



Environmental Assessment Certificate #E14-03 Condition 1 Report #2

CGL4703-CGP-ENV-RP-026

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Revision 1

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NTD – List of Appendices needs to be updated to reflect the following:

- Appendix A: Acronyms and Abbreviations
- Appendix B: TEK Interests and Concerns from the 2019 Field Program
- Appendix C: Summary of Dark House Engagement and Interests and Concerns
- Appendix D: Coastal GasLink Response to LUOS Mitigation Recommendations
- Appendix E: Summary of Key Mitigation for the Aquatic Environment, Vegetation and Wildlife and Wildlife Habitat for the Reduced Technical Boundary
- Appendix F: Potential Effects, Key Mitigation and Potential Residual Effects for the Social Effects Assessment for the Reduced Technical Boundary
- Appendix G: Environmental Assessment Certificate Condition 1 Report #2: Fish and Fish Habitat Technical Data Report #2
- Appendix H: Environmental Assessment Certificate Condition 1 Report #2: Vegetation Technical Data Report #2
- Appendix I: Environmental Assessment Certificate Condition 1 Report #2: Wildlife and Wildlife Habitat Technical Data Report #2

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1.0 INTRODUCTION AND BACKGROUND

On March 11, 2014, Coastal GasLink Pipeline Ltd. (Coastal GasLink) submitted an Application for an Environmental Assessment Certificate (EAC Application) to the British Columbia (BC) Environmental Assessment Office (EAO) for the Coastal GasLink Pipeline Project (the Project). On October 23, 2014, Coastal GasLink received an Environmental Assessment Certificate (EAC) #E14-03 for the Project which includes Schedule B, Table of Conditions. Condition #1 (EAC Condition 1) requires Coastal GasLink to complete and report on biophysical information collected for the Morice River Technical Boundary (Technical Boundary).

The EAC for the Project is located on the BC EAO website at:

<https://projects.eao.gov.bc.ca/p/588511c4aaecd9001b825604/certificates;currentPage=1;pageSize=10;sortBy=+displayName;ms=1568645397921>

A technical boundary refers to constraints on an environmental assessment where there are limitations in the ability to collect field validated information to support the prediction or characterization of effects for a project within a spatial area. In accordance with the approved Application Information Requirements (AIR) for the Project, spatial, temporal, administrative and technical boundaries are discussed in detail for each valued component (VC) in the EAC Application. Coastal GasLink identified a technical boundary in the EAC Application where completion of biophysical field studies to supplement available information and desktop studies was constrained due to blockade activities.

To fulfill the biophysical requirements of EAC Condition 1, Coastal GasLink submitted the following three reports:

- Environmental Assessment Certificate #E14-03 Condition 1 Report #1 (October 30, 2015), hereafter referred to as the 2015 COR1.
- Environmental Assessment Certificate #E14-03 Condition 1 Report #2 (November 19, 2019), hereafter referred to as the 2019 COR2.
- Environmental Assessment Certificate #E14-03 Condition 1 Report #2, hereafter referred to as the 2020 COR2 or ‘this report’.

The 2015 COR1 was submitted to the BC EAO to satisfy EAC Condition 1 for a portion of the Technical Boundary between universal traverse Mercator (UTM) Zone 9U East 577769 North 6000758 and UTM Zone 9U East 594850 North 6008800. Within the 2015 COR1, Coastal GasLink acknowledged that field validation data collection was not complete for all areas within the Morice River Technical Boundary due to ongoing challenges with access. Specifically, fish and fish habitat, vegetation, and wildlife and wildlife habitat were identified as requiring further field data collection.

The 2019 COR2 and 2020 COR2 address the outstanding information requirements for EAC Condition 1 regarding the collection and assessment of additional field data within the reduced Technical Boundary. The reduced Technical Boundary is the area where field data were not previously collected for inclusion in the EAC Application or the 2015 COR1 (Coastal GasLink 2015), and is situated between UTM Zone 9U East 611335 North 6003957 and UTM Zone 9U East 594850 North 6008800.

The purpose of this 2020 COR2 is to fulfill EAC Condition 1 and the outstanding baseline information requirements for the reduced Technical Boundary as well as complete an assessment that verifies the effects assessment conclusions reached in the original EAC Application still apply.

Biophysical field information used to inform this 2020 COR2 was collected during the 2019 field data collection program, and further developed using data collected from previous field programs, existing data sources, and desktop analysis.

1.1 UPDATE TO THE 2020 COR2

Coastal GasLink shared the 2019 COR2 and associated Technical Data Reports (TDRs) to the relevant regulatory authorities and Indigenous groups on November 20, 2019 and submitted the 2019 COR2 to the BC EAO on November 25, 2019. Following receipt of the 2019 COR2, the BC EAO provided the 2019 COR2 to the relevant regulatory agencies and potentially impacted Indigenous groups to seek their feedback. The BC EAO received feedback from the agencies and Indigenous groups in December 2019. The BC EAO then requested additional information for the 2019 COR2, particularly:

- selection of VCs
- consistency of the methodology used to assess particular VCs with the AIR
- incorporation of Aboriginal Traditional Knowledge (ATK)
- how feedback from Indigenous groups had been responded to and addressed.

In response, Coastal GasLink submitted additional information to the BC EAO on January 28, 2020—the ‘Assessment of Updated Traditional Land Use (TLU) Baseline Conditions in the Morice River Technical Boundary’ (Jacobs Memo) and a memo produced by Stantec primarily regarding the biophysical valued components, titled ‘Coastal GasLink Pipeline Project Environmental Assessment Certificate [EAC #E14-03] Condition #1’ (Stantec Memo).

After considering the information received during the review of the 2019 COR2, on February 19, 2020, the BC EAO provided a letter to Coastal GasLink concluding that specific aspects of the 2019 COR2 needed to be updated or addressed to fulfil the requirements of Condition 1. The required revisions are addressed and discussed in this 2020 COR2 and associated TDRs. Based on information and concerns raised by

Dark House to BC EAO and Coastal GasLink, additional engagement activities were undertaken between March 26, 2020, and the time of filing of this updated report in July 2020. The information gathered during this time has been reflected in this version of the report. Coastal GasLink continues to welcome the opportunity to engage with Indigenous groups to better understand timing and approximate locations of activities, to ensure that approved and site-specific mitigation can be effectively implemented to address concerns and reduce impacts.

Abbreviations and acronyms used in this 2020 COR2 are described in Appendix A. Key applicable mitigations for the VCs are presented in Appendix B (mitigation related to TEK), Appendix C (mitigation related to the biophysical VCs) and Appendix D (mitigation related to socio-economic VCs).

1.2 ENVIRONMENTAL ASSESSMENT CERTIFICATE CONDITION 1

EAC Condition 1 states:

For the Morice River Technical Boundary Area between UTM Zone 9U East 611335 North 6003957 and UTM Zone 9U East 577769 North 6000758 (Area), the Holder must provide EAO with:

- TDRs based on field data collected in a manner consistent with the methodology captured in the AIR for EAO's information; and
- a report that either verifies that the effects assessment conclusions reached in the Application are consistent with the information in the TDRs, or updates those effects assessment conclusions based on the new information contained in the TDRs, including any additional mitigation relevant to the Area.

The Holder must share the TDRs and the report with RRA's and Aboriginal Groups that assert territory within the Area.

In order to allow for 60 days review and comment, the Holder must provide the report to EAO no less than 90 days prior to the Holder's planned date to commence Construction in the Area. The Holder must not start Construction in the Area until the report has been approved by EAO. The Holder must implement the mitigation described in the approved report unless otherwise authorized by the RRA.

Figure 1-1 shows the Technical Boundary, as defined in EAC Condition 1, and the reduced Technical Boundary as defined in Section 1.0.

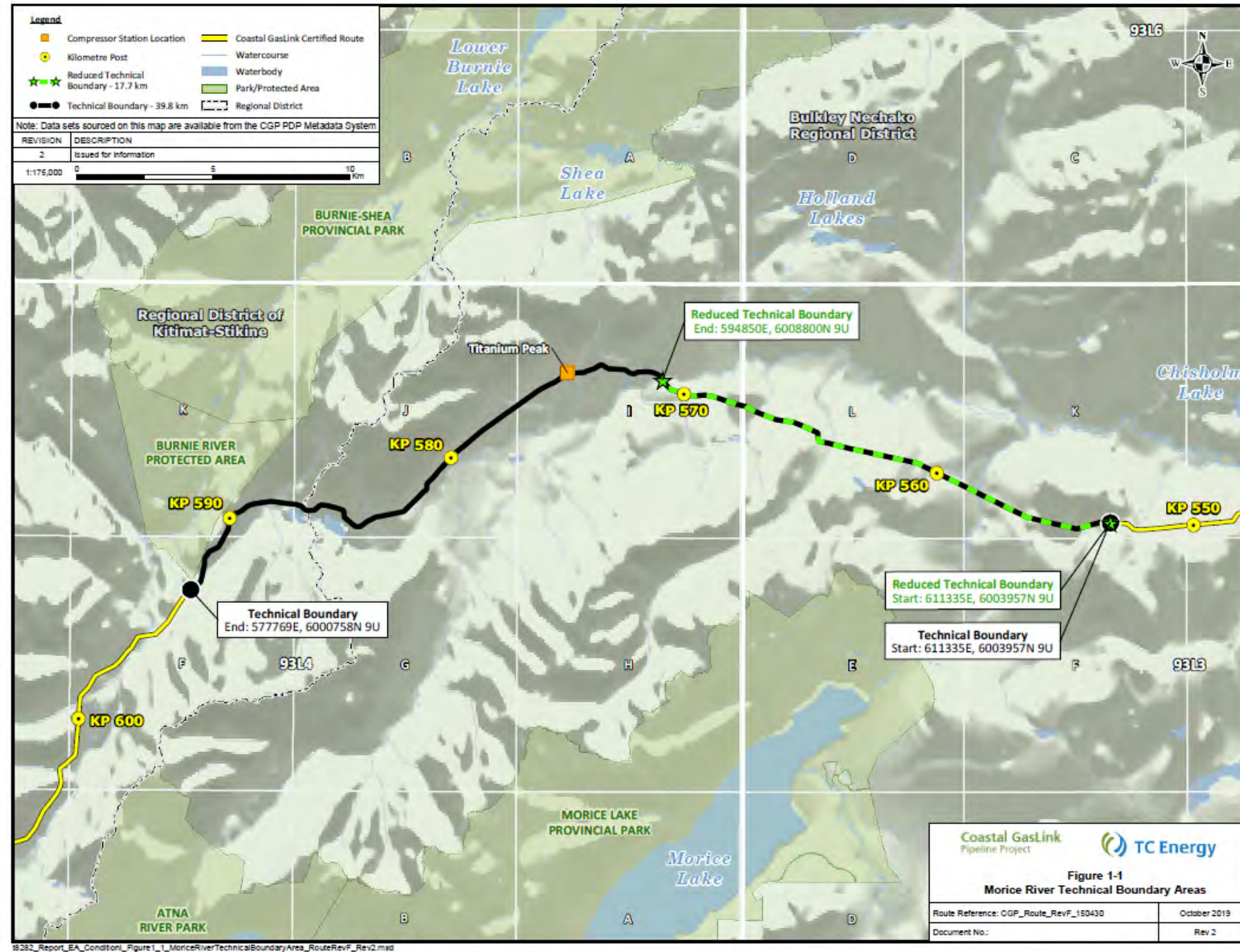


Figure 1-1: Morice River Technical Boundary Areas

1.3 TRADITIONAL ECOLOGICAL KNOWLEDGE

Coastal GasLink offered Indigenous groups with an interest in the reduced Technical Boundary the opportunity to participate in biophysical field investigations and contribute ATK as part of Coastal GasLink's biophysical field investigations in the Technical Boundary in accordance with the Project's AIR. ATK considers both Traditional Use Studies (TUS) and Traditional Ecological Knowledge (TEK). Indigenous groups with an interest in the Project area completed TUS within the reduced Technical Boundary study area; these studies were considered in the EAC Application effects assessment. Some Indigenous groups chose not to conduct TUS for the Project and provided information directly to the BC EAO instead. To satisfy the intent of EAC Condition 1, Coastal GasLink therefore focused on collecting TEK in the reduced Technical Boundary in locations where TEK had not been previously gathered during the 2015 field program. CH2M HILL Canada Limited (Jacobs) was commissioned to facilitate the participation of potentially affected Indigenous groups during the biophysical field work for the Project within the reduced Technical Boundary.

On May 24, 2019, Coastal GasLink sent letters inviting the following Indigenous groups with an interest in the reduced Technical Boundary study area to participate in the baseline field program:

- Dark House;
- Nee-Tahi-Buhn Band;
- Office of the Hereditary Chiefs of the Wet'suwet'en (Office of the Wet'suwet'en);
- Skin Tyee Nation;
- Witset First Nation (previously Moricetown Indian Band); and
- Wet'suwet'en First Nation.

For the 2019 field program within the reduced Technical Boundary, TEK was provided by community members from Witset First Nation, Skin Tyee Nation and Wet'suwet'en First Nation. Participants from Dark House and Office of the Wet'suwet'en were invited to participate through a third-party Indigenous contractor. These participants attended the field studies but did not participate on behalf of the Office of the Wet'suwet'en and Dark House, and they did not provide TEK. Nee-Tahi-Buhn Band chose not to participate in the 2019 field program.

1.3.1 Traditional Ecological Knowledge Field Survey Objectives

Indigenous participation objectives during the biophysical field programs (i.e., the fish and fish habitat field program, the pond-dwelling amphibian survey, and the rare plant vegetation field surveys) were as follows:

- document the TEK of Indigenous participants who chose to share it;
- supplement the field survey design and execution;
- confirm 2019 TEK field program findings align with TEK previously collected (i.e., prior to 2019) as part of the Project;
- identify potential adverse effects of the reduced Technical Boundary on environmental and TEK resources; and
- integrate TEK into mitigation development to manage environmental effects.

Key issues and concerns previously identified by Indigenous groups during preliminary engagement in 2013 and throughout field surveys in 2014, 2015, and 2016 overlap with concerns raised during the 2019 field surveys for the reduced Technical Boundary. Coastal GasLink's responses to the issues and concerns previously raised were submitted in 2013 to Indigenous groups and are available in Section 23 of the original EAC Application submitted in March 2014, as well as in the Aboriginal Consultation Reports that have been filed for the Project. Additional issues or concerns raised during participation on subsequent Project field surveys have been considered in Project planning, including the development of management plans to satisfy the Project's EAC conditions.

Coastal GasLink conducted a comprehensive review of recommended mitigation measures and any interests and concerns raised by each Indigenous group who participated in the 2019 field program for the reduced Technical Boundary, and this report is reflective of this review.

1.3.2 Summary of Participation

Indigenous field survey participation for the reduced Technical Boundary was conducted between July 15 and 20, 2019. Table 1-1 summarizes Indigenous group participation in the fish and fish habitat field program, the pond-dwelling amphibian survey, and the rare plant vegetation field surveys. TEK collected in the field was compiled into a memorandum (results review memos) that was sent to Indigenous groups for review for accuracy and feedback. TEK information collected by Jacobs' facilitators was compiled and provided to communities on the dates outlined in Table 1-1.

Table 1-1: 2019 Indigenous Group Field Survey Participation in the Reduced Technical Boundary

Indigenous Group	Fish and Fish Habitat	Rare Plants	Pond-Dwelling Amphibians	Results Review Memos Sent
Dark House	July 19, 2019	July 18, 2019 July 20, 2019	July 18, 2019 July 20, 2019	No TEK collected
Skin Tyee Nation	July 19, 2019	July 18, 2019 July 20, 2019	July 16, 2019	August 2, 2019
Witset First Nation	July 20, 2019	July 16, 2019	July 18, 2019 July 19, 2019	August 2, 2019
Office of the Wet'suwet'en	July 20, 2019	July 16, 2019	July 16, 2019	No TEK collected
Wet'suwet'en First Nation	July 20, 2019	July 16, 2019	July 18, 2019 July 19, 2019	August 7, 2019
Wet'suwet'en community members attended biophysical field studies, as facilitated through a third-party Indigenous contractor, but did not participate on behalf of Office of the Wet'suwet'en or Dark House.				

1.3.3 Traditional Ecological Knowledge Collection Methods During Field Surveys

Field surveys for TEK collection took place at targeted locations identified by biophysical specialists and at areas of interest, concern or importance identified by Indigenous participants on Crown land within the reduced Technical Boundary and focused on Indigenous experiential knowledge of the land.

The field crew consisted of aquatics, vegetation and wildlife specialists, Indigenous participants and Jacobs facilitators.

Jacobs facilitators accompanied participants during the field surveys to:

- document TEK that Indigenous participants chose to share;
- share information about potential construction techniques;
- describe Project specifications;
- document potential Project effects on environmental resources;
- compile TEK information collected during field surveys into memos to send to Indigenous groups for review to confirm accuracy and completion; and
- where appropriate, confirm that proprietary information was kept in confidence.

During field reconnaissance and TEK collection, an open dialogue between participating community representatives and the Jacobs facilitator occurred. Potential Project-related effects on TEK and TLU within the reduced Technical Boundary, potential effects on environmental resources, potential construction techniques and Project specifications were discussed. Indigenous participants observed and contributed to discussions on Project-related effects on resources within the reduced

Technical Boundary, identified issues and concerns, and discussed mitigation measures to reduce potential adverse Project-related effects associated with the Project's construction, operation, decommissioning and abandonment phases. Information was documented as spoken and reviewed at the end of each field day with the participants to confirm information was accurately recorded.

As outlined in Table 1-1, TEK information collected by Jacobs facilitators was compiled and provided to communities on August 2, 2019 (Skin Tyee Nation and Witset First Nation), and August 7, 2019 (Wet'suwet'en First Nation), so the Indigenous groups could review and validate the information shared during biophysical field surveys. The information shared between Indigenous participants and Jacobs was reviewed by representatives from each Indigenous group because Indigenous groups consider some TEK data and information to be confidential. In situations where Indigenous groups indicated that information that was shared was to be kept in confidence, this information is not detailed in this report, and a high-level summary is provided instead. The specific concerns raised, even if not described in this report, have been considered in mitigation selection to inform ongoing planning of the Project. A comprehensive literature review of available TEK was completed and included in the EAC Application in Section 4.2 of the Aquatics TDR, Section 4.2 of the Vegetation TDR and Section 4.2 of the Wildlife TDR (Appendix 2L of the EAC Application), and it was found that this information continues to be relevant; no additional update to the literature review is provided in this report.

1.3.4 Traditional Ecological Knowledge Findings

To assist in demonstrating Coastal GasLink's commitment to considering TEK in Project planning, construction and operations, high-level summaries of the TEK collected by participating Indigenous groups during the 2019 field program, including interests and concerns that were raised, are presented in each of the relevant topics in Section 2.

Appendix B includes general interests and concerns that were discussed during the 2019 TEK field program as well as Project mitigation, as detailed in the approved management plans and developed in accordance with the Project's EAC conditions. The mitigation provided in Appendix B is relevant and appropriate for the reduced Technical Boundary.

