "disturbed state". A considerable amount of visible anthropogenic disturbance already existing within other parts of the Local Assessment Area, including the Peace River valley, is supported by the local assessment area baseline description provided in Section 27.4, lines 18 - 32 of the EIS.

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ab_0001-584	Treaty 8 Tribal Association	V.4, S.28.2.1 ; page(s) 28-5 ; line(s) 20-23 EISG S.17.2.3 Comment 4-1.	<i>Data on population and demographics were obtained for all PRRD communities from the Census of Canada and periodic updates prepared by Statistics Canada and BC Stats. Data on the Aboriginal population in the LAA were gathered from Statistics Canada and community profiles prepared and submitted by First Nations.</i> Comments In this section and elsewhere, BC Hydro refers to baseline data collection on population and demographics including “literature reviews”. Technically, this is not a literature review, but a compilation of existing quantitative (often census) data from government sources. While this information is central to the description of baseline and trend data on population and demographics, the collection and analysis of case study data of the effects of large-scale construction projects on relatively small communities should have been used to inform the impact assessment. Case studies are often the best tools available to make informed and defensible predictions of effects on the human environment. Information Request BC Hydro is asked to: a) identify relevant case studies of the effects of large-scale construction projects, including hydroelectric development projects, on relatively small population regions; and b) provide a summary of impacts predicted and encountered, lessons learned and any recommended mitigation and monitoring measures identified in the literature.	Literature reviews do not exclude information from quantitative sources. Relevant information is included in the baseline in accordance with the EIS Guidelines.
ab_0001-585	Treaty 8 Tribal Association	V.4, S.28.3.2 ; page(s) 28-9 ; line(s) 5-9 EISG S.17.2.3 Comment 4-2.	Comments The EIS does not disaggregate down to local or Aboriginal levels among indicators of social or economic wellbeing. This makes it difficult to fully ascertain, for example, the risks and opportunities faced by urban Aboriginal people, especially from area First Nations, living in Fort St. John. However, we know or can strongly infer that the demographic structure of Fort St. John and area residents from nearby First Nations communities is younger, poorer, less likely to own their own homes, more likely to have young single-parent families, and more likely to be seeking education and training opportunities (as opposed to full-time skilled labour) than the general population in this community. Specific demographic cohorts at risk, such as single-parent families and young females in general, emerge as meriting special attention. The EIS does not address the urban Aboriginal sub-population and other demographic cohorts in the EIS.	The scope of the assessment of changes to population is in accordance with the EIS Guidelines, and further included as assessment of potential migration into and out of Aboriginal communities as a result of the Project labour opportunities.
ab_0001-586	Treaty 8 Tribal Association	V.4, S.28.3.2 ; page(s) 28-9 28-10 ; line(s) 12-13 1 EISG S.17.2.3	<i>Table 28.7 First Nation Population Profile in the Local Assessment Area (Peace River Regional District), 2006 Table 28.8 First Nation Community Population Profiles</i> Comments The Proponent provides some data on First Nations populations in the PRRD in Table 28.7. In Table 28.8, census data collected disaggregates some of that data down to the four T8FNs communities.	The statement that the baseline is incomplete is incorrect. BC Hydro first approached First Nations, including Blueberry River First Nations and Saulteau First Nations, regarding information gathering in May 2011 (Volume 3 Appendix B Part 1, Section 1). BC Hydro and each First Nation came to the agreement that the First Nation would each develop their own community baseline report, funded by BC Hydro, and a report delivery date was agreed upon. As noted in the EIS, BC

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		Comment 4-3.	However, there is no data provided on any other local First Nations, including but not limited to the Blueberry River and Saulteau First Nations. Thus, the baseline conditions profile and the assessment upon which it is based is incomplete. BC Hydro has had several years to collect this information, and dedicated collection of socio-economic baseline data only appears to have begun in mid-2012. Information Request The Proponent is asked to provide a revised EIS properly incorporating the results of all baseline community profiles on First Nations, and revise the effects characterization, residual effects estimation, significance estimation and mitigation commitments accordingly.	<p>Hydro did not receive the agreed upon reports from all First Nations in time for inclusion in the EIS.</p> <p>The EIS Guidelines (Preface and elsewhere) required that BC Hydro incorporate additional baseline information as made available based on concerns raised by Aboriginal groups. The EIS information is therefore not incomplete, as it does include information that was made available to BC Hydro by First Nations in time for inclusion in the EIS. BC Hydro's efforts to obtain baseline information from First Nations with respect to the socio-economic effects assessment is described in Volume 3 Appendix B Part 1 - First Nations Community Baseline Reports - Approach to Gathering and Integrating Community Baseline Information.</p> <p>The Aboriginal Group Supplemental Report will include consideration of the Blueberry River and Saulteau First Nations Community Baseline Reports in the findings reported in the EIS. Any reports made available to BC Hydro from McLeod Lake Indian Band and Horse Lake First Nation will be considered if received in a timely fashion. Updated information will be submitted to CEA Agency and BCEAO.</p>
ab_0001-587	Treaty 8 Tribal Association	V.4, S.28.4.1.1 ; page(s) 28-11 ; line(s) 19-31 EISG S.17.2.4 Comment 4-4.	<p><i>To characterize the Project's population effect on the general population, three categories of in-migrants were identified. • Camp Direct Workers: ... • Community Direct Workers and their Families: ... • Community Indirect/Induced Workers and their Families: Workers for supplier industries (i.e., indirect) and consumer service sectors (i.e., induced), who are not working directly for the Project, and who take up normal residence in the LAA. It is assumed that their families and dependents will accompany them to the LAA. Comments It is not readily apparent whether Community Indirect/Induced Workers and their Families includes unsuccessful or transient job seekers moving to the region, which is often a concern in relation to large industrial projects. Such in-migrants may contribute to adverse social effects such as crime, higher health care demands, and pressure on housing (low-income crowding and emergency housing). Research from the oil sands region of Alberta indicates that in-migration pressures along with low socio-economic status, substance abuse issues, and systemic barriers have seen the proportion of homeless people who are Aboriginal grow to as much as 50 per cent.¹ No discussion is provided in the EIS of the risks of increased Aboriginal homelessness resulting from the proposed Project. Information Request The Proponent is requested to: a) indicate whether BC Hydro's estimate of in-migration includes unsuccessful/transient job seekers and estimate the number of people likely to in-migrate during construction that fit this category; and b) provide a discussion, based on case studies, of past and potential effects of unsuccessful/transient job seekers who travel to development areas in search of work, including a</i></p>	<p>The scope of the Population and Demographics effects assessment is in accordance with the EIS Guidelines and appropriate information is provided in Section 28 of the EIS. This includes assessing the Project's effects on Population and Demographics based on the results of the Labour Market assessment (EIS Guidelines, Section 17.2.4). The Labour Market assessment incorporates the Project's direct labour needs and indirect and induced employment in the region calculated using the BC Input-Output Model, this does not include unsuccessful job seekers.</p> <p>The number of in-migrants and local residents who may not gain employment cannot be estimated quantitatively; however, Section 29.4.2 provides a qualitative description of Project effects on the demand for non-market and the demand for and price of rental housing.</p>

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			<p>discussion of potential higher risks to Aboriginal people caused by such in-migration.</p> <p>1 Nichols Applied Management. (2012). Appendix 6 – SIR 32 – Supplemental Information for the Jackpine Mine Expansion Project – Assessment of Socioeconomic Effects on Aboriginal Groups. May 2012. Submitted by Shell Canada Limited to the Joint Review Panel for the Jackpine Mine Expansion Project. Accessed at http://www.ceaa.gc.ca/050/documents_staticpost/59540/56367/A6-Assessment_Socio-Economic_Effects_Aboriginal_Groups.pdf.</p>	
ab_0001-588	Treaty 8 Tribal Association	V.4, S.28.4.1.1 ; page(s) 28-11 ; line(s) 32-36 EISG S.17.2.4 Comment 4-5.	<p><i>The demographic characteristics of workers forecast to reside in the community is assumed to be similar to that of the existing population in the LAA. This assumption is supported by interviews that indicated B.C. trade workers are reflective of the general populations in B.C. and the LAA in terms of marital status and household size (Cochrane 2011, pers. comm.)... The demographics of in-migrating indirect and induced workers and their families are also assumed to be reflective of existing demography. Therefore, changes in the demography of the LAA are not anticipated.</i> Comments No case studies of similar large construction projects in relatively remote regions are cited to support BC Hydro's population modeling. The possibility that a greater than assumed percentage of the in-migrants will be young single males, the demographic most likely to contribute to social dysfunction, is not considered. A single personal communication is not adequate evidence to support BC Hydro's key assumption. Information Request The Proponent is requested to: a) provide evidence from case study research and other literature to support or refute its current assumption that in-migrants will mirror the current demographic makeup of the LAA; and b) provide an estimate of the gender breakdown of all categories of in-migrants.</p>	<p>The comment does not provide the rest of the supporting statement in the EIS; furthermore, the current labour force in the LAA has a high proportion of trade workers (Section 17 Labour Market, Table 17.7) and the Project would attract in-migrants from similar occupations.</p> <p>Please see Volume 4 Appendix A Part 3 Population Effects Model for further information regarding demographic assumptions for different population segments and the supporting rationale.</p>
ab_0001-589	Treaty 8 Tribal Association	V.4, S.28.4.1.2 ; page(s) 28-12 28-17 ; line(s) 14-16 17-20 EISG S.17.2.4 Comment 4-6.	<p><i>The timing of population change would be driven by the Project's labour force requirements (i.e., rise in Years 0 to 2, relative stability in Years 3 and 4, rise to peak population in Year 5, and decline thereafter to baseline). Even if workers and their families stayed in the LAA or Fort St. John after construction, this would not be a Project-related effect as the effect would be attributable to some other economic or social causal factor, such as taking up a local employment opportunity.</i> Comments This assertion that the Project's contribution to population change will somehow "decline to baseline" is unsupportable. This is part of BC Hydro's assertion that people who move to the region to take part in the proposed Project are no longer a Project-related effect if they stay after</p>	<p>The regional population is historically highly mobile. Please see Section 28.2, Figure 28.2, for a description of the population changes for the north and south Peace local health areas between 1986 and 2010. Given the size of the Project operations phase workforce, there would be limited opportunities for on-going employment with the Project (Section 17.1.3, page 17-4). Therefore, if workers choose to stay in the region after Project construction, it will be due to general economic growth described in Section 18.3.3, pages 18-14 and 18-15. If they leave the region, then other in-migrants would be needed to fill regional demand for labour. Therefore, the size of the population in the LAA after the construction phase will not be a result of the Project.</p>

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			<p>their work on the Project is complete. If the primary driver for someone to move to the region is to work at the proposed Project, the effects on population of that choice continue as long as that person remains in the region.</p> <p>Information Request BC Hydro is asked to: a) identify based on case study research what proportion of the proposed Project's direct, indirect and induced in-migrant workforce will be likely to stay in the PRRD after the construction phase is complete; and b) provide a reconsidered assessment of Project-specific population effects that includes the longer-term effects of the proportion of Project-related in-migrants identified in part a).</p>	
ab_0001-590	Treaty 8 Tribal Association	V.4, S.28.4.1.3 , V.3, S.17.3.5.1 ; page(s) 28-12 , 17-14 ; line(s) 38-45 , 33-36 EISG S.17.2.4 Comment 4-7.	<p><i>Should demand for accommodation in Fort St. John place pressure on rents and housing costs, Aboriginal persons, who can be vulnerable to rising costs, may move back to their home communities with neither an employment guarantee nor secure housing. Section 29 Housing indicates a potential Project effect on the local apartment rental market and prices when low vacancy rates intersect with Project labour demand and increasing local population. The housing assessment concludes that, as the market would be expected and able to adjust to supply and demand imbalances, Project effects on housing are not considered significant. There is also a large difference in earnings in favour of Aboriginal persons living off-reserve (80.9% of the earnings of non-Aboriginal persons) compared to those living on-reserve (54.8% of the earnings of non-Aboriginal persons) (BC Stats No date)</i></p> <p>Comments BC Hydro's analysis takes a market perspective rather than looking at the impact on potentially marginalized and vulnerable sub-populations, which in the PRRD disproportionately consists of Aboriginal people. The average income of Aboriginal residents living off-reserve in the LAA is only 80.9% of that of non-Aboriginal people, which is indicative of higher vulnerability to housing price shifts, especially in the rental market. What is relevant is not the overall ability of the market to adjust (a tenuous assumption on its own, taken up further in comments on Section 29 of the EIS below), but the ability of marginalized sub-populations to adapt to the adjustments and the distribution of adverse effects. This is an example where BC Hydro ignores impact equity considerations for Aboriginal people.</p>	<p>The information cited provides an analytical basis to support the concern that populations on reserve may be affected by the movement of Aboriginal people back to their home communities. This Section of the EIS also identifies that some on-reserve Aboriginal people may leave the communities to seek job opportunities. The number of individuals choosing to move into, or out of, each Aboriginal community cannot be estimated; however, the Project related mechanisms that may motivate such decisions are described.</p>
ab_0001-591	Treaty 8 Tribal Association	V.4, S.28.4.1.3 ; page(s) 28-13 ; line(s) 8-15 EISG S.17.2.4 Comment 4-8.	<p><i>...even a small amount of out-migration from smaller First Nations communities of employed, well-paid people and their families could be regarded as an adverse effect on the economic and social development of these communities (i.e., for example, the departure of just three workers with families could represent a population decrease of 10% on some reserves). Family members left behind also lose the benefits of having other well-paid, securely employed family</i></p>	<p>The scope of the Population and Demographics effects assessment is in accordance with the EIS Guidelines and appropriate information is provided in the EIS.</p> <p>The potential for out-migration is described in Section 28.4.1.3, and relevant mitigation is proposed in Section 28.4.3.2, "BC Hydro will support Aboriginal persons working on the Project to maintain permanent residence within their home communities by providing camp housing and, where demand warrants, by providing commuter support.</p>

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			<p><i>members. Community cohesion and family unity are also cited as concerns when people leave their communities. Comments Outmigration from smaller First Nation communities is not meaningfully addressed in the effects characterization stage of the assessment or anywhere in the EIS. This is an example where potential adverse effects on well-being and quality of life of area First Nations people are identified conceptually but not characterized or assessed for residual significance. Information Request BC Hydro is asked to: a) identify where in the EIS the effects of out-migration from First Nation communities is addressed, and b) provide the rationale for why it is not part of the effects characterization stage of the assessment.</i></p>	
ab_0001-592	Treaty 8 Tribal Association	V.4, S.28.4.1.3 ; page(s) 28-13 ; line(s) 31-35 EISG S.17.2.4 Comment 4-9.	<p><i>As BC Hydro is proposing to use workforce camps, and is anticipating the majority of its workforce to reside in the camps, the potential for negative interactions between new non-Aboriginal and existing Aboriginal persons will be less than if the entire workforce resided in the community, as the camp residents would spend less time in the community at large. Comments Notwithstanding the use of work camps, there may be increased social impacts on Aboriginal populations related to in-migration of non-Aboriginal people caused by and contributed to by the proposed Project. Section 4.3.6.2 of the EIS identifies that there will be “general parking” at temporary accommodations on the north and south side of the Peace River Valley, and that a shuttle service will be provided “as deemed necessary” – to the Fort St. John area and Chetwynd area, for commuters and “leisure transport to town”, among other reasons. Both of these provisions – general parking and potential shuttle services for camp-based workers – may increase the interaction level between camp-based workers and residents of nearby communities. This can have beneficial or adverse effects, depending on the nature of the interactions and who is involved. BC Hydro does not examine this social impact issue in the EIS. With lower socio-economic status and as a visible minority group, among other systemic factors putting them at higher risk, First Nations members are more susceptible to many types of social risks. This includes but is by no means limited to the effects of an almost exclusively male camp workforce on Aboriginal females. Information Request The Proponent is requested to: a) identify all BC Hydro plans, policies and programs related to the off-site activities of its camp-based construction workforce, especially in relation to the minimization of adverse social effects on nearby communities; b) identify any lessons learned about the identification and management of social risks related to large camp-based workforces to nearby communities from previous case studies; and c) identify in more detail what sort of plans BC Hydro has for “leisure transport to town” and what sort of</i></p>	<p>BC Hydro has committed to providing services, including recreational facilities and medical services, at dam the site to reduce the use of these services in the local communities by the Project workforce, as described in community infrastructure and services (Section 30.4.2).</p> <p>Potential effects identified during the completion of the valued component effects assessments in accordance with the EIS Guidelines have had mitigation proposed. Effects assessments are based on a variety of information sources which are described in the beginning of each section as well as the reference section. For example, BC Hydro has proposed mitigation to provide cross-cultural awareness training to Project workers, and to adopt and monitor codes of conduct in response to the population and demographics effects assessment. Additional information requested in part b) of the Information Request is outside the scope of the environmental assessment.</p> <p>Please see Volume 4 Appendix B Section 2.1.1 for additional information on Project shuttle services. Some considerations are that the shuttles will need to be flexible to match the seasonal and shift patterns of the workforce. A shuttle service would be provided from both the north and south bank camps to the Fort St. John area for leisure transport. Shuttle services can be scheduled, and adjusted if necessary, to manage the level and timing of the Project workforce being in the community. Leisure transport would be transportation to local communities for purposes other than commuting (e.g. recreation, shopping, dining).</p>

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			"leisure" workers are being transported to.	
ab_0001-593	Treaty 8 Tribal Association	V.4, S.29.1.2 ; page(s) 29-1 ; line(s) 31-33 EISG S.17.3 Comment 4-10.	<i>The key issues for housing, as identified in Table 29.1, include the potential for housing shortages, especially for temporary accommodation, which is currently experiencing high demand because of major construction projects. Information Request BC Hydro is asked to: a) identify the "major construction projects" creating demand for temporary accommodation; and b) indicate, for these major construction projects and any other projects in the "Project Inclusion List", the estimated time frame and construction workforce requirements (use of a Gantt chart is recommended)</i>	<p>Please see Volume 4 Appendix A Part 5 Section 3.1.2 for information regarding the base case projections for housing levels in the LAA. Household growth is projected for the construction period based on the population forecast in Section 28, Figure 28.6, as this is a primary driver of housing levels. The BC Stats method forecasts the population from the latest base year estimate by forecasting births, deaths and migration. BC Stats indicated that the publically available forecasts for the two local health areas included migration associated with several large projects announced for the region (Volume 4 Appendix A Part 2 Section 2). The base case projections for Population and Demographics, and Housing, assume that these projects will proceed, as considered by BC Stats in their projection model.</p> <p>BC Hydro provided information on its potential Project workforce, by year, to the Northeast Regional Workforce Table, and understands that this provincial initiative was seeking similar information from other industry representatives. A construction workforce requirement for all projects forecast for the region is not publically available.</p>
ab_0001-594	Treaty 8 Tribal Association	V.4, S.29.1.2 ; page(s) 29-2 29-4 ; line(s) 1 10 EISG S.17.3 Comment 4-11.	<i>Table 29.1 Key Issues: Housing Approaches to Addressing Key Issues • the implications for housing in Aboriginal communities are considered in this assessment. Table 29.4 Key Indicators for Housing Information Request The Proponent is asked to: a) indicate where and how the implications for housing in Aboriginal communities are considered and assessed in Section 29; and b) add the following key indicator to a revised Section 29 housing assessment: "Aboriginal access to affordable housing in off-reserve communities".</i>	<p>The scope of the Housing effects assessment is in accordance with the EIS Guidelines and appropriate information is provided in the EIS. The key indicators selected are in accordance with the EIS Guidelines.</p> <p>Section 29.4.1.4 of the EIS describes the implications of the housing effects assessment for Aboriginal peoples and proposed mitigation is described in Section 29.4.2. Affordability is described based on income levels, and the effect of the Project on occupancy costs, for all residents, is described in Section 29.4.1.3.4.</p>
ab_0001-595	Treaty 8 Tribal Association	V.4, S.29.3.3 ; page(s) 29-12 , 29-12 , 29-13 , 29-26 ; line(s) 25-29 EISG S.17.3.3 Comment 4-12.	<p><i>The MLS data for the Fort St. John area indicate an active market that responds quickly to both increases and declines in demand, so that buyers' and balanced markets become the norm. Even when demand spikes, as happened in 2006, the market was able to quickly respond with more supply (see year 2007 in Table 29.12) that restored balanced conditions.</i></p> <p><i>Table 29.12 Housing Starts for Cities of Dawson Creek and Fort St. John, 2001 to 2010</i></p> <p><i>Table 29.13 MLS Activity and Prices for BC Northern and Northern Lights Real Estate Board Areas and Fort St. John Area, 2006–2010</i></p> <p><i>Housing prices in the PRRD could be affected by the Project, but based on the projected housing supply and demand comparison, a sellers' market with a low listing to-sales ratio would have to be present during the 2014 to 2018 period for that to occur. Even in that scenario, price increases would be temporary as residential builders bring new houses onto the market (BCREA 2010). (our</i></p>	<p>The use of term "balance" is in accordance with MLS data as provided and interpreted by the Canadian Real Estate Association and BC real estate boards, as described in EIS Volume 4 Appendix A Part 5, Section 3.1.3. There is no assumption or implication that a balanced market cannot coincide with rising house prices.</p> <p>Assertions about future construction activity are supported by historical data described in Sections 29.3.2 and 29.3.6.1.</p> <p>Effects on housing prices as described in Section 29.4.1.3.4 are based on the consideration of incremental and peak demand.</p> <p>Section 29.4.1.4 describes the implications of the Housing effects assessment for Aboriginal peoples and proposed mitigation is described in Section 29.4.2.</p> <p>The characterization of residual effects and significance was carried out in accordance with the EIS Guidelines for the valued component as a whole, and appropriate information is provided in in the EIS.</p>

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			emphasis) Comments BC Hydro conflates supply (availability) with price (affordability) in reference to “balance” when stating that “Even when demand spikes, as happened in 2006, the market was able to quickly respond with more supply (see year 2007 in Table 29.12) that restored balanced conditions.” As shown in Table 29.13, while 2007 brought more housing stock, prices continued to climb to highs in 2008 and effective stasis thereafter. All told, this newly “balanced” condition (as BC Hydro characterizes it) between 2006 and 2010 saw about a 40 per cent increase in housing prices south of the Peace River in the Northern Lights Board Area and 29 per cent north of the River in the Fort St. John area (see Table 29.13). Assertions about the amount of housing stock that will be built, as well as about the relationship between housing stock and prices in the Project scenario, are unsupportable. Even if more housing starts begin when there is a supply imbalance (a tenuous assumption if the majority of trades are tied up in major construction projects), the actual availability of housing may not improve for those First Nations people at the socioeconomic margins. This is another example where assumptions made on population-based data may mask current baseline issues and potential Project impacts on First Nations people. Information Request Conduct separate effect characterization and residual effects significance estimation exercises on housing for Aboriginal and non-Aboriginal sub-populations, giving careful consideration to all three major housing factors – availability, affordability and appropriateness/crowding.	
ab_0001-596	Treaty 8 Tribal Association	V.4, 29.3.4 ; page(s) 29-14 ; line(s) 5-10 EISG S.17.3.3 Comment 4-13.	<i>As part of its Census household survey, Statistics Canada estimates affordability thresholds based on the proportion of total household income that goes towards meeting housing needs. The percentage of resident households who spend more than 30% of their income on housing is lower in the City of Fort St. John, District of Taylor, and the PRRD than it is in the province as a whole (Table 29.15).</i> Comments No disaggregation of data between Aboriginal and non-Aboriginal sub-populations is provided, despite readily available evidence that non-reserve Aboriginal peoples earn on average only about 80% in comparison to their non-Aboriginal counterparts, indicating that numbers on affordability may differ widely. Fundamental questions for Aboriginal people, related to housing and raising a family in Fort St. John and what the Project may do to change this situation, for better or worse, are not considered in the EIS. Information Request The Proponent is requested to: a) identify all efforts to gather information on Aboriginal housing affordability thresholds, including through government agencies, Aboriginal support agencies, relevant literature and case studies; and b) if quantitative data is not available, provide a qualitative	<p>The scope of the Housing effects assessment is in accordance with the EIS Guidelines and appropriate information is provided in the EIS. Section 29.4.1.4 describes the implications of the Housing effects assessment for Aboriginal peoples and proposed mitigation is described in Section 29.4.2.</p> <p>BC Hydro's efforts to obtain baseline information from First Nations with respect to the socio-economic effects assessment are described in Volume 3 Appendix B1 - First Nations Community Baseline Reports - Approach to Gathering and Integrating Community Baseline Information.</p>

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			discussion on Aboriginal housing affordability in the Fort St. John area, considering the income differentials noted above.	
ab_0001-597	Treaty 8 Tribal Association	V.4, S.29.3.7 ; page(s) 29-20 ; line(s) 10-14 EISG S.17.3.3 Comment 4-14.	<i>The housing baseline conditions apply in general to the Aboriginal population not living on a reserve in the LAA. The specific housing characteristics for the Aboriginal population not living on reserve are not known, as housing data are not typically collected by Aboriginal identification for non-Aboriginal communities such as Fort St. John and Dawson Creek. Comments The use of the term “apply in general” implies that the “specific housing characteristics” for Aboriginal off-reserve populations actually resemble or mirror those of the non-Aboriginal population. Given the socio-economic characteristics of Aboriginal off-reserve populations, we would suggest this is, on the whole, highly unlikely. Indeed, BC Hydro cites the T8FNs Community Assessment Baseline Profile Report as noting the converse, at p. 29-21 of the EIS: <i>A report from T8FNs...reported that the costs for purchasing a house and paying rent in nearby off-reserve communities are considered high, and high costs (particularly the high rental costs) in Fort St. John have negative social effects. Aboriginal persons living in the non-Aboriginal communities in the LAA often pay a disproportional amount of rent to food and other expenses, and that high rents act as a deterrent to pursuing post-secondary educations for many, and act as a barrier to elders living in Fort St. John in an effort to be closer to medical services.</i> The admitted lack of evidence available from census and other data sources should have been a warning sign for BC Hydro to increase its data collection efforts to draw a compelling portrait of baseline conditions for the off-reserve Aboriginal population in the Fort St. John area. Information Request The Proponent is asked to: a) identify all sources of potential off-reserve Aboriginal baseline data sought out in the course of developing the EIS; b) identify all qualitative and quantitative methods it used or plans to use to collect additional information on off-reserve Aboriginal population baseline and trend-over-time conditions.</i>	<p>The scope of the Housing effects assessment is in accordance with the EIS Guidelines and appropriate information is provided in the EIS. Please see Section 29.4.1.4 for a description of the implications of the effects assessment for Aboriginal peoples and proposed mitigation in Section 29.4.2.</p> <p>BC Hydro's efforts to obtain baseline information from First Nations with respect to the socio-economic effects assessment are outlined in Volume 3 Appendix B1 - First Nations Community Baseline Reports - Approach to Gathering and Integrating Community Baseline Information. Please also see Section 29.2 for a description of information sources and methods for the housing effects assessment. Affordability is described based on income levels, and the effect of the Project on occupancy costs, for all residents, is described in Section 29.4.1.3.4.</p>
ab_0001-598	Treaty 8 Tribal Association	V.4, S.29.3.7 ; page(s) 29-20 ; line(s) 23-27 EISG S.17.3.3 Comment 4-15.	<i>Work orders for minor repairs and maintenance are common to address on reserve housing. Funding received from Aboriginal Affairs and Northern Development Canada (AANDC) for housing maintenance and repairs is perceived by some First Nations as being insufficient, given the high cost of construction labour and, subsequently, housing repairs. Comments Aboriginal people in BC were much more likely than non-Aboriginal people to live in homes in need of major repairs. Section 29 has not considered either the availability of trades or cost of repairs in the event the proposed Project proceeds. Information Request Provide a discussion of potential Project and cumulative effects on the</i>	The matter raised in this Information Request is outside the scope of the environmental assessment.

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			cost and availability of housing maintenance, especially in relation to the more remote T8FNs communities.	
ab_0001-599	Treaty 8 Tribal Association	V.4, S.29.3.7 ; page(s) 29-20 ; line(s) 27-29 EISG S.17.3.3 Comment 4-16.	Information Request Provide a citation for the information related to PRFN on-reserve housing conditions.	The information was provided to BC Hydro by T8TA, in Telling a Story of Change the Dane-zaa Way: A Baseline Community Profile of Doig River First Nation, Halfway River First Nation, Prophet River First Nation and West Moberly First Nations, page 145 (2012). The full quote provided in the profile is, "interviews in 2003 indicated that PRFN community members were generally satisfied with the quality and maintenance of the existing 32 housing units on reserve (Statistics Canada 2003)." This document is included in the EIS as Volume 3 Appendix B7.
ab_0001-600	Treaty 8 Tribal Association	V.4, S.29.4.1.3.5 ; page(s) 29-27 29-10 ; line(s) 30-36 3-5 EISG S.17.3.4 Comment 4-17.	<i>Given the size and public awareness of the Project, it is predicted that there would be an increase in the number of people coming to the region, resulting in an increase in demand for emergency and transitional housing facilities in the City of Fort St. John during the construction phase. With the announced expansion of bed availability with the redevelopment of Cedar Lodge by the Salvation Army, shortages of emergency and non-market housing may not occur. The Project would not have an adverse effect on non-market housing Demand for temporary accommodation is highest in the summer tourist season and in the winter oil and gas activity period, and decreases during the spring thaw and fall freeze-up, when oil and gas activity slackens.</i> Comments The winter period of high demand for temporary accommodation is of concern. This is the coldest time of year, and the time most dangerous to be out of doors. Nowhere in the EIS are questions around patterns and implications of seasonal variations in available accommodations, especially seasonal variations, contemplated. Information Request The Proponent is requested to: a) provide baseline and trend-over-time information about the number of homeless people in the Fort St. John area; b) identify any seasonal differences in demand for homeless shelter spaces in the Fort St. John area; c) provide an estimate of the Project's likely contribution to the homeless population during the construction phase; and d) identify what provided BC Hydro confidence, prior to estimating the number of likely homeless persons in the Fort St. John area at any point in time, that the proposed Project will not have an adverse effect on non-market housing.	<p>The number of in-migrants, and local residents, who may require non-market housing cannot be estimated quantitatively; however, it can be qualitatively estimated that the Project may increase the demand for non-market housing, for reasons described in Section 29.4. Therefore, BC Hydro has proposed to support this sector as described in Section 29.</p> <p>The Project schedule has a seasonal profile, with higher labour requirements between April and October than between November and March (Section 17.4.1, page 17-18, lines 12-13).</p> <p>The scope of the Housing assessment was in accordance with the EIS Guidelines and appropriate information is provided in Section 29 of the EIS. Section 29.4.2.1 proposes mitigation for transitional or emergency housing or help to become job-ready and able to participate in market housing by providing supportive funding to emergency housing providers, such as the Salvation Army, during the Project construction.</p> <p>The information requested regarding further data regarding the homeless is outside the scope of the environmental assessment.</p>
ab_0001-601	Treaty 8 Tribal Association	V.4, S.29.4.2.1 ; page(s) 29-28 ; line(s) 18-25 EISG S.17.3.4 Comment 4-18.	<i>To retain balanced housing conditions and minimize potentially adverse effects on housing supply and demand, BC Hydro will implement the following mitigation measures: • ... • Expand the supply of rental housing by building at least 40 rental units in partnership with BC Housing, for use by Project workforce during construction. • Transition the 40 rental units to permanent nonmarket/affordable housing after construction (in partnership with BC</i>	BC Hydro has not proposed that it should build all new rental units that would be required in the community, as there is a housing market that will respond to this market demand. Forty units will absorb approximately 18% of the demand in the peak year, reducing pressure on the rental market. If additional mitigation is required due to a low vacancy scenario, Project workers can be housed in the camp.

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			<i>Housing</i>) • <i>Expand the supply of temporary accommodation by providing long-stay RV spaces (seeking private or local government partnerships)</i> Information Request The Proponent is asked to: a) identify how the appropriate number of housing units to build was determined; b) identify any plans BC Hydro has to prioritize Aboriginal housing applicants for permanent residence in any planned housing units, should the proposed Project proceed; and c) clarify the disparate references to 50 total housing units built by BC Hydro (Executive Summary) and 40 total housing units (Section 29.4.2.1).	<p>Plans for occupants of the affordable housing units after BC Hydro’s use have not yet been determined. The units would be run in the future by a non-profit housing association, and BC Hydro will seek an interested operator for the units. Future occupants will be determined by the future non-profit affordable housing operator.</p> <p>BC Hydro proposes to expand the supply of rental housing by building at least 40 rental units in partnership with BC Housing for use by the Project workforce during construction (Section 29.4.2.1, page 29-28, lines 24-25). In addition, BC Hydro will provide up to 10 new affordable housing units to be used by the community in the Fort St. John area in partnership with BC Housing, to expand the supply of affordable housing (Section 39, page 39-20). These together total 50 units.</p>
ab_0001-602	Treaty 8 Tribal Association	V.4, S.29.4.2.2 ; page(s) 29-28 ; line(s) 37 EISG n/a Comment 4-19.	Correction Clarify the reference made to Section 29.4.3; there is no Section 29.4.3 in the EIS.	The correct reference is to Section 29.5 Summary of Effects Assessment and Mitigation Measures. This update has been added to the List of Errata and Updated Information.
ab_0001-603	Treaty 8 Tribal Association	V.4, S.29.4.2.2 ; page(s) 29-28 ; line(s) 38-40 EISG S.17.3.4 Comment 4-20.	<i>These mitigation measures will address adverse effects on Aboriginal renters in the City of Fort St. John as well as on its non-Aboriginal renters.</i> Comments BC Hydro suggests general mitigation measures for housing will also apply to Aboriginal sub-populations. Since one of the issues evident is differential access to housing due to systemic barriers for Aboriginal people (e.g., lower income), this argument is not compelling. Information Request In light of likely differential accessibility to housing, reconsider and identify appropriate mitigation measures specific to Aboriginal sub-populations, especially but not limited to off-reserve populations.	Proposed mitigation measures specifically for Aboriginal peoples are described in Section 29.4.2.2. In addition, general mitigation measures would benefit all members of the population engaged in the housing market, including Aboriginal sub-populations, by retaining balanced housing conditions and minimizing adverse effects on housing supply and demand from the current baseline.
ab_0001-604	Treaty 8 Tribal Association	V.4, S.29.5 , V.4, S.29.6.1 ; page(s) 29-29 , 29-31 ; line(s) 12 , 13-17 EISG S.17.3.4 Comment 4-21.	<i>Table 29.24 Project Effects and Mitigation Measures on Housing Projections for housing demand by the Project carry a high degree of confidence, while research on major construction projects in Kitimat, the PRRD, and Fort McMurray have provided realistic benchmarks for housing preferences. Supply-side parameters and market conditions are well documented by statistical agencies and housing authorities such as Canada Mortgage and Housing Corporation, and BC Housing.</i> Comments BC Hydro identifies factors contributing to its prediction of mitigation effectiveness, such as results from other BC Hydro projects in Mica and Revelstoke, as well as knowledge gained from other construction projects in Kitimat, the PRRD, and Fort McMurray. None of these are discussed in detail in the EIS. Information Request Provide details of the case study information used	Please see the references for Section 29 for additional citation information. Information from these sources was integrated primarily into Section 29.4.1.3 (citations provided) as well as Volume 4 Appendix A Part 5, where additional detail regarding the benchmarks mentioned is found.

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			in support of BC Hydro's predictions of housing mitigation effectiveness.	
ab_0001-605	Treaty 8 Tribal Association	V.4, S.29.6.1 ; page(s) 29-31 ; line(s) 21 EISG S.17.3.4 Comment 4-22.	<i>Table 29.25 Characterization Criteria for Residual Housing Effects Probability</i> • Low: Past experience indicates that an effect is unlikely but could occur • High: Past experience indicates that an effect is highly likely to occur • Unknown: Past experience does not allow the determination of the effect's Probability Comments We suggest that probability be based on the mixture of specific context and project components (physical works and activities), as much as "past experience". Information Request BC Hydro is asked to identify why "past experience" is considered the arbiter of all probability in this characterization of residual housing effects, or reconsider this criterion definition.	The use of past experience to frame the probability of an effect on Housing due to an increase in demand from the Project is appropriate. The past experience demonstrates the actual regional housing conditions in response to past changes in supply and demand for housing.
ab_0001-606	Treaty 8 Tribal Association	V.4, S.29.6.2 ; page(s) 29-32 ; line(s) 6-7 EISG S.17.3.5 Comment 4-23.	<i>Project demand for rental housing that causes the apartment vacancy rate to move below 4% for more than six months is considered a significant adverse effect.</i> Information Request The Proponent is asked to clarify what the significance threshold for rental housing demand is based on, and provide examples from previous environmental assessments where this threshold was incorporated, and what other thresholds BC Hydro considered.	<p>The assessment of effects on Housing considered several factors, and a residual effect was identified only on the aspect of rental housing. Therefore, the threshold for determining significance in the EIS was Project demand for rental housing that would cause the apartment vacancy rate to move below 4% for more than six months (Section 29.6.2).</p> <p>The rental vacancy rate threshold is based on historical data between 2007 and 2011. This period captures a variety of economic conditions experienced in the region that influenced the rental housing market. The likelihood of the Project to push the market outside those historical norms was then used to make a determination of significance (Volume 4, Appendix A, Part 5 Section 3.1.3, page A-4, lines 22-25).</p> <p>As an alternative, the use of rental unit availability rates was considered. Availability rates are defined by CMHC. A rental unit is considered available if the existing tenant has given, or has received, notice to move and a new tenant has not signed a lease, or if the unit is vacant. Availability rates are typically higher than vacancy rates; therefore, the use of vacancy rates is a more conservative approach for the determination of significance.</p>
ab_0001-607	Treaty 8 Tribal Association	V.4, S.30.1.2 ; page(s) 30-4 ; line(s) 12 EISG S.17.4 Comment 4-24.	<i>Table 30.1 Key Issues: Community Infrastructure and Services Key Issues First Nations concern that influx of workers and increased flow of money into communities could lead to public health and safety concerns; concern regarding impact on availability and response of fire and peace officers in Doig River and Halfway River; call for safety net and programs to address this (T8TA and SFN). Approach to Addressing Key Issues Issue is considered in view of results of population forecast and mitigations such as workforce management.</i> Comments The proposed approach to addressing the issue is not credible. Information Request Provide a full reconsideration of potential effects on infrastructure and service availability in First Nations communities reliant on human resources from Fort St. John due to increased demand, including: a) closer examination of current and trend-over-time availability and time delays in service provision to	<p>The approach meets the requirements of EIS Guidelines Section 17.4.4 which states that the results of the assessment of the Project on Population and Demographics will be used to assess the effects on Community Infrastructure and Services.</p> <p>The scope of the Community Infrastructure and Services effects assessment is in accordance with the EIS Guidelines and appropriate information is provided in the EIS. The EIS Guidelines (Preface and elsewhere) required that BC Hydro incorporate additional baseline information as made available based on concerns raised by Aboriginal groups, which can be found in Section 30.3.10.</p>

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			the four T8FNs from Fort St John, Hudson's Hope, and Chetwynd; and b) evidence from case studies of the effects of major construction projects on service and infrastructure availability in the North American context.	
ab_0001-608	Treaty 8 Tribal Association	V.4, S.30.1.3 ; page(s) 30-6 ; line(s) 9-12 EISG S.17.4 Comment 4-25.	<i>In addition, the utilization of the camp accommodation will reduce the need for workers and their families to reside in the local communities, which will further reduce demand on community infrastructure and services.... BC Hydro has committed to providing accommodation for all direct workers if required.</i> Comments It is not readily apparent how BC Hydro would make a determination that this was required. Information Request Identify how BC Hydro plans to monitor the effects of its direct workers on social services and community infrastructure, and on what basis BC Hydro would make the determination to provide all of its direct workers with accommodation.	As described in Section 29.8 of the EIS, BC Hydro has proposed to monitor apartment vacancy rate and price for the Fort St. John area, to work with the City of Fort St. John if additional mitigation is needed, and to work with Aboriginal communities in the LAA to track net migration to on-reserve housing. BC Hydro would work with contractors to forecast required camp accommodation, and would respond to the forecast demand by scaling up the capacity of the camp, if required (Section 4 Project Description) (Section 29.1.2, page 29-1, lines 24-30.
ab_0001-609	Treaty 8 Tribal Association	V.4, S.30.1.4 ; page(s) 30-7 ; line(s) 1 EISG S.17.4 Comment 4-26.	<i>Table 30.3 Key Indicators for Community Infrastructure and Services</i> Comments Table 30.3 does not include any disaggregated indicators to show potential differential effects between Aboriginal and non-Aboriginal sub-populations. Information Request The Proponent is asked to disaggregate the indicators assessed in Section 30 to Aboriginal and non-Aboriginal sub-populations and present them separately wherever possible, noting required assumptions and data gaps.	The scope of the Community Infrastructure and Services effects assessment is in accordance with the EIS Guidelines and appropriate information is provided in the EIS. Please see Section 30.3.10 for First Nations communities baseline information.
ab_0001-610	Treaty 8 Tribal Association	V.4, S.30.2.1 ; page(s) 30-9 ; line(s) 22-27 EISG S.17.4.3 Comment 4-27.	Comments BC Hydro refers to the First Nations community baseline profiles provided by the T8FNs as an information source. The T8FNs Community Assessment Baseline Profile Report (p.14-15) identifies a series of limitations, including budget and time limitations that constrain the application of the results. Information Request The Proponent is requested to identify its plans to fill detail gaps in the human environmental impact assessment during the EIS review period.	The EIS Guidelines (Preface and elsewhere) required that BC Hydro incorporate additional baseline information as made available based on concerns raised by Aboriginal groups. The EIS includes information that was made available to BC Hydro by First Nations at the time of writing of the EIS. BC Hydro's efforts to obtain baseline information from First Nations with respect to the socio-economic effects assessment are outlined in Volume 3 Appendix B1 - First Nations Community Baseline Reports - Approach to Gathering and Integrating Community Baseline Information. The Aboriginal Group Supplemental Report will include consideration of the Blueberry River and Saulteau First Nations Community Baseline Reports in the findings reported in the EIS. Any reports made available to BC Hydro from McLeod Lake Indian Band and Horse Lake First Nation will be considered if received in a timely fashion. Updated information will be submitted to CEA Agency and BCEAO.
ab_0001-611	Treaty 8 Tribal Association	V.4, S.30.3.6.1 ; page(s) 30-17 30-46 ; line(s) 2-6 10-28 EISG S.17.4.3	<i>In 2012, daycare space was limited in the Fort St. John, Charlie Lake, and Taylor area, with no available licensed daycare space for infant to three-year-old children, and only 20 spaces for children aged three to five. The following measures will be implemented by BC Hydro to mitigate potentially adverse project effects on community infrastructure and services: Health and Social</i>	BC Hydro is the only corporate entity that has proposed to support the community with provision of new daycare spaces; therefore, this measure is above and beyond what could be expected. BC Hydro has proposed this measure to support families who wish to enter the labour market, for whom access to daycare may be a barrier. Both Aboriginal and non-Aboriginal families, and single and non-single parent families, would have access these new spaces.

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		Comment 4-28.	<p><i>Services: ... • Provide additional daycare spaces in the Fort St. John area to increase spousal participation in the labour market</i> Comments Limited daycare spaces may be of heightened concern for the Aboriginal sub-population, which is younger and (possibly; data is not provided) more likely to have young children. BC Hydro's commitment suggests a possible blind spot in relation to single parent families and the lack of sufficient assessment of the effects on women of the proposed Project. Information Request The Proponent is requested to: a) clarify plans to support day care programs for proposed Project workers; and b) provide available data on the proportion of Aboriginal vs. non-Aboriginal families in the RAA that are single parent families.</p>	<p>BC Hydro will seek a partnership with an existing, licensed operator with whom the proposed number of delivered spaces can be determined in consideration of operational context, facility design, regulations, and management. The proposed number of daycare spaces will be determined in consideration of the local need for daycare spaces by age group, the Community Care and Assisted Living Act Child Care Licensing Regulation, which has requirements for facility design, maximum group size, age and number of children per group, and the ratio of employees to children which typically determine the number of spaces. BC Hydro will work with the operator to develop policies for access by Project workers and the community. Post construction, all of the new spaces would be available to the community.</p> <p>Demographic information, such as marital status and number of dependents, has been presented in the population and demographics baseline in EIS Section 28.3, including Aboriginal information when available.</p>
ab_0001-612	Treaty 8 Tribal Association	V.4, S.30.3.7.1.2 ; page(s) 30-18 , 30-19 ; line(s) 23-24 EISG S.17.4.3 Comment 4-29.	<p><i>The Fort St. John jurisdiction experiences twice the rate of violent crime and three times the rate of other crime rates when compared to B.C.</i></p> <p><i>Table 30.9 Crime Rate Statistics by Jurisdiction, 2010</i></p> <p><i>Total offences have dropped from a high of 9,337 in 2005 to 7,001 in 2010.</i></p> <p>Information Request The Proponent is requested to: a) provide data on Aboriginal vs. non-Aboriginal criminal offenses, incarceration rates, and victimization for the Fort St. John area, the RAA, or appropriate proxy study from northern B.C.; b) identify whether criminal records checks will be part of the screening process for working at the proposed Project, and BC Hydro's policy related to criminal record checks; c) identify the potential for a large influx of workers, indirect workers and induced growth (including transient job seeking populations) in relation to the proposed Project to increase criminal activity, policing needs, and court costs in the Fort St. John and surrounding areas; and d) discuss interpretations (including discussions with police) of why crime rates dropped in the LAA between 2005 and 2010.</p>	<p>The scope of the Community Infrastructure and Services effects assessment is in accordance with the EIS Guidelines and appropriate information is provided in Section 30 of the EIS. The EIS Guidelines (Preface and elsewhere) required that BC Hydro incorporate additional baseline information as made available based on concerns raised by Aboriginal groups. The EIS includes information that was made available to BC Hydro by First Nations at the time of writing of the EIS. BC Hydro's efforts to obtain baseline information from First Nations with respect to the socio-economic effects assessment are described in Volume 3 Appendix B1 - First Nations Community Baseline Reports - Approach to Gathering and Integrating Community Baseline Information.</p> <p>BC Hydro is required to comply with the North American Electric Corporation (NERC) Critical Infrastructure Protection (CIP 04) Standards-Security-Sensitive Positions. Criminal Record checks are required to be conducted of workers and contractors performing security sensitive work and /or who are key individuals or members of the design team. This requirement is also contained in BC Hydro's corporate security policy and guidelines.</p> <p>Please see Section 30.4.1.2 for information regarding the Project's change in demand for policing services. Mitigation has been proposed in EIS Section 30.4.2. BC Hydro will pay for incremental policing costs reasonably attributable to the Project. In response, the RCMP is undertaking a resource estimate for discussion. The RCMP is the appropriate agency to identify increased policing requirements.</p> <p>Interpretation of the reason for crime rates to decline is outside the scope of the environmental assessment.</p>
ab_0001-613	Treaty 8 Tribal	V.4, S.30.3.8.1 ; page(s) 30-24	<p><i>Table 30.14 Student Enrolment and Number of Schools, SDs 59 and 60 – LAA</i></p> <p>Comments Table 30.14 indicates that Aboriginal enrolment in SDs #59 and 60</p>	<p>Determination of factors associated with Aboriginal education enrolment is outside the scope of the environmental assessment.</p>

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	Association	; line(s) EISG S.17.4.3 Comment 4-30.	has declined between 2006-7 and 2010-11. Given the inequitable access to education and relatively low educational status of Aboriginal peoples historically and to date, these numbers merit further examination and, if possible, explanation. Information Request Conduct additional data gathering and discussions with regional and Aboriginal education system representatives, in an effort to provide a plausible explanation for the noted declining Aboriginal student enrolment in SDs #59 and 60.	
ab_0001-614	Treaty 8 Tribal Association	V.4, S.30.3.10 ; page(s) 30-35 to 30-38 ; line(s) EISG S.17.4.3 Comment 4-31.	Comments This four-page section on baseline conditions in the First Nations communities, limited to only the four T8FNs, is insufficient. Information Request BC Hydro is asked to: a) revisit and revise the section on baseline conditions for First Nations and other Aboriginal groups when it has received all of the required information, and resubmit a more detailed baseline conditions profile in a revised EIS; b) explain how BC Hydro can consider the EIS complete in the absence of data from other RAA First Nations communities.	<p>The EIS Guidelines (Preface and elsewhere) required that BC Hydro incorporate additional baseline information as made available based on concerns raised by Aboriginal groups. The EIS includes information that was made available to BC Hydro by First Nations at the time of writing of the EIS. BC Hydro's efforts to obtain baseline information from First Nations with respect to the socio-economic effects assessment are described in Volume 3 Appendix B1 - First Nations Community Baseline Reports - Approach to Gathering and Integrating Community Baseline Information.</p> <p>The Aboriginal Group Supplemental Report will include consideration of the Blueberry River and Saulteau First Nations Community Baseline Reports in the findings reported in the EIS. Any reports made available to BC Hydro from McLeod Lake Indian Band and Horse Lake First Nation will be considered if received in a timely fashion. Updated information will be submitted to CEA Agency and BCEAO.</p>
ab_0001-615	Treaty 8 Tribal Association	V.4, S.30.4 , Executive Summary ; page(s) 30-40 , 51 ; line(s) 23-27 EISG S.17.4.4 Comment 4-32.	<i>The workers taking on-site accommodation would place minimal demand on most community services, as they would either have their local living requirements met by the camp facilities (water, sewer, recreation), or they would continue to access services from their permanent place of residence outside the LAA or through on-site services for workers provided by BC Hydro and its contractors. Project workforce camps that will be self-sufficient and not dependent upon local government services.</i> Comments The above sections appear to be contradictory. Information Request BC Hydro is requested to: a) provide plans, programs and policies related to self-commuting of camp workers; b) plans, programs and policies related to entry and exit of workers from the camp site; and c) estimate all likely costs to and pressures on local and regional services from camp operations and camp-based workers, by year and per capita (workforce)	<p>The statements are not contradictory. Workers residing in on-site accommodation will either be in the on-site accommodation when working, or in their home communities outside the area when not working.</p> <p>Workforce commuting assumptions are described in EIS Volume 4 Appendix B Project Traffic Analyses Report, Section 2.</p> <p>Plans, programs and policies related to the entry and exit of workers from the camp are outside the scope of the environmental assessment.</p> <p>Potential changes in demand due to in-camp workers for different services are described in the appropriate section of the effects assessment (e.g., health and social services, emergency services). Appropriate mitigation has been proposed in Sections 30.4.2 and 30.4.4.</p>
ab_0001-616	Treaty 8 Tribal Association	V.4, S.30.4.1.1 ; page(s) 30-41 ; line(s) 19-25 EISG S.17.4.4	<i>Workers living in on-site workforce camps would not have the same need for services as residents would, since the workers would retain access to health and social services in their home communities during shift rotation. However, they would require periodic access to health and social services during their time in</i>	Fort McMurray and other communities in that region host large construction workforce camps, with out-of-town workers, near their communities. The Nichols Applied Management Study includes workers from camps of varying distances from Fort McMurray as well as camps located closer to other population centres. The inclusion of the camps located closer to population

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		Comment 4-33.	<p><i>the LAA. Emergency and acute care services would see the greatest increase in demand, but mental health, drug addiction, and diagnostic services would also be utilized (Nichols Applied Management 2007). Comments The Nichols Applied Management Study applied to the Regional Municipality of Wood Buffalo and the Alberta oil sands development scenario. Information Request BC Hydro is asked to: a) explain why similar outcomes to those occurring in the Alberta oil sands will occur in this instance; and b) describe how it will monitor the effects of the proposed Project workforce (both camp-based and community-based) demands on local and regional services.</i></p>	centres supports the assumptions for similar trends for the Project site and local communities. Monitoring is proposed where appropriate with specific mitigation measures in Sections 30.4.2 and 30.4.4.
ab_0001-617	Treaty 8 Tribal Association	V.4, S.30.4.1.4.4 , V.4, S.30.4.2 , V.4, S.30.4.2 , V.4, S.30.4.2 ; page(s) 30-45 , 30-46 , 30-50 ; line(s) 39-41 , 10 , 5 EISG S.17.4.4 Comment 4-34.	<p><i>While demand for services will increase, it is anticipated that service providers in the LAA will respond and adapt to the rise in population and associated pressures on services.</i></p> <p><i>The following measures will be implemented by BC Hydro to mitigate potentially adverse project effects on community infrastructure and services:</i></p> <p><i>... • Work with local fire departments to identify incremental demands on emergency rescue services, and provide funding to local governments for accident coverage during Project construction • Work with the RCMP to identify incremental demands on policing services, and provide direct funding to the RCMP in the LAA to cover identified increases during Project construction ... • Continue to participate in and support northern training initiatives, including participation on Northern Opportunities and financial support to Northern Lights College Foundation for funding student bursaries ... • Providing funds for the relocation or replacement of Hudson’s Hope water intake, pumping station, and treatment plant to meet the reasonable water supply needs of the residents and the District of Hudson’s Hope Comments It is not immediately clear that all service providers will adapt without additional human and financial resources. Information Request The Proponent is requested to: a) explain how it defines “local government infrastructure”; b) indicate the approach to monitoring system effects on local government infrastructure; c) explain how it would determine that increased demand on local government infrastructure was occurring in whole or in part as a result of the proposed Project; and d) explain how it will determine the initial level of funding required to “fund appropriate mitigation measures”; e) explain how it will adaptively respond with additional funding in response to monitoring; ; and f) confirm that the list of funded infrastructure and services above is complete and, if not, explain any additional funding.</i></p>	<p>It is reasonable to assume that service providers would meet their mandates and statutory requirements as described in Section 30.1.1 of the EIS.</p> <p>The Community Infrastructure and Services effects assessment was completed in accordance with EIS Guidelines Section 17.4, pages 95-96. This section specifically references sewer and water systems as examples of infrastructure. This aspect of the assessment included identification of such infrastructure that may be directly impacted by activities within the Project activity zone.</p> <p>Table 30.24 in Section 30.4.5 (Summary of Effects Assessment and Mitigation Measures) summarizes proposed mitigation measures for Community Infrastructure and Services. Where necessary, these include commitments to work with the appropriate entity to determine the specific effects, or to monitor as appropriate. The level of funding does not need to be specified in the EIS. BC Hydro would, as proposed, fund the mitigation of additional damages that occur to such infrastructure as a result of the Project.</p> <p>BC Hydro identified infrastructure within the Project activity zone by asking each local government to provide BC Hydro with the information. Each community provided the information to BC Hydro as requested.</p>

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ab_0001-618	Treaty 8 Tribal Association	V.4, S.30.4.2 ; page(s) 30-48 ; line(s) 5-7 EISG S.17.4.4 Comment 4-35.	<i>Mitigation measures identified in Section 30.4.2 have general applicability in the LAA, and will therefore also avoid adverse effects on Aboriginal people living in Fort St. John and other urban centres that will see a rise in population related to the Project. Table 30.24 Project Effects and Mitigation Measures on Community Infrastructure and Services</i> Comments BC Hydro identifies no specific mitigation measures to relieve potential effects on Aboriginal peoples and communities of increased demand for services and pressures on existing infrastructure. The proposed Project may continue or exacerbate existing inequitable access of both urban (off-reserve) and rural (primarily on-reserve) First Nations peoples, given existing systemic barriers to access and a growing effects load on service and infrastructure from population growth in the region. Information Request BC Hydro is requested to: a) clarify whether it believes that First Nations, both on-and off-reserve in the RAA already have equitable access to services and quality of infrastructure; and b) explain how the proposed mitigations will address additional service and infrastructure pressures within local First Nations communities; and c) separate Aboriginal and non-Aboriginal populations into two versions of Table 30.24.	Population changes, as described in Section 28 in the EIS, were used to assess the changes in demand for community infrastructure and services as stated in EIS Guidelines Section 17.4.4, page 96. Information describing potential population change for Aboriginal peoples is provided in EIS Section 28.4.1.3. The purpose of the Community Infrastructure and Services assessment is to identify potential effects associated with changes in demand due to the Project. Expression of a view about the current access to services is outside the scope of the environmental assessment. Changes to demand for community infrastructure and services are driven by the results of the population and demographics assessment (EIS Section 28). As described in EIS Section 28.4.1.3 and 29.4.1.4, there may be changes in the population of First Nations communities due to the Project. Mitigation for this potential change is described in EIS Sections 28.4.3.2 and 29.4.2.2. There are no anticipated effects on Aboriginal infrastructure and services that would be distinct from those described throughout Section 30.4.
ab_0001-619	Treaty 8 Tribal Association	V.4, S.30.5.1 ; page(s) 30-53 ; line(s) 10-11 EISG S.17.4.5 Comment 4-36.	<i>Table 30.25 Characterization Criteria for Residual Community Infrastructure and Services Effects Magnitude • High: effect occurs that would singly or as a substantial contribution in combination with other sources cause exceedances of regulatory criteria beyond the project boundaries. ... Context The extent to which the area within which an effect may occur; has already been adversely affected by human activities; and is ecologically fragile and has little resistance and resistance to imposed stresses</i> Information Request BC Hydro is asked to: a) identify what “regulatory criteria” it relied upon for determining the magnitude of potential effects on community infrastructure and services and, if no such regulatory criteria exist, identify more appropriate measures of magnitude for this VC and re-assess effects accordingly; and b) reconsider its description of “context” on pg. 30-54 as its current emphasis on ecological fragility is inappropriate for socio-economic impact assessment.	Please see EIS Section 30.5.1, page 30-54, lines 1-4 for a description of the determination of magnitude. The description of context should have read: "Capacity of socio-economic systems and processes to accept change, resilience, or the level of change relative to base case or base line variation typically experienced". This update has been added to the List of Errata and Updated Information. This update does not change the characterization of the context, as described in detail for health and social services in Section 30.5.1, page 30-55, lines 3-10.
ab_0001-620	Treaty 8 Tribal Association	V.4, S.30.5.3 ; page(s) 30-57 ; line(s) 15-17 30-36 EISG S.17.4.5 Comment 4-37.	<i>Peak demand and constraints would arise in health and social services, but these would be managed through adaptive management practices for balancing service demand and supply. Project induced population increases that would affect provincially funded services would be expected to be met by provincial budget planning. The provision of forecast and actual labour information will help these agencies plan for the projected increases, alongside their usual sources of information for future planning. For example, Northern Health would</i>	Section 30.1.1 describes the regulatory and policy setting, including appropriate federal and provincial Acts, for service providers for the key indicators for the Community Infrastructure and Services effects assessment. It is reasonable to assume that these service providers will meet their mandated requirements to fund services to the population. Mitigation measures are identified in Sections 30.4.2 and 30.4.4 to support identified service providers as well as measures to reduce demand on their services.

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			<i>be expected to plan for increased levels of health services in consideration of Project related new permanent residents in the area, and the need for potential additional hospital services for the on-site workforce. Comments The expected planning, adaptive management and financial support from local and Provincial governments may not materialize. Information Request The Proponent is requested to identify contingency measures that it has developed or is developing in order to address the potential that local or provincial services will be unable or unwilling to provide the anticipated planning, adaptive management and financial support to respond to the changes and effects resulting from the proposed Project.</i>	
ab_0001-621	Treaty 8 Tribal Association	V.4, S.31.3.1.2 ; page(s) 31-12 ; line(s) 25-26 EISG S.17.5.3 Comment 4-38.	<i>Table 31.6 Annual Average Daily Traffic at BCMoTI Permanent Count Stations on Major Regional Highways, 2006 to 2010 Comments No data is provided of trend-over-time traffic counts in locations other than portions of Route 97 and Highway 2. This is possibly due to a lack of permanent count stations. Nonetheless, there has been a marked increase in the amount of traffic, especially large industrial vehicle traffic, in places such as the Farrell Creek Road and Highway 29 in recent years, largely due to Montney gas play activities. The absence of information from this location is problematic in understanding change over time in traffic along Highway 29. Information Request BC Hydro is requested to consult with appropriate transportation authorities to identify, using quantitative data where available and qualitative data where necessary, additional information about the level of increase in industrial traffic along Highway 29 between Hudson's Hope and Fort St. John between 2006 and present.</i>	Please see the response to ab_0001-571.
ab_0001-622	Treaty 8 Tribal Association	V.4, S.31.3.2 ; page(s) 31-15 ; line(s) 1-2 11-12 EISG S.17.5.3 Comment 4-39.	<i>Table 31.7 Annual Average Daily Traffic Forecasts for Highway 29 Background Traffic Projections by Segment Table 31.8 Annual Average Daily Traffic Forecasts for Jackfish Lake Road Background Traffic Projections by Segment Comments These two tables indicate estimated average daily traffic along the north and south sides of the Peace River between 2010 and 2025. The use of 2010 as the first data period raises concerns that increased industrial traffic in the 2000s is not shown, which would dampen down the total change over time estimated in the Project scenario. Information Request BC Hydro is requested to: a) identify what assumptions were made about the amount of oil and gas and other types of development on both sides of the Peace River in the traffic modelling provided in Tables 31.7 and 31.8, and whether LNG facility development and its induced effects were included in the scenario; and b) identify an appropriate baseline and trend-over-time period for transportation along major area roads</i>	Please see the response to ab_0001-571.

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			that goes back earlier than the currently utilized baseline (which appears to be 2010 in most locations), to account for any increases in regional traffic associated with oil and gas and other developments in the 2000s.	
ab_0001-623	Treaty 8 Tribal Association	V.4, S.31.4 ; page(s) 31-19 ; line(s) 34 EISG S.17.5.4 Comment 4-40.	<i>Table 31.12 Projected Peak Year Traffic Volumes on Key Road Segments in the LAA</i> Comments Some of the traffic increases predicted (e.g. maximum traffic frequency of one additional vehicle every 52 seconds on the southern portion of Jackfish Lake Road) may be of high concern to First Nations land users, from perspectives of public safety, quiet enjoyment of the land, increased harvesting pressures and effects on wildlife (e.g., collisions). Information Request BC Hydro is asked to: a) identify whether and how First Nations were consulted and engaged in the effects characterization and significance estimation for the transportation VC; and b) identify potential effects of increased traffic on First Nations land users': i) quiet enjoyment of the land; ii) safety (real and perceived); and iii) harvesting competition.	<p>Aboriginal group information distribution and consultation is described in Section 9.2. Specific details of consultation activities undertaken with each of the 29 Aboriginal groups identified in Table 9.1 are provided in Volume 5 Appendix A Asserted or Established Aboriginal Rights and Treaty Rights, Aboriginal Interests and Information Requirements Supporting Documentation. The issues, interests, and concerns raised through the consultation process are described in Volume 1 Appendix H Aboriginal Information Distribution and Consultation Supporting Documentation. Related material is also described in Section 19 Current Use of Lands and Resources for Traditional Purposes, Section 34 Asserted or Established Aboriginal Rights and Treaty Rights, Aboriginal Interests and Information Requirements, Section 35 Summary of Environmental Management Plans, and Section 37 Requirements for the Federal Environmental Assessment (Section 9.2.1, page 9-19 and 9-20).</p> <p>Changes to noise and vibrations due to the Project are described in Section 11.12 Noise and Vibration in Section 11 Environmental Background and in Volume 2 Appendix M Noise and Vibration Technical Data Report.</p> <p>Road safety is described in Section 31. Potential impeded access and egress was considered as a subset of traffic delay. Mitigation for potential impeded access and egress to properties is part of the mitigation proposed to reduce traffic delays as described in Section 31.4.2.1, and was carried into the residual effects assessment as part of the description of traffic delays and changes to Level of Service (Section 31.6.1, page 31-40, lines 16-22) with the following result: "Increases in traffic delays are anticipated to be minor (less than 10 seconds) in the typical peak hour of the peak construction year for all traffic movements" (Section 31.6.1, page 31-42, lines 2-3). Traffic Management Plans would be developed and communication to the public would be addressed in the Public Safety Management Plan (Section 35 of the EIS).</p> <p>Changes to access to traditional territory and greater non-Aboriginal use of traditional lands are described in Section 19.4 Current Use of Lands and Resources for Traditional Purposes.</p>
ab_0001-624	Treaty 8 Tribal Association	V.4, S.31.6.1 ; page(s) 31-42 ; line(s) 14-19 EISG S.17.5.5 Comment 4-41.	<i>The overall residual Project effects on traffic delay and road safety would be local in geographic extent, as the changes would occur within the LAA and surrounding road networks; would be medium term in duration, extending through the construction phase; and would be reversible once the construction phase is complete. The frequency of effects, where changes occur, would be daily throughout construction, with commuter-based traffic volumes peaking during shift changes.</i> Information Request Identify whether long-distance self-commuting risks for Project workers were included in the assessment of	Based on travel time and cost considerations, and access to the proposed work sites, 90% of in-migrants are assumed to live in communities north of the Peace River. Please see Volume 4 Appendix A Section 3.14, page A-4 and A-5, lines 39-46 and 1-6 for additional information regarding these assumptions. Section 2.1 of the Project Traffic Analysis Report (Volume 4, Appendix B of the EIS) describes the assumptions made in estimating the number and routes used by commuting workers. Table 2.1 presents the predicted distribution of off-site daily commuters by community.

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			potential increased accidents as a result of the proposed Project's transportation needs and, if not, incorporate this factor into a reassessment of accident risks.	In the EIS, BC Hydro has proposed to support carpool programs and shuttles, based on demand, for workers commuting from off-site communities, including Aboriginal communities. BC Hydro would also provide beds for all of its direct Project workers, including those in off-site communities who would otherwise experience a long commute.
ab_0001-625	Treaty 8 Tribal Association	V.4, S.32.1 ; page(s) 32-1 ; line(s) EISG S.18.2 Comment 4-42.	Comments This section lacks identification of areas of potential higher archaeological and other heritage resource impacts and lacks maps of potential for undiscovered heritage resources. Information Request BC Hydro is requested to provide a figure or figures indicating areas of high potential for undiscovered heritage resources in the LAA, providing all relevant assumptions.	<p>BC Hydro has previously provided figures indicating areas of high potential for undiscovered heritage resources in the LAA, based on the predictive model developed for BC Hydro by Millennia Research Ltd., to the B.C. Archaeology Branch and First Nations during permitting processes. These data were provided in the Peace River Site C Hydro Project Heritage Program Year 1 (2010) Summary Report and in the Peace River Site C Hydro Project Heritage Program Year 2 (2011) Summary Report under the HCA permit application and report review process.</p> <p>A description of the predictive model developed by Millennia Research Ltd. for BC Hydro is found in Volume 4 Appendix C, Section 5.1.2 Archaeological Predictive Modelling in the EIS.</p> <p>BC Hydro will provide a maps series, to BCEAO and CEA Agency, that contain:</p> <ol style="list-style-type: none"> 1. areas of high and moderate archaeological potential for the LAA, and 2. survey coverage in for the archaeological field program for 2011 and 2012
ab_0001-626	Treaty 8 Tribal Association	V.4, S.32.1 ; page(s) 32-1 ; line(s) 13-16 EISG S.18.2 Comment 4-43.	<i>The selection of the heritage resources VC and the scope of the heritage program were developed using information obtained through discussion with various external sources including Aboriginal communities, research institutions, local citizens or associations, and government agencies.</i> Comments On December 18, 2012, the T8FNs provided BC Hydro with some guidance on its understanding of intangible heritage resources. In addition, the T8FNs Community Assessment Baseline Profile and Impact Pathways reports refer specifically and extensively to intangible heritage resources. The T8FNs Community Assessment Baseline Profile Report identifies three priority valued components: • <i>Meaningful practice of Treaty rights</i> ; • <i>Protection and promotion of culture</i> ; • <i>Meaningful governance and stewardship role for the T8FNs, including meaningful redress of past infringements</i> ; Information Request The Proponent is requested to describe the steps taken, if any, with the T8FNs to incorporate materials contained in the T8FNs Community Assessment into the selection of the heritage resources VC and the scoping of the heritage resources program.	<p>In accordance with Section 18 Heritage Resources effects assessment of the EIS Guidelines, non-archaeological “interests of Aboriginal groups, including intangible heritage resources”, are not included in the Section 32 Heritage Resources effects assessment of the EIS.</p> <p>Please also see Section 19 Current Use of Lands and Resources for Traditional Purposes of the EIS, which describes an assessment of changes in cultural and traditional uses of the land, considering the following key aspects:</p> <ul style="list-style-type: none"> • Use of and access to areas for other cultural and traditional uses of the land (e.g. collection of food and medicinal plants) • Availability of harvested species • Use of and access to culturally important places and valued landscapes. <p>Non-archaeological sites (i.e., spiritual sites) were not included in the field inventory or effects assessment, as BC Hydro has no knowledge of the location or nature of such sites, and such sites are not identifiable in the field. Information on these sites was not provided to BC Hydro in the Traditional Land Use Studies or Community Assessments, and Aboriginal groups did not share this information with the heritage consultant or BC Hydro. BC Hydro and the heritage consultant requested information about non-archaeological heritage or cultural sites from the Treaty 8 Tribal Association (Doig River, Halfway River, Prophet River and West Moberly First Nations) on several occasions starting in 2009 to inform the heritage assessment as relevant. In addition, BC Hydro offered to provide funding for a session to collaborate on how to incorporate information on non-archaeological sites and other heritage matters in May 2010. The Treaty 8 Tribal</p>

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				<p>Association (Doig River, Halfway River, Prophet River and West Moberly First Nations) did not take BC Hydro up on this offer.</p> <p>Please see the Aboriginal Issues, Concerns, and Interests Tracking Table included in Volume 1 Appendix H Aboriginal Information Distribution and Consultation Supporting Documentation of the EIS. The table presents a high-level description of the issues, concerns, and interests identified by Aboriginal groups in consultation activities with BC Hydro between November 1, 2007 and November 30, 2012, including those identified in meetings, phone calls, letters, emails, and reports (e.g., Traditional Land Use Studies, Community Assessments), as well as those identified during the comment periods for the EIS Guidelines. Issues, concerns and interests related to heritage resources are found on pages 52 to 53.</p> <p>Please also see the Technical Memo: Archaeology.</p>
ab_0001-627	Treaty 8 Tribal Association	V.4, S.32.1 ; page(s) 32-1 32-2 ; line(s) 35-39 3-5 EISG S.18.2 Comment 4-44.	<p><i>Archaeological sites are locations that contain physical evidence of past human activities for which scientific methods of inquiry (i.e., survey, excavation, data analysis) provide the main sources of information. Archaeological sites can be associated with pre-contact (commonly referred to as prehistoric) and post-contact periods – that is, the time before or after the arrivals of Europeans. Historical sites and locations in B.C. are primarily attributable to post-contact Euro-Canadian settlement and land use, but also include habitations and other evidence left by Aboriginal peoples in that time period.</i> Comments The Proponent defined archaeological sites to include both pre-and post-contact sites. Yet, throughout the Heritage resource assessment pre-contact (i.e., prehistoric) sites are equated with archaeological sites and post-contact period sites are equated with historic sites, as defined above. These divisions are arbitrary and reflect the dominant culture’s ideology and worldviews, and the institutions and regulations that support them. From an Aboriginal/First Nations perspective it would have been more useful/valuable to differentiate all sites yielding evidence of human use and occupation into Aboriginal and non-Aboriginal.</p>	<p>As noted in Section 32.1 of the EIS, historical sites and locations in B.C. are primarily attributable to post-contact Euro-Canadian settlement and land use, but also include habitations and other evidence left by Aboriginal peoples in that time period. As many post-contact sites were used by both Aboriginal and Euro-Canadian people, it would be difficult to use ethnicity as a criteria to define site type.</p>
ab_0001-628	Treaty 8 Tribal Association	V.4, S.32.1.1.5 ; page(s) 32-4 ; line(s) 14-25 EISG S.18.2 Comment 4-45.	<p>Comments The potential for disturbance and even desecration of ancestral remains is a critical issue for area First Nations. The experience of the W.A.C. Bennett Dam, where remains were covered and in some cases later exposed due to erosion is still fresh in the cultural consciousness. Reliance on the legislation referred to in this subsection is necessary, but not sufficient in this instance. Information Request Provide BC Hydro’s draft plans for the management of any situation where human remains are identified: §§ During pre-Project investigations; §§ During Project clearing, should Site C proceed;</p>	<p>During pre-Project investigations, previously recorded burial sites were not subject to testing, as described in Section 32 Heritage Resources, to avoid unnecessary disturbance of such sites. Should it be determined that any burials will be affected by the Project, a full assessment and mitigation recommendations will be made in accordance with legislation and policies. Heritage Conservation Act Inspection Permit 2010-0378, under which the archaeological assessment is being undertaken, also included procedures for discovery of human remains that were reviewed by First Nations during the permit review period.</p> <p>Section 32 Heritage Resources identifies which Project activities would have an adverse effect on</p>

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			and §§ During operations	<p>burial sites, whether identified or not, and includes mitigation recommendations that are meant to minimize adverse effects on unidentified heritage sites that include human remains.</p> <p>See Volume 4 Appendix C Heritage Resource Assessment Report for a more detailed description of burial practices and how this may be reflected in the archaeological record. Volume 4 Appendix C Heritage Resource Assessment Report also includes a description of potential locations for burials, based on information from Traditional Land Use Study reports prepared for the Project.</p> <p>For construction, including Project clearing, BC Hydro will implement a Heritage Resources Management Plan (Section 35.2.2.14). The Heritage Resources Management Plan states that in B.C., the management of archaeological and historical resources, including human remains, is governed under the Heritage Conservation Act (HCA), the Coroner’s Act and the Cremation, Interment and Funeral Services Act. In addition, the B.C. Archaeology Branch has published procedures for respectful handling of found human remains that are protected under the HCA in the Found Human Remains policy (B.C. Archaeology Branch 1999). BC Hydro is bound by these statutes and policy.</p> <p>As described in Section 35.2.2.14, the Heritage Resources Management Plan will include step-by-step chance find procedures, designed to avoid or mitigate disturbance of heritage resources, including human remains, during construction. Project workers would receive training in the types of heritage resources and chance finds procedures and a qualified professional would be retained for any mitigation planning and implementation for chance finds.</p> <p>During operations, BC Hydro current procedures for the management of heritage resources will be followed, which are maintained in accordance with regulations and standard management practice.</p> <p>See Section 32 Heritage Resources for more information on how unrecorded burials were considered in the effects assessment. Also see Sections 32.3.2.2 and 32.3.3 for additional information on three locations where human burials were previously recorded. No previously unidentified human remains were identified during fieldwork. Aboriginal groups have not shared information on the location of burials in the valley bottom or in other parts of the Project activity zone.</p> <p>Please also see the response to ab_0001-626.</p>
ab_0001-629	Treaty 8 Tribal Association	V.4, S.32.1.1.6 ; page(s) 32-4 ; line(s) 28-37 EISG S.18.2 Comment 4-	<i>There are no Aboriginal groups in northeastern B.C. that issue permits to conduct heritage research within their respective traditional lands. However, there is a Memorandum of Understanding (MOU) signed by three Treaty 8 First Nations and the Province of British Columbia for heritage conservation (B.C. Ministry of Tourism, Culture, and the Arts 2010). The MOU was signed on May</i>	<p>The Memorandum of Understanding (MOU) between the T8FNs and the Province respecting heritage conservation is on the public record at: http://www.gov.bc.ca/arr/treaty/key/down/treaty_mou_heritage_conservation.pdf</p> <p>BC Hydro heritage investigative activities were undertaken in accordance with a permit issued by</p>

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		46.	<p>20, 2010, between the Province and the Doig River First Nation, Prophet River First Nation, and West Moberly First Nations. The purpose of the MOU is to highlight the importance of heritage protection and conservation during development and resource extraction, to establish effective processes to facilitate information sharing between the Province and Treaty 8 First Nations, and to enable participation by signatory First Nations in heritage conservation.</p> <p>Information Request BC Hydro is requested to: a) provide a copy of this MOU between the T8FNs and the Province respecting heritage conservation for the public record; b) identify any conformity issues between the MOU referred to above and BC Hydro's: §§ Investigative activities thus far in support of the proposed Project; and §§ Heritage resources management plan; and c) if there are any disconformity issues identified, report how BC Hydro is changing its heritage resources management plans for the project planning, construction and operations phases.</p>	<p>the BC Archaeology Branch, and the Branch is responsible for following the parameters of that agreement. Therefore, BC Hydro has not identified any conformity issues as the permit was issued in consideration of the MOU. BC Hydro would expect that future heritage permits would also be issued in consideration of the MOU between T8FNs and the Province.</p>
ab_0001-630	Treaty 8 Tribal Association	V.4, S.32.1.2 ; page(s) 32-5 ; line(s) 3 EISG S.18.2 Comment 4-47.	<p>Comments BC Hydro refers to its field inventory program for heritage resources. Information Request BC Hydro is requested to: a) clarify what involvement elders and land users had in interpretation of cultural landscapes during the heritage assessment program; b) explain the results of the involvement in part a); and c) identify any plans to add this valuable context to future fieldwork and the final effects assessment.</p>	<p>As described in Section 2.4 of Volume 4 Appendix C of the EIS, a total of 163 aboriginal field assistants have been employed as field assistants to date. Elders and land users were not precluded from participating, though none of the field assistants self-identified to the heritage consultant leading the program, as an elder or land user.</p> <p>As noted in Volume 5 Appendix A23.2, a process was established with Sauteau in August 2012 which required that representatives of BC Hydro notify affected Sauteau trapline holders of archaeological work occurring in their traplines and to discuss opportunities for monitoring such work and providing advice on potential heritage site locations.</p> <p>No site visits or an effects assessment were completed for non-archaeological (i.e., spiritual sites), as BC Hydro has no knowledge of the location or nature of such sites, and such sites are not identifiable in the field. Information on these sites was not provided to BC Hydro in the Traditional Land Use Studies or Community Assessments, and Aboriginal groups did not share this information with the heritage consultant or BC Hydro. The heritage consultant requested this information from the Treaty 8 Tribal Association (Doig River, Halfway River, Prophet River and West Moberly First Nations) and BC Hydro offered to fund a collaborative session to discuss such information. The Treaty 8 Tribal Association (Doig River, Halfway River, Prophet River and West Moberly First Nations) did not take BC Hydro up on this offer.</p> <p>Please also refer to Section 19.4.7 in the EIS that provides mitigation measures to address potential adverse Project effects on current cultural and traditional use of lands, which includes opportunities to ground truth traditional land use information within the Project activity zone and establishing a Culture and Heritage Resources Committee to provide advice and guidance on the mitigation of specific effects of the Project on culture and heritage</p>

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				Resources. Please also see the response to ab_0001-626.
ab_0001-631	Treaty 8 Tribal Association	V.4, S.32.1.2 ; page(s) 32-5 ; line(s) 1-4 EISG S.18.2 Comment 4-48.	<i>a heritage program was initiated in 2010 to:</i> • <i>Acquire baseline data through literature reviews, interviews, and discussions with key stakeholders and Aboriginal groups</i> • <i>Undertake a field inventory program</i> • <i>Assess potential effects of the Project on heritage resources</i> Information Request Provide a summary of Aboriginal consultation and comments in relation to the heritage program, including baseline, field inventory and effects assessment	Please see Volume 5 Appendix A06.2, which includes within the consultation described the key meetings, sending of materials, offers to fund, etc. that were made with respect to the heritage program. Please also see the response to ab_0001-626.
ab_0001-632	Treaty 8 Tribal Association	V.4, S.32.1.3 ; page(s) 32-5 ; line(s) 22-24 EISG S.18.2 Comment 4-49.	Comments Treaty 8 commissioned a quality audit of the 2010 archaeological fieldwork. Information Request Provide the results/summary of this audit for the public record.	The audit was undertaken by the BC Archaeology Branch. BC Hydro would not object to the BC Archaeology Branch providing this document to the public, and understands that they have already provided the audit results to the T8TA.
ab_0001-633	Treaty 8 Tribal Association	V.4, S.32.1.3 ; page(s) 32-5 ; line(s) 28 EISG S.18.2 Comment 4-50.	Information Request The Proponent is requested to provide a separate discussion on key issues, identification of potential effects, and other related topics raised by Aboriginal groups.	Section 32.1.2 of the EIS provides a summary of communications with First Nations and stakeholders with respect to the development of the Heritage Resources effects assessment. Further information on involvement of Aboriginal groups in the Heritage Resources effects assessment is described in Volume 4 Appendix C Heritage Resources Assessment Report. Please also see the response to ab_0001-626.
ab_0001-634	Treaty 8 Tribal Association	V.4, S.32.1.3 ; page(s) 32-7 ; line(s) 1 EISG S.18.2 Comment 4-51.	<i>Table 32.1 Interactions of the Project with Heritage Resources</i> Comments The content of a column titled “other considerations raised by Aboriginal groups” is identical to those of other columns. Without a separate analysis for Aboriginal groups, pursuant to the previous information request, this appears gratuitous.	Please see the response to ab_0001-626.
ab_0001-635	Treaty 8 Tribal Association	V.4, S.32.1.3 ; page(s) 32-7 ; line(s) 1 EISG S.18.2 Comment 4-52.	<i>Table 32.1 Interactions of the Project with Heritage Resources</i> Comments In its table of potential Project interactions, BC Hydro does not recognize that there are potential effects on heritage resources already occurring as a result of the proposed Project, through actions or inactions being taken during archaeological studies in the proposed Project planning stage. Information Request The Proponent is requested to: a) explain why it did not consider effects on heritage resources from the proposed Project planning and investigative stage; b) identify any concerns raised by area First Nations regarding the methods, quality and quantity of work in relation to the	The assessment of the Project is for the construction and operation phases in accordance with the EIS Guidelines. Field studies and investigations undertaken during the planning stage have been completed in accordance with Heritage Conservation Act Inspection and Site Alteration permits issued by the BC Archaeology Branch, which authorize disturbance to known or unknown archaeological remains. Concerns raised by area First Nations regarding methods, quality and quantity of work in relation to the archaeological work performed to date were raised to the B.C. Archaeology Branch, BC Hydro and the heritage consultant during reviews of permit applications and permit reports. BC Hydro and the heritage consultant provided responses to comments and concerns, and

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			archaeological work performed to date; and c) identify remedial actions taken in response to issues raised in part b) or, if no remedial actions were taken, provide a rationale.	supported the BC Archaeology Branch in undertaking a field audit of the program in 2011. Heritage Conservation Act Inspection Permit 2010-0378 contains conditions related to some of the concerns raised. BC Hydro would undertake changes to the program as directed by the BC Archaeology Branch; none were requested. Please also see the Technical Memo: Archaeology.
ab_0001-636	Treaty 8 Tribal Association	V.4, S.32.1.5 ; page(s) 32-11 ; line(s) 12 EISG S.18.2 Comment 4-53.	<i>Table 32.2 Key Indicators for Heritage Resources</i> Comments A missing key indicator with respect to archaeological and heritage resources, is the “loss of culture” (e.g., traditional knowledge and values, respect, stewardship responsibilities, etc.) that destruction/loss of such sites would engender among Aboriginal peoples. “Changes to ...sites that prompt relevant comment from Aboriginal groups” is inadequate. Information Request BC Hydro is requested to add “preservation of heritage resources for cultural uses by Aboriginal peoples” to the list of key indicators in Table 32.2.	BC Hydro will add “preservation of heritage resources for cultural uses by Aboriginal peoples” to the list of key indicators in Table 32.2. This information has been added to the List of Errata and Updated Information.
ab_0001-637	Treaty 8 Tribal Association	V.4, S.32.1.6.1 ; page(s) 32-14 ; line(s) 3-8 EISG S.18.2.1 Comment 4-54.	<i>The Local Assessment Area (LAA) for the heritage resources assessment is defined as the Project activity zone (Figure 32.1). Given the site-specific and stationary nature of heritage resources, this is the maximum area where potential direct and indirect Project effects on heritage resources are reasonably expected to occur. The Regional Assessment Area (RAA) is also defined as the Project activity zone. Other projects are not expected to have residual effects on heritage sites within the LAA.</i> Comments The LAA for heritage resources is not the same as the Project Activity zone, since it is not: “the maximum area where potential direct and indirect Project effects on heritage resources are reasonably expected to occur.” Rather, adverse effects to heritage resources will be felt downstream of the reservoir and dam. The assessment area for heritage resources needs to be expanded to at least Peace Point -the location at which BC Hydro has determined to be the limit of influence of the proposed Project on surface water flows – and perhaps as far as the Peace-Athabasca Delta for scientific and cultural reasons. The Peace River watershed is the cultural landscape for the proposed Project that links all Aboriginal peoples (prehistoric, historic and contemporary) in the Peace River valley. Also, it is understood that the examination of “other projects” is for cumulative effects assessment, and this would encompass a proper RAA, not merely the LAA. Information Request BC Hydro is requested to: a) reconsider the use of the Project Activity Area as the LAA by extending the LAA downstream to the extent of the anticipated surface water flow changes from the proposed Project, currently Peace Point; and b) reconsider the use of the LAA as the RAA by establishing a proper RAA for a cumulative effects assessment, using cited good practice guidance for	The rationale for the Local Assessment Area (LAA) and Regional Assessment Area (RAA) is described in Section 32.1.6.1 of the EIS and is the same as the LAA and RAA described in Table 18.2 in Section 18.2.1 of the EIS Guidelines. Surface water conditions during construction of the Project will have no adverse effects on heritage resources downstream of the dam. During channelization (see Section 11.4.3.2.1 in the EIS), downstream flows and water levels would be unaffected, with the exception of a small increase in water level at the downstream end of the river constriction in the order of 20 cm on average. This change would be negligible within 2 km downstream of the construction site. During diversion of the Peace River (see Section 11.4.3.2.3 in the EIS), both the extreme maximum and minimum water levels as well as the rate of change of water levels would be less than under existing conditions downstream of the diversion tunnel outlets. Hydraulic changes would be negligible at Taylor and further downstream. During operations, the Project, including predicted changes in surface water regime would have no effects on Heritage Resources located downstream of the Project activity zone. As described in Section 11.4.5.2.1 of the EIS, the limited amount of active storage in the Site C reservoir limits the degree to which the Project could change the downstream flow regime. The predicted changes in low and high water levels on the Peace River as a result of the Project [shown in the flow duration curves included in Appendix D of Volume 2 Appendix D, Part 2 Downstream Flow Modelling (1D)] would have no influence on heritage resources. Please also see the Technical Memo: Peace Athabasca Delta.

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			heritage resources impact assessment.	
ab_0001-638	Treaty 8 Tribal Association	V.4, S.32.2 ; page(s) 32-14 ; line(s) 35-41 EISG S.18.2.3 Comment 4-55.	Comments BC Hydro refers to several ethnohistorical and cultural documents, but not the T8FNs Community Assessment Baseline Profile Report, which includes a variety of cultural information based on both primary and secondary data collection. Information Request BC Hydro is asked to: a) put all cultural literature referred to in section 32 of the EIS on the public record for this environmental assessment; and b) review sections 3, 5.1.6, 5.2.6, 5.3.6, 5.4.6 and 6.2 of the T8FNs Community Assessment Baseline Profile Report and incorporate appropriate materials into Section 32 of the EIS.	a) BC Hydro is not the copy-right owner of the majority of cultural literature referred to in Section 32 of the EIS. For example, several are published books, and BC Hydro is unable to post this information to the public record for this environmental assessment. If there are specific references that T8TA is interested in, BC Hydro would check if the information is able to be provided publicly, considering copyright restrictions and data upload limitations. b) The Sections listed for review in the T8FNs Community Baseline Profile Report refer to aspects of intangible culture and heritage, which is not included in Section 32 of the EIS. Please also see the response to ab_0001-626.
ab_0001-639	Treaty 8 Tribal Association	V.4, S.32.2.1.2 ; page(s) 32-15 ; line(s) 39-40 EISG S.18.2.3 Comment 4-56.	Comments Archaeological sites recorded by Fladmark (1979) that may be “potentially affected by the Project” were not included in the heritage sites assessment. Information request Explain why archaeological sites recorded by Fladmark (1979) were not included in the heritage resources assessment.	The report text has been misunderstood. The sites from Fladmark’s study that are within the LAA are included in the Heritage Resource assessment. Section 32.2.1.2 of the EIS states that the "principal SFU investigations within and adjacent to the LAA" included "... An archaeological field school in the Peace River valley that involved site excavation and historical research (Fladmark 1979); this project investigated a number of sites potentially affected by the Project, but was not part of the studies conducted for the Project”.
ab_0001-640	Treaty 8 Tribal Association	V.4, S.32.2.1.2 ; page(s) 32-17 ; line(s) 32-36 EISG S.18.2.3 Comment 4-57.	<i>Archaeological overview assessments for quarries and excavated construction material areas (Wuthrich Quarry, West Pine Quarry, Portage Mountain, Del Rio Pit, and Area E), access roads, and the as –yet-undefined construction activity areas near the dam site. Within these areas there are 10 previously recorded archaeological sites that are considered part of the existing baseline, but they are not included in mitigation planning or the effects assessment because they have not yet been assessed in the field</i> Comments The exclusion of 10 previously recorded archaeological sites on the basis that they had yet to be assessed in the field is not a satisfactory reason for leaving them out. Information Request BC Hydro is asked to provide further rationale as to why 10 previously recorded archaeological sites are not considered part of the existing baseline have been excluded from mitigation planning and effects assessment.	As described in Section 32.2.1.2 of the EIS, archaeological overview assessments have been completed for several Project components where field assessment has not yet occurred. The archaeological overview assessments considered 10 previously recorded archaeological sites as part of the baseline, but excluded them from mitigation planning or the effects assessment because they have not yet been able to be re-assessed in the field. Also, depending on final design for Project activities in these areas these sites may or may not be affected by the Project. Please also see Section 32.2.2 of the EIS for BC Hydro’s commitment to complete fieldwork and assessment of heritage resources in these areas in a manner consistent with the current heritage assessment prior to the start of construction in these areas. Section 32.2.2 of the EIS also states that reports on future heritage work would be submitted to relevant Provincial agencies and Aboriginal groups in accordance with legislative and permit requirements. Please also see the response to ab_0001-639.
ab_0001-641	Treaty 8 Tribal Association	V.4, S.32.2.1.3 ; page(s) 32-18 ; line(s) 22-28 EISG S.18.2.3 Comment 4-58.	<i>The review of historical information focused on areas identified as gaps in the historical data for the LAA (Arcas 2009). Particular attention was paid to the following themes: transportation methods and routes, aspects of settlement and interactions with the environment, developing economies (e.g., extraction and production, trade and commerce, communication, technology, and engineering), and building social and community life. These broad themes and subthemes are representative of those included in Parks Canada’s (2009) National Historic Sites</i>	Section 3.2.2 in Volume 4 Appendix C Heritage Resource Assessment Report of the EIS provides a summary of available ethnographic and ethnohistorical evidence and includes a description of early interactions between Aboriginal groups and Euro-Canadians. Aboriginal/Euro-Canadian interaction was not identified as a theme during the interviews described in Section 32.2.2.3 of the EIS. As Aboriginal/Euro-Canadian interaction has been included in the Heritage Resources effects assessment as noted above, the assessment does not require an update.

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			<i>of Canada System Plan. Comments Parks Canada’s thematic classifications do not adequately address “Aboriginal/Euro-Canadian interaction” (and how social and cultural interactions changed each culture). This information and knowledge are scientifically and culturally important (especially to First Nations), and sites representative of this theme would shed much light on the economic, social, and cultural development of the region. Information Request The Proponent is requested to add “Aboriginal/Euro-Canadian interaction” as a theme for review and analysis of historical information used in the heritage resources assessment and to update the assessment accordingly.</i>	
ab_0001-642	Treaty 8 Tribal Association	V.4, S.32.2.2 ; page(s) 32-19 ; line(s) 10-18 EISG S.18.2.3 Comment 4-59.	Comments BC Hydro identifies additional locations that field inventory and assessment of heritage resources are still required. In addition, BC Hydro notes that private lands have not been inventoried. There are substantial gaps in the locations assessed in the HRIA. Information Request BC Hydro is requested to: a) assess any additional locations identified by Aboriginal groups that require proper archaeological and other site characterization by BC, or indicate how and when will they be assessed; b) provide a map showing all locations that have been inventoried to date as well as remaining areas that require inventory prior to the proposed Project proceeding; and c) provide reasons, given the gaps in the HRIA inventory, why BC Hydro is confident enough to make predictions of likely significance of effects of the proposed Project on heritage resources.	<p>Many private lands have been inventoried. Only those parcels for which access was denied have not been inventoried, as described in Section 32.2.2 of the EIS. See the Technical Memo on Archaeology for a further description of areas yet to be inventoried.</p> <p>Heritage Conservation Act Inspection Permit 2010-0378 included the following condition from the BC Archaeology Branch to address Treaty 8 First Nations’ request to include additional areas identified by them: “The permit holder will allot 25 person/days to inspection of areas, within the study area, that may be selected by Treaty 8 First Nations.” As this information has not been shared with BC Hydro or the heritage consultant, such field inspections have not yet been undertaken.</p> <p>Section 19.4.7 in the EIS also provides mitigation measures to address potential adverse Project effects on current cultural and traditional use of lands, which includes opportunities to ground truth traditional land use information within the Project activity zone and establishing a Culture and Heritage Resources Committee to provide advice and guidance on the mitigation of specific effects of the Project on culture and heritage resources.</p> <p>Please also see the responses to ab_0100-625 and ab_0100-626.</p>
ab_0001-643	Treaty 8 Tribal Association	V.4, S.32.2.2.2 ; page(s) 32-20 ; line(s) 39-44 EISG S.18.2.3 Comment 4-60.	<i>Archaeological fieldwork followed the methods described in the application for Heritage Inspection Permit 20100378 (see Volume 4 Appendix C Heritage Resources Assessment Report), and the British Columbia Archaeological Impact Assessment Guidelines (B.C. Archaeology Branch 1998). At the direction of the B.C. Archaeology Branch, an archaeological predictive model created for the Project (Millennia 2010a, 2010b) was used to select locations for archaeological field testing. Information Request Describe the archaeological predictive model developed by Golder and AMEC for the archaeological field testing.</i>	The archaeological predictive model was developed by Millennia Research Ltd., and was field tested and refined under the Golder heritage program with Millennia Research Ltd. A description of the archaeological predictive model is provided in Section 5.1.2 of Volume 4 Appendix C Heritage Resource Assessment Report of the EIS. The model reports, field testing and model revisions have been provided to the BC Archaeology Branch and to First Nations in accordance with the issuance of Heritage Inspection Permit 2010-0378.
ab_0001-644	Treaty 8 Tribal Association	V.4, S.32.2.2.2 ; page(s) 32-20 32-21 ; line(s)	<i>In 2010 fieldwork focused on testing the archaeological predictive model (Golder and AMEC 2011). In 2011 and 2012, field inventory was undertaken within lands modelled as having high, moderate, and low archaeological site potential</i>	In Volume 4 Appendix C Heritage Resource Assessment Report of the EIS, Section 5.1.5.1 describes the methodology and Section 5.2.2 provides the results of 2010 field testing work, which was focused on field testing the predictive model developed and later revised by Millennia

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		45-47 1-5 EISG S.18.2.3 Comment 4-61.	<i>throughout the LAA, with most effort focused on high potential areas. Field inspections included systematic visual surface inspection and over 50,000 subsurface tests, consisting of a combination of systematic, adaptive, and judgmental shovel tests, auger, or backhoe tests in locations with the potential for deeply buried archaeological deposits, and evaluative tests within select archaeological sites (Figure 32.3).</i> Comments Model testing would have entailed equal effort among all 3 classes of archaeological site potential. This was not the case. The predictive model was thus being applied, not tested. In other words, the model was not tested as claimed.	<p>Research for the Project. The referenced report, The Peace River Site C Hydro Project Heritage Program Year 1 (2010) Summary Report (Golder / AMEC 2011), was submitted to the BC Archaeology Branch and First Nations in accordance with Heritage Conservation Act Permit 2010-0378. The field programs in 2011 and 2012 were not part of model testing.</p> <p>As described in Section 5.1.5.1, the objective of ground-truthing was to confirm the presence or absence of archaeological materials and to assess whether the model correctly identified site potential, thus testing needed to be completed in all areas of archaeological potential. The testing program was designed to test the validity of the model with a representative sample from each potential area.</p> <p>The predictive model testing methodology resulted in a roughly equal number of tests in areas of low, moderate and high potential. This intentionally obtained a disproportional sample in terms of overall area represented by each potential class, but ensured representative samples from high, moderate, and low potential, in accordance with good statistical sampling techniques. The decision to use a 100 m interval between low potential tests ensured that low potential areas would be adequately represented during model testing and all parts of the larger area of low potential lands would receive coverage.</p>
ab_0001-645	Treaty 8 Tribal Association	V.4, S.32.2.2.2 ; page(s) 32-21 ; line(s) 6-11 EISG S.18.2.3 Comment 4-62.	<i>Specific archaeological methods were also designed to test for archaeological sites in the following contexts:</i> • <i>Well-defined terrestrial margins of wetlands</i> • <i>The saturated side of wetland margins</i> • <i>Small (≤100 m2), well-defined landforms</i> • <i>Lands peripheral to the historic fur trade post of Rocky Mountain Fort</i> Information Request Indicate how tests for archaeological sites in other geomorphological contexts were determined, and how Aboriginal groups were consulted in selecting these contexts.	<p>Only the geomorphological contexts listed in Section 32.2.2.2 of the EIS were included in the Heritage Resources effects assessment. Aboriginal groups were consulted through the review of the permit application for Heritage Conservation Act Inspection Permit 2010-0378.</p> <p>The judgmental survey program allowed crew leads to select other geomorphological settings and locations not captured by the model. This program is described in Section 5.2.4.2.3 Volume 4 Appendix C Heritage Resource Assessment Report of the EIS. As is common in archaeological impact assessments, the selection of judgmental testing locations used a subjective decision-making process based on the experience of the crew leads and other crew members, including Aboriginal participants.</p>
ab_0001-646	Treaty 8 Tribal Association	V.4, S.32.2.2.2 ; page(s) 32-21 ; line(s) 21-33 EISG S.18.2.3 Comment 4-63.	<i>Based on these characteristics, the 31 sites are considered to have higher scientific significance in accordance with Appendix D of the British Columbia Archaeological Impact Assessment Guidelines</i> Comments Each site of “high scientific interest” is not equally important. Deeply stratified sites with good faunal preservation are more scientifically important, and should receive greater attention.	BC Hydro agrees that the few “Deeply stratified sites with good faunal preservation are more scientifically important, and should receive greater attention.” These sites are included in the 31 Class I sites described in Section 32.3.3.2 of the EIS.
ab_0001-647	Treaty 8 Tribal Association	V.4, S.32.2.2.3 ; page(s) 32-22 ; line(s) 38-46 EISG S.18.2.3	<i>... in 1998, the Peace River was recognized as a provincial heritage river by British Columbia’s Heritage River Program (Province of British Columbia 1998; B.C. Ministry of Environment 2010). Specifically, it has been recognized as a working river that “integrates economic activities with natural heritage,</i>	<p>The matter raised in a) of this Information Request is outside the scope of the environmental assessment.</p> <p>British Columbia's Heritage River Program offers recognition, not legal protection, of provincial heritage rivers.</p>

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		Comment 4-64.	<i>recreational, historic, and traditional cultural values” (B.C. Ministry of Environment 1998). The Province’s vision statement seeks to manage resource-based uses of the river while maintaining representative natural heritage qualities and recognizing the historical heritage values of the river corridor to Aboriginal groups and non-Aboriginal people (Province of British Columbia 1998).”</i> Comments It is difficult to reconcile the desire to protect historic heritage values of the Peace River important to Aboriginal groups with additional damming and water management. Information Request The Proponent is requested to: a) identify how much (and what percentage) of the original Peace River’s natural course in British Columbia will remain a river environment should the proposed Project proceed; b) identify what protections, if any, are associated with recognition as a Heritage River; c) identify what thresholds of acceptable change, if any, are associated with the management of Heritage Rivers; and d) identify any other documents BC Hydro is aware of that highlight values associated with the Peace River and place them on the public record for this environmental assessment.	<p>In the EIS, BC Hydro has referenced two documents relevant to heritage values of the Peace River, both of which are already accessible in the public domain:</p> <ul style="list-style-type: none"> - Province of British Columbia (1998) British Columbia’s Heritage River System, Government’s Response to the BC Heritage Rivers Board’s 1997 Nominations. - British Columbia (B.C.) Ministry of Environment. 1998. Heritage Rivers Bulletin (32). Victoria, B.C. <p>BC Hydro has referenced the provincial website for the BC Heritage Rivers Program, also in the public domain:</p> <ul style="list-style-type: none"> - British Columbia (B.C.) Ministry of Environment. 2010. British Columbia Heritage Rivers Program, BC Rivers, Peace River. Available at: http://www.env.gov.bc.ca/bcparks/heritage_rivers_program/bc_rivers/peace_river.html 26 Accessed: October 2010.
ab_0001-648	Treaty 8 Tribal Association	V.4, S.32.2.2.3 ; page(s) 32-23 ; line(s) 1-5 EISG S.18.2.3 Comment 4-65.	Comments BC Hydro recognizes that the Peace River Valley is a cultural landscape; however the Proponent has not assessed heritage effects at the level of a cultural landscape. Information Request Clarify whether BC Hydro conducted an assessment at the level of cultural landscapes and, if so: a) provide details; b) indicate what criteria were used for evaluating the significance of the cultural landscape; and c) explain how the T8FNs were involved in making the determination of significance, or how their cultural values or criteria were considered.	The Peace River valley and its associated uplands are identified as a cultural landscape based on their component features and sites, including archaeological and historical sites. An assessment of heritage effects at the level of cultural landscape is outside the scope of the environmental assessment.
ab_0001-649	Treaty 8 Tribal Association	V.4, S.32.3 ; page(s) 32-23 ; line(s) 32-38 EISG S.18.2.4 Comment 4-66.	<i>Potential effects on archaeological and historical sites associated with inundation and operation of the reservoir were assessed using a heritage site erosion potential assessment scoring technique (E-PAST) that was developed specifically for the Project (see Volume 4 Appendix C Heritage Resources Assessment Report). The E-PAST tool uses a series of measurable units for specific site locations within and immediately adjacent to, the reservoir to create scores that indicate which sites are most and least susceptible to erosion.</i> Information Request The Proponent is requested to apply the E-PAST technique to downstream archaeological sites (to at least Peace Point), subsequent to adequate archaeological survey and assessment.	Please see the response to ab_0001-637. As the Project will not have an adverse effect on Heritage Resources downstream of the dam site, the E-PAST technique need not be applied to downstream archaeological sites.
ab_0001-650	Treaty 8 Tribal Association	V.4, S.32.3 ; page(s) 32-24 ; line(s) 1-4	<i>Other relevant considerations raised by Aboriginal groups regarding effects to heritage resources will be evaluated by BC Hydro in consultation with the concerned group and the appropriate regulatory body on a case-by-case basis as</i>	Please see the response to ab_0001-626.

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		EISG S.20.6 S.18.2.4 Comment 4-67.	<i>such considerations are raised. Comments Section 20.6 of the EIS Guidelines reads as follows: <i>The EIS will:</i> • <i>Identify interests that Aboriginal groups may have with respect to potential social, economic, health, and physical and cultural heritage effects of the Project;</i> • <i>Describe how the potential effects on those interests have been considered in the assessment of the potential adverse effects of the Project on VCs or otherwise</i> Information Request BC Hydro is requested to explain: a) the effects of the proposed Project on tangible and intangible heritage resources; b) explain why it is not addressing the interests of Aboriginal groups in relation to cultural heritage effects in the EIS, despite the clear requirements of the EIS Guidelines, and deferring consultation to some unspecified later date.</i>	
ab_0001-651	Treaty 8 Tribal Association	V.4, S.32.3.1.3 ; page(s) 32-25 ; line(s) 6-9 EISG S.18.2.4 Comment 4-68.	<i>Initial filling of the reservoir has the potential to affect heritage resources, if present, through erosion, sedimentation, and hindering access for scientific research. Ground disturbing activities associated with channelization and diversion have the potential to alter heritage resources, as indicated in Section 32.3.1.1. Information Request BC Hydro is asked to amend this section to include the fact that the reservoir will destroy evidence of Aboriginal use and occupation, which will have adverse effects on Aboriginal groups.</i>	BC Hydro has reviewed this suggestion and will leave the wording in this section unchanged. The nature of effects to Heritage Resources are described in Section 32.1.3 and throughout Section 32.3, and include terms such as disturb, displace, compact and destroy, among other terms. In addition to physical site remains, the archaeological site records from site investigations will remain as evidence of aboriginal use and occupation.
ab_0001-652	Treaty 8 Tribal Association	V.4, S.32.3.2.1 ; page(s) 32-26 ; line(s) 24-27 EISG S.18.2.4 Comment 4-69.	<i>The potential effects of operation of the dam, generating station, and spillways are addressed in the discussion of the construction effects (Section 32.3.1.2). Therefore, no additional effects on heritage resources are expected during their operation. Comments The regional assessment area for heritage resources needs to be expanded to at least Peace Point --the location at which the BC Hydro has determined to be the limit of influence of the proposed Project on surface water flows.</i>	Please see the response to ab_0001-637.
ab_0001-653	Treaty 8 Tribal Association	V.4, S.32.3.2.2 ; page(s) 32-26 32-27 ; line(s) 41-42 1-2 EISG S.18.2.4 Comment 4-70.	<i>In the event that low reservoir levels occur in the future and exposed heritage site locations can be safely accessed, emergency salvage and systematic data collection of exposed resources would help to mitigate the potential effects of erosion and unauthorized collection of heritage materials. Comments Hillsides in the area are reported to be common burial sites for Dane-zaa ancestors. Information Request BC Hydro is requested to: a) summarize the prior concerns and response of First Nations upon learning that the existing reservoirs on the Peace River were exposing bodies and graves; and b) discuss the likelihood that human remains will be exposed due to erosion or other factors during operation of the proposed reservoir.</i>	As described in Section 3.2.4.2 of Volume 4 Appendix C Heritage Resource Assessment Report in the EIS, the TLUS data included references to burials along the Peace River that may have eroded away. The locations of these burials were not included in the TLUS data provided to BC Hydro, and BC Hydro is not aware of exposed bodies and graves in existing reservoirs on the Peace system. BC Hydro is aware that eroded graves on the edge of a gully adjacent to the Peace River have been reported at Dunvegan, downstream of BC Hydro's reservoirs, under Alberta Historical Resources Act research permit 2008-334. The 2008-334 study attributed the causes of erosion to agricultural land clearing practices and human visitation to this location rather than upstream reservoir operations. Please also see the response to ab_0001-637 for a description of anticipated effects on Heritage Resources downstream of the Site C dam.

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				<p>As human remains have not been found in areas that may be subject to erosion during operations, the likelihood of exposure of human remains cannot be predicted.</p> <p>Please also see the response to ab_0001-628.</p>
ab_0001-654	Treaty 8 Tribal Association	V.4, S.32.3.3 ; page(s) 32-28 ; line(s) 29-39 EISG S.18.2.4 Comment 4-71.	<p><i>Should the Project proceed, a detailed heritage site mitigation strategy would be required based on the results of the heritage resources assessment and upon completion of detailed design. Applying the principles outlined above, an opportunity exists to incorporate heritage resource considerations into Project planning and detailed design. The goal of the proposed mitigation strategy would be to reduce adverse Project effects on heritage sites and to provide a positive Project effect by recovering data which adds to the knowledge base of palaeontology, local prehistory, and human use of the LAA over time. While the effects of Project activities on palaeontological, archaeological, and historical resources will be similar, the measures used to mitigate the effects on each resource type will differ. Potential mitigation strategies for each resource type are presented below, based on existing information.</i> Comments The heritage resources site mitigation strategy is incomplete, and will not be complete until: §§ heritage sites (e.g., historic Aboriginal campsites) are properly documented and assessed in areas to be inundated and disturbed by construction and operations; and §§ heritage sites (e.g., prehistoric and historic Aboriginal campsites) are properly documented and assessed downstream of the proposed Project.</p>	<p>The heritage mitigation program in Section 32.3.3.2 of the EIS describes the types of activities that may be undertaken to reduce adverse Project effects on archaeological resources in cases where those resources cannot be avoided through Project planning or redesign.</p> <p>Please also see the responses to ab_0001-626, ab_0001-637, ab_0001-672 and ab_0001-675.</p> <p>Please also see the Technical Memo: Archaeology.</p>
ab_0001-655	Treaty 8 Tribal Association	V.4, S.32.3.3.2 ; page(s) 32-35 32-36 ; line(s) 3-5 1-2 EISG S.18.2.4 Comment 4-72.	<p><i>Class I sites have the greatest potential to provide more archaeological information and larger artifact assemblages with time depth, whereas Class II sites collectively have the potential to provide important information about Aboriginal land use associated with the most common type of archaeological site in the area.</i> Comments Lithic scatters are assigned a Class II designation despite the acknowledged “potential to provide important information about Aboriginal land use”. Failure to adequately investigate variation in these types of sites is a disservice to science and First Nations. A 20% sample of Class II archaeological sites for further investigation is arbitrary. Any sample of Class II sites needs to be based on documented variation in this class. Perhaps more importantly, historic and recent/contemporary/traditional land use by First Nation/Aboriginal peoples should be used to develop predictive models of contemporary, historic, and prehistoric Aboriginal site types, locations and distributions. Not only is this activity the most scientifically rewarding way to proceed, it is ethically and culturally appropriate. It may also lead to more</p>	<p>As described in Section 9.2.4 (Process for Resolving Issues with Aboriginal Groups), BC Hydro will seek to address outstanding issues by, among other activities, “continuing to seek input and engage in dialogue regarding the EIS and the Project, and to answer questions and address issues, interests, and concerns from Aboriginal groups by identifying appropriate mitigation measures and/or other appropriate means by which to address or resolve potential impacts”.</p> <p>Furthermore, as noted in Section 32.3.3.2, the details of the heritage mitigation program would be determined in consultation with the Archaeology Branch and Aboriginal groups, and would include the definition of sampling strata for Class II sites. The comments provided would be considered in determining the details of the heritage mitigation program.</p> <p>Please also see the responses to ab_0001-626, ab_0001-672 and ab_0001-675.</p> <p>Please also see the Technical Memo: Archaeology.</p>

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			accurate assessments of resource development on the exercise of Aboriginal and Treaty rights. Moreover, predictive models of Aboriginal land use and occupation, based on what is known from the historic and recent past, will inform the prehistoric record in ways that archaeology has thus far failed, leading to more scientifically rigorous investigations and assessments.	
ab_0001-656	Treaty 8 Tribal Association	V.4, S.32.3.3.2 ; page(s) 32-36 ; line(s) 3-10 EISG S.18.2.4 Comment 4-73.	Comments BC Hydro identifies 31 Class I archaeological sites in the LAA. Information Request Estimate the percentage of likely heritage sites that have been located to date, describe the basis for this estimate, and explain how the sample can be used to extrapolate the total number of heritage site (found and unfound) that are likely to be adversely affected.	Please see the Technical Memo: Archaeology.
ab_0001-657	Treaty 8 Tribal Association	V.4, S.32.4.2 ; page(s) 32-62 ; line(s) 2-11 EISG S.20.6 S.18.2.5 Comment 4-74.	<i>The process of determining the significance of effects to the heritage resources VC is through a combined evaluation of heritage site value, Project-related effects on those sites, the application of mitigation strategies to offset the effects, and evaluation of the success of follow-up mitigation on any residual effects. This process begins with individual site evaluation using methods prescribed by various guidelines and frameworks, as described in the sections below. The checks and balances established by this process should result in residual effects that are not significant. Significant residual effects should only occur when processes are not followed or when unforeseen effects occur to heritage resources of value which are not mitigated to applicable regulatory standards.</i> Comments The process of determining the significance of effects of the proposed Project to heritage resources omits consideration of the following: §§ Aboriginal cultural values; and §§ significance thresholds for other “considerations, concerns and interests” of First Nations, such as intangible cultural heritage. The T8FNs have expressed both opposition and despair at the prospect of cultural loss from the proposed Project. Information Request BC Hydro is asked to a) indicate for every potentially-impacted heritage resource how the Aboriginal and Treaty rights of the T8FNs were considered in determining significance of the adverse effects; and b) provide details regarding how the T8FNs were involved in making the determination of significance.	As noted in Section 32.4.4 of the EIS, the ethnic significance of all sites is considered high. Please also see responses to ab_0001-626 and ab_0001-658.
ab_0001-658	Treaty 8 Tribal Association	V.4, S.32.4.4 ; page(s) 32-62 32-63 ; line(s) 35-43 1-2 EISG S.18.2.5 Comment 4-	<i>For archaeological sites, heritage value is determined by applying the Checklist for Criteria for Pre-Contact Site Evaluation (British Columbia Archaeological Impact Assessment Guidelines [B.C. Archaeology Branch 1998], Appendix D). The checklist includes four evaluative categories: scientific, public, ethnic, and economic significance, where the term ‘significance’ refers to values assigned to each category. This use of the term ‘significance’ in this context is distinct from</i>	As noted in response to ab_0001-626, BC Hydro offered to provide funding for a session to collaborate on how to incorporate information on non-archaeological sites and other heritage matters, which could have included significance determination and mitigation, in May 2010. The Treaty 8 Tribal Association (Doig River, Halfway River, Prophet River and West Moberly First Nations) did not take BC Hydro up on this offer.

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		75.	<i>its use in determining the significance of an effect. For archaeological site value assessment, scientific significance was used as the discriminating criteria, as the sites were considered to have low public and economic significance and, based on discussions with Aboriginal groups, the ethnic significance of all sites is considered high. Comments The report authors use “scientific significance of archaeological sites” as the discriminating criteria for assessing archaeological (i.e., prehistoric sites), effectively eliminating public, economic and ethnic (i.e., Aboriginal) significance from consideration. More thorough investigation and informed consultation (especially with First Nations) would likely reveal that some sites have greater ethnic, economic and public significance than others. For example, deeply stratified sites with good faunal preservation and many lithic types and tools would likely achieve greater significance along all 3 categories, while aligning with scientific criteria. Stated another way, a proper significance assessment of archaeological sites remains to be conducted.</i>	Consultation with First Nations would be undertaken by the BC Archaeology Branch which consults with First Nations during Project permitting with respect to Site Alteration Permits that would be required under the Heritage Conservation Act. Please also see the Technical Memo: Archaeology.
ab_0001-659	Treaty 8 Tribal Association	V.4, S.32.4.6 ; page(s) 32-64 ; line(s) 1-2 EISG Comment 4-76.	<i>The potential residual effects to archaeological and historical resources are not considered to be significant. Comments The existing state of knowledge does not warrant this conclusion or any assessment at this stage. Based on the existing knowledge presented in the EIS, this assessment is premature. More research of the kinds proposed above, especially the development of a predictive model of recent, historic and prehistoric Aboriginal site distribution, needs to be undertaken.</i>	The scope of the Heritage Resources effects assessment is in accordance with the EIS Guidelines and appropriate information is provided in the EIS. Please see the Technical Memo: Archaeology.
ab_0001-660	Treaty 8 Tribal Association	V.4, S.33 ; page(s) 33-1 ; line(s) EISG S.19.1 Comment 4-77.	Comments Human health status data is absent from Section 33 of the EIS, for both Aboriginal and non-Aboriginal residents of the RAA. Such baseline and trend-over-time information is relevant to the consideration of effects of the Project on human health. The EIS also does not include information about culturally-defined indicators of health and well-being, despite a large amount of information provided to BC Hydro by the T8FNs in the T8FNs Community Assessment Baseline Profile and despite readily available definitions of well-being from organizations, such as the World Health Organization and Health Canada. BC Hydro adopts no definition of population health, well-being or quality of life in its EIS. Information Request BC Hydro is asked to: a) provide its understanding of what constitutes Aboriginal population health and well-being; and b) provide an update to the human health section of the EIS that includes: §§ criteria and indicators identified by First Nations for wellbeing and quality of life; and §§ baseline and trend-over-time data for relevant human health status indicators for the Aboriginal and non-Aboriginal populations in the RAA.	The scope of the Human Health assessment (Section 33) meets the requirements of the EIS Guidelines and did not include population health and well-being. As described in Section 33.1.4 of the EIS, Human Health assessment indicators related to water quality, ambient air quality, noise and vibration EMF and methylmercury and country foods that may change as a result of the Project and have the potential to affect Human Health were assessed in relation to the potential for exceedance of applicable objectives or guidelines. Potential effects on identified sensitive population groups (e.g. hospitals, schools, senior centres) were assessed. Prediction of potential Project effects on health status (e.g. potential Project-related effects on morbidity and mortality) was not included in the Human Health assessment due to the nature of the Project construction and operations, and low additional interaction with changes in morbidity/mortality characteristics outside of the indicators included in the assessment. Where applicable, potential Project effects identified by First Nations on population health, well-being and quality of life were assessed in Section 34 Asserted or Established Aboriginal and Treaty Rights, Aboriginal Interests and Information.

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ab_0001-661	Treaty 8 Tribal Association	V.4, S.33.1 ; page(s) 33-1 ; line(s) 36-40 EISG S.19.1 Comment 4-78.	<i>Potential effects of the Project on community health and well-being of Aboriginal groups as a result of effects on traditional use and culture are assessed in Section 34 Asserted or Established Aboriginal Rights and Treaty Rights, Aboriginal Interests, and Information Requirements. Comments</i> Potential effects of the proposed Project on community health and well-being of Aboriginal groups as a result of effects on traditional use and culture are not assessed in Section 34. Information Request Identify what information presented in Section 34 of the EIS assesses the effects of the proposed Project on Aboriginal community health and well-being.	Please see the response to ab_0001-660.
ab_0001-662	Treaty 8 Tribal Association	V.4, S.33.1.2 ; page(s) 33-8 ; line(s) 12 EISG S.19.1 Comment 4-79.	<i>Table 33.7 Key Issues Human Health Landscape, including Access to and Use of Land The issue of reduced access to land during the construction and operation of the Project is related to public safety and, therefore, addressed through individual management plans outlined in Section 35 Summary of Environmental Management Plans. Comments</i> The effects of the proposed Project on Aboriginal mental health are not included in Table 33.7. These mental health effects include but are not limited to: psycho-social impacts of land alienation, loss of culture and the cumulative “weight of recent history” on sociocultural and economic vulnerability and resiliency among First Nations’ members. BC Hydro proposed to relegate the assessment of mental health effects to a "summary of environmental management plans". Psycho-social impacts (e.g., high stress, solastalgia, a sense of helplessness and loss of control, sense of failure to be stewards of the land for future generations) and their negative outcomes (e.g. anger, distrust, loss of sense of purpose, socially and personally destructive activities) are real. The BC Hydro EIS does not address this important discussion, despite the fact that these psycho-social effects have been recognized by the Government of Canada, which even provided advice to managers of contaminated sites on the variety of impact outcomes they needed to be prepared to deal with from local people whose lands, rights and interests have been subject to real or perceived contamination (Health Canada: 2005). ² Information Request The Proponent is requested to: a) summarize information received from Aboriginal communities asserting potential mental health, well-being, quality of life, cultural and spiritual effects from the proposed Project; and b) include potential effects of the proposed Project on Aboriginal mental health in a revised human health impact assessment that more closely follows a “population health” and “social determinants of health” framework, and incorporates case studies and academic research into the effects of industrial development on First Nations and Aboriginal peoples’ mental health, well-being	The scope of the Human Health assessment (Section 33) is in accordance with the EIS Guidelines and appropriate information is provided in the EIS. Health Canada provided comments on the EIS Guidelines. Please see the response to ab_0001-660. BC Hydro's commitment to continued dialogue with Aboriginal groups through construction is described in Section 9.2.5 of the EIS.

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			and quality of life. 2 Health Canada. 2005. Addressing Psychosocial Factors Through Capacity Building: A Guide for Managers of Contaminated Sites. Ottawa: Minister of Health, June 2005.	
ab_0001-663	Treaty 8 Tribal Association	V.4, S.33.1.4 ; page(s) 33-12 ; line(s) 28-32 EISG S.19.1 Comment 4-80.	<i>A screening process was implemented by the water quality, air quality, noise and vibration, EMF, mercury and human health risk, and human health assessment teams to identify specific indicators related to water quality, air quality, noise and vibration, EMF, methylmercury, and country foods that may change as a result of the Project, and that have the potential to affect human health.</i> Information Request Clarify whether BC Hydro sought and received from First Nations any input about selection of key indicators of human health and, if not, why not.	The BCEAO and CEA Agency sought input from First Nations regarding the scope of the Human Health assessment, as well as other aspects of the EIS, as proposed in the draft Environmental Impact Statement Guidelines for the Project. After the filing of the EIS, and during the Panel Review Stage, BC Hydro will consult with First Nations on raised issues, concerns, or interests as outlined in Section 9.2 of the EIS.
ab_0001-664	Treaty 8 Tribal Association	V.4, S.33.1.4 ; page(s) 33-13 ; line(s) 1 EISG S.19.1 Comment 4-81.	<i>Table 33.9 Key Indicators of Human Health</i> Information Request Reconsider the key indicators in the human health assessment to include indicators relevant to Aboriginal mental health, well-being and quality of life.	Please see the response to ab_0001-660.
ab_0001-665	Treaty 8 Tribal Association	V.4, S.33.2.1.1 ; page(s) 33-17 ; line(s) 7-32 EISG S.19.2.3 Comment 4-82.	<i>The following information was used to formulate the baseline, and assist with assessment of potential effects: General Health Canada guidance documents including: • Hydroelectric Projects (Health Canada 2011a) • Useful Information for Environmental Assessments (Health Canada 2011b) • Canadian Handbook on Health Impact Assessment (Health Canada 2004a)</i> Comments The Human Health Impact Assessment contained in the EIS has not referenced the Public Health Agency of Canada's Determinants of Health Model and the concept of population health is generally ignored. Health Canada (2005) also produced a very useful guidance document on communal perception of risk. Information Request BC Hydro is requested to: a) explain why Health Canada's determinants of health model, or a similar model used for the assessment of community health effects, was not used in the assessment of human health effects in the EIS; and b) consider the above-noted citations in a reconsidered human health impact assessment.	The scope of the Human Health assessment is in accordance with the EIS Guidelines and appropriate information is provided in the EIS. The references used are the most appropriate guidance materials for assessing the effects of hydroelectric projects.
ab_0001-666	Treaty 8 Tribal Association	V.4, S.33.3.5.1 ; page(s) 33-33 ; line(s) 22-38 EISG S.19.2.4	Comments BC Hydro's methods for conducting First Nations dietary surveys to estimate average or maximum consumption rates for fish and other wild foods, and for determining the most sensitive health receptor for exposure to contaminants, including methylmercury, does not appear to be consistent with	BC Hydro relied on country food questionnaires/surveys completed as part of the First Nation Community Assessments (Volume 3, Appendix B, Part 1, Page B-2) and/or their Traditional Land Use Studies and the results of a recent dietary study of BC First Nations to understand the dietary patterns of First Nations peoples within the Project area (First Nations Food Nutrition and

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		Comment 4-83.	<p>good practice or Health Canada guidelines.³ Standard practice in HHRA (human health risk assessment) is to do the assessment based on an “average” consumer, and a “maximum” or 'high' (usually 95th percentile) consumer. Because the average and high are based on current consumption, and current consumption is not the same as the level of consumption protected under Treaty, we also recommend a 'rights based' level be used. Information Request BC Hydro is requested to: a) provide, if any, dietary or consumption survey information was used from the T8FNs in the health effects assessment, including sample size, methods, and findings; b) provide details regarding how the T8FNs were involved in interpreting and confirming the validity of consumption estimates determined in part a); c) in the absence of dietary and consumption information, explain any subsequent plans to augment the information for the T8FNs for the human health risk assessment; and d) explain whether BC Hydro has considered average, maximum and rights-based consumption rates for fish and wild foods by the T8FNs.</p> <p>3 Health Canada. 2010. Federal Contaminated Site Risk Assessment in Canada: Supplemental Guidance on Human Health Risk Assessment for Country Foods. Accessed at http://www.hc-sc.gc.ca/ewh-semt/pubs/contamsite/country_foods-aliments_locale/index-eng.php</p>	<p>Environment Study completed by Chan, Receveur, Sharp, Schwartz, Ing and Tikhonov). Food questionnaires/surveys were completed by Duncan’s First Nation and Horse Lake First Nation as requested by BC Hydro, at the time of the EIS submission. BC Hydro requested this information from T8TA as part of the Community Baseline but it was not provided. The Human Health effects assessment relied on information First Nations who did submit such information, supplemented by an Aboriginal Group Supplemental Report.</p> <p>The Aboriginal Group Supplemental Report will include consideration of the Blueberry River and Saulneau First Nations Community Baseline Reports in the findings reported in the EIS. Any reports made available to BC Hydro from McLeod Lake Indian Band and Horse Lake First Nation through their First Nations Community Baseline Reports will be considered if received in a timely fashion. Updated information will be submitted to CEA Agency and BCEAO.</p> <p>The mercury Human Health Risk Assessment (Volume 2, Appendix J, Part 2) does not make any assumptions about the type or relative sensitivity of human receptors – risk estimates were derived for males and females of all life-stages. The Human Health Risk Assessment (HHRA) also does not make any assumptions about consumption frequency.</p> <p>The HHRA is based on assumptions about average fish serving sizes, which vary with age. The average fish serving sizes assumed in the HHRA and the data and rationale supporting these assumptions is presented in Section 3.2 of the HHRA. The average fish serving size for adults assumed in the HHRA (163 g/serving) is based on the highest average fish portion size reported in the available site-specific data on First Nations fish consumption behaviours. No site-specific data on Fish Consumption behaviours of sub-adults were available and average fish serving sizes for sub-adults assumed in the HHRA are based on Health Canada’s (2007) recommended default fish serving sizes.</p> <p>It is acknowledged in Section 4.4 of the HHRA that the average fish serving size of some individuals or subpopulations may be greater than that assumed in the HHRA. However, as described in Section 4.4 of the HHRA, fish serving size is positively correlated with body weight (see Health Canada, 2007 for supporting research). Since the mercury exposure dose is calculated on a body weight normalized basis, these two factors will cancel each other out. Therefore, risk estimates for individuals or subpopulations with higher than average fish serving sizes are not expected to be appreciably different from the risk estimates derived using average fish serving sizes.</p> <p>Finally, as also described in Section 4.4 of the HHRA, the HHRA is based on conservative (i.e., health protective) assumptions about the post-construction concentrations of methylmercury in fish and, as such, is more likely to over-estimate risks than under-estimate risks.</p> <p>The relevant Health Canada guidance was followed: Health Canada. 2007. Human Health Risk</p>

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				Assessment of Mercury in Fish and Health Benefits of Fish Consumption. Health Canada, Health Products and Food Branch, Food Directorate, Bureau of Chemical Safety, Ottawa, ON.
ab_0001-667	Treaty 8 Tribal Association	V.4, S.33.3.5.1 ; page(s) 33-34 ; line(s) 15-18 EISG S.19.2.4 Comment 4-84.	<i>The most commonly consumed species of fish reported by participants in the B.C. First Nations Food, Nutrition, and Environment Study (Chan et al. 2011) from the First Nations communities in closest proximity to the Project (Tsay Keh Dene, Doig River, Saulteau, and Tl'azt'en) were...</i> Information Request The Proponent is requested to: a) explain why historic information, including UBCIC (1980), and Brady (1982), were not used to provide historical context for the assessment; and b) clarify why no information from Prophet River's engagement in Chan et al. (2011) was used in the assessment.	The EIS relied on recently publicly available information on commonly consumed species of fish, as well as on results from First Nations Country Food Questionnaires Consumption Survey for the Project. Information about fish consumption from 30 years ago would be less relevant than information available today. The information from the Chan et al. study for Prophet River First Nation was not included; however, a review of this information indicates that the percentage of people from Prophet River First Nation who consume rainbow trout, lake trout, whitefish, bull trout, northern pike, Arctic grayling and walleye are similar to that reported in Section 33.3.5.1.1 of the EIS for First Nations and would not change the results of the Human Health effects assessment.
ab_0001-668	Treaty 8 Tribal Association	V.4, S.33.3.5.2 ; page(s) 33-35 ; line(s) 18 EISG n/a Comment 4-85.	Correction Correct 'Profit River' to 'Prophet River'.	This update has been added to the List of Errata and Updated Information.
ab_0001-669	Treaty 8 Tribal Association	V.4, S.33.4.10 ; page(s) 33-62 ; line(s) 13-17 EISG S.19.2.4 Comment 4-86.	<i>If monitoring and human health risk analysis results indicate a potential health risk-related consumption of fish obtained from the LAA, fish consumption advisories would be implemented, which would include communications to the public and First Nations of the potential risk of methylmercury exposure at certain consumption levels of certain fish species for certain population groups.</i> Comments Risk communication and perception are not addressed in the EIS. Information Request Identify key studies on country food risk perception and risk communication to Aboriginal people considered for the assessment, and summarize key findings.	Section 33.4.9 of the EIS indicates that, because fish is part of a healthy diet, avoiding fish consumption due to perceived health risk could result in negative health effects. The Project's monitoring and communications plan proposes to engage Aboriginal people in monitoring and communications to help assess and manage perceived risks within communities and build local understanding and knowledge. As specified in Section 33.4.10, where applicable, the monitoring and communications plan will include collaborative methylmercury monitoring with Aboriginal and other communities and provide communications on monitoring results to local communities. Please see the Technical Memo: Methylmercury.
ab_0001-670	Treaty 8 Tribal Association	V.4, Appendix C, S.3.1.3.1 ; page(s) 12 ; line(s) EISG S.18.2.3 Comment 4-87.	<i>The soil characteristics in the reservoir area are generally favourable to the preservation of organic archaeological materials, being well-drained, calcareous Bear Flat 1 soils. The deposition of sand to the Bear Flat 1 soils may have protected archaeological sites by covering them. The Bear Flat 2 and alluvial soils are less likely to hold archaeological sites as these fluvial deposits are relatively recent.</i> Information Request Clarify how the Bear Flat soils in the reservoir, which were recognized at the outset to demonstrate characteristics conducive to the recovery of higher significance archaeological sites, were incorporated into the AIA methodology or predictive modelling.	Section 5.1.2 of Volume 4 Appendix C Heritage Resource Assessment Report of the EIS describes the predictive model utilized in the archaeological component of the Heritage Resources effects assessment. The predictive model was developed using LiDAR data to identify landforms exhibiting qualities (i.e. micro-topography otherwise hidden by vegetation) associated with known, or suspected, high archaeological potential. Soil type is not a variable used in these types of predictive models. In general, for soil types, such as Bear Flat 1 or Bear Flat 2, the higher the soil acidity (e.g. pH smaller than 7), the less likely organic materials (e.g., bone) will be preserved. The presence of organic material is one criterion that contributed to the assessment of higher site significance. As described in Section 3.1.3 of Volume 4 Appendix C Heritage Resource Assessment Report of the

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				EIS, the soil was typically neutral or slightly acidic in the LAA with the exception of some wet organic soils that may have better preservation due to anaerobic conditions. Given this pattern, soil type is thought to be a poor predictor of sites with organic remains in the LAA.
ab_0001-671	Treaty 8 Tribal Association	V.4, Appendix C, S.3.2.1 ; page(s) 21 ; line(s) EISG S.18.2.3 Comment 4-88.	<i>Although archaeological sites represent discrete locations, the material remains that are present in these sites are usually associated with traditional Aboriginal land use practices that took place throughout the surrounding landscape. As such, the boundaries of an archaeological site do not constrain the spatial extent of traditional activities associated with that site. Furthermore, some traditional activities, such as berry gathering, medicinal plant collecting, and spiritual practices, leave little or no archaeological remains and thus are more appropriately addressed by a Traditional Use Study. Comments The report authors acknowledge a strong correlation between “traditional Aboriginal use practices that took place throughout the surrounding landscape” and archaeological site locations, but fail to adopt any methodologies that would model recent and historic Aboriginal land use/occupation and use them as predictors of prehistoric Aboriginal land use and site locations/distributions.</i>	<p>Section 3.2.2 of Volume 4 Appendix C Heritage Resource Assessment Report of the EIS provides a summary of the available ethnographic and ethnohistorical evidence relating to the Aboriginal peoples occupying and using northeastern British Columbia, to help interpret the archaeological record. A summary of “living memory” traditional land use summaries (TLUS) prepared by, and for, participating First Nations for the Project is found in Section 19 Current Use of Lands and Resources for Traditional Purposes.</p> <p>As described in Section 3.2.4.3 of Volume 4 Appendix C Heritage Resource Assessment Report of the EIS, several of the culturally important locations mentioned coincide with locations of archaeological sites found during the Site C Heritage Program, including the Bear Flat – Cache Creek locality, the mouths of the Halfway River, Lynx Creek, Dry Creek, and Farrell Creeks, and the vicinity of Hudson’s Hope. The TLUS data provided to BC Hydro by First Nations is not detailed enough to use for predictive modeling.</p> <p>Please also see the response to ab_0001-626.</p>
ab_0001-672	Treaty 8 Tribal Association	V.4, Appendix C, S.3.2.1.1 ; page(s) 21 ; line(s) EISG S.18.2.3 Comment 4-89.	Artifact Scatters: <i>The most common archaeological remains in this region, artifact scatters are composed of clusters of (usually) stone artifacts, including expedient tools and formed tools and the waste products of tool manufacture and maintenance (debitage). Small artifact scatters or isolated artifact finds occur frequently and may reflect the use of the landscape by highly mobile groups. However, as noted by LeBlanc (2004), the highly mobile inhabitants of the subarctic relied heavily on tools formed from bone, wood, sinew, and other perishable materials, which tend to disintegrate. Recurrently occupied sites will typically cover a larger area and have higher frequencies of cultural materials, possibly including butchered animal bones and fire-altered rocks, as well as charcoal-stained soils. Comments Artifact scatters are the most ubiquitous site type in the region, and account for most of the archaeological record in the area. Yet, the report authors fail to fully investigate the variability within this site type, and fail to link or model this site type vis-a-vis contemporary, recent and historic Aboriginal site counterparts. Subsequently, an opportunity to more thoroughly understand and assess the archaeological record was lost.</i>	<p>Section 5.2.5.5 of Volume 4 Appendix C Heritage Resource Assessment Report of the EIS summarizes an analysis of site distribution patterns for Pre-contact period archaeological sites within the LAA and the relationship between site distribution and the biophysical and cultural setting, including an analysis of site size and content. The analysis of small site distribution, which is largely based on artifact scatters, is found on pages 155-156.</p> <p>The TLUS data provided to BC Hydro by First Nations is not detailed enough to allow for comparisons with the archaeological record, except at the very general level described in Section 5.2.5.5 of Volume 4 Appendix C Heritage Resource Assessment Report of the EIS. In addition, artifact collections from most sites were small and contained few, if any, tools. Further analysis of site function would require larger artifact samples that would be obtained from more detailed and intensive excavations that would be conducted prior to construction in accordance with the mitigation program as described in Section 32.3.3 of the EIS.</p>
ab_0001-673	Treaty 8 Tribal Association	V.4, Appendix C, S. 5.1.1 ; page(s) 68 ; line(s)	<i>Some additional British Columbia archaeological sites from outside the Peace region were included in the review, to encompass those few northeastern British Columbia archaeological sites where scientific or mitigative excavations have taken place. Comments While the report authors include “some additional BC</i>	As described in Section 5.1.1 of Volume 4 Appendix C Heritage Resource Assessment Report of the EIS, adjoining parts of northern Alberta within the “GQ” “HQ” Borden blocks are included in the counts of archaeological sites and summaries of previous investigations as these parameters largely define lands drained by the Peace River to the east of the Rocky Mountains. The

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		EISG S.18.2.3 Comment 4-90.	archaeological sites from outside the Peace region” in their review of existing information, they do not include investigated downstream archaeological sites in Alberta along the Peace River to Lake Athabasca (e.g., Fort Vermillion, Peace Point, etc.) which ethnographic/historic evidence suggest were the homeland of the Dene Zaa (Tsatine) Beaver Indians from the headwaters of the Peace to Lake Athabasca. Information Request The Proponent is requested to justify the exclusion of archaeological sites in Alberta along the Peace River to Lake Athabasca from the review of existing information.	distribution of continuous prairie grassland comparable to the Peace River Valley of British Columbia (e.g., Moss 1952; Wilkinson & Johnson 1982) is absent downstream of Peace River, Alberta. In general, the distribution of recorded Alberta sites downstream from the Town of Peace River is even sparser than indicated in Figure 5.3, aside from the Fort Vermilion area and the lower Peace River above its junction with Slave River. Archaeological site reports from the Alberta portion of the Peace River, including Peace Point, were reviewed as part of the study. The results of this review are not summarized in the study as the information was not directly relevant to the assessment of sites in the LAA. Please also see the response to ab_0001-685.
ab_0001-674	Treaty 8 Tribal Association	V.4, Appendix C, S. 5.1.1 ; page(s) 69 ; line(s) EISG S.18.2.3 Comment 4-91.	<i>Many small, level benches occurring partway down bluffs, slides, and other unstable landforms were captured as areas of archaeological potential in the initial model run. It was concluded that all such landforms had low potential and that these were “false” areas of archaeological potential. The initial solution to this issue was to eliminate all such unstable landforms from the modeled areas of high potential. However, examination of the LiDAR hillshade maps revealed that a number of documented archaeological sites occur on old slide deposits. Therefore, only flat areas within distinctively steep, relatively recent, bluff landforms were removed from the model.</i> Information Request The Proponent is requested to explain in greater what level of systematic investigation was actually carried out, if any, at the small level benches initially removed from the modeled areas of high potential.	During the evaluation of the predictive model in 2010, some of these small level benches were included in the systematic surface inspection and subsurface testing program. This methodology is described in Section 5.1.5.1 of Volume 4 Appendix C Heritage Resource Assessment Report of the EIS. No archaeological sites were found on these benches and archaeologists reassessed them in the field as having low potential. These benches were removed from the modeled areas of high potential based on these field results.
ab_0001-675	Treaty 8 Tribal Association	V.4, Appendix C, S. 5.1.4 ; page(s) 70 ; line(s) EISG S.18.2.3 Comment 4-92.	<i>The purpose of the AOA was to summarize previous archaeological work and known archaeological resources in the development areas mentioned above, assess their archaeological potential, and provide recommendations for further archaeological work that may be required prior to development of those areas.</i> Comments The archaeological field program did not examine all landforms in the LAA, instead focusing on location with known high archaeological potential such as stratified sites. Again, the focus is on prehistoric site assessment, and historic Aboriginal sites were not investigated, even though they could have been used to predict prehistoric site locations and functions. Thus, the AIA methodology adopted is not as scientifically rigorous as it could have been. Not only are historic Aboriginal sites under-represented, the opportunity to use this data set, along with traditional land use and occupational information, as a predictor of prehistoric site locations was lost.	Please see the response to ab_0001-626. The heritage consultant was prepared to assess historic Aboriginal sites, but the TLUS information provided by First Nations was not detailed enough to identify the location of such sites. The general localities identified as important traditional use areas corresponded to areas modeled as having high archaeological potential and were systematically tested.
ab_0001-676	Treaty 8 Tribal	V.4, Appendix C, S. 5.1.4 ;	<i>The field program focused on areas modeled as having high archaeological potential. The field program was concerned with relocating and documenting</i>	As summarized in Section 5.2.5.5 of Volume 4 Appendix C Heritage Resource Assessment Report of the EIS, the field program discovered many small, low density lithic scatters possibly

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	Association	page(s) 71 ; line(s) EISG S.18.2.3 Comment 4-93.	<i>previously recorded archaeological sites as well as locating and documenting unknown archaeological sites. Both systematic and judgemental field methods were used in this inventory. Comments By focusing the field work on areas with higher “prehistoric” site potential and ignoring historic Aboriginal archaeological sites, the report authors missed the opportunity to better understand variability with respect to structure, function and location of the most ubiquitous type of known prehistoric site in the region, i.e., “small, low density lithic scatters,” whose historic/contemporary counterparts may be short-term (e.g., overnight), “one-off,” single-purpose campsites.</i>	representing short term, single purpose campsites. It is also thought that many of the large sites are comprised of similar overlapping campsites. Please see responses to ab_0001-672 and ab_0001-675.
ab_0001-677	Treaty 8 Tribal Association	V.4, Appendix C, S. 5.1.5.5 ; page(s) 76 ; line(s) EISG S.18.2.3 Comment 4-94.	<i>Surface inspection of judgementally selected locations, either with or without subsurface testing, was employed in addition to systematic survey at the discretion of the field crew in all parts of the heritage resources LAA.</i> Information Request BC Hydro is asked to present a flow diagram used for judgmental decision-making when selecting locations to identify archaeological sites in the field.	Judgmental sampling is defined in the Glossary for Volume 4 Appendix C Heritage Resource Assessment Report of the EIS as choosing archaeological test locations on the basis of pre-determined potential assessments or in-field observations suggestive of high archaeological potential. The judgmental survey program and results are described in Section 5.2.4.2.3 Volume 4 Appendix C Heritage Resource Assessment Report of the EIS. As is common in archaeological impact assessments, the selection of judgemental testing locations used a subjective decision-making process based on the experience of the lead archaeologists, archaeologist crew members, and archaeological field assistants.
ab_0001-678	Treaty 8 Tribal Association	V.4, Appendix C, S. 5.1.5.9 ; page(s) 78 ; line(s) EISG S.18.2.3 Comment 4-95.	<i>Removed sediments were segregated by lift onto small tarps. A sample (approximately 5%) from each lift was screened through 6 mm metal mesh. In the event that identified archaeological materials were encountered, 100% of the sediments from the respective lift were screened. Comments The use of a 5% screening sample has the potential to miss sites containing archaeological materials, even to the point of calling into question the utility of the program. Information Request The Proponent is requested to explain why it did not screen a larger portion, such as 20% or 50%.</i>	The deep testing methods, as approved by the Archaeology Branch in Heritage Conservation Act Inspection Permit 2010-0378 and reviewed by First Nations, are described in Section 5.1.5.9 Volume 4 Appendix C Heritage Resource Assessment Report of the EIS. These methods and sample size are standard practice in B.C. Most sediments observed in these tests consisted of deep aeolian and fluvial deposits representing thick undifferentiated deposits with occasional evidence of darker more stable surfaces. The excavations were monitored for evidence of these darker deposits and were selectively screened where found.
ab_0001-679	Treaty 8 Tribal Association	V.4, Appendix C, S. 5.1.5.10.3 ; page(s) 79 ; line(s) EISG S.18.2.3 Comment 4-96.	<i>BC Hydro signed agreements with the Treaty 8 Tribal Association, Blueberry, Saulteau, Duncan’s, Dene Tha’, and Horse Lake First Nations to complete “living memory” TLU studies for their respective areas of interest. First Nations were invited to provide this information early in the program so it could be incorporated into the archaeological assessment. Unfortunately, the reports were not available to the heritage assessment team in time to inform the field program, but were instead reviewed for information relevant to understanding the archaeological and historical assessment results. Comments The co-occurrence of “TLU” and “archaeological” sites was not adequately investigated. Again, the TLU information should have been used to develop a predictive model of Aboriginal prehistoric site location and function.</i>	Please see the responses to ab_0001-626 and ab_0001-675. TLUS information provided to BC Hydro by First Nations did not provide enough detail to develop an archaeological predictive model.

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ab_0001-680	Treaty 8 Tribal Association	V.4, Appendix C, S.5.1.5.10.4 ; page(s) 79 ; line(s) EISG S.18.2.3 Comment 4-97.	<i>No further archaeological work was conducted within the boundary of Rocky Mountain Fort, as the site has been extensively studied and documented (e.g., Burley, et al. 1996). However, since limited information exists on Aboriginal encampments associated with the fort, the field program included testing in the vicinity of Rocky Mountain Fort to identify possible outlying encampments.</i> Information Request The Proponent is requested to clarify the basis of the criteria used to determine the location of Aboriginal encampments associated with Rocky Mt. Fort, and whether Aboriginal groups were involved in the development of these criteria.	As described in Section 5.2.4.2.20 of Volume 4 Appendix C Heritage Resource Assessment Report of the EIS, a judgmental subsurface testing strategy was adopted for investigations at Rocky Mountain Fort, based on a test interval of 10 metres. Crew Leads selected locations peripheral to the known boundary of the fort, including suitable camping sites upstream and downstream, and across the Peace River from the site, based on historical records of comparable encampments in this region (e.g., Burley, et al. 1996). The testing strategy for Rocky Mountain Fort was included in the application for Heritage Conservation Act Inspection Permit 2010-0378, on which Aboriginal groups were consulted. Please also see the response to ab_0001-630.
ab_0001-681	Treaty 8 Tribal Association	V.4, Appendix C, S. 5.1.6.1.1 ; page(s) 85 ; line(s) EISG S.18.2.3 Comment 4-98.	<i>All diagnostic artifacts were compared to similar artifacts from the Peace River valley and surrounding regions. Past research has documented cultural affiliations between the upper Peace River region and other regions such as the Yukon and Northwest Territories, the northern Plains, and central interior and northwestern British Columbia (Spurling 1980b).</i> Comments No comparison is made with diagnostics from the lower Peace region. It is as if Aboriginal travel, use, and occupation of the Peace River is limited to BC, even though the authors note cultural affiliations with the northern Plains (among other regions) and Dene use all along the Peace River from its headwaters to Lake Athabasca.	The description of tools found in the LAA was not limited to a comparison of artifacts from sites in the LAA (see Sections 3.2.1.2 and 5.2.5 Volume 4 Appendix C Heritage Resource Assessment Report of the EIS). Comparative analysis of the diagnostic artifacts included evidence from the region and parts of Alberta.
ab_0001-682	Treaty 8 Tribal Association	V.4, Appendix C, S. 5.1.7 ; page(s) 90 ; line(s) EISG S.18.2.3 Comment 4-99.	<i>The scientific significance of known archaeological sites within the LAA was assessed on the basis of artifact frequency, artifact density, the presence of expedient and formed tools, the presence of temporally diagnostic tools, the presence of obsidian, intrasite variability, the presence of cultural features, the presence of materials suitable for radiocarbon dating, the presence of burials, and the integrity of the site setting.</i> Comments The field program actively focused on locations with the potential for “deeply stratified sites.” Yet, this criterion was not included among the scientific significance of known archaeological sites.	Although site stratification is not listed as a criterion in Section 5.1.7, Volume 4 Appendix C Heritage Resource Assessment Report of the EIS, it was used as a criterion to assessed site significance for the few sites where stratification was identified. Stratification is listed as a factor influencing the assessment of site significance in the individual assessments of site significance found in Appendix F of Volume 4 Appendix C Heritage Resource Assessment Report of the EIS.
ab_0001-683	Treaty 8 Tribal Association	V.4, Appendix C, S. 5.1.7 ; page(s) 90 ; line(s) EISG S.18.2.3 Comment 4-100.	<i>Most of the lithic assemblage recovered in the LAA consisted of debitage (see Section 5.2.5.1.1). The expedient tools and formed tools categories therefore register the presence of lithic tools. The presence of temporally diagnostic tools permits archaeological cross-dating of a site or site component (see Section 5.1.6.1.1). The presence of obsidian (see Section 5.1.6.1.2) also positively influenced the significance rating, as this non-local lithic material can be matched to its geological source and may be indicative of past exchange networks. An absence of obsidian was considered to have no effect on ascribed significance.</i> Comments The significance of non-local lithic material not	The significance of non-local lithic materials is considered in each site description in Appendix F Volume 4 Appendix C Heritage Resource Assessment Report of the EIS. Non-local lithic materials are also described in Section 5.2.5, Volume 4 Appendix C Heritage Resource Assessment Report of the EIS.

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ab_0001-684	Treaty 8 Tribal Association	V.4, Appendix C, S.5.2.1.1 ; page(s) 93 ; line(s) EISG S.18.2.3 Comment 4-101.	<i>After the early 1980s and prior to the onset of current investigative work for the Project, a number of office-and field-based studies were carried out, either for the Project or to address other regulatory requirements for BC Hydro. These studies included: • ... • An office-based assessment of the vulnerabilities of archaeological resources to fluctuating water-flows on the Peace River downstream from the Peace Canyon Dam (Arcas 1994)</i> Information Request BC Hydro is asked to consider the major findings of the Arcas (1994) on the effects of fluctuating water flows on downstream archaeological sites in a reconsideration of the assessment.	The Arcas study identified known sites, close to the river, that could potentially be subject to erosion downstream from the existing Peace Canyon Dam and was based on data available in 1994. The data on surface water conditions upstream and downstream of the proposed Site C dam have been updated for this EIS. Please also see the response to ab_0001-637.
ab_0001-685	Treaty 8 Tribal Association	V.4, Appendix C, S.5.2.1.2 ; page(s) 94 ; line(s) EISG S.18.2.3 Comment 4-102.	<i>Figure 5.3 shows higher site densities in British Columbia when compared to the neighbouring region of Alberta, likely reflecting differing standards of practice between the two jurisdictions.</i> Comments The claim that higher archaeological site densities in B.C. compared to Alberta are due to “different standards of practice” is dubious, as many factors may contribute to this result.	The claim is entirely justified, as Alberta accepts lower levels of effort for archaeological assessments of developments than is required in BC. The effect of this disparity is clearly shown by the relative frequencies of sites in Northeast BC compared to neighbouring parts of Alberta, and the disparity between jurisdictions is even more pronounced if the search is extended to the 60th parallel of latitude. The text in the report was carefully chosen to not over-emphasize the differences.
ab_0001-686	Treaty 8 Tribal Association	V.4, Appendix C, S.5.2.1.3 ; page(s) 96 ; line(s) EISG S.18.2.3 Comment 4-103.	<i>Recent archaeological research in the Williston Reservoir draw-down zone, in a landscape denuded of its native soil and vegetation—the traditional impediments to finding archaeological sites in forested environments—shows that artifacts and other cultural materials are numerous and are scattered sporadically throughout the entire exposed landscape (e.g., Arcas 2003, 2007; Millennia 2008, 2010). This distribution may prove to be analogous to the distribution of archaeological resources in the Peace region generally, including those parts of the LAA that are outside the Peace River valley. Within the Peace River valley, the different depositional environment has allowed for the formation of stratified archaeological sites that may be infrequently found elsewhere in the region.</i> Comments Small, low-density lithic scatters may also be analogous to the distribution of short-term historic and contemporary Aboriginal sites. This cannot be confirmed since small, historic and recent Aboriginal sites of brief duration as well as any variability among prehistoric lithic scatters were not examined.	Please see the responses to ab_0001-672 and ab_0001-675.
ab_0001-687	Treaty 8 Tribal Association	V.4, Appendix C, S.5.2.2 ; page(s) 97 ; line(s)	<i>The results of the 2010 transect survey can be summarized as follows: • A total of 5,165 shovel tests were excavated, more or less equally divided between low, moderate, and high potential areas.</i> Comments If the report authors had prior confidence in their predictive model, there is little reason for expending equal	In Volume 4 Appendix C Heritage Resource Assessment Report of the EIS, Section 5.1.5.1 describes the methodology and Section 5.2.2 provides the results of 2010 field work, which was focused on field testing the predictive model developed and later revised by Millennia Research for the Project. As stated in Section 5.1.5.1, the objective of ground-truthing the model was to

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		EISG S.18.2.3 Comment 4-104.	effort on low and moderate potential areas. Information Request Explain why areas of high potential were not favoured over areas of moderate and low potential during field investigations.	confirm the presence or absence of archaeological materials and to assess whether the model correctly identified site potential, thus testing needed to be completed in all areas of archaeological potential. The testing program was designed to test the validity of the model with a representative sample from each potential area. A biased sample would have resulted from preferential testing in high.
ab_0001-688	Treaty 8 Tribal Association	V.4, Appendix C, S. 5.2.2 ; page(s) 100 ; line(s) EISG S.18.2.3 Comment 4-105.	<i>Following systematic field testing, and in consultation with the BC Archaeology Branch, the Millennia Research model was revised to better reflect conditions observed in the field. Low elevation terraces with predicted high potential were downgraded to low potential based on their recent age. Comments By downgrading low elevation terraces of recent age from high to low potential, the report authors basically excluded historic and recent Aboriginal sites from consideration. In other words, the AIA was heavily biased towards prehistoric Aboriginal sites, and biased against Aboriginal sites that may be culturally important and provide evidence of the unbroken connection between prehistoric, historic and contemporary use and occupation.</i>	Please see the response to ab_0001-671, IR ab_0001-674 and ab_0001-675. As described in Volume 4 Appendix C, areas of low and moderate potential were surveyed using judgemental surveys. Judgemental surveys allowed Crew Leads to use their experience and expertise to select locations for investigation not selected by other methods (e.g., predictive model or systematic survey).
ab_0001-689	Treaty 8 Tribal Association	V.4, Appendix C, S.5.2.3 ; page(s) 101 ; line(s) EISG S.18.2.3 Comment 4-106.	<i>HbRf-25 is a 200 m by 50 m surface lithic artifact scatter located near John Beatton's homestead cabin, on the north side of the Peace River on the upper terrace, opposite the confluence of the Peace and Moberly rivers. Originally recorded in 1974, HbRf-25 was revisited in 1978 by archaeologists from SFU, at which time 38 chert flakes (eight retouched), eight chert cores, 10 quartzite spalls, one hammer stone, and one adze were observed. The artifacts were not collected. A small portion of the south boundary of HbRf-25 is located within the as yet undefined construction activity areas near the dam site. Comments HbRf25 lithic scatter suggests a highly curated tool kit, which has a high proportion of finished tools, cores, and resharpening/thinning flakes. Numerous inferences can be drawn from these types of assemblages (e.g., high degree of mobility, non-local hunters, etc.)</i>	Thank you for your comment. Further investigation of this site may be undertaken as part of the assessment of construction site areas near the dam site as described in Section 5.2.3.1 Volume 4 Appendix C Heritage Resource Assessment Report of the EIS.
ab_0001-690	Treaty 8 Tribal Association	V.4, Appendix C, S.5.2.3.2 ; page(s) 104 ; line(s) EISG S.18.2.3 Comment 4-107.	<i>Previously recorded archaeological sites in the Wuthrich Quarry and surrounding area generally consist of low-density lithic artifact scatters associated with a prominent bedrock outcrop or the shores of Charlie Lake. Assemblages are dominated with black chert, but also contain bone fragments. It is anticipated that stone artifact sites exist in unsurveyed portions of the Wuthrich Quarry. However, there is potential for rock overhangs and caves that could contain very old, stratified, archaeological sites similar to the nearby Charlie Lake cave site (HbRf-39). Information Request Clarify whether there was a systematic investigation for rock overhangs and caves conducted in Wuthrich Quarry.</i>	Please see Section 32.2.2 which states that a field inventory for off-site quarries would be completed in a manner consistent with the current heritage assessment prior to the start of construction in these areas, once specific use areas are identified.

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ab_0001-691	Treaty 8 Tribal Association	V.4, Appendix C, S. 5.2.3.7 ; page(s) 108 ; line(s) EISG S.18.2.3 Comment 4-108.	Comments Additional recommendations: §§ 1) develop and test predictive model of prehistoric Aboriginal site locations/functions based on historic and contemporary Aboriginal land use and occupation; §§ 2) conduct systematic survey and assessment of heritage resources downstream of proposed Project to at least Peace Point; §§ 3) undertake a proper AIA of historic Aboriginal sites; and §§ 4) undertake judgemental investigation of all exposures along banks and slopes of the Peace River upstream and downstream of the proposed Project (lower exposures for contemporary and historic Aboriginal sites; higher terraces for prehistoric, historic and contemporary Aboriginal sites)	<p>Please see the response to ab_0001-630 and ab_0001-675.</p> <p>Please also see the response to ab_0001-637.</p> <p>As described in Section 32.2.2.2 of the EIS, the archaeological fieldwork followed the methods described in the application for Heritage Conservation Act Inspection Permit 2010-0378, and the British Columbia Archaeological Impact Assessment Guidelines. Please also see the Technical Memo: Archaeology.</p> <p>Judgmental investigation of all exposures along the banks and slopes of the Peace River was not required for the archaeological impact assessment defined in Heritage Conservation Act Inspection Permit 2010-0378.</p>
ab_0001-692	Treaty 8 Tribal Association	V.4, Appendix C, S.5.2.4 ; page(s) 120 ; line(s) EISG S.18.2.3 Comment 4-109.	<i>The results of the radiometric dating suggest that HaRk23 is a multi-component site that was occupied at least twice over a thousand-year period between 2,280 and 1,250 BP.</i> Comments Artifacts from LAA deeply stratified sites (e.g. HaRk 23) should have been compared with other deeply stratified sites along the Peace River, especially on the lower Peace River around Peace Point where banded, speckled and mottled tan/brown/gray cherts are found in the limestone bedrock upon which deeply stratified sites are situated.	The matter raised in this comment is outside the scope of the environmental assessment. Please also see the response to ab_0001-637.
ab_0001-693	Treaty 8 Tribal Association	V.4, Appendix C, S. 5.2.5.1.4 ; page(s) 136 ; line(s) EISG S.18.2.3 Comment 4-110.	Comments Analysis and discussion of cherts is inadequate. Information Request Clarify why coarse-grained black chert is most common in the river valley while other, finer-grained cherts and other rock types are most common away from the river.	A description of the distribution of lithic material types is presented in Section 5.2.5.1.4 Volume 4 Appendix C Heritage Resource Assessment Report of the EIS. Based on this information, several explanations can be offered for the distribution of these lithic types. Land forms on the Plateau are older than those in the valley and the sites on the Plateau may contain sites with older components. The finer-grained cherts and more varied rock types may represent an earlier pattern of lithic use or procurement. Another possibility is that the local lithic sources, as yet unknown, are different on the Plateau than in the valley. The debitage and microblade assemblages also suggest great conservation of lithic materials on the Plateau possibly linked to a great dependence of exotic material acquired from distant sources. These alternate explanations may be linked to each other with earlier lithic procurement use and patterns being characterized by a dependence on more distant sources and possibly greater mobility. With time and more sedentary settlement patterns local populations may have adopted the use of more local and courser grained cherts. The low frequency of exotic lithics and datable material in the sites makes it difficult to verify these speculations, hence their exclusion from the report.
ab_0001-694	Treaty 8 Tribal Association	V.4, Appendix C, S. 5.2.5.5 ; page(s) 154 ; line(s) EISG S.18.2.3	<i>A total of 251 Pre-contact archaeological sites have been identified within the LAA. Of these sites, 22 are previously recorded sites that were not re-examined by the Golder team due to access restrictions at the time of study. Eight additional previously recorded sites had no accurate count of the artifacts found prior to this study and no further artifacts were recovered by the Golder team.</i>	A summary of each site is provided in Appendix H of Volume 4 Appendix C Heritage Resource Assessment Report of the EIS, with the exception of those previously recorded archaeological sites within construction site areas that are described in Section 5.2.3.1.

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		Comment 4-111.	<i>Another 10 sites are located in Project components that have not yet been assessed by the field program. These 40 sites are not included in the following analyses since, without relocating the sites and testing to Project standards, the artifact frequencies, site content, site boundaries, and site significance cannot be accurately determined, or at least not to comparable standards. Therefore, the total sample population is 211. Information Request</i> The Proponent is asked to present an analysis and summary table of the 40 sites excluded from consideration.	
ab_0001-695	Treaty 8 Tribal Association	V.4, Appendix C, S. 5.2.5.5 ; page(s) 154 ; line(s) EISG S.18.2.3 Comment 4-112.	<i>Since the reservoir pool deepens closer to the dam and generating station, the LAA includes only the lowest terraces at the western end of the reservoir near Hudson's Hope, but captures progressively higher terraces to the east (or downstream). Comments</i> Since early archaeological sites are likely to be found on the highest terraces, perhaps surveying such terraces upstream of the LAA may be warranted for comparative purposes.	Collection of information outside of the LAA for comparative purposes is outside the scope of the environmental assessment. The spatial boundaries for the Heritage Resource effects assessment are defined in Section 32.1.6.1 of the EIS and in Section 18.2.1 of the EIS Guidelines.
ab_0001-696	Treaty 8 Tribal Association	V.4, Appendix C, S. 5.2.5.5 ; page(s) 156 ; line(s) EISG S.18.2.3 Comment 4-113.	Comments The archaeological techniques used to recover/assess over 90% of the prehistoric archaeological record in the region (i.e., small lithic scatters) are inadequate. Again, developing and testing predictive models based on historic and contemporary site function and distribution would have addressed this deficiency. Information Request Since large complex prehistoric sites were found to be clustered with TLU sites, comment on whether there is a similar distributional and functional correlation between lithic scatters and historic and contemporary Aboriginal campsites.	Please see the responses to ab_0001-672 and ab_0001-675.
ab_0001-697	Treaty 8 Tribal Association	V.4, Appendix C, S. 5.2.5.5 ; page(s) 159 ; line(s) EISG S.18.2.3 Comment 4-114.	<i>Immediately adjacent to Watson Slough and downstream around Wilder Creek are two locations that were identified as open prairies at contact (Spurling 1980b:103; Mackenzie 1971:163-4). These accounts describe grasslands with large herds of deer, elk, and bison. The ethnographic literature (see Section 3.2.2) suggests that these grasslands were maintained by the local Aboriginal people through the use of fire to periodically reduce the growth of brush and trees. Whether natural or manmade, these grasslands would have attracted large game and likely provide another reason why large sites, and sites in general, are more common near Bear Flat and Jim Rose Prairie. Comments</i> The role of Aboriginal burning up to the early 20th century throughout the Peace region needs to be developed more thoroughly as a major factor in archaeological site location and function.	The matter raised in this comment is outside the scope of the environmental assessment. The TLUS data provided to BC Hydro by First Nations is not detailed enough to use for predictive modeling.
ab_0001-	Treaty 8	V.4, Appendix	<i>Archaeological sites are more common on the north bank of the Peace River</i>	Differences between the north and south sides of the valley are described and analyzed in

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698	Tribal Association	C, S. 5.2.5.5 ; page(s) 160 ; line(s) EISG S.18.2.3 Comment 4-115.	<i>valley than they are on the south bank of the valley (Table 5.26). Of the 165 archaeological sites found in the valley portion of the LAA, 21 (13%) are on the south side and 144 (87%) are on the north side.</i> Comments The occurrence of significantly higher numbers of archaeological sites on the north side as opposed to the south side of the Peace River appears to be a phenomenon that occurs all along the Peace to at least Peace Point. Thus, it should receive greater attention than given by the report authors.	Section 5.2.5.5 of Volume 4 Appendix C Heritage Resource Assessment Report of the EIS.
ab_0001-699	Treaty 8 Tribal Association	V.4, Appendix C, S. 5.2.5.5 ; page(s) 162 ; line(s) EISG S.18.2.3 Comment 4-116.	<i>Archaeological sites with deeply buried archaeological materials (i.e., multiple occupation levels more than 50 cm below the surface) were only located at two locations with the LAA: Farrell Creek Site (HaRk-1) and three sites (HaRk-23, HaRk-16, and HaRk-46) located close to each other on a lower terrace, downstream from Farrell Creek.</i> Comments Comparisons of deeply stratified sites around Farrell Creek with those downstream of the proposed Project, such as those around Peace Point, should have been conducted to inform the assessment of these sites.	The detailed comparative analysis of these individual sites is outside the scope of the environmental assessment, but may be more appropriately addressed as part of the mitigation strategy for highly significant sites.
ab_0001-700	Treaty 8 Tribal Association	V.4, Appendix C, S. 5.2.5.5 ; page(s) 165 ; line(s) EISG S.18.2.3 Comment 4-117.	<i>This evidence suggests the possibility that forest fires either directly impacted the human population by having a negative impact on the habitat and resources that the population depended on, or are an indirect measure of other changes to climate and vegetation that impacted these resources, such as drier climatic conditions.</i> Comments The role of fire is misunderstood by the report authors. Use of fire by First Nations peoples for millennia along the Peace River (and other northern drainages, e.g., Hay River) promote human use and occupation by creating values such as improved ungulate grazing and berry picking habitats. Thus, the correlation observed may be spurious.	Given that the use of fire by Aboriginal populations was intended to promote human use and occupation, site frequencies should increase with intentional burning. The evidence presented in Section 5.2.5.5 of Volume 4 Appendix C Heritage Resource Assessment Report of the EIS suggests that site frequency decreases with an increase in the buried charcoal horizons identified on a fluvial fan at Bear Flat. This correlation suggests that these charcoal horizons represent large scale regional forest fires rather than controlled Aboriginal burns.
ab_0001-701	Treaty 8 Tribal Association	V.4, Appendix C, S.5.2.5.5 ; page(s) 168 ; line(s) EISG S.18.2.3 Comment 4-118.	<i>The goal of the archaeological field program was to describe the location and characterize the nature of Precontact heritage resources within the LAA, such that potential Project effects on those resources could be assessed.</i> Comments As the goal of the field program was to discover as many high significant sites as possible, the adopted sampling methods (equal effort across low, moderate and high potential areas) appear discordant with this objective.	This statement in the comment is not correct. First, as noted in Section 5.1.4 of Volume 4 Appendix C Heritage Resource Assessment Report of the EIS and Heritage Conservation Act Inspection Permit 2010-0378, the main objective of the archaeological field program was to characterize the nature of the archaeological resources in the LAA so that potential Project effects could be assessed and appropriately mitigated Second, Section 5.1.5 of Volume 4 Appendix C Heritage Resource Assessment Report of the EIS describes the methodology used for the archaeological field program. Aside from testing of the predictive model (Section 5.1.5.1), equal effort was not applied in areas of low, moderate and high archaeological potential. As stated in Section 5.1.5.3 of Volume 4 Appendix C Heritage Resource Assessment Report of the EIS, systematic survey with subsurface testing was used in only areas identified by the predictive model as having high archaeological potential.

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ab_0001-702	Treaty 8 Tribal Association	V.4, Appendix C, S. ; page(s) 168169 ; line(s) EISG S.18.2.3 Comment 4-119.	Comments The report authors acknowledge that, after their AIA, they do “not fully understand the nature (site size, density and distribution) of background of sites” and there is “little certainty that all sites have been found”. Thus, “it is difficult to estimate how many site may have been missed in the sampling program.” However, the purpose of the AIA is to estimate how many archaeological sites have been missed and of what type. The authors could have made a much greater effort to estimate the total population of archaeological sites in the impact area, what types of sites they are, where their locations are, etc., even with the information available. As a gross generalization, after this AIA, we know about as much as we did before. About the only claim that has some traction is the statement that: “many more sites remain undiscovered in the LAA (and) ... few large (often the most significant) have been missed.” We still have no information about 90% and 100%, respectively, of the site locations, functions and variability of pre-contact and post-contact Aboriginal archaeological sites.	Section 18 in the EIS Guidelines states that the “EIS will summarize the potential adverse effects of the Project on heritage resources, including physical and cultural heritage resources, and any structure, site or thing that is of historical, archaeological, palaeontological or architectural significance” (p. 98) and the “EIS will describe [the] location and nature of known heritage resources that could be impacted by the project” (EIS Guidelines, s. 18.2.3 Heritage Resources Baseline). While an estimation of the total population of sites, and the nature of those sites, is not a requirement for the EIS, BC Hydro is aware that this is a requirement for archaeological impact assessments in BC. The archaeological field inventory completed to date was undertaken in accordance with the BC Archaeological Impact Assessment Guidelines and HCA Section 14 Inspection Permit 2010-0378. Prior to commencing construction activities in particular areas, BC Hydro will need to complete the requirements of the AIA as described in the Guidelines and in HCA 2010-0378. Please also see the Technical Memo: Archaeology.
ab_0001-703	Treaty 8 Tribal Association	V.4, Appendix C, S.6 ; page(s) 170 ; line(s) EISG S.18.2.3 Comment 4-120.	<i>The historical resources program included documentary research, a historical resources overview assessment, stakeholder interviews, and field investigations. Historical heritage sites are defined as any structure, site or thing that is of historical or architectural significance. Historical sites and locations in British Columbia are primarily attributable to post-contact Euro-Canadian settlement and land use, but also include habitations and other evidence left by Aboriginal peoples in that time period.</i> Comments Despite the acknowledgement that “historical sites and locations in British Columbia...also include habitations and other evidence left by Aboriginal peoples”, there is no systematic/concerted effort to access such knowledge from Aboriginal groups. There is no understanding or appreciation that such sites provide a window on archaeological site functions, distributions, and variability in the pre-contact or prehistoric period. A scientifically rigorous AIA in the 21st century would have undertaken to develop a predictive model based on this information.	Please see the responses to ab_001-626 and ab_0001-675. Please also see the Technical Memo: Archaeology.
ab_0001-704	Treaty 8 Tribal Association	V.4, Appendix C, S.6 ; page(s) 170 ; line(s) EISG S.18.2.3 Comment 4-121.	<i>Particular attention during the review was paid to the following themes: transportation methods and routes, aspects of settlement and interactions with the environment, developing economies (e.g., extraction and production, trade and commerce, communication, technology, and engineering), and building social and community life.</i> Comments The report fails to acknowledge perhaps what may be the most important site theme: sites demonstrating	Please see the responses to ab_0001-641 and ab_0001-675.

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			EuroCanadian/Aboriginal Social/Cultural Interactions, Relations and Change. Such a category has the potential to capture important historic sites that may also shed light on the pre-contact/prehistoric land use and occupation. Instead the authors rely on the outdated federal systems plan.	
ab_0001-705	Treaty 8 Tribal Association	V.4, Appendix C, S. 6.2.3.1.1 ; page(s) 208 ; line(s) EISG S.18.2.3 Comment 4-122.	<i>The following words or ideas were identified by the stakeholders. These terms capture the historical identity of the Peace River valley in the vicinity of the LAA, and contribute to the historical themes pertinent to the LAA. The order represents a weighted ranking based on importance and frequency as provided by the respondents.</i> • Historic transportation corridor Comments The Peace River as a “Historic transportation corridor” was ranked as the most important historic theme, yet the report authors ignore the Aboriginal contribution to addressing this role/theme, which in turn would have lead to a more thorough and rigorous assessment.	Please see the responses to ab_0001-630, ab_0001-641 and ab_0001-675.
ab_0001-706	Treaty 8 Tribal Association	V.5, S.34.3.1 ; page(s) 34-2 ; line(s) 18-21 EISG S.20.3 Comment 5-1.	<i>An assessment of the potential effects of the Project on the current and reasonably anticipated future use of lands and resources by Aboriginal groups for traditional purposes is provided in Section 19 Current Use of Lands and Resources for Traditional Purposes.</i> Comments The T8FNs have included several information requests in relation to Section 19 of the EIS in this submission. Upon receipt of responses from the Proponent, the T8FNs will re-evaluate the suitability of the materials in the EIS for use in assessing the implications of the proposed Project for the T8FNs Aboriginal and Treaty rights.	BC Hydro will consider any additional concerns raised by the T8FNs in regard to the implications of the proposed Project for the T8FNs treaty rights through the ongoing Aboriginal consultation process as outlined in the Environmental Assessment Participation Agreement signed by the parties.
ab_0001-707	Treaty 8 Tribal Association	V.5, S.34.3.2.1 ; page(s) 34-7 , 34-6 ; line(s) 25-29 , 25-28 EISG S.20.3 Comment 5-2.	<i>Accordingly, while the passages that precede this section provide BC Hydro's understanding of the treaty rights held by the Aboriginal groups that are signatories or adherents to Treaty 8, BC Hydro has endeavoured throughout the EIS to take the First Nations' perspective of the scope of treaty rights into account when assessing and measuring the potential effects of the Project. BC Hydro's understanding of the rights provided by Treaty 8 is reflected in the sections above. However, in addition to its review of the Treaty and case law, BC Hydro has also been provided with submissions from some Treaty 8 First Nations that set out their perspectives of the rights provided to First Nations under Treaty 8</i> Comments BC Hydro's comments throughout Section 34 (and indeed the analysis throughout the EIS) relate largely to an interpretation of the written aspects of Treaty 8. The T8FNs understanding and interpretation of Treaty 8 and its “scope of rights” are derived as much or more from its verbal promises, as relayed in the reports of the Treaty Commissioners submitted to the Superintendent of Indian Affairs on September 22, 1899 (Laird <i>et al</i> 1899) ¹ and passed down through generations by T8FNs members. The courts have	Please see the following Technical Memos: - Oral Promises Under Treaty 8 - Methodology for the Assessment of the Potential Impacts of the Project on the Exercise of Asserted or Established Aboriginal and Treaty Rights

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			<p>accepted that these verbal promises form part of the treaty (<i>Badger</i>, at para. 39; <i>West Moberly</i>, at para.128). Any effort by BC Hydro to truly “endeavour... to take the First Nations’ perspectives on the scope of treaty rights into account” would, at a minimum, include in the baseline studies, assessment of effects, and determination of residual effects, consideration of the following: §§ cumulative effects assessment based on a pre-development baseline and a future case without the flood reserve; §§ tangible and intangible cultural resources; §§ land alienation; §§ prior infringements on treaty rights by BC Hydro developments; §§ existing or potential commercial rights; §§ the seasonal round (not only individual land uses); §§ the sufficiency of land, resources and opportunity available to practice the mode of life protected under Treaty 8; and §§ the extent to which lands have been taken up by other developments incompatible with the exercise of treaty rights. Information Request BC Hydro is requested to:</p> <p>a) describe BC Hydro’s understanding of the role of verbal promises associated with Treaty 8 in its interpretation of Treaty rights; b) indicate where and how in the EIS BC Hydro considers the implication of verbal promises of Treaty 8 in its analysis and effects assessment; c) provide specific examples, where the EIS utilizes the interpretation of Treaty 8 rights provided to it by the courts and T8FNs, as referred to at p.34-6.</p> <p>1 Laird, D., Ross, J.H. and J.A.J. McKenna (1899). <i>Report of Commissioners to Clifford Sifton, Superintendent General, Department of Indian Affairs</i>, Ottawa, September 22, 1899. Copy of Treaty No. 8 Made June 21, 1899, and Adhesions, Reports, etc. Ottawa: Queen’s Printer, 1966.</p>	
ab_0001-708	Treaty 8 Tribal Association	V.5, S.34.3.2.1 ; page(s) 34-4 ; line(s) 4 EISG S.20.3 Comment 5-3.	<p><i>As outlined by the Supreme Court of Canada in R. v. Badger, [1996] 1 SCR 771, at para. 39, Treaty 8 is one of numbered treaties concluded between the federal government and various First Nations between 1871 and 1923 in order to facilitate the settlement of the western half of the country. Comments</i> The description of the historical context needs to include references to the Treaty Commissioner’s Reports, which show that promises were made to the Indians that by entering the treaty their traditional hunting practices would be protected from “forced interference”, and that they would be able to continue traditional practices as if they had never entered the Treaty. Information Request BC Hydro is requested to provide its understanding as to why the Indians entered into Treaty 8.</p>	Please see the Technical Memo: Oral Promises Under Treaty 8.
ab_0001-709	Treaty 8 Tribal Association	V.5, S.34 ; page(s) 34-5 ; line(s) 14-18	<p><i>The Supreme Court of Canada also commented that “the language of the treaty could not be clearer in foreshadowing change” (Mikisew, at para. 31) and that “none of the parties in 1899 expected that Treaty 8 constituted a finished land</i></p>	In <i>Mikisew</i> , the Supreme Court of Canada said: “With the exceptions of cases where the Crown has taken up land in bad faith or has taken up so much land that no meaningful right to hunt remains, taking up land for a purpose express or

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		EISG S.20.3 Comment 5-4.	<i>use blueprint. Treaty 8 signalled the advancing dawn of a period of transition” (Mikisew, at para. 27). Comments Change was foreshadowed, but the extent of the change was not expected to jeopardize or harm the First Nations’ traditional way of life.</i>	necessarily implied in the treaty itself cannot be considered an infringement of the treaty right to hunt.” (para. 48, citing Rothstein JA, emphasis in <i>Mikisew</i>)
ab_0001-710	Treaty 8 Tribal Association	V.5, S.34 ; page(s) 34-5 ; line(s) 19 EISG S.20.3 Comment 5-5.	<i>Incidental Rights Under the Treaty Comments</i> The discussion of reasonably incidental rights needs to include BC Hydro’s determination of which reasonably incidental rights of the T8FNs will be impacted by the proposed Project. Without this determination, the full extent of the impacts on Treaty rights cannot be assessed. Information Request BC Hydro is requested to provide its determination of which reasonably incidental rights of the T8FNs will be adversely impacted by the proposed Project.	<p>Section 19 assesses the potential effects of the Project on cultural and traditional uses of the land other than hunting, fishing and trapping. This includes an assessment of the effects of the Project on activities which may be described as “ancillary” to hunting, fishing and trapping, such as travel and access to harvesting opportunities, the establishment of cabins, and harvesting of berries, herbs and medicinal plants. The term “ancillary” was used to denote a category of activities which, based on guidance from the case law, may be “reasonably incidental” to the exercise of the treaty rights to fish, hunt, and trap. Thus, “ancillary activities” is a broader category of which “incidental treaty rights” would be a subset.</p> <p>BC Hydro’s approach was to take into account ancillary activities, where that information was made available to BC Hydro, in the assessment of the potential impacts of the Project on treaty rights, as well as the identification of suggested mitigation measures. This approach ensured that the assessment of the potential impacts of the Project on “incidental treaty rights” would be a comprehensive one.</p> <p>Please see the Technical Memo: Methodology for the Assessment of the Potential Impacts of the Project on the Exercise of Asserted or Established Aboriginal and Treaty Rights</p>
ab_0001-711	Treaty 8 Tribal Association	V.5, S.34 ; page(s) 34-5 ; line(s) 28 EISG S.20.3 Comment 5-6.	<i>Geographic Limitations – The Crown’s Right to Take Up Land Comments</i> <i>Mikisew</i> does not stand for the principle for which BC Hydro cites it. The comments on infringement are obiter, and BC Hydro’s interpretation is contrary to the oral promises and applicable case law on the interpretation of the Treaty (since it would allow the Crown to unilaterally and incrementally extinguish the very rights the Treaty promises to protect, and render an 11th hour ‘justification’ of no utility because the rights would by that point be nearly or entirely extinguished). <i>Mikisew</i> established only that the assessment of procedural adequacy (i.e. consultation) must be undertaken prior to determining if there is a substantive infringement of Treaty rights. In <i>West Moberly</i> , the BC Court of Appeal clarified (at para. 134) that: <i>Just as the right to hunt must be understood as the treaty makers would have understood it, so too must "taking up" and "mining" be understood in the same way.</i> And, neither treaty-making party expected the extent of the land taken up to seriously jeopardize traditional ways of life or to include large-scale industrial projects in sensitive wildlife habitat (see <i>West Moberly</i> paras. 134-135; 150). Thus, while	<p>BC Hydro does not agree that its interpretation of the Treaty “allow[s] the Crown to unilaterally and incrementally extinguish the very rights the Treaty promises to protect, and render an 11th hour justification of no utility because the rights would by that point be nearly or entirely extinguished” or that “[t]he logical outcome is that BC Hydro can take up lands, piece by piece, until rights are gone (or until the theoretical ‘last project’ is poised to complete the gradual extinguishment of the meaningful right to hunt)”. Please also see the Technical Memo: Oral Promises Under Treaty 8, and Section 34.3.21.</p> <p>The Project is not being assessed “with a blank slate”. Section 11 of the EIS provides a description of the environment in the vicinity of the Project, including:</p> <ul style="list-style-type: none"> 11.1 - Previous Hydroelectric Development on the Peace River 11.2 - Geology, Terrain, and Soils 11.3 - Land Status, Tenure, and Project Requirements 11.4 - Surface Water Regime 11.5 - Water Quality 11.6 - Groundwater Regime 11.7 - Thermal and Ice Regime

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			<p>the Crown may have the right to take up land for the purpose of the proposed Project, it may be an infringement of the Treaty rights that would require justification. This legal error of BC Hydro provides a foundation for its view that one can assess impacts to Treaty rights without reference to what rights the Treaty promises to protect and how such rights have, since that time, been impacted. BC Hydro’s view is that each project is assessed with a blank slate. The logical outcome is that BC can take up lands, piece by piece, until rights are gone (or until the theoretical ‘last project’ is poised to complete the gradual extinguishment of the meaningful right to hunt). The case law, however, says that impacts and rights must be understood looking backwards to the perspective of the treaty-makers and looking forwards to achieving the promise of a continued exercise of those rights.²</p> <p>2. <i>Tsilhqot’in Nation v. British Columbia</i>, [2008] 1 C.N.L.R. 112 (B.C.S.C.), para. 1291 per Vickers J. (reversed, but not on this point). <i>R. v. Nikal</i>, [1996] 1 S.C.R. 1013 (QL), paras. 94 and 102; <i>R. v. Sparrow</i>, [1990] 1 S.C.R. 1075, para. 60.</p>	<p>11.8 - Fluvial Geomorphology and Sediment Transport Regime 11.9 - Methylmercury 11.10 - Microclimate 11.11 - Air Quality 11.12 - Noise and Vibration 11.13 - Electric and Magnetic Fields</p> <p>Please also see the Technical Memo: Consideration of Historical Context in Assessment of Potential Effects and Impacts on Aboriginal Groups</p>
ab_0001-712	Treaty 8 Tribal Association	V.5, S.34.3.3 ; page(s) 34-11 34-19 ; line(s) 32-35 1-2 EISG S.20.3 Comment 5-7.	<p><i>Some of these ancillary activities may be reasonably incidental to the exercise of the treaty rights to fish, hunt, and trap. Consequently, the results of the assessment in Section 19 are drawn into the assessment of potential impacts on the exercise of asserted or established Aboriginal and treaty rights. Table 34.2 Mitigation Measures for Potential Adverse Impacts on the Exercise of Treaty Rights</i> Comments BC Hydro considers some of the cultural and traditional uses of the land assessed in Section 19 to be “incidental” to the exercise of Treaty rights. Accordingly, BC Hydro imports its suggested mitigation measures for impacts to cultural and traditional uses of the land into Table 34.2. These could be characterized as “incidental Treaty rights”, but BC Hydro lists them as “ancillary activities”, which implies a lesser status. These incidental rights are equal in status to hunting, trapping and fishing. BC Hydro treats them as “ancillary activities” because these are rights that would be significantly impacted by the proposed Project. Information Request BC Hydro is asked to:</p> <p>a) explain why the “ancillary activities” listed in Table 34.2 have not been included in the narrative discussion of Treaty rights in Section 34.3.3; and b) revise Section 34.3.3 to address the inclusion of the “ancillary activities” listed in Table 34.2.</p>	<p>With respect to the information request, Section 34.3.3 discusses the two leading cases (<i>Simon, Sundown</i>) which set out the legal test for determining whether a particular activity is reasonably incidental to the exercise of a treaty right. As stated in <i>Sundown</i>, such a determination “is largely a factual and historical one” (para. 30). As a result, BC Hydro did not purport to apply the legal test to the various “ancillary activities” which may be considered “incidental treaty rights” as part of its narrative discussion of treaty rights. Instead, BC Hydro took into account all ancillary activities in its assessment of the potential impacts of the Project on treaty rights.</p> <p>Please also see the response to ab_0001-710.</p>
ab_0001-713	Treaty 8 Tribal Association	V.5, S.34.3.3 ; page(s) 34-16 34-17 ; line(s) 38-44 1-7	<p><i>Right to Fish T8TA’s treaty right to fish applies throughout Treaty 8 territory. The Project would reduce the ability of T8TA to exercise its treaty right to fish (Section 19 Current Use of Lands and Resources for Traditional Purposes) in the LAA, during both construction and operation. Opportunities for boat and shore-</i></p>	<p>Historic grievances arising from past hydroelectric development on the Peace River are being dealt with in a separate process through BC Hydro’s Aboriginal Relations and Negotiations department (see Section 11.1.4).</p>

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		EISG S.20.3 Comment 5-8.	<i>based river fishing along an 85-kilometre stretch of the Peace will be reduced. Several highly valued fishing areas, where streams and creeks join the Peace, will be inundated. The impact of the creation of the dam will diminish as the reservoir begins to create a new fishery. However, it is not certain when these conditions may occur. As indicated in Section 19, other fishing areas currently used by T8TA would not be affected by the Project, and the Reservoir would, in time, create compensatory fishing opportunities for T8TA. No cumulative effects of the Project were identified with respect to fishing for traditional purposes (Section 19 Current Use of Lands and Resources for Traditional Purposes). T8TA members would continue to have the opportunity to exercise their right to fish within the LAA, within their traditional territories, and within the wider Treaty 8 territory. Comments Discussion of impacts to fishing takes no account of the historical impacts on fishing from WAC Bennett and Peace Canyon Dams, in terms of fishing locations removed, elevated methylmercury levels, and other adverse effects. The proposed Project would contribute to the loss of fishing sites and the locations currently unsuitable for fishing due to increased levels of methylmercury and extirpation of preferred species.</i>	The Project's effects on Aboriginal groups' current use of land and resources for traditional purposes, including fishing, are assessed in Section 19.4. Its potential impacts on the exercise of the treaty right to fish are assessed in Section 34.3.3. The potential effects of the Project on human health, resulting from consumption of country foods, are described in Section 33. Please also see the Technical Memo: Methylmercury
ab_0001-714	Treaty 8 Tribal Association	V.5, S.34.3.3 ; page(s) 34-16 34-17 ; line(s) 38-44 1-7 EISG S.20.3 Comment 5-9.	<i>Right to Fish Comments</i> There is no assessment of the seriousness of the impacts of the proposed Project to the fishing rights of the T8FNs. It is unclear whether BC Hydro has taken this approach because it believes that a <i>Sparrow</i> justification analysis is unnecessary. Even if a <i>Sparrow</i> justification analysis were not needed, BC Hydro still needs to assess the seriousness of the impacts in order to determine whether the proposed mitigation/accommodation will be sufficient. The current approach appears to be limited to simply listing potential mitigation measures. Information Request The Proponent is requested to assess the seriousness of the impacts of the proposed Project on fishing by the T8FNs.	The effects assessment on the change in fishing opportunities is described in Section 19.4.1 (during construction) and in Section 19.4.2 (during operations). The assessment of the potential impacts of the Project on the exercise of the Treaty 8 First Nations' Treaty right to fish is based on the Section 19.4 assessment. The seriousness of the impact with respect to each First Nation was taken into account in the assessment. Please see the following Technical Memos: - Methodology for the Assessment of Potential Impacts of the Project on the Exercise of Asserted or Established Aboriginal and Treaty Rights - Uncertainty and Precaution
ab_0001-715	Treaty 8 Tribal Association	V.5, S.34.3.3 ; page(s) 34-16 34-17 ; line(s) 38-44 1-7 EISG S.20.3 Comment 5-10.	<i>Right to Fish Comments</i> The implication is that the temporary interruption in fishing means impacts are not serious. This conclusion could only be drawn if BC Hydro knew that: §§ 1) there was nothing special about the fish species that will be extirpated; §§ 2) the fishing sites in the impacted areas hold no significance to the T8FNs; and §§ 3) fishing could be increased in other areas of the Treaty lands during this interval. In addition, since BC Hydro has excluded much of other potential areas from the RAA, it is unclear how BC Hydro can state that the T8FNs can: continue to have the opportunity to exercise their right to fish within ... their traditional territories and the wider territory Information Request BC Hydro is asked to indicate other specific locations where fishing	Please see the response to ab_0001-546 and the Technical Memo: Methodology for the Assessment of the Potential Impact of the Project on the Exercise of Asserted or Established Aboriginal and Treaty Rights.

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			could be increased in other areas of the Treaty lands.	
ab_0001-716	Treaty 8 Tribal Association	V.5, S.34.3.3 ; page(s) 34-16 34-17 ; line(s) 38-44 1-7 EISG S.20.3 Comment 5-11.	Right to Fish Comments The conclusion that fishing opportunities will be “reduced” is vague and does not inform the assessment and determination of significance. Information Request BC Hydro is requested to: a) provide estimates respecting the precise loss of fish, fish habitat, fishing sites, and other relevant aspects of the right; and b) discuss the degree of certainty in relation to the estimates determined in part a).	<p>Section 12 presents the effects assessment on Fish and Fish Habitat and considers changes in fish habitat, fish health and survival, and fish movement. Section 12.4.2.1 describes the loss of habitat associated with the transformation of the river to a reservoir. The habitat loss is based on measurements of area within the Project activity zone and, as a result, is relatively certain compared to changes to fish populations. Notwithstanding, Section 12.8 Follow-up Programs describes follow-up monitoring that will be conducted to verify assessments of effects on fish habitat.</p> <p>The change in fishing opportunities and practices, including the loss of fishing sites used by Aboriginal groups is described in Section 19.4.</p> <p>Please see the Technical Memo: Uncertainty and Precaution</p>
ab_0001-717	Treaty 8 Tribal Association	V.5, S.34.3.3 ; page(s) 34-17 ; line(s) 8-24 EISG S.20.3 Comment 5-12.	Rights to hunt and trap Comments All comments above respecting assessment of impacts to the Right to Fish (p. 34-16) apply equally to the section on hunting and trapping rights. Information Request The Proponent is requested to: a) assess the seriousness of the impacts of the proposed Project on hunting and trapping by the T8FNs; b) indicate other specific locations where hunting or trapping could be increased in other areas of the Treaty lands; c) provide estimates respecting the precise loss of wildlife species, wildlife habitat, hunting and trapping areas and locations, and other relevant aspects of the right; and d) discuss the degree of certainty in relation to the estimates determined in part c).	<p>Section 19.4.4 presents the effects assessment on the change in hunting and trapping opportunities and practices, including estimates to any decline in population and habitat areas, where available. The assessment of the potential impacts of the Project on the exercise of the Treaty 8 First Nations’ treaty rights to hunt and trap was based on the Section 19.4 assessment.</p> <p>The TLUS provided by T8TA indicates multiple areas where the members of DRFN, WMFN, HRFN and PRFN hunt and trap within the Wildlife Resources LAA and RAA. The request to indicate specific locations where T8FNs could increase their hunting or trapping activities in Treaty 8 territory is outside the scope of the environmental assessment and not required by the EIS Guidelines.</p> <p>With respect to the precise loss of wildlife species, a quantitative assessment of residual effects was completed for most wildlife resource key indicators by analyzing the amount of suitable habitat occurring within proposed areas of disturbance. The results of the analyses are provided in Section 14 and Volume 2, Appendix R, parts 2-7. It was deemed not practical to provide anticipated estimates of individuals lost for most of the key indicators as it would be difficult to determine what proportion is affected in relation to a regional and/or a provincial population. The loss of hunting and trapping areas and locations used by Aboriginal groups is described in Section 19.4. Residual adverse effect on the current use of lands and resources for hunting and trapping is described in Section 19.5.2.</p> <p>Please see the response to ab_0001-546 and the Technical Memo: Uncertainty and Precaution</p>
ab_0001-718	Treaty 8 Tribal Association	V.5, S.34.4 ; page(s) 34-18 ; line(s) 17 EISG S.20.3	Comments This section’s title is about ‘accommodation’ but the measures listed are not accommodation, but more properly ‘mitigation measures’. Information Request BC Hydro is asked to: a) provide clear definitions of “accommodation” and “mitigation” to distinguish these concepts and their use in the EIS; b) clarify	Accommodation includes avoidance and other mitigation measures. Section 34.4 of the EIS describes mitigation measures, which are a form of accommodation. In addition, Section 34.5 describes BC Hydro’s willingness to continue to consult and enter into impact benefit agreement (IBA) negotiations with First Nations which, in BC Hydro’s view, are likely to be adversely

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		Comment 5-13.	whether it believes that any mitigation measure that has the potential to reduce adverse effects on Aboriginal and Treaty rights is an accommodations for those rights; and c) explain how the adequacy or sufficiency of mitigation and accommodations measures are determined.	impacted by the Project and where BC Hydro considers that accommodation beyond the other mitigations listed in the EIS is warranted.
ab_0001-719	Treaty 8 Tribal Association	V.5, S.34.4.1 ; page(s) 34-19 , 34-22 ; line(s) 1-2 , 32-41 EISG S.8.5.2.2 , S.20.4 Comment 5-14.	<p><i>Table 34.2 Mitigation Measures for Potential Adverse Impacts on the Exercise of Treaty Rights</i></p> <p><i>The potential adverse impacts on the exercise of Treaty 8 rights have been identified and assessed in Section 34.3.3. Section 34.4 contains a description of proposed mitigations and accommodations for these potential adverse impacts, including BC Hydro's willingness to continue to consult and enter into impact benefit agreement (IBA) negotiations with First Nations that, in BC Hydro's view, are likely to be adversely impacted by the Project and where BC Hydro considers that accommodation beyond the other mitigations listed in the EIS is warranted. BC Hydro anticipates that after these mitigation and accommodation measures are applied, adverse impacts to Treaty 8 rights would be mitigated or accommodated. No other potential adverse impacts on asserted or established Aboriginal and treaty Rights have been identified. Comments Table 34.2 sets out the mitigations BC Hydro considers applicable to the potential adverse effects of the proposed Project on Treaty and Aboriginal rights. The proposed mitigation measures are not associated with the effects they are intended to mitigate. Several items are not mitigation measures but supportive measures, involving 'consultation' or 'seeking input'. Any potential adverse or unintended effects of the mitigations themselves are not discussed. Given that the adverse effects on Treaty rights are minimized throughout the EIS, it is not surprising that 'mitigation measures' are so tepid. BC Hydro has not indicated the standard of adequacy or sufficiency as to when an adverse impact to Treaty rights is mitigated or accommodated. For environmental effects, this standard is "significance" as outlined in the EIS Guidelines. However, no similar standard is provided in the EIS Guidelines in relation to Aboriginal and Treaty rights. In general, the information required by the EIS Guidelines in S.8.5.2.2 Mitigation Measures have not been provided. Information Request The Proponent is requested to: a) indicate, for each mitigation, the effect that is intended to be mitigated, the timeline in which this mitigation will be achieved, and the measurable outcomes; b) provide greater specificity regarding how the supportive measures involving consultation and seeking input will be implemented and what is expected to be achieved; c) discuss the potential for and scope of any unintended adverse environmental effects of the proposed</i></p>	Please see the response to ab_0001-538.

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			mitigation measures; d) describe the standard or the approaches used by BC Hydro to determine when a mitigation or accommodation measure has effectively addressed an adverse effect on Aboriginal and Treaty rights; and e) provide the information required by S.8.5.2.2 of the EIS Guidelines.	
ab_0001-720	Treaty 8 Tribal Association	V.5, S.34.4.2 ; page(s) 34-21 ; line(s) 5-16 EISG S.20.4 Comment 5-15.	Alternative Means: <i>Treaty 8 Tribal Association (Doig River, Halfway River, ProphetRiver, and West Moberly First Nations) and Smith's Landing First Nation expressed an interest in alternatives that did not develop all the head between the Project and Peace Canyon, including the potential for lower head facilities at the Project location or further upstream of Wilder Creek. Interest was also expressed by these groups regarding the determination of the constraint to develop the entire head between Peace Canyon and the Project. BC Hydro's considerations for alternative means of carrying out the Project are set out in Section 6 Alternative Means of Carrying out the Project and in Volume 1 Appendix E Dam Alternative Means Report. Section 5.3 Purpose of the Project in Section 5 Need for, Purpose of, and Alternatives to the Project includes a discussion of the objective to cost-effectively maximize the development of the hydroelectric potential of the Site C Flood Reserve.</i> Comments The T8FNs comments and information requests related the Proponent's assessment of alternatives means are set out in: §§ Section 6 Alternative Means of Carrying out the Project; §§ Volume 1 Appendix E Dam Alternative Means Report; and §§ Section 5.3 Purpose of the Project in Section 5 Need for, Purpose of, and Alternatives to the Project including in relation to the proposed objective to cost-effectively maximize the development of the hydroelectric potential of the Site C Flood Reserve.	Thank you for your comment. BC Hydro's responses to each of the specific comments and information requests submitted by the T8TA in regard to the Sections outlined are provided in those Sections of these responses.
ab_0001-721	Treaty 8 Tribal Association	V.5, S.34.6 ; page(s) 34-23 ; line(s) 1-39 EISG S.18 S.20.6 Comment 5-16.	Comments Section 18 of the EIS Guidelines states: <i>Technical data for physical and cultural heritage resources will inform the effects assessment on the heritage resources VC. The interests of Aboriginal groups, including intangible heritage resources, will be presented in the EIS in accordance with Section 20 of these EIS Guidelines. Where Aboriginal groups have identified interests in a VC, the Proponent will incorporate additional baseline information as made available.</i> Section 20.6 of the EIS Guidelines states: <i>The EIS will:</i> • <i>Identify interests that Aboriginal groups may have with respect to potential social, economic, health, and physical and cultural heritage effects of the Project;</i> • <i>Describe how the potential effects on those interests have been considered in the assessment of the potential adverse effects of the Project on VCs or otherwise</i> The T8FNs have reviewed the following sections of the EIS: §§ Section 19 Land and Resource Use for Traditional Purposes by Aboriginal Peoples; §§	In Section 19 of the EIS, BC Hydro included an assessment on the key aspect of other cultural and traditional uses of the land in order to consider changes to the use of and access to culturally important places and valued landscapes. The baseline information considered in the assessment of other cultural and traditional uses of the land was sourced from information provided by Aboriginal groups in traditional land use and community baseline reports. The assessment considered changes to cultural, sacred and teaching areas identified by Aboriginal groups as places, such as Bear Flats, where inter-generational knowledge transfer occurs.

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			<p>Section 32 Heritage Resources; and §§ Section 34 Asserted Or Established Aboriginal and Treaty Rights, Aboriginal Interests, and Information Requirements These sections of the EIS provide no baseline information, effects assessment, or any consideration of intangible cultural heritage resources. A brief and incomplete list under the heading “Aboriginal Interests – Aboriginal Culture and Way of Life” is provided in Volume 5, Appendix A06 Part 4, page 11.</p> <p>Information Request BC Hydro is requested to explain how it considered the potential effects of the proposed Project on intangible cultural or heritage resources in the EIS (with reference to the appropriate sections), including: §§ First Nation sense of place; §§ cultural landscapes; §§ intergenerational transmission of oral histories and traditional knowledge; §§ language; §§ inter or intra group cohesion; §§ culture; and §§ any other factors considered relevant</p>	
ab_0001-722	Treaty 8 Tribal Association	V.5, S.34 ; page(s) 34-24 ; line(s) 28-32 EISG S.20.6 Comment 5-17.	<p><i>The Site C team has sought to support capacity building opportunities for Aboriginal people in the planning and construction phases of the Project through the directed procurement, support for education and training, and business outreach activities described below. Comments Section 20.6 reads as follows: <i>The EIS will:</i> • <i>Identify interests that Aboriginal groups may have with respect to potential social, economic, health, and physical and cultural heritage effects of the Project;</i> • <i>Describe how the potential effects on those interests have been considered in the assessment of the potential adverse effects of the Project on VCs or otherwise;</i> and • <i>Describe the Proponent’s approach to building capacity, for example opportunities for Aboriginal employment, contracting, and business development.</i> The Proponent identifies Aboriginal interests (where these were included in the EIS) in the various appendices to Volume 3 and Volume 5 of the EIS. The potential effects on those interests are considered in the various sections of the report (i.e. Section 11 through Section 33). The approaches to building capacity are presented in Section 34. The EIS does not attempt to bring these three components together in a manner that allows the reader to determine the extent to which Aboriginal interests have been addressed. For example, discussion of capacity building in relation to employment needs to be framed with current data on local aboriginal employment and training levels, funding levels for the Aboriginal youth/working population, and the measurable targets to be achieved should the proposed Project be approved. Secondly, the Proponent has limited the discussion of capacity building to the example provided in Section 20.6, namely training, employment and business and no information is provided concerning capacity building in relation to the many other Aboriginal interests that have been expressed. Finally, the Proponent</i></p>	<p>BC Hydro understands the questions to be in relation to Section 20.4 (Other Interests of Aboriginal Groups) of the EIS Guidelines (and not 20.6 as referenced).</p> <p>Volume 1 Appendix H Aboriginal Issues, Concerns and Interests Tracking Table has been updated to include an additional column that lists mitigations identified in the EIS that address particular issues, concerns and interests, including those interests related to capacity. The updated table will be included in the Aboriginal Group Supplemental Report. This change will enable the reader to more efficiently reference the key mitigation measures being proposed to address issues, concerns and interests respecting Valued Components identified by Aboriginal groups.</p> <p>The scope of the information provided in Section 34.6 (Other Interests of Aboriginal Groups) is in accordance with Section 20.4 of the EIS Guidelines. The Aboriginal Issues Concerns and Interests Tracking Table, in Volume 1, Appendix H, does include the concerns regarding barriers to capacity building that have been brought forward by Aboriginal groups as well as a corresponding consideration or response by BC Hydro.</p> <p>The consideration of capacity building in Section 34.6 of the EIS is in accordance with requirements set out in Section 20.4 of the EIS Guidelines.</p>

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			does not present its understanding of the barriers or challenges to capacity building specific to each interest category. While discussion of these barriers is not explicitly required in the EIS Guidelines, it needs to be part of any meaningful consideration of the likely success of the approach to capacity building. Information Request The Proponent is requested to: a) present the information related to the three aspects of Section 20.6 of the EIS Guidelines for each category of Aboriginal interests (note that these categories may differ for each Aboriginal group) in a summary table to permit easier review; b) present and evaluate the barriers to capacity building specific to each category of Aboriginal interests and the capacity-building measures proposed; and c) explain why the consideration of capacity building in the EIS is limited to training, employment and business.	
ab_0001-723	Treaty 8 Tribal Association	V.5, S.35 ; page(s) ; line(s) EISG S.21 Comment 5-18.	Information Request The Proponent is requested to present some indication of challenging environmental management issues related to each environmental management plan based on experience with existing hydroelectric projects.	BC Hydro's experience with existing hydroelectric projects has been considered in the development of the environmental management framework. Potential issues will be identified and considered in the development of Environmental Management Plans. Please see the Technical Memo: Environmental Management Plans.
ab_0001-724	Treaty 8 Tribal Association	V. 5, S.35.2.2.3 ; page(s) 35-9 ; line(s) 24 EISG S.21 Comment 5-19.	<i>Potential blasting-related effects are regulated under a variety of legislation. For example, blasting carried out near water is regulated by the Fisheries Act.</i> Comments Blasting is not regulated under the <i>Fisheries Act</i> . The Department of Fisheries and Oceans has produced guidelines to minimize the risk of contravening the <i>Fisheries Act</i> by harming or killing fish during blasting operations. See Voluntary Commitments (line 27).	Thank you for your comment.
ab_0001-725	Treaty 8 Tribal Association	V. 5, S.35.2.2.9 ; page(s) 35-12 ; line(s) 33 EISG S.21 Comment 5-20.	Comments Monitoring and reporting are described. However, there is no description of a response plan for dealing with unacceptable sediment releases during construction.	As described in Section 35.2, Environmental Management Plans specify the environmental requirements that contractors must meet and that each contractor will be required to develop works plans that specify how the contractor will meet those requirements. Contractor work plans will be developed prior to construction. As described in Section 35.1.2, BC Hydro will develop an Environmental Oversight Program prior to construction. Responding to events of non-compliance with a management plan is one of the components of this program. Please see the Technical Memo: Environmental Management Plans.
ab_0001-726	Treaty 8 Tribal Association	V.5, S.35.2.2.9 ; page(s) 35-12 ; line(s) 34-38	<i>Four turbidity sensors have been installed in the Peace River, two upstream of the Site C dam site, and two downstream. These monitors would assist in determining the magnitude of sediment releases from dam construction</i>	As stated in Section 35.2.2.9, the four turbidity sensors "would assist in determining the magnitude of sediment releases from dam construction activities." Data from the sensors will be incorporated into erosion and sediment control monitoring program.

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		EISG S.21 Comment 5-21.	<i>activities. A sampling program for monitoring sediment releases from construction activities would be implemented. Results would be reported to regulators on a regular basis. Information Request</i> Provide an indication whether the Proponent will utilize the turbidity sensors to provide feedback to construction activities, i.e., will construction activities be curtailed and additional mitigation measures implemented if high turbidity levels are measured?	Please also see the response to ab_0001-725. Please see the Technical Memo: Environmental Management Plans.
ab_0001-727	Treaty 8 Tribal Association	V. 5, S.35.2.2.10 ; page(s) 35-12 ; line(s) EISG S.21 Comment 5-22.	Comments It is not clear whether a plan to mitigate any fish stranding that may occur during construction will be part of the Fisheries and Aquatic Habitat Management Plan. Such a plan does not currently appear to be included.	Section 35.2.2.10 states that one of the topics to be included in the Fisheries and Aquatic habitat Management Plan is "fish salvage and relocation". Section 12.5.2.1 states "A program of fish salvage and fish relocation is recommended to mitigate for the potential effects of stranding due to water fluctuation on the health and survival of fish during construction". Please see the Technical Memo: Environmental Management Plans.
ab_0001-728	Treaty 8 Tribal Association	V. 5, S.35.2.2.10 ; page(s) 35-13 ; line(s) 11 EISG S.21 Comment 5-23.	Comments Under the Voluntary Commitments heading, there is no mention of the Department of Fisheries and Oceans Policy for the Management of Fish Habitat, which continues to apply and would provide guidance when ascertaining the requirement for and development of fish habitat compensation measures. Compensation measures specified as part of a <i>Fisheries Act</i> Authorization would be compulsory.	Fisheries and Oceans Canada's Policy for the Management of Fish Habitat is currently under review by Fisheries and Oceans Canada. BC Hydro will work with the appropriate regulatory authorities in the development of the Fish and Aquatic Habitat Management Plan. BC Hydro agrees that measures specified as part of a <i>Fisheries Act</i> Authorization would be compulsory. As described in Section 4.4, all construction activities would be carried out in accordance with the Project Construction Environmental Management Program described in Section 35 Summary of Environmental Management Plans, with legal requirements applicable to those activities, and with the terms of permits issued with respect to those activities. The work would be contracted on the basis that contractors must commit to compliance with the Project Construction Environmental Management Program, legal requirements and the terms of all permits. All construction contracts would contain terms mandating compliance with the commitments made in the contractor's proposal or tender, as applicable. Details of how the construction contractors would manage the construction site to comply with the contract terms will depend on the contractor's construction means and methods and will not be known until after the contractors have been engaged (see Figure 3.1 Project Development Schedule). These details will be provided in the work plans prepared by the contractor as described in Section 35.1. BC Hydro would also develop an oversight program prior to construction that would describe the requirements for monitoring of contractor performance, which is described in EIS Section 36.
ab_0001-729	Treaty 8 Tribal Association	V. 5, Section 35.2.2.15 ; page(s) 35-18 ; line(s) 24-26	<i>The Ice Management Plan would discuss the protocols for managing releases from BC Hydro's upstream facilities to control the timing and rate of ice formation on the construction headpond and downstream of the Site C dam.</i> Information Request Clarify whether flow releases that may be required to	Flow releases that may be required to manage ice upstream of the proposed Project construction activities have been considered in the Fish and Fish Habitat effects assessment, in Section 12 of the EIS.

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		EISG S.21 Comment 5-24.	manage ice upstream of the proposed Project construction activities will affect downstream fish and fish habitat and, if so, describe the anticipated effects.	
ab_0001-730	Treaty 8 Tribal Association	V.5, 35.2.2.24 ; page(s) 35-24 ; line(s) 21 EISG S.21 Comment 5-25.	Comments The list of proposed monitoring programs is not parallel with the proposed environmental protection measures and therefore there is no way to measure effectiveness of the proposed management. Monitoring is planned for bald eagles and amphibians, ungulate movement patterns, and fisher movements but the EIS addresses mitigation to protect wildlife (in general) including such things as minimizing collisions with vehicles, restrictions on hunting, treatment of garbage. Other mitigation activities are proposed that are intended to reduce the potential for residual effects but these activities (some of which are not proven mitigations) have no monitoring plans (e.g., provision of artificial snake dens, creation of fish-free zones, etc.). Information Request Provide a complete list of monitoring programs including those to test the effectiveness of mitigating mortality to ungulates, minimizing human-to-bear conflicts, hunting restrictions, dynamics of resulting predator prey relationships, changes in population densities as a result of the proposed Project, changes in hunting levels, any unproven mitigation activities, etc.	Table 39.2 provides a complete list of the follow-up measures identified in other Sections of the EIS. Section 37.5 describes the requirements for follow-up programs. Please also see the following Technical Memos: - Environmental Management Plans - Uncertainty and Precaution
ab_0001-731	Treaty 8 Tribal Association	V. 5, S.35.3 ; page(s) 35-25 ; line(s) EISG S.21 Comment 5-26.	Comments There are no Fisheries and Aquatic Habitat Management plans documented in this section (i.e., Operations Phase). Information Request Clarify whether plans to, for example, mitigate fish stranding appear elsewhere in the EIS.	The operations phase monitoring programs are described in Section 12.8 of the EIS.
ab_0001-732	Treaty 8 Tribal Association	V.5, S.37.3.6 ; page(s) 37-82 ; line(s) 9 EISG S.23.3 Comment 5-27.	<i>Table 37.24 Summary of the Potential Cumulative Effects of the Project</i> Correction The title of the third column should be “Cumulative Effect of the Project in Combination with Other Projects or Activities That Have Been or Will Be Carried Out”, not “Cumulative Effect of the Project”.	BC Hydro has reviewed the suggestion and will leave the wording in column 3 of Table 27.24 unchanged. The suggested wording provided in the information request is provided in the paragraph above Table 37.24 in Section 37.3.6 of the EIS.
ab_0001-733	Treaty 8 Tribal Association	V.5, S.37.4 ; page(s) 37-83 ; line(s) EISG S.23.4 Comment 5-28.	Comments The Proponent has taken the narrowest possible reading of Section 23.4 of the EIS Guidelines. Information Request The Proponent is requested to revise the assessment of the capacity of renewable resources to give consideration to the following: §§ the relative importance of renewable resources in general for Aboriginal peoples to support their way of life compared to non-Aboriginal peoples; §§ the competing importance of	The matters raised are described in the following sections of the EIS: - Section 19 Current Use of Lands and Resources for Traditional Purposes - Section 34 Asserted or Established Aboriginal Rights and Treaty Rights, Aboriginal Interests and Information Requirements - Section 37.4 Capacity of Renewable Resources

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			renewable resources for differing uses (e.g. recreational fishing versus Aboriginal harvesting); §§ concerns of the T8FNs regarding the capacity of renewable resources (e.g., throughout the T8FNs Community Assessment Baseline Profile Report, especially but not limited to Section 4.2.2); and §§ the potential for renewable resources to meet the sustainable harvest requirements of the T8FNs.	
ab_0001-734	Treaty 8 Tribal Association	V.5, S.37.4 ; page(s) 37-84 ; line(s) 2-13 EISG S.23.4 Comment 5-29.	<i>Project Beneficial Use of Renewable Resources</i> Section 23.4 of the EIS Guidelines reads as follows: <i>The EIS will describe the type of renewable resources that may be significantly adversely affected by the Project.</i> Deletion Request The material in Section 37.4.2 is outside the scope of the assessment of the capacity of renewable resources required in the EIS Guidelines and should either be deleted or moved to an appropriate section of the EIS (e.g. Section 7 Project Benefits).	BC Hydro has reviewed this suggestion and will leave the wording in this section unchanged.
ab_0001-735	Treaty 8 Tribal Association	V.5, S.39 ; page(s) 39-2 39-27 ; line(s) 1 4 EISG S.25 Comment 5-30.	<i>Table 39.1 Complete List of Mitigation Measures Table 39.2 Complete List of Follow-up Measures</i> Comments The T8FNs were unable to review this section of the EIS Guidelines for the following reasons: §§ the materials provided in section 39 either do not match those provided in the earlier effects assessment sections (i.e. Section 11 through Section 34) or introduce new information (e.g. monitoring frequency and duration); §§ if the materials in Section 39 are the correct and complete materials, then the materials in Section 11 through Section 34 must first be updated so that they can be viewed in the appropriate context; §§ if the materials in Section 39 are the incorrect materials, then a new table 39.2 must be created that mirrors the materials in Section 11 through Section 33; and §§ the information provided on all monitoring programs in Section 39 is too limited to evaluate their design and adequacy. adequacy. Information Request The Proponent is requested to: a) ensure that all aspects of Table 39.1 and Table 39.2, including monitoring frequency and duration, are explained and justified in the appropriate sections of the EIS (i.e. Section 11 through Section 34); b) ensure that the materials in the earlier sections of the EIS match the materials presented in Table 39.1 and Table 39.2; and c) update the respective sections of the EIS, including Section 39, as appropriate pursuant to part a) and part b) above. The Proponent is requested to: a) ensure that all aspects of Table 39.1 and Table 39.2, including monitoring frequency and duration, are explained and justified in the appropriate sections of the EIS (i.e. Section 11 through Section 34); b) ensure that the materials in the earlier sections of the EIS match the materials presented in Table 39.1 and Table 39.2; and c) update the respective sections of the EIS, including Section 39, as appropriate pursuant to part a) and part b) above.	Section 25 of the EIS Guidelines requires that “... a complete list of mitigation measures contained in the EIS that may be necessary to conclude that a potential adverse effect is either unlikely to result from the Project or is unlikely to be significant.” It also requires that a complete list of follow-up measures be provided. The lists in Section 39 Table 39.1 and Table 39.2 meet those requirements. There is no requirement to include detailed descriptions of the measures in the list. BC Hydro will work with appropriate regulatory authorities in the development of mitigation measures and appropriate follow-up requirements.

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ab_0001-736	Treaty 8 Tribal Association	V.5, S.40.11 ; page(s) 40-5 ; line(s) 37-39 EISG S.26 Comment 5-31.	<i>The residual effects of the Project on Fish and Fish Habitat, on the Current Use of Lands and Resources for Traditional Purposes, and on other VCs are not predicted to combine with the residual effects of the other projects and activities. Comments This statement cannot be made considering the information provided in the EIS, and the current state of knowledge.</i>	The assessment of potential effects of the Project on Fish and Fish Habitat, Current Use of Lands and Resources for Traditional Purposes and on other VCs is in accordance with the EIS Guidelines, and appropriate information is provided in the EIS.
ab_0001-737	Treaty 8 Tribal Association	V.5, S.40.11 ; page(s) 40-5 ; line(s) 31-36 EISG S.26 Comment 5-32.	<i>The residual effects of the Project on two of the VCs listed above, Vegetation and Ecological Communities and Wildlife Resources are expected to be significant and, accordingly, those effects are also significant when considered in combination with the effects of other projects or activities. However, the effects on those VCs resulting from other projects and activities that have been or will be carried out are considered significant, even without the Project. [emphasis added] Comments This statement is made several times in the EIS. It appears to imply that because other projects and activities already have significant adverse residual effects on Vegetation and Ecological Communities and Wildlife, that the additive adverse residual effects of the proposed Project are less important. By this logic, significant effects are justified on the basis that significant effects are already occurring. The potential for the proposed Project to result in additional residual adverse effects that may exceed allowable thresholds and push VCs into an irreparable ecological condition is actually a sound basis on which to conclude that the proposed Project is not justified. Information Request Explain clearly what this paragraph is intended to mean, and how it is relevant to the assessment of the proposed Project.</i>	Section 40.11 of the EIS provides a summary of the potential effects and cumulative effects of the Project that are described in detail in Volumes 2,3 and 4 of the EIS. Detailed information is described in Section 13 Vegetation and Ecological Communities and Section 14 Wildlife Resources in Volume 2 of the EIS. The fact that a significant adverse effect of a project may occur in a place that is already adversely affected is something that the ministers could properly take into account in determining whether that effect is justified. However, in the EIS, BC Hydro does not suggest that the potential significant adverse effects are justified on the basis. Please see Section 40 of the EIS.
ab_0001-738	Treaty 8 Tribal Association	V.5, S.40.11 ; page(s) 40-5 ; line(s) 37 EISG S.26 Comment 5-33.	<i>The residual effects of the Project on Fish and Fish Habitat, on the Current Use of Lands and Resources for Traditional Purposes, and on other VCs are not predicted to combine with the residual effects of the other projects and activities. Comments This conclusion is based on a flawed conceptualisation of the purpose of cumulative effects assessment in this EIS. To choose only one example, it is problematic that losses of habitat essential to Arctic grayling – that may cause this species to be extirpated from another large portion of the river system – added to the losses already incurred in the upper watershed, can fail to be interpreted as a cumulative effect when assessing the ecological effects of a project of this magnitude. Information Request BC Hydro is asked to: a) explain why the additional losses of arctic grayling habitat and other fish species are not considered as a cumulative effect on fish and fish habitat and on the use of lands and resources for traditional purposes; and b) explain how the approach to cumulative effects used in this EIS provides any additional analysis</i>	The assessment of potential effects of the Project on Fish and Fish Habitat is in accordance with the EIS Guidelines and appropriate information is provided in Section 12 of the EIS. Please also see the Technical Memo: Cumulative Effects Assessment.

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			beyond an EA that does not consider cumulative effects of hydroelectric development.	
ab_0001-739	Treaty 8 Tribal Association	V.5, S.40.11 ; page(s) 40-5 40-6 ; line(s) 40-41 1-5 EISG S.26 Comment 5-34.	<p><i>Increasing GHG emissions from the many sources globally and the resulting increase in GHG concentrations in the atmosphere, and the consequent changes to the global climate, are currently believed to be a significant cumulative environmental effect, even without the Project. While the Project's contribution to a net change in global GHG emissions is relatively small and the environmental effect of the Project related GHG emissions (on its own) on global climate is [sic] not measurable, the cumulative effect is considered significant.</i></p> <p>Comments Regardless of the importance of the issue of climate change, habitat loss must be treated with the same level of concern. Habitat loss and conversion is still the largest cause of biodiversity decline worldwide. In this case, the spatial boundary is global as it should be. However, even though the environmental effect of the proposed Project in terms of GHG emissions is not considered to be measurable, the cumulative effect is still rated as significant.</p> <p>Information Request BC Hydro is asked to explain the logic behind this assessment of GHG emissions more thoroughly, particularly whether it is consistent with an approach that excludes a large part of the watershed from a cumulative effects assessment of habitat loss and fragmentation for all other ecological VCs.</p>	<p>Greenhouse gas emissions management is undertaken through provincial and national initiatives; therefore, consideration of the significance of emissions from the Project is appropriately considered in this context.</p> <p>Actual emissions from the Project activity zone would combine in the atmosphere with emissions from all other global anthropogenic sources; therefore, consideration of the cumulative effects of the Project at a global scale is appropriate.</p> <p>The assessment of GHG emissions is described in detail in Volume 2 Appendix S; the approach is consistent with that described by the Intergovernmental Panel on Climate Change (IPCC), Tier 3 which is the most detailed approach.</p>
ab_0001-740	Treaty 8 Tribal Association	V.5, S.40.14 ; page(s) 40-6 ; line(s) 28-31 EISG S.26 Comment 5-35.	<p><i>Finally, the Project would contribute to sustainable development through its optimization of existing BC Hydro hydroelectric facilities on the Peace River and through its delivery of electricity with low GHG emissions intensity.</i> Comments This statement is an oversimplification designed to draw attention away from the significant adverse effects on the proposed Project.</p>	The statement quoted in the comment is true. The statement is found immediately below a summary of the assessment of the potential effects and cumulative effects of the Project (Section 40.11 in the EIS).
ab_0001-741	Treaty 8 Tribal Association	V.5, S.40.15 ; page(s) 40-6 ; line(s) 34-39 EISG S.26 Comment 5-36.	<p><i>The assessment of the potential effects of the Project on 22 valued components indicates that the effects of the Project can largely be mitigated through careful project planning, comprehensive mitigation programs. However, the Project is likely to result in significant adverse effects on four VCs.</i> Comments This statement cannot be made considering the information provided in the EIS, and the current state of knowledge.</p>	The assessment of potential effects of the Project on the 22 valued components is in accordance with the EIS Guidelines and appropriate information is provided in the EIS.
ab_0001-742	Treaty 8 Tribal Association	V.5, S.40.15 ; page(s) 40-7 ; line(s) 17-22 EISG S.26	<p><i>BC Hydro is committed to providing lasting benefits and opportunities to Aboriginal groups and communities through the construction and operation of the Project. Examples of regional benefits would include employment and contracting opportunities, improvements to infrastructure, road upgrades, new</i></p>	<p>Information from the Baseline Profile Section 7.2 was integrated into EIS Section 33 Human Health and Section 34 Asserted and Established Aboriginal and Treaty Rights, Aboriginal Interests and Information Requirements.</p> <p>The Part 7 Community Baseline Report and EIS Integration Summary Table - Doig River First</p>

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		Comment 5-37.	<i>outdoor recreation opportunities and additional affordable housing units.</i> Comments BC Hydro has provided neither a compelling argument that much of these benefits will accrue to T8FNs or their members, neither are they appropriate offsets for the social and cultural loss that local First Nations would certainly experience as a result of the proposed Project. Information Request BC Hydro is requested to consider the overarching goals and aspirations of the Dane-zaa as identified in Section 7.2 of the T8FNs Community Assessment Baseline Profile Report, and provide a discussion of how BC Hydro believes that the proposed Project supports or does not supports those identified goals and aspirations.	Nation, Halfway River First Nation, Prophet River First Nation, West Moberly First Nations - was omitted from the EIS filing in error; however, where relevant, the information was taken into account in the environmental assessment. The omission of the table has been included on the List of Errata and Updated Information. Please also see EIS Section 7 for a description of Project benefits and Section 34.7.1 for information regarding impact benefit agreements.
ab_0001-743	Treaty 8 Tribal Association	V.5, Appendix A06 Part 3 ; page(s) 2 ; line(s) EISG S.15.2.3 Comment 5-38.	Comments It should be noted that the TLUS Local Study Area (LSA), which was the area of focus in the interviews, covers a larger area than the Current Use of Lands and Resources (Wildlife Resources) LAA. The TLUS LSA encompasses the footprint of the proposed Project with a 5 kilometre buffer whereas the Current Use of Lands and Resources (Wildlife Resources) LAA includes the footprint with a 1 kilometre buffer. Information Request BC Hydro is asked to: a) clarify why it chose to ‘translate’ the data provided by the four T8TA First Nations into a new summary considering that the T8FNs provided their own report directly to BC Hydro, including an executive summary, and this report is included in its entirety as an appendix to the EIS; b) provide a full description of the efforts that BC Hydro made to confirm that the accuracy of information was maintained, and nothing important was ‘lost in translation’ of the data and summary provided by the T8FNs; c) clarify how the author of the ‘translation’ considered the limitations expressed in the submission of the T8FNs; and d) explain why it chose to use the much smaller Wildlife Resources LAA for summarizing the data provided by the T8FNs, and for describing their current use of lands and resources, given that the T8FNs identified a larger LSA as being relevant to analysis of Project effects.	In developing the description of baseline conditions for Section 19, BC Hydro considered a number of information sources, including those identified in Section 19.2.1 and in the references that are included at the end of the section. BC Hydro's summary was informed by a number of sources and reflects and is an accurate reflection of the information made available by Aboriginal groups. The use of the LAA to frame the presentation of the baseline description meets the requirements of the EIS Guidelines. Information that the T8FNs shared with BC Hydro on its uses in the larger Local Study Area (LSA) was considered in the effects assessment. Please also see the response to ab_0001-527
ab_0001-744	Treaty 8 Tribal Association	V.5, Appendix A06 Part 3 ; page(s) 2 ; line(s) EISG S.15.2.3 Comment 5-39.	<i>Footnote 7 Overlapping of symbols in several areas on the TLUS Results maps makes differentiation and interpretation difficult. There are also differences in some of the symbols depicting the same resource on the Study Results maps and the Comprehensive Results map. For example on the larger scale map the symbol is for a “chicken” whereas on the smaller scale map the symbol is for a grouse. The symbols used to depict the use values on the maps are of comparable size on the 1:50,000 scale maps and the 1:250,000 scale Comprehensive Study Results map, making accurate location difficult to determine on the latter</i> Comments BC Hydro indicates that it, or its consultants,	With respect to efforts made to clarify information provided to BC Hydro by the T8TA FN's, please see response to ab_0001-528. Table 19.14 Characterization of Residual Effects provides the characterization of potential residual effects on the current use of lands and resources for traditional purposes, and summarizes the characterization described in section 19.5.3. The EIS Guidelines did not require a characterization of uncertainty in the assessment of potential impacts of the Project on the exercise of asserted or established Aboriginal or treaty rights.

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			had difficulty interpreting a number of mapped features, including particular fish species, places with overlapping or clustering of symbols, and polygon or line features provided to BC Hydro by the four T8TA First Nation. Information Request BC Hydro is asked to: a) indicate what efforts, if any, were made to clarify information provided by the T8FNs prior to submission of the EIS, where it was uncertain how to interpret the information; and b) provide a characterization of the uncertainty, or margin of error that exists in the assessment regarding impacts on rights and interests of the T8FNs as a result of interpretation of the materials provided by the T8FNs.	
ab_0001-745	Treaty 8 Tribal Association	V.5, Appendix A06 Part 3 ; page(s) 13 ; line(s) EISG S.15.2.3 Comment 5-40.	Comments As elsewhere in the EIS, BC Hydro has been very selective in the material referenced from the T8FNs Community Assessment Baseline Profile Report. In particular, BC Hydro seems to have focused almost exclusively on the ‘counting’ of icons on maps. Information Request BC Hydro is asked to: a) clarify whether in developing its summary, it considered the preamble to the T8FNs Community Assessment Baseline Profile Report in which the importance of the Peace River valley is highlighted and, if so, indicate how it was considered; and b) clarify whether in developing its summary, it considered the causes and effects of alienation, specifically from previous hydroelectric projects, presented in the T8FNs Community Assessment Baseline Profile Report and, if so, indicate how they were considered.	Please see the response to ab_0001-532.
ab_0001-746	Treaty 8 Tribal Association	V.5, Appendix A06 Part 3 ; page(s) 22 ; line(s) EISG S.15.2.3 Comment 5-41.	Comments These are all land use maps from Brody’s “Maps and Dreams”. These maps were created as a response to the proposal for the Alaska Highway Pipeline and from a “first generation” project-specific TLUS. Significant use areas were not included because of the focus of the study. Also, in some cases the level of participation from the communities in creating these maps was minimal. For example, Brody indicates that at West Moberly only “a small number of hunters” drew land use maps. In summary, these maps must be used with caution as they are not necessarily representative of First Nation land use generally and are specific to a different project.	Thank you for your comment.
ab_0002-001	Kwadacha First Nation		We are writing to provide comments on behalf of the Kwadacha First Nation (“Kwadacha”) with regards to the Environmental Impact Statement (“EIS”) for the proposed Site C dam and hydroelectric generating station (the “Site C Project”). As stated in our previous correspondence, Kwadacha has not taken a position in support or opposition of the Site C Project, and continues to monitor and assess the issues and the potential benefits and impacts associated with it. The comments presented here supplement Kwadacha’s previous comments	Thank you for providing your input during the public comment period for the Environmental Impact Statement (EIS) for the Site C Clean Energy Project. BC Hydro first engaged with Kwadacha with respect to the Project in November 2007and entered into a Consultation Agreement for the Site C Project on November 26, 2010. The Consultation Agreement specifically speaks to the 2008 Final Agreement commitments, in particular sections 9.8 and 9.9, and identifies the following BC Hydro objectives with respect to the consultation: (1) gain further understanding of Kwadacha’s Section 35(1) Rights and the potential impacts of the

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			<p>provided in response to correspondence and other documents from BC Hydro and the provincial and federal governments. In previous discussions and correspondence, and most recently in our letter to Trevor Proverbs, Director of First Nations Engagement for the BC Hydro Site C Project, dated January 31, 2013, Kwadacha has outlined four key issues relating to the potential impacts of the Site C Project:</p> <p>Issue 1: Effects on water levels and management of the Williston Reservoir; Issue 2: Effects on regional ungulate and large carnivore populations; Issue 3: Availability and escalating costs of regional goods and services; and Issue 4: Cumulative effects and related social and environmental factors arising from the Site C Project in combination with other anticipated resource development projects.</p> <p>Kwadacha continues to have concerns with respect to how these issues have been addressed in the EIS for the Site C Project.</p> <p>BACKGROUND</p> <p>The Kwadacha have historically depended on and continue to depend on the lands and natural resources within their area of traditional use and stewardship for the modern equivalent of sustenance, a moderate livelihood and social, cultural and ceremonial use. The use and stewardship of these land, waters and resources by the Kwadacha is integral to the Kwadacha governance and economy.</p> <p>Kwadacha and BC Hydro concluded a Final Agreement on November 27, 2008 to address the resolution of all past, present and future issues, grievances and claims of Kwadacha relating directly or indirectly to the impacts of the W.A.C. Bennett Dam, the Peace Canyon Dam, the Williston Reservoir and any other related and existing works (the “Final Agreement”). Pursuant to this Final Agreement, BC Hydro is bound to fulfill a number of obligations in the case of any hydro-electric projects that depend on water within the Williston Reservoir and are within the area of the main stem of the Peace River between Peace Canyon and the Alberta border. The obligations within the Final Agreement extend to the proposed Site C Project and require BC Hydro to engage Kwadacha in a process that ensures any potential impacts are identified and efforts are proactively undertaken to address such potential impacts.</p>	<p>Project on Kwadacha and its Section 35(1) Rights and Reserves; (2) identify and consider strategies or measures to avoid, mitigate, manage and/or otherwise accommodate those potential adverse impacts, as necessary; and (3) identify and assess, in accordance with and to the extent provided in section 9.9 of the Final Agreement, potential investment, contracting, or other opportunities for Kwadacha that may arise from the Project.</p>
ab_0002-002	Kwadacha First Nation	Volume 2 Appendix D, Part 1 (Volume	<p>ISSUE 1: Effects on water levels and management of the Williston Reservoir</p> <p>Kwadacha remains concerned about the potential effects that the Site C Project may have on water levels and water management of the Williston Reservoir.</p>	<p>As described in Section 11.4.4.2.1 of the EIS, to assess the potential changes to the surface water regime during operation of the Project, optimization modelling was completed to estimate possible future operations of the integrated hydroelectric system for scenarios with and without</p>

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		2, s 11.1), page 7, line N/A (Appendix) Comment #1	<p>Contrary to the comments in Trevor Proverbs' letter dated March 11, 2013, these concerns are not associated with the historic and ongoing impacts of the Williston Reservoir on Kwadacha. Rather, <u>these concerns are associated with changes and other impacts on the Williston Reservoir that might be caused by the operation of the Site C Project</u>, particularly in light of the intended use of the Williston Reservoir for storage purposes and the planned coordination of the Site C generating system with the operation of existing upstream facilities.</p> <p>We have reviewed the EIS and find that despite our previous comments on the potential adverse upstream effects of the Site C Project, the <u>primary focus in the EIS Guidelines remains limited to water levels and management downstream of the proposed Site C Project</u>. We note that although extensive downstream flow modelling was conducted for the EIS (Volume 2 Appendix D, Parts 2 and 3), <u>no similar efforts were undertaken to model upstream impacts associated with using the Williston Reservoir for storage purposes</u>. Rather, the EIS merely provides a description of the existing hydro-electric projects on the Peace River (Volume 2, section 11.1), without providing a technical analysis of the impacts that the proposed Site C Project may have on these existing projects and associated reservoirs.</p> <p><u>We emphasize the importance of an accurate quantification of potential changes to water levels and the duration and timing of drawdown and high water periods in Williston Reservoir as a result of the Site C Project</u>. Kwadacha has an interest in understanding how water elevations may change in the future as a result of the Site C Project. We reiterate that this change is not associated with the ongoing use of Williston Reservoir, but rather on impacts to this use caused by the Site C Project. Without adequate modelling of these impacts, our concerns remain outstanding.</p> <p><u>Outstanding Request:</u> Conduct thorough modelling of upstream impacts of the proposed Site C project, in particular with respect to potential impacts on the Williston Reservoir.</p>	<p>the Project. As expected, there were differences in the operation of each hydroelectric facility between the two simulations, both in terms of reservoir outflows and reservoir water levels. The 10th, 50th, and 90th percentile water levels of the Williston Reservoir were predicted to be approximately 0.6 m lower with the Project, but at all times the Williston water level remained within the existing licensed range.</p>
ab_0002-003	Kwadacha First Nation	Volume 2, s 14, Section in general Comment 2a	<p>ISSUE 2: Effects on regional ungulate and large carnivore populations</p> <p>As repeatedly mentioned throughout our earlier correspondence, Kwadacha has significant concerns with the potential adverse effects of the Site C Project on wildlife movements, migrations, and populations; in particular ungulates and large carnivores in the larger region north and west of the Site C Project. These potential adverse effects could considerably impact the ability and success of</p>	<p>The scope of the assessment on Wildlife Resources, including ungulates, is in accordance with the EIS Guidelines and appropriate information is provided in the EIS. The assessment of potential effects of the Project on Wildlife Resources is assessed within the LAA, where habitat alteration and fragmentation, disturbance and displacement and mortality are anticipated.</p>

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			<p>current and future wildlife harvesting and tourism activities in Kwadacha traditional territory and adjacent lands traditionally used by Kwadacha members. To date, these effects have been inadequately considered as reflected by the lack of field studies and qualified projections of the extent and significance of potential impacts on lands to the north and west of the project, and as the review of baseline for large carnivores is limited to a desktop data review as opposed to actual field studies.</p> <p>Outstanding Request: Complete field studies for ungulates and large carnivores across the Peace River Regional District, including to the north and west of the proposed project, and provide qualified projections of the extent and significance of these potential impacts.</p>	
ab_0002-004	Kwadacha First Nation	Volume 2, page 14-20, Page in general Comment 2b	<p>We remain concerned about the limited scope of the Regional Assessment Area (“RAA”) for the Wildlife Resources Valued Component (“VC”). This RAA is restricted to the Peace Lowlands Ecosection and does not adequately take into account the potential wider scale impacts of the project on wildlife and ungulate winter ranges.</p> <p>The limited scope of the study is reflected in Appendix R, which states that the study was limited to the Peace River, between the Peace Canyon dam and the Alberta border (page 122). Notably, this study also acknowledges the considerable distance that elk travel over short distances, which reflects the high likelihood that ungulates will travel across wide areas, that are much larger than the limited Peace Lowlands Ecosection area covered by the EIS (page 147). It also notes that “[m]ortalities due to seasonal flooding are expected to be small since most ungulates will move away” (page 247); yet, the EIS does not consider the broader impacts associated with such a “move”.</p> <p>We note that although several species of wildlife were classified in the EIS as non-migratory, wildlife displacement across larger areas may occur as a direct result of disruptive construction activities undertaken for the Site C Project. These impacts were not adequately addressed in the EIS.</p> <p>Outstanding Request: Complete an assessment of the Wildlife Resources VC across the entire Peace River Regional District.</p>	<p>The RAA for the Wildlife Resources VC was changed from what is described in the EIS Guidelines to an area that includes 5 Management Units (see Section 14.1.5.1 and Figure 14.1) surrounding the LAA.</p> <p>The study referred to is the Peace River Ungulate Study. The area designated for the capture of study animals was between the Peace Canyon dam and the Alberta Border. The study area was defined by the movement of the study animals (See Volume 2, Appendix R, part 7, Section 1.4.2.1, page 123). The 12 objectives of this study are listed in Volume 2, Appendix R, part 7, Section 1.4.1, page 122. Ungulates (including movement) and ungulate winter ranges are considered within the effects assessment.</p>
ab_0002-	Kwadacha	Volume 3, p.	The Peace River Regional District, which includes Kwadacha traditional territory	Potential effects of the Project on ungulate populations are described in Section 14 of the EIS.

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005	First Nation	24-47; Volume 2, p. 14-65, Pages in general Comment 2c	<p>and the present day Kwadacha community on Fort Ware Reserve #1, would provide a more representative picture of the displacement of wildlife and the combined residual effects of the Site C project along with other projects and activities for consideration in the cumulative effects assessment. These considerations are particularly important in evaluating habitat fragmentation and alteration of wildlife caused by the proposed Site C Project.</p> <p>Concurrently, Kwadacha is concerned about the unsupported allegation that there will be no residual effects expected on hunting opportunities during operations, coupled with the fact that the proposed mitigation measure for mortality of ungulates is limited to encouraging temporary workers not to hunt within the Local Assessment Area (“LAA”). This area is clearly insufficient for considering the full impacts of the proposed project, and should be expanded to cover the entire Peace River Regional District across which workers are likely to travel for recreation purposes.</p> <p>Outstanding Request: Complete an assessment of impacts on the displacement of wildlife from the combined residual effects of the Site C project along with other projects, and the likely travel of workers for recreational purposes across the entire Peace River Regional District.</p>	<p>Section 14.3.1.6.4 describes potential effects associated with habitat loss and fragmentation, Section 14.3.2.6.4 describes potential effects associated with disturbance and displacement and Section 14.3.3.6.4 describes potential effects associated with mortality. An assessment of potential cumulative effects is presented in Section 14.6.</p> <p>Potential effects of the Project on hunting are described in Section 24.4.7 of the EIS. Section 24.4.7 concludes that effects on wildlife populations would not occur over an extended period of time or over a much larger area due to significant increases in hunting and other recreational traffic associated with a very large and mobile workforce. The EIS does consider the potential changes to demand for hunting opportunities through the construction period due to direct, indirect and induced population changes as determined in the Project population model described in EIS Section 28 Population and Demographics. As described in the EIS, the demand for hunting opportunities and hunting licences in the Peace River Regional District would increase in the first five years of construction and start to decline in Year 6. The analysis indicates the Project would be expected to increase the number of licensed hunters by 265 by Year 5 of construction or an average of 44 per year; 265 hunters represents 3% of the baseline number of hunters. After Year 5 of construction, demand for hunting licences would be expected to decrease by 185 hunters over the last three years of the construction phase. The net change in licensed hunters during the construction period would be an estimated increase of 80, or an average increase of nine hunters per year. The potential effect of the Project on use of harvesting areas is considered positive with no associated effect on supporting wildlife populations.</p>
ab_0002-006	Kwadacha First Nation	Volume 2, page 14-81 & Table 14.5, Pages in general Comment 2d	<p>In Table 14.5, we note the lack of habitat modelling for ungulates. This is particularly disconcerting in light of the likely impacts of lost and fragmented habitat, increased human traffic and other cumulative impacts associated with the Site C Project on ungulates across the Peace River Regional District. Concurrently, we are concerned about the unsupported allegation that the extent of disturbance on ungulates is site specific and that highways and the reservoir will not form barriers to movement.</p> <p>Outstanding Request: Complete habitat modelling of ungulates across Peace River Regional District.</p>	<p>Please see Volume 2, Appendix R, Part 7 (page 133) for a description of the modeling used for the ungulates (Resource Selection Functions).</p> <p>Please also see the Technical Memo: Spatial Boundary Selection.</p>
ab_0002-007	Kwadacha First Nation	Volume 2, page 14-40, 14-49, Pages in general Comment 2e	<p>During winter months, when the new reservoir is partly frozen, ungulates will likely attempt to cross it. The EIS itself admits that the frozen reservoir will likely facilitate more winter movements. Concurrently, this increases the risk of drowning mortalities as animals get trapped by weak ice or by ice shelves. Inadequate mitigation measures are provided in the EIS to address this risk.</p>	<p>As described in Section 9.2.4 (Process for Resolving Issues with Aboriginal Groups), BC Hydro will seek to address outstanding issues by, among other activities, “continuing to seek input and engage in dialogue regarding the EIS and the Project, and to answer questions and address issues, interests, and concerns from Aboriginal groups by identifying appropriate mitigation measures and/or other appropriate means by which to address or resolve potential impacts”.</p>

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			Outstanding Request: Provide adequate mitigation measures to address the risk of drowning mortalities by ungulates seeking to cross the reservoir during winter months.	Fewer ungulate crossings of the Peace River were observed in the winter compared to other seasons. BC Hydro is not planning specific mitigation measures to address the risk of drowning mortalities of ungulates.
ab_0002-008	Kwadacha First Nation	Volume 2, page 14-56, Page in general Comment 2f	<p>With further regards to the proposed mitigation measures for ungulates, we note that the EIS states that BC Hydro will consider using feeding programs during severe winters. We question the effectiveness and unintended consequences on migration patterns associated with such a program and remain concerned that these proposed mitigation measures are insufficient. We requests that BC Hydro reconsider what mitigation measures are adequate to address the likely impacts of the project on ungulates. Nevertheless, if the feeding program is deemed necessary, we recommend that local First Nations be involved in implementing such feeding programs and other mitigation measures.</p> <p><u>Outstanding Request:</u> Expand planned mitigation measures to address likely impacts of the Site C project on ungulates.</p>	<p>Section 14, Tables 14.15, 14.16 and 14.17 provide the list of proposed mitigation measures for Wildlife Resources.</p> <p>No additional measures are proposed at this time. BC Hydro will work with appropriate regulatory authorities in the development of mitigation measures.</p> <p>As described in Section 9.2.4 (Process for Resolving Issues with Aboriginal Groups), BC Hydro will seek to address outstanding issues by, among other activities, “continuing to seek input and engage in dialogue regarding the EIS and the Project, and to answer questions and address issues, interests, and concerns from Aboriginal groups by identifying appropriate mitigation measures and/or other appropriate means by which to address or resolve potential impacts”.</p>
ab_0002-009	Kwadacha First Nation	Volume 2, page 14-101, Page in general Comment 2g	<p>Finally, we note the lack of follow-up plan for ungulates in the EIS. This is a significant omission, particularly in light of the lack of mitigation measures and inadequate spatial consideration of the impacts of the Site C Project on ungulates discussed above.</p> <p><u>Outstanding Request:</u> Complete wider scale monitoring and prepare a follow-up plan for ungulates across the Peace River Regional District.</p> <p>Grant Kwadacha and other area First Nations preference for carrying out mitigation activities in the areas upstream of the proposed Site C Project.</p>	<p>The BC Ministry of Forest, Land and Natural Resource Operations monitors ungulate trends for the Peace Region and hunting/harvest allocation.</p> <p>As described in Section 9.2.4 (Process for Resolving Issues with Aboriginal Groups), BC Hydro will seek to address outstanding issues by, among other activities, “continuing to seek input and engage in dialogue regarding the EIS and the Project, and to answer questions and address issues, interests, and concerns from Aboriginal groups by identifying appropriate mitigation measures and/or other appropriate means by which to address or resolve potential impacts”.</p> <p>The assessment of potential effects on ungulates is in accordance with the EIS Guidelines and appropriate information is provided in the EIS.</p> <p>Please also see the Technical Memo: Spatial Boundary Selection.</p>
ab_0002-010	Kwadacha First Nation	Volume 4, section 30, page 34, line 30-7 Comments 1 to 21	<p>ISSUE 3: Availability and escalating costs of regional goods and services</p> <p>Although the LAA for Community Infrastructure and Services encompasses the Peace River Regional District, which includes Kwadacha Traditional Territory, there is no discussion of the impact on community infrastructure and services, and associated costs of regional goods and services for Kwadacha in Fort Ware.</p> <p>There is also no indication of projected effects on the availability and escalating costs of labour, trades and other services and construction materials as a result</p>	<p>The scope of the Community Infrastructure and Services effects assessment is in accordance with the EIS Guidelines and appropriate information is provided in the EIS. Changes in demand for community infrastructure and services due to the Project are expected to correspond with Project related population changes, as described in Section 28 of the EIS, primarily in the Fort St. John area. Fort Ware is not expected to see a Project related population change due to the distance to the Project.</p> <p>Section 17.3.3 describes baseline conditions for labour force and skills, shortages and surpluses for the labour market VC local assessment area. In response to the baseline information</p>

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			<p>of the Site C Project both alone and combined with other existing and reasonably foreseeable projects in the Peace River Regional District.</p> <p><u>Outstanding Request:</u> Complete literature reviews and interviews on community baseline information for Kwadacha and Fort Ware.</p> <p>Assess impacts of the project alone and cumulatively with other existing and projected projects on availability and escalating costs of labour, trades and other services and construction materials.</p>	<p>identified, proposed mitigation would be focused on increasing the supply of labour through increasing workforce participation and recruiting from outside labour pools, and are described in Section 17.4.3.</p> <p>Please also see the Technical Memo: Workforce and Population Estimates During Construction.</p>
ab_0002-011	Kwadacha First Nation	Volume 3, section 24, page 34, lines 24-56 to 24-58 Comment 4	<p>ISSUE 4: Cumulative effects and related social and environmental factors arising from the Site C Project in combination with other anticipated resource development projects</p> <p>Kwadacha is concerned about the cumulative effects assessment of the Site C project and other anticipated resource development projects on wildlife resources. As we have suggested on several occasions, it is likely that these impacts will be long-term and extend across large areas due to increases in hunting and other recreational traffic associated with the influx of Site C workers, which will displace wildlife populations and change land use and predatory patterns. Notably, this is acknowledged in the EIS, which states that: “During project construction, hunting would be displaced from the LAA to other parts of the RAA. The same effect is expected to occur with the above identified RAA projects. Therefore, access to public hunting areas would be expected to decrease overall, resulting in a cumulative residual adverse effect.” (page 24-56). Insufficient support is provided for the subsequent conclusion that “the effect is not considered significant” (page 24-58), particularly in light of the lack of lack of evidence that the effect will be reversible (page 24-57). Kwadacha notes that a long-term construction project, which entails several years of disruption, can irreversibly disturb some key local species, including ungulates.</p> <p>In addition, Kwadacha is concerned about the impacts that shortages in labour, trades and other services and construction materials will have on the already stressed housing market in Fort Ware. The EIS does not consider these impacts associated with the construction of the Site C project both alone and cumulatively with other existing and projected projects within the Peace River Regional District.</p> <p><u>Outstanding Request:</u></p>	<p>The assessment of the potential for the Project to adversely affect wildlife resources, hunting opportunities, labour market, housing and the use of lands and resources for traditional purposes, and of potential cumulative effects for each of these Valued Components, are described in the following sections of the EIS:</p> <ul style="list-style-type: none"> - Section 14 (Wildlife Resources) - Section 17 (Labour Market) - Section 19 (Current Use of Lands and Resources for Traditional Purposes) - Section 24 (Harvest of Fish and Wildlife Resources) - Section 29 (Housing) <p>The potential for the Project to impact the exercise of asserted Aboriginal rights are described in Section 34 (Asserted or Established Aboriginal Rights and Treaty Rights, Aboriginal Interests and Information).</p> <p>The Local Assessment Area (LAA) and the Regional Assessment Area (RAA) for the current use of lands and resources for traditional purposes VC are described in Volume 3, section 19.1.5.1. “The LAA was defined in consideration of the expected maximum geographic extent of the potential for the Project to cause an adverse effect on the VC current use of lands and resources for traditional purposes”.</p> <p>Based on the findings of the assessment in Section 19, which considers the findings of the assessment on harvest of fish and wildlife resources in Section 24, BC Hydro does not anticipate an effect on the current use of lands and resources for traditional purposes by Kwadacha First Nation. With respect to the comment regarding potential increased hunting pressure, BC Hydro is prepared to discuss the findings of these assessments with Kwadacha First Nation.</p> <p>Please also see the following Technical Memos</p> <ul style="list-style-type: none"> - Spatial Boundary Selection - Cumulative Effects Assessment

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			<p>Complete cumulative adverse effects assessment on reductions in wildlife resources and associated impacts on Kwadacha hunting opportunities caused by the combined effect of the Site C Project and other reasonably foreseeable resource development projects.</p> <p>Complete cumulative adverse effects assessment on the impacts on the housing market in Fort Ware caused by shortages in labour, trades and other services and construction materials from the construction of the Site C project both alone and cumulatively with other existing and projected projects within the Peace River Regional District.</p>	<p>Section 17.4.3 of the EIS, identified measures that would focus on augmenting labour supply in the region for the Project, including recruitment and accessing the labour pool outside the region attracting new entrants to the local labour force and enhancing the local labour market participation rate and skill level in the LAA. With implementation of the mitigation measures, the Project would maintain a balance in the local labour market.</p>
ab_0003-001	Fort Nelson First Nation	Appendix P2 Part 1 CE-QUAL-W2, page(s) n/a, line(s) n/a; Comment # Keefer preamble1&2	<p><u>General Comments – Fish and Fish Habitat – Section 12</u></p> <p>The EIS is a significantly large document with much of the supporting data buried deep in the appendices or in referenced material listed in the reference section. With this in mind, there is neither sufficient time nor financial resources to complete a comprehensive review of the proposed project. Some subjects could not be reviewed because of a lack of time. These include for example Table 2-2 (Appendix A), Table 12.6, Table 12.12, Appendix D, and Table 12.22. As such, the absence of comment on a specific part of the EIS does not necessarily mean that the reviewers agree with the statements.</p> <p>Appendix P2 Part 1 CE-QUAL-W2</p> <p>Using Dinosaur reservoir to calibrate and compare to future Site C dam; Dinosaur reservoir is 21km long (187 mm3 of water), future Site C is 81 km long (2840 mm3), so four times as long, and several times bigger. How comparable are they then, does it matter that one is substantially larger?</p>	<p>The use of Dinosaur Reservoir for calibration and comparison is valid.</p> <p>Please see the response to ab_0003-011.</p>
ab_0003-002	Fort Nelson First Nation	Appendix P2 Part 1 CE-QUAL-W2, page(s) 13, line(s) n/a; Comment # Keefer preamble3	<p>P.13: say that the model is acceptable to use for the proposed site C only if its predictions match the seasonal variations and observations at Dinosaur reservoir and Peace River.... Why? Dinosaur reservoir is much smaller. Do they mean same variation but wider amplitude? Why would the values in the proposed Site C not be more important given its much larger size and volume?</p>	<p>Section 3.3.3 in Volume 2, Appendix P, Part 2 presents a summary of the performance criteria used to verify the adequacy of CE-QUAL-W2 to model the proposed Site C reservoir. Matching seasonal variations and observations at Dinosaur Reservoir and the Peace River are adequate performance criteria since all bodies of water (Dinosaur Reservoir, the Peace River and the proposed Site C reservoir) are subjected to the same temporal variations of the climate and water quality (i.e., total suspended solids, dissolved solids and nutrient loadings). More details on the verification of the adequacy of CE-QUAL-W2 to model the proposed Site C reservoir can be found in Volume 2, Appendix P, Part 2, Section 4.4.</p> <p>Please also see the response to ab_0003-011.</p>
ab_0003-003	Fort Nelson First Nation	Appendix P2 Part 1 CE-	<p>Results of validation of model not presented in that appendix, why?</p>	<p>The validation concluded that the model performed as expected and with the same level of accuracy as observed during the calibration in Volume 2, Appendix P, Part 2.</p>

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		QUAL-W2, page(s) 40, line(s) n/a; Comment # Keefer preamble4		
ab_0003-004	Fort Nelson First Nation	Appendix P2 Part 1 CE- QUAL-W2, page(s) 43, line(s) n/a; Comment # Keefer preamble5	P.43: says “periphyton biomass over time was of the same order of magnitude as that of Dino Reservoir and Peace river”. Actually means that the proposed Site C will be much less productive than the other two systems since it has way more water? Same periphyton biomass diluted in way more volume of water? Or are they talking about density?	Predictions of periphyton biomasses in Volume 2, Appendix P, Part 2 are expressed as unit of mass per area (i.e., g/m2). The statement identified in the comment (page 43) is comparing biomass on a mass per unit area basis.
ab_0003-005	Fort Nelson First Nation	Appendix P2 Part 1 CE- QUAL-W2, page(s) 50, line(s) n/a; Comment # Keefer preamble6	“sensitivity of phytoplankton and periphyton biomasses to changes in flows was small to negligible”... We wouldn’t say that 6-9 fold variation in periphyton biomass is negligible. Especially if the scenario that actually happens is the one with a 3-fold decline in periphyton.	As indicated in Volume 2, Appendix P, Part 2, Section 4.8, “Both phytoplankton and periphyton were most sensitive to nutrient loadings (i.e., most of the variations in biomass resulted from changes in nutrient loadings and not in flow, and TSS concentrations).” This statement indicates that most of the changes in phytoplankton and periphyton biomasses can be explained by changes in nutrient loadings. The statement identified in the comment, which was provided in Volume 2, Appendix P, Part 2, Section 4.8, is valid. Changes in flows are predicted to induce small to negligible changes in phytoplankton and periphyton biomasses.
ab_0003-006	Fort Nelson First Nation	Appendix P3: future conditions in the Peace River, page(s) n/a, line(s) n/a; Comment # Keefer preamble7	Appendix P2 Part 1 CE-QUAL-W2 The modelling approach appears realistic and well done, except for one criticism around grouping the fish in three groups, which makes it easier to mask the decline of some populations with the increase of others.	There is no universally acceptable way of grouping fish species for the purposes of summarizing results. The rationale for the chosen species groups is presented in Section 6.2.2 of Volume 2, Appendix Part 3. The overall effects on the upstream and downstream biomass densities (t/km2) of all major fish species (over both the early and longer term stages) are summarized for a range of Ecopath and CE-QUAL-W2 scenarios in Appendix 6B of Volume 2, Appendix Part 3.
ab_0003-007	Fort Nelson First Nation	Appendix P3: future conditions in the Peace	p.8: Increase in kokanee greatly relying on recruitment from the Williston reservoir, two dams up; is this a realistic assumption?	The assumption is appropriate. Please see the response to ab_0001-246 for references to report sections describing kokanee model assumptions and methods.