In addition to gathering TEK in the field through engagement with Dark House from March 26 to July 9, 2020, Coastal GasLink has received information about Dark House interests and concerns and has met to discuss construction and mitigation plans. These engagement efforts are included in Appendix C.

1.3.5 The Yex T'sa Wilk'us Land Use and Occupancy Study

Coastal GasLink recognizes that the structure of environmental assessment and definition of individual effects through evaluation of valued components and key indicators as is typically done for environmental assessments in BC (including this assessment), may not represent or align with the integrated nature of effects and how these effects are perceived through the world views of Dark House hereditary leadership and community members. To capture the world views of Dark House hereditary leadership, the Yex T'sa Wilk'us Land Use and Occupancy Study (LUOS; Crossroads, 2020) has been completed to inform Condition 1 by a consultant selected by Dark House. The LUOS describes the effects of the project based on interviews of Dark House hereditary leadership and community members as well as literature review. The LUOS contains traditional knowledge and use information, a description of the effects of the project on Dark House and Grizzly House, as well as their proposed mitigation. The LUOS has been submitted directly to BC EAO by Dark House representatives for consideration of Condition 1. Aspects of the LUOS are considered culturally sensitive and confidential, and the report is therefore not attached to this submission. Coastal GasLink has provided high level summaries of interests and concerns in this COR 2 report. Coastal GasLink has also responded to mitigation recommendations made in the LUOS in Appendix D.

Through discussions with Dark House hereditary leadership, as well as through the review of the LUOS, Coastal Gas Link acknowledges that Dark House has experienced impacts from the Project's construction activities to date. Coastal GasLink is committed to meeting the requirements of applicable environmental laws and regulations, as well as the commitments as outlined in the Environmental Management Plan and other management plans to reduce the impact of the project to extent practical. Coastal GasLink acknowledges that it has had instances of non-compliance thus far on the Project. Coastal GasLink takes these incidents seriously and has taken corrective actions in an effort to ensure that these types of incidents do not occur again. This is an ongoing process and Coastal GasLink is committed to improving in this regard.

1.4 EFFECTS ASSESSMENT METHODS

The methodology applied to the effects assessment in this 2020 COR2 is consistent with the methodology applied in [Section 3.0](#) of the EAC Application. This 2020 COR2 considers the five interconnected and interdependent pillars within the effects assessment: environment, economy, social, heritage and health, consistent with the AIR for the Project (issued May 23, 2013 by the BC EAO).

The additional 2019 field data collected for relevant VCs within the reduced Technical Boundary Area were considered relative to the baseline data presented in the EAC Application submitted and approved in 2014 to determine whether or not

there is a material change to the assessment. Material change is defined as a change to the assessment criteria ratings used to make a determination of significance (i.e., spatial boundary, duration, frequency, reversibility, magnitude and likelihood). This 2020 COR2 applies the same VC-specific methods for identifying the Project Footprint, Local Study Areas (LSAs) and Regional Study Areas (RSAs) as described in [Section 3.0](#) of the EAC Application and the appended TDRs in Appendices E, F and G of this 2020 COR2.

To complete the effects assessment in the EAC Application, Coastal GasLink developed its understanding of baseline conditions using field data, existing, publicly available data as well as habitat models to extrapolate the habitat conditions in the area. Where there was potential for additional biophysical field data to improve the understanding of baseline conditions, supplemental biophysical data was collected during the 2019 field season.

Table 1-2 outlines the VCs assessed in the EAC Application and indicates where there are updates to information provided in sections of the EAC Application as a result of the 2019 field data collection program within the reduced Technical Boundary and new information received since the EAC Application was prepared as of March 2020.

In situations where additional baseline information caused a change to the characterization of residual adverse effects, a determination was made of whether this change would result in any cumulative interactions between potential residual effects of the Project and the residual effects of other projects or activities are likely to occur. This determination would include whether the change in the residual effect of the Project could:

- result in a measurable change in the cumulative effect relative to how it was characterized in the EAC Application, or
- substantially change the characteristics of the cumulative effects.

Table 1-2: Summary of Valued Components where New Information was Collected in the Reduced Technical Boundary

Topic	Valued Component	New Information Collected in the Reduced Technical Boundary as of March 2020	Comment
Geophysical Environment	Soil Capability	No	Baseline data collected in addition to existing publicly available data on soils, terrain and acid rock drainage potential were sufficient to understand baseline conditions in the reduced Technical Boundary, identify appropriate mitigation and predict residual effects and cumulative effects. See Section 2.1 for additional rationale.
	Terrain Integrity	No	
	Acid Rock Drainage	No	
Atmospheric Environment	Acoustic Environment	No	Baseline data collected in addition to existing publicly available data on noise, air quality and greenhouse gas emissions were sufficient to understand baseline conditions in the Technical Boundary, identify appropriate mitigation and predict residual effects and cumulative effects. See Section 2.2 for additional rationale.
	Air Quality	No	
	Greenhouse Gas Emissions	No	
Aquatic Environment	Protection of Recreationally, Commercially and/or Culturally Important Fish and Fish Habitats	Yes	Additional data, including TEK, were collected to understand site-specific baseline information about fish and fish habitat in the reduced Technical Boundary, including information about species of conservation concern.
	Species of Conservation Concern	Yes	
	Surface Water	No	Baseline data collected in addition to existing publicly available data on surface water and groundwater were sufficient to understand baseline conditions in the reduced Technical Boundary, identify appropriate mitigation and predict residual effects and cumulative effects. See Section 2.3 for additional rationale.
	Groundwater	No	

Topic	Valued Component	New Information Collected in the Reduced Technical Boundary as of March 2020	Comment
Vegetation	Species of Concern	Yes	Additional data, including TEK, were collected to understand site-specific baseline information about species and ecological communities of concern in the reduced Technical Boundary. The objectives of sampling were to inform mapping edits, characterize the existing vegetation in the vegetation Regional Study Area (RSA), identify ecological communities at risk, old forests, plant species of concern, traditionally important plant species, and non-native invasive plant species. See Section 2.4.
	Ecological Communities of Concern	Yes	
Wetlands	Wetland Function	No	Existing and desktop data sources that informed the understanding of baseline conditions in relation to wetland function assessed in the EAC Application remains relevant and comparable to the reduced Technical Boundary. No supplemental studies were required. See Section 2.5 for additional rationale.
Wildlife	Wildlife and Wildlife Habitat	Yes	Additional data, including TEK, were collected to understand site-specific baseline information about wildlife and wildlife habitat in the reduced Technical Boundary. See Section 2.5.
Economy	Economy	No	Baseline data collected in addition to existing publicly available data on economy and employment and labour force were sufficient to understand baseline conditions in the reduced Technical Boundary, identify appropriate mitigation and predict residual effects and cumulative effects. See Section 3.0 for additional rationale.
	Employment and Labour Force	No	

Topic	Valued Component	New Information Collected in the Reduced Technical Boundary as of March 2020	Comment
Land and Resource Use	Current Use of Land and Resources	Yes	Additional baseline information has been received since the Project received its EAC, and as a result land uses have been established in the reduced Technical Boundary that have not previously been assessed. See Sections 4.1 and 4.2.
	Domestic Water Supply	Yes	
Community and Regional Infrastructure and Services	Community Utilities and Services	No	Additional baseline information has been received since the Project received its EAC, and as a result land uses have been established in the reduced Technical Boundary that have not previously been assessed for the Transportation Infrastructure and Services and Community Quality of Life VCs. See Sections 4.1 and 4.3.
	Transportation Infrastructure and Services	Yes	
	Community Quality of Life	Yes	
Current Use of Land and Resources for Traditional Purposes	Traditional Land and Resource Use	Yes	Additional TLU and TEK information has been received since the Project received its EAC, and as a result land uses have been established in the reduced Technical Boundary that have not previously been assessed. See Sections 4.1 and 4.4.
	Cultural Sites	Yes	
Heritage Resources	Archaeological Sites	No	Baseline data collected in addition to existing publicly available data on historical, paleontological and architectural sites were sufficient to understand baseline conditions in the reduced Technical Boundary, identify appropriate mitigation and predict residual effects and cumulative effects. Supplemental archaeological studies to support permitting activities are ongoing. There is no predicted change to the Archaeological Sites Effects Assessment as described in the EAC Application. See Section 5.1.
	Historic Sites	No	
	Paleontological Sites	No	
	Architectural Sites	No	

Topic	Valued Component	New Information Collected in the Reduced Technical Boundary as of March 2020	Comment
Health	Human Health	Yes	Additional baseline information has been received since the Project received its EAC, and as a result land uses that may have potential effects on the human health VC have been established in the reduced Technical Boundary that have not previously been assessed. See Section 6.0.
	Ecological Health	No	Baseline data collected in addition to existing publicly available data on human and ecological health were sufficient to understand baseline conditions in the reduced Technical Boundary, identify appropriate mitigation and predict residual effects and cumulative effects. See Section 6.0.

1.5 2019 BIOPHYSICAL DATA COLLECTION METHODS

Field programs to collect validation data completed in the summer of 2019 focused on those VCs for which data collection was previously limited in the reduced Technical Boundary. Additional field data was collected using the methodology in the AIR for the Project that was developed in consultation with relevant regulatory authorities (RRAs) and affected Indigenous groups and was outlined in [Section 3.0](#) of the EAC Application.

The purpose of the field surveys in 2019 was to validate the understanding of baseline conditions, confirm locations where VCs have the potential to interact with the Project and identify any additional appropriate site-specific mitigation to avoid or reduce these potential adverse effects.

In accordance with EAC Condition 1, any changes to the assessment of effects presented in the EAC Application as a result of the additional 2019 field data collection are described in Sections 2.0 to 6.0 of this 2020 COR2.

The additional field data collected in 2019 are presented in the TDRs provided in the following appendices:

- Appendix G: EAC 2020 COR2: Fish and Fish Habitat TDR #2;
- Appendix H: EAC 2020 COR2: Vegetation TDR #2; and
- Appendix I: EAC 2020 COR2: Wildlife and Wildlife Habitat TDR #2.

Baseline conditions for the reduced Technical Boundary are consistent with the conditions identified in the EAC Application for most of the VCs and, as a result, the potential adverse effects are not predicted to be materially different from the effects considered in the EAC Application. Where a change in baseline conditions is identified as a result of the additional field studies or input from Indigenous groups, a summary of these differences is discussed. Potential adverse effects of the Project were identified in the EAC Application. This 2020 COR2 is intended to identify any changes in the baseline conditions and any new potential adverse effects. Baseline conditions and potential adverse effects that are unchanged from the EAC Application are not repeated in this 2020 COR2.

2.0 ENVIRONMENTAL EFFECTS ASSESSMENT

This section describes the updates made to the effects assessment conclusions based on the supplemental information contained in the appended TDRs, including any additional mitigation relevant to the reduced Technical Boundary.

2.1 GEOPHYSICAL ENVIRONMENT

The assessment of potential adverse effects of the Project on the geophysical environment is provided in [Section 5.0](#) of the EAC Application. Existing and desktop data sources that informed the understanding of baseline conditions in relation to the geophysical environment assessed in the EAC Application remains relevant and comparable to the reduced Technical Boundary. No supplemental studies were required. Because the baseline conditions are comparable, and the potential interactions are also comparable, there is no material change to the assessment of potential adverse effects, mitigation or residual effects for the geophysical environment during the construction, operations, decommissioning and abandonment phases of the Project. As a result, significance conclusions identified in the EAC Application regarding the geophysical environment are unchanged.

No additional mitigation is required for the reduced Technical Boundary for potential adverse effects on the geophysical environment. The mitigation to address potential adverse effects on the geophysical environment for the Project that is detailed in the EAC Application as well as the management plans that have been developed in accordance with the EAC conditions for the Project remain relevant and appropriate, including the approved Environmental Management Plan prepared to satisfy Condition 26.

2.2 ATMOSPHERIC ENVIRONMENT

The assessment of potential adverse effects of the Project on the atmospheric environment is provided in [Section 6.0](#) of the EAC Application. Existing and desktop data sources that informed the understanding of baseline conditions in relation to the atmospheric environment assessed in the EAC Application remains relevant and comparable to the reduced Technical Boundary. No supplemental studies were required. Because the baseline conditions are comparable, and the potential interactions are also comparable, there is no material change to the assessment of potential adverse effects, mitigation or residual effects for the atmospheric environment during the construction, operations, decommissioning and abandonment phases of the Project. As a result, significance conclusions identified in the EAC Application regarding the atmospheric environment remain the same.

No additional mitigation is required for the reduced Technical Boundary for potential adverse effects on the atmospheric environment. The mitigation to address potential adverse effects on the atmospheric environment for the Project that is detailed in the EAC Application as well as the management plans that have been developed in accordance with the EAC conditions for the Project remain relevant and appropriate, including the approved Greenhouse Gas Emissions Management Plan prepared to satisfy Condition 3.

2.3 AQUATIC ENVIRONMENT

The assessment of potential adverse effects of the Project on the aquatic environment is provided in Section 7.0 ([Part 1](#) and [Part 2](#)) of the EAC Application.

2.3.1 Fish and Fish Habitat Traditional Ecological Knowledge Findings

This section provides a summary of the TEK collected by participating Indigenous groups during the 2019 fish and fish habitat field program. Skin Tyee Nation, Witset First Nation and Wet'suwet'en First Nation continue to fish in their traditional territories. Fish spawning areas and species that are currently harvested by community members were identified in unnamed tributaries of the Morice River. It was reported that fish populations and their health are of critical importance to the ecosystems overall. Traditional fishing techniques were shared during the field survey. Indigenous participants reported that there is high archaeological potential along the Morice River.

Concerns were raised by participants regarding potential Project effects on fish and fish habitat, possible drinking water contamination during construction, sedimentation, the contingency crossing method at the Morice River and concerns about archaeological potential along the Morice River. Requests were made, including that water sampling take place every two years to confirm water sources are not contaminated and that a watercourse crossing site visit is set up after construction. These concerns are addressed through the implementation of approved management plans for the Project that have been prepared in accordance with the conditions outlined in the EAC E#14-03 for the Project. These include (and are summarized in Appendix B):

- approved Environmental Management Plan prepared to satisfy Condition 26, including the Directional Drilling Procedures and Instream Drilling Mud Release Contingency Plan;
- approved Water Quality Monitoring Plan prepared to satisfy Condition 4, which will be implemented to monitor water quality at watercourse crossings, including the Morice River, Gosnell River and Crystal Creek;
- approved Wildlife and Wildlife Habitat Management Plan prepared to satisfy Condition 14;

- approved Spill Contingency Plan of the approved Environmental Management Plan prepared to satisfy Condition 26;
- approved Heritage Resources Discovery Contingency Plan of the approved Environmental Management Plan prepared to satisfy Condition 26; and
- approved Directional Drilling Procedures and Instream Drilling Mud Release Contingency Plan prepared to satisfy Condition 26.

After construction is complete, Coastal GasLink will also implement its Post-construction Monitoring Program that includes monitoring for sources of sedimentation that could cause water quality effects.

In response to the feedback provided by Indigenous groups, including Dark House, Coastal GasLink will provide the results from water quality monitoring conducted at the Morice River, Gosnell Creek and Crystal Creek during crossing activity to interested Indigenous groups. Coastal GasLink will also offer an opportunity for a site visit to affected Indigenous groups, including Dark House, after construction of the three watercourse crossings are complete.

2.3.2 Aquatic Environment Assessment

The complete results of the desktop assessment and supplemental field program collected for the aquatic environment in the reduced Technical Boundary are provided in the Fish and Fish Habitat TDR #2 (Appendix G). The updated baseline information does not result in a material change to the overall aquatic environment setting considered in the EAC Application. A brief summary of the results from the 2019 fish and fish habitat assessment is provided below.

An updated search of the BC Species and Ecosystems Explorer web utility (BC Ministry of Environment 2015) was searched for all fish species with the potential to occur within the reduced Technical Boundary. An updated search of the Terrain Resource Information Management (TRIM) Watercourse Enhanced Base Map (BC Ministry of Forests, Lands, Natural Resource Operations and Rural Development 2019) was also conducted to update watercourse information in the reduced Technical Boundary. Additional information gathered for the baseline conditions is provided in Appendix G (Fish and Fish Habitat TDR #2).

At the time of the EAC Application, not all watercourses within the Technical Boundary had been assessed; however, fish-bearing status and watercourse classification were inferred through the following:

- from adjacent sample sites and sampling at other locations within the watershed;
- using historical information; and
- conservatively assigning classifications based on professional judgment and map interpretation of watercourse order, catchment area, gradient and other factors.

A comparison of the watercourse classifications that were assigned in the EAC Application and the revised watercourse classifications after field assessments in 2019 in the reduced Technical Boundary are provided in Table 4-1 of the Fish and Fish Habitat TDR #2.

Of the fish bearing watercourses, the net result included one watercourse crossing changing to non-fish bearing and revisions based on field verification of watercourse widths. These results indicate that the classifications presented in the EAC Application were accurate, and where classification changes have occurred, the initial classifications were conservative (i.e., watercourses received a higher classification in the EAC Application than that assigned during the 2019 field assessment). The primary reason for classification changes in fish bearing watercourses was the result of field collected stream measurements. Therefore, for fish bearing watercourses there are no material differences between the baseline information reported in the EAC Application, 2015 COR1 TDR, and the remaining baseline information reported in this 2020 COR2.

As a result of the 2019 baseline studies, which aimed to identify watercourses not present on TRIM, an additional 20 non-fish bearing watercourses were identified. No additional fish bearing watercourses were identified.

Given that the additional information collected is consistent with what was expected in the reduced Technical Boundary, the following VCs and Key Indicators (KIs) as described in Section 7 of the EAC Application continue to be relevant to the reduced Technical Boundary:

- VC Protection of Recreationally, Commercially and/or Culturally Important Fish and Fish Habitat, including KI Species of fish, including their habitats, that are important for recreation, cultural or traditional, use, and commercial fisheries;
- VC Species of Conservation Concern, including KI Species of fish that are provincially or federally-listed, or are considered to be of conservation concern in other planning documents (e.g., regional land use plans and BC Conservation Framework);
- VC Surface water, including KI surface water quality and surface water quantity; and
- VC Groundwater, including KIs groundwater quality and ground water quantity.

Existing and desktop data sources that informed the understanding of baseline conditions in relation to surface water and groundwater assessed in the EAC Application remains relevant and comparable to the reduced Technical Boundary. As a result, no supplemental studies were required for the Surface Water and Groundwater VCs and related KIs.

The direct and indirect Project effects on the Protection of Recreationally, Commercially and/or Culturally Important Fish and Fish Habitat and Species of Conservation Concern VCs continue to apply in the reduced Technical Boundary, including:

- alteration or loss of riparian habitat function;
- alteration or loss of instream habitat;
- increased suspended sediment concentrations in the water column;
- fish mortality and injury associated with the construction, hydrostatic testing of the pipeline, and decommissioning and abandonment;
- disturbance to instream habitat and increased potential for fish mortality or injury due to increased access to fish and fish habitat;
- blockage of fish movements;
- interbasin transfer of aquatic organisms; and
- potential effects on fish species of conservation concern.