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		River, page(s) 8, line(s) n/a; Comment # Keefer preamble8		
ab_0003-008	Fort Nelson First Nation	Appendix P3: future conditions in the Peace River, page(s) 62, line(s) n/a; Comment # Keefer preamble9	P.62: In summary: reduction in biomass of AG and mountain whitefish under all scenarios, reduction in biomass of bull trout under likely and minimum scenarios (in reservoir); reduction in biomass of group 1 fish under all scenarios downstream of dam (particularly for walleye, northern pike and burbot). Decrease <u>expected to be more than offset</u> by upstream reservoir increases in biomass of burbot, lake trout, northern pike, and rainbow, kokanee and lake whitefish, and downstream increases in mountain whitefish... Can we really offset declines in biomass of given species by increases in the biomass of other species? Not very ecologically valid, nor economically or culturally. What is the value of a species? And how can we really trade-off some species for others?	<p>For Clarification: The summary of changes in individual species provided this comment is not accurate.</p> <p>The potential effects of the Project on the overall upstream and downstream biomass densities (t/km2) of all major fish species are summarized for a range of Ecopath and CE-QUAL-W2 scenarios (over both the early and longer term stages) in Appendix 6B of Volume 2, Appendix P3.</p> <p>Changes in species composition are considered in addition to changes in overall biomass. Section 12.6.2 of the EIS (pg. 12-86) describes the two criterion for determining significance, and the rationale for these standards: "A significant residual affect is assigned if the Project component or activity is predicted to result in either: a) the loss of an indigenous fish species, sub-species, populations, or distinct groups or, b) a reduction in the long-term average standing stock biomass of the fish community relative to the existing baseline condition."</p>
ab_0003-009	Fort Nelson First Nation	Section 12 Fish and Fish Habitat (General Comments), page(s) n/a, line(s) n/a; Comment # Keefer preamble10	Be careful about the comparison of total biomass, or any other global indicator, between current and future conditions; the area of water will increase by 3.3-fold, so it is normal some indicators will increase substantially but it does not mean the productivity of the system is better than before. Densities would be more valid indicators to compare the productivity of the system before and after disturbance. We find that especially misleading when discussing an increase in total biomass of fish, while many populations are expected to decline substantially.	The rationale for using biomass as a measure of change is described in Section 12.6.2 (pg. 12-86). Densities are taken into account. The potential effects of the Project on the overall upstream and downstream biomass densities (t/km2) of all major fish species are summarized for a range of Ecopath and CE-QUAL-W2 scenarios (over both the early and longer term stages) in Appendix 6B of Volume 2, Appendix P3. The reference biomass densities for the reservoir (column 2 in Table 6B.1 of Volume 2, Appendix P3) are equal to the biomass densities for the Peace River upstream reach divided by 3.3, to account for distribution of the pre-Project biomass over a 3.3-fold larger area of the reservoir.
ab_0003-010	Fort Nelson First Nation	Section 12 Fish and Fish Habitat (General Comments), page(s) n/a, line(s) n/a; Comment # Keefer	We disagree with their assessment of ramping and stranding risks. The discharge rates of change are high and The stage change is not negligible. We can expect effects on fish. and mitigation is needed, although it won't be offsetting all impacts.	<p>Fish stranding during the construction stage and operation stage of the Project is described in Section 12.4.3.2 and 12.4.4.1, respectively. These sections discuss the risk of fish stranding downstream of the dam, including implications downstream of the Pine.</p> <p>Mitigation is proposed. As stated in Section 12.5, the follow-up program for stranding include surveillance of fish habitat areas where periodic exposure of channel margins occurs as a result of flow fluctuation and, as feasible, salvage and relocation of fish trapped in potholes, side channels, or other habitat area at risk of dewatering. Also see Section 12.8 Follow-up Programs.</p>

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		preamble11		
ab_0003-011	Fort Nelson First Nation	Section 12 Fish and Fish Habitat (General Comments), page(s) n/a, line(s) n/a; Comment # Keefer preamble12	We are curious about the validity of comparing the proposed Site C dam to the Dinosaur reservoir for the calibration of their CE-QUAL-W2 model, given that the Site C dam would be much larger. See specific comments about that under Appendix 2, Part 1.	The adequacy of CE-QUAL-W2 to describe the hydrodynamics, water quality and biomass (phytoplankton and periphyton) variability in the proposed Site C reservoir is evaluated in Volume 2, Appendix P, Part 2, Section 4.4. As part of the implementation of CE-QUAL-W2 to the proposed Site C reservoir, the predictions of hydrodynamic variables (including water temperature) from that model were compared against the results of the hydrodynamics model (H3D) used in Volume 2, Appendix H. The comparison (i.e., both model produce similar results; see Volume 2, Appendix P, Part 2, Section 4.4.1) supported the conclusion that CE-QUAL-W2 is adequately implemented to describe the hydrodynamics of the proposed Site C reservoir. Furthermore, the model predictions for water quality and biomass variables in the proposed Site C reservoir were evaluated in Volume 2, Appendix P, Part 2, Section 4.4.2. These predictions indicate CE-QUAL-W2 is adequate to describe phytoplankton and periphyton biomasses, since they meet the following expectations: 1) the predictions account for the loadings from the water sources (i.e., Dinosaur Reservoir and tributaries to the proposed Site C reservoir, Volume 2, Appendix P, Part 2, Section 3.2.4); 2) the predictions describe well the impact of reservoir hydrodynamics on water quality parameters; and 3) the predictions describe seasonal variations well (Volume 2, Appendix P, Part 2, Section 4.4.2).
ab_0003-012	Fort Nelson First Nation	Section 12 Fish and Fish Habitat (General Comments), page(s) n/a, line(s) n/a; Comment # Keefer preamble13	The two greatest threats to fish conservation are 1) the creation of the reservoir and 2) the restriction of fish passage by the dam. The reservoir will radically alter fish habitat resulting in a complete change of the fish assemblage and abundance of existing populations and significantly alter predator/prey relationships. The restriction to fish passage, both upstream and downstream has the potential to significantly fragment populations with no certainty that the trap/haul mitigation strategy will be effective to reduce fragmentation. These conditions will have the greatest impact on bull trout (BT) and arctic grayling (AG).	As described in Section 12.8 of the EIS, a follow-up plan will be implemented to address uncertainty in the prediction of effects assessment and the effectiveness of mitigation. Further, the Fish Passage Management Plan (Volume 2 Appendix Q) outlines an adaptive approach to mitigate potential effects. Please see the Technical Memo: Uncertainty and Precaution.
ab_0003-013	Fort Nelson First Nation	Section 12 Fish and Fish Habitat (General Comments), page(s) n/a, line(s) n/a; Comment # Keefer preamble14	As stated in Q2 Fish Passage Management Plan, "There are potential impacts of the Project on Arctic Grayling from the creation of the reservoir. An alternative was examined that combines downstream tributary collection of Arctic Grayling in the Moberly River with upstream passage for AG. Biological modeling estimates 68% reduction in abundance under this scenario, using a likely downstream collection efficiency of 25%. Some workshop participants expressed doubt as to whether this would maintain a sustainable population over the long term. Thus, it is uncertain whether fish passage could maintain AG in the Moberly."	Please see the response to ab_0001-451.

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			This would appear to contradict statements in the EIS that, "Modeling results indicates that fish passage mitigation is not expected to be biologically necessary to maintain population level conservation values of any species of fish in the Peace River under the range of biological assumptions examined"	
ab_0003-014	Fort Nelson First Nation	Section 12 Fish and Fish Habitat (General Comments), page(s) n/a, line(s) n/a; Comment # Keefer preamble15	It would appear that baseline data regarding the AG population within the project area is insufficient to adequately address concerns and potential impacts of the project. Population abundance, migration strategies and genetic structure are crucial to understand their conservation requirements. There also seems to be no alternative strategy in place in the likely event that the untested trap/haul facility is not effective.	Information on Arctic grayling in the LAA is described in Volume 2 Appendix O, including information on abundance (sub-section 5.0), movement (sub-section 6.0) and genetics (sub-section 7.0). This information is sufficient for the effects assessment. Please also see the response to ab_0001-451. Section 12.8, Follow-Up Programs, describes follow-up programs proposed to 1) verify the accuracy of the effects of assessments, and 2) determine the effectiveness of measures implemented to mitigation adverse effects. BC Hydro will work with appropriate regulatory authorities in the development of mitigation measures.
ab_0003-015	Fort Nelson First Nation	Section 13 Vegetation and Ecological Communities (General Comments), page(s) n/a, line(s) n/a; Comment # Keefer preamble16	General Comments- Vegetation and Ecological Communities- Section 13 The occurrence of plant species and communities at risk in the study area is well documented. What is lacking is any significant detail on plans for habitat re-creation or translocation for those species and communities that will be extirpated by the project, and mitigation measures for those threatened by it. The same can be said for the aboriginal plant species of interest.	BC Hydro will work with appropriate regulatory authorities in the development of mitigation measures.
ab_0003-016	Fort Nelson First Nation	Section 13 Vegetation and Ecological Communities (General Comments), page(s) n/a, line(s) n/a; Comment # Keefer preamble17	The document contains plans for some compensatory re-establishment of lost wetlands, but there are no equivalent plans for lost grasslands. The areal extent of the highly biodiverse Peace River grasslands is small—approximately 14,000ha (Wikeem and Wikeem, 2004) and much of it has already been lost to agricultural development and forest encroachment. The additional loss and degradation of native grasslands posed by the Site C Project is significant, and should be addressed.	Section 13, Table 13.15 provides recommended mitigation measures for vegetation and ecological communities, including grasslands. BC Hydro will work with appropriate regulatory authorities in the development of mitigation measures.

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ab_0003-017	Fort Nelson First Nation	Section 13 Vegetation and Ecological Communities (General Comments), page(s) n/a, line(s) n/a; Comment # Keefer preamble18	The ecological consequences of loss of vegetation and topographic heterogeneity, and the cumulative effects of a third dam on this portion of the Peace River ecosystem are not discussed. Invasive plants pose a major threat to remaining ecosystems adjoining the Project area. Diffuse knapweed, <i>Centaurea diffusa</i> , needs to be recognized as a significant invasive plant in the Site C project area. A management plan must be created for it because burying is not a viable or biologically appropriate strategy. This has been proven at the Stewart Lake gravel pit whereby the infestation has continued even after burying. Many invasive plants that would be flooded or impacted by the flooding also have seeds that float. Significant attention, management and implementation of strategic direction is recommended in order to prevent the spread of these invasive species. Construction soil disturbance and the creation of an extensive drawdown zone create corridors of entry and proliferation of invasive plants. Little detail is provided on invasive plant control and eradication measures.	The Vegetation and Invasive Plant Management Plan (Section 35.2.2.22) will be developed with appropriate regulatory authorities as part of the permitting process, if the Project proceeds. Please also see Section 13.3 in the EIS.
ab_0003-018	Fort Nelson First Nation	Section 14 Wildlife Resources (General Comments), page(s) n/a, line(s) n/a; Comment # Keefer preamble19	General Comments- Wildlife-Section 14 One of the primary objectives of the EIS is to assess the impacts of the Site C project on wildlife at both local and regional scales. In general, the EIS is to be commended for including a wide breadth of species for assessment; however, for the majority of species, the EIS does not adequately assess the impact of the project on specific regional populations because of two important shortcomings. First, the EIS does not adequately assess the relative quality of the habitat expected to be lost or impacted by the Site C project. Habitat varies significantly in quality and high quality patches (i.e. source habitats) play an important role in maintaining wildlife populations at regional scales (Pulliam and Danielson 1991). Determining habitat quality requires species-specific demographic information (e.g. survival and reproductive rates). The EIS uses habitat suitability index (HSI) modeling to infer habitat quality but in most instances the EIS models are simplistic and do not explicitly link demographic performance to habitat. Moreover, for many species, it is unclear how the models contained in the EIS were validated. Without validation, it is difficult to evaluate the reliability of model outputs and inferences (Rolloff and Kernohan 1999). While collecting demographic information for all species potentially impacted by this project is logistically a daunting task, efforts should have been directed to obtaining such information for SARA-listed species, riparian specialists, species dependent on rare ecological communities impacted by the project, and species of importance to First Nations. For the former three groups,	For clarification, the spatial scope of the assessment is in accordance with EIS Guidelines Section 8.4.1 and appropriate information is provided in the EIS. Habitat Suitability models were used to identify and quantify the value of habitats in the LAA to key species groups/indicator species. Habitat suitability maps were built according to RIC Standards and the assumptions are provided in Volume 2, Appendix R. Field information was used to adjust draft assumptions and validate the model, as described in that Appendix. Potential effects of the Project on Wildlife Resources are assessed in Section 14. The scope of the assessment on Wildlife Resources is in accordance with the EIS Guidelines and appropriate information is provided in the EIS.

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			a significant loss of high quality habitat could affect population viability at local and regional scales. For species important to First Nations, a significant loss of high quality habitat could have larger impacts on regional abundances than what is predicted in the EIS. If the effect on regional abundances of wildlife is underestimated, opportunities for First Nations hunting could be impacted to a greater degree than what is suggested by the EIS. Given the information currently contained within the EIS, it is not possible to fully assess how habitat loss and alteration from the Site C Project will affect most regional wildlife populations.	
ab_0003-019	Fort Nelson First Nation	Section 14 Wildlife Resources (General Comments), page(s) n/a, line(s) n/a; Comment # Keefer preamble20	A second shortcoming of the EIS is its cursory assessment of cumulative effects with respect to regional wildlife populations. The cumulative effects assessment is overly simplistic and appears to only evaluate for potential interactions between the Site C Project and other regional developments on a case-by-case basis. A more fully realized cumulative effects assessment would model the effect of all regional developments, including Site C, simultaneously. Importantly, such an assessment would explicitly link the impact of cumulative effects to predicted habitat suitability or population trends on a species-by-species basis (e.g., Nitschke 2008; Sorensen et al. 2008; Strimbu and Innes 2011). At a minimum, this type of cumulative effects assessment is necessary for the important wildlife groups noted above, namely SARA-listed species, riparian specialists, species dependent on rare ecological communities, and species of importance to First Nations.	Section 14 provides an assessment of the cumulative effects of the Project on Wildlife Resources. Section 19 provides an assessment on the potential adverse effects of the Project on Current Use of Lands and Resources for Traditional Purposes, which includes consideration of changes to hunting and trapping opportunities and practices. Please see the Technical Memo: Cumulative Effects Assessment.
ab_0003-020	Fort Nelson First Nation	Section 14 Wildlife Resources (General Comments), page(s) n/a, line(s) n/a; Comment # Keefer preamble21	The scope of the Site C project will necessarily impact many local and regional wildlife populations. Moreover, many of the impacts will be permanent (e.g. loss of terrestrial habitats). For First Nation communities dependent on regional wildlife populations, more certainty is required in expected wildlife responses to the Site C project. For the reasons outlined above and more specifically below, the current EIS contains insufficient information for understanding how wildlife populations and First Nations communities will be affected at a regional scale. To address these concerns, further analyses are necessary, specifically those that explicitly link measures of population-level performance to the cumulative effects of the Site C Project.	Section 14 provides an assessment of the cumulative effects of the Project on Wildlife Resources. Section 19 of the provides an assessment on the potential adverse effects of the Project on Current Use of Lands and Resources for Traditional Purposes, which includes consideration of changes to hunting and trapping opportunities and practices. Please also see Section 34 Asserted or Established Aboriginal Rights and Treaty Rights, Aboriginal Interests and Information Requirements. Please see the Technical Memos on Cumulative Effects Assessment and Spatial Boundary Selection.
ab_0003-021	Fort Nelson First Nation	Section 19 Current Use of Lands and Resources for Traditional	Please see the materials reviewed in regards to Fish, Wildlife and Vegetation (in other Sections) as they provide additional concerns and comments to those listed in the review of Section 19. Overall, Section 19 appears to be a generalized summary, however, it is challenging to know and comprehend what the other First Nations believe to be true without having the opportunity to	While some aspects of this comment are unclear, the following points can be addressed: The methodology used in the assessment on potential effects of the Project on Current Use of Lands and Resources for Traditional Purposes is described in Section 19.1 (Approach) in the EIS. Information considered in the baseline for Fort Nelson First Nation is described in Section

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		Purposes (General Comments), page(s) n/a, line(s) n/a; Comment # Keefer preamble22	review their documentation. Therefore, it is challenging to provide comments. It does appear that Section 19 is broken into individual comments which make it challenging to understand the context of the entire impact spatially and temporally across this landscape. The majority of this information was not technical so we were unable to provide comment. The methodology of Section 19 is missing or unapparent. It also appears that Fort Nelson First Nation is under-represented in the documentation outlined in this Section and that there are no mitigation measures associated with FNFN's concerns or the impacts from this project on FNFN. Although the FNFN Strategic Land Use Plan is listed as a reference it has not been mentioned in Section 19 itself.	19.3.1.8. Volume 5 Appendix A09.3 consists of the Aboriginal Land and Resource Use Summary for Fort Nelson First Nation, and this information was also considered in the development of the baseline. Mitigation measures proposed in Section 19.4 are intended to address potential residual effects of the Project.
ab_0003-022	Fort Nelson First Nation	Section 19 Current Use of Lands and Resources for Traditional Purposes (General Comments), page(s) n/a, line(s) n/a; Comment # Keefer preamble23	There is general concern that the proposed Site C development may take away hunting, trapping and harvesting opportunities from those First Nations who have traditionally utilized the area. The result of this may be increased pressure and presence in the regions to the north, such as in the area primarily used traditionally by Fort Nelson First Nation. A northern migration of hunters and gatherers has the potential to result in increased pressure within Fort Nelson First Nation Traditional Territory. With many issues already facing the wildlife and vegetation in the area around Fort Nelson such as impacts from oil and gas activity including intensified water use, introduction of invasive species and increased demand for moose, this increased pressure may cause social and cultural conflict as well as significant negative impacts to wildlife and vegetation. A concern that is important not only to FNFN but to all Nations and others who will consume meat harvested from this area, fish and wildlife, is the safe levels of consumption of organic mercury. It also remains unclear if the Ducks Unlimited Canada wetland restoration project will be flooded or lost with the advent of this Project.	Changes in use of harvesting areas due to direct, indirect, and induced population changes attributable to the Project are described in Section 24.4.7. The assessment on potential effects of the Project on Human Health (Section 33) considered changes in country foods, specifically the effects of methylmercury in fish. Results from the Human Health Risk Assessment for Methylmercury and Fish (Volume 2 Appendix J Mercury Technical Reports, Part 2 Mercury Human Health Risk Assessment) identify safe fish consumption levels for fish from the Site C reservoir and downstream of the Site C dam, during post construction periods (i.e., at peak methylmercury levels). With respect to exposure pathways, please see the response to ab_0001-536. Please also see the Technical Memo: Methylmercury. As described in Section 13, the Ducks Unlimited Canada wetland restoration project at Watson Slough will be lost if the Project proceeds.
ab_0003-023	Fort Nelson First Nation	Section 19 Current Use of Lands and Resources for Traditional Purposes (General Comments), page(s) n/a, line(s) n/a; Comment #	Furthermore, of general concern is the presence and impact of invasive plants on traditionally and medicinally harvest plants and berries in the region. Known infestations of invasive plants, with propagules that are readily transported by water, are documented in the Invasive and Alien Plant Program database. Species such as knapweed and scentless chamomile have been recorded in the area of Site C and it is of concern that they may be spread via the activities involved in the development and implementation of this project. The further spread and introduction of invasive species is a significant concern when considering the traditional territories not only of the peoples who will be impacted by this development, but also for those downstream where the introduction of invasive species may be facilitated by contaminated equipment	BC Hydro confirms that where feasible seed mixes will use native species and will be certified weed free. The Vegetation and Invasive Plant Management Plan (Section 35.2.2.22) will be developed with appropriate regulatory authorities as part of the permitting process, if the Project proceeds. Please also see Section 13.3 in the EIS.

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		Keefer preamble24	or spread through the water. Invasive species cause significant economic, ecological, social and cultural impacts as documented in peer-reviewed literature.	
ab_0003-024	Fort Nelson First Nation	Cumulative Effects, page(s) n/a, line(s) n/a; Comment # Keefer preamble25	<p>There is a strong disconnect between the cumulative effects discussed in Section 13 and those discussed in Section 19. There is recognition in Section 13 that there will be cumulative effects, however, there is no recognition in Section 19 that there will be cumulative effects. This disconnect is concerning and needs to be addressed. Although Section 19 discusses that there are no cumulative effects on the current use of lands and resources for traditional purposes and that regional approaches to mitigation are not proposed, Section 13 does suggest that there will be cumulative effects on vegetation which in turn would have an influence on the traditional use of the area.</p> <p>Cumulative disturbances need to be understood and analyzed with scientific rigour, prior to suggesting that they will not occur. Being able to spatially and temporally analyze these impacts across a landscape is important for managing ecosystem resilience and for understanding ecosystem dynamics (Thrush et al 2013). Therefore, how is it possible to declare what the impact is when the data does not have scientific rigour? This calls into question if there was even a cumulative impact assessment completed? A dynamic landscape model is needed in order to fully assess the influence of the combined changes listed in this Section. As Weber et al. (2012) suggest, a cumulative effects assessments which describes the relationship between “ecological conditions and social and economic indicators so as to measure those most closely responsive to each other.” As written in this Section, this is not an ecologically or culturally appropriate cumulative impact assessment with scientific rigour.</p> <p>Major significant cumulative impacts have already occurred in the region of the Project over the last 50 years and they will continue to occur, specifically with this Project as a catalyst. In their recent paper, Squires et al. (2013) suggest that it is important to assess cumulative effects over large space and time scales, because they can occur for multiple reasons including natural phenomena, industrial growth and population growth. Cumulative impacts in the region of the Project have included: the conversion of natural forests and grasslands to pastures and farms, the oil and gas development resulting in intense habitat fragmentation, the agronomic seeding associated with development and urbanization, the water pollution and water reduction in this area associated with hydraulic fracturing practices of the oil and gas industry (fracking) and the trophic cascades that result from the aforementioned in combination with huge</p>	<p>As described in Section 10.5 of the EIS, the methods used to assess potential cumulative effects of the Project are in accordance with Section 8.5.3 of the EIS Guidelines. Please also see the Technical Memo: Cumulative Effects Assessment.</p> <p>The assessment of the potential effects of the Project on the Current Use of Lands and Resources for Traditional Purposes draws directly on the assessment of the potential effects on Vegetation and Ecological Communities and on Wildlife Resources. However, the assessments are not identical. To assess the potential effects and cumulative effects on Vegetation and Ecological Communities (Section 13) and on Wildlife and Wildlife Habitat (Section 14) the potential changes to those VCs (for example, reduction in certain types of habitat) have been predicted. The assessment of the potential effects of the Project on the Current Use of Lands and Resources for Traditional Purposes assesses the potential changes to the use of those resources - changes to use of and access to those resources as well as changes in the availability of those resources. For example, a reduction in a particular population of a particular species does not necessarily translate into a reduction in traditional harvesting. This is the case regardless of whether the change resulting from the Project is considered as an effect or as a cumulative effect.</p> <p>The residual effects of the Project on the Current Use of Lands and Resources for Traditional Purposes are not predicted to combine with the residual effects of the other projects and activities; therefore, no cumulative effects were determined.</p> <p>A complete list of mitigation and follow-up measures are described in Section 39 of the EIS.</p>

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			<p>impacts from forestry and the coal sector where there is a lot more selenium and nitrates going into the river systems around Chetwynd and Tumbler Ridge. Most of the water draining would be a cumulative impact downstream to Site C.</p> <p>The Williston and Dinosaur Reservoirs have huge impacts to the nutrient flows, to the flood regime, to ice cover and to riparian habitat. Dust storms may result from shoreline erosion with airborne dust impacting air quality and the general health of the people and the wildlife in the area. This brings into question what the end rationale and reason for this project is. If it is to power more natural resource development, then this project in itself with its results will contribute to increased disturbance across the landscape within the traditional territories of many First Nations. Blueberry River First Nation has raised concern about the level of development within their traditional territory and how it impacts their traditional activities (Management and Solutions in Environmental Services 2012). Concerns brought forward include increased access by non-Aboriginal people and increased disturbance to the land.</p> <p>Due to changes in the hydrologic regime associated with the proposed Site C dam, riparian communities both upstream and downstream of the dam will be severely impacted. Given that the Peace River is the region’s major river, these impacts could affect a significant proportion of the region’s riparian habitat, particularly riparian habitats associated flood plains. The EIS offers no projections as to how the loss of riparian habitats will affect the viability of regional wildlife populations dependent on these habitats (e.g. what is the proportion of riparian habitats lost?). Is there a way of explicitly quantifying the projected loss of riparian habitats – communities dependent on the historic flood regime?</p> <p>Cumulative effects of watershed alterations which also receive stress from anthropogenic disturbances across the landscape place the sustainability of freshwater systems at risk (Poornima et al. 2013). As evident in Section 19, the cumulative effects of multiple stressors are not being taken into consideration. Poornima et al. (2013) suggest that currently, development activities are considered on a project-by-project basis without any regard for the effects that result in combination with past, present and foreseeable planning and development actions. Since the health of a river system is a function of in-stream use, allocation and interactions and processes that occur on the landscape surround it, it would be of utmost due diligence to analyse the historical, current and future development in the same area as this Project and to provide scientific data on their interactions (Poornima et al. 2013). On the</p>	

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			<p>landscape scale, it could also be possible that this Project will have an influence on slope stability as well as a significant influence on potential research sites of important data. Through evidence analysed by Jull and Geertsema (2006) forest-fire charcoal was found from over 13,500 years before present. The study site of this research is located at Bear Flats. Currently, it is unknown if this research site will be flooded along with other potential sites that have recorded significant anthropogenic and ecological events through time. Lastly, it is of concern that Section 13 cites numerous cumulative effects, however, there is no recognition in Section 19 that there will be cumulative effects. This strong disconnect between the cumulative effects discussed in this Section and those discussed in Section 13 needs to be addressed.</p> <p>In conclusion, there needs to be more information on a long term monitoring plan, one which includes cumulative effects assessment and management (CEAM), with continual robust scientific monitoring as this is a permanent project.</p>	
ab_0003-025	Fort Nelson First Nation	Section 11.1.2.1, page(s) 11-4, line(s) 33-34; Comment # KeeferTable1	This is a statement of concern if it is scientifically proven.	The statements provided in Section 11.1.2.1 are based on review and summary of scientific literature available.
ab_0003-026	Fort Nelson First Nation	Section 11.1.2.1, page(s) 11-5, line(s) 17-22; Comment # KeeferTable2	This is a statement of concern if it is scientifically proven.	The statements provided in Section 11.1.2.1 are based on review and summary of scientific literature available.
ab_0003-027	Fort Nelson First Nation	Section 11.1.2.1, page(s) 11-5, line(s) 31-46; Comment # KeeferTable3	This is a statement of concern if it is scientifically proven.	The statements provided in Section 11.1.2.1 are based on review and summary of scientific literature available.
ab_0003-028	Fort Nelson First Nation	Section 11.1.2.2, page(s) 11-7,	A change to aquatic habitat is stated as ‘Increased habitat volume’. Would be better to be more specific, as benthic habitat volume has increased, while riverine habitat volume has decreased.	BC Hydro has reviewed this suggestion and will leave the wording in this section unchanged. Increased habitat volume in this reference is associated with the increase in pelagic habitat that resulted from the formation of the reservoir.

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		line(s) 14; Comment # KeeferTable4		
ab_0003-029	Fort Nelson First Nation	Section 11.1.2.1, page(s) 11-8, line(s) 2-16; Comment # KeeferTable5	These are of concern.	Changes to characteristics of aquatic habitat downstream described in this section are intended as a summary of changes resulting from flow regulation associated with previous hydroelectric developments.
ab_0003-030	Fort Nelson First Nation	Section 11.1.2.2, page(s) 11-9, line(s) 7-8; Comment # KeeferTable6	What is the composition of ‘early riparian forest stands.’	Composition of early riparian forest stands can be found in the Expanded Legend for the Peace River Terrestrial Ecosystem Mapping Project in Volume 2, Appendix R, part 1, Appendix A.
ab_0003-031	Fort Nelson First Nation	Section 11.1.2.2, page(s) 11-9, line(s) 17-18; Comment # KeeferTable7	Which adjacent unaffected river valleys have wildlife been documented to move to?	Please see Volume 2 Appendix R, Part 7, maps 1.6.15 through 1.6.17 and 1.6.31 through 1.6.37 to view information on movement patterns of mammals.
ab_0003-032	Fort Nelson First Nation	Section 11.1.3, page(s) 11-11, line(s) 7-21; Comment # KeeferTable8	Will this also be an issue with the Site C project? Dust could impact human and ecosystem health in negative ways.	Fugitive dust from reservoir fluctuation, that may be caused by wind erosion of exposed shorelines, is described in Section 4.2.2 of Volume 2, Appendix L, and is not expected to be a large contributor to emissions during Site C operations as the reservoir shoreline area exposed is small, and the nature of the materials is typically coarse-grained shoreline sediments and areas of shoreline bedrock.
ab_0003-033	Fort Nelson First Nation	Section 11.2.2.4, page(s) 11-17, line(s) 18-20; Comment # KeeferTable9	Written poorly. Hard to follow.	Thank you for your comment. BC Hydro has reviewed this suggestion and will leave the wording in this section unchanged.
ab_0003-034	Fort Nelson First Nation	Section 11.2.3, page(s) 11-20, line(s) 16-26;	Should explain the purpose of impact lines (i.e. to control land use) first thing so that reader is clear of the purpose of this section. Would be useful to refer to these impact lines throughout the subsections as well.	Please see the Technical Memo: Reservoir Impact Lines

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		Comment # KeeferTable10		
ab_0003-035	Fort Nelson First Nation	Section 11.2.3.3, page(s) 11-23, line(s) 42-43; Comment # KeeferTable11	Earlier claimed the Cache Creek Slide was 82 million m3. Now claiming that the landslides studied were in a range between 1,200m3 and 44 million m3. What is the correct number?	The total volume of this landslide complex, which comprises several individual landslides that may or may not have occurred at the same time, is estimated to be 82 million cubic metres. The volume of the largest individual landslide within this landslide complex is estimated to be 44 million cubic metres. Landslide complexes and individual landslides have been distinguished throughout the study area, as described in more detail in EIS Volume 2 Appendix B Part 2 Preliminary Reservoir Impact Lines Section 4.
ab_0003-036	Fort Nelson First Nation	Volume 2, Section 11.2.3.4, page(s) 11-24, line(s) 1-8; Comment # KeeferTable12	States 89 basal slides below maximum normal reservoir level that are of interest because they are likely to be most affected by reservoir levels. Then states 58 of these occurred in an area of shale bedrock slopes where minimal landslides are expected. Need to explain how these slopes can have the majority of the historical basal slides, while still being thought to have little potential to slide in the future.	The comment requests clarification of expected landslide activity for the 58 individual landslides identified downstream of Cache Creek with basal failure surfaces below the proposed Maximum Normal Reservoir Level. The EIS does not say that minimal landslides would be expected in that area, only that potential landslide movement rates are expected to be low. As described in Section 11.2.3.3, the 58 landslides are located in shale bedrock slopes and potential landslide movement rates are expected to be low. Further details on expected landslide activity as a result of reservoir impoundment and operation are provided in EIS Volume 2 Appendix B Part 2 Preliminary Reservoir Impact Line Sections 9 and 12.
ab_0003-037	Fort Nelson First Nation	Section 11.2.3.6, page(s) 11-26, line(s) 1-12; Comment # KeeferTable13	This sections states it will discuss impacts to groundwater flow and their effects on slope stability. It concludes saying groundwater flow will remain similar for the majority of the affected area with the acceptance of significant groundwater changes in the glacially carved buried valley. What impacts will increased groundwater activity have on slope stability and what magnitude do these impacts have? Needs to at minimum mention that these results are incorporated into defining the Stability Impact Line.	Please see the Technical Memo: Reservoir Impact Lines.
ab_0003-038	Fort Nelson First Nation	Section 11.2.3.7, page(s) 11-27, line(s) 1-14; Comment # KeeferTable14	The conclusion leaves the reader hanging. Need to state that the results of this model are used to define a Flood-Impact Line (within which land use will be regulated).	Please see the Technical Memo: Reservoir Impact Lines.
ab_0003-039	Fort Nelson First Nation	Section 11.2.3.7, page(s) 11-27, line(s) 28-29; Comment # KeeferTable15	States that model was run for “vertical Banks”. In Volume 2 Appendix B, Part 2 Preliminary Reservoir Impact Lines on Page 52 it says that “the eroding bluff was modelled as a vertical slope” and does not give information on the bank angle. Information on the bank angle is needed. From page 50: “The term ‘bank’ is used to describe slopes within the existing river environment, whereas ‘bluff’ is used to describe erosional slopes in the reservoir environment.” Refer to Figure	Section 11.2.3.7 should read “Average shoreline recession distances were predicted for vertical bluffs at five and 100 years after reservoir filling, as described in Volume 2 Appendix B Part 2 Preliminary Reservoir Impact Lines”. The predicted position of the modelled vertical bluff at Maximum Normal Reservoir Level five and 100 years after reservoir filling represents the 5-year Beach Line and 100-year Beach Line, respectively. As described in detail in Volume 2 Appendix B Part 2 Preliminary Reservoir Impact Lines Sections 5, 7 and 11, appropriate eroded (short-term)

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			7-1 in the mentioned Appendix for term clarification.	and ultimate (long-term) slope angles for the geological units present around the shoreline were then applied to the 100-year Beach Line predictions to establish the position of the Erosion Impact Line and Stability Impact Line, respectively. This update has been added to the List of Errata and Updated Information.
ab_0003-040	Fort Nelson First Nation	Section 11.2.3.8, page(s) 11-28, line(s) 1-2; Comment # KeeferTable16	Need to conclude that these results were used to define Erosion Impact Line. Otherwise leaves reader wondering what the point of the study is. If erosion is occurring for over 100 years, this may have significant impact on riparian habitat. What about erosion effects on aquatic habitat? Will a sustainable ecosystem establish on the reservoir shoreline at these rates of erosion? Is the area of erosion large enough and the substrate such that a risk of significant dust storms is possible? Is this covered elsewhere?	As described in Section 11.1.2, the licensed range of reservoir levels in the Williston Reservoir is 30 m; however, annual operations typically vary by about 18 m. As described in EIS Section 11.4.4, reservoir levels for the Project would be maintained within the top 0.6 m of the normal operating range 83% of the time and within the top 1.2 m 94% of the time. As described in EIS Section 11.1.2, the surface area of the Williston Reservoir at maximum normal reservoir level is approximately 1,773 km ² . As described in EIS Section 4.3.2, the Project reservoir would have a surface area of 93.3 km ² . Therefore, the exposed shoreline at the Project when the reservoir is drawn down would be a small fraction of the shoreline of the Williston Reservoir when that reservoir is drawn down. As described in EIS Section 11.11.6.2, the Nickling report concludes that it is unlikely that dust emissions would be a major problem at the proposed Site C reservoir. This is attributed to: <ul style="list-style-type: none"> • The small annual drawdown and the associated small area of exposed shoreline • The relatively coarse texture of a large proportion of the sediments • The amount of bedrock exposure at the shoreline that would reduce sediment input Please see the Technical Memo: Reservoir Impact Lines.
ab_0003-041	Fort Nelson First Nation	Section 11.2.5.3, page(s) 11-48, line(s) 1-14.; Comment # KeeferTable17	It states earlier that earthquakes smaller than about M5 are too small to cause damage to a well-engineered structure. However, the results indicate a magnitude range Mw5.5 to 7.5. Need a better discussion that indicates how these results prove that there is no significant risk of damage to the dam by earthquake (if this is the case).	Section 37.1 describes how the performance of the dam during large earthquakes would meet or exceed the performance requirements. Please see the following Technical Memos: <ul style="list-style-type: none"> - Seismic Considerations - Dam Safety
ab_0003-042	Fort Nelson First Nation	Section 11.3.1.4, page(s) 11-54, line(s) 14-18; EISG Section 11.3.1.4 Comment # KeeferTable18	Will there be an archaeological assessment and appropriate follow-up performed prior to the highway realignment?	Please see Section 32 Heritage Resources and Volume 4 Appendix C Heritage Resource Assessment for a description of the Heritage Resource effects assessment for the Project. As noted in Section 32.2.2, Highway 29 realignment sections were included in the heritage field inventory. Please also see Section 32.3 for further information on the assessment of the effects of the Project on Heritage Resources, as well as potential mitigation approaches for Heritage Resources. Please also see the Technical Memo: Archaeology.
ab_0003-	Fort Nelson	Section	Temporary access roads would be required for construction. Is it known how	Section 4.3.7 describes the road access requirements. The total number of roads required during

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043	First Nation	11.3.3.2, page(s) 11-59, line(s) 12-13; Comment # KeeferTable19	many temporary roads would be built, and what the plan is for deactivation and revegetation plans?	construction would depend on the final construction planning by the various contractors. Deactivation of temporary roads and vegetation would be in accordance with the Soil Management, Site Restoration, and Vegetation Plan described in EIS Section 35.2.2.19
ab_0003-044	Fort Nelson First Nation	Section 11.4.3.1, page(s) 11-69, line(s) 12; Comment # KeeferTable20	‘Water years 2000 to 2009 were selected for analysis’ and include the ‘high recorded flow on the Halfway River’. Clarification is required around the temporal duration that rivers have historically existed in the area. The model should include the longest period possible that represents more historical variation in flow levels.	As described in Section 11.4.3.1, the 10-year period selected for the analysis of hydraulic changes associated with construction includes a representative range of wet, dry, and average flows, and extreme events including the largest flood recorded on the Halfway River.
ab_0003-045	Fort Nelson First Nation	Section 11.4.3.1, page(s) 11-69, line(s) 22; Comment # KeeferTable21	‘The model of existing conditions extends from 1km upstream of Site C dam site to approximately 5.5 km downstream’. This is a small area to model. The entire length of the river to be directly impacted by the reservoir should be included (approximately 83kms) in the model.	As described in Section 11.4.3.1, two-dimensional modelling was conducted to analyse the two-dimensional flow patterns, velocities, and bed shear stress under existing conditions and for both stages of construction. The model extent was sufficient for the analysis of changes in these parameters due to construction. The one-dimensional hydraulic model described in Volume 2 Appendix D, Part 2 Downstream Flow Modelling (1D) extended the full length of the reservoir and was used to analyse the influence of construction on flows and water levels in the construction headpond and downstream.
ab_0003-046	Fort Nelson First Nation	Section 11.4.3.1, page(s) 11-69, line(s) 31; Comment # KeeferTable22	Why were the base flows of 838m3/s and 2,069m3/s chosen as calibration values? More calibration values across a range of years would create a more sound model	As described in Section 11.4.3.1, these flows were chosen for calibration of the two-dimensional model as they corresponded to measured water levels in June and August 2011 and covered a representative range of flows.
ab_0003-047	Fort Nelson First Nation	Section 11.4.3.2.1, page(s) 11-70, line(s) 23; Comment # KeeferTable23	What data is the 90th percentile water level based on? Was only data between 2000 - 2009 used in the model? If so, this is insufficient to assess potential impacts and more data should be added.	As shown in Table 11.4.6, the percentiles correspond to the 2000-2009 simulation period. Please see the response to ab_0003-044.
ab_0003-048	Fort Nelson First Nation	Section 11.4.3.2.2, page(s) 11-71, line(s) 8;	‘River closure is planned to occur in the fall’. The fall is a particularly vulnerable period to fish as it is a spawning period. The river closure should be scheduled during a different period.	The planned timing of construction activities has been considered in the environmental assessment of the Project, including the assessment of potential effects on Fish and Fish Habitat.

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		Comment # KeeferTable24		
ab_0003-049	Fort Nelson First Nation	Section 11.4.3.2.3, page(s) 11-71, line(s) 28; Comment # KeeferTable25	The maximum simulated increase should be higher than the maximum flow found in 2001 in order to allow for uncertainty.	Please see the response to ab_0003-044.
ab_0003-050	Fort Nelson First Nation	Section 11.4.4.2.1, page(s) 11-74, line(s) 13-22; Comment # KeeferTable26	Do the models used to predict these values include climate change projections? Climate change will likely alter surface water flows and potentially reservoir levels? There is no mention of climate change in the model details in Appendix D Surface Water Regime and this information should be added.	As described in Section 11.4.4.1, the influence of the Project on surface water regime has been analyzed based on 60 years of historical inflows, including wet and dry years. The median projected change in annual stream flow for the 2050s and 2080s periods (as described in Volume 2 Appendix T Climate Change Summary Report) is within the variability observed in the historical 60-year inflow record used in operational modelling. Therefore, the simulated operation of BC Hydro's generating facilities includes years with higher inflows.
ab_0003-051	Fort Nelson First Nation	Section 11.4.5.2, page(s) 11-77, line(s) 34-38; Comment # KeeferTable27	Considering that the expected time for the reservoir to have ice formation is approximately 3 months of the winter (as stated on 11-120 lines 22-25), inclusion of the hydraulic influence of ice should be included in the models in order to attain realistic surface water regimes.	The influence of the Project on ice conditions and associated water levels is described in Section 11.7 Thermal and Ice Regime and associated appendices.
ab_0003-052	Fort Nelson First Nation	Section 11.4.5.2.2, page(s) 11-79, line(s) 14-15; Comment # KeeferTable28	How was the location of the 'Town of Peace River' determined as a general attenuation point for operations releases?	As described in Section 11.4.5.2.2, the daily pattern of operational releases is less noticeable with increasing distance downstream due to natural hydraulic attenuation and the inflow from tributaries. The predicted change in the average daily range of water levels at various locations on the Peace River is summarized in Table 11.4.9 of the EIS. As shown, the predicted change is 4 cm at the Town of Peace River and this change is considered negligible. Please also see the Technical Memo: Spatial Boundary Selection.
ab_0003-053	Fort Nelson First Nation	Section 11.4.5.2.3, page(s) 11-79, line(s) 32-34; Comment # KeeferTable29	The conclusion that the 'reduction in the most extreme high flows would only be apparent in the 16 km reach between the Site C dam and Pine River confluence' does not make sense. The usual peak flows from the Halfway River would still be influencing the system downstream of that point.	As described in Section 11.4.5.2.3, the Site C reservoir could store some of the flows coming from the Halfway River in the spring, thus leading to lower peak flows in the Peace River immediately downstream of the Site C dam. The largest flows on the Peace River immediately downstream of the Pine River confluence typically correspond to the Pine River spring freshet, which would not be influenced by the Project. Hence, the reduction in the peak flows in the Peace River due to the Project would be most apparent upstream of the Pine River confluence. The flow/ water level duration curves presented in Appendix D of Volume 2 Appendix D, Part 2 Downstream Flow Modelling (1D) illustrate the lack of change in the magnitude of peak flows predicted at Taylor and downstream.

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ab_0003-054	Fort Nelson First Nation	Section 11.4.6, page(s) 11-83, line(s) 14-32; Comment # KeeferTable30	Median annual stream flow is not an appropriate measure of changes to the aquatic ecosystem. Median annual stream flow does not take into account the hydrological changes on a monthly or daily scale which may impact aquatic habitat. Also, the expected decreased flows in the sensitive late summer period are not addressed in terms of the cumulative impacts from climate change and the Project.	<p>The consideration of climate change meets the requirements of the EIS Guidelines. The potential influence of climate change on the hydrology of the Peace basin is described in Volume 2 Appendix T Climate Change Summary Report. A description of climate change as it relates to the analysis of the influence of the Project on the surface water regime (quantity, timing, and rate of change of flow and water level), and thermal and ice regime (including water temperature) is provided in Section 11.4 and Section 11.7, respectively. This description of the potential influence of climate change on the surface water regime and water temperature was not explicitly considered in the simulated 18 scenarios in Appendix P3. However, the time series of 2000 to 2009 used for CE-QUAL-W2 model inputs, calibration, and for the simulation of the case scenarios (see Volume 2 Appendix P2 Section 3.4) was purposefully selected to include a range of flow, nutrient and TSS conditions (e.g., wet and dry years; described in Section 11.4.3.1); the range of simulated conditions encompass the potential changes in flows under climate change. Appendix P3 provides additional information on potential effects of climate change in Section 2.9 Climate Change.</p> <p>These potential changes in seasonal flow as a result of climate change are taken into account in the environmental assessment. For example, Section 12 Fish and Fish Habitat describes the potential influence of climate change on aquatic productivity (see also Section 2.9 of Volume 2 Appendix P, Part 3 Aquatic Productivity Report: Future Conditions in the Peace River).</p>
ab_0003-055	Fort Nelson First Nation	Section 11.5.1, page(s) 11-84, line(s) 14-16; Comment # KeeferTable31	Is it appropriate to use Alberta water quality guidelines when the Project occurs within British Columbia boundaries? More discussion is needed around the reasoning for choosing these guidelines.	The EIS Guidelines requested comparison of data to federal and British Columbia guidelines. The guidelines did not preclude use of guidelines from other jurisdictions. Baseline data were compared to guidelines from BC, Alberta, and the federal government. The comparison was not limited to one guideline source, but rather all available guidelines for a particular parameter were used. It is common practice to compare data to any available guidelines.
ab_0003-056	Fort Nelson First Nation	Section 11.5.2, page(s) 11-84, line(s) 28-34; Comment # KeeferTable32	If analytical uncertainty can be as high as 10%, then a projected change in a water quality parameter of 10% could potentially be 20%. Also, a 10% change in some water quality parameters has the potential to have effects to aquatic organisms.	<p>Confidence in model predictions of water quality parameters is described in Volume 2, Appendix P, Part 2, Section 4.3. BC Hydro will continue to monitor the aquatic ecosystem of the Peace River. Prior to construction and during operations of the proposed Site C reservoir, the Peace River aquatic ecosystem will be monitored to support model validation, update stakeholders, and implement mitigation measure as needed.</p> <p>Please see the Technical Memo: Uncertainty and Precaution.</p>
ab_0003-057	Fort Nelson First Nation	Section 11.5.2, page(s) 11-84, line(s) 37-40; Comment # KeeferTable33	Why were there no water quality field programs conducted in 2009?	Water quality baseline data collection was conducted in 2007 and 2008. In 2009, the data were evaluated and future water quality sampling planning was conducted. Water quality sampling commenced again in 2010.
ab_0003-	Fort Nelson	Section 11.5.2,	Why weren't water quality samples taken in the Williston and Dinosaur	From 2006 to 2008, field programs were still in the investigation phase of baseline data

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058	First Nation	page(s) 11-85, line(s) 20-21; Comment # KeeferTable34	reservoirs from 2006-2008? Not maintaining adequate measurements of water quality at least on an annual basis does not show due diligence to monitor water quality. The water quality records collected do not represent a full account of water quality between 2006 - 2011.	collection. At this time there were some discussions that a productivity study would be conducted and that samples for water quality analysis would be collected at that time. Field water quality data (total gas pressure and temperature) were collected from Williston Reservoir in 2007 and 2008 (Golder 2009 a,b). The data collected are adequate for describing baseline conditions.
ab_0003-059	Fort Nelson First Nation	Section 11.5.2.2, page(s) 11-86, line(s) 28-30; Comment # KeeferTable35	It is misleading to say that surface waters in general (including reservoirs, Peace River and tributaries) reach highs of 16°C to 17°C in the summer. It is likely the reservoirs that reach this temperature rather than natural flowing streams and river systems. In the water quality study it shows that the minimum temperature are quite different from reservoirs to natural surface waters (minimum of 8°C in the reservoirs, compared to 1.4° and 0.4°C in the Peace River and Tributaries respectively); Temperature differences should be noted in the main body of the report as it may be significant to cold sensitive aquatic organisms.	Details on baseline water temperatures are provided in Volume 2 Appendix E, page 10. Reservoir water temperature profile data are summarized in Golder (2009a, b) and Limnotek, et al. (2012 Volume 2 Appendix P Aquatic Productivity, Part 1 Baseline Aquatic Productivity in the Upper Peace River). Surface water temperature was highest in the summer period ranging between 8 °C and 16 °C in the reservoirs, 1.4 °C to 16 °C in the Peace River, and 0.1 °C to 17 °C in the tributaries (Figure 3.1).
ab_0003-060	Fort Nelson First Nation	Section 11.5.2.3, page(s) 11-87, line(s) 4-6; Comment # KeeferTable36	The mean values are reported as 10mg/L (90% saturation). Saturation is dependent on water temperature so 10mg/L would vary in saturation with water temperatures. The maximum and minimum values should be reported for % saturation as these are times that aquatic life are vulnerable to oxygen saturation.	In Volume 2 Appendix E, Tables B2 and B3, data are provided for dissolved oxygen in mg/L and percent saturation. Please note that both provincial and federal water quality guidelines for dissolved oxygen are presented in terms of concentration rather than percent saturation and, in accordance with Section 9.3.2 of the EIS guidelines, concentrations are presented to be comparable with these guidelines.
ab_0003-061	Fort Nelson First Nation	Section 11.5.2.5, page(s) 11-88, line(s) 10-13; Comment # KeeferTable37	What caused the acidic pH value of 5.8 to occur? How can this range be prevented in the future as it can be damaging to aquatic life? In Appendix E Water Quality Baseline Conditions in the Peace River, it reports that 4 of the 393 measurement (not 1 as reported in Section 11) were lower than the chronic aquatic life limit guideline.	The result reported in Section 11.5.2.5 was correct; only one value in the data set was below the guideline value of 6.5. The field measured pH at Peace-04 in February 2008 was 5.8, but the lab measured pH was 8.2. The reason for the low recorded pH could be instrument malfunction, transcription error, or variability in hydrogen ion concentration. One value outside of the aquatic life guideline range is not an indication that conditions are damaging to aquatic life.
ab_0003-062	Fort Nelson First Nation	Section 11.5.2.7, page(s) 11-90, line(s) 1-11; Comment # KeeferTable38	Because concentrations of many metals are already exceeding the guidelines for aquatic health, the system is potentially already stressed and degraded. Additional changes could result in greater metal concentrations, further stressing the system. By how much were the guidelines exceeded in the tributaries compared to the reservoirs?	The ranges of metal concentrations found at each water quality station are provided in Volume 2 Appendix E Table B3. Generic guidelines are benchmark values based on toxicity to the most sensitive aquatic organisms. These guidelines are established in lab conditions using the highly soluble form of the parameter and they do not account for the influence factors such as hardness, ions, and organic carbon, all of which can decrease the toxicity of metals. In addition, the concentration of metals in natural systems can vary based on geologic conditions, and organisms have adapted to these conditions. If an area has concentrations of metals naturally above a generic guideline, the aquatic biota living in that system have already adapted to those conditions.

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ab_0003-063	Fort Nelson First Nation	Section 11.6.5.1, page(s) 11-97, line(s) 6-31; Comment # KeeferTable39	These results are presented adequate discussion. How are these results relevant? How do they inform us on the effects to groundwater from reservoir construction?	Section 11.6.5.1 describes the work undertaken to determine the current, or baseline, groundwater conditions.
ab_0003-064	Fort Nelson First Nation	Section 11.6.6, page(s) 11-98, line(s) 38-45; Comment # KeeferTable40	Claims low-likelihood of water chemistry changes caused by groundwater rising into new geologic material. Why? Is this because the rise is small and will occur in similar geologic material? Even if the rise was in similar geologic material, might there be a change in water chemistry because the material has not been previously saturated in water? Or do the geologic materials that the water level will rise into not have chemicals that are water soluble?	Detailed explanation for this conclusion is described in Volume 2 Appendix F Section 4.3.5.
ab_0003-065	Fort Nelson First Nation	Section 11.6.6, page(s) 11-98, line(s) 43-45; Comment # KeeferTable41	Very vaguely mentions some localized effects on water chemistry where water rises into thin layers of differing geologic material. Is there any evidence to support this? What geologic material? What changes? What is this based on? Where are results from the study of baseline conditions? More detail and information is needed.	Please see the response to ab_0003-064.
ab_0003-066	Fort Nelson First Nation	Section 11.6.7, page(s) 11-99, line(s) 7-14; Comment # KeeferTable42	States that the reservoir's rising water levels will not affect water quality in wells and will increase water yield. Then immediately contradicts this statement by giving three regions where water quality in wells could be effected by saturation of geologic material on a nearby septic field or contaminated site. If this is the case, how many wells could risk contamination? How many contaminated sites are there that aren't near wells but could affect groundwater and future water well locations?	As stated in Section 11.6.9, "Prior to reservoir filling, building infrastructure, groundwater wells, and septic tanks/fields at properties within the proposed inundation area would be decommissioned to reduce the potential for affecting groundwater quality for existing water well users. Prior to reservoir inundation BC Hydro will conduct further investigation and, as warranted, carry out site remediation on contaminated properties and on properties where residual pesticide and herbicides may be present at concentrations of concern." Therefore, no wells are likely to become contaminated and no contaminated sites are likely to affect groundwater and future well locations.
ab_0003-067	Fort Nelson First Nation	Section 11.6.8, page(s) 11-99, line(s) 16-21; Comment # KeeferTable43	This statement is arbitrary and misleading. You are saying that 90% of the infrastructure is topographically above the proposed reservoir level and therefore not likely to be effected by rising water table. Infrastructure that is located on land that will be inundated is not relevant to this discussion because the effects from inundation will far outweigh the impacts of groundwater. Furthermore, the study area was defined based on the anticipated area that where there is potential for a rise/change in groundwater. If it were based on the area where infrastructure damage potential exists, 100% of the infrastructure within the study area would be effected by groundwater. The study area is arbitrary. To properly assess the impact it would be useful to know how much infrastructure and what kind of infrastructure may be effected.	The statement made in Section 11.6.8, "As the majority (approximately 90%) of the lands containing infrastructure are located topographically above the proposed reservoir levels, only limited inundation or influence related to water table rise is anticipated" is factual. Current infrastructure and land use that could be influenced either positively or negatively from water table increase is described in Volume 2 Appendix F Section 4.4.

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ab_0003-068	Fort Nelson First Nation	Section 11.6.8, page(s) 11-99, line(s) 35-40; Comment # KeeferTable44	Should include an inventory of potential contaminated sites, their size and what contaminates are present to give a better understanding of the magnitude of potential contamination. (This can be done without disclosing the site locations)	A list of potentially contaminated sites, showing historical land use, is shown in Volume 2 Appendix B3 Table 2.
ab_0003-069	Fort Nelson First Nation	Section 11.7.1.1, page(s) 11-103, line(s) 24-26; Comment # KeeferTable45	Temperature data was collected for the Peace above Pine Station for a six year period (2007-2012) and for the Peace 5 Station for a two year period (2007-2008). Despite this, only one year of data is used from each station to piece together a full year's temperature profile. More of the data should be utilized and averaged to develop a more baseline temperature profile characteristic of more than one annual cycle.	Section 11, Figure 11.7.2 illustrates the observed water temperatures at the Peace Canyon Dam outlet, at the Peace above Pine station, and at the Peace 5 station. The overlapping period of record of the three stations is limited to one year (2008) and thus observations from this year were used to describe the changes in water temperature with distance downstream of the Peace Canyon Dam. The predicted influence of the Project on downstream water temperatures was based on a decade of simulated conditions, as described in Section 11.7.3.1 of the EIS.
ab_0003-070	Fort Nelson First Nation	Section 11.7.1.1, page(s) 11-103, line(s) 31-32; Comment # KeeferTable46	Here it states that a different temperature regime would be expected "without Williston Reservoir". To more accurately illustrate this change and the reasons for it, this should be revised to state: expected "with an unaltered riverine system" or "in pre-dam conditions".	"Without Williston Reservoir" implies pre-dam conditions. BC Hydro has reviewed this suggestion and will leave the wording in this section unchanged.
ab_0003-071	Fort Nelson First Nation	Section 11.7.1.1, page(s) 11-103, line(s) 37; Comment # KeeferTable47	The use of "For example" is misleading (implying there is no influence from the upstream reservoir to the unaltered reach) and should be removed, starting the sentence with "Temperatures observed in the Peace Canyon..."	Section 11.7.1.1 describes the influence of the Williston Reservoir on water temperatures in the Peace River. It also describes how water temperature is influenced by air temperature and meteorological conditions. The observed water temperature changes between Peace Canyon Dam and a location 89 km downstream were described in this section as an "example" of how water temperature is influenced by air temperature and atmospheric conditions as it moves downstream.
ab_0003-072	Fort Nelson First Nation	Section 11.7.1.2, page(s) 11-104, line(s) 3-4; Comment # KeeferTable48	"Water at the outlet of the Peace Canyon Dam never freezes, nor does the immediate downstream reach of the Peace River" is misleading and ignores historic pre-dam temperature profiles. "Though the Peace River downstream of the Peace Canyon once froze in pre-dam conditions, this reach no longer experiences annual freeze" or the like would be more accurate.	The baseline condition for the purpose of the environmental assessment of the Project is the current state of the environment. Hence, it is the current state of the ice regime that is described in Section 11.7.1.2.
ab_0003-073	Fort Nelson First Nation	Section 11.7.1.2, page(s) 11-	Currently, this sentence states that "water cools as it flows down the Peace River due to its exposure to cooler air temperatures". This should be amended to be more illustrative of the thermal influence of a transition from reservoir to	The quoted statement is factual. BC Hydro has reviewed this suggestion and will leave the wording in this section unchanged.

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		104, line(s) 5-6; Comment # KeeferTable49	river , for example “water exiting the reservoir cools as it transitions to a river as faster flows and greater surface-area-to-depth ratios lead to a greater thermal influence from cool air temperatures”	
ab_0003-074	Fort Nelson First Nation	Section 11.7.1.2, page(s) 11-104, line(s) 39-41; Comment # KeeferTable50	The statement “increase in water level is not attributable to any change in the flow releases from upstream dams” is unsupported with any statistical data or historic observations and should be removed if no supporting evidence is given. Supporting evidence is needed, or it should be removed.	The quoted statement is based on water level measurements made by the Water Survey of Canada at several stations along the Peace River. Figure 4 of Volume 2 Appendix G Downstream Ice Regime Technical Data Report illustrates an example of the increase in water level in early January as the ice cover arrives at the Town of Peace River. As per the Joint Task Force guidelines (described in Appendix A of the Technical Data Report), during freeze-up at the Town of Peace River, the releases from the Peace Canyon Dam are held constant. Hence, the observed water level increase is due to the increased resistance and thickness of the ice cover.
ab_0003-075	Fort Nelson First Nation	Section 11.7.1.2, page(s) 11-105, line(s) 36-37; Comment # KeeferTable51	CRISSP is a simulation model. As such, it is a stretch to say that it will necessarily “aid in managing the risk of ice-related flooding”. This sentence should state rather that CRISSP “estimates a baseline condition of the annual ice-flow patterns experienced in this unaltered reach of the Peace River”.	BC Hydro has reviewed this suggestion and will leave the wording in this section unchanged.
ab_0003-076	Fort Nelson First Nation	Section 11.7.1.3, page(s) 11-106, line(s) 27-29; Comment # KeeferTable52	With regards to the statement: “However, the winter of 2011–2012 was the warmest on record, and the ice front advanced upstream only as far 28 Shaftesbury Crossing (km 368), about 27 km upstream of the Town of Peace River”. The wording of this sentence is misleading (specifically the use of “however”) and the information it contains does not seem particularly relevant. There are clearly other factors to consider beyond average temperatures when considering ice flow patterns; this sentence implies incorrectly that there is a direct link between the two and should be removed.	Ice modelling experience on the Peace River demonstrates that air temperature is the single most important variable influencing ice conditions. The fact that the 2011-2012 winter had the warmest air temperatures on record, and that the ice cover extent in that winter was the minimum ever observed supports the assertion of the direct link between the two variables.
ab_0003-077	Fort Nelson First Nation	Section 11.7.1.3, page(s) 11-106, line(s) 40-41; Comment # KeeferTable53	The conclusion that runoff from Smoky River could lead to “potentially flooding” is based, inaccurately, on a single variable. As such, “and potentially flooding” should be removed from the sentence.	The role of the Smoky River spring freshet in the occurrence of a dynamic break-up and ice-jamming on the Peace River (which can lead to flooding at the Town of Peace River) is well understood and is described in Section 11.7.1.3 of the EIS, Section 4.4.2 of Volume 2 Appendix G Downstream Ice Regime Technical Data Report, as well as in "Operational River Ice Forecasting on the Peace River - Managing Flood Risk and Hydropower Production" (Jasek 2007) and "Analysis of the Potential Risks of the Dunvegan Project to the Town of Peace River During Ice Season: Historical Review and Monte Carlo Analysis" (Andres 2002). Both of these documents are referenced in the Technical Data Report.

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ab_0003-078	Fort Nelson First Nation	Section 11.7.1.3, page(s) 11-107, line(s) 2-3; Comment # KeeferTable54	“A historical and statistical analysis of breakups from 1971 to 1999 indicated that dynamic breakups can threaten the Town of Peace River with flooding in about 30% of the years”, but what constitutes a flood? A numeric figure of metres of inundation is needed to support this statement.	As described in Section 4.4.2 of Volume 2 Appendix G Downstream Ice Regime Technical Data Report, a threat of flooding at the Town of Peace River exists when three criteria are met: - dynamic break-up of the Smoky River; - intact ice cover on the Peace River at the Town of Peace River; and - an above-average snowpack in the lower Smoky Basin. Flood is defined as an overflowing of a body of water, especially onto normally dry land. A numerical figure of depth of inundation is not necessary for the purposes of environmental assessment.
ab_0003-079	Fort Nelson First Nation	Section 11, page(s) 11-108, line(s) 6; Comment # KeeferTable55	Please quantify what “somewhat downstream” means. This could be a discrete number or predicted range in metres.	As described in Section 11.7.2.2, the Stage 2 headpond is expected to influence the downstream ice regime due to the trapping of ice during high flow periods, and the increased depth of flow. These factors would lead to a change in the position of the zero-degree isotherm (the point at which the water temperature cools to zero), and the maximum upstream extent of the ice cover. The exact location would depend on the winter severity and the flow conditions during that winter. A more detailed analysis is not required for the purposes of environmental assessment.
ab_0003-080	Fort Nelson First Nation	Section 11.7.2.2, page(s) 11-108, line(s) 8-9; Comment # KeeferTable56	States that the ice regime will be “somewhere in-between the existing conditions and those with the Site C dam in place”. These predicted conditions for Site C have not been described before. A description of these conditions should be described or referenced with an appropriate section here.	The thermal and ice regime with the Site C dam is described in Section 11.7.3. Please see the response to ab_0003-079.
ab_0003-081	Fort Nelson First Nation	Section 11.7.2, page(s) 11-108, line(s) 15-16; Comment # KeeferTable57	Though the Stage 2 headpond may have lesser thermal influence than Dinosaur this does not negate its impact. This sentence should be amended to state “The residence time and corresponding thermal influence of the Stage 2 headpond is predicted to be comparatively smaller than Dinosaur Reservoir though it will have an impact on the temperature profile of the reach”.	As described in Section 11.7.2.2, "The residence time of water in the headpond must therefore be much shorter than that of Dinosaur Reservoir and the thermal influence of the headpond proportionally smaller than that of the upstream reservoir". This statement is factual. BC Hydro has reviewed this suggestion and will leave the wording in this section unchanged.
ab_0003-082	Fort Nelson First Nation	Section 11.7.2, page(s) 11-108, line(s) 19-21; Comment # KeeferTable58	Minimum discharge velocities (2 m/s) are certainly not “well above” those required for ice erosion (1.5 m/s). Is 0.5 m/s a large enough velocity difference to assume there will be no ice buildup in Stage 2? Is there other analysis to support this conclusion?	If ice jamming were to occur in the tunnels, local velocities would become much greater than 2 m/s, increasing the local erosion rate and thus clearing the jam.
ab_0003-083	Fort Nelson First Nation	Section 11.17.3.2,	The Williston Reservoir would be a more suitable candidate for calibrating the model for Site C than Dinosaur, a much smaller reservoir. If there is a reason	Calibration of the Site C reservoir temperature model is described in detail in Volume 2 Appendix H Section 6.

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		page(s) 11-110, line(s) 7-8; Comment # KeeferTable59	Dinosaur was selected as a benchmark (data availability, etc.) it would be pertinent to discuss it here and would better support the analysis.	Dinosaur Reservoir was used for model calibration due to the similar meteorology and due to data availability; especially inflow and outflow temperatures and in-reservoir thermistors to define vertical structure. The size disparity between the Site C and Williston reservoirs is greater than the disparity between the Dinosaur and Site C reservoirs (Dinosaur reservoir is approximately 9% of the volume of the proposed Site C reservoir; Site C reservoir is about 3% of the volume of the Williston Reservoir).
ab_0003-084	Fort Nelson First Nation	Section 11.7.3.2, page(s) 11-110, line(s) 7-8; Comment # KeeferTable60	While validation of the model against Dinosaur Reservoir may be justified, it is both inaccurate and unnecessary to describe it as “a similar water body” to the Site C reservoir; a dramatically larger body. This qualifier should be removed.	The statement on the similarity of the Site C and Dinosaur reservoirs refers to location and meteorology.
ab_0003-085	Fort Nelson First Nation	Section 11, page(s) 11-111, line(s) 12-13; Comment # KeeferTable61	A benchmark figure for allowable variations in ice front progression, freeze-up and break-up dates should support the statement that CRISSP results proved to be a “reliable representation” of real-life thermal patterns.	Section 11, Table 11.7.1 summarizes the observed and simulated maximum upstream ice cover extent and freeze-up and break-up dates at the Town of Peace River. As shown in this table, the average difference between observed and simulated maximum ice front extent over the 16 winter simulation period was 5 km. The average difference in the timing of freeze-up and break-up at the Town of Peace River was zero and 1 day, respectively. Based on these differences, it is concluded that the CRISSP model simulations are a reliable representation of the observed ice front positions.
ab_0003-086	Fort Nelson First Nation	Section 11.7.3.2, page(s) 11-112, line(s) 3-9; Comment # KeeferTable62	The influence of the Smokey tributary on breakup was mentioned earlier as well, though this influence of this system is irrelevant to the potential impacts of the proposed Site C dam. These sentences should be omitted or their inclusion should be justified in terms of this study.	Please see the response to ab_0003-078. One of the criteria for a threat of dynamic break-up and associated flooding at the Town of Peace River is an intact ice cover on the Peace River. As the Project is expected to have an influence on the location and timing of the ice front (as described in Section 11.7.1.3 of the EIS), this discussion is relevant.
ab_0003-087	Fort Nelson First Nation	Section 11.7.3.3.2, page(s) 11-113, line(s) 29-30; Comment # KeeferTable63	This sentence is misleading, implying that the effective time delay is more significant than the temperature amplitudes. This should be revised to state “The changes in temperature due to the Site C reservoir can also be characterized by time delay as well as an absolute difference”.	As described in Section 11.7.3.3.2, the influence of the Project on water temperatures can be considered as an absolute difference in temperature and can also be considered as a time delay.
ab_0003-	Fort Nelson	Section	This statement omits the predicted changes to the extent and location of ice	A description of the predicted influence of the Project on the timing and extent of ice cover at

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088	First Nation	11.7.3.3.5, page(s) 11-115, line(s) 30-33; Comment # KeeferTable64	cover formation. Though areas still experiencing ice formation after dam construction may rapidly gain sufficient thickness to support large mammals or humans the extent of ice formation is expected to change drastically. This statement misleads the reader into thinking passage on the river will be unaltered. To responsibly include this sentence it should be followed or preceeded with a comment on the expected change in the locations and extent of ice formation on the Peace downstream of Site C Reservoir.	various locations on the Peace River is provided in the EIS immediately after the sentence noted in this information request (Section 11.7.3.3.5 of the EIS).
ab_0003-089	Fort Nelson First Nation	Section 11.7.4, page(s) 11-120, line(s) 2-4; Comment # KeeferTable65	Based on the appended tables, the downstream extent of ice formation based on existing conditions and climate models is different by 50 km or more. Thus it is inaccurate to state that there is no difference between the three models and that climate models have no effect.	As described in Section 11.7.3.4.2, climate change leads to a reduction in the rate of ice front progression and a reduction in the maximum extent of the ice cover. The statement referenced in this information request indicates that the influence of the Project (i.e. the change attributable to the Project) was determined to be similar regardless of which of the 3 climate scenarios (i.e. existing, 2050s, or 2080s) was considered.
ab_0003-090	Fort Nelson First Nation	Section 11.7.4, page(s) 11-120, line(s) 6-7; Comment # KeeferTable66	It is incorrect to conclude the Site C reservoir will behave “like a lake”. Natural lacustrine systems are drastically different than reservoir systems, though this sentence leads the reader to believe so. This should be revised to state “Model results for the Site C reservoir predicted the formation of a two-layer thermal structure seen in other reservoir systems”.	In this description of the proposed Site C reservoir, it was being contrasted with a river in terms of residence time and stratification. Hence, compared to a river, the reservoir would behave “more like a lake.”
ab_0003-091	Fort Nelson First Nation	Section 11.7, page(s) 11-102 - 121, line(s) All within Section 11.7; Comment # KeeferTable67	In this section there is little mention of why changes to ice formation patterns will be relevant socially or ecologically. There should be more text included to illustrate the connection of ice cover to animal passage and human travel to explain why such importance is placed on these models.	Assessment of the effects of the predicted changes in the thermal and ice regime are described in Sections 12 Fish and Fish Habitat, 14 Wildlife Resources, 19 Current Use of Lands and Resources for Traditional Purposes, 25 Outdoor Recreation and Tourism, 26 Navigation and 31 Transportation.
ab_0003-092	Fort Nelson First Nation	Section 11.8.3, page(s) 11-123, line(s) 9; Comment # KeeferTable68	The referenced figure shows two green circles which according to the legend are site C locations. This map would also be much more useful if it included labels for the Alces River, Beaton River, Smokey River, and the Vermillion Chutes, all which are referenced within and are significant to this section.	The green circle at Dunvegan in Section 11, Figure 11.8.2, is an error. This update has been added to the List of Errata and Updated Information. Figure 11.7.1 of the EIS illustrates the location of the Alces River, the Beaton River, and the Smoky River. The location of Vermilion Chutes is shown on Figure 11.4.4.
ab_0003-093	Fort Nelson First Nation	Section 11.8.3.2, page(s) 11-124, line(s) 26-29;	How does limiting the analysis to data from a 10 year period increase accuracy? Why would this 10 year data set represent the most accurate hydro-climatic conditions? What happened in 2000 that makes data from before this date less relevant? Is the hydro-climate in this region changing extremely rapidly? Is the only available data from 2000-2009? If so, this should be communicated.	As described in Section 11.8.5, 2000-2009 period was selected as the reference baseline period because it represents recent (current) hydro-climatic conditions, and because this period contains a range of hydrologic conditions, including a large flood event in 2001 and low flow years in 2006 and 2009, so is suitable to characterize the range of conditions that could be expected in the reservoir. It was concluded that the analysis provides a reliable characterization

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		Comment # KeeferTable69		of changes due to the Project.
ab_0003-094	Fort Nelson First Nation	Section 11.8.3.3, page(s) 11-126, line(s) 17-27; Comment # KeeferTable70	Mean Annual Suspended Sediment is well studied, but seasonal effects are not. Seasonal suspended load is only presented for upstream of the proposed dam site. Need to have down-stream seasonal suspended sediment load to adequately access seasonal impacts. It is likely that suspended load during spring freshet accounts for majority of the mean annual suspended load values.	A description of potential seasonal changes in suspended sediment concentrations downstream of the Site C dam is provided in Section 5.2.2.2 of Volume 2 Appendix I Fluvial Geomorphology and Sediment Transport Technical Data Report. Figures 5.7 through 5.10 of that report also illustrate the predicted changes.
ab_0003-095	Fort Nelson First Nation	Section 11.8.3.6, page(s) 11-128, line(s) 21-25; Comment # KeeferTable71	Does this refer to flow regulation at the Peace Canyon Dam? How long has flow regulation been in effect?	The onset of flow regulation refers to the start of Williston reservoir filling in 1967.
ab_0003-096	Fort Nelson First Nation	Section 11.8.4.1, page(s) 11-131, line(s) 7-21; Comment # KeeferTable72	The in-stream construction will occur during short events. Averaging the additional sediment load from these discrete events over an eight year period seems misleading. Furthermore, seasonal sediment load of the Peace River should be considered since these in-stream construction events will likely be scheduled around seasonal weather conditions.	As described in Section 5.1 of Volume 2 Appendix I Fluvial Geomorphology and Sediment Transport Technical Data Report, fine sediment inputs from construction activities and headpond shoreline erosion would occur in an episodic manner, so short-term increases in suspended sediment concentration would be greater than the comparison of annual loads would suggest. Estimates of the episodic incremental increase in suspended sediment concentration by season are presented in Table 5.1 of this appendix.
ab_0003-097	Fort Nelson First Nation	Section 11.8.5.1, page(s) 11-136, line(s) 1-5; Comment # KeeferTable73	This seems misleading. This implies you have accurate data beyond this 2000-2009 range. If this is so, it would provide more accurate results to incorporate this data into analysis. Why would this 10 year data set represent the most accurate hydro-climatic conditions? What happened in 2000 that makes data from before this date less relevant? Is the hydro-climate in this region changing extremely rapidly?	Please see the response to ab_0003-093.
ab_0003-098	Fort Nelson First Nation	Section 11.8.5.1, page(s) 11-136, line(s) 17-19; Comment #	Do not understand how reservoir sediment dynamics can be used to characterize reservoir temperature nor do I see how it is relevant to this section.	The three-dimensional reservoir circulation model (H3D) was used for two purposes: - characterisation of the reservoir water temperature and ice regime (described in Volume 2 Appendix H); and - characterisation of the reservoir sediment regime (described in Appendix G of Volume 2 Appendix I).

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		KeeferTable74		
ab_0003-099	Fort Nelson First Nation	Section 11.8.5.2, page(s) 11-140, line(s) 25-28; Comment # KeeferTable75	Agree that seasonal effects are important, but need quantitative results in discussion.	Predicted suspended sediment concentrations for baseline and operations periods are shown on a seasonal basis in Table 11.8.4 and Figure 11.8.16. A description of seasonal changes is provided in Section 11.8.5.2 of the EIS.
ab_0003-100	Fort Nelson First Nation	Section 11.8.5., page(s) 11-142 and 11-143, line(s) 42-43 and 1-4; Comment # KeeferTable76	Even if bed material is rarely mobilized under normal operating conditions, a 54% reduction of suspended sediment (64% during spring) should have impact at least initially on morphology immediately downstream (even without the 5000m3/s flow rate). Stating that there are no expected changes to channel erosion further downstream seems like an overstatement. Deposition and erosion are directly dependant on suspended sediment. Even if flow rates are so low that no sediment is eroded from river banks or river bed (which seems impossible), there would at least be a small decrease in deposition following downstream confluences.	Please see the response to ab_0004-052.
ab_0003-101	Fort Nelson First Nation	Section 11.9.4, page(s) 11-150, line(s) 2-5; Comment # KeeferTable77	It is acknowledged that some export of carbon might occur during the construction phase of this project, yet goes on to say that it is not accounted for and makes predictions slightly more conservative (as they are based on no export of carbon prior to impoundment). Are there no estimates to include in models based on data from existing reservoir construction projects? Or factors to adjust estimates by?	There were no carbon estimates or data from other reservoir construction available that could be used in the mercury modelling. Consequently, it was not possible to account for potential loss of carbon downstream and implications for reducing the potential pool of methylmercury. This made predictions more conservative from a mercury perspective. Refer to Volume 2 Appendix J Mercury Technical Reports Part 3 for information on mercury modelling.
ab_0003-102	Fort Nelson First Nation	Section 11.10.2, page(s) 11-172, line(s) 37-38; Comment # KeeferTable78	Definition of visibility in darkness does not make sense.	The definition for visibility is the standard definition used for meteorological purposes by the International Civil Aviation Organization and is appropriate for the Microclimate study.
ab_0003-103	Fort Nelson First Nation	Section 11.10.4, page(s) 11-179, line(s) 20-21;	Only mentions “likely” and “extremely likely” confidence intervals. Looking at the figures, “very likely” is between these intervals. Does that mean that “very likely” indicates the 92.5% confidence interval? What about the rest of the likelihood descriptors?	For the Microclimate study (Section 11.10 and Volume 2 Appendix K), statistical significance is expressed using the likelihood terminology employed by the Intergovernmental Panel on Climate Change (2007), which is referenced in Volume 2 Appendix K.

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		Comment # KeeferTable79		
ab_0003-104	Fort Nelson First Nation	Section 11.10.5, page(s) 11-179, line(s) 42-44; Comment # KeeferTable80	This section states that the model predicts weather patterns at the BC Hydro Site C weather stations ‘well enough’. This statement does not adequately present results to prove that the model is accurate. Comparison between model predictions and actual observed weather at these stations need to be quantified.	Model predictions are sufficient for characterising the differences between the base case and the future (with-Project case). These differences are quantified in Sections 11.10.7 Temperature, 11.10.8 Wind Speed, 11.10.9 Mixing Ratio (humidity), 11.10.10 Precipitation and 11.10.11 Fog and Visibility.
ab_0003-105	Fort Nelson First Nation	Section 11.10.7, page(s) 11-180, line(s) 24-30; Comment # KeeferTable81	States that no “statistically significant” changes were observed beyond 1 km from the reservoir. “Statistically significant” needs to be defined. According to the figure 11.10.5 and 11.10.6, the large temperature changes discussed that occur in the fall along the reservoir are “unlikely” or “about as likely as not” to occur. Are results that are “unlikely” to occur “statistically significant”?	The statistical significance of predicted changes in temperature is described in Volume 2 Appendix K Section 5.1. The results presented in Figures 11.10.5 and 11.10.6 are statistically significant.
ab_0003-106	Fort Nelson First Nation	Section 11.10.7, page(s) 11-180, line(s) 31; Comment # KeeferTable82	Figure 11.10.7 would be more useful if it the statistical significance were also plotted for each site.	The statistical significance of predicted changes in temperature is described in Volume 2 Appendix K Section 5.1.
ab_0003-107	Fort Nelson First Nation	Section 11.10.8, page(s) 11-181, line(s) 3-5; Comment # KeeferTable83	Statistical Significance needs to be better defined and discussed. Are results that are labeled “unlikely” still significant?	The statistical significance of predicted changes in wind speed is described in Volume 2 Appendix K Section 5.3.
ab_0003-108	Fort Nelson First Nation	Section 11.10.8, page(s) 11-181, line(s) 6-13; Comment # KeeferTable84	The statistical significance at this location should be discussed.	Please see the response to ab_0003-107.

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ab_0003-109	Fort Nelson First Nation	Section 11.10.8, page(s) 11-182, line(s) 20; Comment # KeeferTable85	"A few percent" is a vague statement. Need a quantitative range.	Changes in mixing ratio above ground level are described in detail in Volume 2 Appendix K Section 5.4, including the quantitative range of changes.
ab_0003-110	Fort Nelson First Nation	Section 11.10.10, page(s) 11-183, line(s) 3-20; Comment # KeeferTable86	Why is statistical significance avoided in this section? Should at least discuss confidence in results. Why the decrease in precipitation? Is this what you would expect when creating a large reservoir?	The statistical significance of predicted changes in precipitation is described in Volume 2 Appendix K Section 5.2. The reasons for changes in precipitation are also described in Volume 2 Appendix K Section 5.2.
ab_0003-111	Fort Nelson First Nation	Section 11.11.4.3, page(s) 11-190, line(s) 39-40; Comment # KeeferTable87	It states here that dustfall monitoring data was collected and utilized for the closed Bullmoose and Quintette mines. If these mines are closed and activity causing the overturning of dust has ceased, why is this data being used to interpret a present day baseline condition?	As stated in Volume 2 Appendix L Section 3.3.2, dustfall data from the closed Bullmoose and Quintette mines was included as baseline data to "provide context for historical dustfall from industrial activity in the region." Data from these two locations were not used in the predictions of changes in air quality that may be attributed to the Project.
ab_0003-112	Fort Nelson First Nation	Section 11.11.4.5, page(s) 11-192, line(s) 20-22; Comment # KeeferTable88	It would be best to revise this sentence to include the rationale for excluding fugitive dust and burning from the dispersion model, rather than simply deferring to the report. For example, "Localized air quality impacts from these activities are hard to predict and model at this point in the project. Volume 2 Appendix L Air Quality Technical Data Report provides the rationale for excluding these emissions from the dispersion modelling."	BC Hydro has reviewed this suggestion and will leave the wording in this section unchanged.
ab_0003-113	Fort Nelson First Nation	Section 11.11.4.5, page(s) 11-192, line(s) 19-22; Comment # KeeferTable89	These sentences mislead the reader into thinking fugitive dust and smoke from clearing and burning, significant contributors to PM and CO emissions, are entirely excluded from consideration. A sentence should be appended here to confirm the inclusion of these sources in the CACs totals for the Project after dispersion modelling. For example "Though not included in the CALPUFF model, projected total emissions from road dust and clearing activities are estimated for each year of project development and included in tables for combined total emissions of	The emission sources included in the scope of Project emissions are listed in Section 11.11.4.4. The list includes: <ul style="list-style-type: none"> - open burning and incineration of clearing debris - fugitive emissions of road dust on paved and unpaved access roads. BC Hydro has reviewed this suggestion and will leave the wording in this section unchanged.

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			CACs.”	
ab_0003-114	Fort Nelson First Nation	Section 11.11.3, page(s) 11-196, line(s) 8; Comment # KeeferTable90	This paragraph implies that impacts from road dust and clearing activities is negligible and not considered for management and mitigation, which is untrue. An appended sentence would be suitable here to reference the BC Hydro’s commitment to manage these impacts (despite their exclusion of the model) , such as: “Though impacts from burning were excluded from the dispersion model due to their unpredictable nature, BC Hydro has drafted a smoke management plan for burning activities to manage for acute impacts from smoke”. This was referenced in the Technical Report (Appendix L) and should be brought to the reader’s attention.	Section 35.2.2.2 Air Quality Management Plan states" Topics that would be addressed in the plan include: - Reduction and control of emissions and dust from clearing - Reduction and control of emissions and dust from operating vehicles and equipment - Reduction and control of emissions and dust from extracting, transporting, stockpiling, processing, and placing construction materials - Road dust control". BC Hydro has reviewed this suggestion and will leave the wording in this section unchanged.
ab_0003-115	Fort Nelson First Nation	Section 11, page(s) 197, line(s) 16-19; Comment # KeeferTable91	Vehicle emissions from out of town traffic to the construction site (from Chetwynd, Hudson’s Hope, etc.) were excluded as their associated line (mobile) emissions are not significant within the study area, yes, however, it is irresponsible to dismiss these impacts in this statement. An additional sentence should be appended here to state “Out-of-town traffic is expected, however, and will contribute to emissions outside the dispersion modelling study area though they are not quantified here”.	As stated in Section 11.4.4, emissions from mobile vehicles are included in the emission sources considered. BC Hydro has reviewed this suggestion and will leave the wording in this section unchanged.
ab_0003-116	Fort Nelson First Nation	Section 11.12.2.1, page(s) 11-201, line(s) 27-28; Comment # KeeferTable92	Statement reads “this Guideline does not directly address wildlife, traffic noise, or vibration”. It would be good to clarify what wildlife means here: impacts to wildlife?	The BCOGC Guidelines do not directly address effects of noise and vibration on wildlife.
ab_0003-117	Fort Nelson First Nation	Section 11.12.2.5, page(s) 11-205, line(s) 7-9; Comment # KeeferTable93	The statement “Summer is considered the most sensitive period for changes in outdoor noise levels, as it is the time of year when windows are open at night when people are trying to sleep” implies that the only impacts for consideration are those to humans, negating those to wildlife. This sentence should be removed.	The effects of noise on wildlife are described in Section 14.3. BC Hydro has reviewed this suggestion and will leave the wording in this section unchanged.
ab_0003-118	Fort Nelson First Nation	Section 11.12.5.1, page(s) 11-213, line(s) 16; Comment #	This statement reads that operational levels are expected to be lower than those at construction and are therefore “expected to be less than 3 dBA”. This assumption that levels are to be lower than restricted is unsupported.	Section 11.12.5.1 Line 16 states "changes at receptors are expected to be less than 3 dBA". A rationale for this statement is described in Volume 2 Appendix M Section 4.2.1, paragraph 2.

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		KeeferTable94		
ab_0003-119	Fort Nelson First Nation	Section 11.12.5.2, page(s) 11-213, line(s) 23-24; Comment # KeeferTable95	The statement that “during the operation phase, the reservoir may be used for more recreational activities than currently occur on the river” is unfounded. There is nothing to support that Site C reservoir will have greater recreational value than the existing river reach and this statement should be removed.	The potential effects of the Project on Outdoor Recreation and Tourism are described in Section 25. Section 25.4.2.1 states "After the early reservoir years and over the long-term operation of the Site C reservoir is expected to have a beneficial effect, resulting from an expected increase in formal and managed outdoor recreation infrastructure that would support a variety of recreation activities on the Site C reservoir." The reasons why the reservoir is expected to have a beneficial effect on outdoor recreation are described in Section 25.4.2.1.
ab_0003-120	Fort Nelson First Nation	Vol 2 Sec 12.1, page(s) 12-1, line(s) 25; Comment # KeeferTable96	Modeling is only as good as the baseline data . Population estimates and genetic assessments are seriously lacking for arctic grayling. More data and information is needed.	Please see the response to ab_0003-014.
ab_0003-121	Fort Nelson First Nation	Vol 2 Sec 12.1.1, page(s) 12-1, line(s) 31-33; Comment # KeeferTable97	It remains to be seen how the changes to the Fisheries Act will affect this assessment and what the consequences will be for this project.	Thank you for your comment.
ab_0003-122	Fort Nelson First Nation	Vol 2 Sec 12.1.2, page(s) 12-3, line(s) 32; Comment # KeeferTable98	Stated “blocked fish movement may result in genetic fragmentation of the population”, but then is not addressed anywhere in the EIS. This needs to be clarified/quantified.	Section 7.0 of Volume 2 Appendix O summarizes information on fish genetics, which is taken into account in the effects assessment for Fish and Fish Habitat. Mitigation for fish passage is described in the effects assessment, and refers to detailed information in the Fish Passage Management Plan (Volume 2 Appendix Q). This mitigation includes: "A periodic capture and translocation program for small-fish species will be implemented, contingent on the results of investigative studies into the genetic exchange requirements of upstream and downstream populations."
ab_0003-123	Fort Nelson First Nation	Vol 2 Sec 12.1.1, page(s) 12-4, line(s) 1; Comment # KeeferTable99	Table 12.2. Many of the project activities and physical works will also affect fish movement, although the table does not reflect that (e.g. channelization and diversion works etc).	The effect of changes to fish movement are described in Section 12.4.5 and in Section 12.5.3 of the EIS, and in more detailed in Volume 2 Appendix Q Parts 1 through 5. The potential changes to fish movement during Stage 1 Channelization and Stage 2 Diversion are included under the heading of 'Reservoir Preparation and Filling – Component Level Interactions' in Table 12.2.
ab_0003-124	Fort Nelson First Nation	Vol 2 Sec 12.1, page(s) 12-4, line(s) 10-12; Comment #	Contradictory sentence. How can interaction occur but be avoided at the same time?	For clarification: The interaction would occur, but potential effects can be avoided through design changes or mitigation measures.

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		KeeferTable100		
ab_0003-125	Fort Nelson First Nation	Vol 2 Sec 12.1.4, page(s) 12-5, line(s) 7; Comment # KeeferTable101	Table 12.3. Key indicators for change in fish health and survival talks about relative abundance but really need population estimates and genetic population data (effective or meta-population size) to determine impacts and conservation requirements.	Table 12.3 Key Indicators includes all indicators used specifically in the assessment of effects on Fish and Fish Habitat. Population estimates and genetics are key aspects used to describe baseline conditions and predictive analysis, in accordance with Section 10.2.3 and 10.2.4 of the EIS Guidelines.
ab_0003-126	Fort Nelson First Nation	Vol 2 Sec 12.1.5.1, page(s) 12-6, line(s) 4-6; Comment # KeeferTable102	What is a measurable effect influencing fish and fish habitat and where do we draw the line (thresholds)?	An example of a measureable effect influencing fish and fish habitat is the change in total suspended sediment concentration in the water. Total suspended sediment concentration can be predicted with models and measured in the field, and established thresholds are available using provincial and federal guidelines for TSS for the protection of aquatic life.
ab_0003-127	Fort Nelson First Nation	Vol 2 Sec 12.1.2, page(s) 12-6, line(s) 18-20; Comment # KeeferTable103	Is there no consideration for decommissioning the dam?	BC Hydro has no plans to decommission the dam. Refer to Section 4.6 for considerations regarding dam decommissioning.
ab_0003-128	Fort Nelson First Nation	Vol 2 Sec 12.2.1, page(s) 12-7, line(s) 28; Comment # KeeferTable104	The Peace River Fish Index Program was insufficient to obtain arctic grayling abundance and did not look at tributary contributions of effective fish population sizes. Its only value is presence/absence data.	The Peace River Fish Indexing Program was able to calculate quantitative bull trout and mountain whitefish population estimates for index sections, and provide detailed information on species composition, distribution and relative abundance information on all fish in the fish community.
ab_0003-129	Fort Nelson First Nation	Vol 2 Sec 12.3, page(s) 12-9, line(s) 13; Comment # KeeferTable105	Again, relative abundance has limited value to establish conservation goals.	For clarification: The referenced paragraph does not mention conservation goals. For further reference, conservation goals for fish populations are established by appropriate provincial regulatory authorities, not BC Hydro. Relative abundance is one line of evidence used for the fish and fish habitat assessment.

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ab_0003-130	Fort Nelson First Nation	Vol 2 Sec 12.3.1, page(s) 12-11, line(s) 1-3; Comment # KeeferTable106	That makes 7 species of interest not 6	This update has been added to the List of Errata and Updated Information; however, the update does not change the results of the effects assessment.
ab_0003-131	Fort Nelson First Nation	Vol 2 Sec 12.3.2.1, page(s) 12-14, line(s) 13-15; Comment # KeeferTable107	These species usually spawn in summer or fall but not always.	Thank you for your comment
ab_0003-132	Fort Nelson First Nation	Vol 2 Sec 12.3.2.3, page(s) 12-26, line(s) 25; Comment # KeeferTable108	Don't all fish species move locally?	As described in the Section 12.3.2.3 in the EIS: "There are four movement strategies identified below. These movement strategies are not mutually exclusive as a given species, life stage, or distinct group may use one or more of these strategies."
ab_0003-133	Fort Nelson First Nation	Vol 2 Sec 12.3.2.8 , page(s) 12-29, line(s) 12-28; Comment # KeeferTable109	The system is obviously already largely impacted by water flow regulation upstream. Cumulative impacts should take this into account as well . The importance of tributaries and side channels is crucial, reservoir creation will affect both: side channels will disappear reducing further the limited habitat availability for small fish and young-of-the-year for larger species.	See the Technical Memo: Cumulative Effects Assessment. See also Section 12, Fish and Fish Habitat.
ab_0003-134	Fort Nelson First Nation	Vol 2 Sec 12.3.2.8 , page(s) 12-29, line(s) 20-22; Comment # KeeferTable110	Refuge and over-wintering habitat should be added to the definition	The fish habitat definition stated in Section 12.3.2.8, page 12-29 cannot be changed because it is quoted from the reference cited.

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ab_0003-135	Fort Nelson First Nation	Vol 2 Sec 12.4, page(s) 12-32, line(s) 1; Comment # KeeferTable11 1	Table 12.11. We think creation of the reservoir and altered fish assemblage should be included in interactions. We also believe all interactions have the potential to affect Fish Health and Survival.	Reservoir creation is included in Table 12.11 under the construction phase.
ab_0003-136	Fort Nelson First Nation	Vol 2 Sec 12.4, page(s) 12-32, line(s) 4-5; Comment # KeeferTable11 2	Are we talking about construction or operation?	For clarification: The statement refers to construction activities.
ab_0003-137	Fort Nelson First Nation	Vol 2 Sec 12.4.1.1, page(s) 12-33, line(s) 15; Comment # KeeferTable11 3	This is a simplified definition of habitat quality and inadequate. High numbers of fish do not necessarily mean habitat quality (see literature regarding habitat requirements vs. habitat use (Rosenfeld, 2003))	Thank you for your comment.
ab_0003-138	Fort Nelson First Nation	Vol 2 Sec 12.4.1.2, page(s) 12-34, line(s) 27-29; Comment # KeeferTable11 4	Very misleading. An increase in water levels upstream of the dam would provide new habitat for some species but will also destroy habitat used by other species (e.g. cold species). We would not consider this to constitute “additional habitat”. Also contradicts lines 42-44.	As stated in the EIS, page 12-34, this fluctuation would limit the ability of fish to utilize the newly formed habitats in the headpond. The increased water levels during channelization and diversion would increase available wetted foraging habitat for fish; however, due to the fluctuations, portions of the foraging habitat would be temporary.
ab_0003-139	Fort Nelson First Nation	Vol 2 Sec 12.4.2.1, page(s) 12-35, line(s) 31; Comment # KeeferTable11 5	Is the potential creation of a littoral zone really biologically productive or ecologically functional in a reservoir? Maybe not.	Volume 2, Appendix P, Part 2 and Part 3, provide detailed information that describes the potential productivity of the littoral zone of the potential Site C reservoir. Section 12.8 describes follow-up programs to verify effects assessment, including the productivity of the littoral zone of the reservoir.
ab_0003-140	Fort Nelson First Nation	Vol 2 Sec 12.4.2.1,	A 0.6 m daily variation in water levels is definitely not trivial. What would be the variation in the other 40% of the time?	A 0.6 metre daily variation is very small compared to other reservoirs in BC, and less variation than normally observed seasonally in natural lakes.

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		page(s) 12-35, line(s) 36; Comment # KeeferTable11 6		The other 40% of the time, the daily range of reservoir levels would be between 0.6 m and 1.8 m. For additional information on reservoir variation, refer to Section 11.4 Surface Water Regime in Section 11.4.4 Surface Water Conditions During Operation (Reservoir).
ab_0003-141	Fort Nelson First Nation	Vol 2 Sec 12.4.2.1, page(s) 12-35, line(s) 38-39; Comment # KeeferTable11 7	Most species? It then acknowledges some species will not be present after the creation of the reservoir.	The referenced statement is accurate.
ab_0003-142	Fort Nelson First Nation	Vol 2 Sec 12.4.2.1, page(s) 12-35, line(s) 40-41; Comment # KeeferTable11 8	During and after the transition to reservoir.	In Section 12.2.1, page 40-41 refers to the transition of the reservoir after impoundment into the future (>30yrs).
ab_0003-143	Fort Nelson First Nation	Vol 2 Sec 12.4.2.1, page(s) 12-36, line(s) 8-11; Comment # KeeferTable11 9	This can include the invasion of exotic species. There is no mention of that possibility anywhere in the document and should be addressed.	The scope of the Fish and Fish Habitat effects assessment is in accordance with the EIS Guidelines and appropriate information is provided in the EIS.
ab_0003-144	Fort Nelson First Nation	Vol 2 Sec 12.4.2.1, page(s) 12-36, line(s) 40; Comment # KeeferTable12 0	How is fish production defined? Growth, abundance, recruitment, survival?	Please see the Definition Section at the beginning of Volume 2. Definitions are also provided in each Appendix.
ab_0003-145	Fort Nelson First Nation	Vol 2 Sec 12.4.2.1, page(s) 12-37,	Littoral habitats associated with the reservoir will not help cold water species and will be much less productive than naturally occurring zones in uncontrolled lakes.	It is not clear from the comment what form of productivity is being described. This statement is based on Section 5.2 of Volume 2, Appendix Part 3 Future Conditions in the

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		line(s) 14-16; Comment # KeeferTable12 1		Peace River, which estimates the change in secondary productivity pre- and post-Project. Estimates of the benthic productivity of littoral areas post-Project are based on measurements in the littoral zone of Dinosaur Reservoir, which are precautionary as the Site C reservoir will likely be more productive than Dinosaur Reservoir owing to the longer water residence time.
ab_0003-146	Fort Nelson First Nation	Vol 2 Sec 12.4.2.1, page(s) 12-38, line(s) 18-25; Comment # KeeferTable12 2	This section is misleading. A substantial increase in total biomass of primary production between present and future conditions is to be expected since the body of water will more than triple in size. More telling is the fact that the density of periphyton is expected to decrease to 5% of its current density. They mention both but always emphasize the total increase in biomass. This is done throughout the document.	Biomass is more important than cell density because it incorporates size of living cells and density, and biomass that is used as food by invertebrates. Biomass is also the standard measure for modeling ecological systems. Hence, biomass is used in preference to cell density in description throughout the EIS.
ab_0003-147	Fort Nelson First Nation	Vol 2 Sec 12.4.2.1, page(s) 12-39, line(s) 7-19; Comment # KeeferTable12 3	BCH uses semantics to make the reality seem like less of an impact. The total biomass of harvestable fish may increase, but the richness and diversity will decrease. In the way they present the results, the increase in biomass for some species masks the decline for others, in the same group or in others (e.g. group 1 where biomass increases but walleye biomass declines). Very misleading.	Please see the responses to ab_0003-008 and ab_0003-009.
ab_0003-148	Fort Nelson First Nation	Vol 2 Sec 12.4.2.1, page(s) 12-39, line(s) 22-25; Comment # KeeferTable12 4	This too is very misleading. The 2.3 fold increase in benthic biomass corresponds in fact to a decline of 30% compared to present conditions, since the increase in reservoir area is 3.3 fold.	Benthic invertebrate biomass and production measurements are expressed on an areal basis and at the whole habitat level. At the whole habitat level, area is included in the calculations as explained and results are shown in Volume 2, Appendix P, Part 1, Section 3.6.3.
ab_0003-149	Fort Nelson First Nation	Vol 2 Sec 12.4.2.1, page(s) 12-39, line(s) 43; Comment # KeeferTable12 5	The statement that tributary populations would persist in the Halfway River may not hold true for arctic grayling that would move into the newly created reservoir instead of the Peace River as they did in the past and would likely do very poorly there, with potential to impact the population.	Both Volume 2 Appendix P Part 3, Future Conditions in the Peace River, and Volume 2 Appendix Q Part 3, Using Single Species Population Models of Bull Trout, Kokanee and Arctic Grayling to Evaluate Site C Passage Alternatives, assume that Arctic grayling will not be abundant in the proposed reservoir because they will not be well adapted to the habitat conditions in the proposed reservoir. Table 6D.3 in Volume 2 Appendix P3 lists the Ecopath assumptions for Arctic grayling, which range from 0% of current biomass (minimum (C) and most likely (B) scenarios) to 10% of current biomass (maximum (A)).
ab_0003-150	Fort Nelson First Nation	Vol 2 Sec 12.4.2.1,	Comparing the Williston to the Site C reservoir is a poor comparison as the Williston is much larger with a greater variety of opportunities for lake whitefish	The context of the referenced comment is consistent with Section 6.4 of Volume 2 Appendix P Part 3 Future Aquatic Conditions of the Peace River (pg. 57), which describes the model

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		page(s) 12-40, line(s) 44; Comment # KeeferTable126	that may not exist in the Site C reservoir . Lake Whitefish are not currently spawning in the Peace River tributaries and may not in the future.	assumptions made regarding kokanee and lake whitefish, and their rationale: "This model suggests that, if the trend to increasing kokanee dominance were to continue in Williston Reservoir, long term kokanee biomass in the proposed Site C reservoir would be about 1.8 t/km2. This is lower than Williston Lake because turbine and sublethal mortality lowers the biomass of fish entering Site C reservoir from Williston and Dinosaur, while high entrainment rates could make it difficult for fish populations to take advantage of better growing conditions in Site C reservoir. In the shorter term, lake whitefish are predicted continue to form a substantial fraction of the pelagic fish biomass in both Williston reservoir and the proposed Site C reservoir, though they are expected to be much less abundant than kokanee." Table 6.5 (pg. 57 of Volume 2 Appendix Part 3) shows that between 2000 and 2008, the biomass density of kokanee increased 9.2-fold in Williston Reservoir, while the biomass density of lake whitefish decreased by 52%.
ab_0003-151	Fort Nelson First Nation	Vol 2 Sec 12.4.2.1, page(s) 12-41, line(s) 24; Comment # KeeferTable127	Kokanee are not currently spawning in the Peace River tributaries so it is unlikely that they will become the dominant fish species in the reservoir with only recruitment from Williston . They will need to naturalize if they are to become dominant in the new fish assemblage.	Please see the response to ab_0001-246.
ab_0003-152	Fort Nelson First Nation	Vol 2 Sec 12.4.2.1, page(s) 12-41, line(s) 30; Comment # KeeferTable128	There is no mention of arctic grayling in the long term so we are assuming they are extirpated? Can BCH verify this?	As described in Section 12.6.3.2, Conclusion, there are expected significant adverse effects to the Moberly River grayling. Please see the response to ab_0003-014.
ab_0003-153	Fort Nelson First Nation	Vol 2 Sec 12.4.2.2, page(s) 12-43, line(s) 18-20; Comment # KeeferTable129	That stage change is substantial and would definitely strand fish.	The assessment has concluded that stranding will occur, and that the potential for stranding fish is uncertain. Section 12.8 describes follow-up programs for fish and fish habitat which includes a program to monitor stranding effects. BC Hydro will work with appropriate regulatory authorities in the development of mitigation measures and appropriate follow-up requirements.
ab_0003-154	Fort Nelson First Nation	Vol 2 Sec 12.4.2.2,	These discharge rates of change seem very high, but we have no idea what the stage change would be and thus the effects on fish .	Refer to Volume 2 Appendix D Surface Water Regime Technical Memos for information on stage changes.

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		page(s) 12-43, line(s) 31-36; Comment # KeeferTable13 0		Section 12.4.1.1 describes changes in health and survival of fish that would result from fish stranding during the operations phase of the Project. The assessment concluded that stranding risk downstream of the dam will increase, and this increased risk would be most prominent between the dam and the Pine River. As a result in the uncertainty in this assessment follow-up monitoring is required. Section 12.8 describes follow-up programs for fish and fish habitat which includes a program to monitor stranding effects. BC Hydro will work with appropriate regulatory authorities in the development of mitigation measures and appropriate follow-up requirements.
ab_0003-155	Fort Nelson First Nation	Vol 2 Sec 12.4.2.2, page(s) 12-44, line(s) 3-6; Comment # KeeferTable13 1	This would effect habitat quality as well as quantity	The changes in flow regime between the dam and Pine River would affect habitat quality and quantity, and this has been taken into account in the assessment. Refer to Volume 2 Appendix D Surface Water Regime Technical Memos for information on stage changes, changes to water velocity, and changes to water depth.
ab_0003-156	Fort Nelson First Nation	Vol 2 Sec 12.4.2.2, page(s) 12-44, line(s) 11-12; Comment # KeeferTable13 2	Which could have very important consequences for fish populations downstream.	As a result of current flow regulation of the Peace River, fish populations have adopted patterns of habitat use to accommodate these changes. The importance of spatial changes to the temporal availability of habitat for the fish in the Peace River downstream of the Project is unknown, but will not alter the characterization of the significance of residual effects on fish and fish habitat.
ab_0003-157	Fort Nelson First Nation	Vol 2 Sec 12.4.2.2, page(s) 12-44, line(s) 29-30; Comment # KeeferTable13 3	Indeed, it is unlikely that habitat submitted to such variations in flow would be used much by fish. The water fluctuations would also affect deeper habitats with habitats at the right depth at lower flows becoming too deep at high flows.	The responses of fish populations (in terms of habitat use) to changes to wetted area and water level during the operation of the Project is uncertain. As described in Section 12.8, follow-up programs will be undertaken to verify predictions of the effects. Please see the Technical Memo: Uncertainty and Precaution.
ab_0003-158	Fort Nelson First Nation	Vol 2 Sec 12.4.2.2, page(s) 12-44, line(s) 31-34; Comment # KeeferTable13	Ramping definitely has the potential to effect all of these habitats and fish stranding should be an issue.	Fish stranding during the construction and operation phases of the Project are described in Section 12.4.3.2 and 12.4.4.1, respectively. A follow-up program to address stranding is described in Section 12.5.2.2.

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ab_0003-159	Fort Nelson First Nation	Vol 2 Sec 12.4.2.2, page(s) 12-45, line(s) 16-18; Comment # KeeferTable13 5	For how long? A few years of high sediment loads can be enough to extirpate a fish population. This section does not consider other geomorphic features that will be effected by flow alteration (e.g. channel forming mechanisms, transport of large woody debris etc.)	<p>Refer to Section 11.2 Geology, Terrain and Soils and Appendix B Geology Terrain Stability and Soil Reports for information on the duration and characteristics of expected reservoir erosion processes. The location, potential erosion volumes, and duration are a function of the potential wave energy and the erodibility of the geological materials present at the reservoir shoreline. Refer to Section 11.2.3.7 for more detailed information.</p> <p>Refer to Volume 2 Appendix I Fluvial Geomorphology and Sediment Transport Technical Data Report for a description of the geomorphic features affected by the flow regime. Please also see Volume 1 Appendix A, Vegetation Clearing and Debris Management Plan.</p>
ab_0003-160	Fort Nelson First Nation	Vol 2 Sec 12.4.2.2, page(s) 12-45, line(s) 34-2; Comment # KeeferTable13 6	How come this project would not result in any changes to the channel erosion or deposition patterns if they acknowledge in the same sentence that the river channel is still responding to the flow regulation that started in 1967? What are the cumulative impacts?	<p>Refer to Section 11.8 and Volume 2 Appendix I Fluvial Geomorphology and Sediment Transport Technical Data Report for the description of baseline conditions and expected changes as a result of the Project.</p> <p>Please also see the Technical Memo: Cumulative Effects Assessment.</p>
ab_0003-161	Fort Nelson First Nation	Vol 2 Sec 12.4.2.2, page(s) 12-46, line(s) 5; Comment # KeeferTable13 7	Higher suspended sediments in the winter could have serious implications to over-wintering fish that do not have refuge habitat in side channels to escape to during low flows. This may offset any benefit to winter habitat as stated in 12-46 -33	The changes in suspended sediments in the winter are small (0.1 to 0.6 mg/L) and not considered to have implications on over-wintering fish.
ab_0003-162	Fort Nelson First Nation	Vol 2 Sec 12.4.2.2, page(s) 12-46, line(s) 13; Comment # KeeferTable13 8	A “doubling of mountain whitefish which are assumed to benefit from an increase in water clarity downstream” contradicts an increase of sediment load during the fall and winter (12-46-5) when whitefish would be most vulnerable.	<p>The predictions of change to mountain whitefish are supported by observations in the existing Peace River and areas downstream of other B.C. dams.</p> <p>Currently, coldwater sportfish, mainly mountain whitefish, dominate the upstream sections of the Lower Peace River and are replaced by suckers and minnows farther downstream (Appendix O Fish and Fish Habitat Technical Data Report, Fig 5.2.2). This pattern is predicted to occur in the areas downstream of the Site C dam following Project completion. MW is the most common species in the tailwater of Peace Canyon Dam (Appendix O, Figures 5.2.4 to 5.2.21) and therefore is expected to be the most common species downstream of the proposed Site C dam. Currently, catch rates of large mountain whitefish (Appendix O, Fig. 5.2.7) in areas near Peace Canyon (Sections 1&2) are approximately double those in areas below the Site C dam (Sections 5&6), implying that there is the potential for densities to increase in areas below the Site C dam. Mountain whitefish are the most common in the areas below other load-following facilities (e.g.</p>

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				<p>Mica Dam, 2011 Revelstoke Reservoir Fish Inventory Data Report 2011; Revelstoke Dam, Middle Columbia River Fish Population Indexing Program CLBMON 16). Age 0 mountain whitefish were concentrated in areas below Peace Canyon Dam as well as below major tributaries (App O Figure 6.4.4).</p> <p>Section 12.8 describes follow-up programs to verify the effects assessment.</p>
ab_0003-163	Fort Nelson First Nation	Vol 2 Sec 12.4.2.2, page(s) 12-46, line(s) 17-21; Comment # KeeferTable139	Are there any expected impacts on timing of fry emergence, if water temperatures changes?	<p>Potential changes in fry emergence timing for fish that spawn in the Peace River near the Site C dam were taken into account in the assessment.</p> <p>Changes to downstream water temperature are described in Appendix P Part 2 Hydrodynamic, Water Quality and Productivity Modelling for the Project. The magnitude of the differences in water temperature at the Alces River is one degree C or less on an annual and seasonal basis. Changes in emergence timing could be approached by comparing pre- and post-project estimates of accumulated thermal units (ATUs) over the period of egg incubation; however, this approach would be confounded by spawning timing and the factors that cue initiation of spawning. Further, for mountain whitefish, evidence from other watersheds suggests that emergence is triggered by stimuli other than water temperature, as the size and stage of development of the fry was similar across tributaries with different temperature profiles (McPhail and Troffe 1998. The mountain whitefish (<i>Prosopium williamsoni</i>): a potential indicator species for the Fraser System). The scope of the assessment of Fish and Fish Habitat is in accordance with the EIS guidelines and appropriate information is provided in the EIS.</p>
ab_0003-164	Fort Nelson First Nation	Vol 2 Sec 12.4.2.2, page(s) 12-46, line(s) 26-28; Comment # KeeferTable140	Any anticipated impacts from climate change?	<p>The potential influence of climate change on the hydrology of the Peace basin is described in Volume 2 Appendix T Climate Change Summary Report. A description of climate change as it relates to the analysis of the influence of the Project on the surface water regime (quantity, timing, and rate of change of flow and water level), and thermal and ice regime (including water temperature) is described in Section 11.4 and Section 11.7, respectively. Climate change is also taken into account in Section 37.1, which describes the effects of the environment on the Project.</p>
ab_0003-165	Fort Nelson First Nation	Vol 2 Sec 12.4.2.2, page(s) 12-47, line(s) 1-3; Comment # KeeferTable141	How will the important daily fluctuations in flow at the outlet of the dam influence that formation of ice?	<p>Refer to Appendix G Downstream Ice Regime Technical Data Report.</p>
ab_0003-	Fort Nelson	Vol 2 Sec	So basically, all this increase in total fish biomass is attributed to doubling in the	<p>The statement referred to in the Information request is accurate.</p>

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166	First Nation	12.4.2.2, page(s) 12-47, line(s) 9-17; Comment # KeeferTable14 2	biomass of mountain whitefish due to clearer water, while burbot, lake trout, rainbow trout, walleye, northern pike, bull trout, and arctic grayling are expected to decline, and kokanee and lake whitefish are negligible. Very misleading to say total fish biomass will increase.	The net biomass will increase; however, the relative proportions of different species will change.
ab_0003-167	Fort Nelson First Nation	Vol 2 Sec 12.4.2.2, page(s) 12-47, line(s) 20-23; Comment # KeeferTable14 3	A 3-fold decrease in benthics will support a doubling of mountain whitefish? How?	<p>Please see the top of page 54 of Volume 2 Appendix P Part 3 for an explanation of how benthos was generally not limiting despite a 72% decrease in biomass, specifically the following:</p> <p>"In the downstream model for the Peace River, ecotrophic efficiencies for benthos were well below 1.0 for the High and Most Likely CE-QUAL-W2 scenarios, indicative of no shortage of benthos, despite the forced reduction in benthic biomass described under No. 3 above. Therefore, there was no propagating effect to higher trophic levels in the downstream model for all Ecopath runs involving the High and Most Likely CEQUAL- W2 scenarios. However, in the Low CE-QUAL-2 scenarios for the downstream Ecopath model, ecotrophic efficiencies were higher (~0.4). The decision was therefore made by the modelling team to include a propagating effect to higher trophic levels of changes in benthos in low CE-QUAL-2 estimate scenarios."</p> <p>The consequence of these conservative adjustments is that in the Low CE-QUAL-2 scenarios for the downstream Ecopath model (Table 6B.2, Volume 2 Appendix P Part 3), mountain whitefish are predicted to have between 0.74 to 0.81 of their reference biomass densities, instead of 2.0 (prediction for the High and Most Likely CEQUAL- W2 scenarios).</p>
ab_0003-168	Fort Nelson First Nation	Vol 2 Sec 12.4.2.2, page(s) 12-48, line(s) 15-17; Comment # KeeferTable14 4	How will the cold water species extend their range downstream, especially arctic grayling, when stated that these species will be in decline? Very contradictory to previous statement.	The statements are not contradictory. Cold-water fish species that are downstream of the dam may be inclined to move further downstream in response to changes in habitat conditions, such as changes to turbidity levels in spring which are predicted to be lower in the Peace River post dam construction. Arctic grayling could be one of these species to move further downstream.
ab_0003-169	Fort Nelson First Nation	Vol 2 Sec 12.4.2.2, page(s) 12-48, line(s) 25-27; Comment # KeeferTable14 5	But with declining biomass.	<p>Analyses did confirm biomass reductions, as noted in the comment.</p> <p>The overall effects on the upstream and downstream biomass densities (t/km2) of all major fish species are summarized for a range of Ecopath and CE-QUAL-W2 scenarios (over both the early and longer term stages) in Appendix 6B of Volume 2, Appendix P Part 3.</p>
ab_0003-	Fort Nelson	Vol 2 Sec	Can this be mitigated?	Refer to the EIS Section 12.5 Mitigation Measures for mitigation measures for managing the

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170	First Nation	12.4.3.1, page(s) 12-50, line(s) 24-27; Comment # KeeferTable14 6		effects of sediment introduction on fish and fish habitat. Construction monitoring programs will be implemented during construction as described in Section 35 Summary of Environmental Management Plans.
ab_0003-171	Fort Nelson First Nation	Vol 2 Sec 12.4.3.1, page(s) 12-51, line(s) 8-10; Comment # KeeferTable14 7	This is a long period. Long enough to seriously affect fish populations, even if the long-term effects are not suspected to be harmful to fish.	Refer to the EIS Section 12.5 Mitigation Measures for mitigation measures for managing the effects of sediment introduction on fish and fish habitat. Construction monitoring programs will be implemented during construction as described in Section 35 Summary of Environmental Management Plans.
ab_0003-172	Fort Nelson First Nation	Vol 2 Sec 12.4.3.1, page(s) 12-52, line(s) 42-43; Comment # KeeferTable14 8	Does this include all of the stream crossings on tributaries as well? Temporary or permanent?	The paragraph referred to is discussing describing Highway 29 realignment bridge crossings, and the discussion description includes all water crossings associated with the Highway 29 work. The generation of sediment inputs would be temporary. BC Hydro will work with appropriate regulatory authorities in the development of mitigation measures.
ab_0003-173	Fort Nelson First Nation	Vol 2 Sec 12.4.3.2, page(s) 12-53, line(s) 34-35; Comment # KeeferTable14 9	No “increase” in the risk of stranding fish... What is the current risk then, and why is there such a difference in risk of stranding fish between construction and operation phases?	As per the direction of the EIS Guidelines, the effects of stranding from existing facilities are accounted for in the baseline. The statement, "no increase in the risk of stranding fish", means that there will not be an incremental change (increase) to the risk of stranding after the implementation of mitigation.
ab_0003-174	Fort Nelson First Nation	Vol 2 Sec 12.4.3.3, page(s) 12-55, line(s) 1-3; Comment # KeeferTable15 0	Where is the supporting evidence for these high survival rates?	The survival of fish entrained through the diversion tunnels is estimated to be high and is described in Volume 2 Appendix Q Fish Passage Management Plan, Attachment C-4 Fish Mortality During River Diversion.
ab_0003-175	Fort Nelson First Nation	Vol 2 Sec 12.4.3.4,	This statement requires further explanation and support.	The statement regarding uncertainty for estimation of total dissolved gas concentrations refers to the approach for deriving predictions, whereby a consistent systematic bias is present for the

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		page(s) 12-58, line(s) 25-27; Comment # KeeferTable15 1		evaluation of each spillway option. Therefore, the relative incremental benefits of each spillway at reducing total dissolved gas are reliably determined.
ab_0003-176	Fort Nelson First Nation	Vol 2 Sec 12.4.4.1, page(s) 12-59, line(s) 2-4; Comment # KeeferTable15 2	It is acknowledged that the current operation of the Peace Canyon Dam produce flow variations that have the potential to strand fish, yet no studies of fish stranding were ever conducted?	BC Hydro is not aware of detailed studies sufficient to quantify fish stranding due to flow changes downstream of the Peace Canyon. BC Hydro will work with appropriate regulatory agencies to develop mitigation for fish stranding associated with the Project.
ab_0003-177	Fort Nelson First Nation	Vol 2 Sec 12.4.4.1, page(s) 12-59, line(s) 12; Comment # KeeferTable15 3	Daily water level range is quite substantial.	The predicted daily water range described in the referenced section is comparable to that which occurred between 2008 and 2010 under baseline conditions.
ab_0003-178	Fort Nelson First Nation	Vol 2 Sec 12.4.4.1, page(s) 12-59, line(s) 15-17; Comment # KeeferTable15 4	The rate of water level reduction is enough to strand fish. How was the ramping rate calculated (average stage reduction over an hour, maximum stage change over an hour)?	Rate of change of water level is calculated based on the change in level that would be observed from one hour to the next. Refer to Volume 2 Appendix D, Part 2 Downstream Flow Modelling (1D).
ab_0003-179	Fort Nelson First Nation	Vol 2 Sec 12.4.4.1, page(s) 12-59, line(s) 27-30; Comment # KeeferTable15 5	Indeed, but still a substantial daily variation. It is possible that fish may become conditioned to these daily variations. However, these flow variations would reduce the value of the upper littoral zone that is most productive for small fish, thereby reducing the extent of new habitat created.	As described in Section 12.5, a follow-up program will be implemented to verify the effects of flow fluctuations on the health and survival of fish, including fish stranding. BC Hydro will work with appropriate regulatory authorities in the development of mitigation measures.
ab_0003-180	Fort Nelson First Nation	Vol 2 Sec 12.4.4.3, page(s) 12-62,	The key word is “average”. How often would maximum spill volumes be expected?	Refer to Section 11.4.4.2.3 for a description of Spill Frequency, Magnitude, Duration and Seasonality. A summary of analyses of predicted maximum spill volumes is provided in Table 11.4.8.

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		line(s) 37-40; Comment # KeeferTable15 6		
ab_0003-181	Fort Nelson First Nation	Vol 2 Sec 12.4.6, page(s) 12-65, line(s) 29; Comment # KeeferTable15 7	"would not affect population level conservation objectives" This statement is completely unfounded especially if the trap/haul technologies are less successful. It is recognized though that bull trout abundance will decline.	<p>The text referred to in the Information Request from the EIS is: "The combined effects of entrainment and blocked upstream movement have a potential effect on the abundance of bull trout, but would not affect population-level conservation objectives."</p> <p>The population-level conservation objectives for bull trout are described in Volume 2 Appendix Q2 sub-section 2.1.2 Conservation Objectives and Performance Measures, and are based on 'Government of British Columbia. 2011. Recommended Fish, Wildlife and Ecosystem Valued Components and Objectives for the Lower Peace River, Site C Project Area'. These conservation objectives include performance measures for abundance, spatial distribution, population structure, and age and size structure. These performance measures are calculated using a bull trout population model (Volume 2 Appendix Q3) that took into account the portion of the bull trout population that move past the Site C dam location. This assessment concluded that: "Predicted total bull trout abundance varied by less than 10% across the different fish passage alternatives that were modelled, including the alternative involving no mitigated fish passage." (Volume 2 Appendix Q3). These predicted changes in abundance did not create a conservation risk given the stock productivity and other factors (Volume 2 Appendix Q3). This result was not sensitive to the effectiveness of mitigation by trap and haul. Trap and haul mitigation is recommended as a precautionary measure, and the fish Passage Management Plan is an adaptive approach to deal with uncertainty in the prediction of effects and effectiveness of mitigation.</p>
ab_0003-182	Fort Nelson First Nation	Vol 2 Sec 12.5.1.1, page(s) 12-67, line(s) 6; Comment # KeeferTable15 8	How much of the reservoir perimeter does this represent? Are there any initiatives planned for other areas?	<p>BC Hydro currently owns farmland on the north bank of the Peace River. Additional farmland on the north side of the reservoir may be purchased by BC Hydro so the actual area that could be planted with riparian vegetation is currently uncertain.</p> <p>BC Hydro will work with appropriate regulatory authorities in the development of mitigation measures.</p>
ab_0003-183	Fort Nelson First Nation	Vol 2 Sec 12.5.1.2, page(s) 12-67, line(s) 10; Comment # KeeferTable15 9	It depends on the morphology of the shoreline. It could still be quite a large drawdown zone.	Since the drawdown of the proposed reservoir is limited, there will not be a large drawdown zone. The shoreline morphology will determine the area of shoreline that is wetted or dewatered during reservoir fluctuations.

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ab_0003-184	Fort Nelson First Nation	Vol 2 Sec 12.5.1.2, page(s) 12-67, line(s) 19-20; Comment # KeeferTable160	Contradicts statement in previous section. The stage change will at least double downstream of the Site C dam as well as many other changes to fish habitat downstream, as previously discussed.	<p>The referenced statement - "Operation of the Project will result in limited changes to the pattern of flow released and the changes to fish habitat downstream of the Project" is not contradictory.</p> <p>The influence of the Project on the average rate of change of water levels from one hour to the next was analyzed as described in Volume 2 Appendix D Surface Water Regime Technical Memos, Part 2 Downstream Flow Modelling (1D). The previous section (12.4.4.2) states: "At the Site C tailrace, results suggest that water level decreases of 0.25 m/hour or more would only occur 9% of the time with the Project, compared to 0% without the Project. At Taylor, the modelling suggests that water level decreases of 0.25 m/hour or more would occur only 3% of the time with the Project, compared to never without the Project" and "changes to the flow regime would affect the temporal and spatial availability of Peace River fish habitats. The effects would be highest in the 15.9 km section of Peace River between the Site C dam and the Pine River confluence because there are no large tributary inputs that would attenuate the flows."</p>
ab_0003-185	Fort Nelson First Nation	Vol 2 Sec 12.5.2.1, page(s) 12-68, line(s) 37; Comment # KeeferTable161	Interesting that the need for a program of fish salvage and relocation is mentioned here but that the importance of fish stranding is dismissed in other sections... Is this program planned for only during construction?	Changes in health and survival as a result of fish stranding was assessed to be an effect of the Project for both construction and operation phases of the Project. Stranding was not characterized as a residual effect as follow-up programs (as described in Section 12.5) will mitigate the effects.
ab_0003-186	Fort Nelson First Nation	Vol 2 Sec 12.5.2.1, page(s) 12-69, line(s) 1; Comment # KeeferTable162	How will BCH define and detect ramping events? Are events considered to be similar to other run-of-the-river facilities in BC? More information is needed.	Surveillance of fish habitat areas where periodic exposure of channel margins occurs will be implemented to evaluate the effects of flow fluctuations. This surveillance will involve physical monitoring to evaluate changes in water level and surveys to establish whether fish stranding occurs and if it does occur the key stranding risk locations.
ab_0003-187	Fort Nelson First Nation	Vol 2 Sec 12.5.3.1, page(s) 12-72, line(s) 9; Comment # KeeferTable163	Unclear. What are the alternatives if the trap/haul does not work and can they be in place before damage to the population occurs?	Please see the response to ab_0001-293.
ab_0003-	Fort Nelson	Vol 2 Sec	It is stated in Appendix Q that this is unlikely to work for arctic grayling and that	Please see the response to ab_0001-453.