Mitigation outlined in the approved management plans that have been developed in accordance with the EAC conditions for the Project remain relevant and appropriate. These include:

- approved Environmental Management Plan prepared to satisfy Condition 26; and
- approved Water Quality Management Plan prepared to satisfy Condition 4.

No mitigation in addition to that required in the EAC E#14-03 is required for the reduced Technical Boundary for potential adverse effects on aquatic environment. Coastal GasLink has invited Indigenous groups, including Dark House, to continue the discussion on site specific mitigation and monitoring beyond Condition 1. For example, Coastal GasLink developed and is implementing the Construction Monitoring and Community Liaison (CMCL) Program. The CMCL Program provides opportunities for Indigenous participation within their traditional territory for the purposes of engaging, observing, recording and reporting on construction activities.

Biophysical field data collected within the reduced Technical Boundary is comparable to the information considered in determining baseline conditions as they relate to the aquatic environment VCs assessed in the EAC Application. Because the baseline conditions are comparable, and the potential interactions are also comparable, there is no material change to the assessment of potential adverse effects, mitigation or residual effects for the aquatic environment during the construction, operations, decommissioning and abandonment phases of the Project. As a result, significance conclusions identified in the EAC Application regarding the aquatic environment remain the same.

Aquatic environment effect pathways and key mitigation measures for the aquatic environment within the reduced Technical Boundary are outlined in Appendix E.

2.4 VEGETATION

The assessment of potential adverse effects of the Project on the Vegetation is provided in [Section 8.0](#) of the EAC Application.

2.4.1 Vegetation Traditional Ecological Knowledge Findings

This section provides a summary of the TEK collected by participating Indigenous groups during the 2019 vegetation field program. Many Indigenous people continue to harvest vegetation resources for sustenance and medicinal uses within their traditional territory. Vegetation that was identified during field surveys continues to be used for traditional purposes; however, specific uses have been kept confidential, and this information is proprietary to the communities. No vegetation-specific concerns were shared with Jacobs by Indigenous participants during the field surveys that warrant additional mitigation relative to the mitigation included in approved management plans that have been developed in accordance with the Project's EAC E#14-03.

Coastal GasLink understands that medicine and berry gathering events will be held out of the Unist'ot'en Healing Centre (UHC), and that these events involve participants to travel to and from the UHC to medicine and berry gathering areas on a daily basis. To ensure everyone's safety, Coastal GasLink welcomes the opportunity to engage with Indigenous groups, including Dark House to better understand timing and approximate locations of activities, to confirm the effective implementation of the Traffic Control Management Plan (Condition 26). Coastal GasLink will also engage with Indigenous groups, including Dark House, regarding the development of the Project's Reclamation Program, including opportunities to incorporate traditionally important plant species.

Dark House has expressed concern about use of pesticides and herbicides on their traditional territory and requested these not be used. Coastal GasLink respects the request that pesticides or herbicides not be used within the traditional territory of Dark House and Grizzly House and will use alternative methods of vegetation control, provided those alternative methods are consistent with the *Integrated Pest Management Act*.

2.4.2 Vegetation Assessment

The complete results of the desktop assessment and supplemental field program for vegetation (i.e., rare plant surveys) in the reduced Technical Boundary are provided in the Vegetation TDR #2 (Appendix H). The updated baseline information does not result in a material change to the overall vegetation setting considered in the

EAC Application. A brief summary of the results from the 2019 vegetation field surveys assessment is provided below.

Baseline data on vegetation resources were collected to characterize the vegetation present in the reduced Technical Boundary in support of the assessment of potential effects on vegetation resources. Key results and findings pertaining to vegetation resources are presented in the Vegetation TDR #2 for each of the spatial boundaries of the reduced Technical Boundary; however, the LSA findings represents the area where direct and indirect effects on vegetation resources are most likely to occur.

These findings are:

- most of the LSA is covered by upland forest, more than 80% of upland forest refer to the zonal hybrid white spruce/huckleberry association;
- wetlands cover 13% of the LSA and 13% of the RSA in the reduced Technical Boundary;
- one red-listed and four blue-listed ecological communities at risk were identified in the reduced Technical Boundary area, they cover 1.7% of the LSA and 1.9% of the RSA in the reduced Technical Boundary;
- no plant species at risk were identified within the LSA and RSA in the reduced Technical Boundary during field surveys; including the 2019 rare plant survey; and
- no invasive species were identified within the vegetation LSA or RSA of the reduced Technical Boundary during 2019 field studies.

Updated desktop reviews for ecological communities at risk and plant species at risk that could occur in the reduced Technical Boundary were conducted. A total of 11 ecological communities at risk were identified by the British Columbia Conservation Data Centre (BC CDC) within the reduced Technical Boundary (BC CDC 2019) and 111 potential plants with a status of Red or Blue were identified within the reduced Technical Boundary. Of these 111 species, 1 species was listed on Schedule 1 of the *Species at Risk Act* (SARA) – whitebark pine (*Pinus albicaulis*) (BC CDC 2019).

Given that the additional information collected is consistent with what was expected in the reduced Technical Boundary, the following VCs and Key Indicators (KIs) as described in Section 8.0 of the EAC Application continue to be relevant to the reduced Technical Boundary:

- VC Species of Concern, including KIs Plant species at risk, and traditionally important plant species (as identified by Indigenous groups); and
- VC Ecological communities of concern, including KIs native vegetation communities and ecological communities at risk.

The direct and indirect Project effects on vegetation continue to apply in the reduced Technical Boundary, including:

- alteration or loss of native vegetation communities, including locally relevant indicators through clearing and maintenance of an earlier seral stage;
- alteration of native vegetation communities, including locally relevant indicators, through the introduction or spread of invasive plants; and
- alteration or loss of native vegetation communities, including locally relevant indicators, by the introduction or spread of forest pests.

Mitigation outlined in the approved management plans that have been developed in accordance with the EAC E#14-03 conditions for the Project remain relevant and appropriate. These include:

- approved Environmental Management Plan prepared to satisfy Condition 26;
- approved Invasive Plant Management Plan prepared to satisfy Condition 16; and
- approved Red- and Blue-Listed Plants and Ecological Communities Survey and Mitigation Plan prepared to satisfy Condition 17.

In addition, Coastal GasLink is also adhering to the requirements of the following vegetation conditions in EAC E#14-03:

- Condition 21, requiring Coastal GasLink to enter into an agreement with FLNR and OGC to develop and implement a Timber Salvage Strategy.

No additional mitigation is required for the reduced Technical Boundary for potential adverse effects on vegetation. Coastal GasLink has invited Indigenous groups, including Dark House, to continue the discussion on site specific mitigation and monitoring beyond Condition 1. For example, Coastal GasLink developed and is implementing the CMCL Program. The CMCL Program provides opportunities for Indigenous participation within their traditional territory for the purposes of engaging, observing, recording and reporting on construction activities.

Biophysical field data collected within the reduced Technical Boundary is comparable to the information considered in determining baseline conditions as they relate to the vegetation VCs assessed in the EAC Application. Because the baseline conditions are comparable, and the potential interactions are also comparable, there is no material change to the assessment of potential adverse effects, mitigation or residual effects for the Vegetation VCs during the construction, operations, decommissioning and abandonment phases of the Project. As a result, significance conclusions identified in the EAC Application regarding the Vegetation VCs remain the same.

Vegetation effects pathways and key mitigation for vegetation within the reduced Technical Boundary are outlined in Appendix E.

2.5 WETLANDS

The assessment of potential adverse effects of the Project on wetlands is provided in [Section 9.0](#) of the EAC Application. The 2015 Wetland TDR prepared as part of the Condition 1 Report identifies the location and type of wetlands within the reduced Technical Boundary study area and provides a summary of their ecological functions. As indicated in the 2015 Wetland TDR, these results are based on the Terrestrial Ecosystem Mapping (TEM) product produced for the entire route (including the reduced Technical Boundary), and surpassed provincial Survey Intensity Level 4 (SiL 4) standards. The TEM was validated for reliability through field surveys completed both within and outside the reduced Technical Boundary. As stated in the 2015 Vegetation TDR for the Condition 1 Report, the subset of the field survey data presented in the reduced Technical Boundary was weighted more towards detailed plots, rather than visual observations. In other words, more quantitative data were collected in the reduced Technical Boundary for the Condition 1 Report submission than is required to meet SiL 4 standards. As a result, no additional field work was required in 2019 to verify the TEM within the reduced Technical Boundary study areas. The TEM for the entire route has been produced in accordance with standards cited in the AIR for the EAC Application.

Since existing and desktop data sources that informed understanding of baseline conditions in relation to wetlands assessed for the 2015 COR1 for the Technical Boundary are relevant and comparable to conditions in the reduced Technical Boundary, no supplemental studies were required. Because the baseline conditions are comparable, and the potential interactions are also comparable, there is no material change to the assessment of potential adverse effects, mitigation or residual effects for wetlands during the construction, operations, decommissioning and abandonment phases of the Project. As a result, significance conclusions identified in the EAC Application and 2015 COR1 regarding wetlands remain the same.

No additional mitigation is required for the reduced Technical Boundary for potential adverse effects on wetlands. The mitigation to address potential adverse effects on the wetlands for the Project that is detailed in the EAC Application as well as the management plans that have been developed in accordance with the EAC conditions for the Project remain relevant and appropriate, including the approved Wetlands Management Plan developed to satisfy Condition 6. Coastal GasLink has invited Indigenous groups, including Dark House, to continue the discussion on site specific mitigation and monitoring beyond Condition 1. For example, Coastal GasLink developed and implemented the CMCL Program. The CMCL Program provides opportunities for Indigenous participation within their traditional territory for the purposes of engaging, observing, recording and reporting on construction activities.

2.6 WILDLIFE AND WILDLIFE HABITAT

The assessment of potential adverse effects of the Project on wildlife is provided in Section 10.0 ([Part 1](#) and [Part 2](#)) of the EAC Application.

2.6.1 Wildlife Traditional Ecological Knowledge Findings

This section provides a summary of the TEK collected by participating Indigenous groups during the 2019 wildlife field program. Several wildlife signs and features were identified by Indigenous participants during field surveys. Indigenous participants shared that traditional activities such as hunting and trapping are still practiced in communities. Harvested resources are used for a variety of traditional purposes, including sustenance, clothing, medicine and in traditional celebrations and ceremonies. Indigenous participants shared knowledge about animal life cycles and how certain animal populations can fluctuate based on the food available during certain seasons. It was noted that signs such as fur thickness and fat content are used by Indigenous harvesters to predict the ideal seasons to harvest specific animal species.

Indigenous participants shared information about traditional uses for resources harvested while hunting and trapping, including food storage, clothing, tools and structures.

Wildlife habitat was identified during field surveys based on the vegetation available for wildlife to eat, the proximity to a water source and vegetation coverage in the area.

The importance of wetlands for water quality, water filtration and other ecological functions was also discussed during the wildlife field surveys.

Concerns were raised by participants regarding potential Project effects on wildlife and wildlife habitat, including disruption of wildlife movement and displacement of wildlife; effects to moose population health; disturbance to calving areas, specifically wetlands in the spring; cumulative effects; increased access; sensory effects on wildlife; and effects on wetlands. These concerns are addressed through the implementation of approved management plans for the Project that have been prepared in accordance with the conditions outlined in the EAC E#14-03 for the Project. These include (and are summarized in Appendix B):

- approved Wildlife and Wildlife Habitat Management Plan prepared to satisfy Condition 14;
- approved Traffic Control Management Plan of the approved Environmental Management Plan prepared to satisfy Condition 26;
- approved Access Control Management Plan prepared to satisfy Condition 15;
- approved Grizzly Bear Mitigation and Monitoring Plan prepared to satisfy Condition 7;

- approved Caribou Mitigation and Monitoring Plan prepared to satisfy Condition 10;
- approved Wetlands Management Plan prepared to satisfy Condition 6; and
- approved Spill Contingency Plan of the approved Environmental Management Plan prepared to satisfy Condition 26.

Coastal GasLink understands that hunting and trapping camps will be held out of the UHC. To ensure everyone's safety, Coastal GasLink welcomes the opportunity to engage with Indigenous groups, including Dark House to better understand timing and approximate locations of activities, to confirm the effective implementation of the Traffic Control Management Plan (Condition 22).

Coastal GasLink continues to offer opportunities for participation in the CMCL Program. The CMCL Program provides opportunities for Indigenous groups to monitor construction activities and report their observations back to their communities.

2.6.2 Wildlife and Wildlife Habitat Assessment

The complete results of the desktop assessment and supplemental field program for wildlife and wildlife habitat in the reduced Technical Boundary are provided in the Wildlife and Wildlife Habitat TDR #2 (Appendix I). The updated baseline information does not result in a material change to the overall wildlife and wildlife habitat setting considered in the EAC Application. A brief summary of the results of aerial nest, breeding bird, and pond-dwelling amphibian surveys is provided below.

During the wildlife surveys, two species of conservation concern were detected: olive-sided flycatcher (*Contopus cooperi*) and western toad (*Anaxyrus boreas*). Olive-sided flycatcher is designated as Threatened under Schedule 1 of the SARA and is provincially Blue-listed. Western toad is designated as Special Concern under Schedule 1 of the SARA and is provincially Yellow-listed (BC CDC 2019). No stick nests were detected during the aerial survey. The locations of wetlands where western toads were observed will be managed during construction.

Given that the additional information collected is consistent with what was expected in the reduced Technical Boundary, the following KIs as described in Section 10 of the EAC Application continue to be relevant to the reduced Technical Boundary:

- Grizzly bear
- Woodland caribou
- Moose
- Bats
- Pond-dwelling amphibians
- Fisher
- Early seral forest birds
- Wetland bird community
- Grass/shrub land birds
- Rusty blackbird

- Western toad
- Mature/old seral forest birds
- Mountain goat
- Marten
- Common nighthawk
- Northern goshawk (interior subspecies)
- Band-tailed pigeon
- Western screech-owl

The direct and indirect Project effects on wildlife and wildlife habitat continue to apply in the reduced Technical Boundary, including:

- change in habitat suitability and effectiveness;
- change in movement; and
- change in mortality risk.

Mitigation outlined in the approved management plans that have been developed in accordance with the EAC E#14-03 conditions for the Project remain relevant and appropriate. These include:

- approved Environmental Management Plan prepared to satisfy Condition 26;
- approved Wildlife and Wildlife Habitat Management Plan prepared to satisfy Condition 14;
- approved Access Control Management Plan prepared to satisfy Condition 15;
- approved Grizzly Bear Mitigation and Monitoring Plan prepared to satisfy Condition 7;
- approved Caribou Mitigation and Monitoring Plan prepared to satisfy Condition 10;
- approved Wildlife Species of Concern Discovery Contingency Plan of the approved Environmental Management Plan prepared to satisfy Condition 26; and
- approved Human Wildlife Conflict Management Plan prepared to satisfy Condition 9.

In addition, Coastal GasLink is also adhering to the requirements of the following wildlife and wildlife habitat conditions in EAC E#14-03:

- Condition 8, requiring Coastal GasLink to enter into an agreement with FLNR (Grizzly Bear Agreement) that sets out terms for Coastal GasLink's participation in a Grizzly Bear Program that supports the conservation and management of regional grizzly bear populations;
- Condition 11, requiring Coastal GasLink to enter into an agreement with FLNR (Caribou Agreement) that sets out terms for Coastal GasLink's participation in a Caribou Program that supports the recovery, conservation and management of caribou;

- Condition 12, that specifies timing windows and separation distances from sensitive wildlife habitats for helicopter and fixed-wing flights over ungulate winter ranges and wildlife habitat areas in the certified pipeline corridor; and
- Condition 25, requiring Coastal GasLink to develop a No-Hunting, No-Trapping, No-Fishing and No-Plant Gathering Policy for Coastal GasLink's employees and contractors during work hours.

No mitigation in addition to that required in the EAC E#14-03 is required for the reduced Technical Boundary for potential adverse effects on wildlife and wildlife habitat. Coastal GasLink has invited Indigenous groups, including Dark House, to continue the discussion on site specific mitigation and monitoring beyond Condition 1. For example, Coastal GasLink developed and implemented the CMCL Program. The CMCL Program provides opportunities for Indigenous participation within their traditional territory for the purposes of engaging, observing, recording and reporting on construction activities.

Biophysical field data collected within the reduced Technical Boundary is comparable to the information considered in determining baseline conditions as it relates to the Wildlife VC in the EAC Application. Because the baseline setting is comparable, and the potential interactions are also comparable, there is no material change to the assessment of potential adverse effects, mitigation or residual effects for wildlife and wildlife habitat during the construction, operations, decommissioning and abandonment phases of the Project. As a result, significance conclusions identified in the EAC Application regarding wildlife and wildlife habitat remain the same.

Wildlife effect pathways and key mitigation for wildlife and wildlife habitat within the reduced Technical Boundary are outlined in Appendix E.

3.0 ECONOMIC EFFECTS ASSESSMENT

This section describes whether additional data collected in the reduced Technical Boundary led to any material change to the assessment of potential adverse effects on the economy described in the EAC Application.

3.1 ECONOMY AND EMPLOYMENT AND LABOUR FORCE

The assessment of potential adverse effects of the Project on the economic environment is provided in [Section 12.0](#) of the EAC Application. Existing and desktop data sources that informed the understanding of baseline conditions in relation to economy and employment and labour force assessed in the EAC Application remains relevant and comparable to the reduced Technical Boundary (Regional District of Bulkley-Nechako [RDBN] 2019). No supplemental studies were required. Because the baseline conditions are comparable, and the potential interactions are also comparable, there is no material change to the assessment of potential adverse effects, mitigation or residual effects for economy and employment and labour force during the construction, operations, decommissioning and abandonment phases of the Project. As a result, significance conclusions identified in the EAC Application regarding economy and employment and labour force remain the same.

No additional mitigation is required for the reduced Technical Boundary for potential adverse effects on the economy and employment and labour force. The mitigation to address potential adverse effects on economy and employment and labour force for the Project that is detailed in the EAC Application as well as the management plans that have been developed in accordance with the EAC conditions for the Project remain relevant and appropriate, including the approved Social and Economic Effects Management Plan prepared to satisfy Condition 24.

The assessment of potential adverse effects of the Project on economy is completed at a regional economic scale as defined in the AIR for the Project and does not take into account individual business operations. Coastal GasLink recognizes that Dark House has concerns about the potential effects of the Project on the business operations of the UHC. Coastal GasLink remains committed to discussing the scope of these effects and seeking mutually agreeable mitigation or alternative measures to reduce the magnitude of the effects.

4.0 SOCIAL EFFECTS ASSESSMENT

This section describes whether additional data collected in the reduced Technical Boundary led to any material change to the assessment of potential adverse social effects described in the EAC Application.

Since the Project received its EAC, the activities at the UHC have evolved, and as a result, additional baseline information is provided on the UHC and land uses have been established in the reduced Technical Boundary that have not previously been assessed. The potential effects of the Project on the UHC are addressed in the Land and Resource Use Section (Section 4.2), Community and Regional Infrastructure and Services Section (Section 4.3), Traditional Land and Resource Use Section (Section 4.4) and the Health Effects Assessment (Section 6.2).

4.1 UPDATED BASELINE INFORMATION

Dark House members and leadership operate the UHC, which is located on the shores of the Morice River (Wedzin Kwah), a tributary to the Skeena and Bulkley Rivers in northwest BC (Unist'ot'en Camp n.d.). The UHC is approximately one kilometre downstream of where the Project crosses the Morice River.

According to the Unist'ot'en website (Unist'ot'en Camp 2017) and UHC Program Plan 2020-2021 as provided by Dark House, the UHC provides year-round holistic healing and support programs for Indigenous individuals, families and communities across the Northwest region of BC through programs using traditional teachings and land-based wellness practices. Some anticipated outcomes and benefits as discussed in the UHC Program Plan 2020-2021 include, but are not limited to, an increased connection to land and culture; an increased pride and identification with cultural heritage; an improved spiritual, emotional, mental and physical wellness; increased skills in self-reliance; increased intergenerational knowledge transfer and a promotion of self-determination.

Based on the UHC Program Plan 2020-2021, the UHC includes the following infrastructure:

- a healing lodge that accommodates 15-20 individuals; equipped with counselling rooms, commercial kitchen, dining hall, workshop rooms, three bathrooms, office space, a medical room, sweat lodge, and smoke house;
- a bunkhouse which accommodates 15-20 individuals;
- a traditional pit house that can accommodate around 15 individuals;
- a program coordinator cabin next to the healing lodge; and
- two additional cabins important for local traditional sites and activities.

Future planned growth includes a Unist'ot'en Long House, an Elder Residence and satellite cabins. The Long House is projected to begin construction in spring 2022 and will be used for traditional ceremonial space on the *Yintah*, the combined importance of the land, the traditional activities on the land, and the emotional and spiritual connection to the land. The Elder residence will host elders for extended stays. The satellite cabins (potentially eight in total) will support participants as they engage with the land and develop traditional skills.

According to the UHC Program Plan 2020-2021, a number of wellness camps are planned for 2020 and 2021 and include an art camp, medicine harvesting camp, berry picking camp, hunting camp, trapping camp, grief and loss healing circle and aftercare programs.

4.2 LAND AND RESOURCE USE

The assessment of potential adverse effects of the Project on land and resource use is provided in [Section 14.0](#) of the EAC Application. Existing and desktop data sources that informed the understanding of baseline conditions in relation to land and resource use assessed in the EAC Application remains relevant and comparable to the reduced Technical Boundary (BC Parks 2019, RDBN 2011, Statistics Canada 2017). However, the potential effects of the Project on the UHC are new to the assessment of the Land and Resource Use VCs and are discussed below.

4.2.1 Potential Adverse Effects, Mitigation, and Potential Residual Effects

The following VCs and KIs as described in [Section 14.0](#) of the EAC Application continue to be relevant to the reduced Technical Boundary:

- VC Current Use of Land and Resources, including KIs of human habitat, hunting, fishing and gathering, trapping and recreational use; and
- VC Domestic Water Supply, including KIs domestic water supply quantity and quality.

The direct and indirect Project effects on the Current Use of Land and Resources and Domestic Water Supply VCs continue to apply in the reduced Technical Boundary, including:

- disruption of trail use;
- change in access to recreational areas;
- disruption of hunting and fishing activities; and
- alteration of domestic water supply quality and quantity.

Potential adverse effects, approved mitigation and potential residual effects of the Project on the UHC associated with the Project's construction, operations,

decommissioning and abandonment for the Land and Resource Use VC are identified in Appendix F. Mitigation outlined in the approved management plans that have been developed in accordance with the EAC E#14-03 conditions for the Project remain relevant and appropriate. These are listed in Appendix F where relevant and include an approved Environmental Management Plan prepared to satisfy Condition 26, which includes the approved Traffic Control Management Plan and approved Access Control Management Plan.

Site-specific mitigation to address potential effects of the Project on the UHC is also included in Appendix F and summarized in the discussions in Section 4.2.2.

4.2.2 Characterization of Potential Residual Effects

This section provides a summary of the characterization of potential residual adverse effects of the Project on the UHC in relation to land and resource use. The rationale used to characterize each of the residual adverse effects is also provided.

Disruption of Trail Use

The Project will be located in the vicinity of the UHC where community members and guests may use non-designated trails for recreational opportunities. This has the potential to lead to access disruptions on trails near the UHC during construction (anticipated to be complete in 2022). As provided in Appendix F, mitigation includes distributing construction schedules, maps and other relevant information about anticipated trail, road and area closures to Indigenous groups, government agencies, community representatives, recreation groups and potential user groups to inform them of the presence of construction activity and potential access restrictions and noise disturbance in recreational areas. Signage will be used on access roads and trailheads to inform users of construction activity and potential access restrictions. Coastal GasLink continues to offer opportunities for participation in the CMCL Program. The CMCL Program provides opportunities for Indigenous groups to monitor construction activities and report their observations back to their communities.

A summary of the rationale for the effect characterization on the effect of disruption of trail use is provided below:

- Context: The Project will be located in the vicinity of the UHC where community members and guests may use non-designated trails for recreational opportunities.
- Spatial boundary: Land and Resource Use LSA – construction may cause disturbance of trail use for recreation users in the Land and Resource Use LSA.
- Duration: short-term – the disturbance of trails will occur during the construction phase.

- Frequency: isolated – the disturbance of trails is confined to the construction phase.
- Reversibility: short-term – the disturbance of trails is limited to the construction phase.
- Magnitude: low – the proposed mitigation for construction reduces the potential adverse effect to a point where there is no effect on the social environment beyond that of an inconvenience.
- Likelihood: high – the route will likely disrupt trail use in select areas.
- Determination of Significance and Confidence: Not significant and moderate confidence.

Determination of Need to Update Cumulative Effects Assessment

Although the residual effect has been updated to consider additional baseline information, the analysis has determined that there are no changes to the characterization of the potential residual adverse effect of disruption of trail use relative to the EAC Application. The EAC Application also considered a number of large projects proposed at the time that would have interacted with the Project, and are no longer being pursued. As a result, the cumulative effects assessment presented in the EAC Application continues to be valid and is considered conservative in nature.

Change in Access to Recreational Areas

The Project will be located in the vicinity of the UHC where recreational activities occur. Some road use restrictions may be put in place to ensure safety during construction which has the potential to lead to access disruptions to recreational areas and trails. Mitigation includes distributing construction schedules, maps and other relevant information about anticipated trail, road and area closures to Indigenous groups, government agencies, community representatives, recreation groups, and potential user groups to inform them of the presence of construction activity and potential access restrictions in recreational areas. Coastal GasLink will implement a Traffic Control Management Plan, use flaggers to alert drivers of construction activity, install signage on access points, use multi-passenger vehicles to transport workers to and from construction workforce accommodations, restrict vehicular traffic to approved routes, and mandate that construction personnel obey traffic, road-use and safety laws. The Project's operations phase is not expected to disrupt access to recreational areas.

A summary of the rationale for the effect characterization on the effect of a change in access to recreational areas is provided below:

- Context: The Project will be located in the vicinity of the UHC where recreational activities occur.

- Spatial boundary: Land and Resource Use LSA – construction of the route may cause a disruption in access to recreational areas in the Land and Resource Use LSA.
- Duration: short-term – the change in access may occur during the construction phase.
- Frequency: isolated – the change in access is confined to the construction phase.
- Reversibility: short-term – the change in access is limited to the construction phase.
- Magnitude: low – the proposed mitigation for construction reduces the potential adverse effect to a point where there is no effect on the social environment beyond that of an inconvenience.
- Likelihood: high – the Project is likely to change the access to certain recreational areas.
- Determination of Significance and Confidence: Not significant and moderate confidence.

Determination of Need to Update Cumulative Effects Assessment

Although the residual effect has been updated to consider additional baseline information, the analysis has determined that there are no changes to the characterization of the potential residual adverse effect of change in access to recreational areas relative to the EAC Application. The EAC Application also considered a number of large projects proposed at the time that would have interacted with the Project, and are no longer being pursued. As a result, the cumulative effects assessment presented in the EAC Application continues to be valid and is considered conservative in nature.

Disruption of Hunting and Fishing Activities

The Project will be located in the vicinity of the UHC, where there is a long history of recreational resource activity including hunting and fishing. Construction activities have the potential to alter access to specific areas and affect the wildlife species targeted by hunters. Coastal GasLink will reduce the amount of land disturbance by using previously disturbed areas for stockpiles and temporary workforce accommodation sites and, where appropriate, use existing roads and disturbances for access as much as practical. Project personnel will not be permitted to hunt, trap, fish or gather plants on any Project lands, including ROWs, temporary working space, Coastal GasLink controlled access roads, or workforce accommodations. Project personnel will not be permitted to hunt, trap, fish or gather plants during working hours. Coastal GasLink will implement the Access Control Management Plan, including access control measures (e.g., signage, road closures, restrictions, access control structures, vegetation screens) to reduce unauthorized motorized access. Once

operational, the buried pipeline will not affect hunting and fishing activities. Coastal GasLink looks forward to ongoing engagement with community members and staff of the UHC to ensure approved and site-specific mitigations can be effectively implemented.

A summary of the rationale for the effect characterization on the effect of a disruption of hunting and fishing activities is provided below:

- Context: The Project will be located in regions that have a long history of recreational resource activity, including in the vicinity of the UHC.
- Spatial boundary: Land and Resource Use LSA – construction activities could affect hunting and fishing areas in the Land and Resource Use LSA.
- Duration: short-term – the disruption of hunting and fishing will occur during the construction phase.
- Frequency: isolated – the disruption of hunting and fishing activities will be confined to the construction phase.
- Reversibility: short-term – the disruption of hunting and fishing activities is limited to the construction phase.
- Magnitude: medium – implementing the proposed mitigation is expected to effectively reduce, but not eliminate, the potential adverse effects on hunting and fishing activities during construction, and will result in a moderate modification in the social environment.
- Likelihood: high – the Project route is likely to disrupt hunting and fishing activities during construction.
- Determination of Significance and Confidence: Not significant and moderate confidence.

Determination of Need to Update Cumulative Effects Assessment

Although the residual effect has been updated to consider additional baseline information, the analysis has determined that there are no changes to the characterization of the potential residual adverse effect of disruption of hunting and fishing activities relative to the EAC Application. The EAC Application also considered a number of large projects proposed at the time, that would have interacted with the Project, and are no longer being pursued. As a result, the cumulative effects assessment presented in the EAC Application continues to be valid and is considered conservative in nature.

Alteration of domestic water supply quality and quantity

The Morice River and Gosnell Creek are a source of water for users in the area and the UHC is located approximately one kilometre downstream of the proposed Morice River pipeline crossing. If a trenchless Morice River crossing is not technically

feasible, the mitigation for the Project that is detailed in the management plans that have been developed in accordance with the EAC Conditions for the Project remain relevant and applicable. In the unlikely event that water quality is adversely affected during the construction period, Coastal GasLink will ensure that potable water is available to residents adversely affected. Water quality monitoring will be conducted during the Morice River crossing construction, and any exceedance of the relevant guidelines will be reported to the appropriate regulatory agencies. Water quality monitoring will be conducted during implementation of instream works in accordance with the approved Water Quality Monitoring Plan (i.e., Condition 4). The duration of the potential adverse effect is considered to be immediate to short-term (occurring during construction of a watercourse crossing (e.g., the Morice River), which may take less than two days (i.e., immediate) or more than two days but less than a year (i.e., short-term) at a given location). The frequency is considered to be isolated (i.e., during the construction phase), reversible in the immediate to short-term (since Total Suspended Solids (TSS) levels will decrease in less than two days after construction at flowing watercourses but the potential residual effect will not be reversed until dry or frozen to bottom open-cut crossings first become inundated with water following construction). The magnitude of the residual effect will depend upon the size and flow rate of the watercourse (e.g., the Morice River) and the construction method used - the magnitude of the potential residual effect may be high within the sediment plume but will be of low magnitude elsewhere within the Zone of Influence.

Coastal GasLink is committed to constructing the crossing of the Wedzin Kwa (Morice River) and Talbits Kwa (Gosnell Creek) with no residual impacts to water quality. Coastal GasLink has engaged Dark House and their representatives in regard to watercourse crossing methods and will continue to engage regarding the crossing plan for the Wedzin Kwa (Morice River) and Talbits Kwa (Gosnell Creek) as it is being finalized. In response to the feedback provided by Indigenous groups, including Dark House, Coastal GasLink will provide the results from water quality monitoring conducted at the Morice River, Gosnell Creek and Crystal Creek during crossing activity to interested Indigenous groups. Coastal GasLink continues to offer opportunities for participation in the CMCL Program. The CMCL Program provides opportunities for Indigenous groups to monitor construction activities and report their observations back to their communities.

A summary of the rationale for the effect characterization on the effect of alteration of domestic water supply quality and quantity is provided below:

- Context: The Morice River and Gosnell Creek is a potential source of potable water for users in the area.
- Spatial boundary: Aquatic Environment LSA – suspended sediments released during construction activities will be carried downstream until they disperse or naturally settle out.

- Duration: immediate to short-term – the construction of a watercourse crossing (e.g., the Morice River), which may take less than two days (i.e., immediate) or more than two days but less than a year (i.e., short-term) at a given location.
- Frequency: isolated – since the event causing the release of suspended sediments into surface water is confined to a specified phase (i.e., construction phase) of the assessment period.
- Reversibility: immediate to short-term – since TSS levels will decrease in less than two days after construction at flowing watercourses but the potential residual effect will not be reversed until dry or frozen to bottom open-cut crossings first become inundated with water following construction.
- Magnitude: low to high – depending upon the size and flow rate of the watercourse (e.g., the Morice River) and the construction method used, the magnitude of the potential residual effect may be high within the sediment plume but will be of low magnitude elsewhere within the Zone of Influence.
- Likelihood: high – sedimentation is expected to cause a reduction in surface water quality at all trenched (i.e., isolated or open-cut) watercourse crossings.
- Determination of Significance and Confidence: Not significant and high confidence.

Determination of Need to Update Cumulative Effects Assessment

Although the residual effect has been updated to consider additional baseline information, the analysis determined that there are no changes to the characterization of the potential residual adverse effect of alteration of domestic water supply quality and quantity relative to the EAC Application. The EAC Application also considered a number of large projects proposed at the time, that would have interacted with the Project, and are no longer being pursued. As a result, the cumulative effects assessment presented in the EAC Application continues to be valid and is considered conservative in nature.

Conclusion

While approved mitigation that has been prepared to satisfy EAC E#14-03 is relevant and applicable to the reduced Technical Boundary for potential adverse effects on land and resource use, Coastal GasLink is committed to implementing the additional mitigation outlined in Appendices D, E and F, as well as continued discussion about site specific implementation of mitigation relevant to the UHC with Dark House. Coastal GasLink looks forward to ongoing engagement with community members and staff of the UHC to ensure mitigations can be effectively implemented. Coastal GasLink confirms that consideration of the UHC using available information in accordance with the scope for environmental assessment presented in the AIR does not alter the effects assessment conclusions nor cumulative effects conclusions presented in the EAC Application for land and resource use. The cumulative effects

assessment for land and resource use presented in the EAC application is considered conservative as it contemplated numerous large pipeline projects and other activities in the area that are no longer being pursued.

4.3 COMMUNITY AND REGIONAL INFRASTRUCTURE AND SERVICES

The assessment of potential adverse effects of the Project on community and regional infrastructure and services is provided in Section 15.0 ([Part 1](#) and [Part 2](#)) of the EAC Application. Existing and desktop data sources that informed understanding of baseline conditions in relation to community and regional infrastructure and services assessed in the EAC Application remains relevant and comparable to the reduced Technical Boundary (Northern Health 2019, RDBN 2011). However, the potential effects of the Project on the UHC are new to the assessment of the transportation, infrastructure and services and the community quality of life VCs and are discussed below.

4.3.1 Potential Adverse Effects, Mitigation, and Potential Residual Effects

See Section 4.1 for the update to the baseline information for the assessment of the Project on the Community and Regional Infrastructure and Services VCs. There is no change to the assessment of community utilities and services VC from that provided in the EAC Application.

The following VCs and KIs as described in Section 15.0 ([Part 1](#) and [Part 2](#)) of the EAC Application continue to be relevant to the reduced Technical Boundary:

- VC Transportation Infrastructure and Services, including KIs of traffic and navigability of waterways; and
- VC Community Quality of Life, including KI community quality of life.

The direct and indirect Project effects on the transportation, infrastructure and services and the community quality of life VCs continue to apply in the reduced Technical Boundary, including:

- increased traffic volumes from transportation of workers, supplies and equipment leading to decreased road safety;
- disruption of movement on navigable waterways; and
- change in community quality of life during construction and operations.

Potential adverse effects, approved mitigation and potential residual effects of the Project on the UHC associated with the Project's construction, operations, decommissioning and abandonment for the transportation, infrastructure and services and the community quality of life VCs are identified in Appendix F. Mitigation outlined in the approved management plans that have been developed in accordance

with the EAC E#14-03 conditions for the Project remain relevant and appropriate. These are listed in Appendix F where relevant and include:

- approved Environmental Management Plan prepared to satisfy Condition 26 which includes the approved Traffic Control Management Plan and approved Access Control Management Plan; and
- approved Social and Economic Effects Management Plan prepared to satisfy Condition 24.

Coastal GasLink will also comply with the Conditions of the EAC E#14-03 specific to Indigenous groups (i.e., Conditions 28 – 32).

Site-specific mitigation to address potential effects of the Project on the UHC is also included in Appendix D and F and summarized in the discussions in Section 4.3.2.

4.3.2 Characterization of Potential Residual Effects

This section provides a summary of the characterization of potential residual adverse effects of the Project on the UHC in relation to community and regional infrastructure and services. The rationale used to characterize each of the residual adverse effects is also provided.

Increased Project-related Traffic

During Project construction, local traffic on highways and secondary roads is expected to increase due to the transport of personnel, equipment and materials to the work site. Coastal GasLink will implement a Traffic Control Management Plan, use flaggers to alert drivers of construction activity, install signage on access points, use multi-passenger vehicles to transport workers to and from construction workforce accommodations, restrict vehicular traffic to approved routes, and mandate that construction personnel obey traffic, road-use and safety laws. These measures are intended to make road users aware of construction activities of the Project and, where warranted, enable them to find an alternate route when construction is occurring along or in the vicinity of their travel route.

In addition to the approved mitigation for the Project, Coastal GasLink is committed to working with Dark House to reinstate an Access Protocol agreement that includes:

- sharing vehicle licenses plate numbers 24 hours ahead of required access;
- financial support provided by Coastal GasLink of security selected and implemented by Dark House at the Morice River Bridge; and
- other items as agreed by Dark House and Coastal GasLink.