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188	First Nation	12.5.3.1, page(s) 12-72, line(s) 29; Comment # KeeferTable16 4	in the long term, it is unlikely that the arctic grayling population can be sustained above Site C. This is unacceptable.	
ab_0003- 189	Fort Nelson First Nation	Vol 2 Sec 12.5.3.2, page(s) 12-74 to 12-79, line(s) N/A; Comment # KeeferTable16 5	Table 12.19 Most potential effects are categorized under “recommended mitigation measures will reduce but not fully mitigate potential effects of project”. Except for the fish stranding, for which they say that the recommended measures will fully mitigate – we disagree! They first said that not much was known about stranding, to later say that flow and stage change would change substantially downstream of the Project, and that the risk of stranding would increase. They propose a vague monitoring program, and say that it will be enough?! Highly unlikely, and too easily dismissed. Finding stranded fish is challenging. Detecting the reservoir and tailrace water fluctuations is challenging. Saying that it won't have any effects on fish population is not valid. We do not know with certainty what effects it can have, but we can assume that fish population will be affected. Moreover, the area for which to assess stranded fish is huge, and it is hard to believe that any monitoring or compensation program for stranded fish would fully mitigate effects of flow ramping. Same comments apply for Table 12.20 (dismissing fish stranding from Project’s residual effects), page 12-80 (330).	Certainty in the assessment of the effects of the risk of stranding has not been misrepresented. Section 12.8, Follow-up monitoring, including a fish stranding follow-up program, will be implemented to assess uncertainties associated with the effects assessment. Please see the Technical Memo: Uncertainty and Precaution.
ab_0003- 190	Fort Nelson First Nation	Vol 2 Sec 12.6, page(s) 12-82, line(s) 10; Comment # KeeferTable16 6	Again, this uncertainty of success is not acceptable. There needs to be other plans in place or compensation strategies developed, especially for arctic grayling. Table 12.23 states that there will be a “loss of distinct fish group” due to “hindered fish movement due to obstruction”.	To clarify, the reference to Table 12.23: 'Hindered fish movement due to obstruction' contributes, together with other categories of effects, to the loss of a distinct group because the reservoir habitat affects the movement of Arctic grayling, as described in sub-section 12.6.3.1 Discussion of the Significance of Residual Adverse Effects: "The habitat changes from the construction headpond and reservoir creation may alter the movement patterns of fish that are not adapted to reservoir habitats such are Arctic grayling. Section 12.8 describes follow-up programs to verify effect assessment. Please also see the Technical Memo: Uncertainty and Precaution.
ab_0003- 191	Fort Nelson First Nation	Vol 2 Sec 12.6.3.1, page(s) 12-93, line(s) 1; Comment # KeeferTable16	Table 12.23. Fish stranding should be included to Health and Survival	Stranding was not characterized as a residual effect taking into account mitigation. Section 12.8 Follow-up monitoring, including a fish stranding follow-up program, will be implemented to assess uncertainties associated with the effects assessment. Therefore, fish stranding was not included in Table 12.23.

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ab_0003-192	Fort Nelson First Nation	Vol 2 Sec 12.6.3.1, page(s) 12-93, line(s) 16-20; Comment # KeeferTable16 8	This can have important consequences for the local ecosystem, economy and First Nations.	The new ecosystem is predicted to support equal or greater levels of long-term standing stock biomass of fish populations and is expected to change the relative species composition. This may have consequences for the local ecosystem, economy and First Nations.
ab_0003-193	Fort Nelson First Nation	Vol 2 Sec 12.6.3.1, page(s) 12-94, line(s) 7; Comment # KeeferTable16 9	Include ramping.	For Clarification: Stranding was not characterized as a residual effect because it was assumed the follow-up program would be effective. Therefore, stranding was not included in Table 12.23 and not described as a residual effect Section 12.6.3.1.
ab_0003-194	Fort Nelson First Nation	Vol 2 Sec 12.6.3.1, page(s) 12-94, line(s) 16-17; Comment # KeeferTable17 0	Which groups of fish? Must be far more transparent.	Refer to Section 12.6.3.2 Conclusions for a description of key fish species expected to be affected by the Project.
ab_0003-195	Fort Nelson First Nation	Vol 2 Sec 12.6.3.2, page(s) 12-95, line(s) 7; Comment # KeeferTable17 1	There is no evidence that this would occur.	<p>The statement is that Arctic grayling are abundant in other tributaries cannot be refuted because of existing information, such as that provided in Volume 2 Appendix O Fish and Fish Habitat Technical Data Report. Thus, the hypothesis that these tributaries provide recruitment to the Peace River is strongly inferred from fisheries information available. As outlined in Section 12.8, follow-up monitoring will be undertaken to verify effects assessments.</p> <p>Please see the Uncertainty and Precaution.</p>
ab_0003-196	Fort Nelson First Nation	Vol 2 Sec 12.6.3.2, page(s) 12-95, line(s) 21; Comment # KeeferTable17 2	This statement is completely unsupported and invalid.	<p>The statement that the probability of the loss of the migratory portion of the Halfway Bull trout population being low is based on literature reviews, experience in other BC Hydro reservoirs, modelling and professional analysis. As outlined in Section 12.8, follow-up monitoring will be undertaken to verify effects assessments.</p> <p>Please see the Technical Memo: Uncertainty and Precaution.</p>

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ab_0003-197	Fort Nelson First Nation	Section 13.1, page(s) 13-1, line(s) 7-8; Comment # KeeferTable17 3	How is it that all vegetation and ecological communities were selected as a single VC? Typically specific vegetation types are used as a VC; representing specific values that are of concern/importance/surrogate/rare, and are able to be measured and tracked.	The Vegetation and Ecological Communities VC was selected in accordance with Section 8 of the EIS Guidelines. The assessment of potential effects on Vegetation and Ecological Communities is in accordance with the EIS Guidelines and appropriate information is provided in the EIS
ab_0003-198	Fort Nelson First Nation	Section 13.1.2.1, page(s) 13-2-13-3, line(s) 40-42, 1-7; Comment # KeeferTable17 4	Unclear of the justification of using sampling along the transmission line as a 'random sample' of the surrounding region. The transmission line is a disturbed and managed corridor, and would have different ecological characteristics than undisturbed areas.	Section 13.1.2.1 of the EIS provides the reason, as suggested by participants at the Technical Advisory Committee meetings.
ab_0003-199	Fort Nelson First Nation	Section 13.1.2.3, page(s) 13-4, line(s) 2; Comment # KeeferTable17 5	In addition to the five key aspects (line 16-26) the following should be considered . Loss of vegetation and topographic heterogeneity, leading to loss of ecosystem resilience (Drever et al. 2006; Dale 1998) Cumulative regional effects on plant species and communities due to projected loss of riparian and valley side habitat from Site C, when combined with previous losses from Bennett and Peace Canyon projects.	BC Hydro has reviewed this suggestion and will leave the wording in this section unchanged. The scope of the Vegetation and Ecological Communities effects assessment is in accordance with the EIS Guidelines and appropriate information is provided in the EIS. Please see the Technical Memo: Cumulative Effects Assessment.
ab_0003-200	Fort Nelson First Nation	Section 13.2.1.2, page(s) 13-11, line(s) 1; Comment # KeeferTable17 6	The area of rare and sensitive plant communities is 19% of the LAA. When combined with the habitats of the identified rare plants, a reasonable and conservative estimate is: one quarter of the LAA contains plant species or plant communities at risk. Some form of compensatory mitigation is in order .	Section 13, Table 13.15 in the EIS lists the mitigation measures BC Hydro is proposing to address effects of the Project on vegetation and ecological communities. BC Hydro will work with appropriate regulatory authorities in the development of mitigation measures for rare plants.
ab_0003-201	Fort Nelson First Nation	Volume 2 Table 13.6, page(s) 13-12, line(s) n/a; EISG Table 13.6 Comment #	Table 13.6 is difficult to evaluate due to the use of vernacular names with no Latin names . We assume bearberry is <i>Arctostaphylos uva-ursi</i> , and spearmint is in fact field mint (<i>Mentha arvensis</i>). We are unaware of any native species in the northeast called blackberry though know a number of species with dark purple fruit. 'Wild potato' could be a number of plants, and may in fact occur in the project under a different name. It is unclear whether 'cranberry' is <i>Viburnum edule</i> or <i>Oxycoccus oxycoccus</i> , two very different plants with rather different	The common names used in Table 13.6 follow the names provided in Traditional Use Studies that identified plants used for food and medicinal purposes. Scientific names were deliberately not used to avoid attributing the incorrect name based on interpretation of the common name. As such, BC Hydro will not be adding scientific names to this table. The Terrestrial Ecosystem Mapping expanded legend was searched for the names provided in the TLUS and when they were not found it was noted that the species was "not recorded during ecosystem mapping surveys".

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		KeeferTable17 7	<p>autecologies. Field mint, bearberry and soapberry (<i>Shepherdia canadensis</i>) are listed as “not recorded during ecosystem mapping surveys,” but have multiple occurrences in the LAA (see Vol. 2 Appendix R Sub-Appendix F, and e-flora BC, 2013) – table should be updated.</p> <p>For the purposes of this section it is suggested that BC Hydro hire an Ethnobotanist to clarify the taxonomic issues so that the impacts to these plants may be more fully assessed. It is clear that the list of plant species provided is woefully inadequate and that it does not reflect the diversity of plants used by the local First Nations. It is also suggested that a proper attempt be made with the First Nations to identify their traditional plants in a manner that may be translated to accepted nomenclature. For the purposes of the EA, BC Hydro only should require the plant names, not the uses; as such there should be no intellectual property issues with the First Nations. BC Hydro should offer funding and potentially methodological assistance to all affected First Nations to correct this substantial deficiency.</p>	The scope of the vegetation and ecological communities effects assessment is in accordance with the EIS Guidelines and appropriate information is provided in the EIS
ab_0003-202	Fort Nelson First Nation	Section 13.3.1.1, page(s) 13-18, line(s) 22; Comment # KeeferTable17 8	<p>Total area of wetlands affected is listed as 675 ha; however summing the “Total Hectares in Project Activity Zone” (Table 13.11, p. 13-19) yields a figure of 796ha. A final size is needed from BCH.</p>	<p>As found in description on page 13-18, Section 13.3.1.1 of the EIS, the total area of wetlands directly affected by Project construction is 675 hectares. Additionally, 121 hectares of wetland has the potential to be altered during operations.</p> <p>Table 13.11 reflects the total sum of wetlands affected directly and indirectly by the Project.</p>
ab_0003-203	Fort Nelson First Nation	Volume 2 Table 13.12, page(s) 13-20, line(s) 1; Comment # KeeferTable17 9	<p>Comparing “Total Rare Vascular Plant Occurrences Potentially Affected” with: “Rare Vascular Plants Found Within the LAA” (Vol 2 Appendix R Table 1.3.3) yields the following:</p> <p>45% of Rare Vascular Plant species: every documented occurrence potentially affected by construction.</p> <p>25% of Rare Vascular Plants: half or more documented occurrences potentially affected by construction.</p> <p>See Comment 178,above.</p>	Section 13.3.1.2 of the EIS indicates that 122 of 142 BCMOE-listed vascular plant occurrences are expected to be lost during construction. By design, rare plant survey coverage was greater in the Project activity zone than in the larger LAA. Because of this, the recommended analysis was not completed, as it misrepresents Project effects on rare plants.
ab_0003-204	Fort Nelson First Nation	Volume 2 Table 13.14, page(s) 13-24, line(s) 17; Comment # KeeferTable18	<p>Habitat restoration will be crucial to the survival of the four Red-listed plant species in the LAA, but no details are provided on the “Habitat Restore” action anywhere in the EIS. More detail is needed.</p>	<p>Habitat restoration and re-vegetated plans will be developed on a site by site basis and will consider rare plant occurrences. A rare plant botanist will provide input into restoration plans in areas with known rare plant occurrences.</p> <p>BC Hydro will work with appropriate regulatory authorities in the development of mitigation measures.</p>

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ab_0003-205	Fort Nelson First Nation	Volume 2 Table 13.15, page(s) 13-27, line(s) 1; Comment # KeeferTable18 1	Under Construction Mitigation Measures/Avoidance, “seed mixes” are referred to, but no detail is provided, either in the Table or in Vol. 5 Section 35.2.2.19. Will the seed mixes consist of native species or introduced species? What seed purity standards will be required? BC Hydro is requested to provide further detail.	Where feasible, seed mixes will use native species, and will be certified weed free. The Vegetation and Invasive Plant Management Plan (Section 35.2.2.22) will be developed with appropriate regulatory authorities as part of the permitting process, if the Project proceeds. Please also see Section 13.3 of the EIS.
ab_0003-206	Fort Nelson First Nation	Volume 2 Table 13.15, page(s) 13-31, line(s) n/a; Comment # KeeferTable18 2	Control of invasive plants within the LAA is critical to the health of surrounding ecosystems. The Provincially-listed noxious weed species <i>Centaurea diffusa</i> , <i>Centaurea biebersteinii</i> , <i>Cirsium vulgare</i> , <i>Descurainia sophia</i> and <i>Tripleurospermum inodorum</i> are reported in the LAA, either in Vol. 2 Appendix R or by E-Flora BC, or both. Other non-noxious invasives are also present. The Vegetation and Invasive Plant Management Plan (Section 35.2.2.22) provides minimal detail on invasive plant control measures. It is basically a plan to have a Plan, more detail is required.	A Vegetation and Invasive Plant Management Plan (Section 35.2.2.22) will be developed. BC Hydro will work with appropriate regulatory authorities in the development of mitigation measures.
ab_0003-207	Fort Nelson First Nation	Volume 2 Table 13.15, page(s) 13-32, line(s) n/a; Comment # KeeferTable18 3	More detail needs to be provided for revegetation as ‘regionally appropriate’ is too vague. We suggest that BC Hydro applies a local genetic native plant revegetation model that will see local seed collections, propagation at a native plant nursery and planting back on the affected sites. We recognise BC Hydro’s experience at Right of Way management yet must assert that this company is amongst the largest vectors of invasive plants in the Province. More sincere efforts/plans to control invasive plants along powerlines must be implemented. In order to consider the translocation program additional detail is needed. It is suggested that a long term target of 1:1 is appropriate; such a goal would require substantial plantings to incorporate losses.	The comments will be considered in the development of revegetation plans. Invasive species along the transmission line affected by the Project will be managed. Please see Section 13, Table 13.15, page 13-32. The rare plant translocation program is under development and will follow the parameters outlined in Volume, 2, Section 13, Table 13.3 and Section 19, Table 19.15. . A 1:1 replacement is not possible as not all rare plant species are suitable for translocation. BC Hydro will work with appropriate regulatory authorities in the development of mitigation measures.
ab_0003-208	Fort Nelson First Nation	Volume 2 Table 13.15, page(s) 13-33, line(s) n/a; Comment # KeeferTable18 4	The overall goal here should be a long term 1:1 replacement of rare plant species and communities that are extirpated by the project.	The rare plant translocation program is under development and will follow the parameters outlined in Volume, 2, Section 13, Table 13.3. A 1:1 replacement is not possible as not all rare plant species are suitable for translocation. Rare communities cannot be replaced, their loss due to Project and the inability to replace them contributed to the finding of a significant adverse residual effect to the Vegetation and Ecological Community VC.
ab_0003-	Fort Nelson	Volume 2	It would be appropriate if the creation of novel shoreline plant communities in	BC Hydro will take this suggestion into account. BC Hydro will work with appropriate regulatory

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209	First Nation	Table 13.4.1, page(s) 13-34, line(s) n/a; Comment # KeeferTable18 5	the proposed reservoir were considered. It is believed that with a minimal drawdown reservoir being constructed that there may be substantial opportunities for such an offset. We believe that such novel wetlands would be of relatively low value compared to that of natural wetland, however they would offer substantial ecological value at a habitat replacement ratio that must be determined.	authorities in the development of mitigation measures.
ab_0003-210	Fort Nelson First Nation	Volume 2 Table 13.5.2, page(s) 13-40, line(s) 21-24; Comment # KeeferTable18 6	What is the definition of residual effects? Across a broad landscape scale, it is inappropriate to suggest that activities within the RAA (Regional Assessment Area) will not influence areas within the LAA (Local Assessment Area) as nutrient flows, hydrological cycles, wildlife movement, traditional use and other factors are not static – they are dynamic and they fluctuate, migrate, move and change.	The definition of residual effects used to assess the potential effects of the Project on Vegetation and Ecological Communities is as per the definition in Section 8.5.2.3: "residual adverse effects are the effects of the Project that may remain after taking into account the implementation of mitigation measures". The cumulative effects assessment follows methods described in Section 10 Effects Assessment Methodology.
ab_0003-211	Fort Nelson First Nation	Volume 2 Table 13.5.2, page(s) 13-40, line(s) 37-38; Comment # KeeferTable18 7	In order to determine cumulative effects, each individual project and activity cannot be taken into account separately or isolated from the whole. Boutin <i>et al.</i> (2009) state that “although it may be desirable and necessary to separate individual stressors for experimental purposes, it is the cumulative effects of all human activities that ultimately determine biodiversity change.” Furthermore, the introduction and spread of weeds causes significant cumulative effects including ecological, cultural, social and economic impacts.	The approach for characterizing cumulative effects is described in Section 10 Effects Assessment Methodology. Please see the Technical Memo: Cumulative Effects Assessment.
ab_0003-212	Fort Nelson First Nation	Volume 2 Table 13.5.2, page(s) 13-41, line(s) 4-5; Comment # KeeferTable18 8	In order to determine cumulative effects, each individual project and activity cannot be taken into account separately or isolated from the whole. Boutin <i>et al.</i> (2009) state that “although it may be desirable and necessary to separate individual stressors for experimental purposes, it is the cumulative effects of all human activities that ultimately determine biodiversity change.” Furthermore, the introduction and spread of weeds causes significant cumulative effects including ecological, cultural, social and economic impacts.	Please see the response to ab_0003-211.
ab_0003-213	Fort Nelson First Nation	Volume 2 Table 13.5.2, page(s) 13-41, line(s) 23-25; Comment # KeeferTable18 9	This is a cumulative effect that needs to be addressed and mitigated.	Please see the response to ab_0003-211.
ab_0003-214	Fort Nelson First Nation	Volume 2 Table 13.5.2,	This is a cumulative effect that needs to be addressed and mitigated.	Please see the response to ab_0003-211.

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		page(s) 13-41, line(s) 33-36; Comment # KeeferTable19 0		
ab_0003-215	Fort Nelson First Nation	Volume 2 Table 13.5.2, page(s) 13-42, line(s) 10-11; Comment # KeeferTable19 1	This is a cumulative effect that needs to be addressed and mitigated.	Please see the response to ab_0003-211.
ab_0003-216	Fort Nelson First Nation	Volume 2 Table 13.5.2, page(s) 13-42, line(s) 19-21; Comment # KeeferTable19 2	This is a cumulative effect that needs to be addressed and mitigated.	Please see the response to ab_0003-211.
ab_0003-217	Fort Nelson First Nation	Volume 2 Table 13.5.2, page(s) 13-42, line(s) 39-41; Comment # KeeferTable19 3	This is a cumulative effect that needs to be addressed and mitigated.	Please see the response to ab_0003-211.
ab_0003-218	Fort Nelson First Nation	Volume 2 Table 13.5.2, page(s) 13-43, line(s) 11-13; Comment # KeeferTable19 4	This is a cumulative effect that needs to be addressed and mitigated.	Please see the response to ab_0003-211.
ab_0003-219	Fort Nelson First Nation	Volume 2 Table 13.5.2, page(s) 13-43,	This is a cumulative effect that needs to be addressed and mitigated.	Please see the response to ab_0003-211.

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		line(s) 21; Comment # KeeferTable19 5		
ab_0003-220	Fort Nelson First Nation	Volume 2 Table 13.5.2, page(s) 13-43, line(s) 32-33; Comment # KeeferTable19 6	This is a cumulative effect that needs to be addressed and mitigated.	Please see the response to ab_0003-211.
ab_0003-221	Fort Nelson First Nation	Volume 2 Table 13.5.2, page(s) 13-43, line(s) 43; Comment # KeeferTable19 7	This is a cumulative effect that needs to be addressed and mitigated.	Please see the response to ab_0003-211.
ab_0003-222	Fort Nelson First Nation	Volume 2 Table 13.5.2, page(s) 13-44, line(s) 10-11; Comment # KeeferTable19 8	This is a cumulative effect that needs to be addressed and mitigated.	Please see the response to ab_0003-211.
ab_0003-223	Fort Nelson First Nation	Volume 2 Table 13.5.2, page(s) 13-44, line(s) 25-26; Comment # KeeferTable19 9	This is a cumulative effect that needs to be addressed and mitigated.	Please see the response to ab_0003-211.
ab_0003-224	Fort Nelson First Nation	Volume 2 Table 13.5.2, page(s) 13-44, line(s) 33-34;	This is a cumulative effect that needs to be addressed and mitigated.	Please see the response to ab_0003-211.

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		Comment # KeeferTable200		
ab_0003-225	Fort Nelson First Nation	Volume 2 Table 13.5.2, page(s) 13-45, line(s) 2-3; Comment # KeeferTable201	This is a cumulative effect that needs to be addressed and mitigated.	Please see the response to ab_0003-211.
ab_0003-226	Fort Nelson First Nation	Volume 2 Table 13.5.2, page(s) 13-45, line(s) 41621; Comment # KeeferTable202	This is a cumulative effect that needs to be addressed and mitigated.	Please see the response to ab_0003-211.
ab_0003-227	Fort Nelson First Nation	Volume 2 Table 13.5.2, page(s) 13-45, line(s) 26-27; Comment # KeeferTable203	This is a cumulative effect that needs to be addressed and mitigated.	Please see the response to ab_0003-211.
ab_0003-228	Fort Nelson First Nation	Volume 2 Table 13.5.2, page(s) 13-45, line(s) 36-37; Comment # KeeferTable204	This is a cumulative effect that needs to be addressed and mitigated.	Please see the response to ab_0003-211.
ab_0003-229	Fort Nelson First Nation	Volume 2 Table 13.5.2, page(s) 13-46, line(s) 24-25; Comment #	This is a cumulative effect that needs to be addressed and mitigated.	Please see the response to ab_0003-211.

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		KeeferTable205		
ab_0003-230	Fort Nelson First Nation	Volume 2 Table 13.5.2, page(s) 13-46, line(s) 40-42; Comment # KeeferTable206	This is a cumulative effect that needs to be addressed and mitigated.	Please see the response to ab_0003-211.
ab_0003-231	Fort Nelson First Nation	Volume 2 Table 13.5.2, page(s) 13-47, line(s) 6-9; Comment # KeeferTable207	This is a cumulative effect that needs to be addressed and mitigated.	Please see the response to ab_0003-211.
ab_0003-232	Fort Nelson First Nation	Volume 2 Table 13.5.2, page(s) 13-47, line(s) 22-25; Comment # KeeferTable208	This statement says that cumulative effects will occur which is contrary to the statements made in Section 19 about cumulative effects. This discrepancy needs to be addressed and reconciled.	Please see the response to ab_0003-024.
ab_0003-233	Fort Nelson First Nation	Volume 2 Table 13.5.2, page(s) 13-48, line(s) 26-28; Comment # KeeferTable209	This statement says that the cumulative effects that will occur will be significant which is contrary to the statements made in Section 19 about cumulative effects. This discrepancy needs to be addressed and reconciled.	Please see the response to ab_0003-024.
ab_0003-234	Fort Nelson First Nation	Volume 2 Appendix R Vegetation and Ecological Communities (Appendix H),	“The Conceptual Mitigation Plan for BC Hydro Lands West of Wilder Creek” has no provision for compensatory planting of native upland herbaceous vegetation, rare or otherwise.	The plan presented is conceptual, and draft in nature. The final plan will include a vegetation planting plan. BC Hydro will work with appropriate regulatory authorities in the development of mitigation measures.

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		page(s) 449-455, line(s) n/a; Comment # KeeferTable210		
ab_0003-235	Fort Nelson First Nation	Volume 2 Appendix R Vegetation and Ecological Communities (Appendix H.2.), page(s) 451, line(s) n/a; Comment # KeeferTable211	“Establish old field/grassland habitat in portions areas that are currently in hay/pasture production.” If these fields have been previously cultivated, they are likely dominated by introduced agronomic grasses such as smooth brome (<i>Bromus inermis</i>) and cannot be considered an offset or replacement for the native grasslands lost to the project.	For clarification: The intent is not to replace native grassland habitat. Rather, the intent is to create old field/grassland habitat that can be used by wildlife. Please see Section 14 and Appendix R, Parts 4, 5 and 6.
ab_0003-236	Fort Nelson First Nation	Section 14, page(s) 14-12, line(s) 4-12; Comment # KeeferTable212	Why a 1 km buffer? This spatial scale seems to be an arbitrary selection given that the zone of influence will vary by species (Polfus <i>et al.</i> 2011; Boulanger <i>et al.</i> 2012; Leblond <i>et al.</i> 2013).	Please see the Technical Memo: Spatial Boundary Selection.
ab_0003-237	Fort Nelson First Nation	Section 14; Volume 2 Appendix R_7 Mammals, page(s) 14-20, 133-135;153-159; Appendix C3 (338-345), line(s) 22-42; Comment #	The resource selection function (RSF) modelling completed for ungulates is rudimentary at best. The RSF is a simple bivariate analysis that relates animal GPS locations to land cover and slope at a pixel scale (e.g. 30-m). The spatial distribution of ungulates is driven primarily by the selection of areas at scales much larger than 30 m2 (but still within the scale of the LAA). The low quality of the analyses is reflected in the pseudo-R2 values listed in the referenced appendix, where many values are <0.05 and none are >0.25. These values imply that for many of the analyses, the RSF describes less than 5% of the variation of how animals select resources or are spatially distributed in the study area. With such poor model performance, it is simply not possible to assess how ungulate habitats will be affected by this project. Further, the poor performance of habitat models for ungulates calls into question the adequacy of models of other species assessed in the EIS.	The RSF model (used only for ungulates) is a vector/polygon analysis with a minimum polygon size of 2 ha and not a 30m2 grid/raster (using source map data). A random sample of study animals were captured and followed to assess habitat use and selection by moose, elk and mule-deer at the population scale. Beta coefficients of selection were significant and corresponded with expected ungulate habitat use as reported in the literature.

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		KeeferTable213		
ab_0003-238	Fort Nelson First Nation	Volume 2 Appendix R_7 Mammals, page(s) 134-135, line(s) n/a; Comment # KeeferTable214	<p>The methods used to evaluate the model fit / performance of the RSF is inadequate. The Hosmer-Lemeshow test is inappropriate for evaluating an RSF of a use-availability design, which is the design of this study.</p> <p>Curiously, after stating that the Hosmer-Lemeshow test is used, the authors cite a reference (Johnson et al. 2006) which clearly states “[t]he typical approaches for assessing logistic regression (e.g., ROC, Hosmer-Lemeshow goodness-of-fit, percent correctly classified, etc.) are inappropriate for the use–availability design”. (Johnson et al. 2006, p. 352). Along with the above comments, it is not possible to adequately assess how well the RSF models actually perform in modelling ungulate space use.</p>	The Hosmer-Lemeshow test is commonly used to assess model fit for logistic regression models across research disciplines that make use of binary data with large samples sizes. Other model fit statistics were also provided, including Wald Chi-Square and Pseudo R-Squared.
ab_0003-239	Fort Nelson First Nation	Section 14, page(s) Appendix C3, line(s) 214-217; Comment # KeeferTable215	<p>What RSF values were used to determine the categories of “High”, “Mod High”, etc., for the RSF maps? Most of the maps seem to be dominated by two categories, which implies that the cut-off values do not adequately portray the relative quality of resources on the landscape. Why not use a continuous representation of RSF values?</p>	<p>Suitable habitat was defined by using the upper 75% of pr (used) values (moderate to high suitability).</p> <p>The assessment is in accordance with the requirements of the environmental assessment, and provides appropriate information for the Wildlife Resources effects assessment.</p>
ab_0003-240	Fort Nelson First Nation	Section 14, page(s) 14-26, line(s) 44-following page line 3; Comment # KeeferTable216	<p>Winter range is important to ungulates, but so is summer range. Summer range quality is an important determinant in pregnancy rates and can influence over-winter survival (by directly influencing the build-up of fat reserves); therefore, the impacts of the project on ungulates should not be limited to only the winter (Cook <i>et al.</i> 2004; Parker <i>et al.</i> 2009).</p>	Please see the response to ab_0001-327.
ab_0003-241	Fort Nelson First Nation	Section 14, page(s) 14-29, line(s) Table 14.7; Comment # KeeferTable217	<p>Some of the species listed under Butterflies and Dragonflies and Amphibians and Reptiles are projected to have substantial losses of habitat (e.g. >20%). With this amount of habitat loss, efforts should be made to assess how this loss will affect the viability of these local populations (e.g. population viability analysis). Right now, there is not enough information to assess whether this amount of habitat loss represents a significant extirpation risk to these populations going forward.</p>	The assessment of potential effects of the Project on butterflies and dragonflies was conducted at a regional population level. Viability of local populations is considered under the key aspects of habitat loss and fragmentation, disturbance and displacement and mortality.
ab_0003-	Fort Nelson	Section 14,	The loss of habitat for some of these SARA -listed songbirds is disconcerting.	Please see the response to ab_0003-211.

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242	First Nation	page(s) 14-31, line(s) 27-34; Comment # KeeferTable21 8	When habitat loss is only considered on a project by project basis, the impact of one project can seem trivial; however, for these threatened species, habitat loss is often a prime driver of endangerment so the effect of the project should be considered within the context of the species' regional population . Similar to the above comments for butterflies and amphibians, it is difficult to evaluate how the habitat loss from this project will affect population persistence at a larger regional scale. Such analyses require that the project be considered within a larger regional assessment that assesses cumulative effects of all human-mediated disturbances. In general, a more complete assessment of the cumulative effects on wildlife populations, especially those SARA-listed, is necessary. These analyses should also assess whether the habitats lost are in fact important 'source habitats' for maintaining regional populations . The current assessment gives no indication as to the relative importance of these habitats on a larger scale.	Please also see the Technical Memo: Cumulative Effects Assessment, and EIS Section 10, Assessment Methodology.
ab_0003-243	Fort Nelson First Nation	Section 14, page(s) 14-41, line(s) 17-18; Comment # KeeferTable21 9	Text mentions relationship of species persistence to habitat quality yet little effort seems to have been made to actually measure habitat quality .	Habitat quality is taken into account through the habitat suitability modeling and mapping, and under the key aspect of habitat alteration and fragmentation.
ab_0003-244	Fort Nelson First Nation	Section 14, page(s) 14-75, line(s) 15-21; Comment # KeeferTable22 0	White-tailed deer can displace mule deer via apparent competition (Robinson <i>et al.</i> 2002). If the loss of prime mule deer winter range, pushes more mule deer into agricultural fields, this may not result in a 'neutral' effect (e.g. because agricultural fields have more food) as competition with white-tailed deer will necessarily increase.	<p>The numbers of mule deer are approximately 4-5 times that of white-tailed deer.</p> <p>Robinson et al. (2002) describe a situation where white tailed deer increased and mule deer decreased due to density dependent cougar predation on white tailed deer and density-independent or inverse density dependent predation on mule deer.</p> <p>Robinson et al. did not state that the two deer species competed directly for winter habitat, as the comment implies, but instead suggested that their interaction was mediated by the predator (cougar in this case). Their study area was mountainous habitat and did not include agricultural fields where deer wintered.</p>
ab_0003-245	Fort Nelson First Nation	Section 19, page(s) 19-83, line(s) 10-24; Comment # KeeferTable22 1	The mitigation measures outlined in section 19.4.5 are vague. For many First Nations, moose are the primary ungulate targeted for sustenance hunting. Will BC Hydro specifically be targeting compensation programs toward improving moose habitat elsewhere? Are there areas in the RAA that are suitable to such projects? Moose tend to prefer early seral habitats; thus, any activity aimed at compensating for a loss in moose habitat will necessarily lead to a further loss of habitat for species dependent on late seral vegetation. Mitigating against a loss of land (not simply habitat) will be difficult for terrestrial wildlife.	<p>Mitigation measures specific to moose (ungulates) are described in Section 14.4.</p> <p>BC Hydro has offered to consult with Aboriginal groups in the Project area about mitigation measures, and will continue to pursue discussions on this topic as part of the consultation process for the Project. As described in Section 9.2.4 (Process for Resolving Outstanding Issues with Aboriginal Groups), BC Hydro will seek to address outstanding issues by, among other activities, "continuing to seek input and engage in dialogue regarding the EIS and the Project, and to answer questions and address issues, interests, and concerns from Aboriginal groups by</p>

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				identifying appropriate mitigation measures and/or other appropriate means by which to address or resolve potential impacts."
ab_0003-246	Fort Nelson First Nation	Section 19.5, page(s) 19-16 to 19-19, line(s) n/a; Comment # KeeferTable22 2	There is no mention of FNFN's values in the Resource Use tables. The implications of these tick lists is that certain nations did not use certain species, however, from a cursory overview, these lists appear to be lacking and inadequate in capturing traditionally and medicinally used plants and berries, wildlife and resources. The inclusion of blackberries on this list is an interesting note – without latin names and with questionable common names, it is challenging to assess the accuracy of the plant section- latin names should be added to this list.	<p>At the time of writing, FNFN had not identified to BC Hydro any information with respect to land and resource use within the LAA. Consultation is ongoing between BC Hydro and the Fort Nelson First Nation, and may yield additional information. Should Fort Nelson First Nation provide additional information to BC Hydro, it will be considered.</p> <p>With respect to the use of common names, the names used in Table 13.6 follow the names provided in Traditional Use Studies provided to BC Hydro as of November 30, 2012, that identified plants used for food and medicinal purposes. Scientific names were not used to avoid attributing the incorrect name based on interpretation of the common name. The effects of the Project on opportunities and practices to harvest resources, including berries, herbs and medicinal plants, are assessed based on information reported in TLU studies and on the biophysical effects described in Section 13 of the EIS. Section 13 does not assess effects on individual plant species or plants, but rather on terrestrial ecosystems and ecological communities.</p>
ab_0003-247	Fort Nelson First Nation	Section 19.4, page(s) 19-66 to 19-67, line(s) 36 - 13; Comment # KeeferTable22 3	Although this report pertains to the area within the LAA, this comment suggests that FNFN does not have traditional rights that will be considered in the decision making process of this project.	The identified text on page 19-66 and 19-67 does not suggest that FNFN does not have treaty rights that will be considered in the assessment. Rather, the text explains that because FNFN (and other Aboriginal groups) has not identified any current use of lands and resources within the LAA, a determination has been made that the Project is not expected to have an effect on the current use of or access to lands and resources for traditional purposes for FNFN and they are therefore not considered further in the effects assessment in the EIS. It is noted that should additional information regarding current and reasonably anticipated future use of lands and resources within the LAA be received from the Aboriginal groups listed above, BC Hydro will consider and incorporated it in the EIS, as appropriate, during the EIS review phase.
ab_0003-248	Fort Nelson First Nation	Section 19.4, page(s) 19-67, line(s) 14 – 19; Comment # KeeferTable22 4	This comment suggests that FNFN's traditional rights to hunt and gather and pursue a traditional lifestyle do not apply within the LAA, which is contrary to the spirit of the Treaty. The increased hunting and gathering pressure during construction of this project will likely be apparent as far north as Fort Nelson where there is significant access to traditional harvesting from natural resource development. An influx of non-native moose hunting is already of concern to FNFN as moose populations are in a state of flux.	The identified text on page 19-67 does not suggest that FNFN's treaty rights do not apply within the LAA. Rather, the text explains that because FNFN (and other Aboriginal groups) has not identified any current use of lands and resources within the LAA, a determination has been made that the Project is not expected to have an effect on the current use of or access to lands and resources for traditional purposes for FNFN and they are therefore not considered further in the effects assessment in the EIS. It is noted that should additional information regarding current and reasonably anticipated future use of lands and resources within the LAA be received from the Aboriginal groups listed above, BC Hydro will consider and incorporated it in the EIS, as appropriate, during the EIS review phase.
ab_0003-249	Fort Nelson First Nation	Section 19.4.1, page(s) 19-68, line(s) 35-36;	Cold water species will be the most impacted and these are the most desirable group for harvest so losses to habitat will be disproportionate.	SFN's preference for cold water species was considered as part of the effects assessment described in Section 19.4.2, which considered changes in fishing opportunities and practices.

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		Comment # KeeferTable22 5		Mitigation measures to address changes identified in the assessment are described in Section 19.4.3. The characterization of residual effects is presented in Section 19.5.3.
ab_0003-250	Fort Nelson First Nation	Section 19.4.1, page(s) 19-68, line(s) 43-44; Comment # KeeferTable22 6	Moberly River arctic grayling are likely to be extirpated and are a target species.	Section 12.6.3.2 summarized the conclusions of the predicted effects of the Project on Moberly Arctic grayling. It is uncertain whether the distinct group of fish will be lost; therefore, follow-up monitoring will be undertaken to verify the effects assessment (see Section 12.8 Follow-Up Programs). Please see the Uncertainty and Precaution Technical Memo.
ab_0003-251	Fort Nelson First Nation	Section 19.4.1, page(s) 19-69, line(s) 22; Comment # KeeferTable22 7	The greatest fish diversity is presently located at the tributary confluences. These sites will be the most impacted. The “new” confluences will be less productive and converted to the cool water fish species which are less desirable for harvest.	Inundation of the reservoir will result in the inundation of lower reaches of tributaries. New confluences will develop at the interface of the reservoir and the tributaries as upstream fluvial and sediment processes will be unaffected. The time frame for re-establishment of the tributary confluences is uncertain. Follow-up monitoring will be implemented to verify effects, and to assist in the development of mitigation, as appropriate. Please see the Technical Memo: Uncertainty and Precaution.
ab_0003-252	Fort Nelson First Nation	Section 19.4.1, page(s) 19-69, line(s) 26-27; Comment # KeeferTable22 8	Lake fishing (from a boat) represents a small portion of FN angling effort, therefore converting the Peace River to a reservoir does not increase harvest opportunity.	The baseline information describes information made available to BC Hydro from Aboriginal groups with respect to their use of lands and resources, including fishing practices.
ab_0003-253	Fort Nelson First Nation	Section 19.4.1, page(s) 19-71, line(s) 18-20; Comment # KeeferTable22 9	Again, there will be minimal increase in opportunity with the potential to increase angling competition in the few remaining desirable locations, thereby reducing opportunity further.	Please see the response to ab_0003-252.
ab_0003-254	Fort Nelson First Nation	Section 19.4.2, page(s) 19-73, line(s) 38-41; Comment # KeeferTable23 0	It’s about perception. Any limits placed on fish consumption are therefore suspect.	The perception of health risk related to methylmercury in country foods was identified in the Key Issues table included in Section 33 Human Health. Results from the Human Health Risk Assessment for Methylmercury and Fish (Volume 2 Appendix J Mercury Technical Reports, Part 2 Mercury Human Health Risk Assessment) identify safe fish consumption levels for fish from the Site C reservoir and downstream of the Site C dam, during post construction during periods (i.e., at peak methylmercury levels). Please also see the Technical Memo: Methylmercury.

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ab_0003-255	Fort Nelson First Nation	Section 19.4.2, page(s) 74, line(s) 8-9; Comment # KeeferTable23 1	The new reservoir and shoreline will not be the same as the past nor will the fish assemblage, so there is be fewer angling opportunities for desirable target fish species.	Please see Section 24.4.2.1, which describes the new angling opportunities provided in the reservoir.
ab_0003-256	Fort Nelson First Nation	Section 19.4.2, page(s) 74, line(s) 15-17; Comment # KeeferTable23 2	FN propensity to not fish from boats will reduce opportunity.	Please see the response to ab_0003-252.
ab_0003-257	Fort Nelson First Nation	Section 19.4.2, page(s) 74, line(s) 41-43; Comment # KeeferTable23 3	The likelihood of FN changing harvest strategies to address changes in fishing opportunities, techniques and species is very low.	The discussion of adaptability of aboriginal land use practices in Section 19 is not based on a theoretical model that predicts the ability of Aboriginal hunters to transfer their practices from affected areas to unaffected areas, that are unknown or new to them or where they have not harvested before, but on an analysis of the current land use spatial data and other information provided directly by the Aboriginal groups themselves, as well as other available sources.
ab_0003-258	Fort Nelson First Nation	Section 19.4.6, page(s) 19-84, line(s) 34-36; Comment # KeeferTable23 4	In regards to the flooding of burial sites, it is a spiritual and cultural concern that these ancestors will be disrespected and placed under water.	<p>No previously unidentified human remains were identified during fieldwork for the heritage program. Aboriginal groups have not shared information on the specific location of burials in the valley bottom or in other parts of the Project activity zone, aside from previously recorded burial locations at Attachie and Bear Flats as noted in Section 19.4.6. Such information was not included in the Traditional Land Use studies and Aboriginal groups did not share this information with the heritage consultant or BC Hydro. BC Hydro's heritage consultants asked the Treaty 8 Tribal Association (Doig River, Halfway River, Prophet River and West Moberly First Nations) for this information and BC Hydro offered to fund a collaborative session to discuss such information. The Treaty 8 Tribal Association (Doig River, Halfway River, Prophet River and West Moberly First Nations) did not take BC Hydro up on this offer.</p> <p>Section 32 Heritage Resources identifies which Project activities would have an adverse effect on burial sites, whether identified or not, and includes mitigation recommendations that are meant to minimize adverse effects on unidentified heritage sites that include human remains. The section also provides more information on how unrecorded burials were considered in the effects assessment. Also see Sections 32.3.2.2 and 32.3.3 for additional information on three locations where human burials were previously recorded.</p> <p>For construction, including Project clearing, BC Hydro will implement a Heritage Resources</p>

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				<p>Management Plan (Section 35.2.2.14). The Heritage Resources Management Plan states that in B.C., the management of archaeological and historical resources, including human remains, is governed under the Heritage Conservation Act (HCA), the Coroner’s Act and the Cremation, Interment and Funeral Services Act. In addition, the B.C. Archaeology Branch has published procedures for respectful handling of found human remains that are protected under the HCA in the Found Human Remains policy (B.C. Archaeology Branch 1999). BC Hydro is bound by these statutes and policy.</p> <p>During operations, BC Hydro policies will be implemented, including Environmental Best Practices for Managing Heritage Resources (BC Hydro 2004) or any future versions of that document.</p>
ab_0003-259	Fort Nelson First Nation	Section 19.4.7, page(s) 19-90, line(s) 10-12; Comment # KeeferTable23 5	<p>This section does not do justice to the cumulative effects perspective. Cumulative effects must be considered from the oil and gas industry, the other reservoirs, the other projects and the rapid rising populations in northern BC of non-native people. It is inappropriate culturally and ecologically to examine these in isolation. Site C is part of something much larger than isolated development projects and population growth. This scope needs to be inclusive of habitat fragmentation and population dynamics of fish, wildlife, vegetation and humans. Site C is the enabler for all of the other resource development in the area thus resulting in a significantly large influence and cumulative impact.</p>	<p>Potential adverse effects of the Project on habitat fragmentation and wildlife population dynamics are described in Section 14 Wildlife Resources, effects on fish populations are described in Section 12 Fish and Fish Habitat, and effects on human populations are described in Section 28 Population and Demographics.</p> <p>Please see the Technical Memo on Cumulative Effects Assessment for information on its cumulative effects assessment methodology. With respect to the considerations of how BC Hydro has incorporated past development and other previous changes to the lands and resources, please see the Technical Memo: Consideration of Historical Context in Assessment of Potential Effects and Impacts on Aboriginal Groups.</p>
ab_0003-260	Fort Nelson First Nation	Section 19.4.7, page(s) 19-94, line(s) 20 – 21; Comment # KeeferTable23 6	<p>It is unclear as to what is meant by indigenous and/or non-invasive plants and grasses. What are the definitions of these? Alfalfa and clover are invasive as well as smooth brome and crested wheatgrass, however, they may be considered as non-invasive by less knowledgeable sources. There needs to be definitions associated with these statements as they are not clearly defined. If seeding is implemented, the certificate of analysis must be reviewed and compared to ALL provincial and regional invasive species lists, particularly the listings for the Invasive Plant Committee of the Peace River Regional District and the Peace-Liard Revegetation Manual.</p>	<p>BC Hydro confirms that where feasible seed mixes will use native species and will be certified weed free. The Vegetation and Invasive Plant Management Plan (Section 35.2.2.22) will be developed with appropriate regulatory authorities as part of the permitting process, if the Project proceeds.</p> <p>Please also see Section 13.3 in the EIS.</p>
ab_0003-261	Fort Nelson First Nation	Section 19.4.7, page(s) 19-94, line(s) 18-19 and 22-24; Comment # KeeferTable23 7	<p>What do these comments actually mean? Will there be capacity funding for the First Nations to transplant and if so, will the new areas be accessible, fertile and ecologically appropriate for growing these plants? What will the actual implementation involve and who will be funding these? How much area will be displaced for berry harvesting and where will berry harvesting occur in the future?</p>	<p>For those measures where consultation with and seeking input from Aboriginal groups has been identified, BC Hydro intends to continue to consult with Aboriginal groups, as described in Section 9.2.4, in order to answer questions and address issues, interests, and concerns from Aboriginal groups by identifying appropriate mitigation measures and/or other appropriate means by which to address or resolve potential impacts. This process could include the review of proposed mitigation measures described in Section 19.</p> <p>The proposed mitigations noted in the comment will be site and species specific. Transplantation is proposed as a mitigation measure for rare plants. Specific plans will be developed with the</p>

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				advice of a rare plant ecologist.
ab_0003-262	Fort Nelson First Nation	Section 19.4.7, page(s) 19-95, line(s) 1-4; Comment # KeeferTable238	What is meant by provide support for the Twin Sisters nursery?	As described in Section 19.4.7, BC Hydro will provide support for the indigenous plant nursery owned by West Moberly and Saulteau First Nations located at Moberly Lake. BC Hydro will engage in discussions with these two First Nations to explore options for the kinds of support that would be most beneficial to the nursery.
ab_0003-263	Fort Nelson First Nation	Volume 3 Section 19.6.1, page(s) 19-108, line(s) 2-10; Comment # KeeferTable239	Residual adverse effects are also likely to result in neighbouring territories. The proposed Site C development may take away hunting, trapping and harvesting opportunities from those First Nations who have traditionally utilized the area. The result of this may be increased pressure and presence in the regions to the north, such as in the area primarily used traditionally by Fort Nelson First Nation. See general comments for more detail.	Please see the response to ab_0003-022.
ab_0003-264	Fort Nelson First Nation	Volume 3 Section 19.1.1 – 19.1.2, page(s) 19-114, line(s) 10-17; Comment # KeeferTable240	These comments do not make sense given the information provided previously that acknowledges that there will be cumulative effects on the landbase. It is also possible that when viewed in isolation of one another, the aforementioned projects will not have a cumulative impact, however, they must be spatially and temporally analysed together in order to accurately and methodically determine the cumulative effects from these disturbances on the landscape. Boutin <i>et al.</i> (2009) state that “although it may be desirable and necessary to separate individual stressors for experimental purposes, it is the cumulative effects of all human activities that ultimately determine biodiversity change.” It is impossible that this Project will not contribute to cumulative effects. The discussion should be focused on the degree of cumulative effects, not whether or not the impact is likely or unlikely.	Please see the response to ab_0003-024.
ab_0003-265	Fort Nelson First Nation	Section 19.7, page(s) 19-114, line(s) 19-36; Comment # KeeferTable241	These comments only say that BC Hydro will consider programs and is prepared to engage. This does not indicate BC Hydro’s commitment to monitoring and follow-up.	<p>In Section 19.7, BC Hydro noted that it is prepared to engage with Aboriginal groups to discuss potential community-based monitoring programs, such as programs intended to monitor the productivity and abundance of fish and wildlife species.</p> <p>BC Hydro has offered to consult with Aboriginal groups in the Project area about mitigation measures, and will continue to pursue discussions on this topic as part of the consultation process for the Project. As described in Section 9.2.4 (Process for Resolving Outstanding Issues with Aboriginal Groups), BC Hydro will seek to address outstanding issues by, among other activities, "continuing to seek input and engage in dialogue regarding the EIS and the Project, and to answer questions and address issues, interests, and concerns from Aboriginal groups by</p>

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				identifying appropriate mitigation measures and/or other appropriate means by which to address or resolve potential impacts."
ab_0003-266	Fort Nelson First Nation	Volumes 1 and 3, page(s) n/a, line(s) n/a; Comment # SedleyTable1	<p>The author was instructed to review BC Hydro ("BCH") Site C Environmental Assessment ("EA") Documents on behalf of Fort Nelson First Nation ("FNFN") in regard to answering the following question: What are the direct financial benefits to FNFN if the project goes forward?</p> <p>The author has been unable to find any reference in the EA documents to the subject of specific financial (or other) benefits to FNFN. Some FNFN concerns have been noted in Volume 3 (sections 19.1.2 and 19.3.1.8.2) but the author found no references related to FNFN benefits in general or financial benefits in particular.</p> <p>FNFN requests that the JRP require BCH, as supplemental information to the EIS, to document, in detail, the direct and indirect benefits of the Project to FNFN.</p>	<p>The Project Benefits are described in Section 7. There is no requirement in the EIS Guidelines for the EIS to describe the direct and indirect benefits of the Project to each specific Aboriginal group. Section 34.6.3, is specific to Aboriginal groups and describes the "Proponent's Approach to Building Capacity", including information regarding BC Hydro Aboriginal Procurement Policy, directed procurement for Stage 3 general contractor work, the establishment of a bursary fund at Northern Lights College, and partnerships with Northern Opportunities dual credit program and with the North East Native Advancing Society, as well as employment and capacity building opportunities through the heritage program. Section 34.6.3 also describes how BC Hydro has actively pursued opportunities to engage directly with the Aboriginal business community.</p> <p>Section 34.7.1 indicates that in March 2012, BC Hydro secured a mandate to enter into impact benefit agreement (IBA) negotiations with First Nations that, in BC Hydro's view, are likely to be adversely affected or impacted by the Project and where BC Hydro considers that accommodation beyond the mitigations listed in the EIS is warranted.</p> <p>A description of consultation activities specific to the FNFN is provided in Volume 5, Appendix A09 Part 2.</p>
ab_0003-267	Fort Nelson First Nation	Volumes 1 and 3, page(s) n/a, line(s) n/a; Comment # SedleyTable2	<p>The author was instructed to review BC Hydro ("BCH") Site C Environmental Assessment ("EA") Documents on behalf of Fort Nelson First Nation ("FNFN") in regard to answering the following question: Will Site C be a supplier of electricity to the natural gas fracking industry north of Fort Nelson (the Horn River Basin)?</p> <p>It is FNFN's understanding that BCH has stated that Site C will not supply electricity to the natural gas fracking industry north of Fort Nelson (the Horn River Basin).</p> <p>The author has been unable to find any reference in the EA documents to the subject of supplying power to fracking operations.</p> <p>However, Volume 1, section 5.2, states that: "The need for the Project [i.e., Site C] is to address future customer demand ... for firm energy and dependable capacity in BC Hydro's service area." (author's italics)</p> <p>A definition if BCH's "service area" is not provided in the EA documents reviewed. However, Section 1 of Appendix 2E of BCH's 2012 Integrated Resource Plan (believed to be in "draft" status) states that :</p>	<p>BC Hydro's service area is comprised of: (1) the integrated system (interconnected by transmission lines, distribution lines and substations linking generation stations to one another and customers); and (2) non-integrated areas, which are isolated regions not connected directly to the BC Hydro integrated system.</p> <p>The need for the Project is set out in Section 5.2 of the EIS, and is based on the energy and capacity load resource balances (LRBs) depicted in Tables 5.8 and 5.9 of the EIS. These LRBs are based on forecasted customer demand (referred to as load in the EIS) on BC Hydro's integrated system. The LRBs do not include projected customer load in the non-integrated areas:</p> <ul style="list-style-type: none"> • Fort Nelson is a non-integrated area – as noted in the comment, Fort Nelson is "not directly connected to the BC Hydro integrated system" (although it is electrically integrated with Alberta's system via a single 144 kV transmission line); • Horn River Basin is not currently served by BC Hydro – it is neither a non-integrated area nor is it part of the BC Hydro integrated system. <p>Therefore, the need for the Project as set out in the EIS which is the subject of the environmental assessment does not include serving potential load, including oil and gas load, in either the Fort Nelson or Horn River Basin regions.</p> <p>The prospect of connecting the Fort Nelson/Horn River Basin region to the integrated system is</p>

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			<p>“The Fort Nelson region is located within BC Hydro’s service area in the far Northeast of B.C. The region is electrically integrated with Alberta’s system via a single 144 kV transmission line and is not directly connected to the BC Hydro integrated system.”</p> <p>“The Horn River Basin (HRB) region encompasses a large geographic area generally extending north and east of the community of Fort Nelson. It is a region with significant natural gas reserves. The natural gas reserves are called “unconventional” in that they are situated in shale formations and take new, more aggressive techniques (i.e., “fracking”) to extract the gas. BC Hydro currently serves the Fort Nelson region, but not the Horn River Basin.” (page 2E-1) (author’s italics)</p> <p>So, it may be concluded that Fort Nelson, while in the BHC “service area”, is not connected to the grid and that energy generated at the proposed Site C cannot be made available to Fort Nelson. Further, the Horn River Basin is not in the BCH service area and thus energy generated at the proposed Site C cannot be made available to the Horn River Basin.</p> <p>It is important, however, to note that while this lack of connection to the BHC grid is the current state of affairs, this may change.</p> <p>The BHC 2012 Integrated Resource Plan presents an analysis of “various load scenarios and resource supply options for serving the combined Fort Nelson / Horn River Basin region electricity requirements” (page 2E-1).</p> <p>BCH forecasts that growth in demand from Fort Nelson alone will not economically justify supplying electricity from the integrated system via high voltage transmission line (page 2E-11). Nevertheless, in its planning, BCH developed four alternatives for supplying the combined energy requirements of Fort Nelson and the Horn River Basin together.</p> <p>Its “Alternative 1” involves interconnecting the Fort Nelson / Horn River Basin regions to the integrated system with a Northeast Transmission Line and supplying the full Fort Nelson / Horn River Basin region with system clean energy.” (page 2E-23) The Integrated Resource Plan goes on to conclude that:</p> <p>“A supply strategy based on clean energy from the BC Hydro integrated system [Alternative 1] is relatively more expensive than other strategies under [the low market price scenario for natural gas], but is at or near the lowest cost under [the mid to high market price scenarios for natural gas].” Page 2E-36</p> <p>It thus appears that BCH is studying the alternative of providing electricity from</p>	<p>addressed in the Integrated Resource Plan. However, the need for the Project as set out in the EIS not based on this possibility. The Project would not be built to supply a specific area or specific customers. Rather, the Project is assessed on its ability to add value to the system and enable the supply of all customer requirements.</p>

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			<p>its integrated system to the Horn River Basin and that this approach is the economically preferred approach for BCH under two of the three natural gas scenarios it analyzed. In conclusion, should Horn River Basin natural gas fracking operations grow quickly, BCH has not ruled out connecting the region to its integrated system – in which case, fracking power needs would indeed be supplied at least in part by power generated at the proposed Site C.</p> <p>FNFN requests that BCH explain the likelihood of the proposed Site C Project supplying electricity to the Horn River Basin.</p>	
ab_0003-268	Fort Nelson First Nation	Section 9.2, page(s) 9-20, line(s) 20-24; Comment # SchaldemoseT able1	<p>With regard to early engagement, BCH did not meaningfully engage in meetings and information exchange with FNFN until a consultation agreement was negotiated between the Parties; this did not occur until after FNFN was recognized through CEAA and was provided funding to engage in the process in early 2012. Earlier attempts by FNFN to enter into a formal arrangement (via a capacity agreement) were not successful. Note that FNFN acknowledges that it was represented by the Treaty 8 Tribal Council until 2010; however direct consultation between FNFN and BCH did not occur until 2012 (i.e. a community – proponent relationship).</p> <p>Recommendation (response requested): FNFN recommends that BCH enter into an agreement for FNFN to gather additional information (information that would have been sought had a structured consultation process been agreed to earlier on in the process) to inform the project, such as a Traditional Land Use Study.</p>	<p>As described in Volume 5, Appendix A09, BC Hydro made initial contact with the six T8FNs, including FNFN. On March 24, 2008, CT8C sent an email to BC Hydro confirming that CT8C would represent all six of its member Nations, including FNFN. As such, “BC Hydro considered Fort Nelson to be represented by CT8C / T8TA until the expiry of the Stage 2 Consultation Agreement between the Treaty 8 First Nations (including Fort Nelson) and BC Hydro on March 31, 2010.”</p> <p>BC Hydro has no knowledge or record of unsuccessful “earlier attempts by FNFN to enter into a formal arrangement (via a capacity agreement)”. As outlined in Volume 5, Appendix A09, in January 2012, “Fort Nelson expressed interest in establishing a formal relationship through a consultation agreement, and requested funding to hire a technical expert to review the EIS Guidelines. BC Hydro indicated its readiness to commence negotiations” and tabled a consultation agreement, including capacity funding, the following month. The parties entered into a Consultation Agreement on September 19, 2012 that provides for capacity funding to gather additional information about the Project and outlines a structured consultation process.</p> <p>Please see the response to ab_0003-273 regarding a Traditional Land Use Study.</p>
ab_0003-269	Fort Nelson First Nation	Section 9.2, page(s) 9-21, line(s) 5-10 & 14-17; Comment # SchaldemoseT able2	<p>With regard to identifying potentially ‘directly affected’ Aboriginal groups, BCH assumes that geography or location is proportional to degree of effect and hence degree of consultation required. This may or may not be the case and can only be determined through consultation and assessment of effects to all potentially affected Aboriginal groups. As much traditional land and resource use information is proprietary and often confidential, relying on publically available information is not necessarily reflective of the extent of use or of defining which groups may be exercising Treaty and Aboriginal rights in any particular area.</p> <p>Recommendation (response requested): FNFN recommends that BCH describes what, if any, consideration was given to (a) the use of traditional resources that move beyond the immediate area of the project such as water, fish, and wildlife that may impact Aboriginal resource users beyond the project footprint (and to what extent); and (b) the increasing necessity of Aboriginal groups in close</p>	<p>BC Hydro's assessment of the potential adverse effects of the Project on the Current Use of Lands and Resources for Traditional Purposes considered the results of the effects assessments on Fish and Fish Habitat, Wildlife Resources and Vegetation and Ecological Communities. The Local and Regional Assessment Areas for these three VCs coincide with that used for the assessment on current use of lands and resources.</p> <p>Please see the Technical Memo: Spatial Boundary Selection.</p> <p>The baseline for the assessment on the potential effects of the Project on the current use of lands and resources considered information made available by Aboriginal groups, and gathered from publicly available sources, with respect to the current and reasonably anticipated future use of lands and resources for traditional purposes. Where Aboriginal groups identified use of lands and resources within the LAA, they were considered through the full effects assessment.</p>

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			proximity of heavily industrialized areas to move beyond their historically intensively used areas to other areas due to displacement and loss of traditional resources, to practice traditional pursuits.	
ab_0003-270	Fort Nelson First Nation	Section 9.2, page(s) 9-22, line(s) 13-21; Comment # SchaldemoseT able3	<p>With regard to consultation objectives, due to (a) the late formal engagement with FNFN [see comment 1 above] and (b) the degree of consultation with FNFN [see comment 2 above], FNFN did not have the opportunity, nor the capacity, to fully engage its members to provide meaningful information for BCH to meet this objective with respect to FNFN.</p> <p>Recommendation (response requested): FNFN recommends that BCH, on a go forward basis, work with FNFN to meet this objective. Initiatives may include a FNFN TLU study and trade-show-type event for individuals, small businesses and larger Band-owned businesses to discuss employment and business opportunities related to the Site C Project.</p>	<p>Please see the response to ab_0003-268 with regard to the FNFN assertion that the parties entered into “late formal engagement”.</p> <p>On September 19, 2012, FNFN and BC Hydro entered into a consultation agreement. The terms of the consultation agreement provide for a structured consultation process that meets the Project Consultation Objectives outlined in Section 9.2. BC Hydro will continue to consult with the FNFN, in accordance with the terms set out by both parties in the Consultation Agreement. As part of this engagement, BC Hydro is interested is discussing FNFN’s interest in hosting a trade-show-type event for individuals, small businesses and larger band-owned businesses to discuss employment and business opportunities related to the Project.</p> <p>Please see the response to ab_0003-273 regarding a Traditional Land Use Study.</p>
ab_0003-271	Fort Nelson First Nation	Section 9.2, page(s) 9-22, line(s) 27-39; Comment # SchaldemoseT able4	With regard to identifying potentially ‘directly affected’ Aboriginal groups, see comment 2 above.	Please see the response to ab_0003-269.
ab_0003-272	Fort Nelson First Nation	Section 9.2, page(s) 9-26, line(s) 11-13; Comment # SchaldemoseT able5	<p>With regard to BCH’s approach to obtain input from Aboriginal groups, FNFN questions the statement that its consultation process was iterative, i.e. allowed input from Aboriginal groups to inform the project and the assessment of impacts.</p> <p>Recommendation (response requested): FNFN requests that BCH, provide examples of how Aboriginal input guided or changed Project plans that minimized or eliminated impacts to, or concerns of, Aboriginal Groups. Furthermore, FNFN requests that BCH explain how it plans to incorporate additional information that has or may be provided by FNFN into the Project plans, e.g. from FNFN’s previous comments on the baseline ungulate study or from a Site C specific TLU study should one be carried out.</p>	Section 4.2 Project Evolution summarizes the design changes made to mitigate potential effects of the Project. Many of these design changes mitigated potential effects to VCs of importance to Aboriginal groups, including Wildlife Resources and Fish and Fish Habitat. Section 34.4.2 provides a summary of mitigation measures suggested by Aboriginal groups, and BC Hydro's response to them. As described on page xi of the EIS Guidelines, in the preface, “the Proponent will incorporate additional baseline information as made available based on concerns raised by Aboriginal groups." As such, if FNFN provides additional baseline information, it will be considered in the effects assessment.
ab_0003-273	Fort Nelson First Nation	Section 9.2, page(s) 9-32, line(s) 37-42; Comment # SchaldemoseT	With regard to BCH’s approach to obtain TLU information and the provision of project-specific TLU studies for those located in the ‘activity zone’ and provisions for others to use existing information that may be applicable to the Project; FNFN questions the ability of the latter to provide traditional land and resource use information or TEK to an area for which it may not be documented	As described in Section 9.2.3.3.2 (Stage 3 Consultation (Spring 2010 to present) BC Hydro negotiated Traditional Land Use Study (TLUS) agreements with those Aboriginal groups located immediately downstream of the Project or who may exercise rights within the area that is now defined as the Project activity zone. Fort Nelson First Nation is not one of those Aboriginal groups. From the traditional territory maps provided by FNFN, FNFN's traditional activities are

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		able6	<p>in written form. Note that such information is usually collected in response to a proponent requesting such information and it cannot be assumed that detailed TL/TR/TK information is available for the Aboriginal group's expansive territories upon which their Treaty and Aboriginal rights are exercised. FNFN did attempt to provide to BCH what it could based on available information, but this information cannot be considered to be exhaustive or complete and therefore adds little to informing the Project assessment.</p> <p>Recommendation (response requested): FNFN recommends that BCH, works with FNFN Lands Department to scope a project-specific TLU study.</p>	<p>shown as north of the Current use of Lands and Resources LAA and RAA.</p> <p>Information regarding traditional land use made available to BC Hydro, as well as how that information was considered in the EIS, is found in Section 19 Current Use of Lands and Resources for Traditional Purposes, Volume 5 Asserted or Established Rights and Treaty Rights, Aboriginal Interests and Information Requirements, and in the supporting documentation found in Volume 5 Appendix A09.</p> <p>BC Hydro will consider additional baseline information made available by Fort Nelson First Nation with respect to its current use of lands and resources for traditional purposes.</p>
ab_0003-274	Fort Nelson First Nation	Section 9.2, page(s) 9-36, line(s) 3-12 & 42-45; Comment # SchaldemoseT able7	<p>With regard to BCH's consultation on their IRP, FNFN was not engaged with BCH through the Treaty 8 Tribal Council or through direct consultation and therefore did not participate in consultation on the IRP (Mar/Apr 2011, June/Aug 2012) and more specifically the need for, purpose of and alternatives to the Project, something of great interest to FNFN.</p> <p>Recommendation (response requested): FNFN requests that BCH, if deemed desirable by FNFN present and discuss their IRP, provide capacity for FNFN to consider this information with its technical team and community and provide input for consideration in the finalized Plan, by means of a formal submission prior to August 3, 2013.</p>	<p>BC Hydro's approach to consulting with all B.C. First Nations, including the FNFN, respecting the IRP is described in Section 9.2.3.3.2 in a subsection entitled "Consultation Regarding the Need for, Purpose of, and Alternatives to the Project through the Integrated Resource Plan (IRP)". As described, the FNFN were directly contacted, offered capacity funding, and invited to participate in the IRP consultation process.</p>
ab_0003-275	Fort Nelson First Nation	Section 9.2, page(s) 9-37, line(s) 34-41; Comment # SchaldemoseT able8	<p>With regard to BCH's consultation on fish and aquatics, FNFN was not engaged in the technical workshops though fisheries resources are of great interest to FNFN.</p> <p>Recommendation (response requested): FNFN requests that BCH, if deemed desirable by FNFN, engage in a fish and aquatics workshop (or some other appropriate venue/mechanism) to discuss potential effects and FNFN's concerns with respect to the EIS and fisheries (see Fish review by FNFN).</p>	<p>As indicated in Volume 5, Appendix A09, "BC Hydro considered Fort Nelson to be represented by CT8C / T8TA until the expiry of the Stage 2 Consultation Agreement between the Treaty 8 First Nations (including Fort Nelson) and BC Hydro on March 31, 2010." Volume 5, Appendix A06, describes BC Hydro's consultation with the CT8C, including consultation that began as early as 2008 on the topics that included fish and aquatics. Early consultation included funding from BC Hydro for CT8C to participate in the TAR (Technical Advisory Representative) process which is described in Section 9.2.3.3.1 and included a 10 day workshop on several topics including fish and aquatics.</p> <p>BC Hydro entered into a consultation agreement with the Fort Nelson First Nation, including provision of capacity funding, on September 19, 2012. As per the terms of the consultation agreement, BC Hydro remains interested in continuing consultation with Fort Nelson regarding the effects of the Project, including any concerns with respect to the EIS and/or fish. However, the "Fort Nelson First Nation Background and Rational for Involvement in the Site C Project" provided to BC Hydro in August 2012, indicates that although FNFN exercise treaty rights outside its traditional territory, no specific information was identified that described or documented FNFN's exercise of treaty rights within the current use of land and resources (Wildlife Resources or Fish and Fish Habitat) LAAs or RAAs. Furthermore, from the traditional territory maps provided by FNFN, FNFN's traditional activities are shown as north of the current use of lands and</p>

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				resources (for both the Wildlife Resources and the Fish and Fish Habitat) LAAs and RAAs and do not appear to overlap with the Project activity zone.
ab_0003-276	Fort Nelson First Nation	Section 9.2, page(s) 9-38, line(s) 1-10; Comment # SchaldemoseT able9	With regard to BCH's consultation on wildlife, FNFN has reviewed the ungulate study that was compiled as a baseline and is continuing to consult with BCH on the results of the study as well as provide recommendations to make the study results more meaningful to FNFN so that they may understand the potential effects of the Project on the ungulates examined in the study, and hence, any potential effects to their use of ungulate resources. Recommendation (response requested): FNFN requests that BCH continue to work with FNFN, including following up on FNFN's technical recommendations, to make the report results more relevant to FNFN and other First Nations.	BC Hydro will continue to consult with the FNFN, in accordance with the terms set out by the parties in the Consultation Agreement dated September 19, 2012. BC Hydro appreciates the input received from FNFN regarding the ungulate data collected by BC Hydro. BC Hydro will continue to meet with FNFN and consider technical recommendations submitted by FNFN.
ab_0003-277	Fort Nelson First Nation	Section 9.2, page(s) 9-41, line(s) 39-42; Comment # SchaldemoseT able10	With regard to BCH's consultation on TLU and current land use information, see comment 6 above.	Please see the response to ab_0003-273.
ab_0003-278	Fort Nelson First Nation	Volume 1, Appendix H, page(s) 4, line(s) n/a; Comment # SchaldemoseT able11	<i>FNFN is identified as expressing interest in reclamation, however the BCH response directs FNFN to sections of the EIS that were not reviewed. Note that FNFN prioritized the sections reviewed based on funding made available through its agreement with BCH.</i> Recommendation (response requested): FNFN requests that BCH provide the funds available for FNFN to review the sections referred to: Volume 1 Appendix C Parts 1 to 5; Section 35.2.2.19 and provide feedback for further consideration.	The consultation agreement of September 19, 2012 between Fort Nelson First Nation and BC Hydro provides for two types of funding: general funding with payments available on a quarterly basis for eligible consultation activities and expenses, and defined consultation funding for specific deliverables or initiatives. BC Hydro is receptive to discussions with FNFN regarding the allocation of funding available through the existing consultation agreement for FNFN to engage in the consultation process.
ab_0003-279	Fort Nelson First Nation	Volume 1, Appendix H, page(s) 17 & 18, line(s) n/a; Comment # SchaldemoseT able12	<i>FNFN is identified as expressing interest in cumulative effects, however the BCH response directs FNFN to sections of the EIS that were not reviewed. Note that FNFN prioritized the sections reviewed based on funding made available through its agreement with BCH.</i> Recommendation (response requested): FNFN requests that BCH provide the funds available for FNFN to review the sections referred to: Section 10.5 and provide feedback for further consideration.	Please see the response to ab_0003-278.
ab_0003-280	Fort Nelson First Nation	Volume 1, Appendix H, page(s) 19, line(s) n/a; Comment #	<i>FNFN is identified as expressing interest in slope stability, however the BCH response directs FNFN to sections of the EIS that were not reviewed. Note that FNFN prioritized the sections reviewed based on funding made available through its agreement with BCH.</i> Recommendation (response requested): FNFN requests that BCH provide the	Please see the response to ab_0003-278.

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		SchalldemoseT able13	<i>funds available for FNNF to review the sections referred to: Volume 2 Appendices B & R and provide feedback for further consideration.</i>	
ab_0003-281	Fort Nelson First Nation	Volume 1, Appendix H, page(s) 28 & 55, line(s) n/a; Comment # SchalldemoseT able14	<i>FNNF is identified as expressing interest in mercury and methylmercury, however the BCH response directs FNNF to sections of the EIS that were not reviewed. Note that FNNF prioritized the sections reviewed based on funding made available through its agreement with BCH.</i> <i>Recommendation (response requested): FNNF requests that BCH provide the funds available for FNNF to review the sections referred to: Section 33; Volume 2 Appendix J and provide feedback for further consideration.</i>	Please see the response to ab_0003-278.
ab_0003-282	Fort Nelson First Nation	Volume 1, Appendix H, page(s) 31, line(s) n/a; Comment # SchalldemoseT able15	<i>FNNF is identified as expressing interest in fish, however the BCH response directs FNNF to sections of the EIS that were not reviewed. Though FNNF reviewed Section 12 it only did a cursory review of some of the appendices. Note that FNNF prioritized the sections reviewed based on funding made available through its agreement with BCH.</i> <i>Recommendation (response requested): FNNF requests that BCH provide the funds available for FNNF to review any other Appendices in Volume 2 that may be relevant and provide feedback for further consideration.</i>	Please see the response to ab_0003-278.
ab_0003-283	Fort Nelson First Nation	Section 34, page(s) 34-11, 34-12, line(s) 37-38, 1, 16-19; Comment # SchalldemoseT able16	<i>FNNF questions BCH's conclusion that the Project would have no impacts on FNNF's exercise of their Treaty rights. However, FNNF appreciates that BCH is willing to consider additional information. FNNF is of the opinion that until it has (a) conducted a project-specific TLU study and (b) reviewed the assessed potential impacts to traditionally used resources and received responses, to their satisfaction, that such potential impacts do not significantly impact current or reasonably foreseeable future traditional land or resource use; it is premature to conclude that no impacts exist.</i> <i>Recommendation (response requested): FNNF requests that BCH work with FNNF to (a) provide FNNF the resourcing to conduct a project-specific TLU study; and (b) work with FNNF to address FNNF's concerns related to the assessment and potential impacts and endeavor to eliminate, minimize or mitigate those impacts to FNNF, including the development of an impact-benefit agreement that would include, at a minimum, involving FNNF in mitigation measures such as those identified in Table 34.2, and possibly exploring options as identified under 'Other Accommodations' (34.4.4, page 34-22) if deemed necessary by FNNF.</i>	With respect to the request by FNNF to conduct a TLUS, please see the response to ab_0003-273. In May 2012, BC Hydro advised FNNF of its interest in receiving information related to FNNF's current use of land and resources for traditional purposes, its exercise of treaty rights, its traditional territory and the location of any trap lines used by FNNF members. In response to this request, in August 2012, FNNF provided BC Hydro with a document entitled "Fort Nelson First Nation Background and Rationale for Involvement in the Site C Project" which described the history of the FNNF, its use of the land, its concerns related to industrial development and interest in the Project. As described in the BC Hydro Consultation Summary: Fort Nelson First Nation (Volume 5 Appendix Axx.2), in September 2012, BC Hydro wrote to the 29 Aboriginal groups identified in the EIS Guidelines, including FNNF, and invited them to provide any additional information for BC Hydro's consideration in preparing the EIS. The letter included a specific request for a traditional territory map, as well as requests for information regarding FNNF's current use of lands and resources for hunting fishing and trapping, and other purposes, and information regarding how the Project would affect FNNF's exercise of treaty rights. A follow-up letter was sent in October 2012, and BC Hydro reminded FNNF of its interest in receiving information on a conference call in November, 2012. Following that call, FNNF sent BC Hydro two maps of its traditional territory to supplement the information it had provided in August 2012.

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				<p>BC Hydro's assessment of the Project's potential impact on the exercise FNFNs treaty rights is based on information provided by the FNFN identified above, as well as a limited number of publicly available published and unpublished reports on FNFN's traditional land and resource uses. Although FNFN's August 2012 document stated that FNFN members exercise treaty rights outside its traditional territory, no specific information was identified that described or documented FNFN's exercise of treaty rights within the current use of land and resources LAA or RAA, and are shown as being north of both of those areas. Given the information that BC Hydro had at the time it was preparing the EIS, it was therefore reasonable for BC Hydro to conclude that the Project will have no adverse impacts on the exercise of treaty rights by the FNFN.</p> <p>Consultation is ongoing between BC Hydro and the FNFN, and may yield additional information on the FNFN's current and reasonably anticipated future use of lands and resources that may potentially be affected by the Project. Should FNFN provide additional information to BC Hydro, it will be considered.</p>
ab_0003-284	Fort Nelson First Nation	Section 34, page(s) 34-23, line(s) 31-34; Comment # SchaldemoseT able17	<p><i>With regard to First Nations Community Baseline Reports, and with reference to Volume 3 Appendix B, FNFN questions the narrow selection of First Nations to those in the activity zone which is described as that area that encompasses Project components. The baseline reports were designed to collect information from First Nations on 'social, economic, land use and human health baseline information specific to First Nation communities'. Certainly the social, economic, land use and heath effects from the Project will extend far beyond the activity zone (the Project components).</i></p> <p><i>Recommendation (response requested): FNFN requests that BCH explain why only those Aboriginal communities that are geographically within this narrow zone the only groups that may have information on the above noted areas where the effects (positive or negative) on these areas on different Aboriginal groups may be affected.</i></p>	As described in Volume 3 Appendix B First Nations Community Baseline Reports Part 1 Approach to Gathering and Integrating Community Baseline Information, the communities selected to gather community baseline information were identified as having Indian Reserves located in proximity to the Project activity zone, and/or were understood to be exercising treaty rights within the Project activity zone. In addition to the First Nation community baseline reports that were prepared, social, economic, land use and human health baseline information was collected throughout the Local Assessment Area for each valued component. The boundaries for each valued component are based on the characteristics of the valued component and are described in the EIS Guidelines. The rationale for the boundaries is described in each EIS section. The LAAs for some valued components, such as regional economic development, include the area where Fort Nelson First Nation is located.
ab_0003-285	Fort Nelson First Nation	Section 34, page(s) 34-24, line(s) 34-35; Comment # SchaldemoseT able18	<p><i>With regard to capacity building and procurement, FNFN questions the efforts made by BCH to engage FNFN businesses.</i></p> <p><i>Recommendation (response requested): FNFN recommends that BCH shares its Aboriginal Procurement Policy with FNFN and, if requested hold a trade show in Fort Nelson to present and engage potential businesses.</i></p>	<p>BC Hydro has already made its Aboriginal Procurement Policy available to all Aboriginal groups, including FNFN, through a secured file transfer website for Aboriginal groups described in Section 9.2.3.1 (Information Distribution Methods). This policy is also available on BC Hydro's website at the following link: http://www.bchydro.com/content/dam/hydro/medialib/internet/documents/about/company_information/partners_vendors/PV_aboriginal_contract_policy.pdf</p> <p>Please see the response to ab_0003-270 with respect to FNFN's interest in a trade show in Fort Nelson.</p>
ab_0003-	Fort Nelson	Section 19,	<i>With regard to the identification of key issues, FNFN is of the opinion that</i>	Please see the response to ab_0003-273.

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286	First Nation	page(s) 19-2, line(s) 13-14; Comment # SchaldemoseT able19	<p><i>without (a) the provision of a FNFN project-specific TLU study; and (b) that the consultation activities that did occur with Fort Nelson were not directed at identifying key issues; that the list, though fairly detailed may be either missing FNFN as a reference to re-affirm that the listed issue may be shared by FNFN or missing issues key to FNFN (particularly with regard to location-based issues as without a FNFN TLU study, FNFN was not able to provide a comprehensive map of important traditional land use areas).</i></p> <p><i>Recommendation (response requested): FNFN recommends that BCH supports a FNFN project-specific TLU study and, if additional key issues are identified, consider those in the assessment.</i></p>	
ab_0003-287	Fort Nelson First Nation	Section 19, page(s) 19-11, line(s) 3-15; Comment # SchaldemoseT able20	<p><i>With regard to the spatial assessment areas for Current Use of Lands and Resources for Traditional Purpose, FNFN questions whether the LAAs and RAAs identified for vegetation and ecological communities can adequately represent cultural and traditional uses of the land; why not develop the spatial scale on TLU information (i.e. traditional land use areas). As well, it is unclear how, for example, navigability and other supporting traditional activities were captured based solely on assessment areas for purely scientific disciplines when, for example, hunting and fishing activities include more than just a presence or absence of the resource, which may necessitate a different spatial scale.</i></p> <p><i>Recommendation (response requested): FNFN requests that BCH provide more rationale as to their selection of spatial scales with regard to land use for traditional purposes.</i></p>	<p>As described in Section 19.1.5 Spatial and Temporal Boundaries, the LAA and RAA for Current Use of Lands and Resources for Traditional Purposes is comprised of maximum extent of the LAA and RAA for each of Fish and Fish Habitat, Wildlife Resources, and Vegetation and Ecological Communities. The LAA was defined in consideration of the expected maximum geographic extent of the potential for the Project to cause an adverse effect on this VC. BC Hydro views that "access" is a component of the three key aspects assessed in Section 19, in that consideration was given to both use of and access to resources, including cultural and other traditional uses of the land.</p> <ul style="list-style-type: none"> - The Fish and Fish Habitat LAA delineates the expected maximum geographic extent of the potential for the Project to cause an adverse effect on that VC. As changes in fishing opportunities and practices is the first key aspect assessed in Section 19, there is a direct correlation between the expected maximum extent of the potential for the Project to cause adverse effects on both VCs. The RAAs for both VC are aligned for the same reason. - The Wildlife Resources LAA delineates the expected maximum geographic extent of the potential for the Project to cause an adverse effect on that VC. As changes in hunting and trapping opportunities and practices is the second key aspect assessed in Section 19, there is a direct correlation between the expected maximum extent of the potential for the Project to cause adverse effects on both VCs. The RAAs for both VC are aligned for the same reason. - The Vegetation and Ecological Communities LAA delineates the expected maximum geographic extent of the potential for the Project to cause an adverse effect on that VC. As changes in other cultural and traditional uses of the land, including gathering, is the third key aspect assessed in Section 19, there is a direct correlation between the expected maximum extent of the potential for the Project to cause adverse effects on both VCs. The RAAs for both VC are aligned for the same reason. - In addition to gathering, the third key aspect also considers the use of areas for other cultural purposes, such as high-value places and landscapes along the Peace River used for the conduct of multiple current use and cultural activities. These types of activities are site-specific and

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				stationary in nature, and as such would be located within the bounds of the LAA identified for this VC.
ab_0003-288	Fort Nelson First Nation	Section 19, page(s) 19-11, line(s) 19-22; Comment # SchaldemoseT able21	<p><i>With regard to the temporal boundaries for Current Use of Lands and Resources for Traditional Purpose, it seems that BCH chose a time period of construction and operations; with current use based on seasonality. Though the rationale is not provided for the project phases, FNFN is of the opinion that current conditions (i.e. pre-construction) at a minimum should be included [is this the baseline case?]. An attempt should also be made to understand a closure and reclamation phase as well. How are cumulative effects addressed during this time (i.e. will it place added pressure on TLU or displace TLU activities out of or into the spatial boundaries defined for traditional activities?)</i></p> <p><i>Recommendation (response requested): FNFN requests that BCH provide more rationale as to their selection of temporal boundaries with regard to land use for traditional purposes.</i></p>	<p>As described in Section 19.1.5.2, the assessment has been conducted for the Project construction and operations phases, which are described in Section 4 Project Description. The assessment for all VCs uses this same temporal boundary.</p> <p>The current conditions are the baseline case. The temporal description of the VC itself centres on the seasonality of the current use of lands and resources for traditional purposes – i.e., the “seasonal round” – and was based on Aboriginal traditional knowledge, as communicated in consultation and through Project-specific Traditional Land Use Studies, and ethnohistorical and other reports. Where information was made available by Aboriginal groups with respect to the seasonal nature of their use of lands and resources, it was considered in the baseline for Section 19. Baseline descriptions for Saluteau, Blueberry and Dene Tha’ First Nations include this information.</p>
ab_0003-289	Fort Nelson First Nation	Section 19, page(s) 19-6 to 19-20, line(s) Tables 19.5 to 19.10; Comment # SchaldemoseT able22	<p><i>With regard to the resource use tables, FNFN is of the opinion that the uses are under-represented and questions whether BCH informed those Aboriginal groups that undertook a TLU study for the project that BCH desired such detailed information (i.e. was there standardized scoping of the TLU studies with the intent to provide specific information to be included in the EIS?) The onus should not be on the Aboriginal group to guess what information is going to be used (particularly for analysis, whether quantitative or not) and proponents cannot expect that a TLU study be exhaustive or focused on producing ‘lists’ or ‘numbers’ when the interview process is typically not set up in that fashion but rather to document TLU and TEK as shared by the interviewee, with questions that are probing but not necessarily structured. Also, as there are temporal boundaries defined, it is not clear if BCH, asked Aboriginal groups about changes in resources and resource use, anticipated changes and their understanding of causality of those changes.</i></p> <p><i>Recommendation (response requested): FNFN requests that BCH consider providing specific information requests/requirements with regard to resource use to all potentially affected Aboriginal groups and re-assess the data.</i></p>	<p>In addition to engagement on the topic with individual Aboriginal groups, BC Hydro made a formal request to all 29 Aboriginal groups identified in the EIS Guidelines to provide information with respect to their traditional land and resource use within the proposed LAA and RAA in a letter dated September 21, 2012. A follow-up letter was sent on October 25, 2012.</p> <p>As described on page xi of the EIS Guidelines, in the preface, “the Proponent will incorporate additional baseline information as made available based on concerns raised by Aboriginal groups.”</p>
ab_0003-290	Fort Nelson First Nation	Section 19, page(s) 19-49, 19-67, line(s) 4-31, 1,14-19; Comment #	<p><i>With regard to the FNFN current and future use of lands and resources, FNFN did not have the capacity to undertake a project-specific TLU study for the Project on its own and did not have detailed documented resource and land use information for the LAA or RAA. Nor did FNFN enter into an agreement with BCH at the time the EIS or this review was undertaken.</i></p> <p><i>Recommendation (response requested): FNFN recommends that BCH consider</i></p>	Please see the response to ab_0003-273.

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		SchaldemoseT able23	<i>providing resources to FNFN to undertake a project-specific TLU study and jointly scope the study to address comment 22 above. Furthermore, upon provision of the TLU, FNFN requests that BCH consider the information in its Project assessment.</i>	
ab_0003-291	Fort Nelson First Nation	Section 19, page(s) 19-105, line(s) 17-22; Comment # SchaldemoseT able24	<i>With regard to the determination of significance of residual effects on fishing, it is presumptuous to say that the effect in not significant because fishing practices of Aboriginal people is adaptable. Fishing may be displaced, but that should not be considered as not negatively effecting the fishing effort or experience. Traditional resource use cannot be determined based on solely a presence/absence of a resource. Recommendation (response requested): FNFN recommends that BCH re-consider the rating of 'not significant' to 'significant' if it is determined that Aboriginal fishing will be displaced by the Project.</i>	<p>The discussion of adaptability of aboriginal land use practices in Section 19 is not based on a theoretical model that predicts the ability of Aboriginal hunters to transfer their practices from affected areas to unaffected areas, that are unknown or new to them or where they have not harvested before, but on an analysis of the current land use spatial data and other information provided directly by the Aboriginal groups themselves, as well as other available sources.</p> <p>The effects assessment in Section 19 is not derived from the identification of specific other fishing, hunting and trapping sites by BC Hydro or its consultants. The assessment drew on information obtained from Aboriginal groups themselves with respect to areas where they currently hunt, fish and trap.</p>
ab_0003-292	Fort Nelson First Nation	Section 19, page(s) 19-105, line(s) 23-27; Comment # SchaldemoseT able25	<i>With regard to the determination of significance of residual effects on hunting and trapping, it is presumptuous to say that the effect in not significant because the traditional purpose of the activity would not be undermined. As expressed by a number of Aboriginal groups, practicing traditional pursuits is simply not a matter of subsistence but includes cultural aspects to experience, transmission of knowledge, and spiritual and aesthetic aspects. Recommendation (response requested): FNFN recommends that BCH re-consider the rating of 'not significant' to 'significant' if it is determined that Aboriginal hunting and trapping will be adversely effected by the Project to the extent that the experience and cultural/spiritual aspects in pursuing these activities will be compromised.</i>	<p>BC Hydro is confident in the findings of the assessment of the potential effects of the Project on the Current Use of Lands and resources for Traditional Purposes. Although a finding of "not significant" was determined with respect to changes in hunting and trapping opportunities and practices, a "significant" finding was made with respect to changes in other cultural and traditional uses of the land. In that part of the assessment, consideration was given to the cultural and spiritual use of the land, and to high-value multi-use sites.</p>
ab_0003-293	Fort Nelson First Nation	Section 19, page(s) 19-108, line(s) 2-10; Comment # SchaldemoseT able26	<i>With regard to the cumulative effects assessment information limitation, see comment 20 above regarding the choice of spatial boundaries.</i>	<p>Please see the response to ab_0003-287.</p>
ab_0003-294	Fort Nelson First Nation	Section 19, page(s) 19-109, line(s) 7-10, 12-19;	<i>With regard to the screening of cumulative effects, because FNFN does not necessarily agree with the spatial (activity zone, LAA, RAA) boundaries set, FNFN also questions the screening of cumulative effects considerations. For example, industrial development outside of the RAA may further reduce Aboriginal groups from practicing their traditional pursuits. This is of concern to FNFN because</i>	<p>Please see the response to ab_0003-287.</p> <p>The alternate approach suggested would be contrary to the assessment methodology required by the EIS Guidelines and described in Section 10.3 Assessment Boundaries. As described in that section, "for each VC, the LAA has been defined in consideration of the expected maximum</p>

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		Comment # SchaldemoseT able27	<i>BCH states that such pursuits, where adverse, can be offset by adapting to another geographic location (e.g. fishing).</i> <i>Recommendation (response requested): FNFN recommends that BCH re-consider the spatial boundaries screened for its cumulative effects assessment of current use of lands and resources and define these boundaries based on traditional territories and land use.</i>	geographic extent of the potential for the Project to cause an adverse effect on the VC." If the LAA were to be described to encompass the maximum extent of information provided by Aboriginal groups with respect to their current use of lands and resources for traditional purposes, such an area would be significantly larger than the LAA described in the EIS and would extend beyond the area where any potential effects resulting from the Project would occur. The resulting assessment might understate the effect. Please also see the following Technical Memos: - Cumulative Effects Assessment - Spatial Boundary Selection
ab_0003-295	Fort Nelson First Nation	Section 38, page(s) 38-2 to 38-25, line(s) Table 38.1; Comment # SchaldemoseT able28	<i>With regard to the interpretation of Table 38.1, it is not clear how and what metrics were used to determine the significance of potential effects, including the confidence in the significance rating. The methods should be presented at the beginning of Section 38.</i> <i>Recommendation (response requested): FNFN requests that BCH provide the methods used in the significance rating for each of the potential residual effects along with the confidence in such ratings.</i>	As described in Section 10.4.2.3 of the EIS, the thresholds of significance have been determined in accordance with Section 8 of the EIS Guidelines. The manner in which the significance of potential residual adverse effects have been assessed is described separately for each VC in Sections 12 to 15, Sections 16 to 27, and Sections 28 to 33. A summary of potential residual adverse effects is provided in table format in each section. Section 38 of the EIS provides a summary of the residual effects of the Project from each of these sections.
ab_0003-296	Fort Nelson First Nation	Section 38, page(s) 38-2 to 38-25, line(s) Table 38.1; Comment # SchaldemoseT able29	<i>With regard to the potential residual effects on the various components, was this table provided in each specific discipline or as part of a larger table of all potential effects?</i> <i>Recommendation (response requested): FNFN requests that BCH provide the relevant sections of Table 38.1 to each discipline.</i>	Please see the response to ab_0003-295. Section 38 Table 38.1 meets the requirements of Section 24 of the EIS Guidelines.
ab_0003-297	Fort Nelson First Nation	Section 38, page(s) 38-2 to 38-25, line(s) Table 38.1; Comment # SchaldemoseT able30	<i>With regard to the potential residual effects on the various components, what if upon external review, a potential effect is re-categorized as having a potential residual effect?</i> <i>Recommendation (response requested): FNFN requests that BCH provide an explanation at the end of Section 38 to explain how a re-categorization will be handled and communicated as part of the overall potential residual effects of the Project to all concerned stakeholders.</i>	BC Hydro has considered this suggestion and will leave the wording in this Section unchanged.
ab_0003-298	Fort Nelson First Nation	Section 38, page(s) 38-13, line(s) Table 38.1; Comment # SchaldemoseT	<i>With regard to the potential residual effects on fishing opportunities and practices, FNFN questions the proposed mitigation – for example, consultation and communication in and of itself may be simply providing information to Aboriginal groups and not necessarily making allowance or change to activities based on using input or feedback from the groups. “Seek input from Aboriginal groups respecting mitigation strategies”, for example is a weak statement – it</i>	As described in Section 9.2.4 (Process for Resolving Issues with Aboriginal Groups), BC Hydro will seek to address outstanding issues by, among other activities, “continuing to seek input and engage in dialogue regarding the EIS and the Project, and to answer questions and address issues, interests, and concerns from Aboriginal groups by identifying appropriate mitigation measures and/or other appropriate means by which to address or resolve potential impacts”.

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		able31	<p><i>should read “Seek input and where possible (or reasonable) incorporate that input into the mitigation strategies”.</i></p> <p><i>Recommendation (response requested): FNFN requests that BCH strengthen the wording in its proposed mitigation activities to provide more assurance to Aboriginal groups that they will be meaningfully involved, and hence more satisfied, that the proposed mitigation considers their need and interests.</i></p>	
ab_0003-299	Fort Nelson First Nation	Section 38, page(s) 38-14, line(s) Table 38.1; Comment # SchaldemoseT able32	<p><i>With regard to the potential residual effects on hunting and trapping opportunities and practices, FNFN questions the proposed mitigation – for example, consultation and communication in and of itself may be simply providing information to Aboriginal groups and not necessarily making allowance or change to activities based on using input or feedback from the groups. “Seek input from Aboriginal groups respecting mitigation strategies”, for example is a weak statement – it should read “Seek input and where possible (or reasonable) incorporate that input into the mitigation strategies”.</i></p> <p><i>Recommendation (response requested): FNFN requests that BCH strengthen the wording in its proposed mitigation activities to provide more assurance to Aboriginal groups that they will be meaningfully involved, and hence more satisfied, that the proposed mitigation considers their need and interests.</i></p>	Please see the response to ab_0003-0298.
ab_0003-300	Fort Nelson First Nation	Section 38, page(s) 38-14, line(s) Table 38.1; Comment # SchaldemoseT able33	<p><i>With regard to the potential residual effects on cultural and other traditional uses of land, FNFN questions the proposed mitigation – for example, consultation and communication in and of itself may be simply providing information to Aboriginal groups and not necessarily making allowance or change to activities based on using input or feedback from the groups. “Work with Aboriginal groups to ground truth traditional land use information for specific areas within the Project activity zone prior to commencing construction”, for example is a weak statement – it should end with “prior to commencing construction to avoid, where possible, construction and land use conflicts”</i></p> <p><i>Recommendation (response requested): FNFN requests that BCH strengthen the wording in its proposed mitigation activities to provide more assurance to Aboriginal groups that they will be meaningfully involved, and hence more satisfied, that the proposed mitigation considers their need and interests.</i></p>	Please see the response to ab_0003-0298.
ab_0003-301	Fort Nelson First Nation	Section 38, page(s) 38-26 to 38-28, line(s) Table 38.2;	With regard to Table 38.2 and Federal Considerations, FNFN questions why BCH did not elaborate on SARA species i.e. what SARA species occur within the LAA and RAA. Though there was some reference to migratory birds that were also species at risk, there is no comprehensive species lists in the wildlife section (Section 14) of all federally listed species and if there was a possible overlap	SARA species occurring in the LAA are described by key indicator group in Section 14 and Volume 2 Appendix R.

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		Comment # SchaldemoseT able34	within the RAA. <i>Recommendation (response requested): FNFN requests that BCH provide more information on SARA species.</i>	
ab_0003-302	Fort Nelson First Nation	Section 39, page(s) 39-1, line(s) 1-23; Comment # SchaldemoseT able35	<i>With regard to category one ‘standard practice’ mitigation, and its applicability (overlap) to category two ‘VC’ mitigation, Section 39 is difficult to follow and more detailed cross-referencing would be helpful as would any reference to specific Volume and Section with additional detail.</i> <i>Recommendation (response requested): FNFN requests that BCH provide a supplemental Appendix of all types of mitigation, with for example detailed reference to management plans with objectives, anticipated operating requirements, relevant BCH policy, etc. and proposed monitoring.</i>	The matter raised in this comment is described in EIS Section 35, Summary of Environmental Management Plans. Please also see the Technical Memo: Environmental Management Plans.
ab_0003-303	Fort Nelson First Nation	Section 39, page(s) n/a, line(s) 24-25; Comment # SchaldemoseT able36	<i>With regard to Table 39.2, Follow Up Measures, and reference to Section 3.5, it is difficult to understand the rationale for the monitoring programs, whether they are adequate and how they will be measured against assessment predictions.</i> <i>Recommendation (response requested): FNFN requests that BCH provide a supplemental Appendix of all follow up measures with rationale, adequacy, reporting of results, how they will be used to validate predictions and what measures are in place if the results of these programs reveal a difference outcome than predicted (i.e. additional actions to be taken).</i>	Follow-up programs were taken into account in each of the effects assessments on the VCs, as required, and are described in more detail separately for each VC in Sections 12 to 15, Sections 16 to 27 and Sections 28 to 33, of this EIS. Table 39.2 provides a summary of the follow-up measures from each of these sections. Please also see Technical Memo: Uncertainty and Precaution.
ab_0003-304	Fort Nelson First Nation	Section 39, page(s) 39-2 to 39-26, line(s) Table 39.1; Comment # SchaldemoseT able37	<i>With regard to the interpretation of Table 39.1 it is unclear how the ‘potential residual effect’ (Y/N) and ‘significant’ (Y/N) were determined i.e. what methods were used to make those determinations and with what confidence rating.</i> <i>Recommendation (response requested): FNFN requests that BCH provide the methods used in the Y/N determinations for each of the potential residual effects and their significance along with the confidence in such ratings.</i>	Please see the response to ab_0003-295.
ab_0003-305	Fort Nelson First Nation	Section 39, page(s) 39-11 to 39-13, line(s) Table 39.1; Comment # SchaldemoseT able38	<i>With regard to current use of land and resources for traditional purposes, see comments 31-33 above.</i>	Please see the response to ab_0003-298.
ab_0003-	Fort Nelson	Section 39,	<i>With regard to Table 39.2, see comment 36 above.</i>	Please see the response to ab_0003-303.

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306	First Nation	page(s) 39-27 to 39-31, line(s) Table 39.2; Comment # SchaldemoseT able39		
ab_0003-307	Fort Nelson First Nation	Section 39, page(s) 39-28, line(s) Table 39.2; Comment # SchaldemoseT able40	<p><i>With regard to the follow up programs for current use of lands and resources for traditional purposes, FNFN agrees that community-based monitoring programs are appropriate part of follow-up. FNFN suggests that these programs be coupled with other monitoring programs such as wildlife to allow comparison of monitoring results; also should the CBM programs identify other species (fish, wildlife, plants) that these species are also included in any western-science based monitoring for the same reason. FNFN is concerned that the wording around the monitoring commitment is not strong enough to give Aboriginal groups confidence that such programs will indeed be initiated and incorporate TK.</i></p> <p><i>Recommendation (response requested): FNFN requests that BCH designs CBM programs with consideration to other western-based monitoring to allow some qualitative comparison, involve Aboriginal groups in the western science monitoring programs in addition to the CBM programs and consider input from CBM scoping to adjust western-science based monitored components (e.g. additional species). Furthermore, FNFN requests that BCH strengthens its wording in Tabel 39.2 to say “will involve incorporation of local, community, and traditional knowledge”.</i></p>	<p>Table 39.2 presents the complete list of follow-up measures identified in Section 39, and notes that BC Hydro proposes to engage with Aboriginal groups to discuss potential community-based monitoring programs, such as programs intended to monitor the productivity and abundance of wildlife species.</p> <p>In addition to the community-based monitoring programs described in Section 39, Section 19 of the EIS notes that BC Hydro will consult with Aboriginal groups respecting the development of fish, wildlife and habitat conservation programs that align with BC Hydro compensation programs.</p> <p>BC Hydro has offered to consult with Aboriginal groups in the Project area about mitigation measures, and will continue to pursue discussions on this topic as part of the consultation process for the Project. As described in Section 9.2.4 (Process for Resolving Outstanding Issues with Aboriginal Groups), BC Hydro will seek to address outstanding issues by, among other activities, "continuing to seek input and engage in dialogue regarding the EIS and the Project, and to answer questions and address issues, interests, and concerns from Aboriginal groups by identifying appropriate mitigation measures and/or other appropriate means by which to address or resolve potential impacts."</p>
ab_0003-308	Fort Nelson First Nation	Section 39, page(s) 39-28, line(s) Table 39.2; Comment # SchaldemoseT able41	<p><i>With regard to the follow up programs for current use of lands and resources for traditional purposes, FNFN questions that the duration is appropriate. CBM should begin before construction (baseline), during construction, and for 5 years into operation at which time monitoring may continue to be annual or may be adjusted, based on results, to every 3 to 5 years. There should also be consideration to monitoring post closure/decommissioning and during reclamation.</i></p> <p><i>Recommendation (response requested): FNFN requests that BCH designs CBM programs with a duration (schedule) to begin before construction (baseline), during construction, and for 5 years into operation at which time monitoring may continue to be annual or may be adjusted, based on results, to every 3 to 5 years. There should also be consideration to monitoring post</i></p>	Please see response to ab_0003-307

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			<i>closure/decommissioning and during reclamation.</i>	
ab_0003-309	Fort Nelson First Nation	Section 40, page(s) 40-2, line(s) 4-23; Comment # SchaldemoseT able42	<p><i>With regard to BCH's conclusion that the assessment process has been sufficient to meet the EIS Guidelines for the Project, FNFN is of the opinion that the EIS will not meet a rigorous sufficiency test to move to the public hearing stage. FNFN questions whether BCH scoped the Project assessment to adequately capture and address all potential effects, particularly with respect to the environmental and traditional land and resource use components. FNFN does not agree that the spatial (LAA, RAA) or temporal (construction and operations) boundaries chosen are adequate to capture species or land uses that may be affected. FNFN also questions the methods used to: select VCs, determine whether or not a potential effect is residual, determine significance, determine the effectiveness of proposed mitigation to minimize or eliminate potential effects or determine whether or not proposed follow up is appropriate. As a result, not enough information was provided to determine whether or not the determination, classification or ranking of effects, and hence the overall assessment, allows for decisions to be made concerning the Project moving forward (i.e. through the hearing process).</i></p> <p><i>Recommendation (response requested): FNFN requests that the Joint Review Panel conduct a rigorous sufficiency test, including testing the adequacy of the EIS as commented on above, before considering the EIS sufficient to proceed to hearing.</i></p>	<p>Thank you for your comment.</p> <p>The assessment of the potential effects of the Project is in accordance with the EIS Guidelines, and the EIS is sufficient for the purpose of giving notice of and conducting a public hearing.</p>
ab_0003-310	Fort Nelson First Nation	Section 40, page(s) 40-5, line(s) 5-8 and 17-39; Comment # SchaldemoseT able43	<p><i>With regard to BCH's conclusions about cumulative effects, FNFN has similar concerns as expressed in comment 42 above. As well, the cumulative effects study, due to the limitations in spatial boundary, fails to consider that the rapid pace of development of the natural gas fracking industry north of Fort Nelson and the oil sands industry downstream of the Project may potentially result in two unassessed outcomes: Aboriginal groups being displaced in their core areas to move to less disturbed areas (including in and around the Project RAA); and the need of electricity by these industries resulting in further development of infrastructure (and hence additional potential impact) to service them.</i></p> <p><i>Recommendation (response requested): FNFN requests that the Joint Review Panel require BCH to expand its cumulative effects study to address the inadequacies identified in comment 42 above as well as to those identified above.</i></p>	<p>Thank you for your comment.</p> <p>Please also see the Technical Memo: Cumulative Effects Assessment.</p>
ab_0003-311	Fort Nelson First Nation	Section 40, page(s) 40-6, line(s) 6-10;	<i>With regard to BCH's conclusions and conditions with respect to the impact to the exercise of Treaty rights, and with respect to FNFN's Treaty rights, see comment 16 above.</i>	Please see the response to ab_0003-283.

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		Comment # SchaldemoseT able44		
ab_0003-312	Fort Nelson First Nation	Section 40, page(s) 40-6, line(s) 11-18; Comment # SchaldemoseT able45	<i>With regard to BCH's conclusions and conditions with respect to follow up programs, see comments 36, 40, 41 and 42 above.</i>	Please see the responses to ab_0003-303, ab_0003-307, ab_0003-308 and ab_0003-309.
ab_0003-313	Fort Nelson First Nation	Section 40, page(s) 40-6, line(s) 19-33; Comment # SchaldemoseT able46	<i>With regard to BCH's conclusions about benefits, FNFN is of the opinion that BCH's statement about being committed to negotiating IBAs with some Aboriginal groups is too vague to ensure that those Aboriginal groups that will be adversely impacted, will ultimately benefit (in any way) from the Project. Recommendation (response requested): FNFN requests that the Joint Review Panel require BCH to identify those Aboriginal groups referred to as some. BCH should make a commitment to negotiate IBAs with all Aboriginal groups that will be adversely impacted as it is not clear that there are any direct or indirect benefits (e.g. guaranteed employment, benefits extending from regional development, etc.) that will compensate for the impacts that may be experienced.</i>	BC Hydro's approach to impact benefit agreements (IBAs) is described in Section 34.7.1. In that section, it is noted that in early March 2012, BC Hydro secured a mandate to enter into IBA negotiations with First Nations that, in BC Hydro's view, are likely to be adversely affected or impacted by the Project and where BC Hydro considers that accommodation beyond the mitigations listed in the EIS is warranted. The potential elements of an IBA are also described in that section.
ab_0003-314	Fort Nelson First Nation	Section 40, page(s) 40-6 to 40-7, line(s) 34-39; 1-41; Comment # SchaldemoseT able47	<i>With regard to BCH's Project justification, FNFN is not confident with the statement that there will only be significant adverse effects on four VCs – see comment 42 above.</i>	Please see the response to ab_0003-309.
ab_0003-315	Fort Nelson First Nation	Section 40, page(s) 40-8, line(s) 1-30; Comment # SchaldemoseT able48	<i>With regard to BCH's rationale and conclusion that a Decision Statement and Environmental Assessment Certificate should be issued for the Project, FNFN is of the opinion that the EIS does not provide sufficient information for such issuances to be made – see comment 42 above.</i>	Please see the response to ab_0003-309.
ab_0003-316	Fort Nelson First Nation	Volume 5, Appendix A09	<i>With regard to the Community Summary for FNFN, the information provided through, what seems to be a desktop search of available literature (primarily</i>	In its September 21, 2012 letter to the 29 Aboriginal groups identified in the EIS Guidelines, BC Hydro asked the Aboriginal groups to provide information with respect to the ethnography,

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		Part 1, page(s) 1-3, line(s) n/a; Comment # SchaldemoseT able49	<i>from the internet), along with FNFN's comments on the draft EIS Guidelines; is minimal and was not validated by FNFN prior to submission of the EIS (though, FNFN is of the understanding that there was the intent be BCH to do so).</i> <i>Recommendation (response requested): FNFN recommends that BCH, if both Parties see value, work with FNFN to ensure the information in the Community Summary is up-to-date and complete. Should BCH require additional information about the community itself or context around the existing information, FNFN would provide such.</i>	language, land use setting and planning, governance and economy of their community. A follow-up letter was sent on October 25, 2012. As described on page xi of the EIS Guidelines, in the preface, "the Proponent will incorporate additional baseline information as made available based on concerns raised by Aboriginal groups."
ab_0003-317	Fort Nelson First Nation	Volume 5, Appendix A09 Part 2, page(s) 2, line(s) n/a; Comment # SchaldemoseT able50	<i>With regard to consultation periods, FNFN wishes to note that there was a time period between March 31, 2010 (when the Stage 2 Consultation Agreement with Treaty 8 expired) and September 19, 2012 (when the Stage 3 Consultation Agreement was finalized) that FNFN did not have the capacity to respond to BCH's requests for review of documents, etc. FNFN did receive confirmation on January 24, 2012 from CEAA that it was successful in obtaining seed funding to review and provide comment on: the draft EIS Guideline as well as the EIS, in addition to prepare for and participate in the JRP hearings.</i> <i>Recommendation (response requested): FNFN requests that the JRP consider this time lag (and inability of FNFN to meaningfully consult with BCH) when reviewing the consultation log.</i>	As described in Volume 5, Appendix A06 and A09, beginning in 2008, "BC Hydro considered Fort Nelson to be represented by CT8C / T8TA until the expiry of the Stage 2 Consultation Agreement between the Treaty 8 First Nations (including Fort Nelson) and BC Hydro on March 31, 2010." Following that, BC Hydro began providing regular Project notifications directly to the FNFN throughout 2010 and 2011. On at least two occasions, these correspondences provided offers of capacity funding to facilitate participation by the FNFN. BC Hydro has no knowledge or record of any responses from FNFN until October 2011.
ab_0003-318	Fort Nelson First Nation	Volume 5, Appendix A09 Part 2, page(s) 3, line(s) n/a; Comment # SchaldemoseT able51	<i>With regard to BCH writing to FNFN expressing interest in feedback on the process and rationale for identifying the proposed Valued Components and spatial boundaries (May 2012), note that at that time FNFN did not have funding in place to do a thorough review at that time. See comment 42 above for FN concerns.</i> <i>Recommendation (response requested): FNFN requests that the JRP consider this review as FNFN's feedback on the process and rationale, with reference to comment 42 above.</i>	In May of 2012, BC Hydro wrote to Fort Nelson regarding the process and rationale for identifying the candidate Valued Components and spatial boundaries in the draft EIS Guidelines, and expressed interest in receiving feedback from Fort Nelson. The letter requested a response if this topic was of interest for further discussion at an upcoming meeting. BC Hydro has no knowledge or record of a response.
ab_0003-319	Fort Nelson First Nation	Volume 5, Appendix A09 Part 2, page(s) 4, line(s) n/a; Comment # SchaldemoseT able52	<i>With regard to BCH's request for information regarding FNFN's use of land and resources as well as the exercise of their Treaty rights with respect to the Project in support of the EIS, FNFN did not conduct a project-specific TLU study. Please also see comment 6 above.</i> <i>Recommendation (response requested): FNFN requests that the JRP not consider the information provided by BCH on FNFN's land and resource use or exercise of Treaty rights exhaustive or complete. Furthermore, FNFN recommends that BCH, works with FNFN Lands Department to scope a project-specific TLU study and that the results of this study be provided as supplemental information to the EIS.</i>	Consultation is ongoing between BC Hydro and the Fort Nelson First Nation, and may yield additional information on FNFN's land and resource use and/or exercise of Treaty rights. BC Hydro will continue to consult and, as described on page xi of the EIS Guidelines, in the preface, "the Proponent will incorporate additional baseline information as made available based on concerns raised by Aboriginal groups." Please see the response to ab_0003-273 regarding a Traditional Land Use Study.

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ab_0003-320	Fort Nelson First Nation	Volume 5, Appendix A09 Part 2, page(s) 5-24, line(s) n/a; Comment # SchaldemoseT able53	<i>With regard to BCH's chronology of events, FNFN does not dispute them, but is making note that as of March 31, 2010 (when the Stage 2 Consultation Agreement with Treaty 8 expired) FNFN did not have the capacity to respond to the multiple requests made by BCH or its consultants. Please also see comment 50 above.</i> <i>Recommendation (response requested): FNFN requests that the JRP consider this time lag (and inability of FNFN to meaningfully consult with BCH) when reviewing the chronology of events.</i>	Please see the response to ab_0003-317.
ab_0003-321	Fort Nelson First Nation	Volume 5, Appendix A09 Part 3, page(s) 1-7, line(s) n/a; Comment # SchaldemoseT able54	<i>With regard to the FNFN current and future use of lands and resources, FNFN did not have the capacity to undertake a project-specific TLU study for the Project on its own and did not have detailed documented resource and land use information for the LAA or RAA. Nor did FNFN enter into an agreement with BCH at the time the EIS or this review was undertaken.</i> <i>Recommendation (response requested): FNFN requests that the JRP not consider the information provided by BCH on FNFN's land and resource use or exercise of Treaty rights exhaustive or complete. Furthermore, FNFN recommends that BCH, works with FNFN Lands Department to scope a project-specific TLU study and that the results of this study be provided as supplemental information to the EIS.</i>	Please see the response to ab_0003-319.
ab_0003-322	Fort Nelson First Nation	Volume 5, Appendix A09 Part 4, page(s) n/a, line(s) n/a; Comment # SchaldemoseT able55	<i>With regard to Appendix 09, Part 4 as a summary of FNFN's exercise of their rights and interests and concerns with respect to the Project; FNFN is of the opinion that this summary is not adequately representative. Due to the timing of meaningful engagement (see comment 50 above) and lack of capacity to respond with detailed, project-specific information (see comments 52 and 53 above) and given the numerous concerns as identified throughout this review; the list of concerns is ad hoc and not comprehensive and the conclusion that there will be no adverse effects on FNFN's Treaty rights is premature.</i> <i>Recommendation (response requested): FNFN requests that the JRP not consider the information provided by BCH on FNFN's land and resource use or exercise of Treaty rights exhaustive or complete. Furthermore, FNFN requests that the JRP not accept BCH's conclusion that there will be no adverse effect on FNFN's Treaty rights. FNFN also recommends that BCH continue to work with FNFN to gather information that will allow a proper assessment and hence understanding and conclusion about potential effects to FNFN's from the Project.</i>	BC Hydro has consulted FNFN about the Project since 2007. Details of the consultation process are found in Volume 5 Appendix A06 and A09. BC Hydro entered into a consultation agreement with the Fort Nelson First Nation, including provision of capacity funding, on September 19, 2012 which remains active at the time of writing and is intended to remain in full force or effect until the completion of any approval processes. BC Hydro will continue to consult with Fort Nelson First Nation, and as described on page xi of the EIS Guidelines, in the preface, "the Proponent will incorporate additional baseline information as made available based on concerns raised by Aboriginal groups." As described in Section 9.2.4 (Process for Resolving Issues with Aboriginal Groups), BC Hydro will seek to address outstanding issues by, among other activities, "continuing to seek input and engage in dialogue regarding the EIS and the Project, and to answer questions and address issues, interests, and concerns from Aboriginal groups by identifying appropriate mitigation measures and/or other appropriate means by which to address or resolve potential impacts". Please also see the Technical Memo: Aboriginal Consultation.
ab_0003-	Fort Nelson	Volume 5,	<i>With regard to Appendix 09, Part 5, FNFN is extremely concerned and wholly</i>	This update has been added to the List of Errata and Updated Information.

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323	First Nation	Appendix A09 Part 5, page(s) n/a, line(s) n/a; Comment # SchaldemoseT able56	<i>opposed to this information being entitled, and hence misrepresented as a Traditional Land Use Study. This information was provided to BCH as a rationale in its negotiations to enter into a Stage 3 Consultation Agreement.</i> <i>Recommendation (response requested): FNFN requests that the JRP not consider the information provided by BCH entitled "TLUS Public Report: Fort Nelson First Nation". Furthermore, FNFN requests that the JRP require that BCH provide FNFN with the resources to conduct a TLUS for the Site C Project and have this information submitted as supplemental to the EIS, replacing Part 5. FNFN requests that BCH either re-titles Part 5 as "FNFN Rationale to BCH to enter into a Stage 3 Consultation Agreement" or withdraws the Part 5 from the EIS altogether until the Parties agree to a project-specific TLUS for submission as Volume 5 Appendix A09 Part 5.</i>	Please see the response to ab_0003-273 with respect to the request for a Project-specific TLUS.
ab_0004-001	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	CvrLtr1	The EISG requires BCH to scientifically justify the spatial scoping of its study areas in the EIS. BCH has not done that for any of its study areas in the EIS. BCH has narrowly scoped the Local Assessment Areas ("LAAs") and Regional Assessment Areas ("RAAs") for a number of Valued Components ("VCs"), without scientific justification. The First Nations previously provided information to BCH relating to potential effects outside BCH's proposed study areas, most particularly in relation to the Peace Athabasca Delta ("PAD") - for example, through comments made by the First Nations at various meetings and in the December 31, 2012 report of Dr. Martin Carver. This information does not appear to have been taken into account at all in BCH's proposed spatial scoping. Scoping is a critically important issue to the First Nations because the lack of proper and scientifically justified scoping results in flawed and inadequate assessments of potential effects to current uses for traditional purposes and Treaty and Aboriginal rights. For ACFN and MCFN, the approach taken by BCH results in potential effects to their constitutionally protected rights being entirely ignored in the draft EIS, without any assessment at all, despite the fact that the Crown has identified that there is potential for impacts to ACFN and MCFN from Site C (and, hence, acknowledged that the duty to consult is triggered). All of the potential effects to ACFN and MCFN, and many of the potential effects to DTFN downstream, have been scoped out of the draft EIS. It is imperative that BCH be directed to re-work the EIS to include assessments based on appropriate spatial scoping that permits proper assessments of impacts to the First Nations' Treaty rights to be undertaken.	Thank you for providing your input during the public comment period for the Environmental Impact Statement (EIS) for the Site C Clean Energy Project. Please see the following Technical Memos: - Peace Athabasca Delta - Spatial Boundary Selection - Methodology for the Assessment of the Potential Impacts of the Project on the Exercise of Asserted or Established Aboriginal and Treaty Rights BC Hydro will provide a formal response to the report provided by Dr. Carver.
ab_0004-002	Athabasca Chipewyan	CvrLtr2	The draft EIS does not contain a proper Cumulative Effects Assessment ("CEA"). The CEA contained in the draft EIS merely compares the status quo with the	The projects and activities to be taken into account in the cumulative effects assessment, and the information about the residual effects of those projects and activities, where available, were

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	First Nation, Dene Tha' First Nation and Mikisew Cree First Nation		situation if Site C proceeds. It does not consider what the effects of past projects are, together with potential effects of Site C. This is a requirement of a CEA - both CEAA and EAO definitions of cumulative effects include consideration of effects from past projects or physical activities. By not considering effects from existing projects, the CEA in the draft EIS does not really look at cumulative effects at all. This is a very serious problem in the context of understanding not just environmental effects, but also effects to current uses for traditional purposes and effects to Treaty and Aboriginal rights. It is the cumulative effects of myriad projects that result in "death by a thousand cuts" for the exercise of Treaty and Aboriginal rights. If those cumulative effects are not considered in the EIS, the effects of Site C to Treaty and Aboriginal rights cannot be assessed. BCH needs to be directed to conduct a proper CEA, as required by the EISG. That CEA also needs to consider effects throughout properly scoped RAAs for each VC, rather than in just the LAAs (which, as noted above, are themselves too narrowly scoped). To the extent that BCH takes the position that there is inadequate data available to look at effects from the Bennett and Peace Canyon Dams, the First Nations note in the enclosed table of comments a number of sources of information in this regard, including information referenced by CEAA, information offered by Environment Canada and sources of Traditional Ecological Knowledge ("TEK").	<p>identified using the method described in Section 10.5.2 of the EIS. Information about the residual effects of those projects and activities on i) lands and resources and, ii) where available, on the current use of lands and resources for traditional purposes, has been taken into account in the assessment of cumulative effects in Section 19 of the EIS. Comments on the adequacy of the information for the purpose of assessing the potential cumulative effects of the Project on current use of lands and resources for traditional purposes are provided on page 19-108, in Section 19.6 of the EIS.</p> <p>Please also see the following Technical Memos:</p> <ul style="list-style-type: none"> - Cumulative Effects Assessment - Spatial Boundary Selection
ab_0004-003	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	CvrLtr3	The consideration of potential effects to Treaty and Aboriginal rights set out in the draft EIS is wholly inadequate. Despite the fact that the EISG requires BCH to consider effects to more than just current uses for traditional purposes, BCH has effectively narrowed the consideration down to just current uses for traditional purposes by using current use as essentially a VC for the assessment of impacts to rights. This is completely contrary to the EISG requirements, and raises the same concerns that the First Nations raised initially in their comments on the draft EISG. In addition, the EIS does not explain what methodology was used for making conclusions about effects to Treaty and Aboriginal rights, including what criteria and thresholds were used.	Please see the Technical Memo: Methodology for the Assessment of the Potential Impacts of the Project on the Exercise of Asserted or Established Aboriginal and Treaty Rights.
ab_0004-004	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First	CvrLtr4	The First Nations do not agree with the summaries contained in volume 5, appendix A, as they relate to each First Nation. The First Nations expect that the Crown and BCH will consult with each First Nation to address their concerns with the summaries.	<p>Volume 5, Appendix A, provides information required pursuant to the EIS Guidelines. BC Hydro will consider any specific concerns raised by Aboriginal groups in regard to the summaries or any of the other information presented in the EIS through the ongoing Aboriginal consultation process.</p> <p>BC Hydro will also continue to consult with the Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation, in accordance with the terms set out in existing Consultation Agreements.</p>

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	Nation			
ab_0004-005	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	CvrLtr5	<p>The First Nations are very concerned about the inadequacies of the draft EIS. Before CEAA and the EAO make any decisions about what BCH is required to do in relation to the draft EIS, the First Nations expect that CEAA and the EAO will fully engage with them in a consultation process so that the First Nations' concerns can be discussed, understood and hopefully addressed. In the process to date, the First Nations have spent considerable time and energy to make detailed comments about various aspects of the EA process, including the JRP Agreement and the EISG, and there was absolutely no engagement by the Crown on those comments before decisions were rendered. As the First Nations' representatives stated at their meeting with CEAA and the EAO in December 2012, their comments appear to go into "black holes" without any discussion by CEAA and the EAO as to whether, and how, they intend to address the comments.</p>	<p>The Project is currently in a cooperative environmental assessment process led by federal and provincial regulatory agencies, which includes a joint review panel. Consultation is part of this process and includes opportunities for input and participation by the public, Aboriginal groups, stakeholders, and communities.</p> <p>BC Hydro remains committed, in accordance with consultation agreements entered into between the BC Hydro and the three First Nations, to consulting with Athabasca Chipewyan, Mikisew Cree and Dene Tha' First Nations about the Project.</p> <p>Please see the Technical Memo: Aboriginal Consultation.</p>
ab_0004-006	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V. 1, s. 4.5.1.2; page(s) 4-65, line(s) n/a. EISG section n/a Comment # Table1	<p>The operating regime for Site C represents a significant element of the project description since it is a potential source of biophysical and sociocultural effects as well as a tool to mitigate potential effects. The EIS claims that Site C project will regulate flows in a manner that is consistent with the current Water Use Plans for the current operating projects. Did the Peace Water Use Plan and associated operating regime consider Site C as part of the regulating system? If not, how is the Water Use Plan relevant for describing the Site C project's operations? Will the addition of Site C to the Peace River hydropower system require a completely new Water Use Plan?</p> <p>Given that it is the Water Use Plan that will dictate what operating regimes are put in place, it is critical that the EIS contain information about the Water Use Plan and any changes that might result to the Plan as a result of Site C.</p>	<p>The operations modelling conducted for the purpose of the environmental assessment of the Project assumed no change to the current water licenses for the existing facilities. The modelling was done constraining the operation of the existing facilities to the existing Peace Project Water Use Plan (BC Hydro 2007). The reservoir level and generation release constraints assumed in the study are described in EIS Volume 2 Appendix D.</p> <p>A new WUP will not be required for or as a result of the Project. BC Hydro will follow the process outlined in the agreement between the federal and provincial Ministers of the Environment to conduct a cooperative environmental assessment of the Site C Clean Energy Project.</p> <p>As set out in the Peace Project Water Use Plan (BC Hydro 2007), a full review is planned for the tenth year after implementation (i.e. 2017).</p>
ab_0004-007	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V. 1, Fig 4.8; page(s) n/a, line(s) n/a. EISG section n/a Comment # Table2	<p>This figure showing Environmentally Sensitive Areas and Parks does not show the Peace-Athabasca Delta (the "PAD"), even though the EIS acknowledges that "The Peace-Athabasca Delta (PAD) is designated a wetland of international importance under the Ramsar Convention, and it is the location of Wood Buffalo National Park, which is a UNESCO World Heritage site." The PAD and other sensitive areas in the Peace River need to be added to this figure.</p>	<p>Please see the following Technical Memos:</p> <ul style="list-style-type: none"> - Cumulative Effects Assessments - Peace Athabasca Delta - Spatial Boundary Selection
ab_0004-008	Athabasca Chipewyan	V. 1, s. 5.4.1; page(s) 5-31,	<p>The EIS Guidelines require BCH to describe different ways to meet the need for the Project. The EIS states that the Canadian Entitlement of the electricity</p>	<p>BC Hydro will not provide any legal opinions it may have concerning whether the Canadian Entitlement is barred as a planning resource due to the self-sufficiency provisions found in</p>

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	First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	line(s) 39-42. EISG section 4.2 Comment # Table3	produced on the Columbia River pursuant to the Columbia River Treaty cannot be considered an alternative to the Project as this electricity does not “result solely from electricity generating facilities within the Province.” The First Nations comment as follows: a) Has BCH obtained a legal opinion in regard to the purported exclusion of the Canadian Entitlement from the self sufficiency requirement under the Clean Energy Act? If so, the First Nations request copies of these legal opinions. b) The Columbia River Treaty may be renegotiated or terminated, pursuant to the terms of this treaty. BCH should include, in its considerations of either the need for the Project or of alternatives to the Project, whether the renegotiation or termination of this treaty would affect the analysis of the need for the Project, or alternatives to the Project.	Section 6 of the Clean Energy Act. BC Hydro has set out its reasons why the Canadian Entitlement does not meet the self-sufficiency requirement in Section 5, page 5-31, of the EIS. Whether the Columbia River Treaty will or will not be renegotiated will not impact the need for the Project as set out in Section 5.2 of the EIS given the self-sufficiency requirement.
ab_0004-009	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V.1, s. 9, Appen H; page(s) 24, line(s) n/a. EISG section 8.4.1 Comment # Table4	Regarding the concerns of ACFN and MCFN that impacts on the Peace-Athabasca Delta from past and current regulation of the Peace River may be exacerbated by Site C, BCH's response in this table is insufficient. BCH needs to provide a scientific justification for the claim that: "The Site C reservoir would be a fraction of the size of the Williston Reservoir; hence, the Project would have limited ability to influence the surface water regime." Serious questions arise in relation to BCH's claim in this regard, particularly in light of the issues highlighted in Dr. Carver's December 31, 2012 report (Dr. Martin Carver, Review of Hydrologic & Geomorphic Downstream Impacts of Site C, December 2012), provided to BCH, CEAA and the EAO on behalf of the First Nations, that are not addressed.	Please see the following Technical Memos: - Peace Athabasca Delta - Spatial Boundary Selection
ab_0004-010	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V.1, s. 9, Appendix H; page(s) 27, line(s) n/a. EISG section 8.4.1 Comment # Table5	It should also be clarified that, in addition to the noted concerns regarding effects from changes to the ice regime, ACFN and MCFN have also stated technically valid concerns that changes to the ice regime may impact downstream hydrology (Dr. Martin Carver, Review of Hydrologic & Geomorphic Downstream Impacts of Site C, December 2012) and consequently fish and wildlife habitats, harvesting activities and Treaty rights. The EIS does not address this concern.	Please see the following Technical Memos: - Spatial Boundary Selection - Peace Athabasca Delta
ab_0004-011	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew	V. 2, s. 10; page(s) 10-20, line(s) 10 (Table 10.7). EISG section 8.5.3	The EIS does not justify why two of the projects that are having the most current and future effect on the Peace River - the WAC Bennett and Peace Canyon hydro facilities - are not considered in the Cumulative Effects Assessment (“CEA”) required under the EIS Guidelines. Some of the ongoing effects on aquatic and terrestrial habitats from river management are described in the EIS as "ongoing response of the river channel to upstream flow regulation	Please see the Technical Memo: Cumulative Effects Assessment

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	Cree First Nation	Comment # Table6	that started in 1967 (i.e., aggradation below tributary confluences, local bank erosion opposite from tributary confluences, and vegetative encroachment onto gravel bars and into secondary channels)" (Volume 2, p.12-46). Despite this acknowledgement, these and other effects from the existing dams are not considered in the CEA.	
ab_0004-012	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V. 2, s. 10.2.3, Appendix A; page(s) 10-3, Table 1, line(s) Table 10.3. EISG section 8.3.2, 8.4.1, 8.5.3 Comment # Table7	<p>The EIS Guidelines and regulatory guidance materials clearly lead to the conclusion that the PAD merits detailed consideration of potential impacts from the Project. Despite this, the supporting evidence provided in the EIS to try to justify the removal of the PAD from consideration in the EIS is weak and incomplete and relies on:</p> <ul style="list-style-type: none"> · a fragmented set of assessments that diminishes the total potential effect of the Project on the PAD; · a lack of scientific recognition of the changes in the PAD resulting from past development and the implications of this for further and similar incremental development; and · BCH's own undefined subjective interpretations of significance. <p>The EIS asserts in Table 1 (Appendix A) that the PAD does not have "a potential to interact with" the "Dam, Generating Station and Spillways" and "associated activities, either during project construction or operation." Table 1 states that the PAD is "not applicable" because it is "beyond [the] spatial influence of the Project." The reader is directed to Sections 11.4 and 11.7 for further details. This assertion is unsupported due to inappropriate procedural simplifications and scientific deficiencies in the EIS, as noted else where in these submissions. The claim in the EIS of "no effect" to the PAD remains unsupported and is a key gap in the EIS.</p> <p>The Project may result in a residual effect or be part of a cumulative effect to the PAD (i.e., in combination with other projects or activities.) However, because the PAD is inappropriately removed from consideration, these effects analyses have not been carried out in the EIS, highlighting another key gap in the EIS. It is suggested that the residual effects characterization table (V2, Table 10.3, EIS) be completed for the PAD to provide information helpful in describing the nature of potential impacts.</p>	<p>The methods used in the assessment of cumulative effects are in accordance with the EIS Guidelines.</p> <p>Please see the following Technical Memos:</p> <ul style="list-style-type: none"> - Peace Athabasca Delta - Cumulative Effects Assessment
ab_0004-013	Athabasca Chipewyan First Nation, Dene Tha'	V.2, s. 10.3; page(s) 10-4, line(s) n/a. EISG section	It does not appear that the scoping of assessment boundaries for VCs considered that there are variable sensitivities related to different VCs along the length of the river. This needs to be taken into account in the EIS and explicitly discussed/addressed.	Please see the Technical Memo: Spatial Boundary Selection.

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	First Nation and Mikisew Cree First Nation	8.4 Comment # Table8		
ab_0004-014	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V.2, s. 10.3.1; V.2, s. 12.1.5.1; page(s) 12-5 & 10-4, line(s) n/a. EISG section 8.4.1 & 10.2.1 Comment # Table9	<p>Section 8.4.1 of the EIS Guidelines states "The EIS shall include a scientific justification for the selection of relevant spatial boundaries" For the scope of spatial boundaries for the assessment of Fish & Fish Habitat, the EIS states "The downstream limit of the LAA was set at a point where the physical changes in the river are expected to diminish to the point where the change could no longer have a measurable effect that would influence fish and fish habitat." No further scientific justification is presented, so it does not meet the aforementioned requirement of the EIS Guidelines. Section 10.3.1 of the EIS (Methodology section) claims that "Each of these sections provides the scientific justification for the selection of relevant spatial boundaries." As demonstrated, this scientific justification is missing for Fish & Fish Habitat, so this statement in section 10.3.1 is not accurate. A scientific justification for the LAA and RAA is required.</p> <p>The EIS contains no explanation of the important correlation between the spatial area in which hydrology, fluvial geomorphology and the ice regime were studied in the EIS and the spatial areas for assessment of impacts to Fish & Fish Habitat. The EIS considers hydrology and fluvial geomorphology downstream from the proposed location of Site C to Peace Point, Alberta (a fact that ACFN and MCFN take issue with in and of itself, given the need to assess impacts downstream to the PAD). Despite the fact that factors relating to hydrology and fluvial geomorphology can impact fish and river ecosystems, the Fish & Fish Habitat study area was not spatially scoped even as far downstream as Peace Point. Regarding the downstream extent of physical effects on fish habitat, the EIS has assumed: "There would be no change in the range of flows experienced downstream of the Pine River confluence." A scientific justification is required to support this claim considering the First Nations' other comments on the uncertainty of BCH's predictions of changes to flow regime, including the complex icejam flooding mechanism.</p> <p>The Project has the potential to affect the First Nations' Treaty rights to fish. Although biophysical indicators are not the only factor to be considered in assessing impacts to Treaty rights, it is a relevant consideration. As a result, the scoping of the spatial boundary for fish is a critically important issue. The EIS does not meet the requirements of the EIS Guidelines on this issue.</p>	Please see the Technical Memo: Spatial Boundary Selection.

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ab_0004-015	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V.2, s. 10.3.1; V.2, s. 13.1.5.1; page(s) 13-7, 10-4, line(s) n/a. EISG section 8.4.1 Comment # Table10	<p>Section 8.4.1 of the EIS Guidelines states "The EIS shall include a scientific justification for the selection of relevant spatial boundaries". For the scope of spatial boundaries for the assessment of <i>Vegetation and Ecological Communities</i>, the EIS does not provide scientific justification, so it does not meet the aforementioned requirement of the EIS Guidelines. Section 10.3.1 of the EIS (Methodology section) claims that "Each of these sections provides the scientific justification for the selection of relevant spatial boundaries." This scientific justification is missing for <i>Vegetation and Ecological Communities</i>, so this statement in section 10.3.1 is not accurate.</p> <p>A scientific justification for the LAA and RAA is required. The Project has the potential to affect the First Nations' Treaty rights to gather. Although biophysical indicators are not the only factor to be considered in assessing impacts to Treaty rights, it is a relevant consideration. As a result, the scoping of the spatial boundary for vegetation is a critically important issue. The EIS does not meet the requirements of the EIS Guidelines on this issue.</p>	Please see the Technical Memo: Spatial Boundary Selection.
ab_0004-016	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V.2, s. 10.3.1; V.2, s. 14.1.5.1; page(s) 14-12, 10-4, line(s) n/a. EISG section 8.4.1 Comment # Table11	<p>Section 8.4.1 of the EIS Guidelines states "The EIS shall include a scientific justification for the selection of relevant spatial boundaries". For the scope of spatial boundaries for the assessment of Wildlife Resources, the EIS does not provide scientific justification, so it does not meet the aforementioned requirement of the EIS Guidelines. Section 10.3.1 of the EIS (Methodology section) claims that "Each of these sections provides the scientific justification for the selection of relevant spatial boundaries." This scientific justification is missing for Wildlife Resources, so this statement in section 10.3.1 is not accurate. A scientific justification for the LAA and RAA is required.</p> <p>The Project has the potential to affect the First Nations' Treaty rights to hunt and trap. Although biophysical indicators are not the only factor to be considered in assessing impacts to Treaty rights, it is a relevant consideration. As a result, the scoping of the spatial boundary for Wildlife Resources is a critically important issue. The EIS does not meet the requirements of the EIS Guidelines on this issue.</p>	Please see the Technical Memo: Spatial Boundary Selection.
ab_0004-017	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew	V. 2., s. 10.3.1; V. 3, s. 19.1.5.1; page(s) 19-10, 10-4, line(s) n/a.	Section 8.4.1 of the EIS Guidelines states "The EIS shall include a scientific justification for the selection of relevant spatial boundaries". For the scope of spatial boundaries for the assessment of Current Use of Lands and Resources for Traditional Purposes, the EIS states "The LAA was defined in consideration of the expected maximum geographic extent of the potential for the Project to cause an adverse effect on the VC current use of lands and resources for	As described in Section 19.1.5 Spatial and Temporal Boundaries, the LAA and RAA for Current Use of Lands and Resources for Traditional Purposes is comprised of maximum extent of the LAA and RAA for each of Fish and Fish Habitat, Wildlife Resources, and Vegetation and Ecological Communities. The LAA was defined in consideration of the expected maximum geographic extent of the potential for the Project to cause an adverse effect on this VC. BC Hydro views that

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	Cree First Nation	EISG section 8.4.1 Comment # Table12	<p>traditional purposes." The LAA and RAA boundaries defer to the other biological boundaries (which are themselves unjustified by scientific evidence), and no further scientific justification is presented, so it does not meet the aforementioned requirement of the EIS Guidelines. Section 10.3.1 of the EIS (Methodology section) claims that "Each of these sections provides the scientific justification for the selection of relevant spatial boundaries." This scientific justification is missing for Current Use of Lands and Resources for Traditional Purposes, so this statement in section 10.3.1 is not accurate. The spatial scoping for the LAA and RAA must be scientifically justifiable for the EIS Guidelines requirements to be met.</p> <p>In addition, it is unacceptable to use the spatial scoping for Vegetation and Ecological Communities and for Wildlife Resources to determine the spatial scoping for current use. Other types of potential effects can affect the ability of First Nations to exercise their Treaty rights, beyond effects to vegetation and wildlife, such as effects to hydrology and ice flow regimes as these factors can result in navigational constraints in accessing harvesting areas or result in impacts to ecological communities such as perched basins in the PAD which are necessary to sustain harvesting practices. As expressed by the First Nations at meetings with CEAA and the EAO, as well as at meetings with BCH, the First Nations' access to areas of their Traditional Territories have been adversely affected because of water levels and ice flow regime changes. For instance, ACFN and MCFN cannot access some of their resources because of low water levels. Any incremental effects on Peace River water levels, geomorphology and ice flow regimes have the potential to further adversely impact the ability of ACFN and MCFN members to exercise their rights. By way of illustration, if only 10% of a given area is still usable for the exercise of rights, an additional impact on 5% of the area would constitute an impact to 50% of the usable area. What are otherwise considered "small" changes can have incredibly large impacts to the exercise of Treaty and Aboriginal rights, especially in areas already compromised by existing development. The approach taken to spatial scoping in the EIS completely ignores the potential cumulative effects to the exercise of Treaty and Aboriginal rights in their true context.</p>	<p>"access" is a component of the three key aspects assessed in Section 19, in that consideration was given to both use of and access to resources, including cultural and other traditional uses of the land.</p> <ul style="list-style-type: none"> - The Fish and Fish Habitat LAA: as changes in fishing opportunities and practices is the first key aspect assessed in Section 19, there is a direct correlation between the expected maximum extent of the potential for the Project to cause adverse effects on both VCs. The RAAs for both VC are aligned for the same reason. - The Wildlife Resources LAA: as changes in hunting and trapping opportunities and practices is the second key aspect assessed in Section 19, there is a direct correlation between the expected maximum extent of the potential for the Project to cause adverse effects on both VCs. The RAAs for both VC are aligned for the same reason. - The Vegetation and Ecological Communities LAA: as changes in other cultural and traditional uses of the land, including gathering, is the third key aspect assessed in Section 19, there is a direct correlation between the expected maximum extent of the potential for the Project to cause adverse effects on both VCs. The RAAs for both VC are aligned for the same reason. - In addition to gathering, the third key aspect also considers the use of areas for other cultural purposes, such as high-value places and landscapes along the Peace River used for the conduct of multiple current use and cultural activities. These types of activities are site-specific and stationary in nature, and as such would be located within the bounds of the LAA identified for this VC. <p>Please also see the following Technical Memos:</p> <ul style="list-style-type: none"> -Peace Athabasca Delta -Spatial Boundary Selection
ab_0004-018	Athabasca Chipewyan First Nation, Dene Tha' First Nation	V. 2, s. 10.3.1.1; page(s) 10-4, line(s) 24. EISG section	The EIS states "For each VC, the LAA has been defined in consideration of the expected maximum geographic extent of the potential for the Project to cause an adverse effect on the VC." The EIS also acknowledges the past, current and foreseeable future effects of the current regulation of the Peace River on the downstream river ecology to the Peace-Athabasca Delta. Since Site C is	<p>Please see the following Technical Memos:</p> <ul style="list-style-type: none"> - Spatial Boundary Selection - Peace Athabasca Delta

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	and Mikisew Cree First Nation	8.4.1 Comment # Table13	<p>proposed to become part of the hydropower system and the furthest downstream control point that regulates the Peace River flows, Site C becomes an integral part of the system to regulate downstream flows and mitigate the effects that BCH has acknowledged are currently ongoing. The EIS Guidelines require that "should a technically valid concern with respect to study area boundaries arise during the course of environmental assessment, they would address it in the EIS."</p> <p>Despite the stated intention to scope the assessment areas to the maximum area of effect, it seems that the LAAs were scoped too narrowly in some cases which has excluded assessment of effects further downstream and, in so doing, pre-determined the conclusion on the extent of effect. This flawed methodology of claiming no effect because the area was not studied as a result of being scoped out of the assessment needs to be addressed by BCH before the EIS can be deemed to be complete by CEAA and EAO. Note that the First Nations provided technically valid concerns about effects outside its proposed study area boundaries through the December 31, 2012 report of Dr. Martin Carver (Dr. Martin Carver, Review of Hydrologic & Geomorphic Downstream Impacts of Site C, December 2012). There is no evidence that BCH took into account the comments or opinions of Dr. Carver in the EIS, despite the direction in the EIS Guidelines. The comments in Dr. Carver's report put into question the scientific soundness of BCH's study areas for a number of VCs, including fish, wildlife and current use.</p>	
ab_0004-019	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V. 2. s. 10.3.1.1; page(s) 10-5, line(s) 3. EISG section 8.4.1 Comment # Table14	The EIS states that the LAA for each VC took into account "The nature of the VC and its susceptibility to various influences". The EIS does not disclose how the susceptibility and vulnerability of the PAD to long-term incremental effects was taken into account. Exclusion of the PAD in all study areas is not scientifically justified in the EIS.	Please see the following Technical Memos: - Peace Athabasca Delta - Spatial Boundary Selection
ab_0004-020	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First	V. 2, s. 10.4.2.3 Appendix A; page(s) 10-10, line(s) 1-19 Table 1. EISG section	The EIS Guidelines and other guidance documents indicate that concerns about impacts of the Project on the PAD justify its inclusion as a fully assessed Valued Component (VC), and particularly for inclusion in the CEA. The EIS Guidelines note that many comments have been received from interested parties concerning the inclusion of the PAD within the spatial boundary of the assessment.	Please see the following Technical Memos: - Peace Athabasca Delta - Spatial Boundary Selection - Cumulative Effects Assessment

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	Nation	8.3, 8.4.1, 8.5.2.3, Table 8.3 Comment # Table15	<p>Guidance documents stress the need to consider sensitive situations:</p> <p>1. The EIS refers to CEAA’s operational policy statement on addressing cumulative environmental effects under the Canadian Environmental Assessment Act. (Note that the EIS section 10.4.2.3 refers to an outdated version of this operational policy statement - Agency 1999 - rather than the updated one - Agency 2007.) CEAA (2007, p3) states: <i>For example, the practitioner should give particular attention to the selection of future projects to be considered in the cumulative environmental effects assessment where:</i></p> <ul style="list-style-type: none"> • <i>certain and reasonably foreseeable projects may have an impact on the same valued ecosystem components as the project under assessment;</i> • <i>rapid development of the project area is anticipated; or</i> • <i>particular environmental sensitivities or risks are involved.</i> <p>It is well established that the PAD has “particular environmental sensitivities” as a landform with regard to sustaining the environmental good and services that it provides (PADTS 1996).</p> <p>2. The EIS refers to “relevant guidance” materials including Hegmann et al. (1999). This publication (p5) provides the decision from another EIA as guidance in determining whether there are cumulative effects (CEs): <i>To assist in its deliberations on cumulative effects during the public hearings for a proposed pipeline in Alberta (NEB 1996), the Review Panel identified three requirements that must be met before they would consider as relevant any evidence related to cumulative effects:</i></p> <ol style="list-style-type: none"> <i>1. There must be an environmental effect of the project being assessed.</i> <i>2. That environmental effect must be demonstrated to operate cumulatively with the environmental effects from other projects or activities.</i> <i>3. It must be known that the other projects or activities have been, or will be, carried out are not hypothetical.</i> <p><i>In the Panel’s subsequent Decision Report (Priddle et al. 1996), the Panel noted that a further requirement was that the “cumulative environmental effect is likely to result”.</i></p> <p><i>It is noted here that the requirement (#1) is not that the environmental effect not be negligible but that that there be an effect.</i></p> <p>3. The EIS refers to “relevant guidance” materials including BCEAO (2010). That publication (p20) states that the “Proponent must commit to provide the following for each of the five types of impacts (environmental....)”: <i>Identify the</i></p>	

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			<p><i>Valued Components (VC) to be considered in the EA. VCs are components that are considered important by the Proponent, public, First Nations, scientists and government agencies involved in the EA process (e.g., fish and fish habitat, listed species, rare ecosystems, air quality, water quality); and, - [Importance may be determined on the basis of values including First Nations interests, scientific and/or regulatory concern, biodiversity, and sensitivity to proposed project effects.]”</i></p> <p>This guidance requirement describes the PAD very well.</p> <p>4. The EIS refers to “relevant guidance” materials including FEARO (1994). With respect to the ecological context of deciding whether its environmental effects are significant, that publication (p 190) states: <i>The adverse environmental effects of projects may be significant if they occur in areas or regions that:</i></p> <ul style="list-style-type: none"> · <i>have already been adversely affected by human activities; and/or</i> · <i>are ecologically fragile and have little resilience to imposed stresses.</i> <p><i>To assist the RA and the Minister in deciding significance, proponents should always be required to submit information on these criteria.</i></p> <p>There is considerable peer-reviewed evidence that these two criteria are met by the PAD, thus BCH should provide this information.</p> <p><i>Integration</i> Based on the above requirements and guidance, and due to the potential for cumulative effects, the EIS should include the PAD as a VC and include it in the assessment, including a thorough CEA.</p>	
ab_0004-021	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V.2, s.10.5; V.2, s.11.1.2.1 ; page(s) 10-11 to 10-22, 11-3 , line(s) n/a, 4-23. EISG section 8.5.3.3 Comment # Table16	<p>The EIS Guidelines require that the EIS (p36) “describe the potential CE on VCs, including the following: ... Potential residual cumulative effects.” In addition to excluding the PAD, the EIS also does not consider the many small residual Project effects on the distal reaches of the Peace River and their material consequences for flooding of the PAD. The following is a list of small changes for which the consequences have not been assessed collectively, nor their individual or combined implications for the other assessments taken into account: Changes to operating regimes of existing dams. The operating regimes of the existing dams will change slightly with the Project in place, and the extent of the changes will change further with incremental climate change. Adjustments in ice control measures to protect the Town of Peace River. For the operating scenario with Site C, downstream ice control flow constraints were assumed to be transferred from Peace Canyon to the Site C generating</p>	<p>Please see the following Technical Memos:</p> <ul style="list-style-type: none"> - Peace Athabasca Delta - Spatial Boundary Selection

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			<p>station. Details on ice control flow objectives and constraints on the Peace River are presented in Volume 2 Appendix G Downstream Ice Regime Technical Data Report (see V2 App D p 6 lines 7-10). Potential changes in ice-control flow constraints may be developed as a direct result of Site C. Increased reservoir temperatures due to increased air temperature. The EIS climate change assessment does not take into account the effects of climate change on increasing the temperature of the Project’s reservoir. Increased river reservoir temperatures reduce the downstream ice extent. Hydraulic modeling excludes hydraulic effect of ice. Downstream changes in river flow parameters (water level, wetted area, average velocity, etc) are determined using a 1d model that assumes open-water conditions. The effects of ice and changes in ice cover are not taken into account (see V2, p11-77). Power generation model assumes perfect foresight. The Generalized Optimization Model (GOM) is applied to past climate data with a perfect ability to anticipate climate thereby minimizing the potential for spills, however additional spills are projected to come about due to the weakness of this modeling assumption. See V2, 11.4.4.2.3 lines 34-42.</p> <p>Within-day flow variation not considered in hydrologic modeling. Flow modeling uses average daily flows and does not consider diurnal increases and decreases. The implications of this simplification are not discussed in the EIS (see V2, Appendix D, p7). Power generation model assumes use-constrained conditions. Future operating regimes are determined based on an assumption of electricity generation sufficient to meet demand and leads to particular projections of Project dam discharge flows considerably higher than would occur if generation-constrained conditions prevail (see V2, Appendix D, p9-10).</p> <p>Unassessed implications of downstream decline in ice cover. The EIS recognizes, with Site C in place, that there will be a reduced length of the Peace River with winter ice cover. The implications of these changes on the ice-jam mechanism remain unstudied in the EIS. The EIS does not: · Acknowledge, in one integrated discussion, these many small effects, each of which is determined in the EIS to be unimportant when considered separately; and · Assess the aggregate significance of these many small residual effects, and particularly in relation to their potential to aggravate any effects already resulting from existing hydroelectric dams and including interactions among the controls. The EIS provides a fragmented collection of analyses, in narrowly defined themes. It is scientifically inappropriate, in consideration of this fluvial system, to assume the total of all these (and other) effects, including their interactions and potential for relative amplification, to be “negligible.” A discussion should be provided in the EIS to address these additional integrated</p>	

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			effects, particularly in relation to the PAD. Until this is carried out, the EIS conclusion with respect to the PAD remains unsupported, contrary to the EIS Guidelines.	
ab_0004-022	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V. 2, s. 10.5.1.2; page(s) n/a, line(s) n/a. EISG section 8.5.3.1 Comment # Table17	<p>The lack of consideration of past projects and activities in the CEA is contrary to the EIS Guidelines provisions requiring a cumulative effects assessment, and is inconsistent with the requirements under the CEAA as well as the EAO's definition of cumulative effects. Subsection 19(a) of CEAA 2012 requires every environmental assessment to include consideration of the environmental effects of a project, including "any cumulative environmental effects that are likely to result from the project in combination with other physical activities that have been or will be carried out." The EAO defines cumulative effects as "likely impacts from a reviewable project, combined with impacts from prior development, existing activities; and, reasonably foreseeable future development that is sufficiently certain to proceed".</p> <p>The CEA conducted for each VC in the draft EIS did not consider the cumulative effects of Site C along with projects that have been carried out, including the Bennett and Peace Canyon dams. This is notwithstanding the fact that data is available for the pre-Bennett era:</p> <ul style="list-style-type: none"> · CEAA and the EAO advised the First Nations in a November 13, 2012 letter that information pre-dating the Bennett dam is available through the Water Survey of Canada's Historical Data & Station Information; and · Environment Canada noted in comments to CEAA in relation to Site C that there is existing information available through the Northern Rivers Basins Study, the Northern Rivers Ecosystem Initiative, the Mackenzie River Basin Board, and the Peace-Athabasca Delta Ecological Monitoring Program that allows for a "reasonable consideration of the changes introduced to the Peace River system since construction of the W.A.C. Bennett Dam". Environment Canada offered to assist BCH in accessing this information. Environment Canada also expressly noted the potential of Site C, in combination with existing generating stations, to result in cumulative impacts on downstream ecological values in the Peace River, including in the PAD. · Traditional Ecological Knowledge is available on effects from regulation of the Peace River. <p>The approach taken in the EIS is unacceptable methodology for a cumulative effects assessment, and is inconsistent with standard Canadian and international practice. The method used in the draft EIS merely reflects the status quo, rendering the CEA meaningless in its key goal to understand how</p>	<p>Please see the following Technical Memos:</p> <ul style="list-style-type: none"> - Cumulative Effects Assessment - Peace Athabasca Delta

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			<p>multiple changes to the condition of a valuable resource over time can be avoided or managed. If each new project used the current state as a baseline (such as the proposed "Baseline Case"), then baselines would continue to shift with each new assessment and past and current effects would be ignored. This type of approach to a CEA shirks responsibility to manage cumulative effects and risks becoming an excuse for inaction.</p> <p>In light of all of this, it is clear that the EIS Guidelines requirement to conduct a CEA has not been met.</p>	
ab_0004-023	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V. 2, s. 10.5.2.2; V. 2, s.10.5.2; page(s) 10-14, 10-15 to 10-21, line(s) Table 10.5. EISG section 8.4.1 Comment # Table18	<p>As discussed in comment 15, the PAD is highly qualified to be a candidate VC carried through to an effects assessment. However, the EIS asserts that the Project effects do not persist sufficiently to reach the PAD and hence it is removed for further consideration before it is assessed. The EIS (V.2, Table 10.5) points out that it is the spatial boundaries from the VC assessments that determine the spatial boundary for the CEA. However, as explained in other comments, the spatial boundaries used in the relevant EIS assessments are unsupported by relevant scientific research. As a result, the spatial boundary used in the CEA is unsupported.</p> <p>It is also evident that the list of considered projects for the CEA excludes the oilsands developments on the Athabasca River, presumably because they do not affect the hydrology of the Peace River. However, if the Project does have a residual effect on the PAD, then these oilsands developments do result in “a residual effect of another project or activity” (BCEAO 2012) that has a spatial and temporal overlap with the Project’s residual effects.</p> <p>The ecological and cultural significance of the PAD leads to the conclusion that a conservative approach needs to be used in identifying the boundaries associated with the CEA.</p>	<p>Please see the following Technical Memos:</p> <ul style="list-style-type: none"> - Cumulative Effects Assessment - Peace Athabasca Delta - Spatial Boundary Selection
ab_0004-024	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V. 2, s. 10.5.1.2; page(s) 10-13, line(s) 3-7. EISG section 8.5.3.1 Comment # Table19	<p>The EIS Guidelines require that the “Baseline Case will demonstrate the current status of the VC. In doing so, it will reflect the effect of all projects and activities that have been carried out.” In the EIS (p10-13), BCH chooses September 5, 2012 “to demarcate the Baseline Case from the future cases because 1) this was the date the EIS Guidelines were issued by the federal Minister of Environment and the Executive Director of the BCEAO, and 2) by this date, BCH had already substantially developed the assessment of potential effects and cumulative effects of the Project.”</p> <p>In light of the dynamic nature of the baselines in this system, the temporal</p>	<p>Please see the Technical Memo: Cumulative Effects Assessment.</p>

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			<p>baseline for the CEA should include consideration of system conditions prior to the implementation of the existing hydroelectric facilities (early 1960s). The culminating demarcation date is satisfactory, however the baseline period should extend back far enough to capture the dynamics currently in place. Because the EIS describes the system based only on the post-Bennett-Dam condition, the EIS is unable to adequately describe the baseline condition so that the aggregate of all residual Project effects can be appropriately understood and put in context.</p> <p>It is also notable that the EIS uses as the criterion for inclusion in the CEA of other projects a comparison with the likelihood of the Site C proposal being built. This probability is unclear and unexpressed in the EIS and presumably changes with time. How can the other projects be assessed for inclusion when the base comparison is so unclear?</p>	
ab_0004-025	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V. 2, s. 10.4.2.2; page(s) 10-9, line(s) 20-22. EISG section 8.5.2, 8.5.2.3 Comment # Table20	<p>Changes are described subjectively without definitions provided for the qualitative terms used, or without sufficient support in science. For example (underlining emphasis added):</p> <p><u>Description of model outputs</u></p> <ul style="list-style-type: none"> · “The differences between the duration curves diminish at downstream stations due to flow attenuation and tributary inflows. For stations downstream of Alces the water level duration curves show <u>little difference</u> between case A and B for the 10-year period.” (AppD, Part 2, p7, third bullet) · “While these calibration coefficients were applied to the other 12 years in the study, the model was <u>reasonably accurate</u> in predicting the ice fronts for those years as well.” (V2, S11, 11.7.3.2, p11-111, line 4) · “Potential interactions rated “0” or “1” were not further assessed because there is no interaction or the interaction can be avoided or minimized by implementing mitigation, these industry standard mitigation measures are understood to be effective, and any residual effects are <u>negligible</u>.” (V2, S10.4.2, p10-8, lines 12-15) <p><u>Assumptions</u></p> <ul style="list-style-type: none"> · The EIS states (V2, S11.4.5.2.4, p11-81, lines 11-13): “It is <u>unlikely</u> that the probability of ice jamming would be influenced by the relatively lower flows that are predicted to occur periodically in October and November with the Project...” The EIS refers to the same two publications that it refers to in discussing the significance of ice jams in flooding the PAD. This incomplete presentation of the science suggests a subjective interpretation of the research 	<p>Scientific justification of methods used to assess cumulative effects and spatial boundary selection is described in the following Technical Memos:</p> <ul style="list-style-type: none"> - Cumulative Effects Assessment - Peace Athabasca Delta - Spatial Boundary Selection <p>The reference to Section 10, p 10-9, lines 20-22 refers to providing definitions for residual effects of VCs that have been characterized qualitatively. The definitions requested in the comment are not related to valued components. Definitions of key terms are listed in a "Definitions" section which is provided at the beginning of each of the 5 volumes of the EIS. Definitions of technical terms used in the appendices to the EIS are provided in each appendix, where relevant.</p> <p>Please see the Technical Memo: Uncertainty and Precaution.</p>

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			<p>literature.</p> <p><u>Opinions</u></p> <ul style="list-style-type: none"> · As discussed in other comments, the spatial and temporal boundaries of the EIS exclude consideration of the potential cumulative impacts of the Project on the PAD in conjunction with other existing and reasonably foreseeable development. The justifications for these boundaries rest partly on opinion and other forms of subjectivity, and are not scientifically supported in the EIS. · Various opinions are provided elsewhere in the EIS to justify the nature of assessments that are pursued. <p>In the examples shown above, the subjective qualitative terms are not defined as the EIS states they will be (V2, p10-9, lines 20-22): “Where possible, these criteria are described quantitatively. When residual effects cannot be characterized quantitatively, they are characterized qualitatively. Definitions are provided when qualitative terms are used.” There are many exceptions to this stated methodology, raising doubt about the interpretation of change noted in the EIS, particularly those environmental changes leading to impacts that are deemed to be unworthy of assessment.</p>	
ab_0004-026	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V. 2; page(s) n/a, line(s) n/a. EISG section 8.5.2.3; Table 8.3; 9.3; 9.3.1 Comment # Table21	<p>The EIS assessments involve a wide range of uncertainties. Some are explicitly acknowledged while many are disregarded or assumed negligible. For example:</p> <p><u>Undefined Subjectivity</u></p> <p>The previous comment in these submissions provides examples of subjectivity present in the EIS leading to unsupported interpretations.</p> <p><u>Climate Change Assessment</u></p> <p>The climate change assessment is based on average values and conservative emission scenarios and thus underestimates the potential uncertainties associated with future climates. Further, climate change after the 2080s remains unassessed. The climate change assessment (EIS Appendix T) acknowledges expected changes in hydrologic regime of lower tributaries (to rainfall regime) yet this significant change is unassessed in the EIS in relation to expected impacts of the Project. The EIS states: “The goal of working with climate change scenarios is not to predict the future, but to better understand uncertainties in order to reach decisions that are robust under a wide range of possible futures.” (Appendix T, Executive Summary). The climate change assessment falls well short of this goal of clarifying the potential uncertainties associated with future climates and, instead, the considerable uncertainty associated with climate change and its effects on the various EIS model</p>	Please see the Technical Memo: Uncertainty and Precaution.

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			<p>components remain unevaluated.</p> <p><u>Sensitivity Analyses</u> A collection of sensitivity analyses is provided at different points in the EIS. These tests indicate the relative influence of single variables on, typically, single outcomes and do not address the need to consider the aggregate effect of many small unassessed changes.</p> <p>In addition, assessments are rerun with future climate change scenarios (2050s, 2080s) however this sensitivity analysis does not provide an uncertainty assessment in relation to climate change, particularly given the conservative nature of single climate change projections developed in Appendix T and applied to each of the future time periods.</p> <p><u>Confidence Assessments</u> To carry out its EIS assessments, BCH conducts narrowly-defined component assessments built upon simplifications and yielding qualified outcomes. Whereas the assumptions limit the scope of applicability of the assessed impacts, the EIS does not provide an integrated uncertainty assessment or error analysis to aggregate them to highlight their magnitude and to support its confidence assessments for the VCs affected by the assessed changes in flow, ice, and sediment. As a result, BCH's assumptions are largely considered within each focused component analysis, leaving unassessed and unknown the implications of those simplifications on other applicable analyses. Further, the aggregate effect of all of the assumptions on the component analyses is not provided. Hence, for those VC evaluations that rely on these assessments, the overall confidence assessments provided in the EIS appear to be unsupported and thus unreliable.</p>	
ab_0004-027	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V.2, s. 11.1; page(s) 11-2, line(s) 6. EISG section 9.1 Comment # Table22	<p>The EIS states that "Understanding environmental changes, in particular those associated with previous hydroelectric development, provides context for the environmental assessment of the Project." This statement underplays the importance of the section on "Previous Developments". The past and current regulation of the Peace River not only provides context, but is fundamental to assessing the future direct and cumulative effects of additional regulation of the Peace River system. Section 9.1 of the EIS Guidelines states: "An understanding of those facilities, of the environmental changes understood to have resulted from those facilities, and of the mitigation measures employed may provide information that could be used to better assess the potential effects of the Project and the feasibility of proposed mitigation measures." There is no</p>	<p>The scope of the narrative on Previous Developments is in accordance with, and is provided for the purposes set out in, Section 9.1 of the EIS Guidelines, and appropriate information is provided in the EIS. Methods used to assess potential cumulative effects are in accordance with Section 8.5.3 of the EIS Guidelines.</p> <p>Please see the following Technical Memos:</p> <ul style="list-style-type: none"> - Cumulative Effects Assessment - Peace Athabasca Delta

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			indication in the EIS as to whether, and how, BCH used the information on past and current effects to the Peace River to "better assess the potential effects of the Project and the feasibility of proposed mitigation measures". Elsewhere in these comments, we have noted that Dr. Carver has described mitigation measures relating to flow regulation on the Peace that could be used to mitigate effects of regulation within the PAD (Dr. Martin Carver, Review of Hydrologic & Geomorphic Downstream Impacts of Site C, December 2012). The EIS does not comply with the EIS Guidelines in these regards.	
ab_0004-028	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V. 2, s. 11.1; page(s) n/a, line(s) n/a. EISG section 8.5.3 Comment # Table23	Section 8.5.3 of the EIS Guidelines states "Information contained in Section 9.1 Previous Developments may contribute to the cumulative effects assessment." The EIS does not disclose if, or how, BCH has used the information from previous developments in the CEA. For the reasons noted above, the CEA is not methodologically sound and does not comply with the EIS Guidelines.	<p>The methodology used to assess cumulative effects is described in Section 10.5 of the EIS. This methodology is in accordance with the EIS Guidelines Section 8.5.3, and appropriate information is provided in the EIS.</p> <p>The EIS guidelines Section 8.5.3 states for the purposes of cumulative effects assessment "the baseline case will demonstrate the current status of the VC. In doing so, it will reflect the effect of all projects and activities that have been carried out".</p> <p>Please see the Technical Memo: Cumulative Effects Assessment.</p>
ab_0004-029	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V. 2, s. 11.1; page(s) n/a, line(s) n/a. EISG section 9.1, 8.5.3 Comment # Table24	BCH's "narrative discussion" on past development effects is summarized in section 11.1, although it is not clear in the actual effects assessments of VCs how this information was used to enhance the understanding of potential Site C effects and how they may act in a cumulative way with past and current changes from the existing facilities. The EIS needs to explain if, and how, this information was used in the VC effects assessments (direct and cumulative).	<p>The methodology used to assess cumulative effects is described in Section 10.5 of the EIS. This methodology is in accordance with the EIS Guidelines Section 8.5.3, and appropriate information is provided in the EIS.</p> <p>The EIS guidelines Section 8.5.3 states that for the purposes of cumulative effects assessment, "the baseline case will demonstrate the current status of the VC. In doing so, it will reflect the effect of all projects and activities that have been carried out".</p> <p>Please see the Technical Memo: Cumulative Effects Assessment.</p>
ab_0004-030	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V. 2, s. 11.1.2.1; page(s) 11-4, line(s) 28-45. EISG section Agency comments on the EIS Guidelines Comment # Table25	<p>As noted above, Environment Canada offered to assist with access of their research data on the Peace River for the purpose of properly assessing cumulative effects down to and including the PAD. Did BCH take up this offer? This information needs to be incorporated into the CEA.</p> <p>Parks Canada, Transport Canada, Government of NWT all commented that the PAD should be scoped into the studies. The second set of comments from most agencies after release of the EIS Guidelines indicates that their concerns were not addressed. The EIS explanation of why the PAD was scoped out draws no conclusions and is entirely inadequate to address the considerable concerns raised by regulators and First Nations, and is not scientifically justifiable.</p>	<p>Available reports and published research on the conducted by Environment Canada and other research authorities on the Peace River down to and including the Peace Athabasca Delta was reviewed and taken into account in the EIS.</p> <p>Please see the response to ab_0004-028.</p> <p>The justification for scientific boundaries is described in the Peace Athabasca Delta Technical Memo and the Spatial Boundary Selection Technical Memo.</p>

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ab_0004-031	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V.2, s. 11.1.2.1; page(s) 11-5, line(s) 28-30. EISG section 8.4.1 Comment # Table26	<p>The EIS states "increased regulated river flows have altered the ice freezeup levels both at the Town of Peace River and farther downstream to Peace Point, Alberta (Ashton 2003)". Despite this statement, the spatial scope of the ice regime study went only as far downstream as Fort Vermillion, AB. The spatial scope of the ice regime study is not scientifically justified. Note that Dr. Carver's December 31, 2012 report also provides technically valid concerns about ice regime areas. It does not appear that the EIS considered these concerns.</p> <p>In addition, as noted above, the ice regime can affect other elements of the environment that can affect the harvesting activities and Treaty rights of ACFN and MCFN, through effects to perched basins, the ecosystem in the PAD and navigation. Due to the limited study area for the ice regime, and given the use of only the wildlife and vegetation spatial areas for studying effects to current uses, these potential effects to ACFN and MCFN are not assessed in the EIS, and remain unaddressed.</p>	<p>The scientific justification for the ice regime study area is provided in the Spatial Boundary Selection Technical Memo and the Peace Athabasca Delta Technical Memo.</p> <p>Changes to the ice regime were taken into account in the assessment of cumulative effects in the following:</p> <p>Section 12 (Fish and Fish Habitat) Section 13 (Vegetation and Ecological Communities) Section 14 (Wildlife Resources) Section 19 (Current Use of Lands and Resources for Traditional Purposes) Section 26 (Navigation) and Section 34 (Asserted or Established Aboriginal Rights and Treaty Rights, Aboriginal Interests and Information Requirements).</p>
ab_0004-032	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V. 2, s.11.1.2.1; page(s) 11-6, line(s) 9-11. EISG section 9.3.4 Comment # Table27	<p>The EIS states "Fluvial geomorphology and sediment transport regime in the Peace River have been, and will continue to be, in a state of adjustment to the regulated flow conditions for decades to come (Church 1995)". This explains the need to understand past and current changes that are ongoing in the environment to appropriately assess the acceptability of Site C effects that are further added to the system. The EIS does not recognize the current and future long-term effects on the Peace River system in the scoping and assessment of effects on fish, wildlife and socio-cultural VCs. The EIS does not consider whether the predicted current effects of the Bennett and Peace Canyon facilities will continue to be exerted downstream if Site C is built, or whether Site C could serve to mitigate any of these effects. Given the recognition of current and future effects from past development, these need to be included in the scope of the CEA.</p>	<p>Section 11.8.3.7 Historical Erosion and Deposition Patterns and Section 11.8.5.3 Channel Erosion and Depositional Patterns Downstream of the Site C dam describes the state of adjustment of the fluvial geomorphology of the Peace River and how this was taken into account into analyses of change resulting from the Project, respectively.</p> <p>The methodology used to assess cumulative effects is described in Section 10.5. This methodology is in accordance with the EIS Guidelines Section 8.5.3, and appropriate information is provided in the EIS.</p> <p>Section 8.5.3 of the EIS Guidelines states that for the purposes of cumulative effects assessment "the baseline case will demonstrate the current status of the VC. In doing so, it will reflect the effect of all projects and activities that have been carried out".</p> <p>Please see the Technical Memo: Cumulative Effects Assessment.</p>
ab_0004-033	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V. 2, s. 11.1.2.1, Appendix T; page(s) 11-4, line(s) 32-45. EISG section 9.1; 8.5.2 Comment #	<p>The EIS Guidelines require that the EIS include a narrative discussion of existing hydro-electric generation project on the Peace River, including the WAC Bennett Dam. The EIS Guidelines require that the narrative include "the description of any existing studies of changes to the environment resulting from those projects that are similar to potential changes resulting from the project" as well as "historical data, where available and applicable." BCH has not provided a comprehensive narrative.</p> <p>The EIS Guidelines indicate that the discussion will describe "the environmental changes that are understood to be caused" by BCH's existing hydroelectric</p>	<p>The scope of the narrative on Previous Developments is in accordance with, and is provided for the purposes set out in, Section 9.1 of the EIS Guidelines, and appropriate information is provided in the EIS.</p> <p>Please see the Technical Memos on Cumulative Effects Assessment and the Peace Athabasca Delta.</p>

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		Table28	<p>developments on the Peace River. However, what is actually provided are results from selective assessments of the existing hydroelectric developments. The incomplete and unrepresentative review of the literature implies that what is meant by “understood to be caused” appears to be BCH’s understanding of the cause. BCH should provide the assumptions it makes in referring to the literature given the highly selective nature of the references it offers. Whose understanding of the impacts is BCH bringing forth? There is significant authoritative literature that recognizes the hydrologic changes resulting from BCH’s existing dams: what understanding do these studies provide with respect to the impacts of existing BCH dams? The EIS Guidelines require that this narrative discussion assist interested parties to understand the potential effects of Site C, but the narrative does not do this and instead provides one perspective that obscures comprehension by interested parties of the potential impacts.</p> <p>In addition, the information about BCH’s existing dams is not brought forward into other parts of the EIS, most notably the CEA, as noted elsewhere in these submissions.</p> <p>The narrative report does not cite a variety of studies that have been conducted on the effects of the WAC Bennett Dam on downstream communities, such as MCFN and ACFN. For instance, the Indian Claims Commission report on the “Athabasca Chipewyan First Nation Inquiry: WAC Bennett Dam and Damage to Indian Reserve 201” (Indian Claims Commission, March 1998) and the Northern Rivers Basin Study Board: Report to the Ministers, 1996 should be referenced in this section. Further, BCH should be required to include traditional ecological knowledge drawn from downstream communities to fill out the assessment of the impacts of the Bennett and Peace Canyon Dams. This information should then have been factored in to the CEA.</p> <p>Further, the narrative report indicates that there is “limited pre-regulation information” but does not include this historical data, as required by the EIS Guidelines. The First Nations note that CEAA and Environment Canada have confirmed that pre-regulation data relating to the Peace River exists, but the EIS does not reference or describe this data.</p>	
ab_0004-034	Athabasca Chipewyan First Nation, Dene Tha'	V. 2, s. 11.1.2.1; page(s) 11-4, line(s) 32-45.	The EIS discusses changes that have come about downstream of the Peace Canyon Dam, since regulation. In particular, it raises the question of changes in the PAD that have occurred since regulation and whether these changes are related to regulation. The EIS identifies five factors it contends have affected	<p>The scope of the narrative on Previous Developments is in accordance with, and is provided for the purposes set out in, Section 9.1 of the EIS Guidelines, and appropriate information is provided in the EIS.</p> <p>Please see the Technical Memo: Peace Athabasca Delta.</p>

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	First Nation and Mikisew Cree First Nation	EISG section 9.1 Comment # Table29	<p>the hydrology of the PAD: climate change, climate variation, flow control weir installation, dredging, geomorphic succession. Backed by reference to five selected publications, the EIS states that there is “an ongoing debate amongst the scientific community about the overall contribution of hydroelectric development to observed hydrological changes in the PAD.” The EIS concludes its reference to the debate by referring to Timoney (2006) to assert that “since flow regulation, the observed changes within the PAD lie within the range of natural variation in the system”, thereby implying to interested parties that changes that have happened in that landform are essentially independent of regulation. For BCH’s definition of natural variation, reference to its source suggests the definition used in this statement to be as follows: “Recent landscape changes lie within the range of variation expected in a healthy and dynamic delta.” (Timoney 2006) This source reaches descriptive conclusions on the vegetative changes observed in the PAD without reference to climate records nor to current climate projections. This gap suggests that its descriptive conclusions have not been evaluated in light of actual climate data to test their accuracy. It also does not provide defense of what it says would be “expected” in the delta and how “healthy” is defined, raising further questions as to the value of its conclusions.</p> <p>The EIS narrative discussion leaves undefined what it means by the PAD’s range of natural variation and it doesn’t link its discussion of the past with its own projections of future climate (especially temperature) that the EIS itself recognizes will go outside the range of historical variability - Appendix T states, with respect to temperature changes projected from GCMs: “The expected warming will very likely fall outside the range of historical variability.”</p> <p>As a result, the narrative provided in the EIS is not comprehensive or complete.</p>	
ab_0004-035	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V. 2, s. 11.1.2.1; page(s) 11-5, line(s) 27-30. EISG section 9.1 Comment # Table30	It is important to understand what effects have already taken place as a result of existing regulation, so as to place additional changes that could be caused by Site C in an appropriate context. Incremental changes caused by Site C may be relatively more significant to an environmental system already under considerable stress, and particularly when climate change is stressing the system even further. Rather than do that, the EIS completely disregards potential changes to the PAD.	Please see the Technical Memos on the Cumulative Effects Assessment and the Peace Athabasca Delta.
ab_0004-036	Athabasca Chipewyan	V.2, s. 11.1.2.1;	BCH notes changes that have taken place in the Peace River sediment regime as a result of its existing dams. It refers to the pre-regulation sediment regime as	The scope of the narrative on Previous Developments is in accordance with, and is provided for the purposes set out in, Section 9.1 of the EIS Guidelines, and appropriate information is

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	First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	page(s) 11-5, line(s) 31-46. EISG section n/a Comment # Table31	<p>“naturally dynamic” (p11-5, line 32) and that “[f]luvial geomorphology and sediment regime in the Peace River have been, and will continue to be, in a state of adjustment to the regulated flow conditions for decades to come (Church 1995).” (p11-6, lines 9-11). More recently, Church (2013) has clarified that this process could take centuries to resolve.</p> <p>Fluvial systems are routinely adjusting to disturbances and changes in their governing conditions. For example, BCH recognizes that the climate of the Peace River basin is experiencing ongoing change that is having dynamic consequences for the baseline climate and hydrology of the EIS. It is unclear why the EIS refers to changes in the baseline sediment regime as dynamic, yet does not refer to changes in the climate regime, surface water regime, and downstream ice dynamics as “dynamic”. These are all changing in response to the factors which control them, including anthropogenic effects. This observation suggests two concerns with the EIS science:</p> <p>1) It appears that different components of the physical system are given different scientific interpretation by BCH for regulators. For example, ongoing dynamic aspects of the ice-regime important to understanding the consequences of further regulation <i>into the future</i> are not discussed in the EIS despite contextual acknowledgement of interpretation of the same sort of change with respect to the sediment regime.</p> <p>2) There is concern that the baseline for each assessment may be biased toward a particular outcome. The dynamic climate baseline acts as an important control in creating dynamic ice-regime and surface-water-regime baselines, yet this dynamic physical context is only partially recognized in the EIS.</p> <p>These concerns can be addressed by including the pre-Bennett-Dam period as part of the baseline condition and interpreting the assessed impacts of Site C in light of the dynamic changes unfolding since that earlier period. As noted elsewhere in these submissions, including the pre-Bennett period in the baseline is required in order to do a proper CEA, a required by the EIS Guidelines.</p>	<p>provided in the EIS.</p> <p>Please see the Technical Memo: Cumulative Effects Assessment.</p>
ab_0004-037	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First	V. 2, s. 11.1.2.2; page(s) 11-8 to 11-9, line(s) n/a. EISG section 8.5.1	The EIS lists numerous habitat changes to fish, vegetation and wildlife habitats that have been occurring downstream of the Peace Canyon Dam due to historic flow regulation. It does not appear that these trends in dynamic change to VCs downstream been considered in the cumulative effects of Site C. The proposed and flawed Cumulative Effects Assessment methodology has apparently allowed the VC-specific Cumulative Effects Assessments to ignore these relevant aspects of understanding the nature and extent of ongoing effects. This is not an	<p>The methodology used to assess cumulative effects is described in Section 10.5 of the EIS. This methodology is in accordance with the Section 8.5.3 of the EIS Guidelines and appropriate information is provided in the EIS.</p> <p>The EIS guidelines Section 8.5.3 states that for the purposes of cumulative effects assessment, "the baseline case will demonstrate the current status of the VC. In doing so, it will reflect the effect of all projects and activities that have been carried out".</p>

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	Nation	Comment # Table32	acceptable approach to cumulative effects assessment.	Please see the Technical Memo: Cumulative Effects Assessment.
ab_0004-038	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V.2. s. 11.1.2.2; page(s) 11-8 to 11-9, line(s) n/a. EISG section 8.4.1, 9.3.1 Comment # Table33	Is there data to indicate that the current effects exerted on downstream ecology from the current regulation of the Peace River will continue in equal or different magnitude, temporal extent and spatial extent with the addition of Site C to the Peace River hydropower system? If so, this data needs to be included in the EIS and be factored into the assessment.	The potential for effects has been taken into account in the EIS. As directed by the EIS Guidelines the EIS contains analyses and predictions of the potential changes various key physical and ecological components including: Surface Water Regime (Section 11.4), Water Quality (Volume 2 Appendix P Part 2); Fluvial Geomorphology and Sediment Transport (Section 11.8), Thermal and Ice Regime (Section 11.7); Aquatic Productivity (Section 12 and Appendix P Part 3) following the potential addition of the Project to the Peace River.
ab_0004-039	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V. 2, s. 11.4.2.3; page(s) 11-65, line(s) 10-13. EISG section 8.4.1, 9.3.1 Comment # Table34	<p>The EIS presents the changes in river hydrology pre and post regulations as far downstream at the gauge at Peace Point (Table 11.4.3, 11.4.4). To conclusively demonstrate that there aren't changes happening further downstream, the other Peace River stations should also be analyzed to document BCH's assertion that further changes have not occurred. A fuller suite of hydrologic metrics should be examined in addition to the average annual maximum and minimum daily changes.</p> <p>Even BCH's own analysis show changes at the most downstream station at Peace Point that they reference of -40% to + 170%. Note that the EIS excludes the Water Survey of Canada stations that exist further downstream on the Peace in Figure 11.4.4. The EIS also needs to clarify what time periods are used for the pre and post calculations.</p>	<p>Section 11.4.2.3 of the EIS describes the influence of regulation on the surface water regime of the Peace River to provide context to the analysis of predicted changes with the Project. A detailed analysis of pre- and post- regulation flows is not required by the EIS Guidelines, nor is that analysis germane to the environmental assessment. It should be noted that observed flows both pre- and post-regulation are publicly available through the Water Survey of Canada.</p> <p>Tables 11.4.3 and 11.4.4 of the EIS present a comparison of daily maximum and minimum flows for the pre-regulation and post-regulation periods. The period of record varied by station and was between 8 and 26 years. The period of record for the post-regulation period also varied by station and was between 34 and 38 years.</p>
ab_0004-040	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V. 2, s. 11.4; V. 2, s. 11.4.2.4; page(s) 11-62, 11-67, line(s) 8-13, 1-4. EISG section 8.4.1, 9.3.1 Comment # Table35	<p>Section 8.4.1 of the EIS Guidelines states "the EIS shall include a scientific justification for the selection of relevant spatial boundaries".</p> <p>The EIS states that "the spatial boundary selected for the characterization of potential changes to the surface water regime as a result of the Project extends from the outlet of the Peace Canyon Dam to Peace Point, Alberta, over 1,000 km downstream" and provides two reasons for this selection. Neither reason is sufficient scientific justification for the spatial boundaries, for the following reasons:</p> <p>Reason #1: <i>"This downstream boundary was selected because surface water data for that location are available"</i></p> <p>Although tying the spatial limit to a data limit boundary may be convenient, the absence of historic data does not preclude the potential for impact of</p>	<p>Please see the following Technical Memos:</p> <ul style="list-style-type: none"> - Peace Athabasca Delta - Spatial Boundary Selection <p>The dynamic baseline of the surface water regime is described in Section 11.4.2.4 of the EIS. The change in variability in the surface water regime over time has been captured in the description of the baseline flow regime, as it is based on observed flows and water levels from 1973 to 2010. The analysis predicts the incremental changes to this dynamic baseline attributable to the Project. It is these incremental changes that are reported on in the EIS.</p>

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			<p>concern to regulators and is not a justification for selection of assessment spatial boundaries.</p> <p>Reason #2: “...and because at that location, any changes in the surface water regime were expected to be negligible in relation to the natural variability of the baseline flow regime.”</p> <p>This reasoning appears circular. BCH has assumed away the need to consider its potential impacts on the PAD because of its own expectation that there won’t be any. Further, the reason given provides a subjective interpretation of what it considers to be unimportant impacts. Climate change has taken this system out of equilibrium and is in a non-stationary state, relative to previously accepted timescales of natural variability. The degree of departure from natural variability should be discussed and supported along with a discussion of what <i>would</i> constitute natural variability in this <u>non-stationary</u> system. Given these considerations, this rationale is inadequate.</p> <p>Neither criterion provided is sufficient to justify excluding the PAD from the spatial boundary of the surface water regime. It is further noted that BCH states (V2, p11-67): <i>The current post-regulation flow regime reflects not only the variability of the Peace River inflows but also the changes over time in BCH’s system load, system resources, and electricity market conditions. For this reason, it is important to consider the historical flow regime as dynamic.</i> It appears contradictory that the EIS can emphasize the changing nature of the Peace River flows and the load-based/price-based operating decisions of the dams elsewhere in the surface-water-regime assessment, yet disregard this same dynamic nature of the flow regime when setting the spatial boundary of the same assessment.</p>	
ab_0004-041	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V. 1, s. 4; page(s) 11-64, line(s) 7-9. EISG section n/a Comment # Table36	Figure 11.4.5 presents all the pre-regulation flows on one figure and all the post-regulation on the other. This is not a useful presentation – the EIS should provide a pre- and post- curve for each station on separate graphs.	Section 11, Figure 11.4.5, of the EIS includes plots of monthly average flows for the pre-regulation period and post-regulation period. The two plots are on the same page and have the same y-axis range to facilitate comparison between the two periods.

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ab_0004-042	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V. 2, s. 11.4.2.4.2, Appendix T; page(s) 11-67, 11-68, line(s) 39-45, 1-5. EISG section 8.5.2 Comment # Table37	<p>EIS Figures 11.4.7 through 11.4.10 are provided to illustrate the present level of variability in average annual regulated flow at four points downstream of the Peace Canyon dam. The presentation contains two important gaps that obscure the interpretation of these flow dynamics:</p> <p><u>1) Comparison with variability in unregulated system</u></p> <p>The EIS defines variability of the flow regime based on only the short-term regulated regime. Data should also be presented alongside these scatterplots to illustrate the level of variability present prior to regulation. Where measured data are unavailable, modeled simulations can be provided. Without a complete description of variability prior to Site C, and given the variably complex and interacting processes at play downstream, it is difficult to adequately interpret the changes in flow regime projected to result from Site C.</p> <p><u>2) Trends in flow regime</u></p> <p>The EIS lacks a transparent presentation of the change in variability of the flow regime at points downstream during the years of regulated record. A trend analysis in conjunction with the EIS' understanding of climate change (see Appendix T) and including consideration of uncertainty in climate projections should be included in the EIS. Instead, without this analysis of past data, the EIS states (p 11-83): <i>"The median projected change in annual streamflow for the 2050s and 2080s periods is within the variability observed in the historical 60-year inflow record used in operations modelling. Therefore, the operation of BCH's generating facilities on the Peace River under a future climate with higher inflows could be inferred from the simulation of operations in years with higher inflows. No requirement for changes to the existing water licences would be expected as a result of climate change."</i></p> <p>This statement focuses on median projected values, disregarding the implications of the considerable uncertainty associated with such climate projections. Further, the EIS states what BCH would "expect" to come about, which is a potentially biased reflection of what may be determined scientifically to be most likely to transpire.</p>	<p>EIS Section 11, Figures 11.4.7 through 11.4.10 illustrate the variability in daily and seasonal flows over the regulated (baseline) period. The baseline condition for the purpose of describing the flow regime is the current state.</p> <p>A trend analysis on the within-year variability of flows over the regulated (baseline) period has not been conducted, as there are a multitude of factors that contribute to this variability, and no clear indication how future changes in these factors would lead to a trend in variability that would continue into the future. The relationship between climate change and natural reservoir inflows is more relevant for such analysis, and that trend analysis was completed as described in Volume 2 Appendix T Climate Change Summary Report.</p> <p>Volume 2 Appendix T Climate Change Summary Report includes a description of projected change in future stream flow. 5th, 50th (median), and 95th percentile projections (based on the ensemble of climate models) for the Williston basin and Site C local basin inflows are provided in Table 6. Uncertainty in these projections is described in Section 4.4.</p> <p>Information presented in the EIS on the predicted changes in surface water regime is in accordance with the EIS Guidelines.</p> <p>Please also see the Technical Memo: Uncertainty and Precaution.</p>
ab_0004-043	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First	V. 2, s. 11.4.2.4.2, Appendix T; page(s) 11-67, line(s) 40-45. EISG section n/a	<p>Figure 11.4.10 picks a sample of years to illustrate downstream flows. Three spill years were chosen. Can BCH explain how and why the sample years to illustrate were chosen and why no lower flow years were selected?</p>	<p>EIS Section 11, Figures 11.4.7 through 11.4.10, present observed daily flow hydrographs for Water Survey of Canada stations at Hudson's Hope, Taylor, Town of Peace River, and Peace Point. In these figures, observed hydrographs are shown in grey for each year (for which data are available) between 1973 and 2010 to illustrate the general pattern and variability in the baseline flow regime at these locations. Five annual hydrographs were coloured to highlight example years of interest; three of these years (1983, 1996, and 2002) had operational spills from the Williston Reservoir, and one of the years (1983) also contained an extreme winter low flow</p>

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	Nation	Comment # Table38		period.
ab_0004-044	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V. 2, s. 11.4.3.3; page(s) 11-68, line(s) 23-27. EISG section 8.5.1 Comment # Table39	To properly describe the impacts of regulation on surface water flows for the purposes of the CEA, there should be a description of the effects during the filling of the Williston reservoir (1968 to 1972).	Section 11.4.2.3 describes the influence of regulation on the surface water regime of the Peace River to better predict the potential changes in the downstream flow regime. A detailed analysis of pre- and post- regulation flows and a detailed analysis of the influence of Williston reservoir filling are not required by the EIS Guidelines, nor is that analysis germane to the environmental assessment. It should be noted that observed flows both pre- and post-regulation are publicly available through the Water Survey of Canada. Please also see the Technical Memo: Cumulative Effects Assessment.
ab_0004-045	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V. 2, Appendix D, 4.1; V. 2, Appendix D, Pt. 2 s. 3; page(s) 6, 3, line(s) 21-30, 17-19. EISG section 8.5.2 Comment # Table40	BCH uses the period from 1940 to 2000 to provide input data to the models for calibration, based on availability of data that have approval by the Columbia River Treaty Operating Committee. BCH does not describe the data sets available to calibrate within this period; does not identify the uncertainties imposed on the EIS through use of this period of data; and does not describe the implications of not including, in the calibration data, the most recent data that have been most influenced by climate change. These are gaps in the EIS. The Mike 11 simulations were carried out for the period 1964-1973 as being representative years of the 60-year calibration period. This effort to represent 1940-2000 does not consider representation of other years outside of 1940-2000 creating doubt as to the presence of concerns associated with this lack of consideration. Again, this is a gap in the EIS.	The Surface Water Regime Study, as described in Section 11.4 and Volume 2 Appendix D was conducted in accordance with Section 9.3.1 of the EIS Guidelines. As described in Section 11.4.4.1 of the EIS, the influence of the Project on surface water regime was analyzed based on 60 years of historical inflows to capture the historic variability of inflows. As described in Section 11.4.6 of the EIS, this 60 year period (and the 10 year subset used in the downstream modelling) includes both wet and dry years, the range of which encompasses the median projected change in annual stream flow for the 2050s and 2080s periods. The operations models used in the study of potential changes to surface water regime as a result of the Project (described in Section 3 of Volume 2 Appendix D, Part 1 Operations Study) were used to approximate potential future operations. As the models provide an approximation of future operations, traditional calibration/ validation of these models is not possible. System data used in the model do not require calibration or validation as the data are measured or specified. Inflow sequences used as input to the models are historical (unregulated) inflows, either measured or calculated based on reservoir level/ storage and plant discharge. Other data used as input to the models (such as electricity price and load) are forecasted and are subject to uncertainty, as described in Section 11.4.4.3 of the EIS. As described in Section 3 of Volume 2 Appendix D, Part 2 Downstream Flow Modelling (1D), the decade (water years 1965-1974) used for downstream flow modelling included a representative range of water years, including years that were between 86% and 130% of the 60-year average in terms of annual Peace River inflows, and including one of three peak daily inflows greater than 2,000 cms (based on the 1964-2000 period for which daily flows are available). Information presented in the EIS on the predicted changes in surface water regime is in accordance with the EIS Guidelines.
ab_0004-046	Athabasca Chipewyan	V. 2, s. 11.4.4.2.2;	The EIS explains that with the Project in place, the operating regimes of the existing dams will change to optimize power generation for the entire system,	As described in Section 11.4.5.1 of the EIS, the results of the operational modelling (which predicted the changes in monthly flows described in the information request) were input into a

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	First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	page(s) 11-74, 11-75, line(s) 31-44, 1-10. EISG section 8.5.1 Comment # Table41	and expresses these adjustments as differences in timing of releases from the existing upstream facilities. During October and November, the monthly flows would be 7% and 6% lower whereas during August and September, the monthly flows would be 7% and 14% higher, respectively. The EIS does not discuss the implications of these changes for other assessments or concerns. For example, how do these changes incrementally affect ice dynamics downstream of the dams? This concern should be addressed within the context of a CEA of the Project on the PAD.	hydraulic model of the downstream river to analyse the potential changes to the surface water regime downstream of the Site C dam. Assessment of the effects of the predicted changes in the surface water regime are described in Sections 12 Fish and Fish Habitat, 14 Wildlife Resources, 19 Current Use of Lands and Resources for Traditional Purposes, 24 Harvest of Fish and Wildlife Resources, 25 Outdoor Recreation and Tourism, 26 Navigation, 30 Community Infrastructure and Services and 31 Transportation. A specific description of the influence of the predicted lower flows in November (as a result of the Project) on the frequency of ice-jams in the lower reaches of the Peace River is provided in Section 11.4.5.2.4 of the EIS. Please also see the Technical Memos on Cumulative Effects Assessment and the Peace Athabasca Delta.
ab_0004-047	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V. 2, Appendix T, S. 4.2; Appendix G, s. 3.2.2; page(s) 17, 11, line(s) 1-3, 24-25. EISG section 8.3, 8.5 Comment # Table42	<p>Given the understanding in the research literature of the importance of the ice-jam mechanism to flooding of the PAD and its reliance on timely freshet discharges in key lower tributaries, the following statement by BCH is of concern because it suggests that this mechanism may become largely ineffective by 50 years out (Appendix T, p17): "Areas further downstream, including the Taylor local basin, would transition to a largely rainfall dominated regime in the next 50 years. In these areas, a reduction of -30 to -50% in peak snow water equivalent is projected (Figure 9)."</p> <p>The EIS variously describes changes in downstream ice presence with the Project, declining freshet magnitudes due to climate change, and the importance of considering the dynamic nature of assessment baselines. From its own (above) assessment comments, it is evident that the ice-jam mechanism will continue to undergo profound changes downstream of the BCH dams, yet estimates of expected changes in the ice-jam mechanism remain unaddressed in the main ice report and they do not appear in the CEA. This is a gap in the EIS. To address this, the scope of the Downstream Ice Regime Technical Data Report (EIS Appendix D) should be broadened to explicitly include an assessment of the baseline status and future prognosis of the ice-jam mechanism. In addition, the baseline status should include consideration of its pre-Bennett-Dam behavior (corrected for climate).</p> <p>It is notable that the EIS maintains that the "ice front cannot propagate as far upstream due to the warmer water exiting the dam in winter, as compared with existing conditions (Figure 11.7.5), and <u>because ice generated in the Site C reservoir would remain behind the dam.</u>" That is to say, BCH takes the position that the loss of ice from behind the proposed Site C dam limits the ability of the</p>	<p>The ice regime is described in EIS Section 11.7. Ice jamming is described in the EIS in the following sections:</p> <ul style="list-style-type: none"> - 11.4.5.2.4 Frequency of High and Low Flows - 11.7.1.2 Baseline Ice Regime - 11.7.1.3 Timing of Ice Formation and Breakup. <p>The statement on page 17 of Appendix T applies to the Taylor local basin, which includes the local drainage area between the W.A.C. Bennett Dam and the Water Survey of Canada station at Taylor. Areas further downstream were not included in the study area.</p> <p>As described in Section 11.7.3.3.5 of the EIS, no changes to the ice regime would be expected at Carcajou (located approximately 550 km downstream of the Site C dam, or 520 km upstream of the Peace-Athabasca delta) or downstream as a result of the Project.</p> <p>The two publications referenced in Section 11.4.5.2.4 of the EIS indicate that there may be a relationship between freeze-up stage and the probability of dynamic break-up. No inferences are made in the EIS regarding the influence of regulation by BC Hydro's existing facilities on this process. There are assertions made in the information request/ comment about the influence of BC Hydro's existing facilities on the frequency of downstream ice jamming. The comments are outside of the scope of the environmental assessment.</p> <p>Please see the Technical Memos on the Peace Athabasca Delta and Spatial Boundary Selection.</p>

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			<p>ice front to grow upstream.</p> <p>The EIS states (V2, p11-81): “...the hydrology of the Peace Athabasca Delta is influenced by the frequency of ice-jams in the lower reaches of the Peace River. Freeze-up in the lower Peace River typically occurs in November. The possibility of a relationship between the freeze-up stage (water level) and the probability of dynamic break-up and ice-jams in the spring has been researched (Ashton 2003; Beltaos et al. 2006). It is unlikely that the probability of ice jamming would be influenced by the relatively lower flows that are predicted to occur periodically in October and November with the Project. Ice cover set in at a low level during a period of relatively low flow in November would re-freeze at a higher level as flows increase in December. This is because with increasing flows, the floating portion of the ice cover in the main channel would release from the border ice attached to the banks, float up to accommodate a higher flow beneath it, and re-freeze to the banks at a new, higher freeze-in level. This phenomenon is described by Beltaos et al. (2006). Consequently, low flows in November would not influence the freeze-in level that may be related to the frequency of ice-jams in the lower reaches of the Peace River. The small predicted changes do not justify extension of the spatial boundary.” BCH offers two publications presumably to support its contention that the ice-jam mechanism would be unchanged. Beltaos et al. (2006) identify the conditions needed to yield an ice-jam flood and indicate that “increased freezeup stages reduce the likelihood of ice-jam flooding because they inhibit the occurrence of mechanical events” (Beltaos et al 2006, p4024). That is to say, the existing hydroelectric dams have caused a reduction in the frequency of ice-jam flooding – this finding contradicts the EIS statement. Additionally, Ashton (2003) is a none-peer-reviewed presentation using theoretical relationships from other rivers in conjunction with the author’s own judgment to evaluate the relative significance of the ice-jam mechanism in relation to stage at freeze-up and the freshet from lower tributaries. BCH appears to base its own opinion on these two publications yet these do not lead to its conclusion of “no effect” from Site C. In fact, such an inference is contrary to other peer-reviewed publications that reach an opposite conclusion (e.g., Prowse and Conly 1998). Again, lack of proper assessment of impacts to the ice regime from Site C is a major gap in the EIS.</p>	
ab_0004-048	Athabasca Chipewyan First Nation,	V. 2, s. 11.4.4.3; page(s) 11-76,	The EIS Guidelines states that “Other mitigation measures, if any, which were considered shall be identified, and the rationale for rejecting these measures shall be explained.”	<p>Please see the Technical Memos on Cumulative Effects Assessment, the Peace Athabasca Delta, Spatial Boundary Selection, and Uncertainty and Precaution.</p> <p>The EIS Guidelines (Section 8.5.2.2) require that the EIS include a description of measures that</p>

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	Dene Tha' First Nation and Mikisew Cree First Nation	line(s) 21-26. EISG section 8.5.2.2 Comment # Table43	<p>As a result of various deficiencies in the EIS, and in particular the collective uncertainties, subjective assessments, and inappropriate choices of spatial and temporal assessment boundaries, significance assessments provided in the EIS are unreliable. In addition, the exclusion of the PAD as an assessed VC and the gaps in the CEAs, highlight other scientific deficiencies in the EIS.</p> <p>Until the EIS provides complete effects assessments, its significance assessments will remain unreliable and inadequate, with the potential that appropriate mitigation will not be developed and proposed. For example, the non-zero impacts of the Project on distal reaches of the Peace River add to existing dynamic changes already taking place. Additionally, where these impacts may affect flooding in the PAD, those interactions may be overlooked in the EIS. It is not possible to meaningfully interpret an accumulation of small changes when they are individually disregarded as negligible and when they are not interpreted in light of the appropriate baseline.</p> <p>The EIS indicates (V2, p11-76): <i>The current operation of BCH's existing hydroelectric system has the fundamental objectives of generating sufficient electricity to meet domestic demand, and maximizing the value of generation through electricity trade. Within the current licensed operational ranges and within the physical and operational constraints of all of BCH's generating assets, flows are released to meet the above-noted objectives. These objectives would not change as a result of the Project.</i>" The dams themselves can be used to mitigate their impacts. These comments show how downstream impacts due to the dams (existing and proposed) are not adequately considered in the EIS. Once determined, appropriate mitigation can be considered by first broadening the objectives of dam operation to <i>explicitly include mitigation</i> of their impacts. In this way, the dams can be used to create resilience in the Peace-Athabasca system, rather than generating further decline.</p> <p>Until impact significance is adequately described and interpreted, it will not be possible to determine the appropriate mitigation steps able to address the impacts. For example, in 1996, BCH drew down the Williston Reservoir to address concerns about a sinkhole. This prolonged action simulated a pre-regulation freshet which led to flooding of the PAD perched basins, demonstrating mitigation opportunities available to BCH through broadened objectives in using its hydroelectric facilities (e.g., through the Water Use Planning process).</p>	<p>the Proponent is proposing to mitigate any potentially significant adverse effects of the Project on Valued Components. This does not include mitigation measures related to potential effects of other projects, which are outside the scope of the environmental assessment.</p> <p>The selection of Valued Components is described in Section 10.2 of the EIS and is in accordance with the effects assessment methodology outlined in the EIS Guidelines (Section 8).</p> <p>Perched basins in the PAD region are re-charged by overland flooding. In April 1996 an ice jam on the Peace River cause overland flooding in the PAD, which recharged perched basins in the region. The sink hole in Bennett Dam was discovered in June 1996 after the ice jam had melted, and flow releases from the dam were increased. These increased flows reached the PAD in late June, causing a reversal of flow from the Peace River into Lake Athabasca and Lake Mamawi. The perched basins are not hydraulically connected to these lakes and were not recharged at this time.</p>
ab_0004-	Athabasca	V. 2, s. 11.4.5;	There are clearly historical flow impacts past Peace Point. Truncating the	Please see the response to ab_0012-019.

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049	Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	page(s) 11-77, line(s) 5-6. EISG section 8.5.1 Comment # Table44	Operations model at this point does not allow cumulative impacts to be assessed or flow manipulations as mitigation of impacts to be considered.	
ab_0004-050	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V. 2, s. 11.7; V. 2, s. 11.7.3.3.5; page(s) 11-102, 11-115, line(s) 12-15, 26-33. EISG section 8.4.1 Comment # Table45	<p>The EIS provides two reasons for extending the spatial boundary for the downstream ice assessment to Fort Vermillion only:</p> <p><i>Reason #1: "[T]his is usually the first location at which the ice front location is recorded in each ice season."</i></p> <p>This reason is inappropriate. Instead, the downstream ice study should include examination of the dynamics of ice jams and ice-jam flooding, their baseline behavior, and their potential to change with Site C.</p> <p><i>Reason #2: "Also, previous modeling results indicated that this location is well downstream of where changes to the ice regime would occur as a result of the Project."</i></p> <p>The EIS refers to previous modeling results but does not provide a citation to indicate the source. Additionally, the EIS appears to be assuming that despite the loss of ice length in the Peace River, there will be no changes in distal ice-jam occurrence either independently, or in conjunction with cumulative effects such as climate change and other industrial developments. This is not an appropriate assumption.</p> <p>After having limited the scope of the downstream-ice assessment, the EIS concludes that the spatial boundary is appropriate (V2, p11-115): "Results suggested that on average, over the 16 winters simulated, no changes would be expected at Carcajou, which is approximately 550 km downstream of the Site C dam. These results indicate that the Fort Vermilion downstream boundary of the ice models was far enough downstream to capture the entire extent of Project's influence." Given the inappropriate assessment scope and concerns for accumulated uncertainty due to methodological simplifications, this conclusion is unsupported.</p>	Please see the Technical Memo: Spatial Boundary Selection.
ab_0004-051	Athabasca Chipewyan First Nation, Dene Tha'	V. 2, Appendix G, 3.2.2; page(s) 11, line(s) 24-27.	The EIS states (V2, App G, p11): "A total of 16 winters (1995-1996 through 2010-2011) were selected as the basis for the modeling. The ice front trace for each of these 16 winters is shown in Figure 3. The range of years chosen was based on data availability and their representativeness of winter severity. Although ice	<p>As described in Section 3.2.2 of Volume 2 Appendix G Downstream Ice Regime Technical Data Report, 16 different winters were included in the study so that a wide range of conditions (winter severity) were considered in the analysis of potential changes associated with the Project.</p> <p>The baseline condition for the purpose of describing the downstream ice regime is the current</p>

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	First Nation and Mikisew Cree First Nation	EISG section 8.4.2 Comment # Table46	<p><i>front locations and weather data were available back to 1973, accurate water temperature data from Peace Canyon from prior to 2000 were not available.”</i></p> <p>The EIS indicates that the temporal baseline for the downstream ice assessment ranges from 1995 through 2011 for two reasons:</p> <p>Reason #1 – Data Availability</p> <p>Although this is an appropriate choice for calibration of a model, it is not an appropriate justification for the temporal limits of the broader study which this section of the EIS (entitled “Temporal Study Boundaries”) is intended to describe.</p> <p>Reason #2 – Degree of Winter Severity</p> <p>Again, these comments are not appropriate to justifying the temporal baseline of the study, but rather are helpful in explaining the logic of the selection of calibration data.</p> <p>The EIS does not provide an objective justification for limiting the content and boundaries of the downstream ice report to exclude study of the icejam mechanism and understanding its changes since pre-Bennett-Dam times to post-Site-C projections. This remains a significant and fundamental gap in the EIS and undermines the ability of the EIS to describe effects of the Project on candidate VCs and with respect to CEAs, contrary to EIS Guidelines requirements. Effects to the ice flow regime can have effects on vegetation, wildlife and fish, harvesting activities and Treaty rights.</p>	<p>state. Hence, the changes since pre-Bennett Dam times are not considered in the Downstream Ice Regime study.</p> <p>A description of potential changes to the frequency of ice-jams in the lower reaches of the Peace River is provided in Section 11.4.5.2.4 as it relates to the predicted change in flows during the freeze-up period.</p> <p>The approach for selecting valued components described in Section 10.2 of the EIS is in accordance with the requirements set out in Section 8.3 of the EIS Guidelines. Each candidate valued component was taken through steps 1-3 to determine whether it is a Valued Component for the purposes of the assessment of the potential effects of the Project. A number of candidate Valued Components were not carried through the assessment as Valued Components, but technical data with respect to those candidate VCs were taken into account in assessing the potential effects of the Project on other valued aspects of the environment that were carried through the assessment as Valued Components.</p> <p>The effects of changes in the ice regime are described in Sections 12 Fish and Fish Habitat, 14 Wildlife Resources, 19 Current Use of Lands and Resources for Traditional Purposes, 25 Outdoor Recreation and Tourism, 26 Navigation and 31 Transportation.</p>
ab_0004-052	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V. 2, s. 11.8.2; page(s) 11-123, line(s) 5-9. EISG section 8.4.1 Comment # Table47	<p>Downstream project-related effects related to fluvial geomorphology and sediment transport regime are assessed in the EIS using spatial boundaries extending from the Site C dam to Peace Point, 108 km upstream of the Peace River confluence with the Slave River. The EIS provides the justification for this (11.8.3, p11-123): <i>“Project-related changes in fluvial geomorphology and sediment transport regime were expected to be negligible downstream of Peace Point when the downstream study area was established.”</i> Appendix I concludes that the changes set in motion by the existing hydroelectric dams will continue once Site C is in place, however below the Pine River confluence with the Peace River, these changes will be unrelated to the Project (V2, App I, p70): <i>“Ongoing vegetative encroachment onto bars and into secondary channels, and ongoing channel aggradation below the Pine River and other tributary confluences, are expected to continue in the future but are not related to the Project.”</i> That assessment explains that Site C would serve to reduce the sediment that is transported in the Peace River downstream of Site C and thus will exacerbate</p>	<p>The two fundamental processes (channel morphology and suspended sediment transport) have separate drivers of change in the Peace River, as follows:</p> <p>Changes in suspended sediment transport (clay, silt and fine sand) are governed by net deposition in existing and proposed reservoirs, but are not sensitive to the predicted changes in flow regime due to the Project.</p> <p>Changes in channel morphology are governed by peak river discharge as it controls bed mobility and bedload transport, so have been influenced by regulation of the river but would not be further influenced by the Project due to the lack of change in the magnitude of peak flows.</p> <p>Changes in suspended sediment load in the Peace River are expected as a result of the Project as described in Section 11.8.5.2 of the EIS. As described in Section 11.8.5.3 of the EIS, other than the 4 km reach downstream of the Site C dam under unusually high flow conditions, channel erosion and depositional patterns (i.e. channel morphology) downstream of the Site C dam are not expected to change due to the Project.</p>

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			the effects that are already underway. It is unclear how the EIS can conclude that there will be zero effect downstream of the Pine River confluence when the reduction in Peace River sediment load brought about by the new dam and reservoir, though small relative to the total load, will only heighten the effects of the existing dams, albeit by a much smaller degree (but non-zero). Justification is not provided to conclude the effect to be zero immediately below this confluence. In a similar manner, although the effect declines downstream in its relative magnitude, it remains nonzero, and adds incrementally to the same adjustments that the existing dams continue to create. This is a gap in the EIS in that the scoping is not justified as required by the EIS Guidelines.	
ab_0004-053	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V. 2, 11.8.7; page(s) 11-146, line(s) n/a. EISG section 23.1 Comment # Table48	The EIS summarizes flow changes projected to occur in the 2050s and 2080s then states (V2, p11-146): "Although it is not currently possible to quantify the magnitude of the potential increase in sediment inputs due to climate change, it is thought to be within the range of uncertainty in the baseline data collection and modeling studies of project-related changes, and would not result in a materially different description of sediment dynamics in the reservoir or in the Peace River downstream of the dam site." This conclusion of no Project-related effect on geomorphology and sediment transport is unsupported by assessment and appears to rely heavily on BCH's opinion, rather than objective assessment.	The conclusion of Section 11.8.7 is the predicted changes in the sediment regime due to the Project are not sensitive to climate change. This conclusion is based on an understanding of the hydrology, physiography, geology, and sediment transport characteristics of the Peace River and its tributaries.
ab_0004-054	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V.2, s.12.7 ; page(s) n/a, line(s) n/a. EISG section 8.5.3.1 Comment # Table49	<p>The single-page long CEA for <i>Fish & Fish Habitat</i> is extremely brief, cursory, flawed in methodology and lacking sufficient detail to conduct an assessment on such a significant VC for such a large project.</p> <p>First, the EIS claims that "there would be no cumulative effects" on any fish values with any other activity. Considering that the effects assessment determined several residual effects to fish, including some significant effects, this claim requires justification and specific examination of each of the residual effects and other past, present and future activities that may impact those same receptors.</p> <p>Second, the CEA for fish appears to be scoped on only those effects that may be within the Local Assessment Area (LAA). This assessment is flawed because it is pre-determining the extent of effects by the spatial scope of the baseline study (an area which we point out in another comment has not been justified scientifically as required by the EIS Guidelines). The EIS Guidelines (section 8.5.3.1) require: "The EIS will describe the spatial boundaries within which each cumulative effect of the Project will be assessed and provide a rationale for</p>	<p>For clarification: The EIS guidelines Section 8.5.3.1 states that for the purposes of cumulative effects assessment, "the baseline case will demonstrate the current status of the VC. In doing so, it will reflect the effect of all projects and activities that have been carried out".</p> <p>The cumulative effects assessment methods are in accordance with the EIS Guidelines and do not need to be re-scoped. Appropriate information is included in the EIS. There are no cumulative effects because there is no spatial or temporal overlap of the residual effects of the Project with other projects or activities on the Project inclusion list (Table 10.7 in 36 Section 10.7 in Section 10 Effects Assessment Methodology).</p> <p>Please see the Technical Memo: Cumulative Effects Assessment.</p>

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			<p>each boundary."</p> <p>In addition, restricting the CEA to only those effects within the LAA is not in compliance with the method described in the EIS Guidelines (section 8.5.3.1): "The Proponent proposes to assess the cumulative effects within the proposed RAA defined for each VC."</p> <p>The CEA for fish does not comply with the EIS Guidelines and needs to be re-scoped and re-assessed.</p>	
ab_0004-055	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V.2, s. 12.4.2.2 ; page(s) 12-46 , line(s) n/a. EISG section 10.2.4 Comment # Table50	Regarding effects on downstream fish, the EIS states: "Higher suspended sediment concentrations would consist of mainly clay and a small amount of silts, which are not expected to settle out prior to the Pine River confluence. Increased sediments would potentially affect clear water fish species including Arctic grayling, bull trout, mountain whitefish, and rainbow trout occupying the river downstream of the dam." The EIS seems to leave this issue without further assessment of this impact and how it may be mitigated, if at all. The effects assessment on downstream fish is incomplete.	<p>Refer to Volume 2 Appendix P Aquatic Productivity Report Part 2 Hydrodynamic, Water Quality and Productivity Modelling for the Site C Project and Part 3 Future Conditions in the Peace River. Sediment concentrations were used in these models to predict the downstream effects on fish and fish habitat.</p> <p>The scope of the Fish and Fish Habitat effects assessment is in accordance with the EIS Guidelines and the appropriate information is provided in the EIS.</p>
ab_0004-056	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V.2, s.12.4.2.2 & s.12.5.1.2 ; page(s) 12-48 & 12-67 , line(s) 33-36 . EISG section 10.2.4 Comment # Table51	The assessment of effects of operational changes to fish habitat concludes with "The extent of the change on all fish populations downstream of the Pine River would be based primarily on the degree to which Pine River and other tributary inputs (i.e., Beatton River, Kiskatinaw River, Clear River, and Pouce Coupe River) would attenuate the flow and thermal and ice regime as a result of the operations of the Project", and later states "Changes to the habitat would be most evident between the Site C Dam and the confluence of the Pine River, and the magnitude of changes would diminish downstream of the Pine River" (p. 12-81), and "Potential effects will be limited to the section of the river between the dam and the Pine River confluence" (p.12-67). The EIS does not include scientific justification for how far downstream these habitat effects are expected, and what changes will be exerted over the operational life of the project. This is needed to meet the requirements of the EIS Guidelines.	Please see the Technical Memo: Spatial Boundary Selection.
ab_0004-057	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V.2, s.12.4.2.2 ; page(s) 12-44 , line(s) 4-6. EISG section 10.2 Comment # Table52	The assessment of flow regulation on downstream fish habitat states: "Changes to the flow regime would affect the temporal and spatial availability of Peace River fish habitats. The effects would be highest in the 15.9 km section of Peace River between the Site C Dam and the Pine River confluence because there are no large tributary inputs that would attenuate the flows", and then goes on to present predictions about hydrological effects on fish habitat between Site C and the Pine River. Since this data does not provide any information on effects further downstream than the Pine River, what does BCH predict will be the	<p>Refer to Volume 2, Appendices D, E, G, H, I, and P for downstream effects associated with the physical and biological changes downstream of the dam. Changes to the physical environment (fish habitat) downstream of the Pine River are described throughout these Appendices.</p> <p>The scope of the Fish and Fish Habitat effects assessment is in accordance with the EIS Guidelines and appropriate information is provided in the EIS.</p>

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			changes (temporal and spatial) to fish habitat further downstream than the Pine River? These needs to be included in the EIS.	
ab_0004-058	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V.2, s.12.5.1.2 ; page(s) 12-67 , line(s) 18 onwards . EISG section 8.5.2.2 Comment # Table53	None of the measures to mitigate downstream effects on fish habitat from operations involve using the control of flows to manage impacts. The EIS needs to include a discussion of how the operational control of flows can be used to mitigate effects.	<p>The dependable capacity of the Project is established as part of the Project design. The dependable capacity of the Project is 1,100 MW, as described in Section 4.3.1.4 in Volume 1. The question refers to how operational control of flows can be used to mitigate effects. BC Hydro does not propose to implement down ramping controls to mitigate the potential for stranding of fish.</p> <p>The incremental increase in daily range of water levels downstream of the Site C dam during operations is described in Section 11.4 Surface Water Regime, Table 11.4.9, and the expected changes to the rate of change of flow are presented in Appendix D Part 2 Downstream Flow Modelling (1-D). As described in Section 12 Fish and Fish Habitat Effects Assessment, Section 12.5.2.2, this increase in daily range of water level may increase the risk of fish stranding in that section of the Peace River downstream of the Project and upstream of Pine River confluence.</p> <p>The Project as described (Section 4 Project Description) does not include maximum down-ramping rates. Such ramping rates would affect the dependable capacity of the Project, and as such are not economic to implement. The need for the dependable capacity of the Project is described in Section 7:</p> <p>"Capacity represents the instantaneous power output of a generating facility at any given time. As described in Section 5.2, BC Hydro plans its system to ensure that there is sufficient dependable capacity to meet customer needs, which represents the maximum generation output that can be reliably supplied coincident with system peak load, taking into account the physical state and availability of the equipment and water or fuel constraints. The Utilities Commission Act service obligation described in Section 5.2 means that BC Hydro must make sure customer demand is met at the peak load every day.</p> <p>Section 4 Project Description. As described in Section 5.2, after BC Hydro implements Revelstoke Unit 6, there are limited dependable capacity resource options available to BC Hydro. Proceeding with the Project avoids dependable capacity resources such as natural gas-fired SCGTs and/or pumped storage facilities.</p> <p>Table 39.1 of the EIS states the approach for the mitigation of the effects of fish stranding is:</p> <ol style="list-style-type: none"> 1) monitor fish habitat areas where periodic exposure of side channel and mainstem margins occurs as a result of water fluctuations; 2) enhance side channel complexes in the reach between the dam site and the confluence of the Peace and Pine Rivers to increase wetted habitat and to reduce stranding potential during low flows; 3) where practical, contour mainstem bars to reduce potential for fish stranding.

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				As listed in Table 12.20 of Section 12, these mitigation actions are predicted to eliminate the potential effect of fish stranding on Fish and Fish Habitat. As stated in Section 12.8 (Follow-Up Programs), a fish and fish habitat follow-up plan would be implemented to address key uncertainties associated with effects assessment and the effectiveness of mitigation. The information collected during the follow-up program for fish stranding will be used to verify predictions, and depending on the outcome additional adaptive programs may be required including the implementation of specific actions such as habitat improvement or creation to compensate for unforeseen adverse effects.
ab_0004-059	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V.2, s.12.1.5.1 ; page(s) 12-5 to 12-6 , line(s) n/a. EISG section 8.4.1 Comment # Table54	There is also no correlation between the spatial area in which hydrology and fluvial geomorphology were studied in the EIS and the spatial areas for assessment of impacts to <i>Fish and Fish Habitat</i> and <i>Wildlife Resources</i> The EIS considers hydrology and fluvial geomorphology downstream from the proposed location of Site C to Peace Point, Alberta (a fact that ACFN and MCFN take issue with in and of itself, given the need to assess impacts downstream to the PAD). Despite the fact that factors relating to hydrology and fluvial geomorphology can impact fish, wildlife, river ecosystems, current uses and Treaty rights, the <i>Fish and Fish Habitat</i> and <i>Wildlife Resources, Current Uses for Traditional Purposes</i> and Treaty Rights, the VCs were not spatially scoped as far downstream as Peace Point.	The scope of the effects assessments is in accordance with the EIS Guidelines, and appropriate information is provided in the EIS. Please see the Technical Memos on Spatial Boundary Selection and the Peace Athabasca Delta.
ab_0004-060	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V.2, s.13.1.5.1 ; page(s) 13-8, line(s) n/a. EISG section 11.2.1 Comment # Table55	The EIS uses a different RAA for <i>Vegetation and Ecological Communities</i> than that which was proposed in the EIS Guidelines. Regarding the RAA for <i>Vegetation and Ecological Communities</i> , the EIS states "The updated boundary includes most of the Peace Lowlands ecosection and incorporates all Project components and activities." The EIS Guidelines asserted that the entire "Peace Lowlands Ecosection" would be used for the RAA. A justification for this change is required, including a comparison of the two descriptions of the study areas and an explanation of the implications for the CEA for <i>Vegetation and Ecological Communities</i> .	For clarification: Section 11.2.1 of the EIS guidelines stated that "the proponent proposes the LAA and RAA as described in Table 11.2". Table 11.2 in the EIS-guidelines lists the Peace Lowlands Ecosection. Section 13.1.5.1 provides the rationale for LAA and RAA selection. Please see the Technical Memos on Spatial Boundary Selection and Cumulative Effects Assessment.
ab_0004-061	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V.2, s.13.3.1 ; page(s) 13-14 , line(s) 22-24 . EISG section 11.2 Comment # Table56	Regarding downstream effects to vegetation from the operations and alteration to the water regime, the EIS states "Operation of the dam is expected to result in changes to the surface water regime downstream. These conditions would be similar to the conditions currently experienced downstream of the Peace Canyon Dam..." BCH needs to provide a rationale that the effects to downstream vegetation from Site C will be similar or different than the current ongoing changes. Studies exist that document past changes to vegetation on the Peace River, and should be used as a reference for comparing the changes	Please see the Technical Memo: Spatial Boundary Selection.

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			expected from Site C in order to substantiate this claim.	
ab_0004-062	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V.2, s.14.1.5.2 ; page(s) 14-12, line(s) n/a. EISG section 12.2.1 Comment # Table57	<p>The EIS uses a different RAA for <i>Wildlife Resources</i> than that which was proposed in the EIS Guidelines. Regarding the RAA for <i>Wildlife Resources</i>, the EIS states "The updated boundary includes most of the Peace Lowlands ecosection and incorporates all Project components and activities." The EIS Guidelines asserted that the entire "Peace Lowlands Ecosection" would be used for the RAA. A justification for this change is required, including a comparison of the two study areas and an explanation of the implications for the Cumulative Effects Assessment for <i>Wildlife Resources</i>.</p> <p>There is also no correlation between the spatial area in which hydrology and fluvial geomorphology were studied in the EIS and the spatial areas for assessment of impacts to <i>Wildlife Resources</i>. The EIS considers hydrology and fluvial geomorphology downstream from the proposed location of Site C to Peace Point, Alberta (a fact that ACFN and MCFN take issue with in and of itself, given the need to assess impacts downstream to the PAD). Despite the fact that factors relating to hydrology and fluvial geomorphology can impact fish, wildlife and river ecosystems, the <i>Wildlife Resources</i> were not spatially scoped as far downstream as Peace Point.</p>	<p>For clarification: Section 11.2.1 of the EIS guidelines states that “the proponent proposes the LAA and RAA as described [in Table 11.2]. Table 11.2 in the EIS-guidelines lists the Peace Lowlands Ecosection.</p> <p>Section 14.1.5.1 provides the rationale for LAA and RAA selection.</p> <p>Please see the following Technical Memos:</p> <ul style="list-style-type: none"> - Spatial Boundary Selection - Cumulative Effects Assessment
ab_0004-063	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V.2, s.14.6.3 ; page(s) n/a, line(s) n/a. EISG section 8.5.2.2 Comment # Table58	Regarding the EIS's conclusion of anticipated significant adverse cumulative effects on wildlife, the EIS states: "BCH has limited authority to guide regional initiatives to support the diversity and persistence of wildlife resources. This would be better guided by the provincial government." Is BCH willing to provide a formal recommendation to the Provinces of B.C. and Alberta to help BCH manage the cumulative effects to which Site C would contribute? There does not appear to be proposed mitigation measures to help address the significant adverse effects.	Section 8.5.3.3 of the EIS Guidelines requires BC Hydro to “... recommend possible regional approaches to mitigation.” BC Hydro recommends the implementation of collaborative initiatives to address rare species recovery and to address the alteration and fragmentation of habitats, displacement and disturbance of wildlife, and possible wildlife mortality (see EIS Sections 13.5.3 and 14.6.3). These initiatives should be guided by the Provincial government because it has the capacity to secure the collaboration those who undertake other projects and activities, the residual effects of which would combine with those of the Project and result in a cumulative effect.
ab_0004-064	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V.3 s.19.1 ; page(s) 19-1, line(s) n/a. EISG section 15 Comment # Table59	<p>The EIS Guidelines requires BCH to “summarize the traditional lands and resource use effects” of the Project through “an assessment of the potential adverse effects of the Project on the current use and reasonably anticipated future use of lands and resources by Aboriginal persons for traditional purposes.”</p> <p>However, the EIS appears to narrow the scope of this assessment to only an assessment of the effects of the Project on “current” uses of lands for traditional purposes, and not reasonably anticipated future uses. Specifically, BCH has renamed this section and has set out key indicators for this VC as (i) the “current use of lands and resources for hunting, fishing and trapping activities</p>	<p>The assessment in Section 19 does consider the potential effects of the Project on the current and reasonably anticipated future use of lands and resources for traditional purposes, as required by the EIS Guidelines. Where information was made available by Aboriginal groups with respect to reasonably anticipated future use of lands and resources for traditional purposes, it was considered in the baseline for Section 19. Where Aboriginal groups provided little or no information with respect to specific, future use of lands and resources, BC Hydro made an assumption that uses of lands and resources and areas currently being used by Aboriginal groups would continue to be into the future.</p> <p>The findings with respect to the significance of residual effects of the Project, summarized in Table 19.15 of the EIS, also assist in characterizing the nature of those effects on the reasonably</p>

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			<p>..." and (ii) the "current use of lands and resources for activities other than hunting, fishing and trapping ..."</p> <p>This section of the EIS is insufficient as it does not include an assessment of the potential adverse effects of the Project on "reasonably anticipated future use of lands and resources by Aboriginal persons", as required by the EIS Guidelines. No justification is given for this departure from the EIS Guidelines. Instead, BCH references s.5(1)(iii) of CEAA, which requires an assessment of "current use of lands and resources for traditional purposes." The EIS must comply with the EIS Guidelines and must include an assessment of the Project's effects on "reasonably anticipated future use of lands and resources by Aboriginal persons."</p>	<p>anticipated future use of lands and resources. The residual effects of the change to cultural and other traditional uses of the land, in particular that noted for T8TA, SFN, and BRFN at particularly high-value places along the Peace River, noted that the areas would be inundated and access to them permanently impaired.</p>
ab_0004-065	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V.3 s.19.1.2 ; page(s) 19-8, line(s) n/a. EISG section 15.2.4 Comment # Table60	<p>The EIS Guidelines require BCH to assess the potential adverse effects from the Project on the current use of land and resources for traditional purposes by taking into account the potential for the Project to result in changes to key aspects:</p> <ul style="list-style-type: none"> · Use of and access to lands used for traditional purposes; · Availability of harvested species based on the results of the assessment of the potential effects of the Project on fish and fish habitat, vegetation and ecological communities, and wildlife resources; and · Other relevant considerations raised by Aboriginal groups. <p>Instead, BCH has chosen to assess different "key aspects", being:</p> <ul style="list-style-type: none"> · Changes in fishing opportunities and practices; · Changes in hunting and trapping opportunities and practices; · Changes in other cultural and traditional uses of land. <p>It is not clear in the EIS whether there are additional concerns from aboriginal groups that should have been brought in, but were not, due to organizational choice.</p>	<p>Please see the response to ab_0001-534.</p>
ab_0004-066	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V.3 s.19.1.5.1 ; page(s) 19-10 – 19-11 , line(s) n/a. EISG section 8.4 Comment # Table61	<p>The EIS Guidelines require that BCH "shall include a scientific justification for the selection of relevant spatial boundaries" for each VC. The EIS states that the spatial boundaries for the <i>Current Use of Lands and Resources for Traditional Purposes</i> VC was defined "in consideration of the expected maximum geographic extent of the potential for the Project to cause an adverse effect on the VC current use of lands and resources for traditional purposes." The LAA and RAA boundaries defer to the other biological boundaries (which are themselves unjustified by scientific evidence), and no further scientific justification is presented, so it does not meet the aforementioned requirement</p>	<p>Please see the Technical Memo: Spatial Boundary Selection.</p>

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			<p>of the EIS Guidelines.</p> <p>Section 10.3.1 of the EIS (Methodology section) claims that "Each of these sections provides the scientific justification for the selection of relevant spatial boundaries." The scientific justification is missing for <i>Current Use of Lands and Resources for Traditional Purposes</i>, so this statement in section 10.3.1 is not accurate. A scientific justification for the LAA and RAA is required. The First Nations also make the following comments on the spatial boundaries for this VC, in addition to the comments above:</p> <p>a) The EIS states that the <i>Current Use of Lands and Resources for Traditional Purposes</i> VC will be considered through three related assessments: (i) fishing opportunities and practices, (ii) hunting and trapping opportunities and (iii) "Cultural and traditional uses of the land". It is the First Nations' understanding that the third category is intended to take into account key aspects of the exercise of treaty rights not otherwise addressed in the fishing, hunting and trapping assessments. Based on this understanding, the First Nations seek clarification on how the spatial boundaries for this assessment were determined to coincide with the boundaries for the vegetation and ecological communities VC, given that elements of cultural and traditional uses of the land do not correspond with this VC.</p> <p>b) On page 19-11, line 7-8, the EIS states that the spatial boundaries for the Fish and Fish Habitat VC "were defined by reviewing information including information from Traditional Land Use Studies." It is unclear how traditional land use study information was used to select the spatial boundary for this VC, nor is it clear what TLUS data was used to define this boundary. The First Nations request that BCH explain what TLUS data was used, and how it was used, to set the spatial boundary for this VC.</p> <p>c) The selection of the spatial boundaries for the Wildlife Resources VC and the Vegetation and Ecological Communities VC does not reference reliance on TLUS data. The First Nations request justification for the exclusion of this data in the selection of spatial boundaries for these VCs.</p>	
ab_0004-067	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First	V.3, s.19.1.5.1 ; page(s) 19-10, line(s) n/a. EISG section 15.2.1 Comment # Table62	The EIS uses a different RAA for Current Use of Lands and Resources for Traditional Purposes than that which was proposed in the EIS Guidelines -ie the use of the now altered RAA for Wildlife Resources and Vegetation and Ecological Communities . Regarding the RAA for <i>Wildlife Resources</i> , the EIS states "The updated boundary includes most of the Peace Lowlands ecosection and incorporates all Project components and activities." The EIS Guidelines asserted that the entire "Peace Lowlands Ecosection" would be used for the	Please see the Technical Memo: Spatial Boundary Selection.

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	Nation		<p>RAA. A justification for this change is required, including a comparison of the two study areas and an explanation of the implications for the <i>Cumulative Effects Assessment for Current Use of Lands and Resources for Traditional Purposes</i>.</p> <p>Also as noted above, using the spatial scoping for <i>Vegetation and Ecological Communities</i> and for <i>Wildlife Resources</i> as the scoping for <i>Current Use of Lands and Resources for Traditional Purposes</i> is not scientifically justified. Impacts to current uses can occur as a result of other factors, beyond direct impacts to vegetation and wildlife, including through changes to hydrology and ice flow regimes.</p>	
ab_0004-068	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V.3 s.19.2.1 ; page(s) 19-12, line(s) 33. EISG section 1.3 Comment # Table63	The EIS states that “Readily available Traditional Land Use and knowledge studies for other projects” were referenced to formulate the baseline and assist with the assessment of potential effects on this VC. The First Nations request that BCH list the studies that were referenced in this regard.	The sources used in the assessment on Current Use of Lands and resources for Traditional Purposes are listed on page 19-115 through 19-123 of Section 19. The Aboriginal Land and Resource Use Summary documents prepared for each of Athabasca Chipewyan, Dene Tha' and Mikisew Cree First Nations also include references for materials considered in the preparation of those documents, and are found in Volume 5 Appendix A01.4, A04.4 and A18.4 respectively.
ab_0004-069	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V.3 s.19.2.3 ; page(s) 19-13 , line(s) 25-28 . EISG section 1.3 Comment # Table64	The EIS states that “a spatial analysis was undertaken to identify the overlap between the Project activity zone and areas that are currently used by Aboriginal groups for traditional purposes.” Given the complexity of the Project and the need to communicate potential site specific impacts to First Nations as part of BCH’s mitigation strategies, the First Nations request that additional information and mapping of the potential adverse effects of the Project as against the traditional uses of land be included in the EIS.	<p>The baseline information and effects assessment in Section 19 draws largely on information provided by First Nations in Traditional Use Studies and publicly available information. BC Hydro has committed to working with Aboriginal groups to ground truth traditional land use information for specific area within the Project activity zone prior to commencing construction, and to continue to consult with Aboriginal groups regarding clearing plans and protocols (See Section 19.4.8).</p> <p>Please see response to ab_0001-527</p>
ab_0004-070	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V.3, Tables 19.5 to 19.10 ; page(s) 19-15 to 19-19 , line(s) n/a. EISG section 15, 15.2.3 Comment # Table65	The EIS Guidelines require BCH to describe the current use of lands and resources for traditional purposes within the assessment areas drawing on information from public sources and information made available to BCH, including TLUS. The purpose of this review is to establish a baseline to assess the potential adverse effects of the Project on both current use and reasonably anticipated future use of lands and resources by Aboriginal persons for traditional purposes. Tables 19.5 to 19.10 purport to summarize the “presence or absence of traditional or current use for those groups that have at least some identified current use, in the LAA, of each resource use or activity listed, regardless of the intensity or frequency of harvesting or activity.”	<p>BC Hydro and Dene Tha' First Nation entered into a Traditional Land Use Study (TLUS) agreement on August 16, 2012.</p> <p>Section 2.3 of that agreement reads as follows: "2.3. The Parties agree that the TLUS: (a) will be representative and will not constitute a comprehensive study or collection of data in relation to all of DTFN’s uses, interests, knowledge or concerns in the Study Area; (b) must be sufficiently reliable to assist in the identification and evaluation of the Potential Impacts of the Project on DTFN’s section 35(1) rights and DTFN’s ability to exercise such rights in the Study Area for the purposes of the environmental assessment of the Project."</p> <p>The Dene Tha' First Nation baseline information considered by BC Hydro was developed using</p>

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			<p>These tables are admitted to be “subject to the limitations expressed in the TLUS and other reports on which it is based”. The TLUS prepared by DTFN indicates that the TLUS represents “an incomplete and distorted record of the actual traditional and contemporary land use activities undertaken by Aboriginal communities.” Additionally, the TLUS states that “rarely are <u>all</u> individuals who use and/or occupy traditional lands, either presently or in the past, ever consulted or interviewed” and “at best, traditional land use studies offer a narrow view of what is actually taking place or took place.”</p> <p>DTFN comments that, despite this disclaimer, BCH appears to have relied upon the TLUS data provided to BCH as a comprehensive assessment of the current use of lands and resources for traditional purposes rather than as a sample of the areas where traditional land and resource use takes place. Tables 19.5 to 19.10 in the EIS particularize DTFN use of species in a way that minimizes the use of lands and resources by the DTFN. This particularization, despite the limits of the TLUS data on which it is based, is improperly carried through the assessment of impacts to both the current use of lands and resources for traditional purposes, as well as the assessment of impacts to treaty rights (section 34 of the EIS).</p> <p>Further, such an approach does not comply with the EIS Guidelines requirement that reasonably anticipated future uses of lands and resources must also be assessed. At a minimum, the indication within TLUS data that DTFN uses lands and resources within the assessment areas for traditional uses requires BCH to assess the impacts to those practices in a way that anticipates that activities may change in the future in relation to other species. Put another way, the fact that areas within the LAA are used for moose hunting currently, means that BCH must consider whether the Project poses risks not only to moose within the area, but also to other similar species that could reasonably be harvested in the area in the future. In fact, the TLUS filed by DTFN clearly indicates “multi-species hunting” areas within the LAA for this VC (see Appendix “A” to TLUS). There is no explanation as to why BCH has characterized this “multi-species hunting” practice as limited to moose. BCH has failed to analyze reasonably anticipated uses with the assessment areas, and has therefore failed to conduct the assessment of impacts to those uses as required by the EIS Guidelines.</p>	<p>information made available to it by Dene Tha' First Nation, in particular the TLUS, as well as information from other publicly available sources.</p> <p>The assessment in Section 19 does consider the potential effects of the Project on the current and reasonably anticipated future use of lands and resources for traditional purposes, as required by the EIS Guidelines. Where information was made available by Aboriginal groups with respect to reasonably anticipated future use of lands and resources for traditional purposes, it was considered in the baseline for Section 19, as described on pages 19-14 and 19-15. BC Hydro made an assumption that lands and resources currently being used by Aboriginal groups would continue to be used into the future.</p> <p>The findings with respect to the significance of residual effects of the Project, summarized in Table 19.15 of the EIS, also assist in characterizing the nature of those effects on the reasonably anticipated future use of lands and resources. The residual effects of the change to cultural and other traditional uses of the land, in particular that noted for T8TA, SFN, and BRFN at particularly high-value places along the Peace River, noted that the areas would be inundated and access to them permanently impaired.</p>
ab_0004-071	Athabasca Chipewyan First Nation,	V.3 s.19.3 ; page(s) 19-13 to 19-19 ,	The EIS Guidelines require BCH to consult with the First Nations, including MCFN and ACFN because of the potential adverse effects of the Project on their Treaty rights. As noted earlier in these comments, BCH has failed to provide a	Section 20.1 of the EIS Guidelines requires BC Hydro to consult with Aboriginal groups that have the potential to be affected by the Project, not "because of the potential adverse effects of the Project on their Treaty rights." Baseline information relating to the current use of lands and

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	Dene Tha' First Nation and Mikisew Cree First Nation	line(s) n/a. EISG section 20.1 Comment # Table66	justification for the exclusion of downstream areas where MCFN and ACFN practice their treaty rights. This exclusion is continued in the consideration of baseline data in s.19.3 of the EIS. The First Nations request that the EIS be amended to include baseline information relating to the Current Use of Land and Resources for Traditional Purposes by MCFN and ACFN, and that an assessment of potential effects to current and reasonably foreseeable future uses by MCFN and ACFN members be included in the EIS.	resources for traditional purposes for both ACFN and MCFN is presented in Sections 19.3.1.9 and 19.3.1.15, respectively. Based on this baseline information and as described in Section 19.4, further consideration of the potential effects of the Project on the current use of lands and resources for traditional purposes by these two First Nations was not given in the effects assessment. Please see the following Technical Memos: - Spatial Boundary Selection - Peace Athabasca Delta
ab_0004-072	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V.3, Table 19.1 ; page(s) 19-3, line(s) n/a. EISG section 1.3 Comment # Table67	<p>Table 19.1 of the EIS purports to identify “Key Issues” for the assessment of impacts to current uses of lands for traditional purposes, as identified through consultations with Aboriginal groups. The First Nations comment that, in general, it is quite unclear whether and how these issues have been incorporated into the assessment of impacts to current use of lands and resources. In particular:</p> <ul style="list-style-type: none"> · On page 19-4, the table identifies a “meaningful assessment of reasonably anticipated future use of lands” as a key issue identified by certain First Nations. This is a key issue not only for the First Nations listed on the table, but for DTFN, ACFN and MCFN as well. Further, it is a requirement of the EIS Guidelines that reasonably foreseeably future use of lands be assessed against potential project impacts. This table states that such future uses have been assessed in section 19, however this assessment seems to be lacking. Of note, the assessment contained in section 19 focusses narrowly on the species of fish, wildlife and plants identified by the First Nation rather than addressing future uses of lands with the assessment areas. BCH should provide a clear assessment of the reasonably foreseeable future uses of lands within the assessment areas so that impacts to these future uses can also be assessed transparently. · On page 19-5, the table states that a key issue is the collection of baseline traditional knowledge and incorporating that knowledge into the environmental assessment. BCH states that “where information respecting traditional knowledge has been made available to BCH by Aboriginal groups, it has been incorporated into the baseline for those VCs to which it applies. The First Nations express two concerns in this regard: (1) this statement indicates that BCH has placed an onus on Aboriginal groups to gather information and identify impacts. While First Nations can certainly assist in this process, the onus is on BCH to identify impacts to current and reasonably foreseeable uses of lands and resources for traditional purposes. BCH should transparently demonstrate the 	<p>With respect to the consideration of the reasonably anticipated future use of lands and resources for traditional purposes, please see the response to ab_0004-064.</p> <p>As noted on page xi of the EIS Guidelines, "the Proponent will incorporate additional baseline information as made available based on concerns identified by Aboriginal groups." BC Hydro has entered into consultation agreements with each of Athabasca Chipewyan First Nation, Dene Tha' First Nation, and Mikisew Cree First Nation. These agreements provide capacity funding to enable the First Nations to identify potential effects of the Project. In addition, BC Hydro has provided funding to Dene Tha' First Nation to carry out a traditional land use study to document its use of lands and resources in the Project area. Funding was also provided to Athabasca Chipewyan First Nation and Mikisew Cree First Nation to prepare a desktop review of existing information respecting their use of lands and resources. Land and Resource Use Summary documents for each of the First Nations, which consider the reports made available to BC Hydro and other publicly available sources, are found in Volume 5 Appendix A Part 3 for each First Nation. Taking into account the baseline information, BC Hydro has identified a potential residual effect of the Project on the current use of lands and resources for hunting and trapping (non-tenured) for Dene Tha' First Nation .</p>

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			efforts made to gather baseline traditional knowledge and demonstrate how such knowledge has been brought into the assessment.	
ab_0004-073	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V.3, Table 19.2 ; page(s) 19-9, line(s) 1-3. EISG section 1.3, 8.1, 8.3.2 Comment # Table68	The footnote to Table 19.2 states that “only Project interactions ranked as ‘2’ ... are carried forward to this table.” The First Nations express concern that this methodology may overlook both adverse effects and cumulative effects as interactions ranked as ‘1’ (i.e. interactions that are assumed to not exist or be negligible in effect) may be miscategorised, or may be misunderstood. Given that the EIS Guidelines do not require this specific methodology, BCH should justify its decision to not carry certain Project interactions through the effects assessment.	The methodology for evaluating how the candidate VCs will be evaluated to identify whether there is an interaction with the Project is described in Section 10.2.2 of the EIS, and complies with Section 8.3.2 of the EIS Guidelines. Table 2 in Volume 2 Appendix A presents the rationale for identification of Project interactions. The methodology used to describe potential Project interactions with the Current Use of Lands and Resources VC is consistent with the prescribed methodology. Potential cumulative effects are assessed in Section 19.6.
ab_0004-074	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V.3 s.19.3.1.9.2 ; page(s) 19-50 , line(s) 7-9. EISG section 1.3 Comment # Table69	The EIS states that baseline information for ACFN was derived from “publically available published and unpublished studies.” ACFN requests that BCH indicate which studies were referenced in establishing the baseline for current, past, and future use of lands, aside from the Desktop Knowledge and Use Report.	The Aboriginal Land and Resource Use Summary (Volume 5 Appendix A01.4) prepared for Athabasca Chipewyan First Nation includes references for materials considered in the preparation of that summary.
ab_0004-075	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V.3 s.19.3.1.15.2 ; page(s) 19-56 , line(s) 27-29 . EISG section 1.3 Comment # Table70	The EIS states that baseline information for MCFN was derived from “publically available published and unpublished studies.” MCFN requests that BCH indicate which studies were referenced in establishing the baseline for current, past, and future use of lands, aside from the Desktop Knowledge and Use Report	The Aboriginal Land and Resource Use Summary (Volume 5 Appendix A04.4) prepared for Mikisew Cree First Nation includes references for materials considered in the preparation of that summary.
ab_0004-076	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V.3 s.19.3.1.9 V.3 s.19.3.1.15 ; page(s) n/a, line(s) n/a. EISG section n/a Comment # Table71	Based on our above comments relating to the lack of justification for the spatial scoping of the assessment areas to exclude a consideration of impacts within the PAD and other downstream areas, MCFN and ACFN comment that, should the assessment areas be amended, these sections, and others, will have to be amended to include a consideration of impacts on MCFN and ACFN.	Please see the following Technical Memos: - Spatial Boundary Selection - Peace Athabasca Delta
ab_0004-077	Athabasca Chipewyan	V.3 s.19.4 ; page(s) 19-65 ,	The EIS Guidelines require BCH to “assess how the Project has the potential to adversely affect current use of lands and resources by Aboriginal persons for	Project interactions with the VCs are described in Volume 2, Appendix A Table 2. Interactions are considered at the project component or activity level in Table 2, as relevant to each VC. Where

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	First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	line(s) n/a. EISG section 15.2.4 Comment # Table72	<p>traditional purposes.” The EIS undertakes this assessment at the Project component level, rather than the activity level, for this VC. In general, this approach does not offer a transparent assessment of the impacts of the Project on the exercise of treaty rights.</p> <p>The assessment is conducted in overly general terms, and it is difficult for the First Nations to determine how and where impacts to their rights will occur. Given the nature of the rights at issue, it is necessary for the First Nations to understand not only the potential for adverse impacts, but the nature and magnitude of those impacts. The First Nations request that BCH provide mapping and other information to indicate, to the extent possible, the location of potential adverse effects.</p>	<p>appropriate, the assessment of potential effects on Current Use of Lands and Resources for Traditional Purposes took into account interactions are the activity level.</p> <p>The baseline information and effects assessment in Section 19 draws largely on information provided by First Nations in Traditional Use Studies and publicly available information.</p> <p>BC Hydro has proposed, as a mitigation measure, to work with Aboriginal groups to ground truth traditional land use information for specific area within the Project activity zone prior to commencing construction, and to continue to consult with Aboriginal groups regarding clearing plans and protocols (see Section 19.4.8).</p>
ab_0004-078	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V.3 s.19.4.1 ; page(s) 19-73 , line(s) n/a. EISG section 20 Comment # Table73	The EIS states that the TLUS reports “provides limited information on how Aboriginal groups use fish” but that “it is reasonable to assume that the Aboriginal groups who currently fish for traditional purposes in the Project LAA use the resource for sustenance, recreational, and social purposes.” DTFN comments that this assumption is not justified, insofar as it may exclude the consideration of the exercise of treaty rights to fish commercially.	<p>BC Hydro's understanding about the nature and scope of rights under Treaty 8 is described in Section 34.3.2.1, and notes that Treaty 8 rights in British Columbia and the Northwest Territories have not been modified by the Natural Resources Transfer Agreement (NRTA). Because the NRTA does not apply in Wood Buffalo National Park, an amendment to clarify this point has been added to the List of Errata and Updated Information. The clarification will read: “Thus, in Alberta and Saskatchewan (with the exception of Indian Reserves and certain national parks, including Wood Buffalo National Park)the treaty rights to hunt, fish, and trap for food can be exercised throughout each of the provinces but the right to hunt, fish, and trap commercially is extinguished. ”</p> <p>As described in the EIS, very limited information has been made available by Aboriginal groups with respect to how they may use fish, and no information has been provided to indicate that Aboriginal groups who currently fish in the Project LAA do so commercially.</p>
ab_0004-079	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V.3 s.19.4.1 ; page(s) 19-73 , line(s) 39-42 . EISG section 1.3, 20, 20.3 Comment # Table74	<p>The EIS states, with respect to concerns expressed by Aboriginal groups about fish contamination, that assessments of the Project’s effect on methylmercury in fish indicates that downstream fishing by Aboriginal groups could remain unchanged as fish could be consumed at the same frequency of consumption of fish that are caught from the LAA, taking into account “results of Aboriginal harvest and consumption studies.” DTFN makes the following comments:</p> <p>a) Please identify the referenced Aboriginal harvest and consumption studies. Do these studies relate to DTFN consumption of fish?</p> <p>b) This conclusion that there will not be an adverse impact to the use of fish is not justified on the basis of the evidence presented. To conduct an assessment of whether there is an adverse impact to the use of fish in the LAA, BCH must assess whether the Project will result in a perceived risk that the Project will increase fish contamination. Such perceived risk may cause an adverse impact</p>	<p>Please see Section 33.2 for information sources and methods for the human health assessment. Specific citations are provided in the text. The effects assessment in Section 33.4.9 states that commonly consumed species of fish in the LAA could be continued to be consumed by even the most sensitive age group at least twice a week without exceeding Health Canada’s pTDI for methylmercury. Comparing these results to reported baseline consumption frequencies of fish caught in the LAA (which indicate a relatively low frequency), it is anticipated that people will not be required to change the frequency of consumption of fish that are caught from the LAA. Below the Site C dam, exposure would be limited to species migrating upstream to preferentially feed on fish entrained out of the Site C reservoir, resulting in their exposure to fish with elevated methylmercury concentrations. With a projected doubling of mercury concentrations in these species at peak (compared to baseline), women of child-bearing age could consume one serving a week, while other adults could consume three servings a week (Section 33.4.9, page 33-60).</p> <p>The fish consumption studies used in the assessment are identified in Section 33.2.1.5. BC Hydro</p>

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			even if fish is safe to eat at certain consumption levels.	<p>is not aware of any studies relating to DTFN's consumption of fish, however, if DTFN were to make additional baseline information with respect to consumption of fish on the Peace River available to BC Hydro, it would be considered. As described in the baseline information presented in Section 19.3.1.7.4, the information presented in the DTFN TLUS describes fishing taking place on the Peace River east of Manning, Alberta, which is located outside the LAA. No changes to fishing opportunities and practices as a result of the Project are anticipated in that area, and as such neither Project effects nor residual effects would be experienced by DTFN.</p> <p>The Human Health effects assessment states avoiding fish consumption due to a perceived health risk could result in negative health effects (i.e., replacement of country foods with store-bought foods and reduction in health status due to alterations in an already healthy diet (Section 33.4.9, page 33-60). Mitigation for this is proposed in Section 33.4.10.</p>
ab_0004-080	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V.3 s.19.4.3 ; page(s) 19-77, line(s) 1-19. EISG section 15.2.4 Comment # Table75	<p>The EIS Guidelines require BCH to identify potential mitigation measures and include a description of how the mitigation measures can address the potential adverse effects.</p> <p>Many of the measures listed in s.19.4.3 do not comply with the EIS Guideline requirements of specificity and clarity. Instead, most of these measures are commitments to “seek input from Aboriginal groups” or to “continue to consult with Aboriginal groups” on plans and protocols. Other measures are described as measures that may be developed in the future, such as the development of a communications program. The effectiveness of such programs cannot be measured without specific mitigation measures being identified by BCH.</p> <p>While consultation with DTFN will be required in designing and implementing mitigation measures relating to impacts to its treaty fishing rights, such consultation does not itself mitigate the adverse effects identified in the EIS.</p> <p>Without providing firm and specific commitments for mitigation, the EIS is not in compliance with the EIS Guidelines and the efficacy of proposed mitigation measures cannot be assessed. As a result, the analysis of the residual effects on fishing arising from the Project in the EIS is not reliable.</p>	<p>The mitigations presented in Section 19.4 include a mix of mitigations that are proposed for the Fish and Fish Habitat, Wildlife Resources, Vegetation and Ecological Communities, Navigation, Harvest of Fish and Wildlife Resources, and Heritage Resources VCs, as well as mitigations that have been identified to address specific concerns raised by Aboriginal groups.</p> <p>BC Hydro has offered to consult with Aboriginal groups in the Project area about mitigation measures, and will continue to pursue discussions on this topic as part of the consultation process for the Project. As described in Section 9.2.4 (Process for Resolving Outstanding Issues with Aboriginal Groups), BC Hydro will seek to address outstanding issues by, among other activities, "continuing to seek input and engage in dialogue regarding the EIS and the Project, and to answer questions and address issues, interests, and concerns from Aboriginal groups by identifying appropriate mitigation measures and/or other appropriate means by which to address or resolve potential impacts."</p> <p>With respect to the level of confidence in the conclusions on the residual effects to the current use of lands and resources for traditional purposes, the nature of the proposed mitigations were taken into account and is reflected in the assessment made. Please see the Technical Memo: Uncertainty and Precaution.</p>
ab_0004-081	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew	V.3 s.19.4.4 ; page(s) 19-82 , line(s) n/a. EISG section 1.3 Comment #	<p>At line 18, the EIS states that there will be a “temporary” reduction to moose availability within the LAA. DTFN requests that BCH provide more specificity in this regard. How long does BCH anticipate the “temporary reduction” to last?</p> <p>At lines 30 to 41, the EIS states that “T8TA members’ harvest of moose, deer, and elk may be affected at hunting locations within the LAA.” Given that DTFN exercises ungulate hunting within the LAA, this comment should also apply to</p>	<p>The word "temporary" was used in error as there may be a reduction to moose availability in the LAA. This update has been added to the List of Errata and Updated Information. This update does not change the results of the effects assessment.</p> <p>With respect to the second comment, lines 42-45 on page 19-82 sets out the following: "The current use of lands and resources for hunting may be affected by reductions in moose populations in the LAA for DFN, HLFN, and DTFN. However, TLUS evidence provided by these First</p>

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	Cree First Nation	Table76	DTFN in order to consider impacts to reasonably anticipated future uses of land.	Nations indicates that their core moose hunting territories are outside the LAA."
ab_0004-082	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V.3 s.19.4.5 ; page(s) 19-88 , line(s) 12. EISG section n/a Comment # Table77	The reference to “fishing” at the end of this line should be corrected to relate to hunting and trapping.	This update has been added to the List of Errata and Updated Information.
ab_0004-083	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V.3 s.19.4.5 ; page(s) 19-88 , line(s) 10-24. EISG section 8.5.2.2 Comment # Table78	<p>The EIS lists certain mitigation measures suggested by BCH to address adverse effects to hunting and trapping opportunities. DTFN restates its comment, above, that the mitigation measures listed by BCH lack specificity and therefore the efficacy of those measures cannot be assessed in order to understand what residual impacts remain.. In addition, DTFN requests information from BCH in regard to the mitigation measures referenced in this paragraph, but contained in V.2 s.14 and V.3 s.24:</p> <p>a) Which mitigation measures suggested for Wildlife Resources and the harvest of fish and wildlife resources relating to trapping does BCH rely upon to mitigate the potential adverse effects of the Project on the current use of lands and resources for traditional purposes?</p> <p>b) Were these mitigation measures developed in consultation with Aboriginal groups?</p> <p>c) If so, how did consultation with Aboriginal group affect the choice of mitigation measures?</p>	<p>As described in Section 19.4.5, BC Hydro proposes to implement all mitigation measures described in Section 14.4 Mitigation Measures for the Wildlife Resources VC to mitigate potential adverse effects of the Project on current hunting and trapping opportunities and practices. Mitigation measures respecting trapping applicable from the Harvest of Fish and Wildlife Resources VC are described in Section 24.4.11 Mitigation Measures -- Changes in Trapping Opportunities. In that section, it is noted that the mitigation measures that support fur-bearing populations found in Volume Section 14 (Wildlife Resources) will support the availability of harvestable species for trapping.</p> <p>These mitigation measures were not developed in consultation with Aboriginal groups but were developed by BC Hydro to address adverse effects of the Project on hunting and trapping opportunities. BC Hydro has offered to consult with Aboriginal groups in the Project area, or in accordance with consultation agreements, about mitigation measures, and will continue to pursue discussions on this topic as part of the consultation process for the Project. As described in Section 9.2.4 (Process for Resolving Outstanding Issues with Aboriginal Groups), BC Hydro will seek to address outstanding issues by, among other activities, "continuing to seek input and engage in dialogue regarding the EIS and the Project, and to answer questions and address issues, interests, and concerns from Aboriginal groups by identifying appropriate mitigation measures and/or other appropriate means by which to address or resolve potential impacts."</p>
ab_0004-084	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V.3 s.19.4.5 ; page(s) 19-87; 19-88 , line(s) 41-46; 1-44 . EISG section 1.3 Comment # Table79	The EIS states that the Project may cause adverse effects to terrestrial ecosystems, which could result in adverse effects to the ability of Aboriginal groups to exercise rights relating to the harvest of berries and other plants within the LAA. However, on page 19-87, the EIS states that “effects on individual plant species or plants report in TLUS reports” have not been assessed in the EIS, but that instead, effects to rare and sensitive plants have been assessed.	Section 13 Vegetation and Ecological Communities reports all terrestrial ecosystems within the Vegetation and Ecological Communities LAA and assesses effects to those that may be adversely impacted by the Project, including rare plants and rare and sensitive communities, which encompass grasslands, wetlands, old-growth forest, marl fends and tufa seeps. Some of these terrestrial ecosystems are known to have occurrences of plants harvested by Aboriginal people (See Section 13, Table 13.6 page 13-12). The assessment of the potential effects of the Project on the Current Use of Lands and Resources for Traditional Purposes described in Section 19 has been conducted on the basis of the interactions and effects described in Section 13.