A summary of the rationale for the effect characterization on the effect of increased Project-related traffic is provided below:

- Context: The Project will require the use of highways and secondary roads to move personnel, equipment and materials. These routes may be used by community members and guests of the UHC.
- Spatial boundary: Community and Regional Infrastructure and Services RSA – increased vehicular traffic volumes are anticipated to occur along various highways and access roads.
- Duration: short-term – the increase in vehicular traffic as a result of transporting workers, supplies and equipment will be limited to the construction phase.
- Frequency: isolated – the increase in Project-related traffic is expected to be confined to the construction phase.
- Reversibility: short-term – the increase in Project-related traffic is limited to the construction phase.
- Magnitude: moderate – the increase in Project-related traffic could disrupt normal traffic patterns.
- Likelihood: high – during construction of the certified route an increase in Project-related traffic is expected.
- Determination of Significance and Confidence: Not significant and moderate confidence.

Determination of Need to Update Cumulative Effects Assessment

Although the residual effect has been updated to consider additional baseline information, the analysis determined that there are no changes to the characterization of the potential residual adverse effect of increased project-related traffic relative to the EAC Application. The EAC Application also considered a number of large projects proposed at the time that would have interacted with the Project, and are no longer being pursued. As a result, the cumulative effects assessment presented in the EAC Application continues to be valid and is considered conservative in nature.

Disruption of Movement on Navigable Waterways

The Morice River has the potential to be used as a travel route for vessels, including boats, rafts, canoes and kayaks. Coastal GasLink intends to cross the Morice River with a trenchless crossing method, and therefore, there should not be any disruption to the movement of vessels. If a trenchless pipeline crossing is not technically feasible and if the Morice River crossing construction occurs during peak user times, the movement of vessels along the Morice River could be temporarily disrupted.

Mitigation measures provided in Table 4-2 are intended to make users aware of the construction activities of the Project and, where warranted, enable them to find an alternate location for water activities when construction is occurring along, or in the vicinity of their travel route.

A summary of the rationale for the effect characterization on the effect of disruption of movement on navigable waterways is provided below:

- **Context:** The Project will involve crossing of the Morice River, where community members and guests of the UHC may use the river for recreational use.
- **Spatial boundary:** Project Footprint – disruption of movement on navigable waterways is anticipated to occur on navigable waterbodies that will be directly disturbed by construction of the Project.
- **Duration:** short-term – the disruption of movement on navigable waterways is expected to be limited to the construction phase.
- **Frequency:** isolated – the disruption of movement on navigable waterways is expected to be confined to the construction phase.
- **Reversibility:** short-term – the disruption of movement on navigable waterways is limited to the construction phase.
- **Magnitude:** low – the proposed mitigations are expected to reduce the potential disruption of users on navigable waterways.
- **Likelihood:** high – during construction of the certified route it is likely that there will be a disruption to movement on navigable waterways.
- **Determination of Significance and Confidence:** Not significant and moderate confidence.

Determination of Need to Update Cumulative Effects Assessment

Although the residual effect has been updated to consider additional baseline information, the analysis determined that there are no changes to the characterization of the potential residual adverse effect of increased project-related traffic relative to the EAC Application. The EAC Application also considered a number of large projects proposed at the time that would have interacted with the Project, and are no longer being pursued. As a result, the cumulative effects assessment presented in the EAC Application continues to be valid and is considered conservative in nature.

Change in community quality of life during construction and operations

The Project will be located near the UHC, a facility that provides holistic healing for community members and guests. Construction (and, to a lesser degree, operation) of the Project has the potential to affect the quality of life of staff, community members and guests of the UHC.

Dark House has raised concerns and questions about the Project's impacts, and these are summarized in Appendix C. The LUOS completed for the Project (Crossroads, 2020) also provides an expanded description of the concerns including sense of place, which is described as an influence on community quality of life for Dark House community members. Dark House is concerned that effects of the Project

will not only lead to adverse effects to the land, but also the sustenance, cultural, emotional and spiritual connection to the land, which in turn could lead to feelings of displacement and disconnection from Wet'suwet'en culture.

Coastal GasLink is committed to discussing ways in which Project activities can reduce or avoid interference with important areas on their traditional territory (e.g., seasonal round). Coastal GasLink is committed to working with the Dark House to reduce the impacts of the Project on Clan and House members and to ensure the safety of all parties in the area. Coastal GasLink proposes that a communication protocol be developed to allow for exchange of advance notification of UHC programming activities and Project construction activities and how to manage these activities to reduce potential impacts.

Coastal GasLink continues to offer opportunities for participation in the CMCL Program. The CMCL Program provides opportunities for Indigenous groups to monitor construction activities and report their observations back to their communities.

Safety of the workers in workforce accommodations and the nearby communities is paramount. To demonstrate Coastal GasLink's commitment to ensuring the quality of life of nearby communities is maintained during construction, security guards will enforce rules and regulations 24 hours a day, seven days a week. Security services will be provided by Indigenous businesses and Coastal GasLink will implement Cultural Awareness Training for Project personnel. Coastal GasLink is interested in exploring the potential for Dark House, or Wet'suwet'en members or their representatives with the involvement of the UHC to contribute and conduct cultural awareness training for people working in this area.

Coastal GasLink is committed to continue engagement with Dark House on workforce accommodations to:

- ensure a safe and respectful environment for workers and the community
- promote relationship building and transparency
- develop and implement meaningful programs and training for workforce accommodation residents
- build capacity for Indigenous communities to support their members working on the Project

Coastal GasLink implemented the Extraordinary Legacy Initiative (ELI) program, an internal program aimed to empower all project personnel to create an extraordinary legacy of safety and respect for all people, communities and the environment. To date, over 1,000 employees and contractors have attended leadership workshop sessions as part of the program.

Coastal GasLink will set out clear guidelines for behaviour that will be enforced by workforce accommodation management and by employers. Adherence to company policies is mandatory and includes:

- Alcohol and Drug Policy;
- Harassment-Free Workplace Policy;
- Duty to Accommodate Policy;
- Employment Equity and Non-discrimination Policy;
- Indigenous Relations Policy;
- Code of Business Ethics Policy; and
- Weapons in the Workplace Policy.

To further reduce impacts on communities, Coastal GasLink will:

- provide nurse practitioners in main workforce accommodations;
- outfit workforce accommodations with first-aid rooms with proper equipment and running water as outlined in the WorkSafe B.C. regulations;
- provide workers access to social services or counselling support through on-site medical staff, help-lines and online services;
- equip workforce accommodations with recreational facilities including exercise equipment, television/movies, telephone and internet access; and
- implement both mandatory and voluntary measures that support:
 - improving workforce accommodation operations;
 - improving awareness of local communities with Project personnel; and
 - providing benefits to local communities

A summary of the rationale for the effect characterization on the effect of change in community quality of life is provided below:

- Context: The Project will be located near the UHC, a facility that provides holistic healing for community members and guests.
- Spatial Boundary: Project Footprint to Community Quality of Life RSA – the potential adverse effects may occur at a range of spatial scales.
- Duration: short-term – the change in community quality of life is limited to the construction period.
- Frequency: accidental to isolated – most of the potential adverse effects on community quality of life will only occur during the construction phase when activities are occurring in the area used by UHC community members and guests.

- Reversibility: short to long-term – most of the potential adverse effects will be reversible in the short-term after construction activity has ended. However, in cases where physical disturbance may affect trails or viewscapes, the reversibility may extend through the operations phase.
- Magnitude: medium – the proposed mitigation during construction are expected to reduce, but not eliminate the potential adverse effects on community quality of life and results in a medium modification in the social and economic environment.
- Likelihood: high – construction of the route will likely cause a change in community quality of life.
- Determination of Significance and Confidence: Not significant and moderate confidence.

Determination of Need to Update Cumulative Effects Assessment

Although the residual effect has been updated to consider additional baseline information, the analysis determined that there are no changes to the characterization of the potential residual adverse effect of increased project-related traffic relative to the EAC Application. The EAC Application also considered a number of large projects proposed at the time that would have interacted with the Project, and are no longer being pursued. As a result, the cumulative effects assessment presented in the EAC Application continues to be valid and is considered conservative in nature.

Conclusion

While approved mitigation that has been prepared to satisfy EAC E#14-03 is relevant and applicable to the reduced Technical Boundary for potential adverse effects on community and regional infrastructure and services, Coastal GasLink is committed to implementing the additional mitigation outlined in Appendices D, E and F, as well as continued discussion about site specific implementation of mitigation relevant to the UHC with Dark House. Coastal GasLink looks forward to ongoing engagement with community members and staff of the UHC to ensure mitigations can be effectively implemented. Coastal GasLink confirms that consideration of the UHC using available information in accordance with the scope for environmental assessment presented in the AIR does not alter the effects assessment conclusions nor cumulative effects conclusions presented in the EAC Application for community and regional infrastructure and services. The cumulative effects assessment for community and regional infrastructure and services is considered conservative as it contemplated numerous large pipeline projects and other activities in the area that are no longer being pursued.

4.4 TRADITIONAL LAND AND RESOURCE USE

The assessment of potential adverse effects of the Project on land and resource use is provided in [Section 16.0](#) of the EAC Application. The potential effects of the Project on Dark House and the UHC are new to the assessment of the Traditional Land and Resource Use VC.

Dark House has raised concerns and questions about the Project's impacts, and these are summarized in Appendix C. In the LUOS completed for the Project, Dark House describes the integrated nature of potential effects of the Project on their traditional use of the land. Dark House expressed concerns about the combined effects of numerous factors including climate change, proposed large scale linear development, and timber harvest effects on subsistence animal populations, which could in turn lead to adversely affecting food security, sustainability of their House territories and ultimately the continuity of their culture (Crossroads, 2020). A summary of interests and concerns raised is provided in Appendix C. Coastal GasLink considered both the Appendix C and Crossroads report in this COR 2 report update.

4.4.1 Potential Adverse Effects, Mitigation, and Potential Residual Effects

The following VCs and KIs as described in [Section 16.0](#) of the EAC Application continue to be relevant to the reduced Technical Boundary:

- VC Current Use of Land and Resources for Traditional Purposes, including KIs of subsistence activities (e.g., hunting, trapping, fishing and gathering), subsistence resources and trails, travelways, habitation sites; and
- VC Cultural Sites, including the KI of gathering places.

The direct and indirect Project effects on the current use of land and resources for traditional purposes VC continue to apply in the reduced Technical Boundary, including:

- disruption of subsistence activities (hunting, trapping, fishing and plant gathering) during construction and operations; and
- disruption of use of trails, and travelways and reduced use of habitation sites during construction and operations.

In light of the updated baseline information for the UHC, the potential effect of disturbance of gathering places during construction and operations has been updated as follows:

- disturbance of gathering places including activities for self-determination during construction and operations.

Potential adverse effects, approved mitigation and potential residual effects of the Project on the UHC associated with the Project's construction, operations, decommissioning and abandonment for the Traditional Land and Resource Use VCs

are identified in Appendix F. Mitigation outlined in the approved management plans that have been developed in accordance with the EAC E#14-03 conditions for the Project remain relevant and appropriate. These are listed in Appendix F where relevant and include:

- approved Environmental Management Plan prepared to satisfy Condition 26 which includes the approved Heritage Resource Discovery Contingency Plan and Traditional Land Use Sites Discovery Contingency Plan.

Site-specific mitigation to address potential effects of the Project on the UHC is included in Appendix F and summarized in the discussions in Section 4.4.2. Coastal GasLink also considered mitigation recommendations provided in the LUOS (Crossroads, 2020), and outlines consideration of relevant mitigation in Appendix D.

Coastal GasLink will also comply with the Conditions of the EAC E#14-03 specific to Indigenous groups (i.e., EAC Conditions 28 – 32).

4.4.2 Characterization of Potential Residual Effects

This section provides a summary of the characterization of potential residual adverse effects of the Project on the UHC in relation to Traditional Land and Resource Use. The rationale used to characterize each of the residual adverse effects is also provided.

Disruption of subsistence activities during construction and operations

The Project is located in an area where community members and guests of the UHC carry out traditional activities on the landscape. Notwithstanding the conclusion of the EAC Application that the Project would have an effect on subsistence activities during the construction phase of the Project, Coastal GasLink is supportive of finding ways for the Wet'suwet'en to harvest traditional foods, medicines, water and conduct ceremony provided they are undertaken in way that is safe and respectful for all parties. Coastal GasLink proposes that a communication protocol be developed to allow for exchange of advance notification of traditional harvesting activities and Project construction activities and how to manage these activities to reduce potential impacts. Despite implementing the proposed mitigation in Appendix D, E and F, traditional land and resource users may still be unable to use, or be deterred from using, certain areas near the UHC at times during construction and, to a lesser extent, during operations. Typically, during operations, current land use practices can take place on the right-of-way.

Coastal GasLink will reduce the amount of land disturbance by using previously disturbed areas for stockpiles and temporary workforce accommodation sites and, where appropriate, use existing roads and disturbances for access as much as practical. Project personnel will not be permitted to hunt, trap, fish or gather plants on any Project lands, including ROWs, temporary working space, Coastal GasLink controlled access roads, or workforce accommodations. Project personnel will not be permitted to hunt, trap, fish or gather plants during working hours. Coastal GasLink

will implement the Access Control Management Plan, including access control measures (e.g., signage, road closures, restrictions, access control structures, vegetation screens) to reduce unauthorized motorized access.

Coastal GasLink understands that hunting and trapping camps will be held out of the UHC. The Coastal GasLink route avoids the UHC and the Project has no intent to construct at the UHC location at the Morice River Bridge. In earlier project planning, alternate routing was considered and determined to not be feasible.

Coastal GasLink acknowledges the concern raised about construction activities scheduled during UHC programming, including hunting and trapping camps. While Coastal GasLink is unable to commit to ensuring no pipeline development activities occur during UHC programming, Coastal GasLink is willing to work collaboratively on timing activities to reduce disturbance to programs. With an understanding of the timing and location of UHC programming, Coastal GasLink may be able to arrange the construction schedule to avoid certain activities occurring in the same area at the same time as the Healing Center Programming. Coastal GasLink is committed to working with Dark House to determine how to maintain programming at the UHC. Coastal GasLink proposes that a communication protocol be developed to allow for exchange of advance notification of UHC programming activities and Project construction activities and how to manage these activities to reduce potential impacts.

A summary of the rationale for the effect characterization on the effect of disruption of subsistence activities during construction and operations is provided below:

- Context: The Project is located in an area where community members and guests of the UHC carry out traditional activities on the landscape.
- Spatial boundary: Traditional Land and Resource Use RSA – the Project may affect subsistence activities beyond the construction footprint and may also indirectly affect the distribution of traditional resource users in other areas of the Traditional Land and Resource Use RSA.
- Duration: short-term – the event causing disruption of subsistence activities occurs during the construction phase or periods of site-specific maintenance occurring in any one year during operations.
- Frequency: isolated to periodic – the event causing disruption of subsistence activities is confined to the construction phase or occurs intermittently, but repeatedly during the operations phase.
- Reversibility: short-term – the residual adverse effect would be limited to the construction phase or to less than any one year during the operations phase.
- Magnitude: medium – it is expected that Project-related disruptions would be temporary through the implementation of the proposed mitigation during the construction and operations phases to reduce, but not eliminate, the potential effects on subsistence activities.

- Likelihood: high – the Project is likely to disrupt subsistence activities.
- Determination of Significance and Confidence: Not significant and high confidence.

Determination of Need to Update Cumulative Effects Assessment

Although the residual effect has been updated to consider additional baseline information, the analysis determined that there are no changes to the characterization of the potential residual adverse effect of increased project-related traffic relative to the EAC Application. The EAC Application also considered a number of large projects proposed at the time that would have interacted with the Project, and are no longer being pursued. As a result, the cumulative effects assessment presented in the EAC Application continues to be valid and is considered conservative in nature.

Disruption of use of trails, and travelways and reduced use of habitation sites during construction and operations

The Project is located in an area where community members and guests of the UHC carry out traditional activities on the landscape. Non-designated trails and travelways in the vicinity of the UHC have the potential to be physically disturbed by construction activity and disrupted by construction-related traffic. Standard mitigation includes distributing construction schedules, maps and other relevant information about anticipated trail, road and area closures to Indigenous groups, government agencies, community representatives, recreation groups and potential user groups to inform them of the presence of construction activity and potential access restrictions and noise disturbance in recreational areas. Signage will be used on access roads and trailheads to inform users of construction activity and potential access restrictions. Coastal GasLink will implement a Traffic Control Management Plan, use flaggers to alert drivers of construction activity, install signage on access points, use multi-passenger vehicles to transport workers to and from construction workforce accommodations, restrict vehicular traffic to approved routes, and mandate that construction personnel obey traffic, road-use and safety laws.

Coastal GasLink recognizes the importance of the traditional territory to Dark House, including access to the area, the UHC, as well as associated habitation sites. In earlier project planning, alternate routing was considered and determined to not be feasible.

In the LUOS and in discussions with Dark House, concerns were raised regarding the removal of property, and specifically property associated with the UHC (e.g., the cabin at Crystal Creek). Through the implementation of mitigation, including upcoming work with Dark House representatives on pre-construction site specific mitigation planning (contemplated in Phase 2 of Terms of Reference with Crossroads, included in Appendix C), Coastal GasLink will seek to work with Dark House to develop site-specific mitigation at established cabins.

Coastal GasLink proposes that a communication protocol be developed to allow for exchange of information regarding property that may impede construction activities and how to manage these activities to reduce potential impacts.

A summary of the rationale for the effect characterization on the effect of disruption of use of trails, and travelways and reduced use of habitation sites during construction and operations is provided below:

- Context: The Project is located in an area where community members and guests of the UHC carry out traditional activities on the landscape.
- Spatial boundary: Traditional Land and Resource Use RSA – use of trails, travelways and habitation sites in the Traditional Land and Resource Use RSA may be disturbed by construction activity and disrupted by construction-related traffic.
- Duration: short-term – the event causing disruption of use occurs during the construction phase or periods of site-specific maintenance occurring within any one year during operations.
- Frequency: isolated to periodic – the event causing disruption of use is confined to the construction phase or occurs intermittently, but repeatedly during the operations phase.
- Reversibility: short-term – the residual effect would be limited to the construction phase or to less than any one year during the operations phase.
- Magnitude: medium – it is expected that Project-related disruptions would be temporary through the implementation of the proposed mitigation during construction and operations to reduce, but not eliminate, the potential effects on use of trails, travelways and habitation sites in the vicinity of the UHC.
- Likelihood: high – the Project is likely to disrupt use of trails, travelways and habitation sites.
- Determination of Significance and Confidence: Not significant and high confidence.

Determination of Need to Update Cumulative Effects Assessment

Although the residual effect has been updated to consider additional baseline information, the analysis determined that there are no changes to the characterization of the potential residual adverse effect of increased project-related traffic relative to the EAC Application. The EAC Application also considered a number of large projects proposed at the time that would have interacted with the Project, and are no longer being pursued. As a result, the cumulative effects assessment presented in the EAC Application continues to be valid and is considered conservative in nature.

Disturbance of gathering places including activities for self-determination during construction and operations

Coastal GasLink acknowledges that the UHC's community members and guests could be temporarily disrupted from conducting activities, including participation in programs using traditional teachings and land-based wellness practices. The LUOS (Crossroads, 2020) describes Dark House concerns about such disruption on the continuity of Wet'suwet'en culture and describes concerns that delays in programming have the potential to affect the continuity of Wet'suwet'en culture. Land and resource use activities are intrinsically connected to Wet'suwet'en culture and engaging in these activities gives community members a source of pride and identity, so if any part of them are impacted, that will have a personal effect on Wet'suwet'en individuals. Traditional knowledge and Wet'suwet'en culture is taught from older generations to a younger generation. If construction activities disrupt this inter-generational transfer of knowledge either through reducing its availability or through negative interactions with the construction workforce, Dark House is concerned that young people will have reduced exposure to experiential learning of Wet'suwet'en culture, resulting in reduced connection to their lands, culture and community.

According to the UHC Program Plan 2020-2021, a number of wellness camps are planned for 2020 and 2021 and include an art camp, medicine harvesting camp, berry picking camp, hunting camp, trapping camp, grief and loss healing circle and aftercare programs. In addition to implementing a Traffic Control Management Plan, Coastal GasLink is committed to working with UHC staff to reduce potential interactions between camp participants and daily mobilization and demobilization of construction crews to the area, where feasible. Coastal GasLink acknowledges the concern raised about construction activities scheduled during UHC programming, including hunting and trapping camps. While Coastal GasLink is unable to commit to ensuring no pipeline development activities occur during UHC programming, Coastal GasLink is willing to work collaboratively on timing activities to reduce disturbance to programs. With an understanding of the timing and location of UHC programming, Coastal GasLink may be able to arrange the construction schedule to avoid activities occurring in the same area at the same time as the Healing Center Programming. Coastal GasLink is committed to working with Dark House to determine how to maintain programming at the UHC. Coastal GasLink proposes that a communication protocol be developed to allow for exchange of advance notification of UHC programming activities and Project construction activities and how to manage these activities to reduce potential impacts.

In addition to the approved mitigation for the Project, Coastal GasLink will implement Cultural Awareness Training for Project personnel. Coastal GasLink is interested in exploring the potential for Dark House, or Wet'suwet'en members or their representatives with the involvement of the UHC to contribute and conduct cultural awareness training for people working in the area. Coastal GasLink is developing a

Community Workforce Accommodation Enhancement (CWAE) Program. This Program takes into consideration wellness, education and Community Workforce Accommodation Advisor concepts as well as Coastal GasLink's ELI to support a positive workforce accommodation experience. The purpose of the CWAE Program is to:

- support a respectful and safe workforce accommodation environment for Project personnel;
- contribute to a positive workforce accommodation experience for all Project personnel, Indigenous communities and local communities located near workforce accommodations;
- support the capacity building for Indigenous communities to support their workforce residents;
- facilitate understanding of pipeline workforce accommodations; and
- build strong, mutually beneficial relationships based on trust and respect between the Project, Indigenous communities, local communities and affected stakeholders.

A summary of the rationale for the effect characterization on the effect of disturbance of gathering places including activities for self-determination during construction and operations is provided below:

- Context: The Project is located approximately one kilometre from the UHC, which is a gathering place for community members and guests.
- Spatial boundary: Traditional Land and Resource Use RSA – the Project may affect gathering places beyond the construction workspace (e.g., sensory disturbance and access limitations).
- Duration: short-term – the event causing disturbance of gathering places occurs during the construction phase or periods of site-specific maintenance occurring within any one year during operations.
- Frequency: isolated to periodic – the event causing disturbance of gathering places is confined to the construction phase or occurs intermittently, but repeatedly during the operations phase.
- Reversibility: short-term – the residual adverse effect would be limited to the construction phase or to less than any one year during the operations phase.
- Magnitude: medium – it is expected that Project-related disruptions would be temporary through the implementation of the proposed mitigation during construction and operations to reduce, but not eliminate, potential adverse effects on disturbance of gathering places and the intrinsic values they bring to Indigenous self-realization.
- Likelihood: high – the Project is likely to disturb gathering places.

- Determination of Significance and Confidence: Not significant and high confidence.

Determination of Need to Update Cumulative Effects Assessment

Although the residual effect has been updated to consider additional baseline information, the analysis determined that there are no changes to the characterization of the potential residual adverse effect of increased project-related traffic relative to the EAC Application. The EAC Application also considered a number of large projects proposed at the time that would have interacted with the Project, and are no longer being pursued. As a result, the cumulative effects assessment presented in the EAC Application continues to be valid and is considered conservative in nature.

Conclusion

While approved mitigation that has been prepared to satisfy EAC E#14-03 is relevant and applicable to the reduced Technical Boundary for potential adverse effects on traditional land and resource use, Coastal GasLink is committed to implementing the additional mitigation outlined in Appendices D and F, as well as continued discussion about site specific implementation of mitigation relevant to the UHC with Dark House. Coastal GasLink looks forward to ongoing engagement with community members and staff of the UHC to ensure mitigations can be effectively implemented. Coastal GasLink confirms that consideration of the UHC using available information in accordance with the scope for environmental assessment presented in the AIR does not alter the effects assessment conclusions nor cumulative effects conclusions presented in the EAC Application for traditional land and resource use. The cumulative effects assessment for traditional land and resource use presented in the EAC application is considered conservative as it contemplated numerous large pipeline projects and other activities in the area that are no longer being pursued.

5.0 HERITAGE EFFECTS ASSESSMENT

This section describes whether additional data collected in the reduced Technical Boundary led to any material change to the assessment of potential adverse heritage effects described in the EAC Application. As part of the engagement with Dark House on the COR 2 report since March 2020, Coastal GasLink received a report that includes a review of Condition 1 heritage resource value components (Armstrong, 2020).

5.1 HERITAGE RESOURCES

The assessment of potential adverse effects of the Project on heritage resources is provided in [Section 18.0](#) of the EAC Application. Supplemental studies, including an Archaeological Impact Assessment to meet requirements of the BC Archaeology Branch are ongoing to support Project permitting activities within the reduced Technical Boundary. Because the baseline conditions are comparable, and the potential interactions are also comparable to the EAC Application, there is no material change to the assessment of potential adverse effects, mitigation or residual effects for heritage resources during the construction, operations, decommissioning and abandonment phases of the Project. As a result, significance conclusions identified in the EAC Application for heritage resources remain the same.

The results of the archaeological impact assessment will be shared with Indigenous groups, including Dark House, and permitting activities will present further opportunities for engagement with Indigenous groups, including Dark House, to discuss specific effects and mitigation. Coastal GasLink will address the concerns raised in Armstrong (2020) during the course of the permitting process. In the event that an archaeological site is discovered during construction, the Heritage Resource Discovery Contingency Plan, as detailed in the Environmental Management Plan, will be implemented.

For the purpose of this COR 2 report, no additional mitigation is required for the reduced Technical Boundary for potential adverse effects on heritage resources. The mitigation to address potential adverse effects on heritage resources for the Project that is detailed in the EAC Application as well as the management plans that have been developed in accordance with the EAC conditions for the Project remain relevant and appropriate, including the Heritage Resources Discovery Contingency Plan prepared as part of the Approved Environmental Management Plan prepared to satisfy Condition 26.

6.0 HEALTH EFFECTS ASSESSMENT

This section describes whether additional data collected in the reduced Technical Boundary led to any material change to the assessment of potential adverse health effects described in the EAC Application.

Since the Project received its EAC, the activities at the UHC have evolved, and as a result, additional baseline information is provided on the UHC. As a result, additional land uses that may have potential effects on the human health VC have been established in the reduced Technical Boundary that have not previously been assessed. The potential effects of the Project on the UHC are addressed in this 2020 COR2.

6.1 UPDATED BASELINE INFORMATION

Dark House members and leadership operate the UHC, which is located on the shores of the Morice River (Wedzin Kwah), a tributary to the Skeena and Bulkley Rivers in northwest BC (Unist'ot'en Camp n.d.). The UHC is approximately one kilometre downstream of where the Project crosses the Morice River.

According to the Unist'ot'en website (Unist'ot'en Camp 2017) and UHC Program Plan 2020-2021 as provided by Dark House, the UHC provides year-round holistic healing and support programs for Indigenous individuals, families and communities across the Northwest region of BC through programs using traditional teachings and land-based wellness practices. Some anticipated outcomes and benefits as discussed in the UHC Program Plan 2020-2021 include, but are not limited to, an increased connection to land and culture; an increased pride and identification with cultural heritage; an improved spiritual, emotional, mental and physical wellness; increased skills in self-reliance; increased intergenerational knowledge transfer and a promotion of self-determination.

The Project has the potential to cause changes to the environmental media (air, water, soil and sediment), noise levels and quality of dietary items that community members and guests of the UHC consume (traditional and country foods). These changes could result in potential human health and wellness risks.

6.2 HUMAN AND ECOLOGICAL HEALTH

The assessment of potential adverse effects of the Project on human and ecological health is provided in Section 20.0 ([Part 1](#) and [Part 2](#)) of the EAC Application. Existing and desktop data sources that informed the understanding of baseline conditions in relation to human and ecological health assessed in the EAC Application remains relevant and comparable to the reduced Technical Boundary (Canadian Council of Ministers of the Environment 1996, Environment Canada 2012, Health Canada 2016, 2017, 2019). However, the potential effects of the Project on the

UHC are new to the assessment of the Human and Ecological Health VCs and are discussed below.

6.2.1 Potential Adverse Effects, Mitigation, and Potential Residual Effects

The following VCs and KIs as described in [Section 20.0](#) of the EAC Application continue to be relevant to the reduced Technical Boundary:

- VC Human Health including KIs of noise, air quality, water quality, sediment quality, soil quality and quality of country foods.

The potential adverse health effects associated with the construction, operations, decommissioning and abandonment of the Project on community members and guests of the UHC are listed in Appendix F and were considered and assessed in the technical assessment for related VCs already addressed in this 2020 COR2 (i.e., domestic water supply and community quality of life).

Mitigation outlined in the approved management plans that have been developed in accordance with the EAC E#14-03 conditions for the Project remain relevant and appropriate. These include:

- approved Environmental Management Plan prepared to satisfy Condition 26; and
- approved Social and Economic Effects Management Plan prepared to satisfy Condition 24.

The UHC is approximately one kilometre downstream of where the Project crosses the Morice River. Concerns regarding degradation of water quality and mobilization of sediment may relate to minor spills, drilling mud release and release of hydrostatic test water to local waterbodies. Communication protocols outlined in the Environmental Management Plan will inform staff of proper emergency procedures in the case of minor spills to maintain the safety of workers, local people and the environment. Project staff will have safety training including knowledge of methods and materials involved in the emergency response plan. Hydrostatic testing release water would undergo routine testing and visual inspection at the beginning, middle and end of dewatering to ensure that permit objectives are met, and water quality is protected in local aquatic environments. The application of mitigation in the Environmental Management Plan and other management plans developed in accordance with the EAC is expected to avoid residual adverse effects.

As a result, significance conclusions identified in the EAC Application for human and ecological health remain the same.

No additional mitigation is required for the reduced Technical Boundary for potential adverse effects on human and ecological health. The mitigation to address potential adverse effects on human and ecological health for the Project that is detailed in the

EAC Application as well as the management plans that have been developed in accordance with the EAC conditions for the Project remain relevant and appropriate.

7.0 CONSTRUCTION AND OPERATIONAL ENVIRONMENTAL MANAGEMENT PLANS AND FOLLOW-UP PROGRAMS

Coastal GasLink has developed a series of management plans in accordance with the EAC conditions for the Project. The management plans were developed in consultation with RRAs and Indigenous groups. All comments provided through consultation efforts on the management plans were considered by Coastal GasLink in the development and refinement of the plans. Coastal GasLink has provided the plans to the BC EAO and other agencies to satisfy specified requirements identified in the EAC conditions. The management plans for the Project remain relevant and appropriate and will be implemented on the entire Project, including the reduced Technical Boundary.

8.0 CONCLUSIONS

The purpose of this 2020 COR2 is to fulfill EAC Condition 1 and the outstanding baseline information requirements for the reduced Technical Boundary as well as complete an assessment that verifies the effects assessment conclusions reached in the EAC Application still apply.

The baseline setting for the reduced Technical Boundary is comparable to the assessment of the Morice River Technical Boundary in the EAC Application. Based on consideration of additional information and supplemental biophysical data, there is no material change to the assessment of potential adverse environment, economic, heritage and health effects for the reduced Technical Boundary. With the new baseline information provided for the UHC since the EAC Application was prepared, the social effects assessment has been updated for the reduced Technical Boundary (Section 4.0). With the mitigation provided in the approved management plans for the Project as well as site-specific mitigation provided in Section 4.0, there are no significant adverse effects for the Project in the reduced Technical Boundary. As a result, significance conclusions identified in the EAC Application are unchanged.

Coastal GasLink confirms that the mitigation for the Project that is detailed in the EAC Application as well as the management plans that have been developed in accordance with the EAC #E14-03 conditions for the Project remain relevant and appropriate. However, Coastal GasLink has developed and provided additional site-specific mitigation to address potential adverse effects of the Project in the reduced Technical Boundary. Coastal GasLink looks forward to ongoing engagement with community members and staff of the UHC to ensure approved and site-specific mitigations can be effectively implemented.

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Appendix A

Acronyms and Abbreviations

AIR	Application Information Requirements
ARD	acid rock drainage
ATK	Aboriginal Traditional Knowledge
BC	British Columbia
BC EAO	British Columbia Environmental Assessment Office
BC CDC	British Columbia Conservation Data Centre
Coastal GasLink	Coastal GasLink Pipeline Ltd.
2015 COR1	Environmental Assessment Certificate #E14-03 Condition 1 Report #1 (October 30, 2015)
2019 COR2	Environmental Assessment Certificate #E14-03 Condition 1 Report #2 (November 19, 2019)
2020 COR2	Environmental Assessment Certificate #E14-03 Condition 1 Report #2 ('this report')
EAC	Environmental Assessment Certificate
EAC Condition 1	EAC E14-03 Schedule B Condition #1
GHG	Greenhouse Gas
KI	key indicator
LSA	Local Study Area
the Project	Coastal GasLink Pipeline Project
RDBN	Regional District of Bulkley-Nechako
RRA	Responsible Regulatory Authority
RSA	Regional Study Area
SARA	<i>Species at Risk Act</i>
TDR	Technical Data Report
TEK	Traditional Ecological Knowledge
UTM	universal traverse Mercator
VC	valued component

Appendix B

TEK Interests and Concerns from the 2019 Field Program

2019 Interests and Concerns Raised during the 2019 TEK Field Program	Interests and Concerns Raised During TEK Field Programs Previous to 2019	Key Mitigation from the Approved Environmental Management Plans to Address Interests and Concerns
<p>Potential adverse effects on water quality including sedimentation and potential effects from the contingency crossing of the Morice River</p>	<p>Potential adverse effects on water quality</p>	<p>Key mitigation measures to address water quality concerns in the reduced Technical Boundary include the following:</p> <p>From Section 8.4.3 of the Environmental Management Plan prepared to satisfy Condition 26 of the Environmental Assessment Certificate (EAC) #E14-03:</p> <ul style="list-style-type: none"> • Excavate entry and exit sites back from the ordinary high watermark and far enough from the watercourse to provide for containment of sediments and other deleterious substances above the high watermark. Vegetation removal for the entry and exit sites is only to occur within the approved construction ROW and temporary workspace. • Ensure that water from dewatering entry and exit sites with a high sediment load is not discharged or allowed to flow into any waterbody. Remove the sediment load (e.g., filtered or discharged into a vegetated area) before discharge water is allowed to enter any watercourse. • Develop an emergency response plan that will be implemented in the event of sediment releases or spills of deleterious substances during the construction of the trenchless crossings. <p>From Section 8.5.3 of the Environmental Management Plan prepared to satisfy Condition 26 of the EAC #E14-03:</p> <ul style="list-style-type: none"> • Where practical, grade the ROW to divert surface water away from the open trench. • If water levels or flow rates in the trench could overwhelm existing trench water control measures (berms, take offs, etc.), thereby increasing the risk of sediment-laden water affecting wetlands or watercourses (e.g., if heavy rains are forecast), dewater and backfill the trench to create a soft plug, or maintain an existing hard plug • Ensure temporary trench plugs and breakers consist of material with low permeability that will effectively block water flowing along the trench. • Where the open trench has the potential to dewater a wetland, conduct trenching in a manner that prevents the flow of water along the trench. <p>From Section 3.2 of Coastal GasLink's Post-construction Monitoring Program:</p> <ul style="list-style-type: none"> • Appropriate spill equipment will be maintained at all work sites, in accordance with the Chemical and Waste Management Plan (Appendix D.1). The risk for site-specific spills will be used to determine the appropriate type of response equipment and suitable location for storage. • When notified of a spill, the Contractor will immediately ensure that action is taken to control danger to human life including the appointment of an Onsite Safety Supervisor; the necessary equipment is mobilized, and measures are being implemented to control and contain the spill; and that all resources are available to contain and cleanup a spill. • Construct berms, sumps and/or trenches to contain and/or prevent spilled product from entering a waterbody. • Deploy booms, skimmers, sorbents, etc., if practical, to contain and recover spilled material from waterbody. • Recover spilled product. • Cleanup contaminated areas. • Dispose of heavily contaminated soil and vegetation at an approved facility. On lightly contaminated soil areas where in situ reclamation is practical, the site will be reclaimed in a suitable manner, as determined by the Environmental Inspector(s). <p>Coastal GasLink intends to cross the Morice River with a trenchless crossing method that will not disturb the riverbed of the Morice River or have an effect on water quality. In the event that a trenchless crossing is not technically feasible, measures outlined in the approved Water Quality Monitoring Plan (Appendix E.2 of the Environmental Management Plan, developed in accordance with Condition 4 of the EAC) will be implemented. After construction is complete, Coastal GasLink will also implement its Post-construction Monitoring Program that includes monitoring for sources of sedimentation that could cause water quality effects.</p>
<p>Cumulative effects of the Project and forestry activities on displacement and disruption of wildlife</p>	<p>Cumulative effects of numerous pipeline proposals</p>	<p>Key mitigation measures to address disturbance to wildlife in the reduced Technical Boundary include the following:</p> <p>From Table 4-1 of the approved Wildlife and Wildlife Habitat Management Plan prepared to satisfy Condition 14 of the EAC #E14-03:</p> <ul style="list-style-type: none"> • If wildlife species of concern or their site-specific habitat are discovered during construction of the pipeline, the discovery will be assessed by a Qualified Professional based on the criteria provided in the Wildlife Species of Concern Discovery Contingency Plan, and appropriate mitigation will be implemented from the list outlined below: <ul style="list-style-type: none"> – Suspend work immediately in the vicinity of any unanticipated discovery of newly discovered wildlife species of concern or habitat feature. Work at that location will not resume until the appropriate mitigation is implemented. – Notify the Environmental Inspector(s) who will notify the Construction Manager of the unanticipated discovery. – The Environmental Inspector(s) will assess the discovery and implement appropriate mitigation as described in the EMP and Wildlife and Wildlife Habitat Management Plan. After mitigation is implemented, construction will resume. If the mitigation cannot be implemented, or if alternative mitigation is needed, the Environmental Inspector will <ul style="list-style-type: none"> ▪ consult with a Resource Specialist/Qualified Professional for advice on alternative mitigation ▪ discuss the alternative mitigation with the appropriate regulatory agency