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			<p>Without this species specific information, it is not possible to determine the extent of the potential adverse effect on treaty rights relating to gathering berries and other plants, nor is it possible to determine how such adverse effect may be mitigated. Despite this, BCH relies on the general information available in the EIS to make specific findings in regard to the current use of lands and resources relating to berries and other plants, including that “Project construction is not likely to have effects on berries downstream of the dam site” (page 19-88, line 43-44). BCH needs to provide the scientific justification for this conclusion and provide an assessment of the impacts to current and reasonably anticipated future uses in downstream areas.</p>	<p>Consequently, the effect pathways identified in Section 13 also apply to specific plants, trees, bushes and water used by Aboriginal people within the LAA. These effect pathways are summarised on page 19-88.</p> <p>The description of the baseline in Section 19.4 identifies the types of berries and plants harvested by Aboriginal groups, as noted in their TLUS reports. Section 13, Table 13.6 page 13-12 lists the species harvested by Aboriginal groups and the ecosystem in which they are found. The majority of these species are common on the landscape in the LAA.</p> <p>In Section 19.4, the assessment of the effect of the Project on Aboriginal use of and access to plant harvesting locations identified by Aboriginal groups in TLUS reports (e.g. harvesting locations at proposed dam site, Lynx Creek confluence, near Hudson’s Hope and at Bear Flats and Attachie) that would be inundated (page 19-88) are described. Possible alteration or loss of harvesting areas south of Boucher Lake due to clearing or the transmission line Right of Way or tower placement (page 19-89) has also been assessed.</p> <p>In many cases, harvesting locations were reported by Aboriginal groups, but information provided in TLUS maps was insufficient to determine whether the Project would overlap spatially with the harvesting sites.</p> <p>In addition to mitigation measures proposed in Section 13, BC Hydro also sets out 7 measures specifically with respect to Aboriginal harvesting of plants and berries (Section 19.4.7 page 19-94). These mitigations include a proposal to work with Aboriginal groups to ground truth traditional land use information for specific areas within the Project activity zone prior to commencing construction, and to continue to consult with Aboriginal groups regarding clearing plans and protocols (See Section 19.4.8).</p> <p>With respect to the question of downstream effects, during operations maximum wetted width downstream of the Site C dam is predicted not to exceed the current wetted widths. Measurable changes to terrestrial vegetation, including berry-producing plants, downstream of the dam are not anticipated. Please see the Technical Memo: Spatial Boundary Selection.</p>
ab_0004-085	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V.3 s.19.4.7 ; page(s) 19-94; 19-95 , line(s) 1-24; 135 . EISG section 8.5.2.2 Comment # Table80	<p>The EIS lists certain mitigation measures suggested by BCH to address adverse effects to hunting and trapping opportunities. DTFN restates its comment, above, that the mitigation measures listed by BCH lack specificity and therefore the efficacy of those measures cannot be assessed.</p> <p>In addition, DTFN requests information from BCH in regard to the mitigation measures referenced in this paragraph, but contained in V.3 s.25 and V.3 s.26: a) Which mitigation measures suggested for outdoor recreation and tourism and navigation does BCH rely upon to mitigate the potential adverse effects of</p>	<p>As described in Section 19.4.7, BC Hydro proposes to implement those measures supporting the development of new shoreline recreation sites described in Section 25 Outdoor Recreation and Tourism, measures supporting the development of three boat launches along the Site C reservoir accessible via Highway 29 to support navigability and navigable use, the re-establishment of recreational sites on the Site C reservoir and downstream, and the re-establishment and creation of new use patterns and access, as set out in Section 26 Navigation, to mitigate potential adverse effects of the Project on current cultural and traditional uses of the land .</p> <p>These mitigation measures were not developed in consultation with Aboriginal groups, but were</p>

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			<p>the Project on the current use of lands and resources for traditional purposes?</p> <p>b) Were these mitigation measures developed in consultation with Aboriginal groups?</p> <p>c) If so, how did consultation with Aboriginal groups affect the choice of mitigation measures?</p>	<p>developed to address potential adverse effects on current use of lands and resources that were identified through consultation. BC Hydro has offered to consult with Aboriginal groups in the Project area, or in accordance with consultation agreements, about mitigation measures, and will continue to pursue discussions on this topic as part of the consultation process for the Project. As described in Section 9.2.4 (Process for Resolving Outstanding Issues with Aboriginal Groups), BC Hydro will seek to address outstanding issues by, among other activities, "continuing to seek input and engage in dialogue regarding the EIS and the Project, and to answer questions and address issues, interests, and concerns from Aboriginal groups by identifying appropriate mitigation measures and/or other appropriate means by which to address or resolve potential impacts."</p>
ab_0004-086	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V.3, Table 19.12 ; page(s) 19-96 , line(s) n/a. EISG section 8.5.2.2 Comment # Table81	The First Nations repeat their comments in regard to lack of specificity in relation to mitigation measures.	Please see the response to ab_0004-080.
ab_0004-087	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V.3 s.19.5.1 ; page(s) 19-99 , line(s) 6-16. EISG section 1.3, 15.2.5 Comment # Table82	The EIS states that, after proposed mitigation, Project construction and Project operation would have residual effects on the current use of lands and resources for fishing, however, without justification or explanation, the EIS states that no residual effects would be experienced by DTFN. DTFN requests that the EIS be amended to either state that DTFN will experience residual adverse effects on the current use of lands and resources for fishing or that a transparent justification is provided to explain why no residual adverse effects will be caused to DTFN, despite the findings in the EIS that fishing opportunities for the DTFN will be reduced as a result of the Project.	As described in the baseline information presented in Section 19.3.1.7.4, the information presented in the DTFN TLUS describes fishing taking place on the Peace River east of Manning, Alberta, which is located outside the LAA. No changes to fishing opportunities and practices are anticipated in that area as a result of the Project, and as such neither Project effects nor residual effects would be experienced by DTFN.
ab_0004-088	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V.3 s.19.5.1 ; page(s) 19-99 , line(s) 24-29 . EISG section 15.2.5 Comment # Table83	The EIS states that the Project may cause adverse effects to treaty rights related to berry and plant gathering, however the EIS states that DTFN will experience no residual effects from this adverse effect. There does not appear to be a justification for this analysis. DTFN requests that the EIS be amended to list a residual adverse effect to its treaty right to gather berries and plants, or that the EIS be amended to provide a justification for stating that DTFN will not experience residual adverse effects in this regard.	Section 19.4.6 describes the assessment of the potential effects of the Project on other cultural and traditional uses of the land, including uses such as gathering. As noted on page 19-88, in its TLUS conducted for the Project, Dene Tha' First Nation reported harvesting berries at the junction of Flatrock Creek and the Peace River, downstream from the dam site. As Project construction is not likely to have effects on berries downstream of the dam site, a determination was made that DTFN will not experience residual effects in the use of land to gather berries.
ab_0004-	Athabasca	V.3 s.19.5.3 ;	The EIS states that the residual adverse effects on hunting and trapping	BC Hydro's understanding of treaty rights is set out in Section 34.3.2.1 and the Technical Memo:

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089	Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	page(s) 19-102 , line(s) 11-16. EISG section 15.2.5 Comment # Table84	<p>opportunities and practices would be of a low magnitude for DTFN “as hunting practices of Aboriginal people are adaptable, spatially and temporally, and the affected areas are at the periphery of their current hunting areas, as indicated in traditional use studies.”</p> <p>DTFN comments that this assessment of magnitude is not supported by data summarized in the EIS. While DTFN has provided TLUS data which indicates that its members exercise hunting and trapping rights outside of the Current Use of Lands and Resources for Traditional Purposes LAA, BCH has not conducted an assessment of whether the hunting and trapping rights exercised within the LAA can in fact be transferred to areas outside the LAA. The traditional territory of the DTFN is one that is experiencing a multitude of industrial development projects which strain the DTFN’s ability to exercise treaty rights throughout its traditional territory. In addition, it is part of DTFN’s Treaty rights to exercise those rights at preferred places through preferred means. This is not taken into account in the EIS and, instead, BCH’s assessment is based on an assumption that DTFN members can “go elsewhere” to exercise their rights.</p> <p>The assessment of the magnitude of the adverse effects caused by the Project is unsupportable.</p>	<p>Oral Promises Under Treaty 8. In its assessments in Section 19 and Section 34, BC Hydro has taken into account information on where and how Aboriginal groups exercise their treaty rights, and their preferred means and locations for exercising those rights where that information has been made available to BC Hydro. See also Volume 5, Appendix A, Part 3 where BC Hydro has identified information on Aboriginal groups’ preferred hunting, trapping and fishing practices, if available. The discussion of adaptability of aboriginal land use practices in Section 19 is not based on a theoretical model that predicts the ability of Aboriginal hunters to transfer their practices from affected areas to unaffected areas, but on an analysis of the current land use spatial data and other information provided directly by the Aboriginal groups themselves, as well as other available sources. The issue of travel and access to harvesting locations, and how that has changed over time, is addressed in the Blueberry TLUS at pp. 88-91. BC Hydro recognizes that there are multiple developments in DTFN’s territory and that it, like other Aboriginal groups in the area, is concerned about the cumulative effects of development. The assessment of magnitude is based on current use information provided by DTFN in combination with the results of the assessment on Wildlife Resources in Section 14.</p> <p>Please also see Technical Memo: Cumulative Effects Assessment.</p>
ab_0004-090	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V.3 s.19.5.5 ; page(s) 19-105 , line(s) 23-27 . EISG section 15.2.5, Comment # Table85	<p>The EIS states that residual effects on hunting and trapping opportunities and practices “would be adverse, however, the traditional purpose of the activity would not be undermined” and that “the Project effect on current use of lands and resources for hunting and trapping (non-tenured) is not significant”. DTFN comments as follows:</p> <p>a) It is unclear what is meant by the phrase “the traditional purpose of the activity would not be undermined”. To the extent that there are residual adverse effects on the exercise of hunting and trapping, this undermines the exercise of treaty rights by the DTFN. There does not appear to be a basis to observe that the “traditional purpose of the activity would not be undermined.”</p> <p>b) The observation that the Project effect on hunting and trapping “is not significant” does not appear to be justified in the EIS. The EIS states that the adverse effect may be of “low magnitude” (see table 19.14), however there is no basis to conclude that a non-reversible and long term disturbance in hunting and trapping opportunities is “not significant.”</p>	<p>Current land use activities are formed in part by Treaty 8 rights and the historical nature of aboriginal practice. From these and other sources, current practices acquire their “traditional” character. The phrase “the traditional purpose of the activity would not be undermined” refers to the ability of the Aboriginal group to continue to undertake traditional practices.</p> <p>Characterization criteria for residual effects are described in Table 19.3 page 19-100.</p> <p>The characterization of residual effects on changes to hunting and trapping opportunities and practices in Table 19.14 on page 19-104 should be changed as follows:</p> <p>Duration and Frequency: “Short-term and continuous”, and Reversibility: “reversible” as described in Section 19.5.3 on page 19-102. This update has been added to the List of Errata and Updated Information.</p>
ab_0004-091	Athabasca Chipewyan First Nation,	V.3, s.19.6.2 ; page(s) n/a, line(s) n/a.	The EIS Guidelines require BCH to describe the cumulative effects of the Project in combination with other developments in the assessment area. The First Nations comment that BCH’s proposed Northeast Transmission Line (NETL) has	The screening criteria used to identify other projects and activities for consideration in the cumulative effects assessment is provided in Table 10.5 of the EIS. The Northeast Transmission Line was not included in the project inclusion list because in view of the considerable uncertainty

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	Dene Tha' First Nation and Mikisew Cree First Nation	EISG section 15.2.4 Comment # Table86	not been included in the cumulative effects analysis.	around electricity supply and supply options for the Fort Nelson/Horn River Basin region, the development of a northeast transmission line project is not as foreseeable as the Project. Accordingly, it has not been included in the project inclusion list. Please see the Technical Memo: Cumulative Effects Assessment.
ab_0004-092	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V.5 s.34.3.1 ; page(s) 34-4 , 34-5, 34-7 , line(s) 9-30, 29-34, 20-22 . EISG section 20.2 Comment # Table87	<p>The EIS provides BCH's interpretation of Treaty 8. The First Nations comment that an assessment of the impact of the Project on treaty rights cannot be sufficient where the nature of those treaty rights is misconstrued. The First Nations comment as follows:</p> <p>a) BCH states that Treaty 8 "involved the surrender of land" by First Nations. The First Nations have previously stated that its interpretation of Treaty 8 is that it is a "sharing agreement" with the Crown (see correspondence dated July 26, 2012 from Melody Lepine to CEAA, cc'd to BCH)</p> <p>b) BCH asserts that the "treaty protection of the right to hunt commercially was extinguished" by the NRTA. BCH states that such extinguishment applies throughout the Treaty 8 territory within Alberta. MCFN comments that this interpretation of Treaty 8 and the NRTA ignores the fact that it retains the right hunt, fish and trap commercially, pursuant to a 1986 treaty land entitlement agreement, within certain areas of Wood Buffalo National Park.</p> <p>c) The First Nations do not agree with BCH's interpretation of treaty rights. In any event, they comment that BCH has not incorporated its own understanding of this legal framework into its assessment of whether the Project may cause adverse impacts to the First Nations. Principally, BCH has concluded that the Project's adverse effects on DTFN's treaty rights to hunt will be of "low magnitude" as "hunting practices of Aboriginal people are adaptable, spatially and temporally" (V.5 Appendix A04 Part 4). This reasoning is not justified in the absence of an assessment of whether First Nations, such as DTFN, are actually able to spatially adapt hunting practices if disrupted by Project impacts. It also disregards that Treaty rights includes the right to harvest in preferred places through preferred means.</p> <p>d) While BCH recognizes that treaty rights are not confined to hunting, fishing and trapping rights, and that these rights extend to those activities that are reasonably incidental to the exercise of rights, BCH has failed to carry this recognition through its assessment of the potential impact of the Project on those incidental activities. Impacts to incidental activities are not assessed.</p> <p>e) Finally, on page 34-7 of the EIS, BCH states that it "has endeavoured throughout the EIS to take the First Nation's perspective of the scope of treaty rights into account when assessing and measuring the potential effects of the</p>	<p>Please refer to the Technical Memo: Oral Promises Under Treaty 8 as well as Section 34.3.2.1 of the EIS.</p> <p>While BC Hydro agrees that Treaty 8 confers benefits and obligations on both the Crown and the signatory First Nations, the fact that Treaty 8 involved the surrender of land is not controversial. It has been noted by the Supreme Court of Canada on multiple occasions (see, e.g., Badger, para. 39, Mikisew, para. 2), and the text of Treaty 8 itself states:</p> <p>"AND WHEREAS, the said Commissioners have proceeded to negotiate a treaty with the Cree, Beaver, Chipewyan and other Indians, inhabiting the district hereinafter defined and described, and the same has been agreed upon and concluded by the respective bands at the date mentioned hereunder, the said Indians DO HEREBY CEDE, RELEASE, SURRENDER AND YIELD UP to the Government of the Dominion of Canada, for Her Majesty the Queen and Her Successors forever, all their rights, titles and privileges whatsoever, to the lands included within the following limits, that is to say ..."</p> <p>BC Hydro notes that Wood Buffalo National Park is located outside of the LAA and RAA for the assessment of current use of lands and resources for traditional purposes, including hunting, fishing and trapping.</p> <p>The discussion of adaptability of aboriginal land use practices in Section 19 is not based on a theoretical model that predicts the ability of Aboriginal hunters to transfer their practices from affected areas to unaffected areas, that are unknown or new to them or where they have not harvested before, but on an analysis of the current land use spatial data and other information provided directly by the Aboriginal groups themselves, as well as other available sources.</p> <p>BC Hydro has assessed the potential impacts of the Project on ancillary activities which may be reasonably incidental to the exercise of treaty rights. Please refer to the response to ab_0001-681 which addresses BC Hydro's approach to this issue. BC Hydro does not agree that its consideration of the potential impacts on treaty rights in Section 34 is focused "purely on...biophysical impacts of the Project" without incorporating the perspective of First Nations. BC Hydro's analysis of the potential impacts on treaty rights in Section 34.3.3 was informed by its assessment of the effects of the Project on current use of lands and resources in Section 19. Section 19 considers the potential effects of the Project on cultural and traditional uses of the land, including the following key aspects: cabins and campsites, drinking water, firewood, feather</p>

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			Project.” As will be noted in further comments, the First Nations observe that BCH has not incorporated the First Nations’ perspective on treaty rights – BCH has focused the assessment of the impact to treaty rights purely on an assessment of biophysical impacts of the Project.	<p>gathering, trails and water routes, cultural and spiritual places, collection of food and medicinal plants, and use of and access to culturally important places and valued landscapes. These key aspects were included in response to concerns raised by First Nations. BC Hydro’s assessment of potential impacts on treaty rights in Section 34.3.3 considered the cultural and traditional uses of the land which may be described as “ancillary” to hunting, fishing and trapping practices. In particular, section 34.3.3 identifies potential impacts of the Project on road access and river navigation, as well as the harvesting of berries, wood and medicine, and related mitigation measures.</p> <p>Please also see Technical Memo: Methodology for the Assessment of the Potential Impacts of the Project on the Exercise of Asserted or Established Aboriginal and Treaty Rights.</p>
ab_0004-093	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V.5 s.34.3.3 ; page(s) 34-11, line(s) 15-35 . EISG section 20.3 Comment # Table88	<p>The EIS Guidelines require BCH to identify “past, current and reasonably anticipated future use of lands and resources by Aboriginal groups for traditional purposes that may be adversely affected by the project”. While BCH recognizes that “the right to fish, hunt and trap does not overlap precisely in time and space with the current sue of lands and resources for traditional purposes” it asserts there is a “close linkage” between treaty rights and current uses of land by Aboriginal groups and confines its assessment of Project impacts on treaty rights to impacts on current uses of land.</p> <p>This approach does not comply with the direction in the EIS Guidelines to identify past and reasonably anticipated future uses of land by the First Nations. The EIS is incomplete without a consideration of the past curtailment of the First Nations’ treaty rights and a forward looking assessment of other pressures on the exercise of treaty rights posed by other uses of lands within the territories of the First Nations.</p> <p>Further, a reliance on an assessment of the Project’s impact on current uses of lands and resources for traditional purposes is insufficient to assess the impact of the Project on treaty rights. The Project may impact treaty rights that are not currently being exercised within the LAAs and RAAs described for the VC’s chosen by BCH. The EIS is insufficient in this regard, as impacts to treaty rights are only assessed insofar as impacts to current exercises of treaty rights within the LAA are concerned.</p> <p>Moreover, despite recognizing that the assessment of potential adverse effects to current uses of lands and resources for traditional purposes does not constitute an assessment of the impacts to treaty and aboriginal rights, BCH relies on the findings of section 19 and does not supplement these findings with an analysis of the effects of the project on activities and factors that are</p>	<p>BC Hydro’s assessment of potential effects on the exercise of asserted or established Aboriginal and Treaty rights in Section 34.3.3 has been conducted in accordance with the EIS Guidelines and appropriate information is provided in the EIS.</p> <p>BC Hydro engaged Traditions Consulting who provided reports for each Aboriginal group. The reports, found at Volume 5, Appendix A, Part 3, do “identify past, current and reasonably anticipated future use of lands and resources by [the Aboriginal group] for traditional purposes who may be adversely impacted by the Project within the Current Use of Lands and Resources (Wildlife Resources) and Current Use of Lands and Resources (Fish and Fish Habitat) LAAs and the RAAs”. Traditions Consulting also identified where there was information relating to the exercise of asserted Aboriginal or treaty rights outside the Current Use LAAs and RAAs.</p> <p>Please see the following Technical Memos:</p> <ul style="list-style-type: none"> - Consideration of Historical Context in Assessment of Potential Effects and Impacts on Aboriginal Groups - Cumulative Effects Assessment - Methodology for the Assessment of the Potential Impacts of the Project on the Exercise of Asserted or Established Aboriginal and Treaty Rights <p>BC Hydro has assessed the potential impacts of the Project on ancillary activities which may be reasonably incidental to the exercise of treaty rights. Please see the response to ab_0001-710 which addresses BC Hydro’s approach to this issue.</p> <p>BC Hydro does not agree that its assessment of the potential impacts of the Project on treaty rights was limited to “biophysical elements”. Please see the responses to ab_0001-710 and ab_0004-092.</p>

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			<p>necessarily incidental to the exercise and maintenance of treaty rights. BCH pays lip service to the inclusion of navigational and access elements, as well as other elements such as the ability to exercise rights in preferred locations and the ability to transmit culture, however, there is no assessment of the potential impacts of the Project on these factors.</p> <p>Notably, the assessment of the impacts to treaty rights of DTFN is confined to two paragraphs, both consisting exclusively of references to section 19. BCH does not provide an assessment or analysis of the effect of the Project on anything except biophysical elements, such as the availability of hunting and fishing opportunities.</p> <p>Additionally, the EIS is not explicit about what criteria and thresholds are being used to assess impacts to treaty rights. Without these it is not possible to determine how the EIS is assessing the nature, degree or scope of potential impacts arising from the Project on treaty rights.</p>	
ab_0004-094	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V.5 s.34.3.3 ; page(s) 34-11 to 34-12 , line(s) 37-41, 1-19 . EISG section 20.3 Comment # Table89	<p>BCH concludes that 11 of the 21 First Nations required to be consulted by the EIS Guidelines will face “no impacts on the exercise of treaty rights” as a result of the Project. This includes ACFN and MCFN. BCH bases this assessment on its conclusion, from Vol. 3, Section 19 on the Current Use of Lands and Resources for Traditional Purposes, that the Project is “not expected to have an effect on the current use of lands and resources for traditional purposes ... because there are no predicted interactions between Project activities and the use areas of these groups” and “[c]onsequently, the Project is not expected to have an impact on the exercise of the treaty rights of these First Nations.” MCFN and ACFN comment as follows:</p> <p>a) This portion of the EIS does not satisfy the EIS Guidelines requirement that BCH identify “past, current and reasonably anticipated future use of lands and resources by Aboriginal groups for traditional purposes that may be adversely affected by the project”. BCH has based its conclusion on an analysis of the current use of lands alone. A finding that the Project will not have an impact on current uses of lands by the First Nations, even if supportable, does not support a conclusion that the exercise of treaty rights will not be adversely impacted as reasonably anticipated future uses of land may be adversely effected.</p> <p>b) BCH states that “should additional information regarding current and reasonably anticipated future use of lands and resources within the LAA be received from the First Nations listed above, BCH will incorporate it into the EIS.” However, BCH is required to assess past, current and reasonably anticipated future uses of land that may be affected by the Project, and this has</p>	<p>BC Hydro’s assessment in Section 34.3.3 meets the requirements of the EIS Guidelines. Please see BC Hydro’s response to the ab_0004-093. The LAAs and RAAs were scoped based on effects to lands and resources.</p> <p>Please also see the following Technical Memos:</p> <ul style="list-style-type: none"> - Spatial Boundary Selection - Peace Athabasca Delta - Methodology for the Assessment of the Potential Impacts of the Project on the Exercise of Asserted or Established Aboriginal and Treaty Rights

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			not occurred in relation to ACFN and MCFN. This statement does not comply with the EIS Guidelines, s.20.3, particularly given that BCH has scoped the various LAAs to exclude any of the traditional territories of ACFN, and MCFN.	
ab_0004-095	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V.5 s.34.3.3 ; page(s) 34-14 , line(s) 4-7. EISG section 20.2, 20.3, 20.5 Comment # Table90	<p>BCH states that “no impact on the DTFN’s treaty right to fish is expected” from the Project. DTFN makes the following comments in this regard:</p> <p>a) BCH states that DTFN’s treaty right to fish “applies throughout the Treaty 8 territory.” This is irrelevant to an assessment of the Project’s impact on DTFN’s treaty rights. The ability of DTFN to exercise treaty right to fish outside the LAA has not been assessed by BCH, and in any event, is a fact that only speaks to degree of impacts, rather than to the assessment of impacts within the LAA. Moreover, this finding ignores elements that are incidental to the exercise of treaty rights by DTFN, such as the right to exercise traditional uses of land in preferred locations and cultural impacts of not being able to use those areas. The EIS contains no analysis of the impact of the Project on DTFN members to exercise rights in preferred locations.</p> <p>b) BCH has not conducted an assessment of the ability of DTFN to exercise its treaty rights to fish outside of areas where there will be Project impacts and therefore cannot rely on DTFN’s supposed ability to exercise its rights elsewhere within the Treaty 8 territory.</p> <p>c) BCH observes that the Project “is not expected to affect DTFN’s current use of lands and resources for fishing for traditional purposes”. This analysis is insufficient to satisfy the EIS Guideline requirement that BCH assess potential adverse impacts of the project on DTFN’s treaty rights. BCH, in the EIS, has identified a number of ways that fish will be impacted from by the Project, yet provides no explanation as to why these impacts are not expected to result in impacts to fishing. This assessment must be bolstered with transparent references to the evidence to satisfy the EIS Guidelines.</p> <p>d) Further, as noted above, BCH’s reliance on assessments of current use is insufficient to satisfy the EIS Guidelines, or to properly assess potential adverse effects to treaty rights.</p> <p>e) The language used by BCH in this section is imprecise and is not useful in determining the potential for adverse impacts to treaty rights. The use of the word “expected” is imprecise, as an impact may have the potential to occur even if the likelihood of that impact occurring is such that one would not “expect” it to occur. The First Nations request that this language be amended in this section, and throughout the EIS, where an assessment relates to an impact on Aboriginal or Treaty rights is addressed. The EIS should determine whether there is a potential for an adverse impact and the likelihood of that impact</p>	<p>As described in the baseline information presented in Section 19.3.1.7.4, the information presented in the DTFN TLUS describes fishing taking place on the Peace River east of Manning, Alberta, which is located outside the LAA. No changes to fishing opportunities and practices as a result of the Project are anticipated in that area, and as such neither Project effects nor residual effects would be experienced by DTFN.</p> <p>The discussion of adaptability of aboriginal land use practices in Section 19 is not based on a theoretical model that predicts the ability of Aboriginal hunters to transfer their practices from affected areas to unaffected areas, that are unknown or new to them or where they have not harvested before, but on an analysis of the current land use spatial data and other information provided directly by the Aboriginal groups themselves, as well as other available sources.</p> <p>The effects assessment in Section 19 is not derived from the identification of specific other fishing, hunting and trapping sites by BC Hydro or its consultants. The assessment drew on information obtained from Aboriginal groups themselves with respect to areas where they currently hunt, fish and trap.</p> <p>Please also see Technical Memo: Methodology for Assessment of the Potential Impacts of the Project on the Exercise of Asserted or Established Aboriginal and Treaty Rights.</p>

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			<p>occurring. For more discussion on this point, please refer to s.3.5 of the Review of Hydrologic & Geomorphic Downstream Impacts of Site C prepared by Dr. Carver.</p> <p>f) Finally, DTFN notes, with concern, that the assessment of the impacts of the Project on Duncan’s First Nation differs markedly from the analysis of the effect on DTFN. DTFN exercises rights within similar areas to Duncan’s, yet the EIS contains much more analysis in regard to these effects, and accords little analysis to the impacts on DTFN. BCH must justify this differential treatment.</p>	
ab_0004-096	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V.5 s.34.3.3 ; page(s) 34-14 , line(s) 9-11. EISG section n/a Comment # Table91	<p>The EIS states that the Project “would reduce the ability of DTFN to hunt and trap in the wildlife resources (Section 19 Current Use of Lands and Resources for Traditional Purposes).”</p> <p>This sentence appears to be incomplete and should describe the area and extent of the reduced ability to exercise treaty rights (e.g. the “wildlife resources LAA”).</p>	This update has been added to the List of Errata and Updated Information.
ab_0004-097	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V.5 s.34.3.3 ; page(s) 34-14 , line(s) 9-11. EISG section 20.3 Comment # Table92	<p>Assuming that the EIS intends to state that DTFN’s treaty rights to hunt and trap will be reduced within the “wildlife resources LAA”, DTFN comments that the EIS Guidelines requires that BCH identify treaty rights that might be adversely impacted and assess the potential adverse impacts on those treaty rights. DTFN has provided TLU data to BCH which contains information on the exercise of DTFN’s treaty rights to hunt and trap within the Project area, including maps and data depicting the location of the exercise of these treaty rights.</p> <p>In order to assess the seriousness of the reduction of treaty rights to hunt and trap, BCH should identify the scope of this reduction and the sites which will be impacted by the Project, rather than making general observations in regard to reduced abilities to hunt and trap. Without this data, the nature, degree and scope of the potential impact to DTFN’s rights cannot be assessed.</p>	<p>The assessment in Section 34 (Asserted or Established Aboriginal and Treaty Rights, Aboriginal Interests, and Information Requirements) is based on assessment carried out in Section 19 (Current Use of Lands and Resources for Traditional Purposes). The criteria used to assess the residual effects on Current Use of Lands and Resources for Traditional Purposes is described Volume 3, Table 19.13. The conclusions with respect to fishing are described on page 19-101 and with respect to hunting and trapping are described on page 19-102. BC Hydro’s understanding of DTFN’s treaty rights are described in Volume 5, Appendix A04.</p> <p>Please refer to Technical Memo: Methodology for the Assessment of the Potential Impacts of the Project on the Exercise of Asserted or Established Aboriginal and Treaty Rights.</p>
ab_0004-098	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew	V.5 s.34.3.3 ; page(s) 34-14 , line(s) 9-18. EISG section 1.3, 20.3 Comment #	<p>The EIS states that the DTFN will have reduced ability to exercise treaty rights to hunt and trap because of the Project, but that this impact would be “temporary”.</p> <p>In order to adequately assess the magnitude of the adverse effects to treaty rights, as required by the EIS Guidelines, BCH must provide an adequate level of detail in its assessment of potential adverse effects. The reference to</p>	<p>"Temporary" is intended to refer to the duration of the residual effect, as defined in Table 19.13, and includes short-, medium-, and long-term.</p> <p>The results of the effects assessment in Section 19.4 were drawn into BC Hydro’s assessment of the potential impacts of the Project on DTFN’s exercise of Treaty rights (Section 34.3.3). Relying on the specific findings made in Section 19.4, BC Hydro undertook an individual inquiry into the effects of the Project on the rights of each Aboriginal group.</p>

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	Cree First Nation	Table93	“temporary” is overly vague. The EIS is deficient without clarity as to the temporal scope of the impacts of the Project.	<p>Section 19.4 provides a detailed assessment of effects. Section 19.5 characterizes the residual effects of the Project, based on criteria defined in Table 19.13 on page 19-100.</p> <p>Please see the Technical Memo: Methodology for the Assessment of the Potential Impacts of the Project on the Exercise of Asserted or Established Aboriginal and Treaty Rights.</p>
ab_0004-099	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V.5 s.34.3.3 ; page(s) 34-14 , line(s) 9-18. EISG section 20.3 Comment # Table94	<p>The EIS states that the DTFN will have reduced ability to exercise treaty rights to hunt and trap because of the Project, but suggests that this impact is lessened as “other areas available to DTFN both within the LAA and within the wider Treaty 8 territory ... will not be affected by the Project.”</p> <p>While DTFN may have a legal right to exercise treaty rights to hunt and trap throughout the Treaty 8 territory, the right to decide where to exercise treaty rights is an inherent part of the those rights. Further, the Supreme Court of Canada has rejected the argument that the question of whether a First Nation retains a “meaningful right to hunt” despite impacts of proposed project, is not ascertained on a treaty wide basis, but with reference to the First Nation’s traditional territory. BCH has recognized this in s.34.3.2.1 of the EIS, and this principle should be applied throughout the EIS.</p> <p>Further, this conclusion is contrary to Appendix A04 Part 3, where the Aboriginal Land and Resource Use Summary prepared for BCH on the DTFN states, at page 4, that “in the past, DTFN would hunt and trap in their traditional territory close to their communities and within the registered trapline territories” but that “increased industrial activity (oil, gas and forestry developments) in the region around their communities in northwestern Alberta has forced DTFN hunters to range further afield in search of game, including to the farthest areas of their traditional territory and beyond in order to obtain enough game for food.”</p> <p>BCH has failed to take into account this assessment. BCH has not conducted an assessment of to what extent it is possible for DTFN members to exercise treaty rights outside of the wildlife resources LAA. This assessment is required to determine the nature, degree and scope of the Project’s potential impact on DTFN’s treaty rights to hunt and trap.</p>	The TLUS provided by DTFN, and other publicly available information, indicates that DTFN members actively hunt or have hunted throughout their traditional territory. Information relating to the exercise of Treaty rights by DTFN outside the Current Use of Lands and Resources (Wildlife Resources) and Current Use of Lands and Resources (Fish and Fish Habitat) LAAs and RAAs that is provided in the TLUS can be found in the Aboriginal Land and Resource Use Summary prepared by Traditions Consulting Services at Volume 5, Appendix 04, Part 3.
ab_0004-100	Athabasca Chipewyan First Nation, Dene Tha' First Nation	V.5 s.34.4, Table 34.2 ; page(s) 34-19 to 34-20 , line(s) n/a.	The EIS Guidelines require BCH to “describe the measures identified to mitigate/accommodate the potential adverse impacts of the project ... on the asserted or established aboriginal rights and treaty rights.” The EIS Guidelines state that accommodation measures are to be written as specific commitments that clearly describe how the Proponent intends to implement them.	Please see response to ab_0004-080.

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	and Mikisew Cree First Nation	EISG section 20.4 Comment # Table95	<p>Section 34.4 and Table 34.2 purports to outline “Mitigation measures for Potential Adverse Impacts on the Exercise of Treaty Rights.” Many of the measures listed here do not comply with the EIS Guideline requirements of specificity and clarity. Instead, most of these measures are commitments to “seek input from Aboriginal groups” or to “continue to consult with Aboriginal groups” on plans and protocols. Other measures are described as items that may be developed in the future, such as the development of a communications program. The effectiveness of such programs cannot be measured without specific commitments being made by BCH.</p> <p>While consultation with First Nations will be required in designing and implementing mitigation measures, such consultation does not itself mitigate the adverse effects identified in the EIS. The First Nations request that BCH make firm commitments to specific mitigations, particularly in relation to the development of measures to accommodate the First Nations for the adverse impacts of the Project and to continue to monitor the effects of the Project.</p> <p>Without providing firm and specific commitments for mitigation, the EIS is not in compliance with the EIS Guidelines, and the analysis of the residual effects of the Project is not reliable because the efficacy of the proposed mitigation cannot be assessed.</p>	
ab_0004-101	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V.5 s.34.4.2 ; page(s) 34-20 , line(s) n/a. EISG section 20.4 Comment # Table96	<p>The EIS Guidelines require BCH to describe “Specific suggestions raised by Aboriginal groups for measures to avoid, reduce or otherwise mitigate the potential adverse impacts of the project.” The EIS lists certain suggestions made by other Aboriginal groups, but fails to mention suggestions made by the First Nations. Specifically, DTFN, MCFN and ACFN have filed a report (Dr. Martin Carver, Review of Hydrologic & Geomorphic Downstream Impacts of Site C, December 2012) which suggests that BCH explore mitigation strategies that involve making changes to the operating regime of the Project and other hydroelectric facilities operated on the Peace River by BCH to mitigate the downstream impacts of the Project, including the PAD (see recommendation #5 from Dr. Martin Carver, Review of Hydrologic & Geomorphic Downstream Impacts of Site C, December 2012 at page 35/6)</p> <p>The First Nations request that the EIS be amended to include a description and assessment of whether Site C could be operated in a manner that would ameliorate changes caused to the water regime in the Peace-Athabasca Delta from the regulation of the Peace River.</p>	<p>Restoring the natural flow regime is neither proposed as a component of the Project, nor proposed as mitigation for the Project.</p> <p>Please see the following Technical Memos:</p> <ul style="list-style-type: none"> - Peace Athabasca Delta - Spatial Boundary Selection

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ab_0004-102	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V.5 s.34.4.4 ; page(s) n/a, line(s) n/a. EISG section 1.3 Comment # Table97	The EIS states that BCH may enter IBAs with First Nations and that it has entered into initial discussions with Aboriginal groups. DTFN notes that, despite findings in the EIS of adverse impacts to its treaty and traditional rights, it has not been invited to enter IBA discussions. This point should be clarified in the EIS.	<p>As indicated in Section 34.7.1, in early March 2012, BC Hydro secured a mandate to enter into impact benefit agreement (IBA) negotiations with First Nations that, in BC Hydro's view, are likely to be adversely affected or impacted by the Project and where BC Hydro considers that accommodation beyond the mitigations listed in the EIS is warranted. As described in Volume 5, Appendix A04, Part 4, "(t)he assessment of the potential effects of the Project on the traditional activity of hunting demonstrates that the Project may impact the exercise of treaty rights by the Dene Tha' First Nation in the LAA. Dene Tha' First Nation members will, however, continue to have the opportunity to exercise their right to hunt within the LAA, within their traditional territory, and within the wider Treaty 8 territory". This section also indicates that "(f)ollowing the methods explained in Section 10 EA Methodology, a cumulative effects assessment was carried out to identify any cumulative interaction between potential residual effects of projects and activities located in the Current Use of Lands and Resources Regional Assessment Area (RAA) with the residual effects of the Project identified above. As a result of that assessment, BC Hydro has determined the Project is unlikely to result in a cumulative effect on the current use of lands and resources for traditional purposes" by the DTFN.</p> <p>BC Hydro is prepared to discuss the implications of the assessment findings with Dene Tha' First Nation.</p>
ab_0004-103	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V.5 s.34.5 ; page(s) 34-22 , line(s) 38-41 . EISG section 20.5 Comment # Table98	<p>The EIS Guidelines require that BCH describe the potential adverse impacts on treaty rights that have not been mitigated/accommodated as part of the environmental assessment and associated consultations with Aboriginal groups including the "potential adverse impacts" on treaty rights "that may result from the residual and cumulative environmental effects."</p> <p>The EIS states that "BCH anticipates that after these mitigation and accommodation measures are applied, adverse impacts to Treaty 8 rights would be mitigated or accommodated" and that "no other potential adverse impacts on asserted or established aboriginal and treaty rights have been identified."</p> <p>In light of the First Nations' previous comments on the insufficiency of the EIS's assessment of the potential adverse effects on Treaty rights arising from the Project, this conclusion should be modified, as no mitigation or accommodation measures have been identified in relation to downstream effects on ACFN and MCFN.</p> <p>Further, in relation to the assessment of potential effects on DTFN's treaty rights to fish, trap, hunt and exercise other land based rights, DTFN comments that this section of the EIS appears to contradict earlier observations in the EIS that the Project will cause residual adverse effects to DTFN's hunting and</p>	<p>The assessment carried out with respect to current use of lands and resources for traditional purposes, in Section 19, found that the Project is not expected to have an effect on 17 of the 29 Aboriginal groups, including ACFN and MCFN. The methodology for the assessment on the potential impacts of the Project on the exercise of treaty rights considered the findings of s. 19, no finding of impact on the exercise of treaty rights was found for these two groups. As noted in the EIS, should additional information regarding current and reasonably anticipated future use of lands and resources within the LAA be received from ACFN, MCFN or other Aboriginal groups, BC Hydro will consider that information.</p> <p>BC Hydro is prepared to discuss the implications of the assessment findings with Dene Tha' First Nation.</p> <p>With respect to the comment regarding mitigations, please see the response to ab_0004-080.</p> <p>Please see the Technical Memo: Methodology for the Assessment of the Potential Impacts of the Project on the Exercise of Asserted or Established Aboriginal and Treaty Rights.</p>

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			<p>trapping rights. While BCH has determined that such effects are not “significant” within the context of this environmental assessment, it is inconsistent to state that all potentially adverse effects to DTFN have been mitigated or accommodated.</p> <p>Finally, this section of the EIS attempts to bring forward all previously identified mitigation measures without any analysis as to the relevance of those mitigation measures to mitigate adverse effects on treaty rights. In fact, a number of the mitigation measures contained within these sections may be detrimental to the exercise of treaty rights. The EIS is insufficient without a particularization and justification for the application of mitigation measures to address adverse effects to treaty rights.</p>	
ab_0004-104	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V.5, s.37 ; page(s) n/a, line(s) n/a. EISG section 23, 20 Comment # Table99	<p>The EIS Guidelines require BCH to include an assessment of potential accidents during construction and operation, as well as seismic, flooding and other circumstances that may cause an accident or malfunction.</p> <p>The First Nations note that the EIS does not contain an analysis of the effect of accidents or malfunction scenarios on VCs related to aboriginal and treaty rights or the current use of lands and resources for traditional purposes. This is troubling, as certain of the accident scenarios predict significant changes to the downstream environment, including the possible destruction of oil and gas pipelines and significant erosion, destruction of vegetation and destruction of habitat for wildlife.</p> <p>In order to assess the potential impacts of the Project on the First Nations, BCH must include the assessment of the effects of potential accidents, malfunctions and flooding on First Nations.</p>	<p>Section 37.1 describes local conditions and natural hazards, such as severe or extreme weather conditions and external events that could adversely affect the Project and describes the measures to avoid or minimize those potential effects.</p> <p>As described in Section 37.1 the dam, generating station and spillways would meet or exceed the performance requirements for the earthquake design ground motions which have an annual exceedance frequency of 1/10,000. Similarly, the dam can safely pass the probable maximum flood which has an annual exceedance frequency of less than 1/10,000.</p> <p>Section 37.2.5 summarizes the effects of accidents and malfunctions on valued components and acknowledges that some of the accidents and malfunctions would adversely affect the current use of lands and resources for traditional purposes due to the adverse effects on fish, wildlife, and vegetation.</p> <p>A detailed environmental assessment of such accidents and malfunctions is not required due to the low likelihood of the events.</p> <p>Please see the Technical Memo: Dam Safety.</p>
ab_0004-105	Athabasca Chipewyan First Nation, Dene Tha' First Nation and Mikisew Cree First Nation	V.5, Appendix A ; page(s) n/a, line(s) n/a. EISG section n/a Comment # Table100	The First Nations do not agree with the content of the Appendices related to each First Nation and expect BCH to consult with each First Nation to address the concerns in these documents before finalizing the EIS.	Please see the response to ab_0004-004.
ab_0005-	Fort	Vol. 5, App.	There is a map presented on this page, entitled ‘Fort Chipewyan Métis Use and	Thank you for providing your input during the public comment period for the Environmental

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001	Chipewyan Métis (Local 125)	A08, Part 1; page(s) Page 2 of 2, line(s) n/a. EISG section Comment # 1	<p>Occupancy Map'. This map delineates a notational boundary for harvesting deemed appropriate by the Alberta government in their June 2010 Metis Harvesting Policy, and, as stated in the materials provided to BC Hydro with the map (letter dated October 28th, 2012), cannot be considered "a true representation of the extent of our territory" (pg.2). In fact, FCM would ask that this map not be used at all as it does not denote their understanding of their 'territory'. (A map with corrected subtitles in the legend will be provided BC Hydro by FCM to ensure accuracy.)</p> <p>As additional background, the FCM have never had the means with which to conduct a comprehensive use and occupancy study (a set of focused, historic maps were completed in 2012), nor have they had support to compile information on their current use in Wood Buffalo National Park (WBNP), where they hold over 22 registered trapping areas (RTAs).</p>	<p>Impact Statement (EIS) for the Site C Clean Energy Project.</p> <p>The October 28, 2012 letter from Fort Chipewyan Metis conveying the identified map noted that "we have attached a map indicating a 'deemed traditional territory' that the Alberta government conceived via its June 2010 Métis Harvesting Policy." At a meeting with Fort Chipewyan Metis on November 20, 2012, BC Hydro was provided with a hard copy of the same map in response to BC Hydro's request for a map of Fort Chipewyan Metis' traditional territory. However, in response to the comment, BC Hydro will remove the map from Volume 5 Appendix A08.1. This update has been added to the List of Errata and Updated Information.</p> <p>With respect to the comment regarding capacity for providing information on Fort Chipewyan Metis' current use of lands and resources, BC Hydro has offered to provide funding to support Fort Chipewyan Metis' participation in the consultation process, including funds to support provision of information regarding current use. To date, no agreement has been reached on this offer of funding.</p>
ab_0005-002	Fort Chipewyan Métis (Local 125)	Vol. 5, App A08, Part 2; page(s) Page 10 of 11, line(s) n/a. EISG section Comment # 2	See Comment #1.	Please see the response to ab_0005-001.
ab_0005-003	Fort Chipewyan Métis (Local 125)	Vol. 5, App. A08, Part 3; page(s) Page 1 of 5, line(s) n/a. EISG section Comment # 3	<p>Statement in text which reads, "In 2008, the Fort Chipewyan Métis established a Study Area for a TLUS that is the same as a proposed Métis Harvesting Area (Figure 1)." This statement is footnoted with the following: "Fraser, Fred. President of the Fort Chipewyan Métis Local 125 (2012). Fort Chipewyan Métis Statements of Concern, Re: Jackpine Mine Expansion and Pierre River Mine. Letter with enclosures to CEAA, December 11, 2012."</p> <p>We have no record of such correspondence with these dates, nor does the CEAA website. We did file a SoC on the Shell projects, but that correspondence dates from August 2012. This SoC, along with its enclosures, contains much the same information as that provided to BC Hydro in our October 28th, 2012 letter. Nowhere in this correspondence is the statement quoted above made. We consider this statement to be inaccurate and question its genesis and origin. Also, the statement itself is unclear. What does the 'Study Area for a TLUS' refer to exactly, and how is this related to a 'proposed Fort Chipewyan Métis Harvesting Area'? Neither area is defined or described.</p>	<p>The letter referred to in the Aboriginal Land and Resource Use Summary for Fort Chipewyan Metis should have been identified as a letter dated August 11, 2012. This update has been added to the List of Errata and Updated Information. BC Hydro understands that the Study Area for a TLUS funded by Shell in 2009 is the same as a Fort Chipewyan Metis Harvesting Area proposed by the province of Alberta.</p> <p>With respect to the map included in the EIS, please see the response to ab_0005-001.</p>

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			In addition, and related to Comment #1 - reference to Figure 1 and information regarding what the figure represents is inaccurate. This is not a map of Fort Chipewyan Métis traditional territory.	
ab_0005-004	Fort Chipewyan Métis (Local 125)	Vol. 5, App. A08, Part 3; page(s) Page 1 of 5, Page 2 of 5, line(s) n/a. EISG section Comment # 4	<p>Comment applies to both Question #1 and #2. FCM restates its objection to study area boundaries. Travel and access are critical components of successful harvesting. If navigation is affected, so too is harvesting. In this case, study areas relating to harvesting are more appropriately represented by those in surface water hydrology sections, which extend to Peace Point, AB. (FCM registered its objection to these boundaries in May 28th, 2012 letter).</p> <p>FCM members hold over 22 RTAs in WBNP, and thus potential project effects throughout WBNP and the Peace-Athabasca Delta (PAD) are of concern. The AB government's deemed territory for FCM extends upstream of Garden River, which is upstream of Peace Point, indicating that Alberta recognizes potential use by FCM peoples along these stretches of the river. It is FCM's opinion that the selection of spatial study areas for harvesting are not culturally appropriate, nor do they represent a true understanding of the relationship between harvesting and navigation.</p> <p>No capacity for compiling information on FCM's 'current use' was provided by BC Hydro, nor does FCM have any capacity to do so on its own behalf. FCM ownership of over 22 RTAs in WBNP should provide a very good indication of the fact that there is indeed 'current use' by FCM members.</p> <p>This fact should be reflected in the EIS; it would be a more appropriate reflection of the facts than the statement that, "No specific information was identified that described or documented current use by the Fort Chipewyan Métis of lands and resources within the Current Use of Lands and Resources (Wildlife Resources) and Current Use of Lands and Resources (Fish and Fish Habitat) LAA or RAA for other traditional activities", study areas which we have already identified as flawed.</p>	<p>With respect to the comment regarding capacity for providing information on Fort Chipewyan Métis' current use of lands and resources, BC Hydro has offered to provide funding to support Fort Chipewyan Métis' participation in the consultation process, including funds to support provision of information regarding current use. To date, no agreement has been reached on this offer of funding.</p> <p>Based on the assessment in Section 19.4, the Project is not expected to have an effect on the current use of or access to lands and resources for traditional purposes for Fort Chipewyan Métis. Should additional information regarding current and reasonably anticipated future use of lands and resources within the LAA be received from Fort Chipewyan Métis, BC Hydro will consider that information.</p> <p>Please see the following Technical Memos:</p> <ul style="list-style-type: none"> - Spatial Boundary Selection - Peace Athabasca Delta
ab_0005-005	Fort Chipewyan Métis (Local 125)	Vol. 5, App. A08, Part 3; page(s) Page 2 of 5, line(s) n/a. EISG section S. 20, page 85,	Comment on Question #3. FCM does not understand the use of the terms 'asserted' and 'assert' in this question and answer. The EIA guidelines clearly state that the proponent shall provide their understanding of 'constitutionally-recognized' Aboriginal rights. FCM is a Métis community with constitutionally-protected rights under the Canadian Constitution (s.35). In addition, FCM has provided the proponent with Alberta's position paper on Métis Harvesting (cf. Vol.5, App. A08, Part 3, Pages 10 and 11 of 11) in November 2012 in which	<p>BC Hydro notes at Section 34.3.2.3, page 34-10, lines 39-41 that the Province of Alberta recognized FCM as an historic and contemporary Métis community.</p> <p>Whether FCM's Aboriginal rights are asserted or established does not affect BC Hydro's assessment under Section 34 as BC Hydro found the Project is not expected to have an impact on any Métis harvesting rights FCM may hold (Section 34, page 34-18, lines 14-16).</p>

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		line 10 Comment # 5	FCM's status as "both a historic and contemporary rights-bearing community" and their harvesting rights are recognized. What is there to assert? These rights are established and affirmed in both law and policy, and the text describing FCM in these sections need to reflect that.	
ab_0005-006	Fort Chipewyan Métis (Local 125)	Vol. 5, App. A08, Part 3; page(s) Pages 2 and 3, line(s) n/a. EISG section Comment # 6	Comment on Question #4. FCM's objections to perception that potential effects to their harvesting are 'distant' or that their 'current use' was not identified are described in Comment #4 above.	<p>BC Hydro has reviewed this suggestion and will leave the wording in this section unchanged.</p> <p>The conclusions made in Volume 5, Appendix A08, part 3, were based on the information available to BC Hydro at the time of the EIS submission. "In preparing responses to these questions, information on the Fort Chipewyan Nation Métis Local 125 and on current and past use of lands and resources by Fort Chipewyan Métis Local 125 was obtained from on-line research. BC Hydro did not enter into a Traditional Land Use Study agreement with the Fort Chipewyan Métis, and no traditional land use information was made available by the Fort Chipewyan Métis for consideration in this review."</p> <p>Consultation is ongoing between BC Hydro and the Fort Chipewyan Metis Local 125, and may yield additional information on current and reasonably anticipated future use of lands and resources that may potentially be affected by the Project. Should additional information regarding current and reasonably anticipated future use of lands and resources within the LAA be received from Fort Chipewyan Metis, BC Hydro will consider that information.</p> <p>With respect to Comment #4, please see the response to ab_0005-004.</p>
ab_0005-007	Fort Chipewyan Métis (Local 125)	Vol. 5, App. A08, Part 3; page(s) Page 3 of 5, line(s) n/a. EISG section Comment # 7	<p>Comment on Question #5. See also Comment #5 above regarding use of term 'asserted'.</p> <p>The text should reflect FCM's lack of capacity and limited ability to provide information.</p> <p>The information regarding Shell's funding and a 'TLUS' study is erroneous and misleading. Shell's helped support some historic use and occupancy research, but this study was very limited due to an overall lack of funding. Maps that were produced are available to the proponent and demonstrate FCM use upstream of Peace Point. FCM offered to share these maps with BC Hydro during their November 2012 meeting/conference call, contingent on funding support to create maps appropriate for public distribution and relevant to the project. (FCM and BC Hydro are discussing such support.)</p> <p>Errors in last statement and footnote of last paragraph are addressed in Comment #3.</p>	<p>The correspondence cited in the Aboriginal Land and Resource Use Summary for Fort Chipewyan Metis describes a Traditional Land Use Study that was funded by Shell.</p> <p>Please see the response provided for ab_0005-005 in regard to the use of the term 'asserted'.</p> <p>Please refer to the response provided for ab_0005-004 in regard to Fort Chipewyan Metis's comment that there was "lack of capacity and limited ability to provide information" and the footnote reference.</p>
ab_0005-008	Fort Chipewyan	Vol. 5, App. A08, Part 3;	Figure and title inaccurate and misleading. Should either be removed or replaced. See also Comment #1.	Please see the response to ab_0005-001.

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	Métis (Local 125)	page(s) Page 4 or 5, line(s) n/a. EISG section Comment # 8		
ab_0005-009	Fort Chipewyan Métis (Local 125)	Vol. 5, App. A08, Part 4; page(s) Page 2 of 3, line(s) n/a. EISG section Comment # 9	FCM does not understand how the proponent can make the assertion that the project will have ‘no adverse effects’ on FCM’s use or rights, when it does not even seem to understand those rights, nor when FCM itself has not had the ability to formally and fully understand its use in relation to the project. The most that proponent can state is that they do not have enough information to understand potential project effects. This comment equally applies to similar statements made by proponent in Vol. 5, S. 34, page 34-18, lines 7-16.	BC Hydro has reviewed this suggestion and will leave the wording in this section unchanged. Should additional information regarding current and reasonably anticipated future use of lands and resources within the LAA be received from Fort Chipewyan Metis, BC Hydro will consider that information. Please see the Technical Memo: the Peace Athabasca Delta.
ab_0005-010	Fort Chipewyan Métis (Local 125)	Vol. 3, S. 19; page(s) 19-6, line(s) n/a. EISG section Comment # 10	Last key issue listed includes Fort Chipewyan Métis (FCM). The approach to addressing this concern cannot include FCM for reasons stated in Comments #4 and #7.	Please also see response to ab_0005-004 and ab_0005-007
ab_0005-011	Fort Chipewyan Métis (Local 125)	Vol. 3, S. 19.3.1.22; page(s) 19-61, line(s) 36. EISG section Comment # 11	Use of word 'assert'; see Comment 5.	Please see the response to ab_0005-005.
ab_0005-012	Fort Chipewyan Métis (Local 125)	Vol. 3, S. 19.3.1.22; page(s) 19-62, line(s) 8-10. EISG section Comment # 12	This statement resembles almost word-for-word footnote and citation that is used repeatedly in Vol. 5, App. A08, Part 1. (See Comment #3 for full description.) The origin and content of this comment are questionable. The same statement appears to be attributed to two different sources. FCM suggests that the proponent provide both these references (notes in case of pers. comm.) so that they can be verified and/or clarified.	Please see response to ab_0005-003.
ab_0005-013	Fort Chipewyan Métis (Local 125)	Vol. 1, S. 9, App. H; page(s) 7, line(s) Last line in table.	FCM does not feel that proponent’s response addresses their concern or point raised. Alternatives to the proponent’s response and contradictory conclusions were presented at the Working Group meeting in Fort St. John (Feb. 2013) that more closely reflect FCM’s concerns.	BC Hydro has reviewed this suggestion and will leave the wording in this section unchanged. Please also see the Technical Memo: Demand-side Management.

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		EISG section Comment # 13		
ab_0005-014	Fort Chipewyan Métis (Local 125)	Vol. 1, S. 9, App. H; page(s) 17, 21, 25, 55, line(s) n/a. EISG section Comment # 14	FCM has no capacity to review technical results and conclusions of proponent.	BC Hydro has offered to provide funding to support Fort Chipewyan Metis' participation in the consultation process, including funds to support provision of information regarding current use. To date, no agreement has been reached on this offer of funding.
ab_0005-015	Fort Chipewyan Métis (Local 125)	Vol. 1, S. 9, App. H; page(s) 56, 59, line(s) n/a. EISG section Comment # 15	The approach to addressing this concern cannot include FCM for reasons stated in Comments #4 and #7.	The purpose of the Aboriginal Issues, Concerns and Interests Tracking Table in Volume 1 Appendix H is to summarize issues, concerns and interests that have been raised by Aboriginal groups since consultation on the Project was initiated in 2007. The issues noted on page 56 and 59 were identified by Fort Chipewyan Metis, and the table presents BC Hydro's response or consideration of the issue. As such, inclusion of Fort Chipewyan Metis is appropriate.
ab_0006-001	Saulteau First Nations	Section 12.1; page(s) 12-1, line(s) 12. EISG section n/a Comment # 1	EIS states that 'BC Hydro has considered information from the Traditional Land Use Studies (TLUS) provided by Aboriginal groups.' <i>What Specific information has BC Hydro considered with regard to Saulteau Fish use studies (TLUS)? It appears that only species and location are documented in the EIS?</i>	Thank you for providing your input during the public comment period for the Environmental Impact Statement (EIS) for the Site C Clean Energy Project. Please see Section 12 Fish and Fish Habitat, Section 12.3.1, for information obtained from the Saulteau TLUS. This information was also taken into account in the assessment of Current Use of Lands and Resources for Traditional Purposes (Section 19). In regard to the Fish and Fish Habitat effects assessment, the key information in the TLUS was fish species and location to confirm all fish species and habitat areas were identified.
ab_0006-002	Saulteau First Nations	Section 12.4.1.1; page(s) 12-33, line(s) 1. EISG section n/a Comment # 2	EIS states that 'Fish habitat would potentially be changed by the following Project components and activities during operations: o Reservoir transformation during operations o Generating station operation effects on downstream Peace River' <i>Why is the word "potentially" used here? Can BC Hydro describe in more detail and in a more meaningful way how, to what extent and with what level of certainty, fish habitat will be changed by these activities?</i>	The use of "potentially" is intended to mean "have the capacity to". The scope of the Fish and Fish Habitat effects assessment is in accordance with the EIS Guidelines and appropriate information is provided in the EIS. The effects of changes to habitat resulting from the proposed operation of the reservoir (following its transformation) are described in 12.4.2.1 - Effects Assessment - Operations - Changes to Fish Habitat. Additional information on the effect of reservoir transformation on productivity can be found in Volume 2 Appendix P Part 2 Hydrodynamic, water quality, and Productivity Modelling for the Site C Project, and in Volume 2 Appendix P Part 3 Future Conditions in the Peace River. The effects of the operation of the generating station operation on fish and fish habitat in the river downstream of the dam are described in Section 12.4.4.2.2. The level of confidence in the characterization of residual effects assessments are provided in Table 12.22.

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ab_0006-003	Saulteau First Nations	Section 12.4.2.2; page(s) 12-47, line(s) 16. EISG section n/a Comment # 4	EIS states ‘Bull trout and Arctic grayling are expected to decline. Group 3 fish (kokanee and lake whitefish) contribute a negligible amount of biomass to the river.’ <i>EIS describes fish groups that will increase and by how much. How much does BC Hydro expect fish biomass to decline for the Bull Trout and Arctic grayling?</i>	Refer to Volume 2 Appendix P Aquatic Productivity Report Part 3 Future Conditions in the Peace River for biomass estimates. The overall effects on the upstream and downstream biomass densities (t/km2) of all major fish species are summarized for a range of Ecopath and CE-QUAL-W2 scenarios (over both the early and longer term stages) in Appendix 6B of Volume 2, Appendix P3.
ab_0006-004	Saulteau First Nations	Section 12.4.3.1; page(s) 12-48, line(s) 38. EISG section n/a Comment # 5	EIS states ‘Fish health and survival would potentially be changed by construction activities as follows: [see list in EIS] <i>According to this description of Site C effects on fish habitat and physical changes to the river, it seems certain that fish survival and fish health will be impacted – why is the word “potentially” used here and what does this mean in terms of population declines and survival?</i>	Please see the response to ab_0006-002.
ab_0006-005	Saulteau First Nations	Section 12.4.3.1; page(s) 12-49, line(s) 5. EISG section n/a Comment # 6	EIS states ‘Sediment inputs may result in potential effects on fish health and survival during construction of the dam and generating station, formation of the construction headpond and reservoir filling, and from realignment of Highway 29.’ <i>Constructions practices described in this section of the EIS are known to generate sediment – how can construction that involves large volumes of material and a significant disturbance footprint only have the “potential” to impact fish health and survival?</i>	"Potential" is used in the context of "having the capacity to" and is appropriate for use in the given context. Mitigation measures are proposed that could reduce or avoid the effect to Fish and Fish Habitat caused by changes in health and survival. As described in Section 12.8, follow-up monitoring is required to verify effects assessment and the effectiveness of mitigation.
ab_0006-006	Saulteau First Nations	Section 12.4.3.1; page(s) 12-52, line(s) 1. EISG section n/a Comment # 7	The EIS states that the construction headpond water levels would vary (see Section 11.4 Surface Water Regime in Section 11 Environmental Background), which could result in bank instability and bank erosion, potentially resulting in sediment inputs. Shoreline erosion is expected to occur in an episodic manner, primarily during windstorm events when the headpond level is high (Volume 2 Appendix I Fluvial Geomorphology and Sediment Transport Technical Data Report). <i>What is the amount of sediment generated during construction and the impact of this amount on fish? – there appears to be no quantification of this impact in this section</i>	See Section 11.8 Fluvial Geomorphology and Sediment Transport, and Volume 2 Appendix J Fluvial Geomorphology and Sediment Transport Technical Data Report, for detailed information on sediment generated during construction and operation phases of the Project. The effects of changes in sediment on fish are described Section 12, Section 12.4.3.1.
ab_0006-007	Saulteau First Nations	Section 12.4.3.2; page(s) 12-53,	The EIS states that the large surface area outside of the active river channel potentially subjected to frequent dewatering (approximately 387 ha during the channelization period and approximately 1,630 ha during the diversion period)	Head pond fluctuations are described in Section 11.4.3 and Appendix D Surface Water Regime Technical Memos, which describes head pond upstream extent, duration and depth. Results suggest that the 10th percentile water level (over the 10 year simulation period) would be

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		line(s) 26. EISG section n/a Comment # 8	and the large range in fluctuation (1.0 m during the channelization period and 8.6 m during the diversion period) could cause an increased risk of fish stranding. <i>What exactly does “could cause an increased risk of fish stranding” mean – can BC Hydro quantify this potential impact?</i>	increased by 1.5 m, and the 90th percentile water level would be increased by 8.6 m. The phrase "could cause an increased risk of fish stranding" means that there is the potential or capacity to result in incremental increase in fish stranding. BC Hydro cannot quantify this potential with certainty effect; however, mitigation measures will be implemented during follow-up monitoring to assess stranding during head ponding. BC Hydro will work with appropriate regulatory authorities in the development of mitigation measures.
ab_0006-008	Saulteau First Nations	Section 12.5.1.2; page(s) 12-67, line(s) 15. EISG section n/a Comment # 9	Future mitigation and compensation options will be evaluated after reservoir development and follow-up monitoring. Compensation options that are technically and economically feasible will be implemented. <i>While it is recognized that future mitigation and compensation options are difficult to project, BC Hydro still has a stewardship obligation, based on its experience with other hydro- electric projects and fisheries impacts, to outline at the very least a minimum commitment or range of commitments to mitigation – what is that minimum commitment or range of commitments?</i>	See Section 12.5 Mitigation Measures and Section 12.8 Follow-up Programs. BC Hydro will work with appropriate regulatory authorities in the development of mitigation measures and appropriate follow-up requirements.
ab_0006-009	Saulteau First Nations	Section 13.1.2.2; page(s) 13-3, line(s) 23. EISG section n/a Comment # 10	Not all issues identified by Aboriginal groups were included as key indicators. Food plants identified by Aboriginal groups were not included within the assessment as plant species are not being assessed individually. <i>Could BC Hydro provided documentation (table format) of food plants identified as a baseline reference and rank the importance of these to First Nations?</i>	Please see Section 13, Table 13.6 for a list of species identified in TLUS. BC Hydro cannot rank the importance to First Nations based on the data provided in the TLUS.
ab_0006-010	Saulteau First Nations	Volume 2 Section 13.1.4; page(s) 13-6, line(s) 8. EISG section n/a Comment # 11	<i>Is fragmentation only considered in relation to the sensitive ecosystems and the rare plants? The vegetation corridors between these communities are also important for wildlife movement, protection from predators, foraging and feeding, and breeding. How are these vegetation corridors considered in terms of fragmentation?</i>	Fragmentation considered the five key aspects listed in Section 13.3, page 13-13. Corridors for wildlife are described in Section 14 and in Volume 2, Appendix R, Parts 2-7 under the key aspect of habitat alteration and fragmentation.
ab_0006-011	Saulteau First Nations	Volume 2 Section 13.1.5.1; page(s) 13-7, line(s) 32. EISG section n/a Comment # 12	Construction may result in changes to site hydrology and stream flow which can in turn impact ecosystem functionality from greater than 1000 m. - <i>Has there been any consideration of hydrologic changes from construction and how these might impact important riparian forests, wetlands or other water sensitive ecosystems?</i>	Hydrologic changes have been taken into account in the effects of habitat alteration and fragmentation in Section 13 of the effects assessment. Further detail on effects to key species and species groups as a result of hydrologic changes (e.g., water quality, quantity) have been detailed in Parts 1-7 of Volume 2, Appendix R.

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ab_0006-012	Saulteau First Nations	Volume 2 Section 13.3.1; page(s) 13-3, line(s) 1. EISG section n/a Comment # 13	With the exception of early seral stages along the transmission lines the EIS considers area as a key measure of vegetation community impact. Many ecosystems adjacent to those that are disturbed or changed through construction and operation will be impacted through edge effects, changes in hydrology, disturbance by wind and other biotic and abiotic effects. <i>How has the EIS addressed the adjacency issues and resultant changes in structure and function of ecosystems indirectly impacted?</i>	Adjacency issues are considered under the key aspect of habitat alteration and fragmentation and are assessed in Section 13 and in Part 1 of Volume 2 Appendix R.
ab_0006-013	Saulteau First Nations	Volume 2 Section 13.3.1; page(s) 13-3, line(s) 36. EISG section n/a Comment # 14	While we agree that there will be significant vegetation changes during the construction phase of the project there will be considerable change long-term given the changes in hydrologic flows, microclimate, and proximity to a new large water body in communities immediately adjacent to the new reservoir. These long-term changes all have the potential to change vegetation communities and this factor appears to have been largely ignored in the EIS. <i>What changes in vegetation, hydrologic flow and those related to proximity of the reservoir be expected? Are these changes in addition to those documented within the inundation zone?</i>	Changes in vegetation and hydrologic flow are considered under the key aspect of habitat alteration and fragmentation in Section 13 and in Part 1 of Volume 2 Appendix R. A description of the surface water regime can be found in Section 11.
ab_0006-014	Saulteau First Nations	Volume 2 Section 13.3.1.1; page(s) 13-15, line(s) 1. EISG section n/a Comment # 15	The EIS presents lots of valuable information of impacts on rare plants and ecosystems but only as summaries and in tabular form. If presented as a map, this information is far more valuable to interpreting and understanding the impacts on vegetation when compared to tabular summaries. <i>Given that these areas have been mapped in detail why are no maps presented in the main EIS document?</i>	Maps of rare plant occurrences can be found in Volume 2, Appendix R, Part 1, Appendix G. Overview maps of all known rare vascular plant species in the LAA are presented on pages 77–78 of Volume 2 Appendix R (Maps 1.4.5 and 1.4.6)
ab_0006-015	Saulteau First Nations	Volume 2 Section 13.4.1; page(s) 13-34, line(s) 10. EISG section n/a Comment # 16	The EIS states that mitigation measures would reduce the effect to vegetation and ecological communities – <i>Specifically what measures and how does BC Hydro quantify the effectiveness of the mitigation measures to justify the conclusion that they would reduce effects to vegetation and ecological communities?</i>	Proposed mitigation measures are described in Section 13.3.2, Table 13.15. Qualification of the expected effectiveness of mitigation measures are provided in Table 13.15, Volume 2, page 13-27. BC Hydro will work with appropriate regulatory authorities in the development of mitigation measures.
ab_0006-016	Saulteau First Nations	Volume 2 Section 13.4.1; page(s) 13-37, line(s) 1. EISG section	<i>Can BC Hydro expand on the specifics of residual effects in relation to the ecological inventory data on ecosystems and rare plants collected as part of the EIS?</i>	Please see Volume 2, Appendix R, Part 1, Section 4.1, page 107.

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		n/a Comment # 17		
ab_0006-017	Saulteau First Nations	Volume 2 Section 13.4.3; page(s) 13-39, line(s) 1. EISG section n/a Comment # 18	<i>How does BC Hydro rationalize that there is no significant effect on vegetation from operations and the effects of flooding on ecosystem hydrology and microclimate change in vegetation communities in close proximity to the reservoir?</i>	The determination of significance of residual effects on vegetation and ecological communities is described in Section 13.4.3.
ab_0006-018	Saulteau First Nations	Volume 2 Section 13.5.5; page(s) 13-48, line(s) 24. EISG section n/a Comment # 19	For ecosystems and rare plants the EIS has described Site C in context with other projects that contribute to cumulative effects regionally (no spatial locations or footprints for other projects have been provided) and states that collectively that all projects combined will have a significant cumulative effect. <i>Can BC Hydro provide the methodology used to quantify this significant effect on ecosystems and rare plants and the contribution that Site C makes to this cumulative effect relative to other projects?</i>	The approach for characterizing cumulative effects is described in Section 10 Effects Assessment Methodology. Thresholds for determining significance are described in Section 13.4.2. Please also see the Technical Memo: Cumulative Effects Assessment.
ab_0006-019	Saulteau First Nations	Volume 2 Section 14.1.2; page(s) 14-8, line(s) 1. EISG section n/a Comment # 20	This was because some species had no expected interaction with the Project, they are common across the landscape and a change to the population in the LAA is not expected, or they could be effectively assessed under another key indicator. <i>How does BC Hydro define “species with no expected interaction with the Project”?</i>	BC Hydro defines species with no expected interaction with the Project as those species that are not expected to interact with or be affected by activities associated with the Project in the LAA in terms of the key aspects of habitat fragmentation and alteration, disturbance and displacement and mortality or habitats used by the species do not occur in the LAA. Please see Section 14, Tables 14.1 and 14.2 in the EIS. Please also see Section 8.3.2 in the EIS Guidelines.
ab_0006-020	Saulteau First Nations	Volume 2 Section 14.2.8; page(s) 14-8, line(s) 7. EISG section n/a Comment # 20	Potential project interactions with wildlife resources are summarized in Volume 2 7 Appendix A Project Interactions Matrix, Table 2. As defined in Section 10 8 <i>How does BC Hydro define “potential project interactions with wildlife resources”?</i>	BC Hydro defines potential Project interactions with wildlife resources as the potential for wildlife species groups or species to interact with or be affected by activities associated with the Project in the LAA in terms of the key aspects of habitat fragmentation and alteration, disturbance and displacement and mortality. Please see Section 14, Tables 14.1 and 14.2 in the EIS. Please also see Section 8.3.2 in the EIS Guidelines.
ab_0006-021	Saulteau First Nations	Volume 2 Section 14.2.8; page(s) 14-19, line(s) 2. EISG section	<i>Habitat use for ungulates does not appear to address movement across the Peace River and how changing this to a reservoir will impact this movement. Does BC Hydro have any data on movement of ungulates specifically and/or any other species movement across the river corridor?</i>	Movement of ungulates across the Peace River is described in Section 14.3.1.6.4, page 14-40, lines 21-30. Data on river crossings collected by BC Hydro are presented in Volume 2, Appendix R, Part 7, Section 1.1.1.1.38, page 152.

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		n/a Comment # 21		
ab_0006-022	Saulteau First Nations	Volume 2 Section 14.3.2; page(s) 14-41, line(s) 1. EISG section n/a Comment # 22	The effects assessment speaks to disturbance and displacement, but there is little discussion around the effects of removal of habitat. Based on the habitat discussion significant portions of habitat will be removed for the reservoir, dam site, transmission line and new road construction. This applies to the majority of groupings of wildlife discussed. The EIS is focused on noise, lighting and other forms of disturbance but the largest impact is likely to be habitat removal which for some species like ungulates is significant (moose 16% of the total habitat area). <i>Why is habitat removal not discussed in more detail in the effects assessment portion of the document? How will removal of 16% of moose habitat affect moose populations in the area?</i>	Habitat removal is described under the key aspect of habitat alteration and fragmentation in Section 14.3.1. Further detail on the effects assessment for mammals is provided in Volume 2, Appendix R, Part 7. Section 14.5.1.1.6, page 14-74, lines 13-15 state: "In the absence of mitigation, numbers of moose would be reduced within the LAA, since evidence suggests that they are at a stable long term population that is related to available habitat."
ab_0006-023	Saulteau First Nations	Volume 2 Section 14.3.2.6.2; page(s) 14-44, line(s) 3. EISG section n/a Comment # 23	The EIS suggests that Beaver will be displaced during reservoir clearing and flooding and is quantified as temporary and or permanent displacement. <i>What proportion of the existing beaver population will be displaced temporarily, and what proportion of the displacement will be permanent? BC Hydro should be able to quantify this given the information on beaver lodges, population numbers and locations.</i>	The beaver population within the reservoir (calculated to be 295 animals, as described in Section 14.2.7.1, page 14-18) will be displaced. No estimate of the number of individuals that will return during operations has been made.
ab_0006-024	Saulteau First Nations	Volume 2 Section 13.3.2.6.4; page(s) 14-44, line(s) 21. EISG section n/a Comment # 24	A significant portion of riparian habitat important to ungulate calving is being inundated by the flooding of the reservoir and there is no discussion in the effects Section 13.3.2.6.4. <i>What will be the estimated impact on moose populations specifically, and other ungulates within the study area – does BC Hydro have any assessment of potential population declines as a result of the removal of the critical calving habitat along the river corridor?</i>	Effects on calving habitat were considered, as described in Section 14.3.1.6.4, lines 7-8. Islands in the Peace River valley and in the reservoir area in general were rarely used for birthing by collared ungulates. Please see Section 14.3.1.6.4, Page 14-40, lines 5-10.
ab_0006-025	Saulteau First Nations	Volume 2 Section 14.4.2; page(s) 14-57, line(s) 1. EISG section n/a Comment # 25	The avoidance and reduction of displacement due to construction head pond flooding is not possible, as the timing of flooding is dependent on natural events (e.g., rainfall and the spring freshet) and power generation. Effects may be alleviated with the creation of habitats within the reservoir and the creation of some additional habitats through compensation works. <i>Please describe in detail the specific habitats and expected wildlife use within the reservoir, and the specific additional habitats to be created through compensation works?</i>	Habitats within the reservoir are described in Volume 2, Appendix R, Part 1. Appendix G provides the area of each ecosystem within the proposed reservoir. Expected wildlife use within the reservoir is described in Section 14 and Appendix R, Parts 2, 3, 4, 5, 6 and 7. Specific details on habitats that will be created are not available at this time, but will focus on wetlands. BC Hydro will work with appropriate regulatory authorities in the development of

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				mitigation measures.
ab_0006-026	Saulteau First Nations	Volume 2 Section 14.4.2; page(s) 14-57, line(s) 1. EISG section n/a Comment # 26	<i>Why are there no mitigation measures for disturbance of moose and other ungulate calving along the river during construction (and inundation of the reservoir)?</i>	Effects on calving habitat are described in Volume, 2 Section 14.3.1.6.4, page 14-40, lines 5-10. Proposed mitigation measures for ungulates are presented in Tables 14.16, and will assist in addressing disturbance to ungulates. Complete mitigation of disturbance is not considered feasible.
ab_0006-027	Saulteau First Nations	Volume 2 Section 14.4.2; page(s) 14-58, line(s) 1. EISG section n/a Comment # 27	Similar to effects it would be expected that specific mitigation measures to avoid mortality would be applied on a species specific basis. Table 14. 16. <i>Why has BC Hydro not classified individual species (beaver, ungulates etc) and lump into a mammal category?</i>	The assessment of potential effects of the Project was conducted on key indicator species groups and within those groups key indicator species (See Section 14, Table 14.4). Mitigation measures for mortality are provided in Table 14.16. Measures are provided at the species group level and, where required, at the indicator species level.
ab_0006-028	Saulteau First Nations	Volume 2 Section 14.5.1.3.6; page(s) 14-86, line(s) 34. EISG section n/a Comment # 28	<i>How has BC Hydro estimated the impact of traffic collisions with wildlife (specifically ungulates) within the corridor to new dam site?</i>	The potential for wildlife collisions is described in Section 14.3 and in Appendix R, Parts 2-7.
ab_0006-029	Saulteau First Nations	Volume 2 Section 14.6.5; page(s) 14-101, line(s) 3. EISG section n/a Comment # 29	For wildlife the EIS has described Site C in context with other projects that contribute to cumulative effects regionally (no spatial locations or footprints for other projects have been provided) and states that collectively all projects combined will have a significant cumulative effect. <i>Can BC Hydro provide the methodology used to quantify this significant effect on wildlife and the contribution that Site C makes to this cumulative effect relative to other projects?</i>	Please see the Technical Memo: Cumulative Effects Assessment.
ab_0006-030	Saulteau First Nations	Volume 2 Section 14.6.5; page(s) 14-101, line(s) 3. EISG section n/a	The EIS states that “the project is likely to result in a significant adverse effect in the alteration and fragmentation of habitat for some key indicators. <i>“Likely” suggests there is likelihood or probability of significant adverse effects. Can BC Hydro quantify or otherwise assess the likelihood or probability of adverse effects as it relates to the individual key indicators?</i>	The characterization of residual effects includes "Probability". The characterization of residual effects for each key indicator is summarized in Section 14.5.1.

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		Comment # 30		
ab_0006-031	Saulteau First Nations	Section 34; page(s) 34-4 to 34-7, line(s) n/a. EISG section n/a Comment # 32	<i>This section speaks generally to the proponent's understanding of Treaty 8 rights. We suggest that this section would be more useful if it were more clearly organized around each of the discrete legal concepts and questions to be considered.</i>	Although there may be different ways this section could be organized, this section meets the requirements of the EIS Guidelines.
ab_0006-032	Saulteau First Nations	Section 34; page(s) 34-4 to 34-7, line(s) n/a. EISG section n/a Comment # 33	<p><i>This section speaks generally to the proponent's understanding of Treaty 8 rights. However, as currently drafted, it seems to us that, rather than aiming for the goal of reconciliation, this section suggests that the proponent has adopted a defensive and partisan view of Treaty 8 rights in anticipation of conflict and/or litigation.</i></p> <p><i>We suggest that the proponent undertake further research, analysis, and reflection, with a view to developing and presenting a more clear and balanced understanding of Treaty 8 rights in the EIS. A more clear and balanced understanding is necessary if the proponent's consultation efforts, assessment of impacts, and mitigation efforts are to viewed as being credible, effective, and in keeping with the Honour of the Crown.</i></p>	Please see the Technical Memo: Oral Promises Under Treaty 8.
ab_0006-033	Saulteau First Nations	Section 34; page(s) 34-4 to 34-7, line(s) n/a. EISG section n/a Comment # 34	<p><i>We note that the proponent includes a long extract from the text of the treaty at p. 34-3. In an earlier draft of this section, the proponent also included an extract from the report of the Treaty Commissioners that evidences some of the oral promises made by the Crown during the negotiation of the Treaty. (When we reviewed the draft, we noted at the time that the extract in the draft was cut short and did not include some significant passages.) In any case, that extract from the report of the Treaty Commissioners has since been struck and now does not appear at all in the EIS.</i></p> <p><i>It is odd to include text from the Treaty and omit any reference to the oral promises, especially since every significant Treaty 8 case has extracted passages from the report of the Commissioners and confirmed the legal effect and significance of the oral promises. We refer you, for example, to the Court of Appeal's decision in the West Moberly case, at paras. 54 and 128.</i></p> <p><i>We suggest that this omission is a mistake. It suggests that the proponent's legal analysis and understanding of Treaty rights is impoverished and flawed. It also suggests that the proponent has not adopted a reasonable attitude and</i></p>	Please see the Technical Memo: Oral Promises Under Treaty 8.

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			<i>orientation towards reconciliation.</i>	
ab_0006-034	Saulteau First Nations	Section 34; page(s) 34-4, line(s) 1 to 30. EISG section n/a Comment # 35	<i>This subsection purports to describe the ‘History and Interpretation’ of Treaty 8. Yet virtually no historical information or analysis is provided. We suggest that it is important for the proponent to understand the history and historical context of the Treaty, and the implications of that history and context for the proposed project and the current impact assessment process. There are several historical works the proponent should reference, extract and summarize in a section on the history of the Treaty, including, for example: R. Daniel (1979), “The Spirit and Terms of Treaty Eight”, in Richard Price, ed., The Spirit of the Alberta Indian Treaties; R. Fumoleau (1973), As Long as this Land Shall Last: A History of Treaty 8 and Treaty 11, 1870-1939. We note that these and other historical works have been cited by the Courts.</i>	Please see the Technical Memo: Oral Promises Under Treaty 8.
ab_0006-035	Saulteau First Nations	Section 34; page(s) 34-4, line(s) 1 to 30. EISG section n/a Comment # 36	<i>This subsection purports to describe the ‘History and Interpretation’ of Treaty 8. We strongly suggest that this section (and the legal analysis that follows) would benefit from the inclusion of a discussion of the generally applicable legal principles of Treaty interpretation. (For example: see Badger, at para. 52; Mikisew Cree, at para 29; and other Treaty rights case law.)</i>	Please see the Technical Memo: Oral Promises Under Treaty 8.
ab_0006-036	Saulteau First Nations	Section 34; page(s) 34-4, line(s) 15 to 30. EISG section n/a Comment # 37	<i>The discussion of the effect of the NRTA on Treaty rights in Alberta is misplaced in the ‘history and interpretation’ section. It would be better located in its own subsection following a discussion of the scope of the content of Treaty 8 rights. We also note that, while the proponent has included some reference to the NRTA, the proponent has not provided any parallel research on the Terms of Confederation for British Columbia, or the Railway Belt and Peace River Block Transfer Agreement.</i>	Although there may be different ways this section could be organized, the section meets the requirements of the EIS Guidelines. BC Hydro is aware of the terms of the Terms of Confederation for British Columbia, and the Railway Belt and Peace River Block Transfer Agreement, and it is BC Hydro’s understanding that they are not relevant to this section of the EIS.
ab_0006-037	Saulteau First Nations	Section 34; page(s) 34-4 to 34-5, line(s) 31 to 18. EISG section n/a Comment # 38	<i>This section purports to describe the ‘Scope of Treaty 8 Rights’. Its main purpose seems to be to make the point that traditional territories are particularly important when considering the geographic scope of the Treaty rights of a particular aboriginal group. We suggest that the word “geographic” should be added to the title of this section, in order to distinguish this analysis from an analysis of the scope of the content of Treaty 8 rights.</i>	BC Hydro has reviewed this suggestion and will leave the wording in this section unchanged. Please see the Technical Memo: Oral Promises Under Treaty 8.
ab_0006-038	Saulteau First Nations	Volume 5 Section 34.3.2.1; page(s) 34-2 to	<i>We were surprised to discover that nowhere in this section on Treaty 8 Rights does the proponent discuss the scope of the content of Treaty 8 rights. We refer you again to the legal effect and significance of the oral promises made by the Treaty Commissioners. The leading case on the content of the Treaty 8 right to</i>	West Moberly is referenced in the Section 34.3.2.1. Please see the Technical Memo: Oral Promises Under Treaty 8.

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		34-7, line(s) n/a. EISG section n/a Comment # 39	<i>hunt, for example, is West Moberly First Nation v. B.C. (Chief Inspector of Mines), 2011, BCCA 247, leave to appeal ref'd, 2012 CanLII 8361 (SCC). See, for example, paras. 54, 128-131, 134 and 137. See also para. 151.</i>	
ab_0006-039	Saulteau First Nations	n/a; page(s) n/a, line(s) n/a. EISG section n/a Comment # 40	<i>We note that BC Hydro is an “agent of the Crown” according to its constituting statute. We suggest that the proponent should include a subsection demonstrating that it acknowledges and is aware of the role and significance of the Honour of the Crown in the making and implementation of Treaties, and in the processes connected with the taking up of land.</i>	Section 34.3.2.1 describes the significance of the honour of the Crown in the taking up of lands under Treaty 8, focusing on the Supreme Court of Canada’s comments on this issue in Mikisew (page 34-6). Please see the Technical Memo: Aboriginal Consultation.
ab_0006-040	Saulteau First Nations	n/a; page(s) n/a, line(s) 25-27. EISG section n/a Comment # 41	<i>The proponent cites Lax Kw’alaams for the proposition that, although Treaty rights are not frozen in time and can evolve, “[s]uch evolution is limited ... and traditional practices cannot be transformed into modern rights.” We say this is a misstatement and/or misapplication of Lax Kw’alaams. The specific question in that case was about the relationship between the scope of a traditional activity (the trade in eulachon grease) and the scope of a claimed aboriginal right (a non-specific right to an expansive commercial fishery). None of the holdings in that case suggest that the evolution of treaty rights is generally limited. (We note that the proponent does not provide a pin-point citation for the asserted proposition in Lax Kw’alaams.)</i>	While BC Hydro agrees that <i>Lax Kw’alaams</i> is a decision relating to Aboriginal rights, the comment cited is of a general nature and would appear to apply to all rights held by Aboriginal groups. Other cases have noted that treaty rights are not frozen-in-time and must be capable of adapting and evolving within limits (<i>R. v. Marshall</i> , [1999] 3 SCR 456 at para. 19; see also <i>Keewatin v. Ontario (Natural Resources)</i> , 2013 ONCA 158, at para. 137). The pin-point citation has been added to the List of Errata and Updated Information.
ab_0006-041	Saulteau First Nations	Section 34; page(s) 34-5 to 34-6, line(s) 28-8. EISG section n/a Comment # 42	<i>The proponent cites Mikisew Cree and Badger for the proposition that Treaty 8 rights are limited by the Crown’s right to take up lands. In response, we note that the rather stark “Crown rights” and “unilateral action” arguments made by the Crown and Crown intervernors were rejected in Mikisew. Indeed, the Court in Mikisew put heavy emphasis on the Honour of the Crown and the duty to consult and accommodate when contemplating the taking up of lands.</i> <i>Further, in British Columbia, the leading case on this point is West Moberly, wherein it was held that Treaty rights are not “subject to” or “inferior to” the Crown’s ability to take up land, and the Crown’s ability to take up land must be understood in its historical context and that. See, for example, paras. 133-5, 150.</i>	BC Hydro agrees that the Crown’s right to take up lands under Treaty 8 must be exercised honourably, and requires the Crown to consult and, where appropriate, accommodate First Nation signatories or adherents to Treaty 8 who may be adversely affected by the change to the land. For details on BC Hydro’s consultation activities, please refer to Section 9.2 and the Aboriginal Consultation Technical Memo. For details on accommodation measures undertaken or proposed by BC Hydro, please see Sections 34.4 and 34.7. Please see Technical Memo: Oral Promises Under Treaty 8 and Section 34.3.2.1 for BC Hydro’s understanding of rights under Treaty 8. West Moberly is referenced in the Section 34.3.2.1.
ab_0006-042	Saulteau First Nations	n/a; page(s) n/a, line(s) n/a. EISG section n/a	We note that the proponent’s assessment of potential impacts on the exercise of established treaty rights is identical or virtually identical for a number of First Nations, located in BC and Alberta, both upstream and downstream from the proposed dam site, including Blueberry River First Nation, Duncan’s First Nation, Horse Lake First Nation, Saulteau First Nation, and T8TA.	The position of SFN was reflected in BC Hydro’s approach to the assessment of the potential impacts of the Project on SFN’s Treaty rights (Section 34.3.3). The assessment took into account baseline information on the current uses of lands and resources by SFN members, which is presented in Section 19.3. This information was primarily gathered from the Culture and Traditions Study undertaken by SFN. BC Hydro used the baseline information to reach a number

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		Comment # 43	<p>This identical analysis fails to reflect the unique position of SFN – being the largest First Nations community and also the closest to the proposed project – virtually all of the inundated areas and infrastructure associated with the proposed project are located near to the SFN community and within core areas of SFN traditional territory.</p> <p>The result is that the proponent’s boilerplate analysis does not clearly address the particular and relative intensity of the potential impacts on SFN, or the consequent effects on the duties to consult and accommodate.</p>	<p>of findings about the potential effects of the Project on the current use of land and resources for traditional purposes by SFN members. Many of the findings were specific to SFN (see e.g., Section 19.4, page 19-80, lines 35-41, page 19-81, lines 10-17 and 31-39, page 19-82, lines 18-25, page 19-83, lines 4-9, page 19-85, lines 14-32, page 19-86, lines 14-32, page 19-89, lines 17-20).</p> <p>See Technical Memo: Methodology for the Assessment of the Potential Impacts of the Project on the Exercise of Asserted or Established Aboriginal and Treaty Rights.</p> <p>BC Hydro has consulted extensively with SFN regarding the potential effects of the Project and related mitigation measures, and has initiated accommodation discussions with SFN including negotiations towards a potential IBA. For a chronological summary of BC Hydro’s consultation activities with SFN, please see Volume 5, Appendix A23, Part 2. See also the Technical Memo: Aboriginal Consultation.</p>
ab_0006-043	Saulteau First Nations	Section 34; page(s) 34-16, line(s) I. 6 to 7. EISG section n/a Comment # 44	The proponent says: “Opportunities for boat and shore-based river fishing ... will be reduced.” <i>What does the proponent mean by “reduced”? Reduced by how much, where, and for how long?</i>	<p>Section 34 is based on the results of the effects assessment on Current Use of Lands and Resources for Traditional Purposes undertaken in Section 19. Detailed information is contained in Section 19, while Section 34 provides a summary of results.</p> <p>Section 19 indicates that “boat and shore-based river fishing along an 85-km stretch of the main stem Peace River and practices will be negatively altered within the LAA by the construction of the Project.</p> <p>Boat and shore-based river fishing along an 85-km stretch of the main stem Peace River between the dam site and the Canyon dam will be inundated”. The details of the effects assessment are presented in Section 19.</p>
ab_0006-044	Saulteau First Nations	Section 34; page(s) 34-16, line(s) I. 7 to 9. EISG section n/a Comment # 45	The proponent says: “Several highly valued fishing areas, where streams and creeks join the Peace, will be inundated, although the confluences of those streams with the new reservoir may develop into good fishing areas.” <i>What does the proponent mean by “may” develop into “good” fishing areas? What is the process and likelihood of such developments? What standard is the proponent using to define “good” fishing areas?</i>	<p>“The use of the term “may” is used given the uncertainty regarding reactions of the environment, and responses to change by Aboriginal harvesters.</p> <p>First Nations identified river confluences as preferred fishing locations. Their term “good fishing area” was used to indicate that the confluences with the reservoir may develop into areas that are conducive to fishing the types of fish and same methods of fishing that Aboriginal groups identified currently doing.</p>
ab_0006-045	Saulteau First Nations	Section 34; page(s) 34-16, line(s) I. 9 to 11. EISG section n/a Comment # 46	The proponent says: “The impact of the creation of the dam will diminish as the reservoir begins to create a new fishery. However, it is not certain when these conditions may occur.” <i>We note that this conclusion is not qualified by the word “may” (as above). How certain is the proponent that a new fishery will be created? Will the new fishery be as diverse and productive as the existing fishery? How will the new fishery be spatially distributed? Can the proponent quantify the certainty levels around the diversity, productivity, spatial distribution, and timeline for the creation of the new fishery?</i>	<p>See Section 12.4.2.1 Transformation of Reservoir Habitat During Reservoir Operation. The extended Conclusion section (starting on page 12-39, line 28) describes changes in productivity and fish populations in the reservoir over the short term (1 to 10 years), medium term (10 to 30 years), and long term (> 30years). Section 12.4.2. Downstream Changes describes changes expected in the Peace River.</p> <p>Volume 2 Appendix P Part 3 Future Conditions in the Peace River describes modeling and analyses undertaken to predict changes in productivity and includes a description of uncertainty.</p>

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				<p>As described in Section 12.8 Follow-up Programs, monitoring will be conducted to verify the effects assessment.</p> <p>Please also see the Technical Memo: Uncertainty and Precaution.</p>
ab_0006-046	Saulteau First Nations	Section 34; page(s) 34-16, line(s) l. 23 to 25. EISG section n/a Comment # 47	<p>The proponent says: “The construction of the Project would have temporary effects on the ability of harvesters to access some parts of the LAA for hunting and trapping via road or river navigation.” <i>What does the proponent mean by “temporary”? When, where, and for how long? What specific mitigation and avoidance measures (if any) is the proponent proposing to ensure that construction does not adversely affect SFN access to preferred hunting and trapping areas during preferred hunting and trapping periods?</i></p>	<p>Project-related construction activities would result in temporary reductions in access to some parts of the LAA if harvesters are using road or river navigation. With respect to mitigating potential adverse effects of the Project on the exercise of the treaty right to hunt and trap, BC Hydro has proposed to implement those mitigation measures described in Table 34.2, in particular, consultation with Aboriginal groups on clearing plans and protocol, and developing a communications program to inform harvesters of planned or unplanned events related to construction activities that may affect hunting opportunities or access.</p> <p>BC Hydro has offered to consult with Aboriginal groups in the Project area, including Saulteau First Nations, about mitigation measures, and will continue to pursue discussions on this topic as part of the consultation process for the Project. As described in Section 9.2.4 (Process for Resolving Outstanding Issues with Aboriginal Groups), BC Hydro will seek to address outstanding issues by, among other activities, "continuing to seek input and engage in dialogue regarding the EIS and the Project, and to answer questions and address issues, interests, and concerns from Aboriginal groups by identifying appropriate mitigation measures and/or other appropriate means by which to address or resolve potential impacts."</p>
ab_0006-047	Saulteau First Nations	Section 34; page(s) 34-16, line(s) l. 25. EISG section n/a Comment # 48	<p>The proponent says: New access will be created around the reservoir.</p> <p>The proponent has been aware since at least the 1970s that SFN is concerned about the annual influx of recreational hunters into SFN traditional hunting areas. See for example, BCUC submissions (Weinstein).</p> <p>In the present process, several concerns about the effects of increased traffic and public access to core hunting areas have been raised by SFN and other First Nations – see, for example, pp. 19-3 and 19-5, 19-81 to 82.</p> <p>The proposed Project includes the construction and upgrading of roads and transmission lines and other access routes within some of SFN’s most important core hunting areas and traplines.</p> <p>Has the proponent assessed the potential for increased non-native access to and increased recreational hunting pressures on SFN traditional hunting areas? How does the proponent propose to control access to avoid and reduce hunting and other pressures on SFN traditional hunting areas?</p>	<p>The effects assessment on Current Use of Lands and Resources for Traditional Purposes considered the potential for increased access by non-Aboriginal users to the Project area, and the potential for increased hunting pressures within the surrounding area. As described in Section 34.3.3, the assessment done in Section 19 was used to inform the assessment in Section 34.</p> <p>Mitigations proposed to address potential impacts of the Project on the exercise of the treaty rights to hunt and trap are described in Table 34.2. Further, and as described in Section 34.4.4, the Project may impact the exercise of treaty rights to hunt, fish and trap. BC Hydro is prepared to address and accommodate the potential for the Project to do so by entering into arrangements set out in Impact Benefit Agreements. BC has offered to discuss special management zone designations as part of IBA negotiations. In addition, BC Hydro understands that wildlife is a topic being discussed in separate negotiations between SFN and the province.</p>
ab_0006-	Saulteau First	Section 34;	The proponent says: Opportunities to harvest small game, waterfowl,	Section 34 is based on the results of the effects assessment on Current Use of Lands and

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048	Nations	page(s) 34-16, line(s) l. 25 to 26. EISG section n/a Comment # 49	furbearers and ungulates will be reduced in the short term. <i>What does the proponent mean by “reduced” and “short term”? What is the cause of the reduction? Which species? Reduced by how much? Over what period?</i>	Resources for Traditional Purposes undertaken in Section 19. Detailed information is contained in Section 19, while Section 34 provides a summary of results.
ab_0006-049	Saulteau First Nations	Section 34; page(s) 34-16, line(s) l. 27 to 28. EISG section n/a Comment # 50	The proponent says: Effects on SFN hunting and trapping would be temporary. <i>Has the proponent quantified the likely effects and the degree of certainty around those effects? Which species? What does the proponent mean by “temporary”? Over what time period?</i>	"Temporary" is intended to refer to the duration of the residual effect, as defined in Table 19.13, and includes short-, medium-, and long-term. The effects of the Project on hunting and trapping opportunities and practices during construction and operations are discussed in Section 19.4.4. Residual effects are discussed in Section 19.5. The focus of the effects assessment is on the 9 species listed on page 19-78. Level of Confidence (i.e. certainty) is one of the criteria for characterizing residual effects, as defined in Table 19.13 page 19-100. Please see the Technical Memo: Uncertainty and Precaution.
ab_0006-050	Saulteau First Nations	Section 34; page(s) 34-16, line(s) l. 27 to 28. EISG section n/a Comment # 51	The proponent says: Effects on SFN hunting and trapping would be temporary. <i>Is the assertion that the effects will be “temporary” consistent with the conclusions (for example, at pp. 19-81 and 82) that hunting “may be affected by increased access and competition by non-aboriginal hunters”? Does not increased access and competition speak to a long term impact?</i>	Please see the response to ab_0006-047.
ab_0006-051	Saulteau First Nations	Section 34; page(s) 34-16, line(s) l. 27 to 28 and l. 32 to 34. EISG section n/a Comment # 52	The proponent says: SFN hunting and trapping areas outside the LAA would not be affected by the Project. The proponent also says: SFN members will continue to have the opportunity to exercise their rights to hunt and trap within the LAA, within their traditional territory, and within the wider Treaty 8 territory. <i>This suggests that the proponent believes that SFN members can avoid the impacts of the proposed project by moving on and practicing their Treaty rights in other location(s). Given that the inundated areas and the areas affected by proposed infrastructure (roads, transmission lines, etc) and activities (construction, clearing, operations, etc) are adjacent to the SFN community and are within core traditional use areas, can the proponent identify which other areas within SFN traditional territory are available to SFN as replacement areas for traditional activities?</i>	In the Culture and Traditions Study provided by SFN, SFN has identified numerous areas outside the inundated areas and areas affected by proposed infrastructure where its members hunt and trap. In addition, the effects on traplines within the Harvest of Fish and Wildlife Resources LAA are assessed in Section 24. Table 24.19 lists trapline areas affected by Project components (although as described in Section 24.4.9, trapping will not be restricted in each of those components). Project activities would overlap with 2.2% or less of the area of the total affected traplines held by SFN members.
ab_0006-052	Saulteau First Nations	Section 19; page(s) 19-82,	In regard to impacts on hunting rights in SFN traditional territory, in addition to increased non-native access, we note that the proponent concludes that	Section 14.2.8 and Appendix R, Part 7 describes the baseline data used to assess potential effects of the Project on moose. As indicated in Volume 2, Appendix R, part 7, BC Hydro has considered

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		line(s) I. 16 to 17. EISG section n/a Comment # 53	<p>“[m]oose may see a decline of 5% in population due to the Project.” We have also noted above that the EIS states that about 16% of moose habitat will be permanently removed by the Project, and we note that the EIS states that “several highly valued locations for hunting trapping and other harvesting (berries, wood, medicine) would be inundated.” These statements seem to acknowledge that there will be long term or permanent impacts on the traditional resources upon which SFN relies in core traditional use areas. And yet the EIS concludes that the effects on treaty rights will be temporary, SFN can move on to practice their rights in other locations (unspecified by the EIS), and so it is unnecessary to make a determination of the significance of impacts on the current use of lands and resources for hunting and trapping? Please elaborate and explain.</p> <p>We also note that last year, the Province reported there has been a 23% percent decline in moose populations, and a 61% decline in the bull:cow ratio in the Peace Region. That GMU includes the SFN community and forms part of SFN’s core traditional hunting areas South of the Peace River and proposed reservoir (See: Theissen, 2011). <i>How has the proponent taken the recent declines in moose populations and population structure into account in assessing the potential impacts of the proposed Project on SFN hunting rights? Has the proponent prepared any baseline assessments of the populations, population structure, density, habitat and movement of moose and other ungulates South of the Peace River?</i></p>	<p>and cited the Theissen, 2011 study as part of the effects assessment for Wildlife Resources presented in Section 14. The information in Section 14, along with the information from the TLUS reports, was used as the basis for the assessment of the potential effects of the Project on Current Use of Lands and Resources for Traditional Purposes, which is provided in Section 19.4. Please see the Technical Memo: Methodology for the Assessment of the Potential Impacts of the Project on the Exercise of Asserted or Established Aboriginal and Treaty Rights.</p> <p>BC Hydro is aware of the decline in moose numbers between 2004 and 2011 based on census data within MU 7-32. When comparing these numbers to census data from 1984 and 1996 the 2011 population estimate is higher than those years. The authors of the 2011 census report stated that the variance in the population estimate is such that it is not possible to say that significant changes have occurred in the population size. Furthermore, the authors state that the consistency of the calf:cow ratio through the years suggests that sufficient bulls exist in the population to ensure pregnancy rates are not negatively affected. Based on studies completed within the LAA along the Peace River, moose numbers were greatest in 2011 (889) compared to 2009 (635) and 2006 (779). From the above information, it appears that the local moose population is near carrying capacity with numbers varying between years depending on hunting and winter severity.</p> <p>In 2013, BC Hydro launched a two-year study on moose and elk in the area of the Jackfish Lake road, to the south of the Peace River. This study includes an examination of habitat use patterns, movement data, and animal counts. Data collected will be used to plan ungulate mitigation along the road.</p>
ab_0006-053	Saulteau First Nations	Section 34; page(s) 34-19, line(s) n/a. EISG section n/a Comment # 54	<p>In regard to mitigation measures for adverse impacts on hunting and trapping rights, the proponent says it will only: ‘consult with’ Aboriginal groups about wildlife habitat compensation projects; ‘seek input’ from Aboriginal groups on mitigation measures related to traplines; and ‘consider’ community-based monitoring programs. <i>We note that the proposed mitigation measures are vague, non-specific, and do not reference any measurable goals or outcomes. Is the proponent prepared to identify in the EIS specific mitigation measures with measureable goals and outcomes?</i></p>	<p>The mitigations presented in Section 34 include a mix of mitigations that are proposed for the Fish and Fish Habitat, Wildlife Resources, Vegetation and Ecological Communities, Navigation, Harvest of Fish and Wildlife Resources, and Heritage Resources VCs, as well as mitigations that have been identified to address specific concerns raised by Aboriginal groups.</p> <p>BC Hydro has offered to consult with Aboriginal groups in the Project area about mitigation measures, including Saulteau First Nations, and will continue to pursue discussions on this topic as part of the consultation process for the Project. As described in Section 9.2.4 (Process for Resolving Outstanding Issues with Aboriginal Groups), BC Hydro will seek to address outstanding issues by, among other activities, "continuing to seek input and engage in dialogue regarding the EIS and the Project, and to answer questions and address issues, interests, and concerns from Aboriginal groups by identifying appropriate mitigation measures and/or other appropriate means by which to address or resolve potential impacts."</p> <p>The information requirements for mitigation measures set out in Section 8.5.2.2 of the EIS Guidelines does not require that mitigation measures include measurable goals and outcomes.</p>

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ab_0006-054	Saulteau First Nations	Section 34; page(s) 34-19, line(s) n/a. EISG section n/a Comment # 55	In regard to mitigation measures for adverse impacts on hunting and trapping rights, the proponent says it will only: ‘consult with’ Aboriginal groups about wildlife habitat compensation projects; ‘seek input’ from Aboriginal groups on mitigation measures related to traplines; and ‘consider’ community-based monitoring programs. <i>We note that these statements fall short of a firm commitment to undertake effective Treaty rights mitigation measures. Is the proponent prepared to make firm commitments in the EIS to undertake and complete effective and successful mitigation measures?</i>	Please see the response to ab_0006-053.
ab_0006-055	Saulteau First Nations	Section 34; page(s) 34-19, line(s) n/a. EISG section n/a Comment # 56	In regard to mitigation measures for adverse impacts on hunting and trapping rights, the proponent says it will only: ‘consult with’ Aboriginal groups about wildlife habitat compensation projects; ‘seek input’ from Aboriginal groups on mitigation measures related to traplines; and ‘consider’ community-based monitoring programs. <i>We note that the proposed mitigation measures do not include any commitments to “avoid” potential impacts on SFN treaty rights. Is the proponent prepared to make clear commitments to avoid (and not just mitigate) potential impacts?</i>	Please see the response to ab_0006-053.
ab_0006-056	Saulteau First Nations	Section 34; page(s) 34-19, line(s) n/a. EISG section n/a Comment # 57	We note that the proposed mitigation measures say nothing about how construction activities will be timed to avoid impacts on wildlife and hunting and trapping rights. <i>Is the proponent prepared to make clear commitments on the timing of works to avoid impacts on traditional activities?</i>	<p>In Table 14.12 Mitigation Measures for Disturbance and Displacement, BC Hydro proposes to follow the least-risk windows for terrestrial wildlife that are of management concern within the Peace Region of the B.C. Ministry of Forests, Lands and Natural Resource Operations</p> <p>Table 34.2 identifies mitigation measures proposed to address potential impacts on treaty rights to hunt, fish and trap. The following mitigation measures would relate to construction and potential interactions with people on the land:</p> <ul style="list-style-type: none"> - work with Aboriginal groups to ground truth traditional land use information for specific areas within the Project activity zone prior to commencing construction - Seek input from Aboriginal groups respecting mitigation measures related to trap lines in the Project activity zone. - Continue to consult with Aboriginal groups on clearing plans and protocols. - Develop a communications program to inform harvesters of planned or unplanned events related to construction activities that may affect hunting and fishing opportunities or access, or opportunities to harvest plants, berries, and other resources
ab_0006-057	Saulteau First Nations	Section 34; page(s) 34-20, line(s) n/a. EISG section n/a Comment # 58	The proponent states that it will “Work with aboriginal groups to identify potential sites for relocation of medicinal and food plants to compensate for areas that will be inundated.” The proponent also states that it will engage with Aboriginal groups re “opportunities to restore ecological communities that support species of high traditional use value”. <i>Has the proponent made any preliminary site identifications or performed any trials or studies to determine</i>	<p>BC Hydro has not made any preliminary site identifications or performed any trials or studies with respect to the relocation of plants and the restoration of ecological communities. Transplantation is proposed as a mitigation measure for rare plants, and specific plans will be developed by a rare plant ecologist</p> <p>BC Hydro has offered to consult with Aboriginal groups in the Project area, including Saulteau</p>

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			<i>whether the relocation of plants and the restoration of ecological communities is possible and the likelihood of success?</i>	First Nations, about mitigation measures, and will continue to pursue discussions on this topic as part of the consultation process for the Project. As described in Section 9.2.4 (Process for Resolving Outstanding Issues with Aboriginal Groups), BC Hydro will seek to address outstanding issues by, among other activities, "continuing to seek input and engage in dialogue regarding the EIS and the Project, and to answer questions and address issues, interests, and concerns from Aboriginal groups by identifying appropriate mitigation measures and/or other appropriate means by which to address or resolve potential impacts."
ab_0006-058	Saulteau First Nations	Section 19-6; page(s) 19-108 to 19-114, line(s) n/a. EISG section n/a Comment # 59	The proponent's cumulative effects analysis is focused on a relatively small number of industrial projects: (i) alliance meter station relocation, (ii) carbon creek coal mine, (iii) dokie windfarm, (iv) groundbirch mainline, (v) beatton river pipeline replacement, (vi) wildmare and wardenbe wind farms, as well as 'general' oil and gas and forestry activities. <i>Why does the cumulative effects analysis include only these projects? The provincial Major Projects Office has identified 27 projects in SFN territory that are currently in or will be entering EA processes within two years. Obviously missing from the proponent's analysis are the proposed Gething Coal Mine, the proposed Septimus and other windfarms, the Saturn Gas Plant and the development of the Groundbirch gas play (and similar developments at Ferrell Creek), the several proposed major LNG pipelines that are routed through SFN preferred traditional use areas, and other major projects. In addition, the cumulative effects analysis does not take into account the enormous volume of timber that Canfor has recently proposed to extract from SFN preferred traditional use areas in the ACCI and PMT.</i>	The projects and activities to be taken into account in the cumulative effects assessment, and the information about the residual effects of those projects and activities, where available, were identified using the method described in Section 10.5.2 of the EIS. Information about the residual effects of those projects and activities on i) lands and resources and, ii) where available, on the current use of lands and resources for traditional purposes, has been taken into account in the assessment of cumulative effects in Section 19 of the EIS. Comments on the adequacy of the information for the purpose of assessing the potential cumulative effects of the Project on Current Use of Lands and Resources for Traditional Purposes are provided on page 19-108, in Section 19.6 of the EIS. Please also see the Technical Memo: Cumulative Effects Assessment.
ab_0006-059	Saulteau First Nations	Section 19-6; page(s) 19-108 to 19-114, line(s) n/a. EISG section n/a Comment # 60	The proponent says that the Project is unlikely to result in a cumulative adverse effect on the current use of lands and resources for traditional purposes, and that therefore regional approaches to mitigation are not proposed. <i>This is one of the weakest parts of the EIS. The cumulative effects analysis is based on an incomplete assessment of ongoing and proposed industrial development in the surrounding area and in SFN traditional territory. Further, the proponent suggests in a number of places within the EIS that SFN members can adapt to the Project's 'temporary' impacts on their preferred traditional use areas by moving on and exercising their rights in other locations during construction. But the proponent does not acknowledge that those other locations are also subject to other proposals for impactful industrial development. It is certainly necessary to at least develop and consider ideas for regional approaches to cumulative effects mitigation if the current assessment of the impacts on SFN Treaty rights is to be considered credible and comprehensive.</i>	BC Hydro has offered to consult with Aboriginal groups in the Project area, including Saulteau First Nations, about mitigation measures, and will continue to pursue discussions on this topic as part of the consultation process for the Project. As described in Section 9.2.4 (Process for Resolving Outstanding Issues with Aboriginal Groups), BC Hydro will seek to address outstanding issues by, among other activities, "continuing to seek input and engage in dialogue regarding the EIS and the Project, and to answer questions and address issues, interests, and concerns from Aboriginal groups by identifying appropriate mitigation measures and/or other appropriate means by which to address or resolve potential impacts." Please see response to ab_0006-058 as well as the Technical Memo: Cumulative Effects Assessment.
ab_0006-	Saulteau First	Section 19-6;	The proponent says that the Project is unlikely to result in a cumulative adverse	BC Hydro has reviewed and considered the submissions made by First Nations to the BCUC in the

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060	Nations	page(s) 19-108 to 19-114, line(s) n/a. EISG section n/a Comment # 61	effect on the current use of lands and resources for traditional purposes, and that therefore regional approaches to mitigation are not proposed. <i>We note that SFN and other FNs made serious submissions on cumulative effects to the BCUC in around 1980. Has the proponent considered those submissions?</i>	1980 application to the BCUC. The method used to assess cumulative effects is described in Section 10.5 of the EIS and is in accordance with the EIS Guidelines. Please also see the Technical Memo: Cumulative Effects Assessment.
ab_0007-001	Swan River First Nation	Comment #1	<p>Site C is a white elephant, a project that would produce power at a cost much greater than the power can be sold for. If built, it would push BC Hydro one step closer to bankruptcy. Here's why: According to BC Hydro estimates, Site C would cost \$8 billion and would take 10 years to construct. Under optimum conditions, it is rated at 1,100 megawatts or 1,100,000 kilowatts. On average, year-round, it might run at 80% capacity and produce 880,000 kilowatts. To obtain the kilowatt-hours produced per year, we multiply 880,000kw by 24 hours, by 365 days and we get 7,708,800,000-kilowatt hours. A few big industrial customers would use all of this power: The liquefaction of natural gas plant in Kitimat (LNG), Enbridge's Northern Gateway pipeline and a few mines. At present, large-scale industrial customers pay 3.671 cents per kwh so the total income Site C would produce per year would be 7,708,800,000 kwh multiplied by 3.671 cents – an annual operating income of \$282,990,800.</p> <p>This yearly income of \$282,990,800 is not nearly enough to cover the yearly operating expenses. To begin with, the \$8 billion price tag is probably on the optimistic side. It does not take into account the new transmission line to Kitimat that would have to be built, the fertile farms that would have to be expropriated and the large sections of the highway from Fort St. John to Hudson's Hope that would have to be relocated. In addition, typically, there are cost overruns so a price tag of \$10 billion is probably more realistic. Hydro would have to borrow all this money by selling BC Hydro bonds, presumably paying an interest rate of about 3%. During the construction phase, Hydro would have to borrow about \$1 billion each year and pay interest on that so the interest bill accumulated during the 10-year construction period would be \$1.65 billion. The total cost of the project would be \$11.65 billion – \$10 billion construction cost and \$1.65 billion accumulated interest. Borrowing all this money at 3%, Hydro would be stuck with a yearly interest bill of \$349.5 million. Interest, of course, is not the only yearly expense. The dam's projected life expectancy is 100 years so it needs to be written off during that time period. That adds another \$100 million to the yearly expenses so now we have \$449,500,000. With wages, taxes, maintenance, etc., totalling maybe \$5.5</p>	<p>Thank you for providing your input during the public comment period for the Environmental Impact Statement (EIS) for the Site C Clean Energy Project.</p> <p>Section 5.2 of the EIS describes the need for the Project analysis. The need for the Project is "to address future customer demand for firm energy and dependable capacity in BC Hydro's service area." The need for the Project is established based on demand from BC Hydro's residential, commercial, and industrial customers. As set out in Section 5.2 of the EIS, the Project is needed whether or not new LNG projects proceed.</p> <p>As stated in Volume 1 Appendix F Part 1, the Project cost estimate includes "... an appropriate level of contingency to reflect uncertainty in future conditions." As a result, BC Hydro expects project costs "... to be within the bounds of the current capital cost estimate in ordinary market conditions." This Appendix also states that interest during construction is included in the \$7.9 billion Project cost estimate.</p> <p>As stated in Section 7.1.2.2 of the EIS, the average annual energy generation from the Project is 5,100 GWh.</p> <p>All methods of meeting need considered in the EIS portfolio analysis will result in financial obligations to BC Hydro. The comparison of financial attributes between the Project and alternative generation options is provided in Section 5.5.4.3, while the effect of the Project on ratepayer costs is provided in Section 7.1.3 of the EIS. As stated in 7.1.3, "... the Project is expected to result in lower long-term costs to ratepayers than alternative resource options." As a result, the Project would result in a lower financial obligation to BC Hydro than the other available alternative resource portfolios considered.</p> <p>As described in Volume 1 Appendix F Part 1 (Project Cost Estimate), the term of the analysis used to prepare the Unit Energy Cost for the Project is 70-years, equivalent to the financial planning life of the Project. This is the time period over which the majority of the depreciable equipment in the Project would be replaced through investments in sustaining capital.</p> <p>The operating life of the Project is greater than 100 years, as described in Section 4.6 (Page 4-69, line 20) of the EIS. The Project would be expected to operate as long as it was properly</p>

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			<p>million, we get yearly operating expenses of \$455,000,000. Comparing the yearly operating income of \$282,990,800 with the yearly operating cost of \$455,000,000, we see a yearly loss of \$166,509,200.</p> <p>The above analysis is based on a very favourable low interest rate of 3%. Should interest rates rise during the next few years, as many observers believe they will, Hydro's yearly loss would increase dramatically. At a rate of 4%, Hydro's yearly operating expenses would be \$571,500,000 and its yearly loss would be \$288,509,200. What's more, Hydro has very little scope to increase the rate of 3.671 cents per kwh that big industrial customers are paying now. If that rate goes up, these customers would generate their own electricity using natural gas. The capital cost of a natural gas facility, producing about the same amount of electricity as Site C, would cost only about \$1.5 billion so these facilities would not be saddled with the huge interest burden of Site C.</p>	maintained through investments in sustaining capital.
ab_0007-002	Swan River First Nation	Comment #2	The steep banks of the Peace River are highly unstable so landslides and a great deal of sloughing would occur, reducing the volume of water held by the reservoir. The huge silting problem would reduce the capacity to produce power, making it even more difficult to generate the money to service the billions of dollars of debt.	Please see the Technical Memo: Reservoir Impact Lines.
ab_0007-003	Swan River First Nation	Comment #3	Over 13,000 acres of prime agricultural land would be lost, as 107 kilometres of the Peace, Halfway and Moberly rivers would be flooded. This area, during the growing season, could produce enough food for all of northern BC. The Peace River flats have their own mini-climate so even melons can be produced there. As well, 12,000 acres of boreal forest (an effective carbon sink) would be lost.	<p>The loss of agricultural land associated with the Project and proposed mitigation measures are described in Section 20. Specifically, Section 20.2.2.1.5 describes regional climate change predictions and Section 20.3.11 describes potential Project effects on regional food production and consumption.</p> <p>The EIS concludes that in the long term, the Project would not affect the future ability of the Peace region to be food self-reliant in vegetable crops that are climatically adapted and in dairy, meat, and egg and poultry products (EIS, Section 20.3.11).</p> <p>Please also see the following Technical Memos:</p> <ul style="list-style-type: none"> - Agriculture - Greenhouse Gas Emission Merits of the Project
ab_0007-004	Swan River First Nation	Comment #4	The carbon footprint of Site C is enormous. Three and a half billion cubic meters of concrete will have to be poured and one and a half million cubic meters of wood will have to be burned, not to mention the use of heavy equipment for 10 years.	Please see the Technical Memo: Greenhouse Gas Emission Merits of the Project. The greenhouse gas emissions from the Project, in relation to the amount of energy produced would be similar to emissions associated with wind turbines.
ab_0007-005	Swan River First Nation	Comment #5	The new reservoir would cut the Yellowstone to Yukon Wildlife Corridor in half at its narrowest and most vulnerable point. Many large animals require these lands for sufficient habitat. Wetlands that support migratory flocks would be	<p>Please see the Technical Memo: Movement of Grizzly Bears and Large Carnivores.</p> <p>The effects of the Project on wetlands are described in Section 13, Vegetation and Ecological</p>

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			gone. The habitat of several red and blue-listed species would be destroyed, including fisher and Northern Myotis bats.	Communities. The effects of the Project on fisher and bats are described in Section 14 (Wildlife).
ab_0007-006	Swan River First Nation	Comment #6	The majority of First Nations in northeastern BC are adamantly opposed to the dam. In an area already overburdened with oil and gas developments, destroying the last relatively untouched areas in BC's Peace River Valley is the last straw for First Nations and other residents. The communities of northern BC have borne the brunt of industrial development in the province for decades. People are still feeling the impact of the first two dams that flooded people out of house and home.	BC Hydro acknowledges in the EIS that constructing and operating a project of this size and scope has the potential to result in adverse environmental, social, economic, health and heritage effects. These potential effects are assessed in the EIS, along with BC Hydro's proposed mitigation measures and follow up programs. The EIS also documents the need for, and benefits of, the Project
ab_0007-007	Swan River First Nation	Comment #7	The Peace River Valley is an area of stunning natural beauty. Destroying this valley to build a money-losing power dam to export bitumen and LNG to Asia, which, in turn, will dump more greenhouse gases into the atmosphere, seems like utter madness.	<p>The need for the Project is described in Section 5 (Need for, Purpose of and Alternatives to the Project). Section 5.2 of the EIS describes the need for the Project, which is "to address future customer demand for firm energy and dependable capacity in BC Hydro's service area." The need for the Project is established based on demand from BC Hydro's residential, commercial, and industrial customers.</p> <p>There is a need for new energy and capacity resources within the next 10 to 15 years without any potential LNG demand. The Project is needed whether or not new LNG projects proceed.</p> <p>The Project would have among the lowest emissions of Greenhouse Gas (GHG) per unit of energy produced over the Project life compared to other forms of electricity generation.</p>
ab_0007-008	Swan River First Nation	Comment #8	If Site C was built and its power used for export-based LNG plants and bitumen pipelines, the Canadian dollar would rise substantially above parity, sending even more shoppers south of the border. The Canadian Retail Council has called this a \$20 billion dollar hole. That hole would become much bigger – \$30 or \$40 billion dollars per year. The jobs lost in Canadian retailing and manufacturing would far outweigh the few short-term construction jobs created by the carbon pipelines and Site C.	Section 5.2 describes the need for the Project analysis. The need for the Project is "to address future customer demand for firm energy and dependable capacity in BC Hydro's service area." The need for the Project is established based on demand from BC Hydro's residential, commercial, and industrial customers. As set out in Section 5.2 of the EIS, the Project is needed whether or not new LNG projects proceed.
ab_0007-009	Swan River First Nation	Comment #9	In closing, the First Nations in Treaty 8 need a separate process that deals specifically with treaty. Lands not taken up are not Crown lands, rather, they are lands that treaty 8 First Nations have full jurisdiction over. It is only when a bonafide consultation process takes place, and that it respects and honours treaty, that lands may be taken up and then it could be called "Crown" lands.	<p>The matter raised with respect to a separate process that deals specifically with treaty is outside the scope of the environmental assessment.</p> <p>These statements are not consistent with BC Hydro's understanding of Treaty 8 as described in Section 34.3 (Asserted or Established Aboriginal and Treaty Rights).</p>
ab_0008-001	Woodland Cree First Nation	CvrLtr1	<p>(Preamble, cover letter.) Concern #1: Alterations of the Surface Water Flow Regime in the Peace River</p> <p>The alterations in the flows of the Peace River downstream of the Project, especially when combined with the changes in the flow regime from the two previous BC Hydro dams, may affect our use and access to traditional plants and</p>	<p>Thank you for providing your input during the public comment period for the Environmental Impact Statement (EIS) for the Site C Clean Energy Project.</p> <p>The potential effects of the Project on the exercise of asserted or established Aboriginal rights and treaty rights are described in Section 19 and Section 34.</p>

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			foodstuffs along the shores of the Peace River.	As stated in Section 34.3.3, "It is anticipated that the Project would have no impacts on the exercise of treaty rights of 11 of the 21 First Nations that are signatories to Treaty 8." The Woodland Cree First nation is one of these 11 First Nations.
ab_0008-002	Woodland Cree First Nation	CvrLtr2	(Preamble, cover letter.) Concern #2: Changes in the Ice Regime on the Peace River Changes in the ice regime on the Peace River due to the proposed Site C project could affect our ability to practice our treaty rights and impact our traditional activities such as hunting, fishing, gathering, and trapping. Specifically, poor ice conditions On the Peace River may delay or prevent river crossings in early winter of large animals, such as moose, or by WCFN members.	Please see the response to ab_0008-001. The effects of changes in the ice regime on large animals are described in Section 14.
ab_0008-003	Woodland Cree First Nation	CvrLtr3	(Preamble, cover letter.) Concern #3: Fish Toxicity in the Peace River The Project would cause increased levels of methyl mercury in fish both in the reservoir and below. The fact that there could be mercury-contaminated fish in the Peace River downstream of the dam would likely cause WCFN members to avoid or consume less fish from the Peace River due to fear and anxiety over mercury toxicity.	Section 11.9 Methylmercury and Volume 2 Appendix J Mercury technical Data Reports provide information on potential changes of methylmercury. Please refer to the Technical Memo: Methylmercury.
ab_0008-004	Woodland Cree First Nation	CvrLtr4	(Preamble, cover letter.) Concern #4: Dam Safety This concern centres around the potential for catastrophic (or even partial) failure of one or more of the three large dams and the impact of the release of large volumes of waters from the reservoirs over a short period of time. Releases of large volumes of water from the dams in emergency situations is allowed under Be Hydro's license, but the impact of such releases were not assessed or considered in the EIS.	Section 11.4.4.2 describes the expected frequency, duration, and magnitude of spills from the Project, including due to unexpected circumstances at G.M. Shrum and Peace Canyon generation stations. Section 37.1.11 describes the performance of the Project during large floods up to the probable maximum flood. Please see the Technical Memo: Dam Safety.
ab_0008-005	Woodland Cree First Nation	CvrLtr5	(Preamble, cover letter.) Concern #5: Cumulative Effects The Project would add to the cumulative effects On WCFN's traditional lands and waters. This area has already experienced significant changes due to the construction and operations of the two previous Be Hydro projects on the Peace River, from forestry operations, and from the recent growth in oil and gas activities in the area which WCFN depends for its livelihood and culture.	Please see the Technical Memo Cumulative Effects Assessment.
ab_0008-006	Woodland Cree First Nation	Volume(s) 1, 2, section(s) Appen. B, 11.4.3.2.4; page(s) 11-72, line(s) 8-10.	BC Hydro states the <i>Volume 1 Appendix B Reservoir Filling Plan includes a description of the expected changes to the surface water regime of the Peace River during this phase of construction.</i> The reservoir filling plan does not include any assessment or discussion of the impacts downstream of the Site C dam during this filling period.	The changes in downstream flow during reservoir filling are described in Volume 1, Appendix B Reservoir Filling Plan Section 3. As stated in Volume 1, Appendix B Reservoir Filling Plan Section 3, the minimum flow downstream of the Project will be 390 m3/s, the same as the minimum flow during operations.