2019 Interests and Concerns Raised during the 2019 TEK Field Program	Interests and Concerns Raised During TEK Field Programs Previous to 2019	Key Mitigation from the Approved Environmental Management Plans to Address Interests and Concerns
		<ul style="list-style-type: none"> ▪ the Qualified Professional may deem it necessary to visit the site to develop an appropriate mitigation plan in consultation with the Environmental Inspector. The mitigation available includes that listed in Section 3.2 of the Wildlife Species of Concern Discovery Contingency Plan (EMP, Appendix C.10) – If a discovery is made during construction preparation, wildlife surveys or construction, the appropriate mitigation will be implemented and the Environmental Worksheets will be updated to incorporate these measures. • Breaks in pipe, soil stockpiles and windrows will be created at least every 500 m if the top height of these barriers is expected to exceed 1.5 m for more than 72 hours (BC MECCS 2011). Breaks will be aligned with obvious wildlife trails to facilitate wildlife movement. Breaks in set-up and welded pipe will coincide with gaps in salvaged material, graded material, trench spoil, snow and rollback windrows. Locations where gaps are appropriate will be determined in the field by the Environmental Inspector(s), in consultation with a Qualified Professional, as required. If the spacing of breaks cannot be achieved, Coastal GasLink will consult with a Qualified Professional for advice on additional mitigation. • The amount of open trench will be minimized. Trenching will be conducted as close as practical to lowering-in and backfill operations. A break (earthen plug) in the open trench will be provided, where appropriate, to allow wildlife to cross the trench. Locations of breaks will be determined by the Environmental Inspector in consultation with a Qualified Professional, as required. • Conduct work expeditiously to maintain a construction section (i.e., interval between front-end work activities such as grading and back-end activities such as cleanup) to reduce the duration of the open trench and to reduce potential barriers and hazards to wildlife. • All work will stop in the vicinity of injured, trapped, defensive, habituated or aggressive wildlife until the construction management team deems it safe to resume work in the area, which will typically be when the animal has left the area. <p>From Section D.2.3 (Traffic Control Management Plan) of the approved Environmental Management Plan prepared to satisfy Condition 26 of the EAC #E14-03:</p> <ul style="list-style-type: none"> • All motorized vehicle traffic, including ATV, ARGO and snowmobile traffic, will be confined to the approved route, access roads or trails except where specifically authorized by the relevant regulatory authority. • All Project personnel and other visitors to the ROW will participate in the Contractor orientation program. • Coastal GasLink, Contractor and all subcontractor personnel will avoid areas that are fenced or staked and abide by any restrictions on in/out privileges that are implemented in areas requiring special protection.
Concerns about new and increased access from the Project	Opening up access to areas previously inaccessible	<p>Key mitigation measures for access control in the reduced Technical Boundary include the following:</p> <p>From Section 4.3.1 of the approved Access Control Management Plan prepared to satisfy Condition 15 of the EAC #E14-03:</p> <ul style="list-style-type: none"> • Follow or use existing clearings and linear disturbances (e.g., pipeline, utility and road ROWs) to the extent practical. • Avoid or reduce traversing environmentally sensitive areas, such as parks, protected areas, endangered or sensitive vegetation and wildlife habitat, archaeological or heritage sites, and other environmentally sensitive areas, where practical. • Avoid or reduce crossings at waterbodies, railways, roads, pipelines, power lines and water lines. • Avoid identified socially and culturally important areas, such as parks, natural areas, Traditional Land Use (TLU) sites, trapper cabins and areas with existing infrastructure that could create land use conflicts to the extent practical. • Input from the public, Indigenous groups, trappers, disposition holders, landowners and relevant regulatory agencies in selecting the route to limit potential adverse effects.
Potential effects to wildlife due to sensory disturbance during construction	Potential adverse effects on wildlife and wildlife habitat Disturbance of bear dens during construction	<p>Key mitigation measures to reduce sensory disturbance in the reduced Technical Boundary include the following:</p> <p>From Table 4-1 of the approved Wildlife and Wildlife Habitat Management Plan prepared to satisfy Condition 14 of the EAC #E14-03:</p> <ul style="list-style-type: none"> • If wildlife species of concern or their site-specific habitat are discovered during construction of the pipeline, the discovery will be assessed by a Qualified Professional based on the criteria provided in the Wildlife Species of Concern Discovery Contingency Plan, and appropriate mitigation will be implemented from the list outlined below: <ul style="list-style-type: none"> – Suspend work immediately in the vicinity of any unanticipated discovery of newly discovered wildlife species of concern or habitat feature. Work at that location will not resume until the appropriate mitigation is implemented. – Notify the Environmental Inspector(s) who will notify the Construction Manager of the unanticipated discovery. – The Environmental Inspector(s) will assess the discovery and implement appropriate mitigation as described in the EMP and Wildlife and Wildlife Habitat Management Plan. After mitigation is implemented, construction will resume. If the mitigation cannot be implemented, or if alternative mitigation is needed, the Environmental Inspector will <ul style="list-style-type: none"> ▪ consult with a Resource Specialist/Qualified Professional for advice on alternative mitigation ▪ discuss the alternative mitigation with the appropriate regulatory agency

2019 Interests and Concerns Raised during the 2019 TEK Field Program	Interests and Concerns Raised During TEK Field Programs Previous to 2019	Key Mitigation from the Approved Environmental Management Plans to Address Interests and Concerns
		<ul style="list-style-type: none"> ▪ the Qualified Professional may deem it necessary to visit the site to develop an appropriate mitigation plan in consultation with the Environmental Inspector. The mitigation available includes that listed in Section 3.2 of the Wildlife Species of Concern Discovery Contingency Plan (EMP, Appendix C.10) – If a discovery is made during construction preparation, wildlife surveys or construction, the appropriate mitigation will be implemented and the Environmental Worksheets will be updated to incorporate these measures. <p>From Section 4.4.1 of the approved Access Control Management Plan prepared to satisfy Condition 15 of the EAC #E14-03:</p> <ul style="list-style-type: none"> • Route adjacent to existing ROWs, where practical. • Use existing access to the Project footprint, where practical • Project personnel and other visitors to the project ROW will participate in environmental awareness training, as applicable, which will include expectations of personnel with respect to access. • The recreational use of all-terrain vehicles (ATVs) or snowmobiles by construction personnel on the Project footprint (i.e., pipeline ROW, temporary work spaces and associated facilities) will be prohibited. <p>From Section 5.4.1 of the approved Grizzly Bear Mitigation and Monitoring Plan prepared to satisfy Condition 7 of the EAC E#14-03:</p> <ul style="list-style-type: none"> • Avoiding working within 200 m of active grizzly bear (or black bear) dens during restricted activity period for dens. The denning period will be determined for each region in consultation with a Qualified Professional, or as stipulated in BC OGC permit conditions. • Implementing the Human-Wildlife Conflict Management Plan. <p>From Table 4-1 of the approved Human-Wildlife Conflict Management Plan prepared to satisfy Condition 9 of the EAC E#14-03:</p> <ul style="list-style-type: none"> • All personnel on the Project are prohibited from, and Coastal GasLink’s Suppliers or Contractors will ensure that no personnel: <ul style="list-style-type: none"> – hunt, trap, fish or gather plants on any Project lands, including ROWs, temporary working space, Coastal GasLink controlled access roads, or camps – hunt, trap, fish or gather plants during working hours – possess or store firearms, bows or crossbows on any Project lands, including rights-of-way, temporary working space, Coastal GasLink controlled access roads, or camps, or in any work vehicles except for firearms expressly permitted by Coastal GasLink and relevant regulatory authorities for wildlife safety purposes <p>From Table 6-2 of the approved Caribou Mitigation and Monitoring Plan prepared to satisfy Condition 10 of the EAC E#14-03:</p> <ul style="list-style-type: none"> • Construction materials (e.g., cables, wires and fencing) will be properly stored to avoid potential hazards for wildlife • Low elevation helicopter and fixed wing flights over UWR and WHA within the Certified Pipeline Corridor will be conducted in accordance with timing restrictions and recommended minimum separation distances specified in <i>the Compendium of Wildlife Guidelines for Industrial Development Projects in the North Area, British Columbia</i> as recommended by BC MFLNRORD. • Coastal GasLink will utilize minimum disturbance construction techniques in areas where grading or blasting is required. Vegetation will be cleared above ground level and grubbing will be restricted to the trench width to maintain root layer integrity on most of the ROW. Within travel and work surfaces on the ROW, shrub and young forest areas will be identified before construction and, wherever practical, tall shrubs and tree saplings will be walked down (instead of cleared) to facilitate regeneration. Packed snow (during the winter) or matting will be used to protect surface soils and vegetation within travel and work surfaces on the ROW, to allow for quicker recovery after construction. • Footprint will be narrowed, to the extent practical, in sensitive areas (e.g., watercourse crossings, wetland and riparian areas) and by utilizing shared workspace, avoiding clearing large diameter trees on the edge of the ROW and reducing extra temporary workspace (e.g., place log decks, storage areas, other temporary construction areas outside of UWRs and WHAs for caribou). • Disturbance to ground-level vegetation and root systems will be minimized by cutting or mowing shrubs and small diameter trees at ground level along portions of the ROW where grading is not required. • Line-of-sight mitigation may include bends in the ROW, doglegs at intersections with access roads, woody debris or earth berms, tree or shrub planting to create vegetation screens across the ROW, and avoiding clearing on the ROW.
Potential effects to moose and moose habitat, including wetlands	Potential adverse effects on ungulates Protection of potential calving area	<p>Key mitigation measures to reduce disturbance to moose and moose habitat within the reduced Technical Boundary include the following:</p> <p>From Table 5-1 of the approved Grizzly Bear Mitigation and Monitoring Plan prepared to satisfy Condition 7 of the EAC E#14-03:</p> <ul style="list-style-type: none"> • Vegetation management will include minimizing disturbance to vegetation at intersections with existing linear features (e.g., leaving bands of uncleared vegetation). If Coastal GasLink cannot adhere to these avoidance measures, Coastal GasLink will consult with a Qualified Professional to identify alternative measures for discussion with the relevant regulatory agency. • Coastal GasLink will utilize minimum disturbance construction techniques in areas where grading or blasting is not required, where practical. Vegetation will be cleared above ground level and grubbing will be restricted to the trench width to maintain root layer integrity on most of the ROW. Within travel and work

2019 Interests and Concerns Raised during the 2019 TEK Field Program	Interests and Concerns Raised During TEK Field Programs Previous to 2019	Key Mitigation from the Approved Environmental Management Plans to Address Interests and Concerns
		<p>surfaces on the ROW, shrub and young forest areas will be identified before construction and, wherever practical, tall shrubs and tree saplings will be walked down (instead of cleared) to facilitate regeneration. Packed snow (during the winter) or matting will be used to protect surface soils and vegetation within travel and work surfaces on the ROW, to allow for quicker recovery following construction.</p> <p>From Table 4-1 of the approved Wildlife and Wildlife Habitat Management Plan prepared to satisfy Condition 14 of the EAC #E14-03:</p> <ul style="list-style-type: none"> • Breaks in pipe, soil stockpiles and windrows will be created at least every 500 m if the top height of these barriers is expected to exceed 1.5 m for more than 72 hours (BC MECCS 2011). Breaks will be aligned with obvious wildlife trails to facilitate wildlife movement. Breaks in set-up and welded pipe will coincide with gaps in salvaged material, graded material, trench spoil, snow and rollback windrows. Locations where gaps are appropriate will be determined in the field by the Environmental Inspector(s), in consultation with a Qualified Professional, as required. If the spacing of breaks cannot be achieved, Coastal GasLink will consult with a Qualified Professional for advice on additional mitigation. • Implement riparian buffer mitigation in Section 8.4 of the Environmental Management Plan. Extend riparian buffers to 100 m at select locations, if recommended as a result of construction preparation surveys (e.g., old-growth riparian forests where fisher is detected). • Use directional or shielded lighting at facilities, where practical, to reduce sensory disturbance to wildlife. • The amount of open trench will be minimized. Trenching will be conducted as close as practical to lowering-in and backfill operations. A break (earthen plug) in the open trench will be provided, where appropriate, to allow wildlife to cross the trench. Locations of breaks will be determined by the Environmental Inspector in consultation with a Qualified Professional, as required. • Conduct work expeditiously to maintain a construction section (i.e., interval between front-end work activities such as grading and back-end activities such as cleanup) to reduce the duration of the open trench and to reduce potential barriers and hazards to wildlife. • All work will stop in the vicinity of injured, trapped, defensive, habituated or aggressive wildlife until the construction management team deems it safe to resume work in the area, which will typically be when the animal has left the area. • Project personnel will be prohibited from having dogs on the ROW. Project personnel are not permitted to hunt, fish, trap or gather plants on the work site. <p>From Section 3.0 of the approved Wetlands Management Plan prepared to satisfy Condition 6 of EAC #E14-03:</p> <ul style="list-style-type: none"> • Reduce activity in areas within 30 m of a wetland, to the extent practical. • Install berms, cross ditches or silt fences between wetlands (non-peat) and disturbed areas when deemed necessary by the Environmental Inspector(s). • Reduce the area of disturbance when crossing a wetland, to the extent practical. • Reduce grading within wetland boundaries to the extent practical. Do not use temporary workspace within the boundaries of wetlands, unless necessary for site-specific purposes. Temporary workspace within the boundary of a wetland must be approved by the Environmental Inspector(s). • In wetlands, implement appropriate mitigation for wildlife (e.g., mitigation for migratory birds, amphibian breeding habitat, ungulate winter range, raptor nests) as detailed in the EMP, as applicable • Reduce the width of grubbing near watercourses, wetlands and through other wet areas to facilitate the restoration of shrub communities and to avoid creating bog holes. • Use natural recovery in wetland areas unless invasive species or noxious/restricted weeds are a concern, unless otherwise specified by the relevant regulatory authority. <p>From Table 7-1 of the approved Environmental Management Plan prepared to satisfy Condition 26 of the EAC #E14-03:</p> <ul style="list-style-type: none"> • Hunting and wildlife sites are areas where large mammals such as elk, moose, deer, caribou and bear are commonly harvested. Key wildlife species are identified both in community discussion and by observed game ambushes, blinds and hunting stands, dry meat racks and butchered animal remains. Furthermore, locales where game can be expected, such as mineral licks, calving areas and well-used game trails, are typically prized hunting areas.
Potential adverse effects on wetlands	Potential loss of wetland habitat, function and water quality also affecting wildlife and vegetation during construction of the proposed Project	<p>Key mitigation measures to address wetland concerns in the reduced Technical Boundary include the following:</p> <p>From Sections 8.4.3, 8.7.3, 8.8.3 of the approved Environmental Management Plan prepared to satisfy Condition 26 of the EAC E14-03:</p> <ul style="list-style-type: none"> • If water levels or flow rates in the trench could overwhelm existing trench water control measures (berms, take offs, etc.), thereby increasing the risk of sediment-laden water affecting wetlands or watercourses (e.g., if heavy rains are forecast), dewater and backfill the trench to create a soft plug, or maintain an existing hard plug. • Preserve water quality, including preventing the introduction of foreign material (debris, sediment, etc.) into the receiving waterbody/watercourse. Do not dewater directly to watercourses or wetlands. • Use natural recovery in peatland and non-peatland wetlands. • Apply seed to all disturbed surfaces (except cultivated fields and wetlands), unless otherwise specified on the environmental worksheets. • Implement measures in the approved Wetlands Management Plan (Appendix D.12 of the Environmental Management Plan) prepared to satisfy Condition # 5 of the EAC #E14-03

2019 Interests and Concerns Raised during the 2019 TEK Field Program	Interests and Concerns Raised During TEK Field Programs Previous to 2019	Key Mitigation from the Approved Environmental Management Plans to Address Interests and Concerns
Potential adverse effects on fish and fish habitat	Potential adverse effects on fish and fish habitat	<p>Key mitigation measures to address fish and fish habitat concerns in the reduced Technical Boundary include the following:</p> <p>From Section 8.4.3 of the approved Environmental Management Plan prepared to satisfy Condition 26 of the EAC #E14-03:</p> <ul style="list-style-type: none"> Prohibit clearing of extra temporary workspace within 10 m of a watercourse to protect riparian areas. This area shall be clearly marked prior to clearing operations. The construction footprint will be narrowed through the riparian area, if practical. Limit clearing activities at watercourse crossings to the removal of trees and shrubs to the ditch line and work side areas required for vehicle crossings. Fell trees away from watercourses. Immediately remove trees, debris or soil inadvertently deposited below the high watermark of a watercourse. When altering a tree that is located on the bank of a waterbody, where practical, ensure that the root structure and stability are maintained to help bind the soil and encourage rapid colonization of low-growing plant species. If the working surface is unstable, do not permit clearing equipment within the 10 m riparian buffer, pending consultation with the Environmental Inspector(s). Following clearing, the 10 m riparian buffer will remain intact (i.e., consisting of low-lying understory vegetation). When riparian areas are being crossed the following mitigation will be implemented: include no extra temporary workspace, limit grubbing to the ditch line, and lay geotextile material or place log corduroy alongside the riparian area for heavy machinery, where applicable. Ensure that drilling mud composition is limited to bentonite-based systems (e.g., bentonite, water and industry standard additives). Implement the Directional Drilling Procedures and Instream Drilling Mud Release Contingency Plan. Implement the Water Quality Monitoring Plan (Appendix E.2 of the Environmental Management Plan) to monitor water quality during instream construction activities. Exceedances of water quality parameters will be reported to the Environmental Inspector and corrective actions will be developed in consultation with the Resource Specialist, the construction management team and the BC OGC. If corrective actions are not successful, construction activities will be temporarily suspended until effective solutions are identified. Return the bed and banks of each watercourse to as close as practical to their original construction preparation contours. Do not realign or straighten watercourses or change their hydraulic characteristics.
Potential disturbance of archaeological sites	Potential disturbance of archaeological sites.	<p>Key mitigation measures to be implemented in the event that heritage resources are discovered during construction in the reduced Technical Boundary include the following:</p> <p>From Section C.11 (Heritage Resources Discovery Contingency Plan) of the approved Environmental Management Plan prepared to satisfy Condition 26 of the EAC #E14-03:</p> <ul style="list-style-type: none"> Suspend work immediately in the vicinity of any newly discovered archaeological or historical site (i.e., up to 100 m) and any newly discovered palaeontological site (i.e., within 30 m). Notify the Environmental Inspector(s) who will notify the Coastal GasLink Construction Manager and Coastal GasLink's Heritage Resource Specialist. Coastal GasLink's Heritage Resource Specialist will provide an initial assessment review of potential archaeological, palaeontological and historical remains and will advise the Environmental Inspector to allow construction to resume or, in the event of a confirmed or potential discovery, Coastal GasLink will proceed by notifying applicable regulatory agencies (e.g., BC OGC or BC MFLNRORD), as required. Arrange for emergency archaeological, historical (including architectural sites) or palaeontological resource excavation of previously unidentified sites endangered by the proposed Project during construction, wherever such sites warrant attention and can be excavated safely. When, for practical reasons, the sites cannot be investigated, map and flag these sites for protection and later investigation. Coastal GasLink will notify affected Indigenous groups of heritage resource discoveries within their Traditional Territory.