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ab_0008-007	Woodland Cree First Nation	Volume(s) 2, section(s) 11.4; page(s) 11-62, line(s) 5. EISG section n/a Comment # 2	All changes in the Surface Flow Regime should be presented against the context of the pre-regulation conditions. In order for this EIS to include a truly cumulative assessment, the effects of the two existing dams (W.A.C. Bennett and Peace Canyon) must be considered.	The baseline condition for the purpose of describing the flow regime is the current state. Section 11.4.2.3 describes the changes to the surface water regime due to regulation to provide context for the predicted changes associated with the Project. Please also see the Technical Memo: Cumulative Effects Assessment.
ab_0008-008	Woodland Cree First Nation	Volume(s) 2, section(s) 11.4.2.1; page(s) 11-62, line(s) . EISG section 9.3.1, Pg. 40 Comment # 3	The Surface Water Flow Regime portion of the EIS does not refer to or seem to include the approved Dunvegan Dam (run-of the-river). The Dunvegan Dam is only included n the analysis on ice formation. This facility, while approved, has not yet been built.	Thank you for your comment.
ab_0008-009	Woodland Cree First Nation	Volume(s) 2, section(s) 11.4.2.4.1, 11.4.3.2, 11.4.4.2; page(s) 11-67, 11-69, 11-74, line(s) 25-29. EISG section 9.3.1, Pg. 40 Comment # 4	Monthly average flows for the Peace River are presented for 1960-1966 and 1973-2010 (Figure 11.4.5) and for 1992-2010 (Figure 11.4.6). However, the EIS does not include a similar presentation of the predicted average monthly flows with the effects of the Site C project (neither during construction nor during operations).	Predicted changes in monthly average flows at the Site C dam site are described in Section 11.4.4.2.2. Figures illustrating the predicted change in monthly average flows due to the Project are presented in the Technical Memo: Spatial Boundary Selection.
ab_0008-010	Woodland Cree First Nation	Volume(s) 2, section(s) 11.4.2.4.2, 11.4.3.2, 11.4.4.2; page(s) 11-67,	Daily hydrographs for the Peace River are presented for four downstream points for 1973-2010 (Figures 11.4.7 - 11.4.10). However, the EIS does not include a similar presentation of the predicted flows at these same four locations under the influence of the Site C project (neither during construction nor during operations).	Section 11, Figures 11.4.7 through 11.4.10, present observed daily flow hydrographs for Water Survey of Canada stations at Hudson's Hope, Taylor, Town of Peace River, and Peace Point. The predicted influence of the Project on flows and water levels at these locations is provided. At Hudson's Hope, the river would be transformed into a reservoir; predicted Site C reservoir levels are provided in Section 11.4.4.2.1. Predicted changes in flows and water levels at Taylor, Town of Peace River, and Peace Point are provided in Section 11.4.5, and in Volume 2 Appendix D, Part 2

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		11-69, 11-74, line(s) 39-42. EISG section 9.3.1, Pg. 40 Comment # 5		Downstream Flow Modelling (1D).
ab_0008-011	Woodland Cree First Nation	Volume(s) 2, section(s) 11.4.2.4.2, 11.4.5.2.5; page(s) 11-67, 11-81, line(s) 39-42, 29-30. EISG section 9.3.1, Pg. 40 Comment # 6	In the EIS, BC Hydro discusses the changes in baseline daily water levels downstream of the Site C project (Table 11.4.9) and this information is presented in a series of figures (Figures 11.4.7 - 11.4.10) for the years 1973-2010. The average daily ranges in water levels indicate that in the Town of Peace River, nearly 400 km away from the Peace Canyon Dam, there is a noticeable (albeit small) difference in the average daily levels. There is no presentation or discussion of the range of values, especially the potential high and low water levels in the EIS.	<p>Section 11, Table 11.4.9 provides the predicted average daily range of water levels with and without the Project.</p> <p>Section 11, Figures 11.4.7 through 11.4.10 present baseline flow hydrographs (observed daily flows from 1973 to 2010) to help describe the baseline conditions of the Peace River.</p> <p>Information on the predicted change in high and low water levels (and/or flows) is described in Sections 11.4.5.2.3 and 11.4.5.2.4, as well as in Volume 2 Appendix D, Part 2 Downstream Flow Modelling (1D).</p>
ab_0008-012	Woodland Cree First Nation	Volume(s) 2, section(s) 11.5; page(s) n/a, line(s) n/a. EISG section 9.3.2, Pg. 42 Comment # 7	The EIS is lacking forecasted or predicted efforts of the Site C project on downstream water quality. Only baseline conditions are presented. The EIS only appears to require baseline conditions, but this is surely an error in the EIS guidelines and should be required of the proponent.	<p>Section 11.5 presents existing water quality conditions in the Peace River. Volume 2, Appendix P, Part 2, describes the results of the model (CE-QUAL-W2) used for predicting water quality constituent concentrations and phytoplankton and periphyton biomasses in the proposed Site C reservoir and the Peace River during the operation of the proposed reservoir.</p> <p>The characteristics of predicted water quality constituent concentrations downstream of the proposed Site C dam, up to the confluence with Alces River, can be found in Volume 2, Appendix P, Part 2, Section 4.5. The water quality predictions in the Peace River show that changes in concentrations occur between existing and proposed Site C reservoir operation conditions. These changes, however, gradually decrease in the Peace River as the distance from the proposed Site C dam increases. Volume 2, Appendix P, Part 2, Section 4.5 concludes that these changes are small or negligible in the Peace River at the confluence with the Alces River and downstream.</p>
ab_0008-013	Woodland Cree First Nation	Volume(s) 2, section(s) 11.7.1.1, 11.7.3.3.3; page(s) 11-103, 11-114, line(s) 39-40, 2-3. EISG section	BC Hydro monitored water temperature at a location 89 km downstream of the Peace Canyon dam (Peace Above Pine station) and at a further 51 km downstream (peace 5 station, about 60 km downstream of the Site C project). BC Hydro states the temperatures at the Peace 5 station peaked at the same time as those at the Peace Above Pine station, but there were slight differences in water temperatures between the two stations. BC Hydro modelled predicted water temperatures at both stations with an operational Site C dam (Figures 11.7.5 and 11.7.6). Modelling showed that even as far as the Peace 5 station, there would be slight changes in water temperatures as a result of the Project.	<p>Please see the Technical Memo: Spatial Boundary Selection.</p> <p>The environmental assessment of the proposed Dunvegan Project concluded that the Dunvegan headpond would have a negligible effect on water temperatures in the Peace River. As such, there was no reason to consider the proposed Dunvegan Project in the water temperature studies.</p>

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		9.3.4, Pg. 43 Comment # 8	Given that water temperatures are predicted to change at the Peace 5 station, the assessment of the thermal impacts on the Peace River should be extended downstream to at least the Town of Peace River and should be presented graphically. This assessment should also include the approved Dunvegan Dam.	
ab_0008-014	Woodland Cree First Nation	Volume(s) 2, section(s) 11.7.1, 11.7.3; page(s) 11-102, 11-106, line(s) 22, 8. EISG section n/a Comment # 9	In the EIS, BC Hydro presents distances for all monitoring points and potential impact locations from the W.A.C. Bennett Dam rather than from the Site C project location. Thus, all of these locations are made to seem further away from the Site C dam than they really would be. For example, the EIS (in various places, but see Section 11.7.1, page 11-102 for one example) refers to the distance to Peace River as being 400 km down the Peace River from the W.A.C. Bennett and Peace Canyon dams, when in fact it is less than 300 km downstream from the Site C project (and 377 km from the Peace Canyon Dam). Having distances referenced against the W.A.C. Bennett Dam, rather than from the Site C project itself, seems rather misleading.	Thank you for your comment.
ab_0009-001	McLeod Lake Indian Band	Volume 2; 12.6.1 Characterization of Residual Effects (Specific to Section 12 – Fish and Fish Habitat); page(s) 12-82, line(s) . EISG section Comment # F1	The proponent has excluded consideration of upstream/prior (above Peace Canyon Dam) impacts and effects within all aspects of the effects assessment methodologies associated with this EIS, but has included (Table 12.21) the criteria “Context” within their effects assessment process (i.e. “This refers to the extent to which the area within which an effect may occur has already been adversely affected by human activities; and is ecologically fragile and has little resilience and resistance to imposed stresses. <u>The proponent has identified their definitions for applying the Criteria of Context as...</u> Disturbed: Area has been substantially previously disturbed by human development or human development is still present. Undisturbed: Area relatively pristine or not adversely affected by human activity”). The proponent doesn’t convey how the definitions applied to the Criteria “Context” for the purposes of characterizing residual effects <u>is being interpreted or quantified</u> . If the definition Disturbed is being used to convey a lesser-weighting within the effects assessment process, this has the dual effect of dampening the assessment of Significance of Residual Effects and the Cumulative Effects Assessment process. This is particularly problematic in consideration of the Fish and Fish Habitat VC subcomponents. Table 8.3 of the EIS Guidelines outlines the Residual Effects Characterization Criteria, including Context “This refers to the extent to which the area within which an effect may occur; has already been adversely affected by human activities; and is ecologically fragile and has little resilience and resistance to imposed stresses.” It would appear that “Disturbed” should infer a higher level of importance when characterizing potentially adverse effects, and it is not clear	<p>Thank you for providing your input during the public comment period for the Environmental Impact Statement (EIS) for the Site C Clean Energy Project.</p> <p>For clarification, "disturbed" criteria were not used to convey a "lesser weighting within the effects assessment process" as suggested in the comment.</p> <p>The Peace River valley, and the fish and fish habitat found in the LAA, have been previously disturbed by human development, through hydro projects, farming, logging, highways and bridges. As described in Table 12.22, the disturbance criteria carry through all the activities and potential effects in the table. Context takes into account situations where fish and fish habitat may be "ecologically fragile and [have] little resilience and resistance to imposed stresses"; accordingly, where it was appropriate, context did have a higher level of importance when characterizing residual adverse effects.</p> <p>For example, the Moberly River Arctic grayling were considered ecologically fragile with little resilience and resistance to imposed stresses during the assessment; therefore, it was identified that certain activities that affected Moberly River Arctic grayling resulted in a significant adverse effect.</p> <p>Please also see Section 4.1.</p>

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			if this was the manner in which the proponent applied this criteria. Clarification should be provided in this regard.	
ab_0009-002	McLeod Lake Indian Band	Section 11.9 (and Appendix J) ; page(s) 11-167, line(s) . EISG section Comment # F2	<p>A thorough assessment of potential mercury/methylmercury level fluctuations facilitated by the project is provided. However, an assessment of baseline and forecast methylmercury levels in fish tissues is considered across a pool of samples for each species, averaging-out observations, which are translated to forecast levels and the HHRA.</p> <p><i>Pg 11-167..."The mean mercury concentration value was used for adult bull trout, not the maximum concentration. Although smaller fish will have a lower absolute mercury increase and larger fish may have a higher concentration, use of the mean better approximates typical exposure to humans. For example, although the maximum mercury concentration of the 50 bull trout measured from the Site C technical study area since 2008 was 0.34 mg/kg, the next highest value was 0.17 mg/kg. All other fish had lower concentrations than 0.17 mg/kg"</i></p> <p>A potentially more relevant approach, particularly for MLIB (relative to their consumptive habits), would be to segment baseline observations and forecasts by fish size (within species, particularly bull trout), reflecting selective preferences.</p> <p>The implications of the existence and amplification of "higher risk fish" should be considered, particularly given consumption preferences.</p> <p>It is also evident from the background data compiled that a regular monitoring program should form part of the proposed Site C mitigation works.</p>	<p>Exposure to methylmercury in fish typically occurs over a long time period (months to years) and it is reasonable to assume a 'mean' mercury concentration that is calculated from both small and large fish.</p> <p>A follow-up monitoring program will be developed to monitor mercury in the environment, including fish.</p> <p>Please see the Technical Memo: Methylmercury.</p>
ab_0009-003	McLeod Lake Indian Band	Volume 2; 12.6.3.2 Conclusion ; page(s) 12-94,95, line(s) . EISG section Comment # F3	Arctic grayling populations within the previously impounded (upstream) portions of the Peace watershed had been designated as Red Listed or Critically Imperilled, due to the effects of harmful habitat alterations. The proponent recognizes there's significant potential for the Arctic grayling population within the LAA to be negatively affected. A qualified opinion should be provided as to the implications of a further contraction of the range within which the species/population is viable – in relation to viability of Arctic grayling in the Peace watershed. Arctic grayling are on COSEWIC's candidate wildlife species list, and the correspondence referred to above should be forwarded to the Chair of the COSEWIC Freshwater Fishes Subcommittee.	<p>For clarification: Arctic Grayling are designated as yellow listed in the Peace River, not red listed. Please see Section 12.3 .1.</p> <p>The scope of the Fish and fish Habitat effects assessment is in accordance with the EIS guidelines and appropriate information is provided in the EIS.</p>
ab_0009-004	McLeod Lake Indian Band	Volume 2; 12.3.2.1, Coldwater Versus Coolwater Fish	The proponent should provide information to substantiate their rationale for not considering brook trout, pygmy whitefish, brook stickleback, finescale dace, northern redbelly dace, peamouth, and pearl dace – as a component of the LAA fish assemblage and therefore not extending their consideration of the project's effects on fish and fish habitat to include these species – re the proponent's	<p>As stated in Section 12 Fish and Fish Habitat Section 12.3.2.1, "these species represent transients from populations that reside outside the influence of the Project."</p> <p>Pygmy whitefish are considered "may be at risk" (Table 12.5). However, pygmy whitefish have been found in a few widely separated large lakes (upper Waterton Lake, Lake Athabasca, Great</p>

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		Groups ; page(s) 12-25, line(s) . EISG section Comment # F4	“classification” of these species as “transients”., particularly given the status of pygmy whitefish in Alberta.	Bear lake and Lake Superior). Only one river population in the upper Athabasca River is known from east of the Rocky Mountains. These populations of pygmy whitefish are outside the influence of the Project.
ab_0009-005	McLeod Lake Indian Band	Volume 2 (Section 12.6) ; page(s) 12-80, line(s) . EISG section Comment # F5	A comprehensive description of the implications all findings of adverse effects should be provided with respect to the specific implications of that finding on any fish species within the LAA that is classified as Endangered, Threatened or of Special Concern (BC designation) or “May be at Risk” (Alta. Designation).	Section 12 Fish and Fish Habitat Section 12.3.1 identifies the conservation of fish species considered in the assessment. Adverse effects are described in terms of the key species affected and take into account conservation status. See the response to ab_0009-004 on other species residing outside the influence of the Project.
ab_0009-006	McLeod Lake Indian Band	Vol 2, Appendix H ; page(s) 21, line(s) . EISG section Comment # F6	<p>The SCP reservoir is predicted to consist of 2 distinct zones reflecting considerably different characteristics...<i>“The reservoir can be divided into two sections with different temperature regimes, similar to the temperature regimes in Dinosaur Reservoir but with a more diffuse transition. In the first 20 to 30 km of the Site C reservoir, velocities would be higher and the temperature would be vertically homogeneous. This part of the reservoir would be shallow (less than 20 m deep) and narrow (about 0.8 km wide), which would result in high velocities, between 0.2 m/s and 2.0 m/s, and sufficient shear stress to mix the water.”</i></p> <p>The depth and velocity of the upper 20-30km zone of the reservoir will not possess similar limnetic (temperature profile and in particular, residence time) characteristics relative to the lower more “lake-like” portion of the reservoir. The upper reservoir section will in essence reflect the chemical and primary and secondary biological characteristics of the Peace Canyon Dam outflows. The degree of distinction in the characteristics of the two portions of the reservoir will vary but will be permanent (Vol 2, Appendix H Figure 6.3). <u>It appears this has not been considered in the modelling of primary, secondary and fish production and/or the areal translation of those forecasts to the proposed Site C reservoir, and it would change all such predictions substantially.</u></p>	<p>The effects of spatial heterogeneity in bathymetry, velocities and other factors on primary productivity are taken into account for primary productivity predictions within CE-QUAL-W2 (Cole and Wells 2008, full citation in Appendix P2 of Volume 2).</p> <p>As described in Appendix P3, applying a spatially homogenous model to 18 scenarios with widely varying assumptions about both primary production and fish productivity is scientifically defensible, brackets the effects of spatial heterogeneity on secondary production and fish production raised in the comment and is in accordance with the EIS Guidelines.</p>
ab_0009-007	McLeod Lake Indian Band	Vol 2, Appendix H ; page(s) 21-23, line(s) . EISG section Comment # F7	The proponent recognizes the uncertainty regarding the behaviour of the lower portion of the proposed reservoir in terms of stratification, but makes little mention of the implications of this uncertainty on the biological and fisheries productive potential of the proposed reservoir. In particular, the short and longer-term impacts of a year in which stratification is not achieved and/or maintained, and/or maintained over various durations and extents – should be considered in relation to primary, secondary and fish production potential and	The effects of thermal stratification on primary productivity are considered in CE-QUAL-W2 (Cole and Wells 2008, full citation in Appendix P2 in Volume 2). Volume 2, Appendix P2 Section 4.8 (pgs. 49-51) describes a sensitivity analysis of CE-QUAL-W2 across 27 scenarios, varying flow, nutrients and total suspended sediments. The lower and upper bookends of this CE-QUAL-W2 sensitivity analysis, as well as the most likely predictions, were used in Ecopath simulations.

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			<p>forecasting.</p> <p>A set of modelled scenarios should be provided that depict the nature (timing, stability/differential, extent, duration, etc.) of the reservoir's forecast stratification behaviour based on the range of inflows and outflows anticipated, across the range of potential inflow temperatures observed and outflow temperature targets, and a reasonable range of possible meteorological conditions. The intent should be provide the ability to evaluate the proposed reservoir's range of productivity potential and characteristics and assign a probability to each range, including a consideration of the frequency of each range.</p> <p>The proposed reservoir's productivity-probabailities should then be considered the basis of primary, secondary and fish productivity forecasts over (suggested 5-10-year) temporal ranges from baseline, through construction phases, to post operation periods.</p>	
ab_0009-008	McLeod Lake Indian Band	Vol 2, Appendix H ; page(s) na , line(s) . EISG section Comment # F8	<p>The predictions of the SCP reservoir's fish fauna (particularly given predictions of fish production primarily transitioning to lake whitefish, kokanee and lake trout) are highly dependent on entrainment of these species via Williston and Dinosaur reservoirs. The species assemblage and abundance of those species in those reservoirs has been transitioning overtime. The creation of the proposed SCP reservoir entails a 8-10year construction period, followed by a lengthy period within which it would it would take on characteristics that may reflect the reservoir habitats facilitating a lake whitefish-kokanee-lake trout dominated sportfish community. Future trends (10-20years) in the fish populations within Williston and Dinosaur reservoirs, and possible constraints to entrainment-recruitment to Site C should be reflected in forecasts of fish biomass production, or the forecasts should be "qualified" as hypothetical production potential.</p> <p>In the absence of entrainment-recruitment adequate to facilitate the forecast species assemblage and productivity-biomass potentials, particularly in the absence of key pelagic prey species such as kokanee or lake whitefish; consideration should be given to forecasting the species assemblages that may arise/occur-remain, and the resulting productivity-biomass.</p>	<p>As described in Volume 2 Appendix P3, CE-QUAL-W2 and Ecopath model runs were completed for two periods: an early stage when bank erosion and nutrient loading from flooded lands would be at their peak, and a longer-term stage, when bank erosion and nutrient loading would have stabilized. In most reservoirs, the early stage typically lasts about 10 years, and after 40 years, most reservoirs have stabilized (the longer term)."</p> <p>The models and methods used to estimate kokanee and lake whitefish abundance in the proposed Site C reservoir are described in Section 6.4 and Volume 2, Appendix P3 Appendix 6F.1 and Volume 2, Appendix Q3 Section 2.7.</p>
ab_0009-009	McLeod Lake Indian Band	Section 12 (Appendix P Part 3) ; page(s) na ,	Tables of fish species present within the fisheries LAA (broken out into the reaches of the LAA including major tributaries) at a minimum of two annual-seasonal periods beginning at baseline conditions and as modelled/forecast at incremental periods post initiation of Site C construction, to perhaps for 40	<p>The scope of the Fish and Fish Habitat assessment is in accordance with the EIS guidelines and appropriate information is provided in the EIS.</p> <p>Refer to Volume 2 Appendix O for information on fish species present within the LAA. Refer to Section 12 Fish and Fish Habitat Section 12.4.2.1 for predictions on species composition changes</p>

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		line(s) . EISG section Comment # F9	years post initiation of operations – should be provided (perhaps in 10-year increments for the post impoundment period). Parameters such as total biomass by species should be included. These tables would be analogous to Table 6.7 (Volume 2 Appendix P Part 3 – pg. 64) but should represent species rather than “Fish Groups”. The tables should be based on the range of productivity-probabilities identified. This is fundamental information to assist in informing an effects assessment of MLIB Treaty 8 Rights/Interests.	in the short, medium and long term. These timeframes are considered sufficient for the EIS.
ab_0009-010	McLeod Lake Indian Band	Volume 2, Appendix P ; page(s) na , line(s) . EISG section Comment # F10	The predictions of productivity within the Site C reservoir are highly dependent on the characteristics (those that influence primary productivity) of inflowing water from upstream reservoirs, particularly Williston Reservoir. The existing water licence for Williston Reservoir provides for a range of reservoir management (lower drawdown) that is outside the range of “norms” through which the reservoir has generally been managed since its creation. It is unclear if the extensive modeling (Volume 2 Appendix P) that has been completed for the purposes of predicting the primary, secondary and fisheries productive potential of the Site C reservoir has considered the implications of any alterations (outside of “norms”) to the management of Williston Reservoir, and the resulting chemical and physical characteristics of inflows that would occur.	Volume 2, Appendix P, Part 2, Section 4.8 includes a sensitivity analysis conducted on the predictions of phytoplankton and periphyton biomasses in the proposed Site C reservoir and the Peace River between the proposed Site C dam and the confluence with the Alces River. The sensitivity analysis considered modeling runs with flow scenarios that departed from average inflows from Peace Canyon Dam (which is directly influenced by flows from Williston Reservoir) and tributaries. The flow scenarios used in the modeling runs included dry (5th percentile of the 10-year moving average) and wet (95th percentile of the 10-year moving average) flow conditions, as stated in Volume 2, Appendix P, Part 2, Section 3.4. The ranges of predicted phytoplankton and periphyton biomasses resulting from this sensitivity analysis are presented Volume 2, Appendix P, Part 2, Table 4.3. The result of this sensitivity analysis, with the CE-QUAL-W2, was then used as input in a sensitivity analysis with Ecopath to predict the range of secondary and fisheries potential. Predictions of secondary and fish biomasses from the sensitivity analysis with Ecopath can be found in Volume 2, Appendix P, Part 3, Section 6.6.4.
ab_0009-011	McLeod Lake Indian Band	Section 12 ; page(s) pg 12; 42-86 , line(s) . EISG section Comment # F11	<p>The changes in the timing of releases from Site C (relative to existing conditions) due to the travel time required for flow between the facilities is recognized. “Under the existing conditions at the Site C Dam site, discharge is highest during hours of darkness (6:00 p.m. to 6:00 a.m.) and lowest during hours of daylight (6:00 a.m. to 6:00 p.m.). The reverse would occur with Site C operation.” This reversal has major implications for habitat use/suitability and fish behaviour and survivability downstream of the proposed Site C dam location.</p> <p>Pg 12-44 <i>“Under present conditions, habitat availability in the vicinity of the Site C Dam is greatest during hours of darkness when fish species require feeding habitats. Availability of habitats located in shallow water areas (i.e., main channel margins and side channels) would be most affected by flow changes. A portion of these habitats would not be available during hours of darkness, depending on Site C operations.”</i></p> <p>Further...</p> <p>The proponent provides extensive consideration of potential changes to the Peace River’s characteristics downstream of the proposed Site C dam location, including temperature, discharges (including timing, daily and hourly</p>	<p>The change in the timing of high flows downstream of the Site C dam and implications to fish are described in Section 12, page 12-44.</p> <p>The scope of the Fish and Fish habitat effects assessment is in accordance with the EIS Guidelines and appropriate information is provided in the EIS.</p> <p>Table 12.20 Summary of Residual Effects on Fish and Fish Habitat summarizes the potential residual effects. Upon further assessment of characterization of residual effects and determination of significance, Table 12.23 summarizes the significant residual adverse effects on fish and fish habitat. Section 12.6.3.1, including page 12-93, provides a summary of the significant residual effects on fish habitat, health and survival and movement.</p> <p>"Modest" means relatively moderate, limited, or small.</p>

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			<p>fluctuations), sediment transport/clarity and fluvial geomorphology, flowrating/elevations, productivity and information regarding fish usage and possible mitigation measures; but it is unclear if a quantitative assessment of adverse impacts and effects was completed (that would guide mitigation and compensation measures) for either the construction or operational phases. At present, the proponent has captured downstream impacts as a Potential Residual Effect – change in habitat (Table 12.20), but deemed them not to be significant.</p> <p>Volume 2, 12-93; “Operation of the Project will result in <u>modest</u> changes to fish habitat downstream of the dam. These changes to habitat have been assessed to be of low magnitude and limited in the proximal reach of the Peace River between the Project and the Pine River confluence. Downstream of the Pine River, changes diminish as a result of flow attenuation and tributary inflows. The changes to habitat would include increases in the range of flow fluctuations, and limited changes to temperature and water quality.”</p> <p>It is not possible to determine how the proponent quantified their effects findings (modest? – relative to what?) with respect to downstream impacts.</p>	
ab_0009-012	McLeod Lake Indian Band	Vol 2, Appendix P, Part 3 ; page(s) pg vii , line(s) . EISG section Comment # F12	<p>A 72% decrease in benthic biomass is modelled-predicted downstream of the proposed SCP dam. Total fish biomass is modelled to increase 1.2-1.4 fold, primarily related to increases in the standing crop of mountain whitefish. Vol 2, Appendix P, Part 3 – pg vii “<i>Despite the reduction in benthic biomass, it was predicted that there would be enough benthos to support all the fish species in the downstream model. However, there is uncertainty regarding the degree to which this predicted decline in benthic biomass would propagate up the food chain. Ecotrophic efficiencies in Ecopath suggest that there would still be sufficient benthos under most scenarios to support the fish community (except for the low bookend from CE-QUAL-W2). Benthic organisms from the Pine and Beaton rivers would continue to contribute to the post-Project benthic biomass downstream of the dam, and could partly mitigate the predicted decrease in benthic biomass below Site C Dam. Hence, there is uncertainty in the consequences arising from the predicted decline in benthic biomass. “</i></p> <p>This is recognized as a modelling anomaly, and what substantiates the prediction within the model should be explained (i.e. ecotrophic efficiencies). Is it reasonable to accept the model’s result indicating diminished benthic biomass, but improved water clarity – will increase the incorporation of benthic biomass into fish biomass (in this case mountain whitefish biomass) to such a degree? Does the modeled prediction of whitefish biomass, density/standing</p>	<p>The concern raised in the comment does not represent a modeling anomaly, but rather it represents a model prediction of which uncertainty has been clearly acknowledged.</p> <p>The quoted text recognizes the uncertainty associated with the consequences of a change in benthic biomass downstream of the Project. Based on assumptions of ecotrophic efficiencies, the Ecopath Model has predicted sufficient biomass to support fish populations predicted to be present. The predicted influence of changes in productivity downstream of the Project on fish populations downstream of the Project are presented in Section 12.4.2.2 Downstream Habitat Changes (page 12-47). Please also see the responses to ab_0003-167 and ab_0003-162.</p> <p>Section 12.8 provides a description of follow-up programs that will be conducted to verify effects assessments.</p> <p>Please also see the Technical Memo: Uncertainty and Precaution.</p>

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			crop appear reasonable relative to baseline SCP-Peace River reach or other measured observations within the proponent's research? Some effort should be made to substantiate this forecast as it is presented and considered as an effect.	
ab_0009-013	McLeod Lake Indian Band	Volume 2, pg 12-84 ; page(s) 12-84, line(s) . EISG section Comment # F13	The acronyms utilized in Table 12.22 (Residual Environmental Effect Criteria - component), as outlined within Table 12.21 – Characterization Criteria – do not align in many instances.	Please see the response to ab_0001-296.
ab_0009-014	McLeod Lake Indian Band	Volume 2, 12.6.2 Standards or Thresholds for Determining Significance ; page(s) 12-86, line(s) . EISG section Comment # F14	The uncertainty regarding stratification and productive properties of the proposed reservoir and the areal calculations of forecast productive potential for the proposed reservoir effect forecasts of downstream (of the proposed dam site) productivity. As outlined above with respect to the proposed reservoir, temporally segmented productivity-probabilities for the reservoir should be extended to habitats downstream of the proposed dam in the same manner.	<p>Predictions of aquatic productivity were produced for the Peace River downstream of the proposed Site C dam, as a result of the operation of the proposed Site C reservoir.</p> <p>The CE-QUAL-W2 model divided up both the proposed Site C reservoir and the section downstream of the proposed Site C dam into longitudinal and vertical segments, as described in Volume 2, Appendix P, Part 2, Section 3.2.1. Phytoplankton and periphyton biomass predictions are presented in Volume 2, Appendix P, Part 2, Section 4.7. Secondary and fish biomass predictions are described in Volume 2, Appendix P, Part 3, Section 6.6.2.</p>
ab_0009-015	McLeod Lake Indian Band	Volume 2, 12.6.2 Standards or Thresholds for Determining Significance ; page(s) 12-86, line(s) . EISG section Comment # F15	<p>The proponent has established criterion through which it assesses the significance of each residual effect (Fish and Fish Habitat VC), and established Standards or Thresholds for determining Significance as follows:</p> <p>a. the loss of an indigenous fish species, sub-species, populations, or distinct groups or,</p> <p>b. a reduction in the long-term average standing stock biomass of the fish community relative to the existing baseline condition</p> <p>The degree to which Standard/Threshold 'a' and 'b' is each congruent with relevant legal, regulatory and policy framework should be explained within the document.</p>	Section 12.6.2 Standards or Thresholds for Determining Significance explains the linkages with the established criteria and regulatory and policy framework. The detail in this section is sufficient for the EIS.
ab_0009-016	McLeod Lake Indian Band	Section 12 – Table 12.19 (Appendix Q1); page(s) , line(s) .	Given that the primary findings of significant adverse effects related to fish and fish habitat in-part relate to the migration barrier that the proposed dam will pose, a thorough explanation should be provided within Volume 2 as to why passive fish passage mechanisms are not being proposed as a mitigation measure.	<p>To clarify the significance of 'Hindered fish movement due to obstruction', see the response to ab_0003-190.</p> <p>It is not clear in the comment what 'passive fish passage mechanisms' refers to. If it refers to a full height fishway, this measure was evaluated in detail (see Volume 2 Appendix Q2 and supporting information in Appendix Q3 and Appendix Q4-1 Attachment A). The assessment</p>

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		EISG section Comment # F16		concluded that mitigation using trap and haul would be more effective at mitigating potential effects of the Project on fish than would mitigation using a full height fishway. Therefore, mitigation using trap and haul is proposed in the Fish Passage Management Plan (Volume 2 Appendix Q).
ab_0009-017	McLeod Lake Indian Band	Section 14; page(s) 14-8, line(s) . EISG section Comment # W1	<p>The proponent has not considered the proposed project's effects on caribou within the EIS, based on the following rationale...</p> <p>Table 14.2 Rationale for the Exclusion of Suggested Species <i>"Caribou are not found in the Peace River valley, so they will not be directly affected by the proposed reservoir or dam. Where Project components do occur in recognized caribou herd ranges (e.g., West Pine Quarry), a review of existing data has determined that there will be no direct Project interactions on caribou, and that sites can be operated in such a way as to have no indirect interactions on caribou. The West Pine Quarry has been in operation by the B.C. Ministry of Transportation and Infrastructure since 2001. Operations will expand the existing quarry, but will not encroach upon important habitats noted in recovery planning and activities will continue to follow practices currently used by the B.C. Ministry of Transportation and Infrastructure."</i></p> <p>Caribou within the areas (South Peace Northern Caribou) surrounding the proposed project reflect a very small proportion of their recent abundance, possibly reflected in their current range. They are a preferred and key species for MLIB. Prior development, including habitat fragmentation due to reservoir development, has been identified as a contributing factor to their decline and current status. Given their recognized status and protection under the Species at Risk Act, and the established Recovery Plans, TWGs and RIGs, their consideration within the EIS should be based on the objectives established within those frameworks/processes.</p> <p>In keeping with Section 20 of CEAA, the proponent should be required to obtain correspondence from the relevant Recovery Team/expert/specialist regarding the acceptability of their rationale for their consideration of caribou within the EIS. [EIS Guidelines – pg. 3 (Scientific advice)]; <i>Section 20 of CEAA requires that every federal authority with specialist or expert information or knowledge with respect to a project subject to an EA make that information or knowledge available to the Agency. The Agency will advise the proponent in a timely manner of the availability of any pertinent information or knowledge.</i></p>	Please see the Technical Memo: Caribou.
ab_0009-018	McLeod Lake Indian Band	Section 14 (and Appendix	The proponent mentions but does not thoroughly consider at least two potential effects that the project may induce with respect to ungulates. These	The potential for mortality of ungulates was taken into account for the construction and operation phases of the Project in Section 14.3. The characterization of residual effects

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		R); page(s) Various - see comments, line(s) . EISG section Comment # W2	<p>include:</p> <p>1. The potential for the proposed reservoir to deter ungulates from undertaking crossings of the Peace River valley (during the spring-fall open water period) as part of what may be regular but critical components of their behaviour for the purposes of accessing preferred habitats.</p> <p><i>Radio telemetry indicated an extensive number of crossings by ungulates of all species, except whitetail deer</i> (Table 1.4.20 – Appendix R-7).</p> <p>Appendix R, pg. 232; Movement to winter ranges appears to occur in fall prior to freezing.</p> <p>Vol 2, Section 14, pg 14-40; <i>The reservoir would be relatively narrow, and it is expected that most individuals would continue to swim across during the spring, summer, and fall seasons, although debris levels within the reservoir and bank stability may hamper movement.</i></p> <p>Vol 2, Section 14.2.8, pg. 14.20; Ungulates Avoidance of open water was noted for moose and elk – year-round (and mule deer Volume 2, Appendix R, pg. 158)</p> <p>The proponent should provide a rationale as to their conclusions in this regard with respect to the migration conditions that would be presented by the proposed reservoir, throughout its length, and any implications of altered movement/migration behaviour that may be induced.</p> <p>2. The potential for the proposed reservoir to act as a source of ongoing mortality during the late fall and winter due to ungulates attempting to cross or travel on ice, the stability of which is modelled to be highly unstable and dangerous throughout much of the reservoir’s length/area (Volume 2, Appendix H Figs 7.12-7.16). Further, there’s little consideration of the potential for the reservoir (during ice-over periods) to induce an increased degree of predator efficiency on ungulates.</p> <p>Appendix R, pg. 232; <i>Ungulates rarely crossed the flowing river in winter and it is expected that they may also avoid the unfrozen reservoir in winter. Once the reservoir is solidly frozen it could facilitate more winter crossing.</i></p> <p>Attempts should be made to more thoroughly consider these potential effects, and as necessary provide a qualified-informed opinion as to their potential to occur, and/or incorporate them into the effects assessment process.</p>	<p>associated with mortality of ungulates is described in Section 14.5.1.3.6. Volume 2, Appendix R, Part 7: Mammals, Section 1.1.1.1.37 Movements, Migration and Home Ranges provides additional information relating to the river crossing. River crossings by ungulates are described in Section 14.3.1.6.5, page 14-40, lines 21-30. The potential for mortality to ungulates while travelling on ice is taken into account in Section 14.3.3.6.4.</p>
ab_0009-019	McLeod Lake Indian Band	Section 14 (and Appendix	With respect to ungulates, the proponent has used the results of radio/gps telemetry monitoring to (in-part) achieve their stated objective of “an	The scope of the Wildlife Resources effects assessment is in accordance with the EIS Guidelines and appropriate information is provided in the EIS.

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		R) ; page(s) Various - see comments, line(s) . EISG section Comment # W3	<p>understanding of the population estimates; habitat use; movement and migration patterns, including river crossings; and birthing site locations and characteristics within the LAA". The numbers of individuals of each species monitored (20 moose, 23 elk, 38 mule deer, 10 white-tailed deer) are small given the extent of the LAA, the diversity of habitats within the LAA (and the likely variability in seasonal life history strategies the ungulates employ as a result) and the recent (2011) winter counts (900 moose, 1,100 elk, and 3,500 mule deer – the specific relation between the area these counts were conducted and the LAA was not clear).</p> <p>Further, the duration over which (from 328 days up to 783 days) telemetry was conducted was sufficient to capture annual habitat use patterns, but doesn't reflect a full range of seasonal habitat use that may occur during critical periods – such as particularly severe winters.</p> <p><i>Pg. 161; In 1991, nearly one third of the moose radio-collared along the Peace River were outside of the census area during the count. That suggested a considerable number may have wintered away from the Peace River that year. In 2011, 80% of the collared elk, 82% of the moose, and 88% of the mule deer were within the census blocks during the survey. Winter conditions in 2009 and 2011 were severe to moderate (DNR WSI = 103 and 73, respectively) enough to force most mule deer into the Peace River portion of their winter ranges (Figure 1.4.8). Based on the distribution of radio-collared elk and moose, a high proportion of all animals were likely on the Peace River ranges and within the census area in 2009 and 2011.</i></p> <p><i>3.3.3 Specific Mitigation for Ungulates (Appendix R, pg. 246)</i></p> <p><i>Direct losses of winter habitat which result from the Project will reduce the long term capacity of the land to produce ungulates. Remaining capable habitat on adjacent crown land could be better managed to improve suitability for wintering ungulates. Additional ungulate winter ranges could be designated by Government within the LAA. The effect of habitat lost will be most pronounced during severe winters when many animals would die. During most winters the habitat lost will not result in a measureable reduction in the current numbers of ungulates. Deer numbers will continue to fluctuate in response to winter severity and elk numbers will likely continue to increase. Moose numbers will likely stabilize at lower numbers than currently in the Peace Valley, but will still persist.</i></p> <p>It's suggested and evident that wintering habitats within the LAA become more heavily utilized with increasing population abundance and increasing winter</p>	Please see the response to ab_0001-327.

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			<p>severity. The project's effect of habitat alteration and fragmentation (HAF) (the loss of wintering habitats quantified – Table 14.14), would not have a single-quantifiable (%) adverse effect on the vulnerable ungulate populations (as suggested), but a range of adverse effects, worsening with the severity of winter conditions. The implications of the HAF effects quantified would both worsen the population-level impacts of the most severe winters, and/thereby reduce the resiliency of those populations to rebuild, as conditions allowed – in addition to reducing the overall ungulate carrying capacity of the area.</p> <p>Given the availability of relevant data regarding ungulate population trends and WSIs, an attempt should be made to model the project's adverse effects (particularly HAF) on regional ungulate populations – retrospectively.</p>	
ab_0009-020	McLeod Lake Indian Band	Section 14; page(s) na-general comment, line(s) . EISG section Comment # W4	<p>With respect to radio telemetry and whitetail deer, it was noted that there was very limited use of the LAA (Map 1.6.37), and their tendency toward limited home range size is documented. A map indicating the location of capture of these individuals is not provided, as it is for the other species.</p> <p>Given their tendency towards relatively small home ranges, it should be clarified if the 10 individual whitetail deer tagged were captured sufficiently close to the LAA so as not to inherently preclude their use of the LAA (as the observed lack of use of the LAA is utilized as a rationale for assessing project effects.</p>	Data on white-tailed deer were provided to BC Hydro by the Province. The white-tailed deer were captured at distances greater than 1.6 km from the proposed reservoir (average 5km). Map 1.6.37, in Volume 2, Appendix R, Part 7 illustrates the home ranges of the white-tailed deer in relation to the LAA.
ab_0009-021	McLeod Lake Indian Band	Section 14; page(s) na-general comment, line(s) . EISG section Comment # W5	<p>It is recognized that the LAA contains extensive amounts of important ungulate wintering habitats, and that the long-term carrying capacity of the area to produce ungulates would be reduced as a result of the proposed project's (HAF) effects, but the extent of this effect's impacts and implications – more broadly across southern Peace region ungulate populations are not clearly described. Information should be provided regarding how the HAF identified, and its adverse effects (on wintering success), in combination with the effect of reduced ungulate carrying capacity – could uniquely affect ungulate populations in surrounding MUs, including 731, 732, 733, 734, and 735.</p>	<p>The assessment is in accordance with the EIS Guidelines and sufficient information is provided in the EIS.</p> <p>Quantifying the ungulate populations across the Peace Region is outside the scope of the environmental assessment and comparative data are not available from other sources.</p>
ab_0009-022	McLeod Lake Indian Band	Section 14; page(s) 14-12, line(s) . EISG section Comment # W6	<p>The Proponent proposes the LAA and RAA as described in Table 12.2 of the EIS Guidelines.</p> <p><i>An approximate 4-km-wide corridor centered on the Peace River from Hudson's Hope to the Alberta border; a 1-km-wide corridor centered on the existing 138 kV wood pole transmission line from the Peace Canyon Dam to Taylor and Fort St. John; a 400 m corridor centered on roads identified for upgrading; a 1km wide corridor centered on new roads; and a 500 m buffer around the proposed quarry and till sites.</i></p>	<p>Thank you for your comment.</p> <p>Please see the Technical Memo: Spatial Boundary Selection.</p> <p>The BCEAO and CEA Agency provided the working group with a map of the previous Wildlife Resources LAA and RAA following the March 1, 2012 meeting on EIS Guidelines.</p>

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			<p>But indicates that they've deviated from the guidelines, indicating that their new approach to the Wildlife VC offers a "larger buffer", but doesn't provide a map to compare the proposed and adopted LAAs, and/or related areal calculations. A map(s) comparing the two boundaries would be particularly useful for comparing specific areas included/excluded with either approach.</p> <p><i>14.1.5.1 Spatial Boundaries; Local Assessment Area (LAA): the area within which the potential adverse effects 4 of the Project are assessed. The LAA encompasses the Project activity zone, 5 buffered by an additional 1,000 m. This buffer is larger than was suggested in 6 Table 11.2 of the EIS Guidelines.</i></p>	
ab_0009-023	McLeod Lake Indian Band	Section 14; page(s) Pg. 14-69, line(s) . EISG section Comment # W7	Table 14.19 Summary of Characterization of Residual Effects: Habitat Alteration and Fragmentation – Butterflies and 1 Dragonflies – Heading is incorrect	The correct title should be "Summary of Characteristics of Residual Effects: Habitat Alteration and Fragmentation: key wildlife species groups". This update will be has been added to the List of Errata and Updated Information.
ab_0009-024	McLeod Lake Indian Band	Section 5; page(s) , line(s) . EISG section Comment # CU1	<p>As indicated via comments 2 and 3 below, MLIB believes that based upon the potential for Site C to perpetuate adverse effects that would culminate in an Impairment of their Treaty 8 Rights/Interests, there is an ample rationale to believe that the Proponent's consideration of the Alternatives to the project have been inadequately constrained.</p> <p>Sections 5.4 and 5.5 examine the potential alternatives to the Project:</p> <p><i>o Section 5.4 describes the process for identifying and reviewing potential alternatives to the Project. <u>Section 5.4 also surveys the potential alternatives that were screened out on the basis that they are not viable</u> (defined as meaning not practicable <u>or not capable of being implemented</u>) <u>because 1) in the case of certain supply-side resources, they are not permitted by or are inconsistent with B.C. Government legal requirements</u>, or are not technically or economically feasible, and 2) in the case of increased DSM levels, cannot reasonably be relied on because of delivery risk.</i></p> <p><i>o Section 5.5 characterizes the remaining available supply-side resources which, when combined into portfolios, are viable alternatives to the Project. Section 5.5.1 describes the major financial, technical, environmental, and economic development attributes applied to the available supply-side resources. Section 5.5.2 presents a qualitative assessment of the available supply-side resources. Section 5.5.3 sets out the portfolio analysis parameters, while Section 5.5.4 compares the available supply-side resources through portfolio and other</i></p>	Consistent with Section 4.2.1 of the EIS Guidelines, BC Hydro identified those potential resources that are legislatively barred in Section 5.4.2.1 of the EIS. The BC Environmental Assessment Office, the CEA Agency, other government agencies and indeed any Joint Review Panel must recognize existing legislative parameters.

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			<p><i>analysis. <u>In Section 5.5.5, BC Hydro concludes that the Project is the preferred alternative to meet the need identified in Section 5.2, based on the review of the financial, technical, environmental, and economic development attributes, and taking into account B.C. Government legal and policy requirements.</u></i></p> <p>It is the opinion of MLIB that the considerations of alternative means of meeting the need for which Site C is being identified as the preferred option, were improperly constrained relative to the impairment of MLIB Treaty 8 Rights that Site C poses.</p>	
ab_0009-025	McLeod Lake Indian Band	Section 19 (extending to Section 34) ; page(s) , line(s) . EISG section Comment # CU2(a)	<p>The McLeod Lake Indian Band (MLIB) is in the process of completing a TLUS, in-part for the purposes of informing BCH's effects assessment with respect to VC19 – Current Use of Lands and Resources for Traditional Purposes. Relevant information will be provided to BCH shortly.</p> <p>The proponent (BCH) has utilized their interpretation of VC-19 (the current use context) as a surrogate for an assessment of MLIB Treaty Rights/Interests, based on their understanding of MLIB Treaty Rights and Interests (see quotes below). MLIB believes that the component (VC-19) that's been assessed within the EIS is not an adequate legal or practical surrogate for an assessment our Treaty 8 Rights/Interests. Further, MLIB has observed that the proponent's assessment methodology (for this VC) deviates extensively from the guidance they were directed to follow, and that which would allow a full and sufficient assessment. As such, MLIB believes that the proponent's findings with respect to VC-19 (and to where they've extended them... an assessment of MLIB's Treaty 8 Rights/Interests) are incorrect, insufficient and incomplete.</p> <p>The following comments relate to a review of the proponent's consideration of VC-19 and also, by necessary extension, from Section 34.</p> <ul style="list-style-type: none"> • The EIS Guidelines include Section 15 Traditional Lands and Resource Use Effects Assessment – stating that “The EIS will summarize traditional lands and resource use effects based on the methodology described in Section 8 of these EIS Guidelines”. The proponent then states (early within Section 15 of the EIS guidelines) that they will conduct “an assessment of the potential adverse effects of the Project on the <u>current use and reasonably anticipated future use</u> of lands and resources”. The proponent then outlines a methodology (within Section 15 of the EIS Guidelines) for conducting an assessment of the project's effects on the “current use” context of this VC that deviates from the broad methodology described in Section 8 of the EIS Guidelines. • Within Section 19 of the EIS the proponent correctly reflects what the VC has 	<p>Please see the Technical Memo: Methodology for the Assessment of the Potential Impacts of the Project on the Exercise of Asserted or Established Aboriginal and Treaty Rights.</p> <p>With respect to the comment regarding the modification to key aspects in the assessment in Section 19, please see the response to ab_0001-534.</p>

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			<p>become (19 CURRENT USE OF LANDS AND RESOURCES FOR TRADITIONAL PURPOSES). They then further advise the reader of a specific alteration in their methodology of assessment (relative to the methodology they describe in the EIS Guidelines <i>“Section 15.2.4 of the EIS Guidelines states that the potential to adversely affect current use of lands and resources by Aboriginal persons for traditional purposes will be assessed by taking into account the potential for the Project to result in changes to key aspects:</i></p> <ul style="list-style-type: none"> <i>o Use of and access to lands used for traditional purposes</i> <i>o Availability of harvested species based on the results of the assessment of the potential effects of the Project on fish and fish habitat, vegetation and ecological communities, and wildlife resources</i> <i>o Other relevant considerations raised by Aboriginal groups</i> <p><i>However, Section 19.4 Effects Assessment below presents the assessment of the potential to adversely affect current use of lands and resources for traditional purposes by taking into account the potential for the Project to result in changes to the following key aspects:</i></p> <ul style="list-style-type: none"> <i>o Changes in fishing opportunities and practices</i> <i>o Changes in hunting and trapping opportunities and practices</i> <i>o Changes in other cultural and traditional uses of the land”</i> <p>The proponent provides their rationales for these changes</p> <ul style="list-style-type: none"> • The proponent outlines the following within the EIS... 19.1.1 Regulatory and Policy Setting “As specified in the EIS Guidelines, the Canadian Environmental Assessment Act (CEAA), 2012 informed the effects assessment for the current use of lands and resources for traditional purposes VC. Section 5(1) of the CEAA identifies that”: “for the purposes of this Act, the environmental effects that are to be taken into account in relation to an act or thing, a physical activity, a designated project or a project are... (c) with respect to Aboriginal peoples, an effect occurring in Canada of any change that may be caused to the environment on... (iii) the current use of lands and resources for traditional purposes.” • CEAA, 2012 actually states the following... 5. (1) For the purposes of this Act, the environmental effects that are to be taken into account in relation to an act or thing, a physical activity, a designated project or a project are... a) with respect to aboriginal peoples, an effect 	

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			<p>occurring in Canada of any change that may be caused to the environment on</p> <p>i. health and socio-economic conditions,</p> <p>ii. physical and cultural heritage,</p> <p>iii. the current use of lands and resources for traditional purposes, or</p> <p>iv. any structure, site or thing that is of historical, archaeological, paleontological or architectural significance.</p> <p>McLeod Lake feels that the proponent’s methodology for assessing their proposed project’s effects on MLIB’s Treaty 8 Rights/Interests deviates from their required obligations under the EIS Guidelines and CEAA guidance. These flaws in methodology are summarized as follows:</p> <p>1. Their limitation of their assessment to a confusing “current use” context – a deviation from the stated heading for the VC within the EIS Guideline, and their extension of this context of the VC-19 as an adequate surrogate for Treaty Rights/Interests.</p> <p>2. Their limitation of CEAA guidance wrt to Environmental Effects and Aboriginal Interests – to just the current use clause – which is only 1 of 4 clauses required to be considered</p> <p>3. Their limitation of the spatial context considered to the LAAs utilized. Their approach is limiting and inadequate through several mechanisms in this respect, in terms of consideration of VC-19 as a surrogate for Rights/Interests, as they don’t extend-translate the implications of the project’s effects on fish/animals and the landscape/habitats outside of the LAA, and conversely, they don’t consider effects within the LAA to the appropriate <u>Territorial-Treaty context</u> of effected First Nations.</p> <p>4. Their deviation from the broad effects assessment methodology outlined in Section 8 of the EIS Guidelines, including deviation from the “first principles approach” – with respect to Aboriginal/MLIB Rights/Interests – is a major flaw.</p> <p>It is apparent the proponent’s approach stems from their selective-interpretation of Treaty 8 Rights/Interests, noted as follows (Vol. 5. Sec. 34)... Pg 34-10; 34.3.3 Assessment of Potential Impacts on the Exercise of Asserted or Established Aboriginal and Treaty Rights</p> <p>“The assessment of potential impacts on the exercise of asserted or established Aboriginal and treaty rights is based on BC Hydro’s understanding of the asserted or established Aboriginal rights and treaty rights set out in Section 34.3.2. <u>While the right to fish, hunt, and trap does not overlap precisely in time and space with the current use of lands and resources for traditional purposes, including fishing, hunting, and trapping, there is a close linkage between the</u></p>	

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			<p><u>rights discussed in this section and the current uses assessed in Section 19 Current Use of Lands and Resources for Traditional Purposes.”...</u></p> <p>.... Pg. 34-11; “This information is the basis for the assessment of the potential effects of the Project on current use of lands and resources for traditional purposes, also provided in Section 19. That assessment includes the potential effects of the Project on what may be described as ancillary activities, such as opportunities to harvest berries, herbs and medicinal plants and the establishment of cabins. Some of these ancillary activities may be reasonably incidental to the exercise of the treaty rights to fish, hunt, and trap.</p> <p><u>Consequently, the results of the assessment in Section 19 are drawn into the assessment of potential impacts on the exercise of asserted or established Aboriginal and treaty rights.</u></p> <p>MLIB disagrees with the proponent’s methodology deviations, and their overall approach and resultant findings. It is clear that their current approach is biased towards minimizing the adverse residual effects findings, and the significance of those findings – as they relate to MLIB’s interests.</p> <p>Given the Standards/Thresholds they’ve established for determining the Significance of residual adverse effects findings...</p> <ul style="list-style-type: none">• A current use of lands for traditional purposes would be permanently undermined and its practice cannot be readily reproduced elsewhere; and• The current use and area is indicated to be of high value or importance among Aboriginal groups for traditional purposes <p>The adverse effects findings stemming from the methodology employed may bias findings of significance.</p> <p>As indicated in the summary of the methodology flaws and deviations outlined (1-4) above, a primary contributor is their deviation from EIS Guideline methodology (First Principles Approach), including the failure to incorporate the spatial context of MLIB Treaty 8-Traditional Territory.</p> <p>Site C would result in the elimination of 87km of the Peace River from MLIB’s Territory, adding to past impacts that perpetuated the elimination of 270km of the Peace and Parsnip rivers, and the related Traditional and Cultural values that were inherent with those environs. The last 62km of the Peace River (in BC) that would remain between the proposed Site C dam site and the Alberta border would represent less than 15% of the large river environs that existed in MLIB Traditional Territory no more than 3 generations ago. MLIB’s unique traditional knowledge and culture is to a large extent premised in its historical and ongoing connection to these large river environs.</p>	

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			<p>The proponent's approach and methodology is flawed such that a fundamental impact to MLIB's Treaty 8 Rights/Interests would not be considered within their process, much less assessed as an effect.</p> <p>Considering the proponent's approach and methodology, and the inadequacies of their findings with respect to MLIB Treaty 8 Rights/Interests, in order for Consultation on this matter to have the potential to be legally fulfilled, MLIB will be required to complete an independent assessment of their Treaty 8 Rights/Interests relative to the proposed Site C Project. They then further advise the reader of a specific alteration in their methodology of assessment (relative to the methodology they describe in the EIS Guidelines)...</p>	
ab_0009-026	McLeod Lake Indian Band	Section 19 (extending to Section 34)... ; page(s) , line(s) . EISG section Comment # CU3	<p>In the opinion of MLIB, the proponent's effects assessment methodology with respect to wildlife (and other VCs – see comments above), fails to adequately consider and conclude the significance of adverse effects with respect to ungulate/animal/fish populations, habitat and land alteration/alienation, and MLIB's Treaty 8 Rights/Interests. The following statements from Section 14 articulate that incongruence. Cumulative adverse effects and Impairment of MLIB's Treaty 8 Rights/Interests are clearly inevitable, but not considered or redressed within the EIS.</p> <p><i>14.6.3 Cumulative Effects Mitigation Measures (14-100)</i> <i>The projects summarized above will result in the alteration and fragmentation of habitats, displacement and disturbance of wildlife, and possible wildlife mortality.</i> <i>It should be noted that BC Hydro is not the lone organization contributing to the decline in wildlife resources, as many of the other projects or industries mentioned above also contribute to the overall decline. Recovery efforts could be undertaken at the regional level collaboratively with other projects. BC Hydro has limited authority to guide regional initiatives to support the diversity and persistence of wildlife resources. This would be better guided by the provincial government.</i></p> <p><i>14.6.5 Determination of Significance of Residual Cumulative Effects (pg. 14-101)</i> <i>The Project is likely to result in a significant adverse effect in the alteration and fragmentation of habitat for some key indicators (see Section 14.5).</i> <i>Consequently, the cumulative effect of the Project on habitat for those species is also significant. The anticipated residual effects of habitat alteration and fragmentation to wildlife resources from all other future projects and activities combined are also considered significant, even if the Project is not constructed. This occurs because effects associated with other projects and activities that</i></p>	<p>Consideration of the potential adverse effects of the Project on the Current Use of Lands and Resources for Traditional Purposes by Aboriginal groups, including McLeod Lake Indian Band, is presented in Section 19. Cumulative effects of the Project on this VC are described in Section 19.6. The projects and activities to be taken into account in the cumulative effects assessment, and the information about the residual effects of those projects and activities, where available, were identified using the methods described in Section 10.5.2 of the EIS. Information about the residual effects of those projects and activities on i) lands and resources and, ii) where available, on the current use of lands and resources for traditional purposes, has been taken into account in the assessment of cumulative effects in Section 19 of the EIS. Comments on the adequacy of the information for the purpose of assessing the potential cumulative effects of the Project on current use of lands and resources for traditional purposes are provided on page 19-108, in Section 19.6 of the EIS.</p> <p>Consideration of the potential adverse impacts of the Project on the exercise of asserted or established Aboriginal and treaty rights is considered in Section 34.4.</p> <p>Please see the following Technical Memos:</p> <ul style="list-style-type: none"> - Cumulative Effects Assessment - Methodology for the Assessment of the Potential Impacts of the Project on the Exercise of Asserted or Established Aboriginal and Treaty Rights

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			<p><i>involve road construction, forestry, land clearing, etc. are not fully mitigable, and the future loss of suitable habitats for species at risk is expected to further elevate provincial or federal listings.</i></p> <p>The totality of the degradation of MLIB Traditional Territory in respect of key environmental, cultural and spiritual components of the environment that are fundamental to the maintenance of the integrity and exercise of Treaty 8 Rights – are not adequately comprehended within this EIS.</p>	
ab_0010-001	Métis Nation BC	CvrLtr	<p>MNBC currently represents over 8100 Powley compliant Métis citizens in British Columbia, with a large number residing in the Central Interior and Northwest parts of the province. There are many citizens in the region around the proposed project residing in Fort St. John, Dawson Creek, Hudsons Hope, and other small communities. The Métis have had an established community in the area and still use the land and resources for traditional purposes.</p> <p>Utilizing the Métis Nation BC (MNBC) Traditional Harvesting Database and preliminary Métis Traditional Knowledge (MTK) research confirms that Métis Nation BC citizens, from adjacent Chartered Communities and nearby smaller communities, are exercising their Aboriginal right to harvest (hunt, fish, trap, gather plants) within the proposed Project's footprint. The construction and operation of the proposed Site C dam project could put local Métis Aboriginal rights and traditional landuses at risk. Métis harvesters who rely on the direct and surrounding area for sustenance, social and ceremonial purposes could see negative impacts from the construction and operation of the proposed project. As there is current traditional harvesting (hunting, fishing, and plant harvesting for foods and medicines) occurring in the proposed project area, there are Métis traditional knowledge and landuse information activities that could be negatively impacted.</p> <p>Métis citizens of British Columbia desire sustainable use of their natural resources which includes: managing natural resources to meet present needs without compromising the needs of future generations; providing stewardship of natural resources based on an ethic of respect for the land; balancing economic, productive, spiritual, ecological and traditional values of natural resources to meet the economic, social and cultural needs of the Métis peoples and other aboriginal and nonaboriginal communities; conserving biological diversity, soil, water, fish, wildlife, scenic diversity, and other natural resources; and restoring damaged ecologies. All of these may be significantly impacted by the proposed project.</p>	<p>Thank you for providing your input during the public comment period for the Environmental Impact Statement (EIS) for the Site C Clean Energy Project.</p> <p>BC Hydro has been directed by CEA Agency to consult with the MNBC. Section 34 indicates that “MNBC asserts that it uses the Peace River valley and the LAA for current use activities including hunting, trapping, and fishing, but has not provided sufficient specific information to enable an effects assessment on current use or asserted rights”. Since the filing of the EIS in January 2013, BC Hydro has received additional TLUS information from the MNBC. BC Hydro's consideration of the recently-received Métis Nation British Columbia Traditional Land Use Study Report will be documented in the Aboriginal Group Supplemental Report.</p> <p>Please see the response to ab_0010-005 regarding the assertion that “MNBC was not included in early engagements with BC Hydro regarding the proposed project”. Please see the response to ab_0010-002 regarding the adequacy of consultation with the MNBC.</p> <p>Please see the response to ab_0010-032 with respect to traditional land use information provided by the MNBC and MNBC's ongoing interest in contributing traditional ecological knowledge.</p> <p>BC Hydro remains interested in continuing to engage with the MNBC. Consultation is ongoing between BC Hydro and the Métis Nation British Columbia, and may yield additional information on the Métis Nation British Columbia's current and reasonably anticipated future use of lands and resources that may potentially be affected by the Project. Should Métis Nation British Columbia provide additional information to BC Hydro, it will be considered.</p>

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			<p>MNBC interests in this proposed project are to protect the sustenance and cultural needs of Métis citizens and ensure adequate consultation has been undertaken. Further, that Métis Rights and Traditional Land Uses are taken into consideration, that where possible the impacts to these rights and uses are minimized and where not possible, mitigation measures are employed.</p> <p>Aboriginal people are very diverse and generalization about their communities and cultures cannot be easily made. Economic, practical, spiritual, political, and historical relationships to homelands are unique to each indigenous community. Therefore, Aboriginal knowledge, including Traditional Ecological Knowledge (TEK), is not a uniform concept across all indigenous people (Smith 1999, Pidgeon and Hardy Cox 2002, Ball and Simpkins 2004). Aboriginal knowledge is so much a part of the clan, band, community, and the individual that it cannot be separated from the possessor to be codified into a single definition (Battiste and Henderson 2000). This knowledge is not only elaborately tied to place and location, but also relationships and ways of being over time (Ball and Simpkins 2004).</p> <p>The MNBC Ministry of Natural Resources Consultation Guidelines and Métis Traditional Knowledge Policy define Métis Traditional Knowledge (MTK) as the body of information, values, beliefs and practices that is passed from one generation to another by oral means or through landbased experience that pertains to the identity, culture, and heritage of the Métis people and their respect for the land and its resources. This definition is based off of the following definition of Traditional Ecological Knowledge (TEK) “a cumulative body of knowledge, practice and belief, evolving through adaptive processes and handed down through generations by cultural transmission, about the relationship of living beings (including humans) with one another and with their environment”(Berkes et al. 2000, 1252). It has also been described as the knowledge and insights acquired through extensive observation of an area or species (Huntington 2000). The definition of MTK, and TEK, demonstrate that there is a component of local observational knowledge of species and other environmental phenomena, a component of practice in the way people carry out their resource use activities, and a component of belief regarding how people relate to resources and ecosystems (Colding et al. 2003).</p> <p>Unfortunately, MNBC was not included in early engagements with BC Hydro regarding the proposed project. MNBC appreciates the fact that the proponent has included TEK from various First Nations across the province but feels that a</p>	

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			<p>vast resource of Aboriginal knowledge is missing due to the lack of consultation with Métis citizens. Although Métis share a lot of similar values and traditional land use activities with First Nations, MTK is an original and unique knowledge system and should be included and incorporated as such. MNBC read the EIS and made comments where appropriate but, as proper consultation did not occur with Métis people, there is a knowledge gap and incomplete Aboriginal knowledge data collected by the proponent and incorporated into this EIS report. MNBC would like to stress that this current EIS does not accurately reflect all the concerns, key issues, and Aboriginal knowledge of all the Aboriginal groups who may be impacted by the proposed project.</p> <p>Métis are stewards of the land and will work cooperatively with BC Hydro to ensure that Métis Citizen's Aboriginal rights are respected and appropriately addressed. MNBC will work diligently and in good faith to protect all the natural resources that Métis people have and continue to rely on as a way of life and cultural connection. MNBC's vision is to build a proud, selfgoverning, sustainable Nation in recognition of the inherent Rights of our Métis Citizens. MNBC will work diligently and in good faith to protect all the natural resources that Métis people have access to and continue to rely on as a way of life.</p>	
ab_0010-002	Métis Nation BC	V.1 S.1 ; page(s) 1-1, line(s) 27-34, 33. EISG section n/a Comment # 1, 2	MNBC does not believe that all Aboriginal groups have been recognized and meaningfully engaged with by BC hydro and BCEAO. MNBC appreciates the current efforts but emphasizes that proper consultation should have occurred in earlier stages of the EA process. MNBC was not involved until 2012.	<p>Since January 2012, BC Hydro and MNBC have engaged in consultation respecting the Project, as described in Volume 5, Appendix A17.2. Reflecting direction by the CEA Agency, Table 9.1 identifies MNBC as one of the Potentially Affected Aboriginal Groups. This information is also described in Section 34, in Table 34.1. The consultation undertaken collectively by the Crown agencies and BC Hydro with Aboriginal groups, including the MNBC, for the environmental assessment of the Project has been conducted in a manner consistent with the Crown's duty to consult.</p> <p>Please also see the Technical Memo: Aboriginal Consultation, subsection "BC Hydro's perspective on the adequacy of the consultation undertaken by BC Hydro and other Crown agencies with respect to the Project".</p> <p>As described in Section 9.2.4 (Process for Resolving Issues with Aboriginal Groups), BC Hydro will seek to address outstanding issues by, among other activities, "continuing to seek input and engage in dialogue regarding the EIS and the Project, and to answer questions and address issues, interests, and concerns from Aboriginal groups by identifying appropriate mitigation measures and/or other appropriate means by which to address or resolve potential impacts".</p>
ab_0010-003	Métis Nation BC	V.1 S1.3 ; page(s) 1-2,	As per above comment, not all Aboriginal groups that may potentially be affected by the proposed project were engaged with early in the project	Please see the response to ab_0010-002.

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		line(s) 21-22, 24-25. EISG section n/a Comment # 3, 4	planning process. MNBC was not engaged with until 2012.	
ab_0010-004	Métis Nation BC	V.1 S.2 ; page(s) 2-1, line(s) n/a. EISG section n/a Comment # 5	BC Hydro is a Certified Gold Level Progressive Aboriginal Relation (PAR) with the Council for Aboriginal Businesses. PAR companies promote their certification with a PAR logo, signaling to communities that they are good business partners; great places to work, and committed to prosperity in Aboriginal communities.	<p>As indicated on BC Hydro’s website “BC Hydro has earned a gold level designation for best practices in aboriginal relations from the Canadian Council for Aboriginal Business' Progressive Aboriginal Relations (PAR) program”. The gold-level designation is the highest offered and is verified by an independent, third party based on four performance areas: employment, business development, community investment and community engagement. Selection also involves a juried review by Aboriginal business people.</p> <p>According to the Canadian Council for Aboriginal Business, a gold certified company verifies its suitability as a good partner, a great place to work, and commitment to the prosperity of Aboriginal communities, businesses, and individuals.</p>
ab_0010-005	Métis Nation BC	V.1 S.3 ; page(s) 3-3, line(s) 34, 35. EISG section n/a Comment # 6	MNBC feels that BC Hydro has not properly followed it’s charter. MNBC appreciates current engagement and relationship building efforts by BC Hydro, however, it is important to note that MNBC was not meaningfully engaged and consulted with throughout all the various stages of project development.	<p>Since January 2012, BC Hydro and MNBC have engaged in consultation respecting the Project, as described in Volume 5, Appendix A17. The consultation undertaken collectively by the Crown agencies and BC Hydro with Aboriginal groups, including the MNBC, for the environmental assessment of the Project has been conducted in a manner consistent with the Crown’s duty to consult as well as the Site C Clean Energy Project Charter.</p> <p>Ongoing engagement will provide the opportunity for the MNBC and BC Hydro to consult through the pre-panel review stage, throughout the joint panel review. Should the Project be approved, consultation will be ongoing through the construction phase, as outlined in Section 9.2.5.</p> <p>As described in Section 9.2.4 (Process for Resolving Issues with Aboriginal Groups), BC Hydro will seek to address outstanding issues by, among other activities, "continuing to seek input and engage in dialogue regarding the EIS and the Project, and to answer questions and address issues, interests and concerns from Aboriginal groups by identifying appropriate mitigation measures and/or appropriate means by which to address or resolve potential impacts."</p>
ab_0010-006	Métis Nation BC	V1. S.3 (table 3.1) ; page(s) 3-4, line(s) 5. EISG section n/a Comment # 7	MNBC feels the objective to consult and identify opportunities for Aboriginal people was inadequate in the earlier stages of the project planning process.	<p>BC Hydro’s approach to identifying opportunities and building capacity among Aboriginal groups, including the MNBC, is described in more detail in Section 34.6.3.</p> <p>Please see the response to ab_0010-005 regarding consultation in early stages of the Project planning process.</p>
ab_0010-	Métis Nation	7 Project	How do these benefits outweigh the costs to Aboriginal groups who will no	Section 19.4 describes the assessment on the potential effects of the Project on Current Use of

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007	BC	Benefits ; page(s) n/a, line(s) n/a. EISG section n/a Comment # n/a	longer be able to carry out traditional land use activities? How can this even be measured?	Lands and Resources for Traditional Purposes. Within that Section, proposed mitigation measures are described to address potential effects of the Project. BC Hydro acknowledges in the EIS that constructing and operating a project of this size and scope has the potential to result in adverse environmental, social, economic, health and heritage effects. These potential effects have been thoroughly studied and are documented in the EIS, along with BC Hydro's proposed mitigation measures and follow-up programs. The EIS also documents the need for, and benefits of, the Project.
ab_0010-008	Métis Nation BC	V. 2 S.10.2 ; page(s) 10-1, 10-2, line(s) n/a. EISG section n/a Comment # 8	MNBC feels that the Valued component list could be incomplete as not all Aboriginal groups were properly consulted with. (MNBC was not consulted on the selection of Valued Components).	As a member of the Working Group, MNBC was invited to provide input respecting the EIS Guidelines, including the proposed Valued Components for the Project. MNBC submitted input respecting the Guidelines on June 1, 2012, which made no reference to the Valued Components. BC Hydro will consider any specific concerns raised by Aboriginal groups in regard to the information presented in the EIS through the ongoing Aboriginal consultation process. Please see the response to ab_0010-002 with respect to the adequacy of consultation with the MNBC.
ab_0010-009	Métis Nation BC	V. 2 S.10.2.1 ; page(s) 10-2, line(s) 12-13. EISG section n/a Comment # 9	Land or resources reasonably anticipated to be used in the future by Aboriginal persons for traditional purposes was a candidate valued component.	The VC Current Use of Lands and Resources for Traditional Purposes (Section 19) considers the current and reasonably anticipated future use of lands and resources for traditional purposes, and meets the requirements of Section 15 of the EIS Guidelines.
ab_0010-010	Métis Nation BC	S.10.2.2 ; page(s) 10-3, line(s) 13-17. EISG section n/a Comment # 10	The above concern could have easily been aggregated to include current and anticipated use for traditional purposes.	Please see the response to ab_0010-009.
ab_0010-011	Métis Nation BC	S.10.5.1.2 ; page(s) 10-12, line(s) 5-7. EISG section n/a Comment # 11	CEAA and BC hydro should use a preindustrial baseline case for best results. The cumulative effects of previous projects need to be considered in order to gain a better understanding of potential effects to the surrounding environment. . Cumulative effects are not accounted for if only current status is considered. For example, in the proposed project area there were two previous dams. If the previous two dams destroyed Métis heritage sites then MNBC considers the	Please see the following Technical Memos: - Cumulative Effects Assessment - Peace Athabasca Delta

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			<p>remaining “intact and pristine” sites as more valuable. If the water quality is compromised from the new proposed dam, then an increase in contaminants would have cumulative effects.</p> <p>Parks Canada suggested that this “Assessment should include not just the incremental and cumulative influence of the Site C Project, but also the potential to hinder/fetter efforts to restore the Ecological Integrity of the Peace Athabasca Delta, and efforts to correct maninduced changes to the natural water regime in the Peace Athabasca Delta basin.” V.1 Appendix I, Parks Canada, p.42. They are concerned with the protection of ecological integrity and suggest: “Project assessment must adopt a preindustrialdevelopment focus within the boundaries of Wood Buffalo National Park (and thus 80% of the Peace Athabasca Delta) at the very least.” V.1 Appendix I, Parks Canada, p.43.</p> <p>Preindustrial –development baseline data is also what Health Canada is suggesting be used when considering the effects from this project. They are also requesting the proponent “Provide information on documented effect of flooding the Williston Reservoir with respect to MeHg contamination and whether the effect is still continuing.” Natural Resources Canada V.1 Appendix I, p.35.</p>	
ab_0010-012	Métis Nation BC	V.2 S.10.5.2.2, Table 10 .5; page(s) 10-14, line(s) 11. EISG section n/a Comment # 12	Table 10.5 states that projects in operation before Sept. 5 2012, are excluded from the cumulative effects assessment. Is this not contrary to the definition of cumulative effects?	<p>This is not contrary to the definition of cumulative effects. As stated in Section 10.5.1, "September 5, 2012 was chosen to demarcate the Baseline Case from the future cases because 1) this was the date the EIS Guidelines were issued by the federal Minister of Environment and the Executive Director of the BCEAO, and 2) by this date, BC Hydro had already substantially developed the assessment of potential effects and cumulative effects of the Project".</p> <p>Please also see the Technical Memo: Cumulative Effects Assessment.</p>
ab_0010-013	Métis Nation BC	S.10.5.2.3 ; page(s) 10-15, line(s) 25-26. EISG section n/a Comment # 13	Criteria not inclusive in selection considerations. Pipelines and oil and gas development are mentioned as beneficiaries to the demand for electricity yet are not considered for their negative impacts. There are a number of pipelines that failed to be included in the cumulative effects even though they pass within the area.	<p>The effects of existing pipelines and oil and gas facilities are reflected in the current status of the valued component. Registered oil and gas applications listed in the BC Oil and Gas Commission or National Energy Board websites are considered in the cumulative effects assessment.</p> <p>Please also see the Technical Memo: Cumulative Effects Assessment.</p>
ab_0010-014	Métis Nation BC	S.10.5.2 , Table 10.7 ; page(s) 1020, line(s) 11. EISG section	List does not include the following proposed projects: Northern Gateway, Coastal GasLink, Prince Rupert Gas Transmission Project, Echo Hill or Sukunka. These may all potentially impact the Northeast region of BC.	The screening criteria used to identify other projects and activities for consideration in the cumulative effects assessment is provided in Table 10.5 of the EIS. The Northeast Transmission Line was not included in the project inclusion list because in view of the considerable uncertainty around electricity supply and supply options for the Fort Nelson/Horn River Basin region, the development of a northeast transmission line project is not as foreseeable as the Project.

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		n/a Comment # 14		<p>Accordingly, it has not been included in the project inclusion list.</p> <p>The criteria used for the inclusion of projects and activities that were considered in the cumulative effects assessment are described in Section 10 Table 10.5. Section 10.5.2.3 states that active projects and activities listed on the BCEAO and CEA Agency websites prior to September 5th, 2012 were included in the cumulative effects assessment. The Project Description report for the Coastal GasLink project was submitted to the CEA Agency on October 30, 2012, and the CEA Agency determined on December 28, 2012 that a federal environmental assessment is required under CEAA 2012. The Project Description report for Sukunka was posted on the BCEAO epic website on January 25, 2013 and on the CEA Agency CEAR website on February 8, 2013. The Echo Hill Project Description report was posted on the BCEAO epic website on November 5, 2013 and on the CEA Agency CEAR website on January 21, 2013. Therefore, these projects were not considered in the project inclusion list.</p>
ab_0010-015	Métis Nation BC	V. 2 S11.1.2.1 ; page(s) 11-3, line(s) 29-32. EISG section n/a Comment # 15	Methylmercury levels due to upstream dams show higher levels and concentrations in fish that exceed Health Canada guidelines. Why is this not considered in cumulative impacts? How will this be mitigated for people who consume these fish? What are the potential impacts to human health?	<p>Please see the Technical Memo: Methylmercury. This memo provides a summary of mercury studies, changes expected as a result of the Project, the risk of potential changes to human health and effects on wildlife.</p> <p>Please also see Section 33, Human Health.</p>
ab_0010-016	Métis Nation BC	S. 11.1.4 ; page(s) 11-12 11-13, line(s) n/a. EISG section n/a Comment # 16	MNBC has yet to be consulted on historical grievances from the existing hydroelectric facilities. MNBC has received concerns from its citizens with regards to historical loss of heritage sites and the previous contamination of fish.	The matter raised in this comment lies outside of the scope of the environmental assessment. Please see Section 11.1.4 in the EIS.
ab_0010-017	Métis Nation BC	S.11.1.2.2 ; page(s) 11-6, line(s) 39-40. EISG section n/a Comment # 17	<p>It is stated that it is not possible to describe the species composition, distribution, and productivity in biological resources that existed prior to the construction of W.A.C., due to the limited amount of information available. MNBC would like to argue that this not entirely true. Métis and First Nations possess a vast amount of knowledge about the land, species, ecology, and resources that they have relied on for generations. This Traditional Ecological Knowledge (TEK) provides a rich resource of knowledge and valuable baseline data and should not be overlooked.</p> <p>What about invasive species? Have these been considered?</p>	<p>Please see Technical Memo: Cumulative Effects Assessment.</p> <p>BC Hydro has documented and is controlling invasive species on BC Hydro owned lands and at Project work sites. The Vegetation and Invasive Plant Management Plan (Section 35.2.2.22) will be developed with appropriate regulatory authorities as part of the permitting process, if the Project proceeds.</p>
ab_0010-	Métis Nation	S. 11.2.4.2.2 ;	The EIS states that trace element concentrations exceed MOE and Working	Overburden units with metal leaching potential will be managed so that water quality guidelines

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018	BC	page(s) 11-40, line(s) 7-16. EISG section n/a Comment # 18	Water Quality Guidelines and that there is the potential for metal leaching. This is of concern to MNBC.	are not exceeded. Mitigation measures are described in Volume 2 Appendix B Part 4 Acid Rock Drainage and Metal Leachate Management Plan.
ab_0010-019	Métis Nation BC	S. 11.3.4 Table 11.2.4 ; page(s) 11-60, line(s) n/a. EISG section n/a Comment # 19	The EIS states that the "fair market value of the land is determined by qualified independent appraisers". MNBC is curious as to how a value can be placed on traditional land use and the relationships that Aboriginal people have with the land? This would require rigorous surveys of harvest activity—not to mention calculating for other values. How will this compensation be calculated? Would the Heritage Act protect heritage sites as third party tenure?	As stated in EIS Section 11.3, BC Hydro's approach to acquire land tenure is to compensate based on the fair market value of the land or right being acquired, in addition to compensating owners for disturbance damages and reimbursing costs related to the acquisition. The purpose of appraising the land is to ascertain the fair market value of the land or right, not to determine or place a value on traditional land use. Archaeological site protection under the Heritage Conservation Act is not a third party tenure. Permits are required under the Heritage Conservation Act to carry out certain activities on protected sites.
ab_0010-020	Métis Nation BC	S. 11.4.6 ; page(s) 11-83, line(s) 14-16. EISG section n/a Comment # 20	The increased water flows due to climate change would increase electricity production in the two upstream dams. Was this increase in electricity production included in the justification of the Site C project?	Potential increased flows due to climate change were not taken into consideration in the analysis of Project Benefits (described in Section 7) because the predictions are too uncertain for analysis of benefits.
ab_0010-021	Métis Nation BC	S. 11.6.5.1 ; page(s) 11-97, line(s) 12-19. EISG section n/a Comment # 20	Is the baseline exceedance of contamination parameters due to the previous two dam projects? The EIS concluded that noncoliform exceedances may be from natural background concentrations (because no anthropogenic sources were apparent). MNBC is curious as to how this was determined. How were these anthropogenic sources researched and what did they include?	There is no evidence to suggest that the exceedances are a result of the previous two dam projects, as many of the exceedances are naturally occurring substances. Determination of the cause of non-coliform is outside of the scope of the environmental assessment.
ab_0010-022	Métis Nation BC	S. 11.7.1.1 ; page(s) 11-102, line(s) 36-40. EISG section n/a Comment # 21	The baseline includes the influences of the existing reservoirs. This is not the intended meaning of cumulative effects according to CEAA which states: "an assessment of the cumulative effects that are likely to result from the Project in combination with other projects or activities that have been or will be carried out". By using the present as a baseline the projects that have been carried out are negated. This section describes (as a baseline) the effects from the Williston and Dinosaur reservoirs causing colder winter and warmer summer water temperatures, 'as the storage of water can also be considered a reservoir of thermal energy' .	Please see the Technical Memo: Cumulative Effects Assessment.
ab_0010-	Métis Nation	V.2 S.11.7.1.2 ;	The effects of the spring cooling and fall warming described in the previous	Thank you for your comment.

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023	BC	page(s) 11-104, line(s) 3-5. EISG section n/a Comment # 22	section 11.7.1.1 seem more dramatic then are summarized and continued on in other sections such as this one and the next.	
ab_0010-024	Métis Nation BC	V.2 S.11.9.5.2 ; page(s) 11-152, line(s) 14-21. EISG section n/a Comment # 23	The EIS suggests baseline mercury rates are due to the influence of the Williston Reservoir, and will continue to influence downstream temperature and contamination.	This statement is not correct. Increased concentration of methylmercury in fish from resulting from the formation of the Williston Reservoir has declined to baseline levels in the four decades since impoundment, and will not influence downstream mercury concentrations in a negative way. Please see the Technical Memo: Methylmercury.
ab_0010-025	Métis Nation BC	S. 11.9.5.2.1 ; page(s) 11-152, 11-153 , line(s) 45-46, 1-8 . EISG section n/a Comment # 24	The EIS suggests here that the low mercury levels are due to the Williston reservoir. Has the initial increase cased by the Williston reservoir dropped to such unnatural low levels?	The formation of the reservoir has not caused the levels of mercury to be reduced to unnaturally low levels. The levels have returned to baseline levels. Please see the Technical Memo: Methylmercury.
ab_0010-026	Métis Nation BC	S. 11.9.5.2.4 ; page(s) 11-154, line(s) n/a. EISG section n/a Comment # 25	The EIS states the mercury levels below the reservoirs are the lowest in Canada. It is assumed that the initial high levels of contamination from initial operation of the upstream dams have resulted in the long term decreases in mercury over time. The concept of initial increase leading to long term decreased levels of mercury in fish is difficult to understand. Could this please be expanded upon? MNBC would be interested in working with BC Hydro in educating its Métis citizens and resource users on the effects of reservoirs, and on mercury levels in fish MNBC has already received concerns from its citizens with regards to mercury and other contaminants.	As described in Section 9.2.4 (Process for Resolving Issues with Aboriginal Groups), BC Hydro will seek to address outstanding issues by, among other activities, “continuing to seek input and engage in dialogue regarding the EIS and the Project, and to answer questions and address issues, interests, and concerns from Aboriginal groups by identifying appropriate mitigation measures and/or other appropriate means by which to address or resolve potential impacts”.
ab_0010-027	Métis Nation BC	V.2 S. 12.4.2.1 ; page(s) 12-39, 12-41 , line(s) n/a.	The changes to fish and fish habitat are complex with variety in the short, medium and long term effects. This would include a change from river species to lake species and habitats. MNBC would be interested in working with BC Hydro to inform its Métis citizens and resource users on these changes. These changes would not only have an effect on what fish species are consumed by	Please see the response to ab_0010-026.

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		EISG section n/a Comment # 26	Métis but on the other species that rely on fish that are important to Métis as well.	
ab_0010-028	Métis Nation BC	S. 12.6, Table 12.20 ; page(s) 12-80, line(s) n/a. EISG section n/a Comment # 27	Concerns regarding fish consumed for sustenance were raised by MNBC citizens. MNBC would be interested in working with BC Hydro in educating its Métis citizens and resource users on the effects and mitigation.	As described in Section 9.2.4 (Process for Resolving Issues with Aboriginal Groups), BC Hydro will seek to address outstanding issues by, among other activities, "continuing to seek input and engage in dialogue regarding the EIS and the Project, and to answer questions and address issues, interests and concerns from Aboriginal groups by identifying appropriate mitigation measures and/or appropriate means by which to address or resolve potential impacts."
ab_0010-029	Métis Nation BC	S.12.6.3.2 ; page(s) 12-94, line(s) n/a. EISG section n/a Comment # 28	There is evidence in this EIS, and appendices, that: <ul style="list-style-type: none"> • There will be a significant impact on fish and fish habitat. • There is also a change in composition expected upstream and some species may be lost. • That the predictive models mentioned in this section will have to be monitored. • Older large Bull trout have high concentrations of mercury. This could be from bioaccumulation or from other effects from the dam. There is uncertainty about the effects on Bull trout. MNBC would like to work with BC Hydro to translate information from this EIS to help Métis resource users understand the effects of the project.	Please see the response to ab_0010-026.
ab_0010-030	Métis Nation BC	S. 12.7 ; page(s) 12-95, line(s) n/a. EISG section n/a Comment # 29	The effects of the two upstream dams have been included in this section but are not recognized as projects that have cumulative effects.	Refer to the EIS Guidelines Section 8.5.3 Cumulative Effects Assessment, and EIS Sections 12.7 and 10.7, Table 10.7 for a list of the projects considered in the cumulative effects assessment. The previous effects of the two upstream dams are reflected in the current baseline conditions. Please see the Technical Memo: the Cumulative Effects Assessment.
ab_0010-031	Métis Nation BC	S.12.8 ; page(s) n/a, line(s) n/a. EISG section n/a Comment # 30	MNBC would like to be involved in Followup Programs so as to be kept informed of data provide from monitoring and participate in informing its citizens of the changes to occur.	Please see the response to ab_0001-026.
ab_0010-032	Métis Nation BC	V.2 S.13.1.2.2 ; page(s) 13-3,	MNBC would like to provide Traditional Use information as there are Métis in the proposed project area who currently use the land for traditional purposes.	On July 3, 2012, BC Hydro provided funding for MNBC to prepare a report regarding MNBC's exercise of asserted Aboriginal rights in and around the Project area. MNBC's report, submitted

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		line(s) n/a. EISG section n/a Comment # 31		<p>to BC Hydro on August 31, 2012, included traditional land use information which BC Hydro considered in the assessment of the potential effects of the Project on the current use of lands and resources for traditional purposes in the EIS filed on January 25, 2013. Upon request from MNBC, BC Hydro also provided additional funding for MNBC to complete a more comprehensive study of traditional land use activities, including the collection of new harvest data, the production of detailed site mapping derived from interviews with Metis traditional knowledge holders, as well as a review of existing literature on Métis traditional knowledge and Métis history in the Fort St. John area.</p> <p>This study, entitled “A Métis Use and Occupancy Study for the BC Hydro Site C Dam Clean Energy Project”, was submitted to BC Hydro on March 18, 2013. The additional information from this traditional land use study will be considered in light of the effects assessment carried out pursuant to Section 19 Current Use of Lands and Resources for Traditional Purposes, and the assessment of impacts to asserted or established Aboriginal or treaty rights in Section 34. The results of the considerations will be outlined in the Aboriginal Group Supplemental Report.</p>
ab_0010-033	Métis Nation BC	S. 13.1.2.2 ; page(s) 13-3, line(s) 22-29. EISG section n/a Comment # 32	Traditional Knowledge should be considered equal to Western Scientific Knowledge, and should allow for consideration of sensitive plants here.	Table 13.6 located in Section 13.2.3 Vegetation Use by Aboriginal Groups provides information derived from Traditional Land Use studies prepared for the Project. Harvesting of plants for traditional purposes was taken into account in the assessment of the potential effects of the Project on Current Use of Lands and Resources for Traditional Purposes (see Section 19).
ab_0010-034	Métis Nation BC	S. 13.2.3 ; page(s) 13-12, line(s) n/a. EISG section n/a Comment # 33	No Métis Traditional Land Use studies included, only First Nations.	Please see the response to ab_0010-032.
ab_0010-035	Métis Nation BC	S. 13.2.3, Table 13.6 ; page(s) 1312, line(s) 16,17 . EISG section n/a Comment # 34	List of species needs to be expanded. There are many other valuable species important to Métis for traditional purposes (including animals, fish, and plants).	<p>The list of species presented in Table 13.6 was compiled from information in TLUS studies provided to BC Hydro prior to November 30, 2012.</p> <p>Since the filing of the EIS in January 2013, BC Hydro has received additional TLUS information from the MNBC. BC Hydro’s consideration of the recently-received Métis Nation British Columbia Traditional Land Use Study Report will be documented in the Aboriginal Group Supplemental Report.</p> <p>BC Hydro will consider any specific concerns raised by Aboriginal groups in regard to the information presented in the EIS through the ongoing Aboriginal consultation process.</p>
ab_0010-	Métis Nation	S. 13.3.1.1 ;	There is no inclusion of Traditional Aboriginal Knowledge in describing the	Information provided to BC Hydro prior to November 30, 2012, in Traditional Land Use studies

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036	BC	page(s) 13-15, 13-18, line(s) n/a. EISG section n/a Comment # 35	ecosystem communities, rare plants and sensitive areas. MNBC would like to have Métis Traditional Knowledge (MTK) included in this Environmental Assessment.	<p>was considered as part of the assessment presented in Section 13, Vegetation and Ecological Communities. Section 13.1.2.2 indicates that "(s)pecific issues and concerns raised by the Aboriginal groups within the various (traditional land use) reports, as well as the approach used to address the issues, are presented in Table 13.1. Not all issues identified by Aboriginal groups were included as key indicators. Food plants identified by Aboriginal groups were not included within the assessment as plant species are not being assessed individually; instead, effects to ecosystems that contain described plant assemblages are assessed under terrestrial ecosystems, including those that are rare, sensitive, or of conservation concern. Harvesting of plants for traditional purposes is considered in the assessment of the potential effects of the Project on Current Use of Lands and Resources for Traditional Purposes, which is found in Section 19."</p> <p>At the time of writing the EIS, BC Hydro did not have traditional knowledge information from MNBC. Please see the response to ab_0010-032 with respect to traditional use information provided by MNBC and how this information has been considered.</p>
ab_0010-037	Métis Nation BC	V. 2 S. 14; page(s) n/a, line(s) n/a. EISG section n/a Comment #	Deal with issue that ungulate studies were not designed to look at the potential cumulative effects of increased access resulting from road infrastructure. This is of concern to MNBC as ungulates play a significant role in Métis traditional diets.	The potential for the road infrastructure to adversely affect wildlife resources is described in Section 14.
ab_0010-038	Métis Nation BC	V. 2 S. 14.1.1 ; page(s) 14-1, line(s) 16,17 . EISG section n/a Comment # 36	Aboriginal Constitutional rights and the duty to consult should be included here ahead of federal and provincial acts and regulations. Constitutional right to hunt supersedes the legislation mentioned here.	Section 14.1.1 is limited to a summary of federal and provincial legislation governing wildlife resources. BC Hydro has described its understanding of the constitutional rights of Aboriginal groups and the duty to consult in Section 34.3.2.
ab_0010-039	Métis Nation BC	V.2 S.14.1.2 ; page(s) 14-5, 14-6 , line(s) 24-25, 14-25 . EISG section n/a Comment # 37	<p>MNBC has yet to be meaningfully consulted.</p> <p>MNBC has yet to provide a TUS. MNBC issues and concerns are not reflected in Key Issues.</p>	<p>Please see the response to ab_0010-002 with respect to MNBC's assertion that "MNBC has yet to be meaningfully consulted".</p> <p>Please see the response to ab_0010-032 with regard to a TLUS.</p> <p>As indicated in Section 14.1.2, the Key Issues table (Table 14.1) includes specific issues and concerns raised by the Aboriginal groups within the traditional land use study reports that were available to BC Hydro prior to the submission of the EIS. Since the filing of the EIS in January 2013, BC Hydro has received additional TLUS information from the MNBC. BC Hydro's consideration of the recently-received Métis Nation British Columbia Traditional Land Use Study Report will be documented in the Aboriginal Group Supplementary Supplemental Report.</p> <p>BC Hydro will consider any specific concerns raised by Aboriginal groups in regard to the</p>

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				information presented in the EIS through the ongoing Aboriginal consultation process.
ab_0010-040	Métis Nation BC	S. 14.1.2, Table 14.1 Table 14.2 ; page(s) 14-7, 14-8, line(s) n/a. EISG section n/a Comment # 38	Bison is listed as Aboriginal Key Issue. However, it then excludes bison stating they have no interaction with the proposed project. Could this be expanded upon? MNBC is concerned that future ambitions to reintroduce Bison would be effected by the project. The Site C Reservoir would forever be a barrier to any possible Bison movement. Preindustrial environments would have had herds of Bison moving through the area.	As noted in Table 14.2, the assessment did not consider bison in the assessment of the effects of the Project on Wildlife Resources because the Project will not have an interaction with the species. The approach for determining whether there will be an interaction between the Project and a particular Valued Component or species indicator group is described in Section 10.2.2. The scope of the Wildlife Resources effects assessment is in accordance with the EIS Guidelines and appropriate information is provided in the EIS.
ab_0010-041	Métis Nation BC	S. 14.2 ; page(s) 14-13, 14-23 , line(s) n/a. EISG section n/a Comment # 39	It is unclear how any Aboriginal Knowledge is incorporated into the baseline description. Could this be addressed?	Please see Section 14.1.2, page 14-6 for a description of how Traditional Use was taken into account in the baseline description of wildlife resources.
ab_0010-042	Métis Nation BC	S. 14.3.1.6.4, S. 14.3.3.6 ; page(s) 14-39, 14-40, 14-48, line(s) n/a. EISG section n/a Comment # 40	The project would effect ungulate habitat and hamper movement across the reservoir. This would negatively impact Métis harvesters.	Effects of the Project on ungulates are described in Section 2.4 and in Appendix R, Part 7. BC Hydro has been directed by CEA Agency to consult with the MNBC. Volume 5, Appendix A17, Part 4 indicates that “(b)ased on the assessment undertaken by BC Hydro and set out in Section 19 Current Use of Lands and Resources for Traditional Purposes, it is BC Hydro’s understanding that the Project will have no adverse effects on the current use of lands and resources for traditional purposes of the Métis Nation British Columbia.” Section 34 Asserted or Established Aboriginal Rights and Treaty Rights, Aboriginal Interests and Information Requirements presents BC Hydro’s assessment of the potential impacts of the Project on the exercise of asserted or established Aboriginal rights and treaty rights of the 29 Aboriginal groups with which BC Hydro was instructed to consult. Based on that assessment, it is BC Hydro’s understanding that the Project will have no adverse impacts on the exercise of asserted or established Aboriginal rights by the [Metis Nation] British Columbia.” Since the filing of the EIS in January 2013, BC Hydro has received additional TLUS information from the MNBC. BC Hydro’s consideration of the recently-received Métis Nation British Columbia Traditional Land Use Study Report is documented in the Aboriginal Group Supplemental Report.
ab_0010-043	Métis Nation BC	S. 14.4.1, Table 14.15 ; page(s) 14-56,	Is the proponent suggesting there would be efforts to feed ungulates in severe winter during the entire future operation of the dam? This would have negative impacts on current and future populations. Has this been considered? What are	The Provincial Ministry of Environment has requested that this mitigation measure be removed from the list of proposed mitigation. BC Hydro agrees.

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		line(s) n/a. EISG section n/a Comment # 41	the impacts to “feeding” wild populations?	
ab_0010-044	Métis Nation BC	S. 14.4.2, Table 14.15, 14.16 and 14.17 ; page(s) 14-57 To 14-65 , line(s) n/a. EISG section n/a Comment # 42	Table 14.15 and 14.16 shows only partial mitigation effects. Most of the project effects cannot be mitigated.	The finding of significant residual effects on the Wildlife Resources VC reflects that although mitigation can be implemented to reduce effects, not all Project effects can be fully mitigated. Please see the Technical Memo: Uncertainty and Precaution.
ab_0010-045	Métis Nation BC	S. 14.5 Table 14.19 ; page(s) 14-69, line(s) n/a. EISG section n/a Comment # 43	It is not clear how ungulate habitat loss is reversible. Could this be expanded upon?	The effects of habitat alteration and fragment are assessed at the population level and are assumed to be reversible with mitigation. The definitions used to characterize residual effects are provided in Table 14.18 on page 14-66 of Section 14.5.1. The characterization of residual effects follows these definitions and is described in detail in Section 14.5. The rationale for characterizing the residual effect is provided in Volume 2, Appendix R, Part 7, Section 4.2.4, page 255.
ab_0010-046	Métis Nation BC	S. 14.5.1.1.6 ; page(s) 14-75, line(s) 11-12, 13-14, 15-21. EISG section n/a Comment # 44	Unclear how elk are not limited by habitat, as all the other ungulates would be. Moose numbers would decline. It is stated that the loss of deer habitat would be mitigated through the use of farm feed. How would this impact the other species that rely on deer as a food source?	The expansion of the elk population in the LAA indicates that habitat is not a factor limiting their population. For clarification: Regarding the limitation of ungulate populations by habitat - Lines 15-18 on page 14-75 of Section 14, Volume 2 states: "Numbers of mule deer are known to fluctuate dramatically in the Peace Region, primarily in response to winter severity. Their populations are thought to be maintained at high levels due to their use of agricultural lands and winter feed intended for cattle. “Further, the abundance and distribution of some ungulate populations (e.g. mule deer) reflects the current dependence on agricultural lands. BC Hydro is not anticipating any effects on predators of deer. For more information see Section 14.5.1, page 14-66.
ab_0010-047	Métis Nation BC	S. 14.5.1.2.6 ; page(s) 14-80, line(s) 29-30. EISG section n/a	How is it possible that the effects on disturbance and displacement of mammals during the operation of the dam would not happen and why this is not even considered? There are many other species that rely on ungulates as a food source and these species would be impacted as well. Has the displacement of these other species’	Disturbance and displacement of mammals due to habitat alteration and fragmentation is described in Section 14.3.

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		Comment # 45	<p>food source been considered?</p> <p>The displacement of ungulates to new areas or smaller areas would impact the new locations\habitats (increased grazing, impact on land, etc) has this been considered?</p>	
ab_0010-048	Métis Nation BC	S. 14.6.4 ; page(s) 14-100, line(s) 36-39. EISG section n/a Comment # 46	“The project is likely to result in a residual cumulative effect of habitat alteration and fragmentation, disturbance and displacement, and mortality” of birds bats and fishers. This loss will affect Métis natural resource harvesters and the species that they rely on for traditional land use activities.	The potential for the Project to affect Current Use of Lands and Resources for Traditional Purposes is described in Section 19.
ab_0010-049	Métis Nation BC	S. 14.7 ; page(s) 14-101, line(s) n/a. EISG section n/a Comment # 47	MNBC would like to contribute harvesting and use data in an information sharing arrangement with BC Hydro, as part of future monitoring.	With respect to implementing mitigation measures identified in Section 19.4, BC Hydro intends to engage with those Aboriginal groups whose current use of lands and resources for traditional purposes has been determined to potentially be affected by the Project.
ab_0010-050	Métis Nation BC	V.3 S.16.2.2 ; page(s) 16-5, line(s) 22-28. EISG section n/a Comment # 48	MNBC was not involved in the Interviews that took place concerning current use utilization and infrastructure demand. MNBC has regional representatives in the area and an office in FSJ; a Minister of Economic Development and an Industry Engagement Director who should be consulted with regarding economic benefits and impacts.	<p>The scope of the Local Government Revenue effects assessment is in accordance with the EIS Guidelines and appropriate information is provided in Section 16, Local Government Revenue. The LAA and RAA for the Local Government Revenue VC are described in EIS Guidelines Table 14.2 as the City of Fort St. John, District of Taylor, District of Hudson's Hope, District of Chetwynd, City of Dawson Creek and the Peace River Regional District.</p> <p>Section 9 describes information distribution and consultation with Aboriginal groups.</p>
ab_0010-051	Métis Nation BC	V.3 S16.4.2, page(s) 16-11, line(s) 20-24; V3 S.16.7, page 16-16, line(s) 3-4. EISG section n/a Comment # 49	MNBC is aware of a number of large projects in the area all leading to accelerated growth. These projects will have cumulative effects on the Métis way of life and traditional practices. How will this be accounted for?	<p>Cumulative effects were assessed by valued component in accordance with the EIS Guidelines. Please see the applicable VC for the results of the cumulative effects assessment.</p> <p>Please also see the Technical Memo: Cumulative Effects Assessment.</p>
ab_0010-052	Métis Nation BC	V.3 S.16.5 ; page(s) 16-14	There is only one measure of \$160 000 to Hudson Hope. How was this calculated? What about other communities?	Section 16.4.4 describes the approximate value of the loss of assessable property tax base which the Peace River Regional District and Hudson's Hope would experience due to inundation. These

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		and 16-15 , line(s) 1-19 and 1-5 . EISG section n/a Comment # 50		are the only municipalities that would experience loss of taxable land base. Mitigation is proposed in Section 16.4.5 in response to the change described in 16.4.4.
ab_0010-053	Métis Nation BC	V.3 S.17.1.1, (Table 17.1), page(s) 17-1, 17-2, line(s) 22-34; V.3 S.17.1.2, (Table 17.2); page(s) 17-3, line 2-7 EISG section n/a Comment # 51	<p>MNBC has an Employment and Training office in Fort St. John and in Prince George, part of the Métis Employment & Training Program (METP). MNBC also runs a ‘Blade runners’ skills training program to prepare young adults for the work force. NENAS only provides “opportunities to improve the quality of life of First Nations and Inuit people”. NENAS does not recognize Métis. This is a good example of how only recognizing First Nations discriminates against the Métis. See appendix B [<i>see note</i>] for BladeRunners program description.</p> <p>BC Hydro seems to not fully understand the terms First Nations and Aboriginal groups. BC Hydro states it consults with Aboriginal groups yet only brings forward issues of First Nations groups. This is marginalizing to the Métis people. The term Aboriginal includes both Métis and First Nations. If only First Nations were consulted and included than it is not appropriate to use the term Aboriginal. What are the ‘Mitigation Measures ‘to address Aboriginal employment barriers? Which of these measures is focused on Métis people and not just First Nations?</p> <p>— <i>Note: MNBC's submission contained 4 appendices: Appendix A (Métis Employment and Training Program); Appendix B (MNBC BladeRunners program); Appendix C (MNBC Consultation Guidelines); Appendix D (MNBC Métis Traditional Knowledge Policy), and; Appendix E (Métis Owned Contracting Businesses in BC)</i></p>	<p>Mitigation measures for changes in demand for labour are described in Section 17.4.3.</p> <p>Please also see the response to ab_0010-050.</p>
ab_0010-054	Métis Nation BC	V.3 S. 17.2.1, page(s) 17-7, line(s) 10-19, V.3 S.17.2.2, line(s) 32-36, V.3 S. 17.2.4 ; page(s) 17-18 , line(s) 2-19 . EISG section	<p>Only First Nations sources of information was used. MNBC has a regional Employment and Training office, a Regional Minister of Development who could have provided information on behalf the Métis People.</p> <p>MNBC Métis community and Métis Traditional Knowledge (MTK) have not been requested by BC Hydro. BC hydro did not respond initially to MNBC request for engagement. BC Hydro instead asked for clarification on asserted rights. BC Hydro then asked further questions regarding asserted rights. See appendix C and D) [<i>see note</i>]. However, MNBC does appreciate the current efforts BC Hydro is making to engage with Métis.</p>	<p>Baseline conditions for the Labour Market VC are described in Section 17.3 and include Aboriginal data sources.</p> <p>Please also see the response to ab_0010-050.</p>

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		n/a Comment # 52	<p>—</p> <p><i>Note: MNBC's submission contained 4 appendices: Appendix A (Métis Employment and Training Program); Appendix B (MNBC BladeRunners program); Appendix C (MNBC Consultation Guidelines); Appendix D (MNBC Métis Traditional Knowledge Policy), and; Appendix E (Métis Owned Contracting Businesses in BC)</i></p>	
ab_0010-055	Métis Nation BC	V.3 S.17.3.5 ; page(s) 17-12 to 17-17 , line(s) n/a. EISG section n/a Comment # 53	<p>‘Occupational skills capabilities’ extend beyond skills and certification to obtain a job but also include the ability to obtain a contract for the project. Programs need to assist Métis people in obtaining not only a job but also a contract. MNBC administers the METP to improve the employment potential, earning capacity and self-sufficiency of Métis people in British Columbia. See appendix A. [see note]</p> <p>—</p> <p><i>Note: MNBC's submission contained 4 appendices: Appendix A (Métis Employment and Training Program); Appendix B (MNBC BladeRunners program); Appendix C (MNBC Consultation Guidelines); Appendix D (MNBC Métis Traditional Knowledge Policy), and; Appendix E (Métis Owned Contracting Businesses in BC)</i></p>	<p>Mitigation measures for changes in demand for labour are described in Section 17.4.3 and include measures for Aboriginal persons.</p> <p>Please also see the response to ab_0010-050.</p>
ab_0010-056	Métis Nation BC	V.3 S.17.4.2.2, page(s) 17-20, line(s) 15,16, 42 V.3 S.17.4.3, page(s) 17-23, line(s) 30-33 V.3 S.17.4.3, page(s) 17-23, line(s) 41-43 EISG section n/a Comment # 54	<p>MNBC agrees that adverse effects would occur if the Métis people of the area were unable to access opportunities. MNBC feels that with the current level of consultation with BC Hydro adverse effects are likely. MNBC would again like to point out the need for Métis to have the proper ‘occupational skills capabilities’ to fairly and equitably access employment. BC Hydro needs to engage with MNBC to assure no adverse effects occur to the Aboriginal labour force. BC Hydro needs direct efforts to address the Métis labour force.</p> <p>MNBC agrees there is a potentially “new employment opportunities for Aboriginal persons in the LAA, but targeted measures are needed to provide a fair and equitable pathway to accessing these opportunities”. BC Hydro needs to target measures directed at the Métis people as well.</p> <p>“Enhancing the local labour market participation rate and skill level of the population in the LAA, via training and skills development amongst other measures, including specific initiatives focused on Aboriginal persons in the LAA”. This could be done through MNBC initiatives such as the Fort St. John and Prince George METP offices or programs such as BladeRunners.</p> <p>This section should include METP and BladeRunners as well.</p>	<p>Mitigation measures for changes in demand for labour are described in Section 17.4.3 and include measures for Aboriginal persons.</p> <p>Please also see the response to ab_0010-050.</p>

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ab_0010-057	Métis Nation BC	V.3 S.17.5, (Table 17-14) ; page(s) 17-25, 17-26, line(s) 1,2 . EISG section n/a Comment # 55	METP and BladeRunners should be added to the plan as they provide successful and ongoing Aboriginal training. “BC Hydro states in the EIS that it will provide “support to Aboriginal training initiatives and students. It also plans “to provide for inclusion of Aboriginal persons in contracted workforce”. For the Métis people this can only be achieved through engaging in consultation to develop these programs in collaboration.	Mitigation measures for changes in demand for labour are described in Section 17.4.3 and include measures for Aboriginal persons. Please also see the response to ab_0010-050.
ab_0010-058	Métis Nation BC	V.3 S.17.8 ; page(s) 17-26, line(s) 11. EISG section n/a Comment # 56	Who is going to ensure that the proponent keeps its promises made here in the EIS? Mitigations and benefits need to be agreed to with the parties involved. If there are plans to assist Métis aboriginal people and businesses obtain benefits it needs to be worked out through collaboration and engagement. At the minimum there needs to be some sort of monitoring to ensure BC Hydro remains committed to providing employment and contracting benefits to Métis people. MNBC METP would be able to provide evidence of successful training and employment of Métis people in the area.	BC Hydro will develop agreements with other entities as necessary to complete the requirements, including mitigation measures, of the environmental assessment. Mitigation measures for changes in demand for labour are described in Section 17.4.3. No monitoring is proposed.
ab_0010-059	Métis Nation BC	V.3 S 18 ; page(s) 18-1, line(s) 31-36. EISG section n/a Comment # 57	See appendix F [<i>see note</i>]for inclusion of Métis owned Businesses. MNBC agrees with BC Hydro’s “Aboriginal Contract and Procurement Policy”, and with capacity building in particular. If this policy was broadened to include all Aboriginal people and not just First Nations it would be a positive step for relations between the proponent and MNBC. Any benefits the Proponent is stating in the EIS should be outline in an agreement with the corresponding Aboriginal group. — <i>Note: MNBC's submission contained 4 appendices: Appendix A (Métis Employment and Training Program); Appendix B (MNBC BladeRunners program); Appendix C (MNBC Consultation Guidelines); Appendix D (MNBC Métis Traditional Knowledge Policy), and; Appendix E (Métis Owned Contracting Businesses in BC)</i>	BC Hydro will develop agreements with other entities as necessary to complete the requirements, including mitigation measures, of the environmental assessment. Mitigation measures for changes in demand for labour are described in Section 17.4.3. No monitoring is proposed. Please also see the response to ab_0010-050.
ab_0010-060	Métis Nation BC	V.3 S.18.2.4 ; page(s) 18-6, line(s) 19-40. EISG section n/a Comment # 58	It appears as though BC Hydro does not understand who the term “Aboriginal” refers to. The term Aboriginal refers to Métis and First Nations and by using this term it implies that both groups were engaged. In reality only First Nations have been engaged. BC Hydro uses the term Aboriginal to refer only First Nations groups and is marginalizing Métis and off reserve First Nations people. The proponent says it is consulting and engaging Aboriginals but appears to only	Please see the response to ab_0010-050.

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			engage with a few First Nations groups.	
ab_0010-061	Métis Nation BC	V.3 S.18.3.4 ; page(s) 18-16, line(s) 40, 22-34 . EISG section n/a Comment # 59	<p>BC Hydro is guilty of continuing many of the challenges and barriers listed in its own EIS document. The Métis currently encounter inadequate linkages, systemic barriers, misconceptions and stereotypes. MNBC seeks to assist its citizens with training and business support and also champion for their rights as Aboriginal people. “Although interest and activity is growing, barriers and challenges for Aboriginal persons in Canada to start and grow businesses have been noted in several reports and studies (Federal–Provincial Ministers Working Group on Aboriginal Participation in the Economy 2001). It summarized the major documented barriers and challenges, including:</p> <ul style="list-style-type: none"> • Inadequate connections and linkages between Aboriginal communities and traditional economies with the mainstream economy • Systemic barriers, misconceptions, and stereotypes about Aboriginal people • Many Aboriginal businesses and communities lack business expertise in marketing, bookkeeping, manufacturing, and management skills • Aboriginal businesses often lack equity and have difficulty acquiring adequate business financing • Access to loan guarantees, and equity and debt financing are issues for both business and community development” 	<p>Mitigation measures for changes in contract opportunities are described in Sections 18.4.2 and 18.4.4.</p> <p>Please also see the response to ab_0010-050.</p>
ab_0010-062	Métis Nation BC	V.3 S.18.4 ; page(s) 18-19, line(s) 36,37 . EISG section n/a Comment # 60	“Adverse effects would occur if local and Aboriginal businesses and contractors were unable to fairly participate in the Project’s procurement and supply opportunities.” Métis have yet to fairly participate in opportunities.	<p>Mitigation measures for changes in contract opportunities are described in Sections 18.4.2 and 18.4.4.</p> <p>Please also see the response to ab_0010-050.</p>
ab_0010-063	Métis Nation BC	V.3 S.18.4.2 ; page(s) 18-22, line(s) 11,12 . EISG section n/a Comment # 61	BC Hydro needs to start working with all Aboriginal communities to identify opportunities for benefits, including skills training, jobs, and economic development.	<p>Mitigation measures for changes in contract opportunities are described in Sections 18.4.2 and 18.4.4.</p> <p>Please also see the response to ab_0010-050.</p>
ab_0010-064	Métis Nation BC	V.3 S.18.4.3.2 ; page(s) 18-23, line(s) 33-43. EISG section n/a	How much of the \$170 million would really reach the Métis people in the area? MNBC hopes that CEAA and BC Hydro don’t actually believe that \$170 million dollars will flow to local Aboriginal businesses, little more than it is possible for them to realise \$323 million. A more realistic number should be given in relation to Aboriginal benefit. At minimum the size of the population and barriers	<p>The scope of the Regional Economic Development effects assessment is in accordance with the EIS Guidelines and appropriate information is described in Section 18 of the EIS.</p> <p>The EIS states that \$170 million may accrue to regional contractors, including Aboriginal businesses in the LAA (EIS 18.6, page 18-27, lines 21-23). Table 18.16, page 18-26 describes the effectiveness of the proposed mitigation measures identified for regional economic</p>

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		Comment # 61	mentioned in the previous section along with actual possibilities would limit such numbers.	development.
ab_0010-065	Métis Nation BC	S.19.1.2 ; page(s) 19-2, line(s) 8-14. EISG section n/a Comment # 66	Because of the lack of inclusion mentioned above no Métis specific ‘Key Issues’ are considered Table 19.1. However, Métis share a lot of similar values and traditional land use activities as First Nations in the area and the key issues do address some of the concerns. Proper engagement at an earlier stage would have ensured that all ‘key issues’ for Métis would have been documented and addressed. MNBC appreciates the efforts the proponent has put into addressing the key issues with regards to hunting, fishing, trapping, etc.; however MNBC feels that some important issues have been over looked. It has been shown that there is an elaborate link between land and health, confirming that land is of great importance for the health of Aboriginal people. Land, as place, makes up an integral part of Aboriginal peoples’ identity and health. To many, land is not just a physical space, but represents the interconnected physical, symbolic, spiritual and social aspects of their culture. Therefore, it is crucial that the proponent considers how the project may impact the land and the strong relationships that Métis and other Aboriginal people have with the land. These cannot always be quantitatively measured but may have severe negative impacts on the quality of life for Aboriginal people.	Several issues, concerns, and interests identified by MNBC are documented in the Aboriginal Concerns, Issues and Interests Tracking Table found in Volume 1 Appendix H. With respect to the connection of Aboriginal people's identity to the land, the assessment of the potential effects of the Project on the current use of lands and resources considered changes to cultural and traditional uses of the land separately from uses such as hunting, fishing and trapping. That assessment considered the loss of some important places which are used by Aboriginal groups as cultural and spiritual areas, or areas of multiple uses. Regarding BC Hydro's consultation with MNBC, please see the response to ab_0010-005.
ab_0010-066	Métis Nation BC	S.19.1.2 ; page(s) 19-9, line(s) 12. EISG section n/a Comment # 67	Table 19.2 Quarried and excavation could affect traditional and cultural use.	Section 19 Table 19.2 presents the interactions of the Project with the Current Use of Lands and Resources for Traditional Purposes. For the construction phase, quarried excavation is identified as having an interaction ranked as “2” for all three key aspects of the current use of lands and resources for traditional purposes VC. This interaction is described in the effect assessment (Section 19.34.4 page 19-79).
ab_0010-067	Métis Nation BC	S.19.1.3 ; page(s) 19-9, line(s) 4-14. EISG section n/a Comment # 68	MNBC feels it is not possible that ‘no interaction is predicted between the Project and the current use of lands and resources for traditional purposes’. Table 19.3 would suggest there should be predictive interactions.	It is not clear what MNBC is referring to in this comment. Section 19 Table 19.3 identifies Key Indicators for Current Use of Lands and Resources for Traditional Purposes. Table 19.2 of the EIS presents the interactions of the Project with the Current Use of Lands and Resources for Traditional Purposes for both the construction and operation phases. All interactions presented in Table 19.2 were ranked as “2” in Volume 2 Appendix A Project Interactions Matrix, Table 2 and were carried through the effects assessment.
ab_0010-068	Métis Nation BC	S.19.2 ; page(s) 19-12, line(s) 1-18. EISG section	No MNBC information sources were used.	Two information sources provided by the MNBC were used and are included in the bulleted list referenced in Section 19 (Section 19.2.1, page 19-12, lines 30-32). Given the inclusion of information sources from MNBC and the Kelly Lake Metis Settlement Society, use of the term "First Nations" in line 9 on page 19-12 is incorrect, and should read

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		n/a Comment # 69		"Aboriginal groups". This update has been added to the List of Errata and Updated Information
ab_0010-069	Métis Nation BC	S.19.2.1 ; page(s) 19-12, line(s) 32. EISG section n/a Comment #	MNBC 'Site C Report' was not a TLUS. In the consultation summary in Vol. 5 Appendix A17 it states BC Hydro had asked for a report regarding 'Métis Nation BC's exercise of asserted rights in and around the Project area, including available mapping' and MNBC provided the Site C report and answered follow up questions regarding rights. MNBC had asked BC Hydro to consider a TLUS. BC Hydro refused even after CEAA asked them to consult MNBC. This is described in Vol. 5 Appendix A17 consultation summary.	BC Hydro did not refuse to consider a TLUS. The MNBC "Site C Clean Energy Project" report provided traditional land use information relating to Northeast BC as well as in and around the Project area. As such, BC Hydro utilized this information, in conjunction with other sources, for consideration as baseline information in the effects assessment carried out pursuant to Section 19, Current Use of Lands and Resources for Traditional Purposes, and the assessment of impacts to asserted or established Aboriginal or treaty rights in Section 34. Please see the response to ab_0010-032 with regard to MNBC's request to collect additional traditional use information and to conduct a TLUS.
ab_0010-070	Métis Nation BC	S.19.2.2 ; page(s) 19-13, line(s) 9-23. EISG section n/a Comment # 70	BC Hydro has not incorporated any MNBC current or past traditional use in this EIS.	Information respecting current and past use of lands and resources for traditional purposes for the Metis Nation BC is described in Section 19.3.1.24 of the EIS.
ab_0010-071	Métis Nation BC	S.19.3 ; page(s) 19-13, line(s) 39. EISG section n/a Comment # 71	Why have only 9 of 29 affected Aboriginal groups had TLUS completed?	As described in Section 9.2.3.3.2 (Stage 3 Consultation (Spring 2010 to present), BC Hydro negotiated Traditional Land Use Study (TLUS) agreements with those Aboriginal groups located immediately downstream of the Project or who may exercise rights within the area that is now defined as the Project activity zone. Additional information regarding the traditional land use information made available to BC Hydro, as well as how this information has been considered and integrated in the EIS, is described in Section 19 Current Use of Lands and Resources for Traditional Purposes and in the Volume 5 Appendix A Asserted or Established Rights and Treaty Rights, Aboriginal Interests and Information Requirements Supporting Documentation. Since filing the EIS in January 2013, BC Hydro has received a traditional land use study (entitled "A Métis Use and Occupancy Study for the BC Hydro Site C Dam Clean Energy Project") from Metis Nation BC which will be considered in, and appended to the Aboriginal Group Supplemental Report. Please see the response provided to ab_0010-032 for additional details respecting the traditional use information provided by the Metis Nation BC.
ab_0010-072	Métis Nation BC	S. 19.3.1.24.2 ; page(s) 19-63, 19-64 , line(s) 25-3. EISG section n/a	BC Hydro did not enter into a TLUS agreement with MNBC. However BC Hydro is waiting for MNBC to share such information with BC Hydro, which it will be considered and incorporated in the EIS, as appropriate, during the EIS review phase. BC hydro refuses to enter into a TLUS agreement yet expects MNBC to provide information freely to assist their industrial project. This EIS seems to be using limited information from one meeting and one individual to represent a	Please see the response to ab_0010-032, which describes the funding provided to MNBC to undertake a traditional use study, and the resulting report which was delivered to BC Hydro in March 2013 and will be considered in, and appended to, the Aboriginal Group Supplemental Report.

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		Comment # 72	TLUS.	
ab_0010-073	Métis Nation BC	S. 19.3.1.24.2 ; page(s) 19-64, line(s) 1-3. EISG section n/a Comment # 73	MNBC would like the opportunity to provide TLUS information into this EIS as well as the opportunity to conduct more data.	Please see the response to ab_0010-032.
ab_0010-074	Métis Nation BC	S. 19.4 ; page(s) 19-65, 19-99 , line(s) n/a. EISG section n/a Comment # 74	MNBC not considered in the effects assessment.	Section 19.4 of the EIS presents the effects assessment on the Current Use of Lands and Resources for Traditional Purposes. In that assessment, a determination was made that while MNBC indicated use of the Peace River valley in a general sense, sufficient specific information on use within the LAA was not made available to enable an effects assessment. As sufficient information on use within the LAA was not provided by MNBC, they were not carried through the effects assessment. BC Hydro noted that should additional information regarding current and reasonably anticipated future use of lands and resources within the LAA be received from MNBC, it would be considered and incorporated in the EIS, as appropriate, during the EIS review phase. Since filing the EIS, BC Hydro has received additional information respecting the current and reasonably anticipated future use of lands and resources by MNBC. The consideration of that additional information will be documented in the Aboriginal Group Supplemental Report.
ab_0010-075	Métis Nation BC	S. 19.5 ; page(s) 19-99, 19-108 , line(s) n/a. EISG section n/a Comment # 75	MNBC not considered in the residual effects. Only First Nations are considered.	Please see the response to ab_0010-074.
ab_0010-076	Métis Nation BC	S.19.6 ; page(s) 19-109, line(s) n/a. EISG section n/a Comment # 76	MNBC not considered.	Please see the response to ab_0010-074.
ab_0010-077	Métis Nation BC	S.19.6 ; page(s) 19-109, line(s)	The past two dam projects are not considered as part of the cumulative effects. Why not?	Please see Technical Memo: Cumulative Effects Assessment.

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IR #	Organization	EIS Section	Information Request / Comment	Triage Final Response
		n/a. EISG section n/a Comment # 77		
ab_0010-078	Métis Nation BC	S.19.6.2 ; page(s) 19-10, line(s) n/a. EISG section n/a Comment # 78	Echo Hill and Sukunka need to be considered as well.	The Project Description report for Sukunka was posted on the BCEAO epic website on January 25, 2013 and on the CEA Agency CEAR website on February 8, 2013. The Echo Hill Project Description report was posted on the BCEAO epic website on November 5, 2013 and on the CEA Agency CEAR website on January 21, 2013. As a result, neither project is included in the project inclusion list.
ab_0010-079	Métis Nation BC	S19.6.2.8 ; page(s) 19-113, line(s) n/a. EISG section n/a Comment # 79	Oil and Gas cumulative effects should include the number of proposed large pipeline projects that ship products to the coast. Coastal GasLink and Northern Gateway at a minimum.	<p>The Northern Gateway Pipeline Project is included in Section 10 Table 10.7, List of other Projects and Activities for Consideration in the Cumulative Effects Assessments.</p> <p>The criteria used for the inclusion of projects and activities that were considered in the cumulative effects assessment are described in Table 10.5 of the EIS. Section 10.5.2.3 states that active projects and activities listed on the BCEAO and CEA Agency websites prior to September 5th, 2012 were included in the cumulative effects assessment. The Project Description report for the Coastal GasLink project was submitted to the CEA Agency on October 30, 2012, and the CEA Agency determined on December 28, 2012 that a federal environmental assessment is required under CEAA 2012; therefore, the project was not considered in the project inclusion list.</p>
ab_0010-080	Métis Nation BC	S. 19.7 ; page(s) 19-114, line(s) 26 &35 . EISG section n/a Comment # 80	MNBC would be interested in community based monitoring programs.	BC Hydro intends to engage with those Aboriginal groups whose current use of lands and resources for traditional purposes has been determined to potentially be affected by the Project.
ab_0010-081	Métis Nation BC	V.3 S.21.2.5 ; page(s) 21-7, line(s) 7,8 . EISG section n/a Comment # 81	Métis concerns have not been incorporated under Aboriginal concerns. Only First Nations were considered.	Please see the response to ab_0010-050.
ab_0010-082	Métis Nation BC	V.3.S. 22.2.4 ; page(s) 22-7, line(s) n/a.	MNBC not considered in Aboriginal community and traditional knowledge in relation to Oil and Gas, only First Nations.	Please see the response to ab_0010-050.

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		EISG section n/a Comment # 82		
ab_0010-083	Métis Nation BC	V. 3 S.22.3.1, V. 3 S.22.3.2 ; page(s) 22-8, 22-8 , line(s) 2,3, 34,35 . EISG section n/a Comment # 83	The size and impact of the oil and gas has been underestimated in the cumulative effects assessment section of this EIS. In this section oil and gas play a large industrial role.	Oil and gas development in the northeast region is considered in the cumulative effects assessments for respective valued components as described in Section 10.5 of the EIS. Please see the Technical Memo: Cumulative Effects Assessment.
ab_0010-084	Métis Nation BC	V. 3 S.23.2.5 ; page(s) 23-6, line(s) n/a. EISG section n/a Comment # 84	MNBC not considered in Aboriginal community and traditional knowledge in relation to minerals and aggregates.	Please see the response to ab_0010-050.
ab_0010-085	Métis Nation BC	V. 3 S.24.2.5 ; page(s) 24-10, line(s) 8-15. EISG section n/a Comment # 85	<p>MNBC not consulted on fishing use. Only First Nations. MNBC would need to conduct a TLUS to fully understand the effects on local use of fish and wildlife resources. Métis harvest a wide variety of natural resources in the proposed project area. Hunting, trapping, and fishing all play significant roles in Métis culture and provide food for many families. Historically, their economy was based on hunting, fishing, and trapping. Like other North American Aboriginal people, Métis had a diversified subsistence economy of harvesting, gathering plants for food and medicine, and trapping furs for clothing, sale or trade. Many believe that being out on the land teaches people many other valuable life skills as well.</p> <p>Traditional harvesting activities provide opportunities for generations of Métis to connect with one another, “to carry things on,” in other words. Through these activities, out on the land, young people learn about Métis traditions, foods and culture. Family harvesting sites are often bridges between past, present and future generations of Métis people. As such, these sites are important to Métis people for their ability to heal, to ground and to remind them where they came from. Traditional land use is integral to Métis kinship networks and harvesting is an important way to ensure the continuity of Métis traditional knowledge (MTK). Métis harvesting knowledge needs to be</p>	<p>Please see the response to ab_0010-050.</p> <p>Potential Project effects on the Harvest of Fish and Wildlife Resources are described for all construction and operations phase components in Section 24 of the EIS.</p>

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			incorporated into the proponents EIS report.	
ab_0010-086	Métis Nation BC	S. 24.3 ; page(s) 24-10 To 24-23 , line(s) n/a. EISG section n/a Comment # 86	It is not clear how the information gathered from TLUS was incorporated into the baseline data for harvesting use?	TLUS information related to traditional aboriginal harvest opportunities supports Section 19, Current Use of Land and Resources for Traditional Purposes. The baseline harvest data supporting Section 24 of the EIS includes BC Ministry of Environment harvest and hunting data for management units in the local assessment area.
ab_0010-087	Métis Nation BC	S. 24.3.4.3 ; page(s) 24-29, line(s) 5-7. EISG section n/a Comment # 87	V. 5 Appendix A17 states that during the one community meeting BC Hydro held with MNBC, a Métis trapper identified that he used the area affected by the dam. BC hydro was aware of this and recorded it the consultation section.	Thank you for your comment.
ab_0010-088	Métis Nation BC	S. 24.4.4 ; page(s) 24-33 To 24-37 , line(s) n/a. EISG section n/a Comment # 88	Changes to Aboriginal hunting and fishing for sustenance are not considered. MNBC would like to know how this will be mitigated for?	Changes to Aboriginal hunting and fishing, as well as mitigation, are described in Section 19 of the EIS.
ab_0010-089	Métis Nation BC	S. 24.6 ; page(s) n/a, line(s) n/a. EISG section n/a Comment # 89	The determination of effects may be dependent on sustenance of Métis people who may report a higher significance to effects on hunting and fishing.	Please see the response to ab_0010-050.
ab_0010-090	Métis Nation BC	V. 3 S. 25.1.2, Table 25.1 ; page(s) 25-3, line(s) 1. EISG section n/a Comment # 90	MNBC has concerns regarding the destruction of a historic Métis community that holds significant value from a heritage perspective, as well as yettobe realized tourism and recreation potential in the proposed project area. MNBC would also like to acknowledge the past destruction of other Métis communities by previous dam projects by BC hydro on the Peace River.	Please see the response to ab_0010-103. Please also see the Technical Memo: Consideration of Historical Context in Assessment of Potential Effects and Impacts on Aboriginal Groups.
ab_0010-	Métis Nation	V. 3 S. 25.1.2,	Heritage value was not assessed in Vol.4 Section 32. Effects on historical sites	As stated in Section 32 of the EIS, the erosion potential assessment scoring method (E-PAST) was

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091	BC	Table 25.1 ; page(s) 25-3, line(s) 1-2. EISG section n/a Comment # 91	were assessed using an EPAST technique in Volume 4 Appendix C Heritage assessment report.	<p>developed for the Project (see Volume 4 Appendix C Heritage Resources Assessment Report), and was used to assess potential effects on archaeological and historical sites associated with inundation and operation of the reservoir. Section 32.3 provides information on the assessment of potential effects for all components and activities related the Project.</p> <p>Please also see Section 32.3.3 for a description of mitigation measures specifically for historical sites.</p> <p>Volume 4 Appendix C Heritage Resource Assessment of the EIS provides a detailed description of the methodology and results of the field inventory.</p>
ab_0010-092	Métis Nation BC	S. 25.2.5 ; page(s) 25-8, line(s) 16-24. EISG section n/a Comment # 92	Key issues related to Métis historic communities gained through consultation were not addressed in this EIS.	<p>Please see the Aboriginal Issues, Concerns, and Interests Tracking Table included in Volume 1 Appendix H Aboriginal Information Distribution and Consultation Supporting Documentation of the EIS. The table presents a high-level description of the issues, concerns, and interests identified by Aboriginal groups in consultation activities with BC Hydro between November 1, 2007 and November 30, 2012, including those identified in meetings, phone calls, letters, emails, and reports (e.g., Traditional Land Use Studies, Community Assessments), as well as those identified during the comment periods for the EIS Guidelines.</p> <p>Please also see the response to ab_0010-103.</p>
ab_0010-093	Métis Nation BC	S. 25.4.3.2 ; page(s) 25-33, line(s) 34-37. EISG section n/a Comment # 93	MNBC would like to participate in tourism mitigation that includes interpretation with respect to key issues. MNBC would be like to be included in interpretation of the early history of Métis in the project area.	Please see the response to ab_0010-103.
ab_0010-094	Métis Nation BC	S. 25.5 ; page(s) 25-36, 25-38, line(s) n/a. EISG section n/a Comment # 94	No mitigation or assessment for key issue raised by MNBC: ‘destruction of a historic Métis community that holds significant value from a heritage perspective as well as yet-t-o-be realized tourism and recreation potential’.	Please see the response to ab_0010-103.
ab_0010-095	Métis Nation BC	V.3 S.26.2.5 ; page(s) 26-11, line(s) 27-43. EISG section n/a Comment # 95	MNBC would like to consult on river navigation with BC Hydro.	<p>Potential project effects on water-based navigation are described in Section 26 of the EIS.</p> <p>Please also see the response to ab_0010-050.</p>

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ab_0010-096	Métis Nation BC	V3. S. 27.8 ; page(s) 27-25, line(s) 23-24. EISG section n/a Comment # 96	MNBC agrees the level of confidence in estimating this cumulative effect is low. Projects such as pipelines and recent EA participants need to be considered as well. This EIS states there already exists a 'considerable amount of visible anthropogenic disturbance (p.27.25, line 19). How will this be mitigated?	The EIS was completed in accordance with Section 8 of the EIS Guidelines. Mitigation for the existing visible anthropogenic disturbance in the Visual Resources Regional Assessment Area, including Peace River Valley, is outside the scope of the environmental assessment.
ab_0010-097	Métis Nation BC	V.4 S.28.3.2, Table 28.7 ; page(s) 28-9, line(s) 10-13. EISG section n/a Comment # 97	EIS states 'Population and demographic information for Aboriginal people in LAA is presented in Table 28.7. Table 28.7 is titled First Nations Population Profile in the Local Assessment Area. This table and section are confusing. Is the proponent referring to the populations of Métis, Inuit and First Nations populations or just First Nations living on reserve?	Table 28.7 on page 28-9 identifies the population as the Aboriginal population (on- and off-reserve). Section 28.1.5.1, page 28-4, lines 17-22 describe the Aboriginal population as, "those persons who reported identifying with at least one Aboriginal group, i.e., North American Indian, Metis, or Inuit, or those who reported they were members of an Indian band or First Nation, or reported being a Treaty Indian or a Registered Indian. This population includes Aboriginal residents of First Nations communities and of non-First Nations communities, such as municipalities."
ab_0010-098	Métis Nation BC	V.4 S. 29.4.1.4 ; page(s) 29-28, line(s) 2-4. EISG section n/a Comment # 98	Here the EIS implies that Aboriginal persons may move back to their communities due to housing shortages. This statement fails to consider Métis and offreserve First Nations populations who have no reserve to return to. Not all Aboriginal persons can return to their community.	Mitigation for changes in housing demand is described in Section 29.4.2. Please also see the response to ab_0010-050.
ab_0010-099	Métis Nation BC	V.4 S.30.1.2, Table 30.1 ; page(s) 30-4, line(s) 12. EISG section n/a Comment # 99	Many of the First Nations concerns and key issues may be shared with Métis citizens as well. However, without proper consultation this is not able to be determined.	Key issues for community infrastructure and services are described in Section 30.1.2, pages 30-3 to 30-5. Please also see the response to ab_0010-050.
ab_0010-100	Métis Nation BC	V.4 S30.2.4 ; page(s) 30-11, line(s) 810. EISG section n/a Comment # 100	BC Hydro consultation with MNBC, included in this EIS, involves only one community meeting and a report requested on asserted rights in the area. MNBC continues to be engaged with the proponent and hopes to contribute greater input into this EA.	Thank you for your comment.
ab_0010-101	Métis Nation BC	V.4 S.30.3.1.1.2 ;	MNBC has a Ministry of Health and runs a number of programs for its citizens. One program is the BladeRunners program for young adults, which is a	Thank you for the information.

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		page(s) 30-12, line(s) n/a. EISG section n/a Comment # 102	preventative program. Including Aboriginal social and health organizations and their programs would produce a stronger EIS.	
ab_0010-102	Métis Nation BC	S30.4.1.4.4 ; page(s) 30-45, line(s) 30-41. EISG section n/a Comment # 103	MNBC provides many services to its citizens. This includes: Health, Education, Youth, Justice, Children and Families, Employment and Training are all MNBC Ministries that run social programs. It would be beneficial for the proponent to seek relationships that would enable MNBC to strengthen its capacity to provide services that would mitigate effects from the project.	Mitigation for changes in demand for or provision of services for community infrastructure and services is described in Section 30.4.2 and 30.4.4. Please see the response to ab_0010-050.
ab_0010-103	Métis Nation BC	V.4.S.32 ; page(s) n/a, line(s) n/a. EISG section n/a Comment # 104	<p>MNBC is concerned with the loss of heritage resources that pertain to the Métis history such as fur trade posts. This section was hard to follow: Tracking codes, appendices within appendices, and reference to section that reference other section and volumes.</p> <p>MNBC is concerned with sites that are of importance to Métis people such as fur trade posts and forts. It is difficult to track certain sites through this process as well as determine which codes represent sites important to Métis people. It appears as though key sites received little or no attention and Aboriginal groups have had no direct involvement in the protection of their history, culture and ancestors.</p>	<p>BC Hydro understands the key issue for Metis Nation BC with respect to heritage resources is potential inundation of the two known fur trade posts in the LAA: Rocky Mountain Fort (HbRf-31) and Rocky Mountain Portage House (HaRI-4). As noted in Section 32.1.3, the effects of the Project on heritage sites such as Rocky Mountain Fort was raised as a key issue or interest in Aboriginal groups, research institutions, local citizens or associations, and government agencies in meetings or in correspondence about the Project.</p> <p>Section 32.3.3.3 of the EIS classifies both sites as Class I historical sites protected by the B.C. Heritage Conservation Act (HCA), and have been identified as candidates for systematic data recovery (excavation) to expose and identify additional architectural details and to gather a sample of historical artifacts prior to construction. Along with other archaeological sites protected by the BC Heritage Conservation Act (see Section 32.3.3.2 of the EIS), the size of sample to be excavated at each site, the approach, and methods would be determined through permit discussions with the B.C. Archaeology Branch, consultation with Aboriginal groups and relevant stakeholders. The extent and nature of mitigation of such sites, however, is ultimately determined by the B.C. Archaeology Branch as part of their permitting responsibilities under the HCA.</p> <p>Volume 4, Appendix C Heritage Resource Assessment Report, Section 5.1.5.10.4 in the EIS includes a description of previous investigations at Rocky Mountain Fort, and a summary of what was learned during those studies. It further describes the focus of this field program on identifying possible outlying aboriginal encampments, which was identified as an area of limited information. No further evidence was found of aboriginal encampments during the field program. Section 6 of this appendix provides a historical background, which further discusses the fur trade period on the Peace River.</p>

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				<p>As noted in Section 32 Table 32.6, reservoir preparation and filling during construction and ongoing operations are expected to affect both HbRf-31 (Rocky Mountain Fort) and HaRI-4 (Rocky Mountain Portage House) should the Project proceed. As noted in Section 32.2.2.3, the private landowner did not grant permission to BC Hydro to access HaRI-4 (Rocky Mountain Portage House) for the field program; a field assessment of HaRI-4 will be needed before a mitigation strategy can be developed.</p> <p>As proposed in the heritage mitigation, BC Hydro would provide mitigation funds to support local museums for heritage programming where required by the Archaeology Branch in conditions of any permits issued for construction under the HCA. BC Hydro welcomes the opportunity to engage in discussions with local museums with respect to the types of programs that may be proposed as a component of the heritage mitigation program. BC Hydro would bring proposed programs forward to the Archaeology Branch for consideration as part of the overall heritage mitigation plan.</p>
ab_0010-104	Métis Nation BC	V.4 S.32.1.2 ; page(s) 32-4, line(s) 39-41. EISG section n/a Comment # 105	MNBC was not consulted in relation to Archeology and heritage sites. MNBC has yet to give or receive information specific to heritage sites, methodologies of the heritage program, and the potential effects. Métis participation in heritage programs that affect their culture is necessary.	<p>MNBC's specific concerns identified during consultation activities with BC Hydro are listed in Volume 5 Appendix A17 Part 4 Aboriginal Summary: Metis Nation British Columbia. A summary of issues, concerns and interests identified by Aboriginal groups with respect to heritage resources is found on pages 52 to 53 of volume 1 Appendix H Aboriginal Information Distribution and Consultation Supporting Documentation of the EIS.</p> <p>Please also see the response to ab_0010-103.</p>
ab_0010-105	Métis Nation BC	S.32.1.3 ; page(s) 32-5, line(s) 40. EISG section n/a Comment # 106	Is the EIS suggesting Rocky Mt. Fort is a key issue?	Please see the response to ab_0010-103.
ab_0010-106	Métis Nation BC	S.32.1.3 ; page(s) 326, line(s) 29. EISG section n/a Comment # 107	Considerations raised by MNBC have yet to be included. The consideration raised by Aboriginal groups is a key aspect to be taken into account in assessing the potential for the project to adversely affect heritage resources.	Please see the responses to ab_0010-050 and ab_0010-103.
ab_0010-	Métis Nation	S.32.1.3 ;	MNBC was not consulted on the Draft EIS.	Please see the response to ab_0010-050.

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107	BC	page(s) 32-35, line(s) 41-43. EISG section n/a Comment # 108		
ab_0010-108	Métis Nation BC	S.32.1.5, Table 32.2 ; page(s) 32-11, line(s) n/a. EISG section n/a Comment # 109	In table 251 concern for the destruction of a historic Métis community that holds significant value from a heritage perspective as well as yettobe realized tourism and recreation potential is recognized as a key issue. Why is this key issue not recognized as a key indicator for heritage resources as well? MNBC would like to provide concerns for loss of historic Métis sites and work toward mitigation of loss of culture. Table 32.2 is stating that changes to historical sites that prompt relevant comment from Aboriginal groups is a key indicator.	Please see the response to ab_0010-103.
ab_0010-109	Métis Nation BC	S. 32.2.2.3 ; page(s) 32-22, line(s) 21-23. EISG section n/a Comment # 110	Due to the cultural significance of Rocky Mt. Fort. To the Métis people MNBC would see itself as a stakeholder in regards to these historical sites.	Please see the response to ab_0010-103
ab_0010-110	Métis Nation BC	S. 32.3 ; page(s) 32-23, line(s) n/a. EISG section n/a Comment # 111	MNBC has yet to provide relevant consideration to historic sites that are of cultural importance to the Métis people.	Please see the response to ab_0010-103.
ab_0010-111	Métis Nation BC	S. 32.3.3 ; page(s) 32-27, line(s) 28-30. EISG section n/a Comment # 112	MNBC hopes to engage with the proponent to help provide detail to the design and help improve the likelihood that heritage sites important to the Métis people will be avoided.	Please see the response to ab_0010-103.
ab_0010-	Métis Nation	S. 32.3.3.3 ;	If Rocky Mt. Ft. And Rocky Mt. Portage House have been identified for	Please see the response to ab_0010-103.

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112	BC	page(s) 32-46, line(s) 31-38. EISG section n/a Comment # 113	systematic data recovery to gather historical evidence MNBC would like to be involved, consulted and participate in this process. MNBC should be involved in the analysis and interpretation of the history of the Métis people. Not including Métis people in the determination of their history would lead to marginalization. There is also no mention of the effects expected for these key sites. Will they be underwater or destroyed by excavation?	
ab_0010-113	Métis Nation BC	S. 32.3.3.3 ; page(s) 32-46, line(s) 39-45. EISG section n/a Comment # 114	BC Hydro needs to engage more openly about graves that will be disturbed. Initial land use mapping performed by MNBC, and yet to be included in the EIS, suggest there are grave and burial sites that are of concern to MNBC . There is also no mention of the effects expected for these key sites. Will they be underwater or destroyed by excavation?	Please see the response to ab_0001-628.
ab_0010-114	Métis Nation BC	S. 32.3.3.3 ; page(s) 32-47, line(s) 12-15. EISG section n/a Comment # 115	Historically Métis have been marginalized and not included in early Canadian history. MNBC would like to be engaged and consulted on mitigation measures such as the suggested “museums, public displays, public education, a website, videos and signage – and for research in areas outside the heritage resources LAA.” It would benefit all parties involved if mitigation plans were laid out in more specific terms and have specific goals and actions attached to it in a formalized agreement or plan. Early fur trade forts are directly related to Métis history, culture and identity and there is evidence that part of this will be lost due to the Project. How can this be mitigated?	Please see the response to ab_0010-103.
ab_0010-115	Métis Nation BC	S. 32.3.3.3, Table 32.6 ; page(s) 32-48, line(s) 19. EISG section n/a Comment # 116	Table 32.6 states that Rocky Mt. Fort. (HbRf31) will be affected by the reservoir prep, filling, dam, and generating station and that the primary mitigation requirements will be addressed in the construction phase. MNBC is curious why they will not be addressed earlier? How is this site going to be monitored? MNBC should be consulted and participate in the potential mitigation approaches for sites that hold Métis heritage concerns.	For clarification, Table 32.6 in the EIS indicates which Project Activity or Physical Works will affect each site, not the timing of the mitigation. As noted in Section 32.3.3, "should the Project proceed, a detailed heritage site mitigation strategy would be required based on the results of the heritage resources assessment and upon completion of detailed design." Heritage mitigation would precede the construction activities that would affect the heritage resources. Please see the response to ab_0010-103. Please also see the Technical Memo: Archaeology.
ab_0010-116	Métis Nation BC	S. 32.3.3.3, Table 32.6 ; page(s) 32-48, line(s) 19.	Table 32.6 states that Rocky Mt. Potage House (HaRI4) will be affected by reservoir preparation and filling and that the potential mitigation approach is systematic recovery, monitoring, and compensation. MNBC should be consulted and participate in the potential mitigation approaches for sites that hold Métis	Please see the response to ab_0010-103.

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		EISG section n/a Comment # 117	heritage concerns.	
ab_0010-117	Métis Nation BC	S. 32.3.3.4 ; page(s) 32-51, line(s) 56. EISG section n/a Comment # 118	It is the responsibility of BC Hydro to implement and complete mitigation; however it is the stakeholders who need to agree to, asses and monitor these mitigations and sites.	Please see the response to ab_0010-103.
ab_0010-118	Métis Nation BC	S.32.3.3.4, Table 32.7 ; page(s) 32-52, line(s) 1. EISG section n/a Comment # 119	Table 32.7 suggests as a mitigation measure the implementation of a Heritage Resources Management Plan. MNBC would like to be involved in implementing such a plan as it relates to Métis Heritage.	Please see the response to ab_0010-103.
ab_0010-119	Métis Nation BC	S. 32.3.3.5 ; page(s) 32-53, line(s) 2-6. EISG section n/a Comment # 120	MNBC would like to identify through discussion mitigation measure which can be evaluated by BC Hydro in consultation and with the appropriate regulatory body on a site by site basis.	Please see the response to ab_0010-103.
ab_0010-120	Métis Nation BC	S. 32.3.3.5, Table 32.8 & Table 32.9 ; page(s) 32-54, line(s) 3 & 1 . EISG section n/a Comment # 121	It is difficult to determine what effects are happening to specific sites and what values these sites have. These two tables are difficult use and provide no real information on what is happening to these sites.	As noted in Section 32.4.1, Table 32.8 describes the criteria used to characterize potential residual effects on Heritage Resources. Table 32.9 characterizes the potential residual adverse effects on Heritage Resources in the LAA based on those criteria.
ab_0010-	Métis Nation	S. 32.4.5 ;	MNBC was not involved in interviews to contribute to the evaluation of historic	Please see the response to ab_0010-050.

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121	BC	page(s) 32-63, line(s) 24-28. EISG section n/a Comment # 123	value.	
ab_0010-122	Métis Nation BC	S. 32.4.6 ; page(s) 32-64, line(s) 3-5. EISG section n/a Comment # 124	MNBC was not included as part of the Aboriginal groups input into the determination of the threshold for residual effects.	Please see the response to ab_0010-050.
ab_0010-123	Métis Nation BC	S. 32.5 ; page(s) 32-65, line(s) 1-13. EISG section n/a Comment # 125	Initial concerns expressed by Métis citizens provide evidence of past concerns not yet addressed due to the proponents previous dam projects up stream. There is evidence that this will be the third time Métis heritage sites have been flooded and not addressed. MNBC feels that previous concerns apply to the cumulative effects more Métis heritage being wiped out.	Please see the response to ab_0010-103. Please also see the following Technical Memos: - Cumulative Effects Assessment - Consideration of Historical Context in Assessment of Potential Effects and Impacts on Aboriginal Groups
ab_0010-124	Métis Nation BC	S. 32.6 ; page(s) 32-65, line(s) 15-19. EISG section n/a Comment # 126	MNBC would like to engage and consult on a Heritage Management Plan that would address site stewardship and protection of sites with Métis heritage. MNBC would like to be involved in the monitoring of heritage sites of concern and kept informed of findings.	Please see the response to ab_0010-103.
ab_0010-125	Métis Nation BC	S. 32.6 ; page(s) 32-66, line(s) 16-22. EISG section n/a Comment #	MNBC would be interested in engaging on any opportunities for scientific examination of Métis heritage resource locations.	Please see the response to ab_0010-103.
ab_0010-126	Métis Nation BC	S.32 ; page(s) n/a, line(s) n/a.	At the end of this section it is difficult to determine what the key issues are, what is affected, how it will be mitigated, and how it will be monitored. Rocky Mountain Fort is of concern to Métis heritage and a protected site. After all the	Please see the response to ab_0010-103.

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		EISG section n/a Comment # 127	information provided here it is difficult to determine what is happening to this site, how it will be mitigated, and how it will be monitored.	
ab_0010-127	Métis Nation BC	Work Cited ; page(s) 32-69, line(s) 12-13. EISG section n/a Comment # 128	<p>MNBC would like to request copies of the unpublished reports cited:</p> <ul style="list-style-type: none"> • Alexander, D 1982. An Inventory and Assessment of Heritage Resources at the Peace River Site C Dam. HAC Permit 1981018. • Arcas Consulting Archeologists Ltd. (Arcas). 1991. BC Hydro Peace Site C Project Heritage Resource Assessment – Status Report. • Arcas Consulting Archeologists Ltd. (Arcas). 2009. Peace River Site C Hydro Project: Heritage Resource Data Gap Analysis. • Archer CRM Partnership (Archer). 2008b. Archaeological Overview Assessment (AOA) of Impervious & Slide Areas, 10km Radius from Site C NE BC. • Burley, D and S. Hamilton. 1990. Historic Overview Dam Site C – Draft Paper. • Golder Associates Ltd. And AMEC Earth & Environmental (Golder and AMEC). 2011. Peace River Site C Project Heritage Program Year 1 (2010) Summary Report. HCA Permit 20100378. • Spurling, B. 1980a and 1980b. The Site C Heritage Resource Inventory and Assessment Final Report. 	The requested reports can be provided by BC Hydro to MNBC.
ab_0010-128	Métis Nation BC	V.4 S.33.2.1.5 ; page(s) 33-19, line(s) 31-32. EISG section n/a Comment # 129	MNBC was not consulted. MNBC has a Minister of Health and a Director of Health who would have been willing to engage with the proponent on Métis health. Evidence exists of Métis people relying on fish from the Peace River watershed for sustenance in the project area.	Please see the response to ab_0010-050.
ab_0010-129	Métis Nation BC	S. 33.3.2 ; page(s) 33-28, line(s) 36-41. EISG section n/a Comment # 130	MNBC Land Use Studies provide evidence of habitation sites and habitation use areas in proximity to the Project. MNBC has provided this information to the proponent and MNBC is hoping for further inclusion in EA planning.	<p>Please see the response to ab_0010-071.</p> <p>New information will be taken into account in the development of the Air Quality Management Plan.</p>
ab_0010-130	Métis Nation BC	S. 33.3.5.1 ; page(s) 33-33, line(s) 23-26.	MNBC has yet to provide information due to BC Hydro late inclusion of the Métis.	Please see the response to ab_0010-050.

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		EISG section n/a Comment # 131		
ab_0010-131	Métis Nation BC	S 33.4.1.1.1 ; page(s) 33-39, line(s) 17-19. EISG section n/a Comment # 132	“Concentrations of Methyl mercury in the water is projected to approximately double from baseline conditions”. This baseline includes the increase from the previous two dams. If each dam doubled concentrations of mercury the magnitude would grow exponentially.	<p>Baseline mercury concentrations in water in the Peace River reflect the current conditions in the upstream reservoirs, are extremely low; therefore, a doubling of this low concentration would still result in a low concentration that is at least 1000x less than the Canadian Drinking Water Quality guideline concentration.</p> <p>As described in Section 11.9 Methylmercury, Williston Reservoir is described with respect to the influence of this system on water quality and flushing rates downstream. Section 11.9.5.2 states that “water quality baseline conditions are not expected to markedly change, given the influence of Williston Reservoir upstream, which will continue to influence mercury methylation rates in the downstream reservoir. Given the short hydraulic residence time of water in the Site C reservoir (approximately 23 days), water discharged from Williston Reservoir will continue to influence downstream water temperature, oxygen, nutrients, suspended solids inputs, and biota, even during operation of the Site C reservoir (Section 11.4 Surface Water Regime, Section 11.5 Water Quality, and Section 11.7 Thermal and Ice Regime).”</p> <p>Please also see Section 33.3.5 Country Foods and Methylmercury in Fish in the EIS and the Technical Memo: Methylmercury.</p>
ab_0010-132	Métis Nation BC	S. 33.4.9 ; page(s) 33-58 To 33-61 , line(s) n/a. EISG section n/a Comment # 133	MNBC is concerned with the increased levels of Mercury in fish as it relates to use by Métis harvesters. How will this be monitored and mitigated?	Please see the Technical Memo: Methylmercury.
ab_0010-133	Métis Nation BC	S. 33.4.10 ; page(s) 33-62, line(s) n/a. EISG section n/a Comment # 134	MNBC would like to engage, consult and participate in monitoring of contaminants in country foods such as fish and plants. MNBC has newsletters and other communication devices to inform its harvesters of concerns. MNBC would like to engage with BC Hydro to inform and educate Métis harvesters or county foods of concerns.	Please see the response to ab_0010-050.
ab_0010-	Métis Nation	S. 33.7 ;	The true meaning of cumulative effects used to mean effects from other	Please see the response to ab_0010-131.

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134	BC	page(s) 33-67, line(s) 7-8. EISG section n/a Comment # 135	industries such as the other two upstream dams. The increased concentration of contaminants such as mercury could be dramatic if each dam caused a doubling as Site C will.	
ab_0010-135	Métis Nation BC	S. 33.8 ; page(s) 33-67, line(s) 9-10. EISG section n/a Comment # 136	In section.33.8 there is no mention of the monitoring and follow up that was previously stated in section 33.4.10.. Table 33.30 suggests there will be daily monitoring until 2022, and then five years after that for some locations. Then reduced frequency monitoring of mercury from five to ten years after that. This monitoring should have been summarized in the monitoring and follow-up section.	In Section 33 Human Health, standard monitoring is proposed as a component of the mitigation program, and not as a follow-up program.
ab_0010-136	Métis Nation BC	Volume 5: DEFINITIONS; page(s) n/a, line(s) n/a. EISG section n/a Comment # 137	No definition of “First Nation” or “Aboriginal”, however there is a good definition of “Clearing= the removal of trees and woody vegetation”.	BC Hydro understands the term "Aboriginal" to be inclusive of First Nations, Metis and Inuit. Where "Aboriginal" is used in the EIS, it is intended to describe both First Nation and Metis, as Inuit groups are not potentially affected by the Project. The EIS Guidelines uses the term "Aboriginal", undefined.
ab_0010-137	Métis Nation BC	V.5 S.34.3.2.3 ; page(s) 34-9, line(s) 7-37. EISG section n/a Comment # 138	MNBC citizens are considered Powley compliant by the federal government. MNBC feels the Crown has a duty to consult its citizens.	BC Hydro is consulting with the MNBC in accordance with the EIS Guidelines. Volume 5, Appendix A17, Part 2 sets out a chronological summary of BC Hydro’s consultation activities with MNBC up to November 30, 2012. BC Hydro notes that a determination of whether a community meets the test set out in Powley must be done on a case-by-case basis. Research on the history of Métis in northern Alberta and northeastern British Columbia can be found in the report prepared by Public History entitled “Site C: Preliminary Historical Research Report”. This report was included in the references for Section 34 and cited in Section 34, at page 34-10, line 29, but inadvertently omitted from inclusion in the EIS. This change has been added to the List of Errata and Updated Information.
ab_0010-138	Métis Nation BC	S. 34.3.3 ; page(s) 34-7, line(s) 37-39. EISG section n/a Comment #	V. 5 Appendix A17 states that MNBC asked to enter into a TLUS. As evident in the consultation summary in BC Hydro refused to engage with MNBC until encouraged to do so recently by CEAA. MNBC has evidence it has provided to BC Hydro. This information is not a TLUS but evidence that a TLUS is necessary to enable an effects assessment on current use and asserted right.	Please see the response to ab_0010-032.

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		139		
ab_0010-139	Métis Nation BC	S. 34.4.1, Table 34.2 ; page(s) 34-19, line(s) 1. EISG section n/a Comment # 140	MNBC was not engaged with the proponent in the earlier stages of the project. BC Hydro has only recently begun to engage MNBC. MNBC hopes to receive the level of engagement listed in Table 34.2 (Mitigation Measures for Potential Adverse Impacts on the Exercise of Treaty Rights).	<p>As set out in ab_0010-137, BC Hydro has consulted with MNBC in accordance with the EIS Guidelines (see Volume 5, Appendix A17, Part 2). BC Hydro provided MNBC with capacity funding to support, among other things, a community meeting in Fort St. John to seek input from members of the Métis community regarding their interests and concerns, and the preparation of a report regarding MNBC's exercise of asserted rights in and around the Project area. This report is included in Volume 5, Appendix 17, Part 5.</p> <p>As the initial report lacked detailed mapping, BC Hydro provided MNBC with additional capacity funding to support the completion of a Land Use Research Project, which involved the following activities/deliverables:</p> <ul style="list-style-type: none"> • A review of existing literature regarding Métis traditional knowledge, traditional land use activities, harvesting data and Métis history in the Fort St. John area; • One-on-one interviews with approximately 10 to 20 individual Métis traditional knowledge holders to document information regarding hunting, trapping, fishing and plant gathering practices, as well as other historical land use activities; • The creation of detailed site mapping based on interviews with Métis traditional knowledge holders, including the identification of significant sites; and, • A summary report, including mapping products, to provide to BC Hydro in order to inform the assessment of the Project. <p>MNBC submitted a report to BC Hydro titled "A Métis Use and Occupancy Study for the BC Hydro Site C Dam Clean Energy Project", together with related site mapping, after the submission of the EIS. The report and maps will be considered by BC Hydro in the Aboriginal Group Supplemental Report.</p> <p>With respect to implementing mitigations identified in Section 34.4.1 and 34.4.3, BC Hydro intends to engage with those Aboriginal groups whose exercise of asserted or established Aboriginal and treaty rights has been determined to potentially be impacted by the Project.</p>
ab_0010-140	Métis Nation BC	S.34.4.2 ; page(s) 34-20, line(s) 2-5, 27-30 . EISG section n/a Comment # 141	<p>MNBC would love to provide specific suggestions for measures to avoid, reduce, or otherwise mitigate the impacts of the project, on Métis people in particular. In fact many have been included here in the Comments on the EIS which is one of the meaningful communication avenues available to MNBC thus far.</p> <p>MNBC hopes to continue meaningful consultation with the proponent.</p>	BC Hydro remains committed to consulting with the MNBC, including with regard to mitigation measures.
ab_0010-141	Métis Nation BC	S. 34.4.4 ; page(s) 34-22,	No IBA or arrangement has yet to be reached between MNBC and BC Hydro. MNBC would be interested in discussions on the matters of accommodation,	As indicated in Section 34.7.1, "in early March 2012, BC Hydro secured a mandate to enter into impact benefit agreement (IBA) negotiations with First Nations that, in BC Hydro's view, are likely

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		line(s) 17-30. EISG section n/a Comment # 142	agreements and capacity building; however BC Hydro has not offered to enter into initial discussions beyond MNBC's assertion of Métis rights at this time.	<p>to be adversely affected or impacted by the Project and where BC Hydro considers that accommodation beyond the mitigations listed in the EIS is warranted". In BC Hydro's view, the Metis Nation British Columbia does not fit within the mandate for negotiation of an impact benefit agreement. BC Hydro has been directed by CEA Agency to consult with the MNBC. However, at the time of filing the EIS, no Métis rights-bearing communities in British Columbia have been recognized by a court. For a more thorough discussion of Métis rights, see Section 34.3.2.3. Furthermore, Volume 5, Appendix A17, part 4 indicates that "(b)ased on the assessment undertaken by BC Hydro and set out in Section 19 Current Use of Lands and Resources for Traditional Purposes, it is BC Hydro's understanding that the Project will have no adverse effects on the current use of lands and resources for traditional purposes of the Métis Nation British Columbia." Section 34 Asserted or Established Aboriginal Rights and Treaty Rights, Aboriginal Interests and Information Requirements presents BC Hydro's assessment of the potential impacts of the Project on the exercise of asserted or established Aboriginal rights and treaty rights of the 29 Aboriginal groups with which BC Hydro was instructed to consult. Based on that assessment, it is BC Hydro's understanding that the Project will have no adverse impacts on the exercise of asserted or established Aboriginal rights by the [Metis Nation] British Columbia."</p> <p>BC Hydro's consideration of the recently-received Métis Nation British Columbia Traditional Land Use Study Report will be described in the Aboriginal Group Supplemental Report.</p> <p>With respect to discussions regarding capacity building, BC Hydro has indicated an interest in continuing to engage with the MNBC on this topic.</p>
ab_0010-142	Métis Nation BC	S. 34.5 ; page(s) 34-22, line(s) 40-41. EISG section n/a Comment # 143	Potential adverse impacts to the Aboriginal rights of MNBC citizens have yet to be identified.	<p>Section 34.3.3 presents the assessment on the potential impacts of the Project on the asserted or established Aboriginal and treaty rights of the 29 Aboriginal groups identified in the EIS. In that assessment, a determination was made that while MNBC asserts that it uses the Peace River valley and the LAA for current use activities including hunting, trapping, and fishing, it has not provided sufficient specific information to enable an effects assessment on current use or asserted rights..... BC Hydro noted that should additional information regarding current and reasonably anticipated future use of lands and resources within the LAA be received from MNBC, it would be considered and incorporated in the EIS, as appropriate, during the EIS review phase.</p> <p>Since filing the EIS, BC Hydro has received additional information respecting the current and reasonably anticipated future use of lands and resources by MNBC. The consideration of that additional information will be documented in the Aboriginal Group Supplemental Report.</p>
ab_0010-143	Métis Nation BC	S.34.6 ; page(s) 34-23, line(s) 41-4. EISG section n/a	BC Hydro began to engage with MNBC from mid to late 2012.	BC Hydro began to consult with the MNBC in 2012 as described in the consultation summary presented in Volume 5, Appendix A17, Part 2.

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		Comment # 144		
ab_0010-144	Métis Nation BC	S. 34.6.1 ; page(s) 34-23, line(s) 41-4. EISG section n/a Comment # 145	The consultation information, in regards to MNBC, in table Vol. 1 Appendix H is from one community meeting with BC Hydro in Fort St. John. MNBC was consulted by BC Hydro late in the EA process but hopes to contribute and represent Métis citizens in future consultation.	<p>The information contained in the Aboriginal Issues, Concerns, and Interests Tracking Table, was derived from consultation activities between the MNBC and BC Hydro prior to November 30, 2012. This included any issues identified in meetings, phone calls, letters, emails, and reports (including the “Site C Clean Energy Project” report submitted by the MNBC in August of 2012), as well as those identified by MNBC during the comment periods for the EIS Guidelines.</p> <p>The issues tracking table will be updated with new or additional information, and will be submitted to the BCEAO and CEA Agency.</p> <p>Please see the response provided to ab_0010-005 regarding MNBC's assertion that MNBC was consulted “late in the EA process”.</p>
ab_0010-145	Métis Nation BC	S. 34.6.2 ; page(s) 34-23, line(s) 17-21, 35-39 . EISG section n/a Comment # 146	<p>Due to the lack of consultation few considerations of effects on identified interests can be assessed at this point. MNBC hopes to provide information to the proponent that can be assessed by CEAA at a future date.</p> <p>MNBC is just beginning the consultation process with BC Hydro and hopes to have its interest identified and available for consideration in the EIS review phase and prior to the JRP.</p>	<p>Please see the response to ab_0010-002.</p> <p>Should MNBC provide additional baseline information to BC Hydro, it will be considered.</p>
ab_0010-146	Métis Nation BC	S. 34.6.3 ; page(s) 34-34, line(s) 2-3. EISG section n/a Comment # 147	Building capacity is more than just hiring Aboriginal businesses and providing scholarships. Industry and government would like capable functioning Aboriginal organizations to engage with, but often there is not enough in a contribution agreement to produce the deliverables required and money is held back, reducing future capacity. The best way to build capacity with an Aboriginal organization is to simply engage with them. MNBC believes that meaningful engagement with industry and government is the road to Self-government.	<p>The “Proponent’s Approach to Building Capacity” is described in Section 34.6.3. This section includes a description of BC Hydro’s Aboriginal Procurement Policy, and capacity building opportunities such as directed procurement for Stage 3 general contractor work, employment with the heritage program, the establishment of the Northern Lights College Bursary, and BC Hydro’s partnerships with the Northern Opportunities dual credit program and the North East Native Advancing Society (NENAS). This section also describes BC Hydro’s engagement with Aboriginal businesses.</p> <p>BC Hydro remains interested in continuing to engage with the MNBC.</p>
ab_0010-147	Métis Nation BC	S. 34.6.3.1 ; page(s) 34-24, line(s) 5-27. EISG section n/a Comment # 148	MNBC agrees with BC Hydro’s “Aboriginal Contract and Procurement Policy”, and with capacity building in particular. If this policy was broadened to include all Aboriginal people and not just First Nations it would be a positive step for relations between the proponent and MNBC. If there are benefits the Proponent is promising in the EIS then those benefits should be outline in an agreement with the corresponding Aboriginal group. Please see appendix E attached to this comment form for a list of registered Métis businesses.	<p>BC Hydro’s Aboriginal Contract and Procurement Policy does include Métis, as well as Inuit, people. The following definition is included in the policy: ““Aboriginal” is defined as First Nations, Métis, and Inuit.” The policy is available on BC Hydro’s website at the following link: http://www.bchydro.com/content/dam/hydro/medialib/internet/documents/about/company_information/partners_vendors/PV_aboriginal_contract_policy.pdf</p> <p>BC Hydro's approach to Impact Benefit Agreements is described in Section 34.7.1.</p> <p>BC Hydro acknowledges the submission by the MNBC of Appendix E (Métis Owned Contracting</p>

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			<p>—</p> <p><i>Note: MNBC's submission contained 4 appendices: Appendix A (Métis Employment and Training Program); Appendix B (MNBC BladeRunners program); Appendix C (MNBC Consultation Guidelines); Appendix D (MNBC Métis Traditional Knowledge Policy), and; Appendix E (Métis Owned Contracting Businesses in BC)</i></p>	Businesses in BC) and would encourage all interested businesses to register with the Site C business directory, which allows BC Hydro to learn more about the goods and services provided by interested vendors (http://www.bchydro.com/energy-in-bc/projects/site_c/business_opportunities.html).
ab_0010-148	Métis Nation BC	S. 34.6.3.2 ; page(s) 34-24 To 34-27 , line(s) n/a. EISG section n/a Comment # 149	<p>MNBC has an Employment and Training office in Fort St. John and in Prince George, part of the Métis Employment & Training Program (METP). MNBC also runs a 'BladeRunners' skills training program to prepare young adults for the work force. NENAS only provides “opportunities to improve the quality of life of First Nations and Inuit people”. NENAS does not recognize Métis. See appendix A & B [see note] of this comment table for BladeRunners and METP program descriptions.</p> <p>—</p> <p><i>Note: MNBC's submission contained 4 appendices: Appendix A (Métis Employment and Training Program); Appendix B (MNBC BladeRunners program); Appendix C (MNBC Consultation Guidelines); Appendix D (MNBC Métis Traditional Knowledge Policy), and; Appendix E (Métis Owned Contracting Businesses in BC)</i></p>	<p>BC Hydro acknowledges receipt of Appendices A and B (Métis Employment and Training Program and the MNBC BladeRunners program) and will consider this information as part of ongoing discussions with the MNBC.</p> <p>The NEATT (North East Aboriginal Trades Training) program, funded in part by BC Hydro and delivered by NENAS, is open to all Aboriginal people, living on or off reserve, including Metis people.</p>
ab_0010-149	Métis Nation BC	S. 34.6.3.3 ; page(s) 34-27, line(s) 2-28. EISG section n/a Comment # 150	BC Hydro's engagement with Aboriginal business strategy is focused on First Nations and does not yet include Métis.	BC Hydro disagrees with the statement that engagement with Aboriginal business is focused on First Nations and does not yet include Métis. BC Hydro has engaged with the MNBC regarding capacity building, Project opportunities, Aboriginal employment and procurement as described in Volume 5, Appendix A17. BC Hydro has also indicated an interest in continuing to engage with the MNBC regarding opportunities associated with the Project.
ab_0010-150	Métis Nation BC	S. 34.7.1 ; page(s) 34-27 To 34-28 , line(s) n/a. EISG section n/a Comment # 151	Can BC Hydro enter into a meaningful IBA if it is considered a “heritage asset” and not for sale? BC Hydro's IBA strategy is First Nations focused and has yet to include Métis.	Although the Project, should it be constructed, would be a heritage asset within the meaning of the <i>Clean Energy Act</i> , and not for sale, BC Hydro has a mandate to enter into IBA negotiations as described in Section 34.7. BC Hydro's IBA strategy is First Nations focused and is described in the same section as follows “(i)n early March 2012, BC Hydro secured a mandate to enter into impact benefit agreement (IBA) negotiations with First Nations that, in BC Hydro's view, are likely to be adversely affected or impacted by the Project and where BC Hydro considers that accommodation beyond the mitigations listed in the EIS is warranted”.
ab_0010-	Métis Nation	S. 34.7.2 ;	The consultation and engagement methods, in regards to MNBC, in table Vol. 1	Please see the response to ab_0010-144.

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151	BC	page(s) 34-28, line(s) 32-39. EISG section n/a Comment # 152	Appendix H is from one community meeting with BC Hydro in Fort St. John. MNBC was consulted by BC Hydro late in the EA process but hopes to contribute and represent Métis citizens in future consultation.	
ab_0010-152	Métis Nation BC	S. 34.8 ; page(s) 34-29, line(s) 2-17. EISG section n/a Comment # 153	Vol. 5 Appendix A 17 consultation summary clearly shows that MNBC was only consulted by BC Hydro in late 2012. "It is BC Hydro's understanding that the Project will have no adverse effects on the current use of lands and resources for traditional purposes of the Métis Nation British Columbia. Métis Nation British Columbia has indicated use of the Peace River valley in a general sense, but has not provided sufficient specific information on use". It is also stated in the same appendices that MNBC offered to enter into a TLUS agreement and BC Hydro refused. BC Hydro is basing its understanding of the Métis on one meeting. MNBC would like to state that due to a lack of meaningful consultation and engagement thus far, there is not enough information to conclude that the proposed project will have no impact on Métis traditional land use in the area	Please see the response to ab_0010-002 regarding MNBC's assertion that there has been a "lack of meaningful consultation". Please see the response to ab_0010-032 regarding funding. Please see the response to ab_0010-071 regarding consideration of new information provided by MNBC.
ab_0010-153	Métis Nation BC	V.5 S.35.2.2.10 ; page(s) 35-12, line(s) n/a. EISG section n/a Comment # 154	MNBC would like to participate and be consulted on the Fisheries and Aquatic Management Plan. MNBC would like to keep its harvesters informed about concerns. MNBC is interested in the monitoring of fisheries and aquatic habitat.	BC Hydro intends to engage with those Aboriginal groups whose current use of lands and resources for traditional purposes has been determined to potentially be affected by the Project.
ab_0010-154	Métis Nation BC	V. 5 S. 35.2.2.14 ; page(s) 35-17 35-18, line(s) n/a. EISG section n/a Comment # 155	MNBC needs to protect heritage of concern to Métis People. BC Hydro cannot develop a plan to manage the heritage of another culture. BC Hydro needs to include MNBC in the development of the Heritage Resources Management Plan.	As stated in Section 35.2.2.14, the objective of the Heritage Resources Management Plan is "to ensure the proper management of archaeological, historical, and paleontological (heritage) resources during construction, including procedures for the inadvertent discovery of heritage resources (i.e., a chance find)." This objective is driven by requirements of the BC Heritage Conservation Act. BC Hydro intends to engage with those Aboriginal groups whose current use of lands and resources for traditional purposes has been determined to potentially be affected by the Project.
ab_0010-155	Métis Nation BC	S.35.2.2.24 ; page(s) 35-24, 35-24 , line(s)	MNBC would like to be consulted on the Wildlife Management Plan. MNBC would like to keep its harvesters informed.	BC Hydro intends to engage with those Aboriginal groups whose current use of lands and resources for traditional purposes has been determined to potentially be affected by the Project

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		n/a. EISG section n/a Comment # 156		
ab_0010-156	Métis Nation BC	V.5 S. 36.1 ; page(s) 36-1, line(s) n/a. EISG section n/a Comment # 157	MNBC would be interested in consulting and participating in the supplying of Environmental Monitors.	As described in Section 9.2.4 (Process for Resolving Issues with Aboriginal Groups), BC Hydro will seek to address outstanding issues by, among other activities, “continuing to seek input and engage in dialogue regarding the EIS and the Project, and to answer questions and address issues, interests, and concerns from Aboriginal groups by identifying appropriate mitigation measures and/or other appropriate means by which to address or resolve potential impacts”.
ab_0010-157	Métis Nation BC	S. 36.2 ; page(s) 36-2, line(s) n/a. EISG section n/a Comment # 158	MNBC would be interested in consulting and participating in the supplying of Environmental Officers.	As described in Section 9.2.4 (Process for Resolving Issues with Aboriginal Groups), BC Hydro will seek to address outstanding issues by, among other activities, “continuing to seek input and engage in dialogue regarding the EIS and the Project, and to answer questions and address issues, interests, and concerns from Aboriginal groups by identifying appropriate mitigation measures and/or other appropriate means by which to address or resolve potential impacts”.
ab_0010-158	Métis Nation BC	V. 5 S.37, Table 37.1 ; page(s) 37-1, line(s) 7. EISG section n/a Comment # 159	Comments and current land resources for traditional purposes have not been sought from MNBC and its citizens until recently and are not included in this EIS.	Please see the response to ab_0010-070.
ab_0010-159	Métis Nation BC	S. 37 ; page(s) 37-2, line(s) 5. EISG section n/a Comment # 160	The effects of changes to the environment on Métis people have not been considered.	The federal requirement, "effects of changes to the environment on Aboriginal peoples", is described in Section 38, Table 38.2. As described in the EIS, no effect is anticipated on Metis communities as a result of the Project. The EIS did not exclude Metis people from consideration in the effects assessment.
ab_0010-160	Métis Nation BC	S.37.3 ; page(s) 37-76, 37-77 , line(s)	CEAA states “an assessment of the cumulative effects that are likely to result from the Project in combination with other projects or activities that have been or will be carried out.” In the case of Site C dam the combination of the two	Please see the following Technical Memos: - Cumulative Effects Assessment - Methylmercury

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		33-39. EISG section n/a Comment # 161	previous dams absolutely must be considered. <ul style="list-style-type: none"> • If mercury levels double with each dam that is a significant increase in cumulative effects. • If the previous dams flooded and destroyed Métis heritage sites the remaining sites are now seen as more precious. 	
ab_0010-161	Métis Nation BC	S. 37.3.6, Table 37.24 ; page(s) 37-81, 37-82 , line(s) n/a. EISG section n/a Comment # 162	Heritage Resources are a VC and not considered in summary. Harvest of Fish is a VC and increased mercury levels are not yet of significant cumulative effect concern in the summary.	Section 37 Table 37.24 provides a summary of the cumulative effects of the Project. Only those VCs for which a cumulative effect was determined were included in this table. The cumulative effects assessment for Heritage Resources and Harvest of Fish and Wildlife Resources are described in Sections 33 and 24 of the EIS, respectively.
ab_0010-162	Métis Nation BC	S. 37.4, Table 37.25 ; page(s) 37-83, line(s) n/a. EISG section n/a Comment # 163	Heritage Resources are a VC and not considered in summary. Harvest of Fish is a VC and increased mercury levels are not yet of significant cumulative effect concern in the summary. Human Health V.4 S.33 lists eating country foods contaminated with mercury as a Key Indicator and Human Health is a VC.	Section 37 Table 37.25 provides a summary of consideration of renewable resources within the EIS. As stated in Section 37.4, Capacity of Renewable Resources, "renewable resources are natural resources (e.g., fish, wildlife, and forest) and non-living (agricultural soils, scenic landscapes) that are replenished on an ongoing basis, either naturally or by human action." Harvest of Fish and Wildlife Resources and Human Health are included in Table 37.25. Heritage Resources are not considered a renewable resource.
ab_0010-163	Métis Nation BC	S. 37.4.3 ; page(s) 37-84, line(s) 2-13. EISG section n/a Comment # 164	Why is the proponent allowed to include cumulative benefits from previous upstream dams, but not negative effects of cumulative upstream effect?	The residual effects of projects and activities that have been and are being carried out, including the existing hydroelectric facilities, are reflected in current baseline conditions. Please also see the Technical Memo: Cumulative Effects Assessment.
ab_0010-164	Métis Nation BC	V. 5. S.38, page(s) 38-2, line(s) 1 Table 38.1 ; page(s) 38-14, 38-15. EISG section n/a	MNBC has yet to consult on mitigation measures such as those mentioned in the Changes to other cultural and traditional uses of the land. MNBC looks forward to engaging but feels there should be an agreement in place on consultation and mitigation measures. MNBC would like to be involved in the Cultural and Heritage Resources Committee that the proponent seeks to establish to mitigate changes to other cultural and traditional uses of the land.	As described in Section 9.2.4 (Process for Resolving Issues with Aboriginal Groups), BC Hydro will seek to address outstanding issues by, among other activities, "continuing to seek input and engage in dialogue regarding the EIS and the Project, and to answer questions and address issues, interests, and concerns from Aboriginal groups by identifying appropriate mitigation measures and/or other appropriate means by which to address or resolve potential impacts".

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		Comment # 165		
ab_0010-165	Métis Nation BC	S.38 Table 38.2 ; page(s) 38-26, line(s) n/a. EISG section n/a Comment # 166	Duty to Consult and Honor of the Crown should be listed under Federal Considerations for effects of changes to the environment on Aboriginal peoples.	Section 23 of the EIS Guidelines identified the federal requirements that must be addressed in the EIS. While "Effects of changes to the environment on Aboriginal peoples" is included in the list of federal requirements identified in Section 23 of the EIS Guidelines, the "Duty to Consult and Honor of the Crown" are not included in the list, nor is it included in <i>CEAA</i> 2012. As a result, Section 38 of the EIS meets the requirements of the EIS Guidelines.
ab_0010-166	Métis Nation BC	V. 5 S.39, Table 39-1 ; page(s) 39-11, line(s) n/a. EISG section n/a Comment # 167	<p>Section 19 of table 39.1 Current Use of Land and Resources for Traditional Purposes show a number of Potential Residual Effects such as permanent loss and reductions in ability. These are mitigated by consultation and engagement. MNBC has just entered into consultation yet it fears due to past marginalization that this consultation will not be inclusive and meaningful.</p> <p>Marginalization of Métis on initiatives such as the naming of sites, commemorating lost places, and recording of history would increase negative impacts suffered from the project. MNBC must be included in these mitigation initiatives.</p>	Please see the response to ab_0010-002 respecting the adequacy of consultation with the MNBC.
ab_0010-167	Métis Nation BC	V. 5 S.39, Table 39-1 ; page(s) 39-24, line(s) n/a. EISG section n/a Comment # 168	Relevant considerations raised by Aboriginal groups should be listed not applied broadly as potential effects to their heritage resources. What are the specific relevant considerations?	<p>As noted in Section 32.1.3 of the EIS, the heritage consultant met with various Aboriginal groups, research institutions, local citizens or associations, and government agencies throughout the heritage program. Topics raised about the Heritage Resources VC included the treatment of human burials, the excavation and housing of artifacts and palaeontological specimens, participation in the archaeological field program, the incorporation of traditional use information in the archaeological program, and the potential effects of the Project on heritage sites such as Rocky Mountain Fort. This information helped identify five key aspects, which were further grouped into three basic types of potential effects to heritage resources: changes to resource integrity, changes to resource accessibility and other relevant concerns raised by Aboriginal groups.</p> <p>MNBC's specific concerns identified during consultation activities with BC Hydro are listed in Volume 5 Appendix A17 Part 4 Aboriginal Summary: Metis Nation British Columbia. A summary of issues, concerns and interests identified by Aboriginal groups with respect to heritage resources is found on pages 52 to 53 of Volume 1 Appendix H Aboriginal Information Distribution and Consultation Supporting Documentation. MNBC expressed specific concerns about potential effects of the Project on the fur trade forts (Rocky Mountain Fort and Rocky Mountain Portage House) and interest in being included in decisions with respect to mitigation of Project effects on</p>

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				these heritage sites. These concerns are considered in the EIS through inclusion in the key aspects identified in Section 32.1.3, the effects assessment for Rocky Mountain Fort and Rocky Mountain Portage House described in Section 32.3, and mitigation measures in Section 32.3.3.3.
ab_0010-168	Métis Nation BC	V. 5 S.39, Table 39-2 ; page(s) 39-31, line(s) n/a. EISG section n/a Comment # 169	MNBC is worried that the federal government's duty to consult and the honor of the crown will not be upheld by the provincial authority as the province has yet to recognize Métis rights. This is of concern to MNBC and the mitigation monitoring of Heritage sites. Aboriginal groups should be consulted along with the Archeology Branch in relation to mitigation monitoring of heritage sites of concern.	BC Hydro is consulting with the MNBC in accordance with the EIS Guidelines. Volume 5, Appendix A17, Part 2 sets out a chronological summary of BC Hydro's consultation activities with MNBC up to November 30, 2012. As described in Section 9.2.4 (Process for Resolving Issues with Aboriginal Groups), BC Hydro will seek to address outstanding issues by, among other activities, "continuing to seek input and engage in dialogue regarding the EIS and the Project, and to answer questions and address issues, interests, and concerns from Aboriginal groups by identifying appropriate mitigation measures and/or other appropriate means by which to address or resolve potential impacts".
ab_0010-169	Métis Nation BC	V.5 S. 40.8 ; page(s) 40-3, line(s) 31-33. EISG section n/a Comment # 170	BC Hydro does not have a comprehensive record of issues and interests of MNBC citizens as it has only just begun consultation after recent direction from CEAA. MNBC looks forward to consulting with the proponent.	Please see the response to ab_0010-002.
ab_0010-170	Métis Nation BC	S. 40.11 ; page(s) 40-5, line(s) 24-30. EISG section n/a Comment # 171	This is the third project in a series of Dams along peace river. To not include the compounding effects of the previous two dams changes the definition and meaning of the term cumulative effects. Preindustrial levels must be used and the other dam projects on the river must be considered. MNBC is aware of unmentioned projects that have recently applied to enter the EA process. CEAA should update BC Hydro to the known projects in the area, including pipelines that run near the area and require power.	The projects and activities to be taken into account in the cumulative effects assessment, and the information about the residual effects of those projects and activities, where available, were identified using the method described in Section 10.5.2 of the EIS. Information about the residual effects of those projects and activities on i) lands and resources and, ii) where available, on the current use of lands and resources for traditional purposes, has been taken into account in the assessment of cumulative effects in Section 19 of the EIS. Comments on the adequacy of the information for the purpose of assessing the potential cumulative effects of the Project on Current Use of Lands and Resources for Traditional Purposes are provided on page 19-108, in Section 19.6 of the EIS. Please also see the Technical Memo: Cumulative Effects Assessment.
ab_0010-171	Métis Nation BC	S. 40.16 ; page(s) 40-8, line(s) n/a. EISG section n/a Comment #	Consultation with all effected Aboriginal groups, including Métis, should occur prior to the issuance of a decision.	As described in Section 9.2.4 (Process for Resolving Issues with Aboriginal Groups), BC Hydro will seek to address outstanding issues by, among other activities, "continuing to seek input and engage in dialogue regarding the EIS and the Project, and to answer questions and address issues, interests, and concerns from Aboriginal groups by identifying appropriate mitigation measures and/or other appropriate means by which to address or resolve potential impacts".

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ab_0011-001	Smith's Landing First Nation	V.2, S.10.3.1 ; page(s) 10-4, line(s) 9-12. EISG section S.8.4.1 Comment # n/a	<p>Smith's Landing First Nation has reviewed portions of the Site C EIS and is providing these comments for further discussion and consideration. We thank the CEA Agency and the BC EAO for extending the time for submission of comments on the EIS.</p> <p>In accordance with your request for comments to be provided in the standardized table, we have attached our comments to this letter. Our key issues of concern at this time are as follows:</p> <ul style="list-style-type: none"> • Appropriate downstream spatial boundaries • Implications of the existing flow regime on viability of the proposed Project • A pre-Bennett baseline for proper cumulative effects assessment • A culturally-based regional assessment area for heritage resources <p>Appropriate downstream spatial boundaries <i>The spatial boundaries are presented and described in the spatial boundary tables in the VC-specific effects assessment sections of this EIS. Each of these sections provides the scientific justification for the selection of relevant spatial boundaries.</i></p> <p>Comments Section 8.4.1 of the EIS Guidelines reads as follows: <i>It is noted that the BCEAO and the Agency received many comments regarding the spatial scope of the environmental assessment, including requests to include the Peace Athabasca Delta (PAD). The EIS shall include a scientific justification for the selection of relevant spatial boundaries.</i></p> <p>SLFN has reviewed the EIS sections dealing with the specific valued components and we are unable to locate the materials that are intended to serve as the "scientific justification" for the spatial boundaries. For example, for Fish and Fish Habitat, the spatial boundary table appears to be <i>Table 12.4 Spatial Assessment Areas for Fish and Fish Habitat</i>. This table contains no scientific justification of the spatial boundaries for this VC .</p> <p>Information Request The Proponent is requested to prepare and assemble in a single document, the scientific justifications for the spatial boundaries for all VCs related to potential downstream effects of the proposed Project, including appropriate references and case studies from the literature, as appropriate.</p>	<p>Thank you for providing your input during the comment period for the Environmental Impact Statement (EIS) for the Site C Clean Energy Project.</p> <p>Please see the following Technical Memos:</p> <ul style="list-style-type: none"> - Spatial Boundary Selection - Peace Athabasca Delta <p>The assessment of potential effects on Heritage Resources is in accordance with the EIS Guidelines.</p>
ab_0011-002	Smith's Landing First	V.2, S.11.1.3; V.2, S.11.4.2.3	<p>Implications of the existing flow regime on viability of the proposed Project <i>To develop the Water Use Plan, information was assembled to evaluate the</i></p>	<p>The matter raised in the comment (i.e., the viability of the Project to fully or partially restore to that which existed prior to the development of the WAC Bennett Dam) is outside of the scope of</p>

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	Nation	; page(s) 11-11, 11-65, line(s) 31-36 . EISG S.9.3.1 Comment # n/a	<p><i>effects of current operating procedures over a range of non-power interests identified in the Peace River system (BC Hydro 2007). Operating constraints and procedures for the facilities were reviewed by a Consultative Committee that involved licensees, government agencies, First Nations, key stakeholders, industry representatives, and key environmental and recreation interest groups.</i></p> <p><i>Figure 11 .4. 5 Pre-and post-regulation monthly Peace River hydrographs</i></p> <p>Comments SLFN notes that it was not part of the Consultative Committee involved in the review or development of the Peace Water Use Plan. We are also not aware that any other First Nations in Alberta participated in that process. The flow regime of the Peace River prior to flow regulation commensurate with operation of the WAC Bennett Dam is described in Figure 11.4.5 of the EIS, and is characterized by high spring-summer flows and minimal winter flows at Peace Point. The flow regime since the development of the Dam, and as currently implemented through the Peace Water Use Plan, has reduced the peak Monthly Average Flows in spring-summer from 7000 cms to 3500 cms at Peace Point, and more than tripled the winter flows. The downstream adverse effects of this change in flow regime are well documented in numerous ecosystem studies, and include:</p> <ul style="list-style-type: none"> • adverse effects on the aquatic and terrestrial environments in the Peace-Athabasca Delta as a result of reductions in the quantity of seasonally-inundated wetlands; • adverse effects on riparian ecosystems along the shoreline of the Peace River and Slave River; • changes in the dynamics and timing of the ice regime; • changes to sediment deposition and delta formation at the mouths of tributaries entering the Peace River and Slave River; and • erosion effects on shoreline heritage resources (discussed below). O <p>On the Slave River, which flows adjacent to our reserve lands and through our traditional territory, the effects of a diminished spring flood and higher winter flows are evident in the form of changes to shoreline ecosystems, open water in winter, vegetation encroachment, reduced wildlife access and habitat, reduced ice safety for travel, and reduced harvesting opportunities for our members travelling on the Slave River. Some, and perhaps many, of these adverse effects could be reversed by a partial or complete reinstatement of the pre-Bennett flow regime on the Peace River.</p>	<p>the environmental assessment and is not feasible.</p> <p>The assessment in accordance with the EIS Guidelines and appropriate information is provided in the EIS.</p>

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			<p>This Water Use Plan is periodically reviewed and amended, and this amending process provides the opportunity to reinstate a flow regime that is conducive to restoration of the affected downstream habitats. However, any change to the flow regime could have an effect on the economic and technical viability of the proposed Site C Project, which appears to be designed based on the existing flow regime.</p> <p>Information Request The Proponent is requested to:</p> <p>a) comment on the technical and economic viability of the proposed Project in the event that the flow regime is restored to that which existed prior to the development of the WAC Bennett Dam;</p> <p>b) comment on the technical and economic viability of the proposed Project in the event that the flow regime is changed to partially restore the flow regime to that which existed prior to the development of the WAC Bennett Dam, including the scenarios that restore the spring-summer Monthly Average Flows to the Peace River at Peace Point to the following:</p> <ul style="list-style-type: none"> • 4000 cms; • 5000 cms; • 6000 cms; and <p>c) estimate unit energy costs from the proposed Site C Project for the scenarios considered in part b)</p>	
ab_0011-003	Smith's Landing First Nation	V.2, S.11.1 ; page(s) 11-2 , line(s) . EISG section EISG S.9.1 Comment # n/a	<p>A pre-Bennett baseline for proper cumulative effects assessment</p> <p><i>The environmental conditions in the Peace River watershed have been influenced by a range of ongoing anthropogenic developments and environmental factors, both prior to and following the development of upstream hydroelectric facilities. Understanding environmental changes, in particular those associated with previous hydroelectric development, provides context for the environmental assessment of the Project.</i></p> <p>Comments Section 9.1 of the EIS Guidelines reads as follows: <i>Previous Developments .. .</i></p> <p><i>The EIS will include a narrative discussion of existing hydro-electric generation projects on the Peace River (W.A.C. Bennett Dam and the Peace Canyon Dam). The narrative will include the description of any existing studies of changes to the environment resulting from those projects that are similar to potential</i></p>	<p>The scope of the cumulative effects assessment is in accordance with the EIS Guidelines and appropriate information is provided in the EIS. Section 8.5.3 of the EIS Guidelines state that "the Baseline Case will demonstrate the current status of the VC. In doing so, it will reflect the effects of all projects and activities that have been carried out."</p> <p>Please also see the Technical Memos on Cumulative Effects Assessment and the Peace Athabasca Delta.</p>

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			<p><i>changes resulting from the project, including any mitigation measures that were implemented, and any long term monitoring or follow up program that were conducted. The effectiveness of those mitigation measures and key results of monitoring or follow-up programs would be described. This narrative discussion should include historical data, where available and applicable, to assist interested parties to understand the potential effects of the Project and how they may be addressed.</i></p> <p>Comments As SLFN indicated in our submission concerning the EIS Guidelines, the above information would form part of the information required to conduct a proper cumulative effects assessment, but it is only a portion of the information available and necessary to understand the prior and ongoing effects of previous hydroelectric development on the Peace River. SLFN sees no reason to limit the information concerning the prior projects for use in the environmental assessment as proposed in the EIS Guidelines.</p> <p>The environmental assessment needs to develop a general understanding of the habitat that exists now compared to what existed prior to the development of the WAC Bennett Dam and what the potential habitat diversity today would have been without river regulation , recognizing that what is often lost with river regulation is not only habitat diversity, but potential habitat diversity over time.</p> <p>The changes resulting from the WAC Bennett Dam are still occurring and so the "existing studies" will not provide a complete picture of the changes that have occurred already, a proper understanding of areas of uncertainty, or sufficient information to reliably outline a variety of possible future conditions without the proposed Site C Project.</p> <p>Information Request The Proponent is requested to include a pre-Bennett baseline in assessing the cumulative effects of the proposed Site C Project.</p>	
ab_0011-004	Smith's Landing First Nation	V.4, S.32.1 .6.1 ; page(s) 32-14 , line(s) 3-8. EISG section S.18.2.1 Comment # n/a	<p>An culturally-based regional assessment area for heritage resources</p> <p><i>The Local Assessment Area (LAA) for the heritage resources assessment is defined as the Project activity zone (Figure 32.1). Given the site-specific and stationary nature of heritage resources, this is the maximum area where potential direct and indirect Project effects on heritage resources are reasonably expected to occur.</i></p> <p><i>The Regional Assessment Area (RAA) is also defined as the Project activity zone. Other projects are not expected to have residual effects on heritage sites within</i></p>	Please see the response to ab_0001-637.

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			<p><i>the LAA.</i></p> <p>Comments The LAA for heritage resources is not the same as the Project Activity zone, since it is not: <i>"the maximum area where potential direct and indirect Project effects on heritage resources are reasonably expected to occur. "</i></p> <p>Adverse effects to heritage resources will also be felt downstream of the reservoir and dam. The assessment area for heritage resources needs to be expanded to encompass the cultural heritage landscape in which the proposed Project is being developed. The Peace River watershed is the cultural landscape for the proposed Project that links all Aboriginal peoples (prehistoric, historic and contemporary) in the Peace River valley. For this reason, the RAA needs to be extended downstream to at least Peace Point --the location at which BC Hydro has ---determined to be the limit of influence of the proposed Project on surface water flows -and perhaps as far as the Peace-Athabasca Delta for scientific and cultural reasons. Also, it is understood that the examination of "other projects" is for cumulative effects assessment, and this would encompass a proper RAA, not merely the LAA.</p> <p>Information Request BC Hydro is requested to: a) reconsider the use of the Project Activity Area as the LAA for assessment of heritage effects by extending the LAA downstream to the extent of the anticipated surface water flow changes from the proposed Project, currently Peace Point; and b) reconsider the use of the LAA as the RAA for heritage effects by establishing a proper RAA for a cumulative effects assessment, using cited good practice guidance for heritage resources impact assessment.</p>	
ab_0012-001	Deninu K'ue First Nation	CvrLtr 1	<p>(Letter Preamble - General Comment) The EISG requires BCH to scientifically justify the spatial scoping of its study areas in the EIS. BCH has not done that for any of its study areas in the EIS. BCH has narrowly scoped the Local Assessment Areas ("LAAs") and Regional Assessment Areas ("RAAs") for a number of Valued Components ("VCs"), without scientific justification. DKFN has raised concerns that the Project may cause potential effects outside BCH's proposed study areas, and notes that other First Nations have filed information indicating that adverse effects may occur outside of the LAA or RAA limits. This information does not appear to have been taken into account at all in BCH's proposed</p>	<p>Thank you for providing your input during the public comment period for the Environmental Impact Statement (EIS) for the Site C Clean Energy Project.</p> <p>Please see the following Technical Memos: - Spatial Boundary Selection - Peace Athabasca Delta</p>

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			spatial scoping. Scoping is a critically important issue to the First Nations because the lack of proper and scientifically justified scoping results in flawed and inadequate assessments of potential effects to current uses for traditional purposes, and to Treaty and Aboriginal rights. For DKFN, the approach taken by BCH results in potential effects to their constitutionally protected rights being entirely ignored in the draft EIS, without any assessment at all, despite the fact that the Crown has identified that there is potential for impacts to DKFN from Site C (and, hence, acknowledged that the duty to consult is triggered). All of the potential effects to DKFN have been scoped out of the draft EIS. It is imperative that BCH be directed to re-work the EIS to include assessments based on appropriate spatial scoping that permits proper assessments of impacts to DKFN's Treaty rights to be undertaken.	
ab_0012-002	Deninu K'ue First Nation	CvrLtr 2	(Letter Preamble - General Comment) The draft EIS does not contain a proper Cumulative Effects Assessment ("CEA"). The CEA contained in the draft EIS merely compares the status quo with the situation if Site C proceeds. It does not consider what the effects of past projects are, together with potential effects of Site C. This is a requirement of a CEA -both CEAA and EAO definitions of cumulative effects include consideration of effects from past projects or physical activities. By not considering effects from existing projects, the CEA in the draft EIS does not really look at cumulative effects at all. This is a very serious problem in the context of understanding not just environmental effects, but also effects to current uses for traditional purposes and effects to Treaty and Aboriginal rights. It is the cumulative effects of myriad projects that result in "death by a thousand cuts" for the exercise of Treaty and Aboriginal rights. If those cumulative effects are not considered in the EIS, the effects of Site C to Treaty and Aboriginal rights cannot be assessed. BCH needs to be directed to conduct a proper CEA, as required by the EISG. That CEA also needs to consider effects throughout properly scoped RAAs for each VC, rather than in just the LAAs (which, as noted above, are themselves too narrowly scoped).	<p>The projects and activities to be taken into account in the cumulative effects assessment, and the information about the residual effects of those projects and activities, where available, were identified using the method described in Section 10.5.2 of the EIS. Information about the residual effects of those projects and activities on i) lands and resources and, ii) where available, on the current use of lands and resources for traditional purposes, has been taken into account in the assessment of cumulative effects in Section 19 of the EIS. Comments on the adequacy of the information for the purpose of assessing the potential cumulative effects of the Project on current use of lands and resources for traditional purposes are provided on page 19-108, in Section 19.6 of the EIS.</p> <p>Please also see the following Technical Memos:</p> <ul style="list-style-type: none"> - Cumulative Effects Assessment - Spatial Boundary Selection
ab_0012-003	Deninu K'ue First Nation	CvrLtr 3	(Letter Preamble - General Comment) The consideration of potential effects to Treaty and Aboriginal rights set out in the. draft EIS is wholly inadequate. Despite the fact that the EISG requires BCH to consider effects to more than just current uses for traditional purposes, BCH has effectively narrowed the consideration down to just current uses for traditional purposes by using current use as essentially a VC for the assessment of impacts to rights. This is completely contrary to the EISG requirements, and raises the same concerns that the First Nations raised initially in their comments on the draft EISG. In	Please see the Technical Memo: Methodology for the Assessment of the Potential Impacts of the Project on the Exercise of Asserted or Established Aboriginal and Treaty Rights.

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			addition, the EIS does not explain what methodology was used for making conclusions about effects to Treaty and Aboriginal rights, including what criteria and thresholds were used.	
ab_0012-004	Deninu K'ue First Nation	CvrLtr 4	(Letter Preamble - General Comment) DKFN does not agree with the summaries contained in volume 5, appendix A, as they relate to DKFN. DKFN expects that the Crown and BCH will consult with DKFN to address their concerns with the summaries.	<p>Volume 5, Appendix A provides information required pursuant to the EIS Guidelines. BC Hydro will consider any specific concerns raised by Aboriginal groups in regard to the summaries or any of the other information presented in the EIS as part of the current public comment period on the EIS and/or through the ongoing Aboriginal consultation process.</p> <p>BC Hydro will also continue to consult with the DKFN, in accordance with the terms set out in the consultation agreement dated November 16, 2011.</p>
ab_0012-005	Deninu K'ue First Nation	CvrLtr 5	(Letter conclusion) DKFN is very concerned about the inadequacies of the draft EIS. Before CEAA and the EAO make any decisions about what BCH is required to do in relation to the draft EIS, the DKFN expects that CEAA and the EAO will fully engage with them in a consultation process so that their concerns can be discussed, understood and addressed.	<p>The Project is currently in a cooperative environmental assessment process led by federal and provincial regulatory agencies, which includes a Joint Review Panel. Consultation is part of this process and includes opportunities for input and participation by the public, Aboriginal groups, stakeholders, and communities.</p> <p>In accordance with the consultation agreement entered into between the two parties, BC Hydro will continue to consult with Deninu K'ue First Nation about the Project.</p> <p>Please see Technical Memo: Aboriginal Consultation.</p>
ab_0012-006	Deninu K'ue First Nation	V.1 s. 9, App H; page(s) 21; 24, line(s) n/a. EISG section 8.4.1 Comment # Table1	<p>DKFN has raised concerns with BCH as to the effects on the Slave River from past and current regulation of the Peace River and has raised concerns that the Project may be cause additional adverse effects in downstream areas. BCH's response, at page 21, that the EIS examines "the influence on downstream flows and water levels from the outlet of the Peace Canyon Dam to Peace Point, Alberta" is insufficient to address DKFN's concerns, which relate to the effect of Site C downstream of Peace Point, Alberta.</p> <p>There appears to be no justification to limit the assessment of downstream effects of the Project to Peace Point, Alberta in light of (i) scientific evidence of downstream effects caused by the WAC Bennett Dam; and (ii) scientific evidence of potential effects of the Project, including effects on ice regime and ice damming, that will persist downstream of Peace Point, Alberta. BCH is required to provide a justification for the spatial scoping of various VCs, but has failed to provide an adequate justification.</p>	<p>Please see the following Technical Memos:</p> <ul style="list-style-type: none"> - Spatial Boundary Selection - Peace Athabasca Delta - Cumulative Effects Assessment
ab_0012-007	Deninu K'ue First Nation	V.2, s. 10; page(s) 10-20, line(s) 10 (Table 10.7).	The EIS does not justify why two of the projects that are having the most significant current and future effect on the Peace River - the WAC Bennett and Peace Canyon hydro facilities - are not considered in the Cumulative Effects Assessment ("CEA") required under the EIS Guidelines. Some of the ongoing	Please see the Technical Memo: Cumulative Effects Assessment.

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		EISG section 8.5.3 Comment # Table2	effects on aquatic and terrestrial habitats from river management are described in the EIS as "ongoing response of the river channel to upstream flow regulation that started in 1967 (i.e., aggradation below tributary confluences, local bank erosion opposite from tributary confluences, and vegetative encroachment onto gravel bars and into secondary channels)" (Volume 2, p.12-46). Despite this acknowledgement, these and other effects from the existing dams are not considered in the CEA.	
ab_0012-008	Deninu K'ue First Nation	V.2, s. 10.3; page(s) 10.4, line(s) n/a. EISG section 8.4 Comment # Table3	It does not appear that the scoping of assessment boundaries for VCs considered that there are variable sensitivities related to different VCs along the length of the river. This needs to be taken into account in the EIS and explicitly discussed/addressed.	Please see the Technical Memo: Spatial Boundary Selection.
ab_0012-009	Deninu K'ue First Nation	V.2, s. 10.3.1 and 12.1.5.1; page(s) 12-5 & 10-4, line(s) n/a. EISG section 8.4.1 & 10.2.1 Comment # Table4	<p>Section 8.4.1 of the EIS Guidelines states "The EIS shall include a scientific justification for the selection of relevant spatial boundaries" For the scope of spatial boundaries for the assessment of <i>Fish & Fish Habitat</i>, the EIS states "The downstream limit of the LAA was set at a point where the physical changes in the river are expected to diminish to the point where the change could no longer have a measurable effect that would influence fish and fish habitat." No further scientific justification is presented, so it does not meet the aforementioned requirement of the EIS Guidelines. Section 10.3.1 of the EIS (Methodology section) claims that "Each of these sections provides the scientific justification for the selection of relevant spatial boundaries." As demonstrated, this scientific justification is missing for <i>Fish & Fish Habitat</i>, so this statement in section 10.3.1 is not accurate. A scientific justification for the LAA and RAA is required.</p> <p>The EIS contains no explanation of the important correlation between the spatial area in which hydrology, fluvial geomorphology and the ice regime were studied in the EIS and the spatial areas for assessment of impacts to <i>Fish & Fish Habitat</i>. The EIS considers hydrology and fluvial geomorphology downstream from the proposed location of Site C to Peace Point, Alberta (a fact that DKFN takes issue with in and of itself, given the need to assess impacts downstream to the Slave River). Despite the fact that factors relating to hydrology and fluvial geomorphology can impact fish and river ecosystems, the <i>Fish & Fish Habitat</i> study area was not spatially scoped even as far downstream as Peace Point. Regarding the downstream extent of physical effects on fish habitat, the EIS has</p>	Please see the Technical Memo: Spatial Boundary Selection.

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			<p>assumed: "There would be no change in the range of flows experienced downstream of the Pine River confluence." A scientific justification is required to support this claim considering the uncertainty of BCH's predictions of changes to flow regime, including the complex ice-jam flooding mechanism.</p> <p>The Project has the potential to affect DKFN's Treaty rights to fish. Although biophysical indicators are not the only factor to be considered in assessing impacts to Treaty rights, it is a relevant consideration. As a result, the scoping of the spatial boundary for fish is a critically important issue. The EIS does not meet the requirements of the EIS Guidelines on this issue.</p>	
ab_0012-010	Deninu K'ue First Nation	V.2, s. 10.3.1 13.1.5.1; page(s) 13-7, 10-4, line(s) n/a. EISG section 8.4.1 Comment # Table5	<p>Section 8.4.1 of the EIS Guidelines states "The EIS shall include a scientific 8.4.1 V.2, s.13.1.5.1 10-4 justification for the selection of relevant spatial boundaries". For the scope of spatial boundaries for the assessment of <i>Vegetation and Ecological Communities</i>, the EIS does not provide scientific justification, so it does not meet the aforementioned requirement of the EIS Guidelines. Section 10.3.1 of the EIS (Methodology section) claims that "Each of these sections provides the scientific justification for the selection of relevant spatial boundaries." This scientific justification is missing for Vegetation and Ecological Communities, so this statement in section 10.3.1 is not accurate. A scientific justification for the LAA and RAA is required.</p> <p>The Project has the potential to affect DKFN's Treaty rights to gather. Although biophysical indicators are not the only factor to be considered in assessing impacts to Treaty rights, it is a relevant consideration. As a result, the scoping of the spatial boundary for vegetation is a critically important issue. The EIS does not meet the requirements of the EIS Guidelines on this issue.</p>	Please see the Technical Memo: Spatial Boundary Selection.
ab_0012-011	Deninu K'ue First Nation	2, s. 10.3.1 14.1.5.1; page(s) 14-12, 10-4, line(s) n/a. EISG section 8.4.1 Comment # Table6	<p>Section 8.4.1 of the EIS Guidelines states "The EIS shall include a scientific justification for the selection of relevant spatial boundaries" For the scope of spatial boundaries for the assessment of <i>Wildlife Resources</i>, the EIS does not provide scientific justification, so it does not meet the aforementioned requirement of the EIS Guidelines. Section 10.3.1 of the EIS (Methodology section) claims that "Each of these sections provides the scientific justification for the selection of relevant spatial boundaries." This scientific justification is missing for Wildlife Resources, so this statement in section 10.3.1 is not accurate. A scientific justification for the LAA and RAA is required.</p> <p>The Project has the potential to affect DKFN's Treaty rights to hunt and trap. Although biophysical indicators are not the only factor to be considered in assessing impacts to Treaty rights, it is a relevant consideration. As a result, the</p>	Please see the Technical Memo: Spatial Boundary Selection.

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			scoping of the spatial boundary for <i>Wildlife Resources</i> is a critically important issue. The EIS does not meet the requirements of the EIS Guidelines on this issue.	
ab_0012-012	Deninu K'ue First Nation	V.2, s. 10.3.1; V.3, s. 19.1.5.1; page(s) 19-10, 10-4, line(s) n/a. EISG section 8.4.1 Comment # Table7	<p>Section 8.4.1 of the EIS Guidelines states "The EIS shall include a scientific justification for the selection of relevant spatial boundaries". For the scope of spatial boundaries for the assessment of <i>Current Use of Lands and Resources for Traditional Purposes</i>, the EIS states "The LAA was defined in consideration of the expected maximum geographic extent of the potential for the Project to cause an adverse effect on the VC current use of lands and resources for traditional purposes." The LAA and RAA boundaries defer to the other biological boundaries (which are themselves unjustified by scientific evidence), and no further scientific justification is presented, so it does not meet the aforementioned requirement of the EIS Guidelines. Section 10.3.1 of the EIS (Methodology section) claims that "Each of these sections provides the scientific justification for the selection of relevant spatial boundaries." This scientific justification is missing for Current Use of Lands and Resources for Traditional Purposes, so this statement in section 10.3.1 is not accurate. The spatial scoping for the LAA and RAA must be scientifically justifiable for the EIS Guidelines requirements to be met.</p> <p>In addition, it is unacceptable to use the spatial scoping for Vegetation and Ecological Communities and for Wildlife Resources to determine the spatial scoping for current use. Other types of potential effects can affect the ability of DKFN to exercise Treaty rights, beyond effects to vegetation and wildlife, such as effects to hydrology and ice flow regimes as these factors can result in navigational constraints in accessing harvesting areas or result in impacts to ecological communities such as perched basins in the PAD which are necessary to sustain harvesting practices. For instance, DKFN has indicated to BCH that the WAC Bennett Dam has caused and is continuing to cause adverse effects to water levels within its traditional territory, which has an effect on habitat for species on which DKFN members rely, and also upon the ability to access areas to exercise treaty rights. Any incremental effects on Peace River water levels, geomorphology and ice flow regimes have the potential to further adversely impact the ability of DKFN members to exercise their rights. Even if the potential effect of the Project on downstream flows with DKFN's traditional territory is small, the seriousness of this effect will be significant given the already strained state of flows within DKFN traditional territory. The approach taken to spatial scoping in the EIS completely ignores the potential cumulative</p>	<p>As described in Section 19.1.5 Spatial and Temporal Boundaries, the LAA and RAA for Current Use of Lands and Resources for Traditional Purposes is comprised of maximum extent of the LAA and RAA for each of Fish and Fish Habitat, Wildlife Resources, and Vegetation and Ecological Communities. The LAA was defined in consideration of the expected maximum geographic extent of the potential for the Project to cause an adverse effect on this VC. BC Hydro views that "access" is a component of the three key aspects assessed in Section 19, in that consideration was given to both use of and access to resources, including cultural and other traditional uses of the land.</p> <ul style="list-style-type: none"> - The Fish and Fish Habitat LAA: as changes in fishing opportunities and practices is the first key aspect assessed in Section 19, there is a direct correlation between the expected maximum extent of the potential for the Project to cause adverse effects on both VCs. The RAAs for both VC are aligned for the same reason. - The Wildlife Resources LAA: as changes in hunting and trapping opportunities and practices is the second key aspect assessed in Section 19, there is a direct correlation between the expected maximum extent of the potential for the Project to cause adverse effects on both VCs. The RAAs for both VC are aligned for the same reason. - The Vegetation and Ecological Communities LAA: as changes in other cultural and traditional uses of the land, including gathering is the third key aspect assessed in Section 19, there is a direct correlation between the expected maximum extent of the potential for the Project to cause adverse effects on both VCs. The RAAs for both VC are aligned for the same reason. - In addition to gathering, the third key aspect also considers the use of areas for other cultural purposes, such as high-value places and landscapes along the Peace River used for the conduct of multiple current use and cultural activities. These types of activities are site-specific and stationary in nature, and as such would be located within the bounds of the LAA identified for this VC. <p>Please see the following Technical Memos:</p> <ul style="list-style-type: none"> -Peace Athabasca Delta - Spatial Boundary Selection - Methodology for the Assessment of the Potential Impacts of the Project on the Exercise of Asserted or Established Aboriginal and Treaty Rights

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			effects to the exercise of Treaty and Aboriginal rights in their true context.	
ab_0012-013	Deninu K'ue First Nation	V.2, s. 10.3.1.1; page(s) 10-4, line(s) 24. EISG section 8.4.1 Comment # Table8	<p>The EIS states "For each VC, the LAA has been defined in consideration of the expected maximum geographic extent of the potential for the Project to cause an adverse effect on the VC."</p> <p>Despite the stated intention to scope the assessment areas to the maximum area of effect, it seems that the LAAs were scoped too narrowly in some cases which has excluded assessment of effects further downstream and, in so doing, pre-determined the conclusion on the extent of effect. This flawed methodology of claiming no effect because the area was not studied as a result of being scoped out of the assessment needs to be addressed by BCH before the EIS can be deemed to be complete by CEAA and EAO.</p> <p>The EIS Guidelines require that "should a technically valid concern with respect to study area boundaries arise during the course of environmental assessment, they would address it in the EIS." DKFN notes that other First Nations in downstream areas (Mikisew Cree First Nation and Athabasca Chipewyan First Nation) have filed a report (Dr. Martin Carver, Review of Hydrologic & Geomorphic Downstream Impacts of Site C, December 2012) which raises serious concerns about the effects of the Project on the Peace-Athabasca Delta (the "PAD"), which falls outside of the proposed study areas. DKFN's traditional territory is located downstream of the PAD, raising the potential that effects on the water regime in the PAD may cause effects within DKFN's traditional territory. BCH has not provided a justification for excluding the PAD, and by extension, areas downstream of the PAD.</p> <p>Further, DKFN has previously filed a Technical Memorandum prepared by Kerr Wood Leidal titled "Report Review – Site C Clean Energy Project, Potential Downstream Changes", dated January 18, 2013. As noted in this report, "no information is provided on changes to downstream flows during construction and reservoir filling apart from stating that flows would always exceed the existing Peace Canyon Minimum licensed flows." As BCH must justify the spatial boundaries that have been selected for each VC, information should be provided on changes to downstream flows during construction and reservoir filling.</p>	<p>Changes to the Surface Water Regime are described in Section 11.4 of the EIS.</p> <p>Please also see the following Technical Memos:</p> <ul style="list-style-type: none"> - Spatial Boundary Selection - Peace Athabasca Delta
ab_0012-014	Deninu K'ue First Nation	V.2, s. 10.5; page(s) 10-11 to 10-22, line(s) n/a.	The EIS Guidelines require that the EIS "provide an assessment of the cumulative effects that are likely to result from the Project in combination with other projects or activities that have been or will be carried out." The EIS Guidelines directs that the cumulative effects assessment ("CEA") be guided by	<p>Past projects and activities are reflected in the current status of the VC. In doing so, it reflects the residual effects of projects and activities that have been and are being carried out.</p> <p>Please see the Technical Memo: Cumulative Effects Assessment.</p>

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		EISG section 8.5.3 Comment # Table9	<p>federal and provincial guidance documents.</p> <p>The lack of consideration of past projects and activities in the CEA is contrary to the EIS Guidelines provisions requiring a cumulative effects assessment, and is inconsistent with the requirements under the CEAA as well as the EAO's definition of cumulative effects.</p> <p>The CEA conducted for each VC in the draft EIS did not consider the cumulative effects of Site C along with projects that have been carried out, principally, the Bennett and Peace Canyon dams. DKFN has provided BCH with the "DKFN Ethno History Report: Site C Dam and Traditional Land Use" which includes traditional ecological knowledge related to the effect of the WAC Bennett Dam on the traditional territory of the DKFN. Despite this information, and a wide range of publically available information that is well known to BCH on the effects of the Bennett dam on downstream areas, including DKFN's traditional territory, the CEA contained in the EIS does not consider effects of the Bennett Dam. The EIS is deficient in this regard.</p> <p>DKFN recommends that the EIS be amended to include a CEA that includes the residual effects from the WAC Bennett Dam and the Project on downstream areas, to DKFN traditional territory.</p>	
ab_0012-015	Deninu K'ue First Nation	V.2, s. 11.1; page(s) n/a, line(s) n/a. EISG section 9.1, 8.5.3 Comment # Table10	BCH's "narrative discussion" on past development effects is summarized in section 11.1, although it is not clear in the actual effects assessments of VCs how this information was used to enhance the understanding of potential Site C effects and how they may act in a cumulative way with past and current changes from the existing facilities. The EIS needs to explain if, and how, this information was used in the VC effects assessments (direct and cumulative).	<p>In accordance with the EIS Guidelines, the effects of previous developments are reflected in the baseline for the assessment. Accordingly, appropriate information is included in the EIS.</p> <p>Please see the Technical Memo: Cumulative Effects Assessment.</p>
ab_0012-016	Deninu K'ue First Nation	2, s. 11.1.2.1; page(s) 11-4, line(s) 32-45. EISG section 9.1; 8.5.2 Comment # Table11	<p>The EIS Guidelines require that the EIS include a narrative discussion of existing hydro-electric generation project on the Peace River, including the WAC Bennett Dam. The EIS Guidelines require that the narrative include "the description of any existing studies of changes to the environment resulting from those projects that are similar to potential changes resulting from the project" as well as "historical data, where available and applicable."</p> <p>The EIS Guidelines indicate that the discussion will describe "the environmental changes that are understood to be caused" by BCH's existing hydroelectric developments on the Peace River. However, this narrative discussion consists of</p>	<p>The scope of the narrative on Previous Developments is in accordance with, and is provided for the purposes set out in, Section 9.1 of the EIS Guidelines, and appropriate information is provided in the EIS.</p> <p>Please also see the response to ab_0004-033.</p>

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			<p>a highly selective sampling of studies relating to the downstream effects of the Bennett Dam and is written in an adversarial manner. As BCH is aware, there are a number of studies which indicate that the Bennett Dam has caused, and continues to cause, residual effects near the Alberta-Northwest Territories Border and in the Northwest Territories (see the comments on the EIS made by the Government of the Northwest Territories, comment #2, for references to studies).</p> <p>The EIS Guidelines require that this narrative discussion assist interested parties to understand the potential effects of Site C, but the narrative does not do this and instead provides one perspective that obscures comprehension by interested parties of the potential impacts.</p> <p>In addition, the information about BCH's existing dams is not brought forward into other parts of the EIS, most notably the CEA, as noted elsewhere in these submissions.</p> <p>DKFN recommends that the narrative report be amended to include reference to studies relating to the effects of the Bennett Dam within its traditional territory and that this amended narrative be brought forward into the assessment of potential adverse effects of the Project on VCs relevant to DKFN, as well as the CEA.</p> <p>Further, the narrative report indicates that there is "limited pre-regulation information" but does not include this historical data, as required by the EIS Guidelines. CEAA and Environment Canada have confirmed that preregulation data relating to the Peace River exists, but the EIS does not reference or describe this data.</p>	
ab_0012-017	Deninu K'ue First Nation	V.2, s. 11.1.2.2; page(s) 11-8 to 11-9, line(s) n/a. EISG section 8.4.1 9.3.1 Comment # Table12	Is there data to indicate that the current effects exerted on downstream ecology from the current regulation of the Peace River will continue in equal or different magnitude, temporal extent and spatial extent with the addition of Site C to the Peace River hydropower system? If so, this data needs to be included in the EIS and be factored into the assessment.	<p>Please see Section 13 and Appendix R, Part 1 and Section 11.4 Surface Water Regime.</p> <p>Please also see the Technical Memo: Spatial Boundary Selection.</p>
ab_0012-	Deninu K'ue	V.2, s. 11.4	Section 8.4.1 of the EIS Guidelines states "the EIS shall include a scientific	Please see the following Technical Memos:

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018	First Nation	and 11.4.2.4; page(s) 11-62, 11-67, line(s) 8-13, 1-4. EISG section 8.4.1, 9.3.1 Comment # Table13	<p>justification for the selection of relevant spatial boundaries".</p> <p>The EIS states that “the spatial boundary selected for the characterization of potential changes to the surface water regime as a result of the Project extends from the outlet of the Peace Canyon Dam to Peace Point, Alberta, over 1,000 km downstream” and provides two reasons for this selection:</p> <ul style="list-style-type: none"> - “This downstream boundary was selected because surface water data for that location are available” - “...and because at that location, any changes in the surface water regime were expected to be negligible in relation to the natural variability of the baseline flow regime.” <p>As noted in the review of the downstream studies conducted by Kerr Wood Leidal, “the most significant information gap is the absence of a justification for the downstream extent of the studies at Peace Point.” This information gap persists in the EIS. DKFN requests that there be a rationalization presented for the choice of downstream boundary that recognizes that the PAD lies less than 50km from Peace Point, and that it is of critical importance to the Slave River watershed.</p>	<ul style="list-style-type: none"> - Spatial Boundary Selection - Peace Athabasca Delta
ab_0012-019	Deninu K'ue First Nation	V.2, s. 11.4.4.3; page(s) 11-76, line(s) 21-26. EISG section 8.5.2.2 Comment # Table14	<p>The EIS Guidelines states that “Other mitigation measures, if any, which were considered shall be identified, and the rationale for rejecting these measures shall be explained.”</p> <p>DKFN notes that the report of Dr. Carver, noted above, indicates that the regulation of flows on Peace River might be conducted so as to mitigate the adverse effects of the Bennett Dam on downstream areas, such as the PAD. Has BCH examined such mitigation measures? If so, such measures should be detailed in the EIS.</p>	<p>The EIS Guidelines (Section 8.5.2.2) require that the EIS include a description of measures that the Proponent is proposing to mitigate any potentially significant adverse effects of the Project on Valued Components. This does not include mitigation measures related to potential effects of other projects.</p> <p>The matter raised in this comment is outside the scope of the environmental assessment.</p>
ab_0012-020	Deninu K'ue First Nation	V.3, s. 19.1; page(s) 19-1, line(s) n/a. EISG section 15 Comment # Table15	<p>The EIS Guidelines require BCH to “summarize the traditional lands and resource use effects” of the Project through “an assessment of the potential adverse effects of the Project on the current use and reasonably anticipated future use of lands and resources by Aboriginal persons for traditional purposes.”</p> <p>However, the EIS appears to narrow the scope of this assessment to only an assessment of the effects of the Project on “current” uses of lands for traditional purposes, and not reasonably anticipated future uses. Specifically, BCH has renamed this section and has set out key indicators for this VC as (i) the “current use of lands and resources for hunting, fishing and trapping activities</p>	<p>Please see the response to ab_0004-064.</p>

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			<p>..." and (ii) the "current use of lands and resources for activities other than hunting, fishing and trapping ..."</p> <p>DKFN comments that this section of the EIS is insufficient as it does not include an assessment of the potential adverse effects of the Project on "reasonably anticipated future use of lands and resources by Aboriginal persons", as required by the EIS Guidelines. No justification is given for this departure from the EIS Guidelines. Instead, BCH references s.5(1)(iii) of CEAA, which requires an assessment of "current use of lands and resources for traditional purposes." The EIS must comply with the EIS Guidelines and must include an assessment of the Project's effects on "reasonably anticipated future use of lands and resources by Aboriginal persons."</p>	
ab_0012-021	Deninu K'ue First Nation	V.3, s. 19.1.2; page(s) 19-8, line(s) n/a. EISG section 15.2.4 Comment # Table16	<p>The EIS Guidelines require BCH to assess the potential adverse effects from the Project on the current use of land and resources for traditional purposes by taking into account the potential for the Project to result in changes to key aspects:</p> <ul style="list-style-type: none"> · Use of and access to lands used for traditional purposes; · Availability of harvested species based on the results of the assessment of the potential effects of the Project on fish and fish habitat, vegetation and ecological communities, and wildlife resources; and · Other relevant considerations raised by Aboriginal groups. <p>Instead, BCH has chosen to assess different "key aspects", being:</p> <ul style="list-style-type: none"> · Changes in fishing opportunities and practices; · Changes in hunting and trapping opportunities and practices; · Changes in other cultural and traditional uses of land. <p>It is not clear in the EIS whether there are additional concerns from aboriginal groups that should have been brought in, but were not, due to organizational choice.</p>	Please see the response to ab_0001-534.
ab_0012-022	Deninu K'ue First Nation	3, s. 19.1.5.1; page(s) 19-10 - 19-11, line(s) n/a. EISG section 8.4 Comment # Table17	<p>The EIS Guidelines require that BCH "shall include a scientific justification for the selection of relevant spatial boundaries" for each VC. The EIS states that the spatial boundaries for the Current Use of Lands and Resources for Traditional Purposes VC was defined "in consideration of the expected maximum geographic extent of the potential for the Project to cause an adverse effect on the VC current use of lands and resources for traditional purposes." The LAA and RAA boundaries defer to the other biological boundaries (which are themselves unjustified by scientific evidence), and no further scientific justification is presented, so it does not meet the aforementioned requirement</p>	Please see the response to ab_0012-012.

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			<p>of the EIS Guidelines.</p> <p>Section 10.3.1 of the EIS (Methodology section) claims that "Each of these sections provides the scientific justification for the selection of relevant spatial boundaries." As demonstrated, this scientific justification is missing for Current Use of Lands and Resources for Traditional Purposes, so this statement in section 10.3.1 is not accurate. A scientific justification for the LAA and RAA is required.</p> <p>DKFN also makes the following comments on the spatial boundaries for this VC, in addition to the comments above:</p> <p>a) The EIS states that the Current Use of Lands and Resources for Traditional Purposes VC will be considered through three related assessments: (i) fishing opportunities and practices, (ii) hunting and trapping opportunities and (iii) "Cultural and traditional uses of the land". It is DKFN's understanding that the third category is intended to take into account key aspects of the exercise of treaty rights not otherwise addressed in the fishing, hunting and trapping assessments. Based on this understanding, DKFN seeks clarification on how the spatial boundaries for this assessment were determined to coincide with the boundaries for the vegetation and ecological communities VC, given that elements of cultural and traditional uses of the land do not correspond with this VC.</p> <p>b) On page 19-11, line 7-8, the EIS states that the spatial boundaries for the fish and fish habitat VC "were defined by reviewing information including information from Traditional Land Use Studies." It is unclear how traditional land use study information was used to select the spatial boundary for this VC, nor is it clear what TLUS data was used to define this boundary. DKFN requests that BCH explain what TLUS data was used, and how it was used, to set the spatial boundary for this VC. In particular, has the TLUS information that was delivered to BCH by DKFN been incorporated into the EIS in any way?</p> <p>c) The selection of the spatial boundaries for the wildlife resources VC and the vegetation and ecological communities VC does not reference reliance on TLUS data. DKFN requests justification for the exclusion of this data in the selection of spatial boundaries for these VCs.</p>	
ab_0012-023	Deninu K'ue First Nation	V.3, s. 19.2.1; page(s) 19-12, line(s) 33. EISG section	The EIS states that "Readily available Traditional Land Use and knowledge studies for other projects" were referenced to formulate the baseline and assist with the assessment of potential effects on this VC. DKFN requests that BCH list the studies that were referenced in this regard.	The sources used in the assessment on Current Use of Lands and Resources for Traditional Purposes are listed on page 19-115 through 19-123 of Section 19. The Aboriginal Land and Resource Use Summary document prepared for Deninu K'ue First Nation also includes references for materials considered in the preparation of that summary, and is found in Volume 5 Appendix

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		1.3 Comment # Table18		A05.4.
ab_0012-024	Deninu K'ue First Nation	V.3, s. 19.2.3; page(s) 19-13, line(s) 25-28. EISG section 1.3 Comment # Table19	The EIS states that “a spatial analysis was undertaken to identify the overlap between the Project activity zone and areas that are currently used by Aboriginal groups for traditional purposes.” Given the complexity of the Project and the need to communicate potential site specific impacts to First Nations as part of BCH’s mitigation strategies, DKFN requests that additional information and mapping of the potential adverse effects of the Project as against the traditional uses of land be included in the EIS.	<p>The baseline information and effects assessment in Section 19 draws largely on information provided by First Nations in Traditional Use Studies and publicly available information.</p> <p>BC Hydro has committed to working with Aboriginal groups to ground truth traditional land use information for specific area within the Project activity zone prior to commencing construction, and to continue to consult with Aboriginal groups regarding clearing plans and protocols (See Section 19.4.8).</p> <p>Please also see the response to ab_0001-527</p>
ab_0012-025	Deninu K'ue First Nation	V.3, Tables 19.5 to 19.10 19.3; page(s) 19-15 to 19-19 '19-13 to 19-19, line(s) n/a. EISG section 15, 15.2.3, 20.1 Comment # Table20	<p>The EIS Guidelines require BCH to describe the current use of lands and resources for traditional purposes within the assessment areas drawing on information from public sources and information made available to BCH, including traditional land use studies (“TLUS”). The purpose of this review is to establish a baseline to assess the potential adverse effects of the Project on <i>both</i> “current use and reasonably anticipated future use of lands and resources by Aboriginal persons for traditional purposes. Tables 19.5 to 19.10 purport to summarize the “presence or absence of traditional or current use for those groups that have at least some identified current use, in the LAA, of each resource use or activity listed, regardless of the intensity or frequency of harvesting or activity.”</p> <p>The EIS is deficient in that current uses of lands and resources by DKFN are not summarized, due to BCH’s unjustified decision to exclude DKFN’s traditional territory from the study areas. This exclusion is continued in the consideration of baseline data in s.19.3 of the EIS. DKFN requests that the EIS be amended to include baseline information relating to the Current Use of Land and Resources for Traditional Purposes by DKFN.</p>	<p>BC Hydro did not decide to exclude DKFNs traditional territory from the Local Assessment Area. Rather, the LAA was described to consider the maximum extent of potential effects of the Project on the current use of lands and resources for traditional purposes. Further, the statement that the EIS is deficient because it did not summarize DKFN's current use of lands and resources is incorrect. BC Hydro's understanding of DKFNs current use of lands and resources is summarized in Section 19.3.1.11.</p> <p>Since the filing of the EIS, BC Hydro has received new information from DKFN respecting its use of lands and resources for traditional purposes. Consideration of that information and its application to the findings of the EIS will be described in the Aboriginal Group Supplemental Report.</p> <p>Please see the Technical Memo: Spatial Boundary Selection.</p>
ab_0012-026	Deninu K'ue First Nation	V.3, Table 19.1; page(s) 19-3, line(s) n/a. EISG section 1.3 Comment # Table21	Table 19.1 of the EIS purports to identify “Key Issues” for the assessment of impacts to current uses of lands for traditional purposes, as identified through consultations with Aboriginal groups. DKFN comment that, in general, it is quite unclear whether and how these issues have been incorporated into the assessment of impacts to current use of lands and resources. In particular: · On page 19-4, the table identifies a “meaningful assessment of reasonably anticipated future use of lands” as a key issue identified by certain First Nations. This is a key issue not only for the First Nations listed on the table, but for DKFN	<p>With respect to the consideration of the reasonably anticipated future use of lands and resources for traditional purposes, please see the response to ab_0004-064.</p> <p>As noted on page xi of the EIS Guidelines, "the Proponent will incorporate additional baseline information as made available based on concerns identified by Aboriginal groups." BC Hydro has entered into a consultation agreement with Deninu K'ue First Nation which provides capacity funding to enable DKFN to identify potential effects of the Project. In addition, BC Hydro has provided funding to DKFN to prepare a report of traditional land use information. The report was received by BC Hydro after filing of the EIS and will be considered in the Aboriginal Group</p>

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			<p>as well. Further, it is a requirement of the EIS Guidelines that reasonably foreseeable future use of lands be assessed against potential project impacts. This table states that such future uses have been assessed in section 19, however this assessment appears to be lacking. Of note, the assessment contained in section 19 focusses narrowly on the species of fish, wildlife and plants identified by the First Nation rather than addressing future uses of lands with the assessment areas. BCH should provide a clear assessment of the reasonably foreseeable future uses of lands within the assessment areas so that impacts to these future uses can also be assessed transparently.</p> <p>· On page 19-5, the table states that a key issue is the collection of baseline traditional knowledge and incorporating that knowledge into the environmental assessment. BCH states that “where information respecting traditional knowledge has been made available to BCH by Aboriginal groups, it has been incorporated into the baseline for those VCs to which it applies. DKFN expresses two concerns in this regard: (1) this statement indicates that BCH has placed an onus on Aboriginal groups to gather information and identify impacts. While First Nations can certainly assist in this process, the onus is on BCH to identify impacts to current and reasonably foreseeable uses of lands and resources for traditional purposes. BCH should transparently demonstrate the efforts made to gather baseline traditional knowledge and demonstrate how such knowledge has been brought into the assessment.</p>	Supplemental Report.
ab_0012-027	Deninu K'ue First Nation	V.3, s. 19.2; page(s) 19-9, line(s) 1-3. EISG section 1.3, 8.1, 8.3.2 Comment # Table22	The footnote to Table 19.2 states that “only Project interactions ranked as ‘2’ ... are carried forward to this table.” DKFN expresses concern that this methodology may overlook both adverse effects and cumulative effects as interactions ranked as ‘1’ (i.e. interactions that are assumed to not exist or be negligible in effect) may be miscategorised, or may be misunderstood. Given that the EIS Guidelines do not require this specific methodology, BCH should justify its decision to not carry certain Project interactions through the effects assessment.	Please see the response to ab_0004-073.
ab_0012-028	Deninu K'ue First Nation	V.3, s. 19.3.1.11; page(s) 19-51, line(s) 38-41. EISG section 1.3 Comment # Table23	The EIS states that baseline information for DKFN was derived from “online research.” DKFN requests that BCH indicate which websites and information were referenced in establishing the baseline for current, past, and future use of lands. Second, now that DKFN has shared the “DKFN Ethno-History Report: Site C Dam and Traditional Land Use” with BCH, will this information be included in the EIS?	<p>The sources used in the assessment on Current Use of Lands and Resources for Traditional Purposes are listed on pages 19-115 through 19-123 of Section 19. The Aboriginal Land and Resource Use Summary document prepared for Deninu K'ue First Nation also includes references for materials considered in the preparation of that summary, and is found in Volume 5 Appendix A05.4.</p> <p>Since the filing of the EIS, BC Hydro has received new information from DKFN respecting its use of lands and resources for traditional purposes. Consideration of that information and its application to the findings of the EIS will be described in the Aboriginal Group Supplemental</p>

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				Report.
ab_0012-029	Deninu K'ue First Nation	V.3, s. 19.3.1.11; page(s) n/a, line(s) n/a. EISG section n/a Comment # Table24	Based on our above comments relating to the lack of justification for the spatial scoping of the assessment areas to exclude a consideration of impacts within the Peace-Athabasca Delta and the Slave River Watershed, DKFN comments that, should the assessment areas be amended, these sections, and others, will have to be amended to include a consideration of impacts on DKFN.	Please see the following Technical Memos: - Spatial Boundary Selection - Peace Athabasca Delta
ab_0012-030	Deninu K'ue First Nation	V.3, s. 19.4; page(s) 19-65, line(s) n/a. EISG section 15.2.4 Comment # Table25	<p>The EIS Guidelines require BCH to “assess how the Project has the potential to adversely affect current use of lands and resources by Aboriginal persons for traditional purposes.” The EIS undertakes this assessment at the Project component level, rather than the activity level, for this VC. In general, this approach does not offer a transparent assessment of the impacts of the Project on the exercise of treaty rights.</p> <p>The assessment is conducted in overly general terms, and it is difficult for DKFN to determine how and where impacts to their rights will occur. Given the nature of the rights at issue, it is necessary for the First Nation to understand not only the potential for adverse impacts, but the nature and magnitude of those impacts. The First Nation requests that BCH provide mapping and other information to indicate, to the extent possible, the location of potential adverse impacts.</p>	<p>Project interactions with the VCs are described in Volume 2, Appendix A Table 2. Interactions are considered at the project component or activity level in Table 2, as relevant to each VC. Where appropriate, the assessment of potential effects on Current Use of Lands and Resources for Traditional Purposes took into account interactions are the activity level.</p> <p>The baseline information and effects assessment in Section 19 draws largely on information provided by First Nations in Traditional Use Studies and publicly available information.</p> <p>BC Hydro has proposed, as a mitigation measure, to work with Aboriginal groups to ground truth traditional land use information for specific area within the Project activity zone prior to commencing construction, and to continue to consult with Aboriginal groups regarding clearing plans and protocols (See Section 19.4.8).</p>
ab_0012-031	Deninu K'ue First Nation	V.3, s. 19.4.1; page(s) 19-73, line(s) n/a. EISG section 20 Comment # Table26	The EIS states that the TLUS reports “provides limited information on how Aboriginal groups use fish” but that “it is reasonable to assume that the Aboriginal groups who currently fish for traditional purposes in the Project LAA use the resource for sustenance, recreational, and social purposes.” DKFN comments that this assumption is not justified, insofar as it may exclude the consideration of the exercise of treaty rights to fish commercially, which may be applicable in the Northwest Territories.	<p>BC Hydro's understanding about the nature and scope of rights under Treaty 8 is presented in Section 34.3.2.1, and notes that Treaty 8 rights in British Columbia and the Northwest Territories have not been modified through case law or legislation to extinguish the right to hunt, fish and trap commercially.</p> <p>As described in the EIS, very limited information has been made available by Aboriginal groups with respect to how they may use fish, and no information has been provided to indicate that fish are being used commercially.</p>
ab_0012-032	Deninu K'ue First Nation	V.3, s. 19.4.3; page(s) 19-77, line(s) 1-19. EISG section 15.2.4 Comment #	<p>The EIS Guidelines require BCH to identify potential mitigation measures and include a description of how the mitigation measures can address the potential adverse effects.</p> <p>Many of the measures listed in s.19.4.3 do not comply with the EIS Guideline requirements of specificity and clarity. Instead, most of these measures are commitments to “seek input from Aboriginal groups” or to “continue to consult</p>	<p>The mitigations presented in Section 19.4 include a mix of mitigations that are proposed for the Fish and Fish Habitat, Wildlife Resources, Vegetation and Ecological Communities, Navigation, Harvest of Fish and Wildlife Resources, and Heritage Resources VCs, as well as mitigations that have been identified to address specific concerns raised by Aboriginal groups.</p> <p>BC Hydro has offered to consult with Aboriginal groups in the Project area about mitigation measures, and will continue to pursue discussions on this topic as part of the consultation</p>

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		Table27	<p>with Aboriginal groups” on plans and protocols. Other measures are described as measures that may be developed in the future, such as the development of a communications program. The effectiveness of such programs cannot be measured without specific commitments being made by BCH.</p> <p>While consultation with DKFN will be required in designing and implementing mitigation measures relating to impacts to its treaty fishing rights, such consultation does not itself mitigate the adverse effects identified in the EIS. DKFN requests that BCH make firm commitments to specific mitigations, particularly in relation to the development of measures to compensate DKFN for the adverse impacts of the Project and to continue to monitor the effects of the Project.</p> <p>Without providing firm and specific commitments for mitigation, the EIS is not in compliance with the EIS Guidelines and the analysis of the residual effects on fishing arising from the Project are not reliable.</p>	<p>process for the Project. As described in Section 9.2.4 (Process for Resolving Outstanding Issues with Aboriginal Groups), BC Hydro will seek to address outstanding issues by, among other activities, "continuing to seek input and engage in dialogue regarding the EIS and the Project, and to answer questions and address issues, interests, and concerns from Aboriginal groups by identifying appropriate mitigation measures and/or other appropriate means by which to address or resolve potential impacts."</p> <p>With respect to the level of confidence in the conclusions on the residual effects to the Current Use of Lands and Resources for Traditional Purposes, the nature of the proposed mitigations were taken into account and is reflected in the assessment made.</p> <p>Please also see the Technical Memo: Uncertainty and Precaution.</p>
ab_0012-033	Deninu K'ue First Nation	V.3, s. 19.4.5; page(s) 19-88, line(s) 10-24. EISG section 8.5.2.2 Comment # Table28	The EIS lists certain mitigation measures suggested by BCH to address adverse effects to hunting and trapping opportunities. DKFN restates its comment, above, that the mitigation measures listed by BCH lack specificity.	Please see the response to ab_0012-032.
ab_0012-034	Deninu K'ue First Nation	V.3, s. 19.4.5; page(s) 19-87, 19-88, line(s) 41-46, 1-44. EISG section 1.3 Comment # Table29	<p>The EIS states that the Project may cause adverse effects to terrestrial ecosystems, which could result in adverse effects to the ability of Aboriginal groups to exercise rights relating to the harvest of berries and other plants within the LAA. However, on page 19-87, the EIS states that “effects on individual plant species or plants report in TLUS reports” have not been assessed in the EIS, but that instead, effects to rare and sensitive plants have been assessed.</p> <p>Without this species specific information, it is not possible to determine the extent of the potential adverse effects on treaty rights relating to gathering berries and other plants, nor is it possible to determine how such adverse effects may be mitigated. If the EIS is amended to include an assessment of impacts within DKFN traditional territory, DKFN requests an assessment of the impacts to current and reasonably anticipated future uses in downstream areas including species specific assessments.</p>	Please see the response to ab_0004-084.

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ab_0012-035	Deninu K'ue First Nation	V.3, Table 19.12; page(s) 19.96, line(s) n/a. EISG section 8.5.2.2 Comment # Table30	DKFN repeats its comments in regard to lack of specificity in mitigation measures.	Please see the response to ab_0012-032.
ab_0012-036	Deninu K'ue First Nation	V.5, s. 34.3.1; page(s) 34-4, 34-5, 34-7, line(s) 9-30, 29-34, 20-22. EISG section 20.2 Comment # Table31	<p>The EIS provides BCH's interpretation of Treaty 8. DKFN comments that an assessment of the impact of the Project on treaty rights cannot be sufficient where the nature of those treaty rights is misconstrued:</p> <p>a) BCH states that Treaty 8 "involved the surrender of land" by First Nations. DKFN's interpretation of Treaty 8 is that it is a "sharing agreement" with the Crown.</p> <p>b) BCH asserts that the "treaty protection of the right to hunt commercially was extinguished" by the NRTA. BCH states that such extinguishment applies throughout the Treaty 8 territory within Alberta. DKFN observes that this restriction is not present in the Northwest Territories, and requests that BCH consider the scope of commercial treaty rights in its assessment of adverse effects of the Project.</p> <p>c) DKFN does not agree with BCH's interpretation of treaty rights. In any event, it comments that BCH has not incorporated its own understanding of this legal framework into its assessment of whether the Project may cause adverse impacts to Aboriginal groups, in that BCH concludes in a variety of places in the EIS, that impacts to treaty rights are minimized due to the ability of First Nations to exercise rights in areas outside of those that will experience adverse effects. DKFN's traditional territory has been adversely affected by numerous developments, a fact that must be considered by BCH in assessing the impact of the Project.</p> <p>d) While BCH recognizes that treaty rights are not confined to hunting, fishing and trapping rights, and that these rights extend to those activities that are reasonably incidental to the exercise of rights, BCH has failed to carry this recognition through its assessment of the potential impact of the Project on those incidental activities.</p>	<p>With respect to the comments on Treaty 8 interpretation, please see the response to ab_0004-092 and the Technical Memo: Oral Promises Under Treaty 8.</p> <p>BC Hydro agrees the restriction in the NRTA is not present in the Northwest Territories. However, BC Hydro has determined that hunting, trapping and fishing practices, commercial or otherwise, in the Northwest Territories would not be affected by the Project. Accordingly, a discussion of commercial hunting rights in the Northwest Territories is not required.</p> <p>The request that BC Hydro consider the effects of other developments within DKFN's traditional territory is beyond the scope of the EIS. It is not expected that the Project will have an effect on the current use of lands and resources for traditional purposes for DKFN (Section 19.4, p. 16-66), or that the Project will have an impact on the exercise of treaty rights of DKFN (Section 34.4, p. 34-11).</p> <p>Please also see the Technical Memo: Spatial Boundary Selection.</p> <p>BC Hydro has assessed the potential impacts of the Project on ancillary activities which may be reasonably incidental to the exercise of treaty rights. Please see the response to ab_0001-681 which addresses BC Hydro's approach to this issue.</p>
ab_0012-037	Deninu K'ue First Nation	V.5, s. 34.3.3; page(s) 34-11, line(s) 15-35.	The EIS Guidelines require BCH to identify "past, current and reasonably anticipated future use of lands and resources by Aboriginal groups for traditional purposes that may be adversely affected by the project". While BCH	Please see the response to ab_0004-093.

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		EISG section 20.3 Comment # Table32	<p>recognizes that “the right to fish, hunt and trap does not overlap precisely in time and space with the current use of lands and resources for traditional purposes”, it asserts there is a “close linkage” between treaty rights and current uses of land by Aboriginal groups and confines its assessment of Project impacts on treaty rights to impacts on current uses of land.</p> <p>This approach does not comply with the direction in the EIS Guidelines to identify past and reasonably anticipated future uses of land by DKFN. The EIS is incomplete without a consideration of the past curtailment of DKFN’s treaty rights and a forward looking assessment of other pressures on the exercise of treaty rights posed by other uses of lands within the territories of the First Nation.</p> <p>Further, a reliance on an assessment of the Project’s impact on current uses of lands and resources for traditional purposes is insufficient to assess the impact of the Project on treaty rights. The Project may impact treaty rights that are not currently being exercised within the LAAs and RAAs described for the VC’s chosen by BCH. The EIS is insufficient in this regard, as impacts to treaty rights are only assessed insofar as impacts to current exercises of treaty rights within the LAA are concerned.</p> <p>Moreover, despite recognizing that the assessment of potential adverse effects to current uses of lands and resources for traditional purposes does not constitute an assessment of the impacts to treaty and aboriginal rights, BCH relies on the findings of section 19 and does not supplement these findings with an analysis of the effects of the Project on activities and factors that are necessarily incidental to the exercise and maintenance of treaty rights. BCH pays lip service to the inclusion of navigational and access elements, as well as other elements such as the ability to exercise rights in preferred locations and the ability to transmit culture, however, there is no assessment of the potential impacts of the Project on these factors.</p> <p>Additionally, the EIS is not explicit about what criteria and thresholds are being used to assess impacts to treaty rights. Without these it is not possible to determine how the EIS is assessing the nature, degree or scope of potential impacts arising from the Project on treaty rights.</p>	
ab_0012-038	Deninu K'ue First Nation	V.5, s. 34.3; page(s) 34-11 to 34-12, line(s) 37-41,	BCH concludes that 11 of the 21 First Nations required to be consulted by the EIS Guidelines will face “no impacts on the exercise of treaty rights” as a result of the Project. This includes DKFN.	Please see the response to ab_0004-094.

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		1-19. EISG section 20.3 Comment # Table33	<p>BCH bases this assessment on its conclusion, from Vol. 3, Section 19 on the Current Use of Lands and Resources for Traditional Purposes, that the Project is “not expected to have an effect on the current use of lands and resources for traditional purposes ... because there are no predicted interactions between Project activities and the use areas of these groups” and “[c]onsequently, the Project is not expected to have an impact on the exercise of the treaty rights of these First Nations.” DKFN comments as follows:</p> <p>a) This portion of the EIS does not satisfy the EIS Guidelines requirement that BCH identify “past, current and reasonably anticipated future use of lands and resources by Aboriginal groups for traditional purposes that may be adversely affected by the project”. BCH has based its conclusion on an analysis of the current use of lands alone. A finding that the Project will not have an impact on current uses of lands by the First Nations, even if supportable, does not support a conclusion that the exercise of treaty rights will not be adversely impacted as reasonably anticipated future uses of land may be adversely effected.</p> <p>b) BCH states that “should additional information regarding current and reasonably anticipated future use of lands and resources within the LAA be received from the First Nations listed above, BCH will incorporate it into the EIS.” However, BCH is required to assess past, current and reasonably anticipated future uses of land that may be affected by the Project, whether those lands are within an LAA, an RAA or otherwise. This statement does not comply with the EIS Guidelines, s.20.3, particularly given that BCH has scoped the various LAAs to exclude any of the traditional territory of DKFN.</p>	
ab_0012-039	Deninu K'ue First Nation	V.5, s. 34.4, Table 34.2; page(s) 34-19 to 34-20, line(s) n/a. EISG section n/a Comment # Table34	<p>The EIS Guidelines require BCH to “describe the measures identified to mitigate/accommodate the potential adverse impacts of the project ... on the asserted or established aboriginal rights and treaty rights.” The EIS Guidelines state that accommodation measures are to be written as specific commitments that clearly describe how the Proponent intends to implement them.</p> <p>Section 34.4 and Table 34.2 purport to outline “Mitigation measures for Potential Adverse Impacts on the Exercise of Treaty Rights.” Many of the measures listed here do not comply with the EIS Guideline requirements of specificity and clarity. Instead, most of these measures are commitments to “seek input from Aboriginal groups” or to “continue to consult with Aboriginal groups” on plans and protocols. Other measures are described as items that may be developed in the future, such as the development of a communications program. The effectiveness of such programs cannot be measured without specific commitments being made by BCH.</p>	Please see response to ab_0012-032

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			While consultation with DKFN will be required in designing and implementing mitigation measures, such consultation does not itself mitigate the adverse effects identified in the EIS. DKFN requests that BCH make firm commitments to specific mitigations, particularly in relation to the development of measures to accommodate DKFN for the adverse impacts of the Project and to continue to monitor the effects of the Project. Without providing firm and specific commitments for mitigation, the EIS is not in compliance with the EIS Guidelines, and the analysis of the residual effects of the Project is not reliable.	
ab_0012-040	Deninu K'ue First Nation	V.5, s. 34.5; page(s) 34-22, line(s) 38-41. EISG section 20.5 Comment # Table35	<p>The EIS Guidelines require that BCH describe the potential adverse impacts on treaty rights that have not been mitigated/accommodated as part of the environmental assessment and associated consultations with Aboriginal groups including the “potential adverse impacts” on treaty rights “that may result from the residual and cumulative environmental effects.”</p> <p>The EIS states that “BCH anticipates that after these mitigation and accommodation measures are applied, adverse impacts to Treaty 8 rights would be mitigated or accommodated” and that “no other potential adverse impacts on asserted or established aboriginal and treaty rights have been identified.”</p> <p>In light of our previous comments as the insufficiency of the EIS’s assessment of the potential adverse effects on Treaty rights arising from the Project, this conclusion should be modified, as no mitigation or accommodation measures have been identified in relation to downstream effects on DKFN.</p> <p>Additionally, this section of the EIS attempts to bring forward all previously identified mitigation measures without any analysis as to the relevance of those mitigation measures to mitigate adverse effects on treaty rights. In fact, a number of the mitigation measures contained within these sections may be detrimental to the exercise of treaty rights. The EIS is insufficient without a particularization and justification for the application of mitigation measures to address adverse effects to treaty rights.</p>	<p>The assessment of the potential effects of the Project on the current use of lands and resources for traditional purposes, in Section 19, found that the Project is not expected to have an effect on 17 of the 29 Aboriginal groups, including DKFN. The methodology for the assessment on the potential impacts of the Project on the exercise of treaty rights considered the findings of Section 19, and no finding of impact to the exercise of treaty rights was found for DKFN in Section 34. Since filing the EIS, BC Hydro has received additional traditional land use information from DKFN, which will be reviewed and considered in the Aboriginal Group Supplemental Report.</p> <p>Because no potential effects on current use of lands and resources or the exercise of asserted or established Aboriginal and treaty rights of DKFN, no mitigation or accommodation measures have been identified. With respect to the comment regarding mitigations, please see response to ab_0012-032.</p> <p>Please see Technical Memo: Methodology for the Assessment of the Potential Impacts of the Project on the Exercise of Asserted or Established Aboriginal and Treaty Rights.</p>
ab_0012-041	Deninu K'ue First Nation	V.5, s. 37; page(s) n/a, line(s) n/a. EISG section 23, 20 Comment # Table36	<p>The EIS Guidelines require BCH include an assessment of potential 23, 20 accidents during construction and operation, as well as seismic, flooding and other circumstances that may cause an accident or malfunction.</p> <p>DKFN notes that the EIS does not contain an analysis of the effect of accident or malfunction scenarios on VCs related to aboriginal and treaty rights or the current use of lands and resources for traditional purposes. This is troubling, as certain of the accident scenarios predict significant changes to the downstream</p>	Please see the response to ab_0004-104.

Response to Comments on the Site C Clean Energy Project Environmental Impact Statement, January 25, 2013
Submitted by BC Hydro on May 8th, 2013

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			<p>environment, including the possible destruction of oil and gas pipelines and significant erosion, destruction of vegetation and destruction of habitat for wildlife.</p> <p>In order to assess the potential impacts of the Project on DKFN, BCH must include the assessment of the effects of potential accidents or malfunctions on DKFN.</p>	