Appendix C

Summary of Dark House Engagement, Interests and Concerns

Interest or Concern Raised by Dark House	Coastal GasLink Response Actions Taken	Status
<p>Traditional Use Activities Dark House raised a number of concerns and questions regarding potential barriers to access and use of their traditional territory related to the Project. Dark House indicated concern that the Project will affect traditional use activities as Dark House has indicated that this is the only area that Dark House and Unist’ot’en Healing Centre (UHC) clients can access freely according to Wet’suwet’en Law. Specific uses discussed include the following.</p> <ul style="list-style-type: none"> • Recreational areas to carry out cultural/traditional activities and activities related to UHC programming. • Trails used by Dark House members and UHC clients to carry out cultural/traditional activities and activities related to UHC programming • this is the only area where Dark House and UHC clients can freely hunt and fish • The area is a core harvesting territory for Dark House members, which supports UHC activities. • Gathering places for Dark House members and UHC clients could overlap with the pipeline footprint and LSA, and may be disrupted as a result of construction and operations. • The Project footprint or LSA overlaps with gathering places used by Dark House members and UHC clients for cultural/traditional activities and UHC activities. Project construction and operation may disrupt and interfere with access to and use of these sites. <p>Dark House raised concerns about project-related barriers to accessing their traditional territory during construction and operations activities. Specifically, Dark House has clarified that:</p> <ul style="list-style-type: none"> • Unist’ot’en Healing Centre (UHC) location is not limited to the facility, but extends to the surrounding land • Project activities create barriers to accessing and spending time on the land • Construction activities create access limitations to the UHC and areas of Dark House traditional territory 	<p>Coastal GasLink responded to the concerns raised by Dark House in a meeting with Dark House and EAO on May 15, 2020. In follow up, Coastal GasLink submitted a letter of response to Dark House (Chief Knedebeas, Ms. Huson, and Dr. Tait) on May 28, 2020 (Attachment A), addressing the interests and concerns raised. Further to this, Coastal GasLink has established Terms of Reference (Attachment B) with Dark House’s preferred consultant, Crossroads Cultural Resource Management (Crossroads CRM) and funded work to inform information gathering by Dark House for a submission to EAO on impacts to traditional use of the project.</p>	<p>Information provided by Dark House has been considered in the updated Condition 1 Report 2 for submission to EAO in July 2020.</p> <p>Coastal GasLink recognizes that the level of assessment detail in the Condition 1 report is not reflective of all site-specific concerns and interests raised by Dark House. To the extent that there is interest by Dark House, Coastal GasLink is committed to continue working collaboratively with Dark House to implement Phases 2 and 3 of the attached Terms of Reference (Attachment B) as part of its continued efforts around detailed project design and detailed construction planning. Coastal GasLink views these efforts to be beyond the scope of Condition 1, but important to the successful construction and operation of the Project.</p>
<p>Cultural Activities Dark House raised concerns about project activities disrupting cultural activities, including</p> <ul style="list-style-type: none"> • Inter-generational transfer of knowledge • Culture • Inability to participate in cultural gatherings 	<p>Coastal GasLink responded to the concerns raised by Dark House in a meeting with Dark House and EAO on May 15, 2020. In follow up, Coastal GasLink submitted a letter of response to Dark House (Chief Knedebeas, Ms. Huson, and Dr. Tait) on May 28, 2020 (Attachment A), addressing the interests and concerns raised. Further to this, Coastal GasLink has established Terms of Reference (Attachment B) with Dark House’s preferred consultant, Crossroads Cultural Resource Management (Crossroads CRM) and funded work to inform information gathering by Dark House for a submission to EAO on impacts to traditional use of the project.</p>	<p>Information provided by Dark House has been considered in the updated Condition 1 Report 2 for submission to EAO in July 2020.</p> <p>Coastal GasLink recognizes that the level of assessment detail in the Condition 1 report is not reflective of all site-specific concerns and interests raised by Dark House. To the extent that there is interest by Dark House, Coastal GasLink is committed to continue working collaboratively with Dark House to implement Phases 2 and 3 of the attached Terms of Reference (Attachment B) as part of its continued efforts around detailed project design and detailed construction planning. Coastal GasLink views these efforts to be beyond the scope of Condition 1, but important to the successful construction and operation of the Project.</p>

Interest or Concern Raised by Dark House	Coastal GasLink Response Actions Taken	Status
<p>Unist'ot'en Healing Centre Purpose Dark House has described that the UHC's purpose is to reconnect Indigenous people with the land, and facilitate healing from past trauma and events. Dark House raised concerns about Project activities interfering with UHC activities and desired outcomes of cultural healing and Indigenous self-determination</p>	<p>Coastal GasLink responded to the concerns raised by Dark House in a meeting with Dark House and EAO on May 15, 2020. In follow up, Coastal GasLink submitted a letter of response to Dark House (Chief Knedebeas, Ms. Huson, and Dr. Tait) on May 28, 2020 (Attachment A), addressing the interests and concerns raised. Further to this, Coastal GasLink has established Terms of Reference (Attachment B) with Dark House's preferred consultant, Crossroads Cultural Resource Management (Crossroads CRM) and funded work to inform information gathering by Dark House for a submission to EAO on impacts to traditional use of the project.</p>	<p>Information provided by Dark House has been considered in the updated Condition 1 Report 2 for submission to EAO in July 2020.</p> <p>Coastal GasLink recognizes that the level of assessment detail in the Condition 1 report is not reflective of all site-specific concerns and interests raised by Dark House, and is committed to continue working collaboratively with Dark House to implement Phases 2 and 3 of the attached Terms of Reference (Attachment B) as part of its continued efforts around detailed project design and detailed construction planning. Coastal GasLink views these efforts to be beyond the scope of Condition 1, but important to the successful construction and operation of the Project.</p>
<p>Drinking Water Dark House raised concerns about the effects on and access to drinking water from the Morice River. Dark House is interested in maintaining water quality of Morice River due to its cultural significance and healing properties.</p>	<p>Coastal GasLink responded to the concerns raised by Dark House in a meeting with Dark House and EAO on May 15, 2020. In follow up, Coastal GasLink submitted a letter of response to Dark House (Chief Knedebeas, Ms. Huson, and Dr. Tait) on May 28, 2020 (Attachment A), addressing the interests and concerns raised.</p> <p>Coastal GasLink provided information to Dark House in meetings with BC EAO, on June 4 and June 19, 2020 focused on construction methods and mitigation. The June 4, 2020 meeting resulted in detailed questions about watercourse crossing approaches for the Morice and Gosnell Rivers as well as Crystal Creek. During the meeting on June 19, 2020, Coastal GasLink provided detailed information on construction methods and mitigation for crossing of wetlands and watercourses.</p>	<p>Information provided by Dark House has been considered in the updated Condition 1 Report 2 for submission to EAO in July 2020.</p> <p>Coastal GasLink recognizes that the level of assessment detail in the Condition 1 report is not reflective of site-specific concerns and interests raised by Dark House. To the extent that there is interest by Dark House, Coastal GasLink is committed to continue working collaboratively with Dark House to implement Phases 2 and 3 of the attached Terms of Reference (Attachment B) as part of its continued efforts around detailed project design and detailed construction planning. Coastal GasLink views these efforts to be beyond the scope of Condition 1, but important to the successful construction and operation of the Project.</p>

Interest or Concern Raised by Dark House	Coastal GasLink Response Actions Taken	Status
<p>Viability of the Unist’ot’en Healing Centre Dark House raised a number of concerns and questions regarding the viability of the UHC. Concerns include the following.</p> <ul style="list-style-type: none"> • Construction and operations will result in residual and cumulative effects on Dark House and the UHC, including impacts from curtailing UHC activities during construction and pipeline maintenance. • Impacts on grant funding, employee and client retention, and the UHC’s ability to provide services to clients. Many UHC participants curtailed their treatment in 2019 due to interference in trapping programs by Coastal GasLink contractors. • Coastal GasLink construction activities, to date, have significantly affected community quality of life for Dark House and UHC clients. Additional impacts are anticipated as a result of further construction and operations. • Increased traffic as a result of Coastal GasLink construction activities, to date, has significantly affected Dark House and UHC clients. Additional impacts are anticipated as a result of further construction and operations. <p>Questions regarding the viability of the UHC were raised by Dark House, specifically asking how Coastal GasLink has:</p> <ul style="list-style-type: none"> • considered cumulative and residual effects on Dark House community economic resilience, including impacts on grant funding, employee and client retention, retention of partnerships with local health authorities, and overall effectiveness of UHC programming and activities • considered how construction in the surrounding areas affected Dark House and the UHC so far • considered whether UHC clients have been unable to complete treatment programs due to construction activities • considered whether UHC clients have experienced relapses as a result of impacts on UHC programming, and what further effects will occur; and • considered how increased traffic has affected Dark House and UHC programming, to date, and whether the effects have been successfully mitigated using the measures laid out in the EAC Application for the Project 	<p>Coastal GasLink responded to the concerns raised by Dark House in a meeting with Dark House and EAO on May 15, 2020. In follow up, Coastal GasLink submitted a letter of response to Dark House (Chief Knedebeas, Ms. Huson, and Dr. Tait) on May 28, 2020 (Attachment A), addressing the interests and concerns raised. Further to this, Coastal GasLink has established Terms of Reference (Attachment B) with Dark House’s preferred consultant, Crossroads Cultural Resource Management (Crossroads CRM) and funded work to inform information gathering by Dark House for a submission to EAO on impacts to traditional use of the project.</p>	<p>Information provided by Dark House has been considered in the updated Condition 1 Report 2 for submission to EAO in July 2020.</p> <p>Coastal GasLink recognizes that the level of assessment detail in the Condition 1 report is not reflective of site-specific concerns and interests raised by Dark House. To the extent that there is interest by Dark House, Coastal GasLink is committed to continue working collaboratively with Dark House to implement Phases 2 and 3 of the attached Terms of Reference (Attachment B) as part of its continued efforts around detailed project design and detailed construction planning. Coastal GasLink views these efforts to be beyond the scope of Condition 1, but important to the successful construction and operation of the Project.</p>

Interest or Concern Raised by Dark House	Coastal GasLink Response Actions Taken	Status
<p>COVID-19 Dark House raised concerns about project activities during the COVID-19 pandemic, including risk to health of elders and lack of access to medical services</p>	<p>In virtual meetings with Dark House and Dark House representatives, Coastal GasLink has indicated that it shares Dark House’s concern with respect to COVID-19 and does not want to put any community members at risk.</p> <p>Coastal GasLink provided an overview description of the measures implemented by the company to ensure the safety of communities. The company has indicated the following, with respect to COVID-19 on its website.</p> <p>Coastal GasLink shares the concerns about the ongoing COVID-19 pandemic and its impact to individuals and communities. There have been no confirmed COVID-19 cases of any individuals working on the Coastal GasLink project. Coastal GasLink will continue to take precautionary measures to ensure the health and safety of everyone involved, including through implementation of measures such as those examples listed below:</p> <ul style="list-style-type: none"> • adhering to all health directives and government guidelines to slow the spread of COVID-19 • Enhanced screening measures to assess workers for potential symptoms, and providing self-isolation practices to support workers who may have symptoms • Increased access to hand washing facilities and enhanced cleaning and disinfection at workforce accommodations • Utilizing global medical experts International SOS to ensure workers have 24/7 access to medical care and advice, and to reduce strain on local health infrastructure • Implementing physical distancing requirements on site and at workforce accommodation lodges. These include individual bedrooms, and staggered use of dining and common areas. • Staying connected to various levels of health and government agencies to ensure we’re aligned with recommended standards to meet risk levels. Incident Management Teams have been set up across TC Energy, Coastal GasLink, and with our prime contractors and workforce accommodation sites. • Proactively closing our major metropolitan offices and having our employees work remotely, canceling non-critical travel and holding meetings with partners, where possible, via phone or video conferencing. • Requiring all our workers to follow safe practices including hygiene, avoiding large public gatherings, adhering to travel restrictions, and staying away from work if they are sick. • Implementation of screening protocol for all workers and a detailed pre-access COVID-19 questionnaire. 	<p>Coastal GasLink continues to manage risks and concerns associated with the COVID-19 pandemic actively, and will continue to discuss with Dark House measures to best engage in discussion about the project and construction activities using virtual techniques. Coastal GasLink views the circumstances associated with the pandemic to be outside of the scope of Condition 1.</p>
<p>RCMP Presence Dark House raised concerns about safety and presence of RCMP resulting from ongoing surveillance activities near the Project</p>	<p>Coastal GasLink recognizes the concerns raised by Dark House, and will continue to work collaboratively with Dark House to address safety concerns.</p>	<p>Although Coastal GasLink views the presence of security and RCMP personnel in the area to be outside the scope of Condition 1, it acknowledges that these are serious concerns for Dark House. Coastal GasLink is committed to continued dialogue with Dark House regarding safety and security.</p>

Interest or Concern Raised by Dark House	Coastal GasLink Response Actions Taken	Status
<p>Wetlands Dark House expressed concerns and questions regarding the integrity of the Gosnell Wetland Complex as this is considered a significant wetland used by Dark House and UHC clients. Activities include beaver hunting, moose hunting, waterfowl hunting and trapping of certain species. The following questions relating to wetlands were asked by Dark House .</p> <ul style="list-style-type: none"> • Was wetland function field work conducted here? • What about residual and cumulative effects to Gosnell Wetland Complex function? • Will multiple pipelines impacting this wetland have cumulative adverse effects? <p>Dark House requested further information on construction approach through Gosnell River wetland complex.</p>	<p>Coastal GasLink responded to the concerns raised by Dark House in a meeting with Dark House and EAO on May 15, 2020. In follow up, Coastal GasLink submitted a letter of response to Dark House (Chief Knedebeas, Ms. Huson, and Dr. Tait) on May 28, 2020 (Attachment A), addressing the interests and concerns raised.</p> <p>Coastal GasLink provided information to Dark House in meetings with BC EAO, on June 4 and June 19, 2020 focused on construction methods and mitigation. The June 4, 2020 meeting resulted in detailed questions about watercourse and wetland crossing approaches for the Morice and Gosnell Rivers as well as Crystal Creek. During the meeting on June 19, 2020, Coastal GasLink provided detailed information on construction methods and mitigation for crossing of wetlands and watercourses.</p>	<p>Information provided by Dark House has been considered in the updated Condition 1 Report 2 for submission to EAO in July 2020.</p>
<p>Watercourse crossings and fish habitat Dark House expressed concerns and questions relating to aquatics and fish and fish habitat, inclusive of no snorkel survey for spawning habitat being conducted at the Gosnell crossing and that the crossing has not been assessed for its effects on fish spawning habitat.</p> <p>Dark House expressed concerns and questions about watercourse crossing installation at Morice River, Gosnell Creek and Crystal Creek.</p>	<p>Coastal GasLink responded to the concerns raised by Dark House in a meeting with Dark House and EAO on May 15, 2020. In follow up, Coastal GasLink submitted a letter of response to Dark House (Chief Knedebeas, Ms. Huson, and Dr. Tait) on May 28, 2020 (Attachment A), addressing the interests and concerns raised.</p> <p>Coastal GasLink provided information to Dark House in meetings which included BC EAO, on June 4 and June 19, 2020 which focused on construction methods and mitigation. The June 4, 2020 meeting resulted in detailed questions about watercourse and wetland crossing approaches for the Morice and Gosnell Rivers as well as Crystal Creek. During the meeting on June 19, 2020, Coastal GasLink provided detailed information on construction methods and mitigation for crossing of wetlands and watercourses.</p>	<p>Information provided by Dark House has been considered in the updated Condition 1 Report 2 for submission to EAO in July 2020.</p>
<p>Rare Plant Surveys Dark House expressed a concern about the rare plant survey frequency conducted within the MRTB, including qualifications of the qualified professionals. Concern was raised about only a single rare plant survey being undertaken in the reduced Morice River Technical Boundary area in 2019.</p>	<p>Coastal GasLink responded to the concerns raised by Dark House in a meeting with Dark House and EAO on May 15, 2020. In follow up, Coastal GasLink submitted a letter of response to Dark House (Chief Knedebeas, Ms. Huson, and Dr. Tait) on May 28, 2020 (Attachment A), addressing the interests and concerns raised.</p> <p>Coastal GasLink views the surveys completed to inform the COR 2 report to be sufficient for the purpose of Condition 1, however recognizes the value in additional data collection for the purpose of site-specific mitigation planning. In the June 19, 2020 meeting, Coastal GasLink committed to undertake further rare plant surveys in advance of construction, and has offered participation in these surveys to Dark House.</p>	<p>Information provided by Dark House has been considered in the updated Condition 1 Report 2 for submission to EAO in July 2020.</p>

Interest or Concern Raised by Dark House	Coastal GasLink Response Actions Taken	Status
<p>Collection of Aboriginal Traditional Knowledge (ATK) Dark House expressed concerns and questions related to collection of ATK, and suggested that the ATK was not collected in accordance with AIR methodology.</p>	<p>Coastal GasLink responded to the concerns raised by Dark House in a meeting with Dark House and EAO on May 15, 2020. In follow up, Coastal GasLink submitted a letter of response to Dark House (Chief Knedebeas, Ms. Huson, and Dr. Tait) on May 28, 2020 (Attachment A), addressing the interests and concerns raised. Further to this, Coastal GasLink has established Terms of Reference (Attachment B) with Dark House's preferred consultant, Crossroads Cultural Resource Management (Crossroads CRM) and funded work to inform information gathering by Dark House for a submission to EAO on impacts to traditional use of the project.</p>	<p>Information provided by Dark House has been considered in the updated Condition 1 Report 2 for submission to EAO in July 2020.</p> <p>Coastal GasLink recognizes that the level of assessment detail in the Condition 1 report is not reflective of all site-specific concerns and interests raised by Dark House. To the extent that there is interest by Dark House, Coastal GasLink is committed to continue working collaboratively with Dark House to implement Phases 2 and 3 of the attached Terms of Reference (Attachment B) as part of its continued efforts around detailed project design and detailed construction planning. Coastal GasLink views these efforts to be beyond the scope of Condition 1, but important to the successful construction and operation of the Project.</p>
<p>Cumulative Effects Assessment Dark House questioned why there were residual effects identified in COR2, but cumulative effects were not assessed, as required by the AIR?</p>	<p>Coastal GasLink responded to the concerns raised by Dark House in a meeting with Dark House and EAO on May 15, 2020. In follow up, Coastal GasLink submitted a letter of response to Dark House (Chief Knedebeas, Ms. Huson, and Dr. Tait) on May 28, 2020 (Attachment A), addressing the interests and concerns raised.</p>	<p>Information provided by Dark House has been considered in the updated Condition 1 Report 2 for submission to EAO in July 2020.</p>
<p>New Human Receptor Sites Dark House indicated that new human habitation locations (human receptor sites) have been established in the MRTB since the Application was submitted.</p>	<p>Coastal GasLink responded to the concerns raised by Dark House in a meeting with Dark House and EAO on May 15, 2020. In follow up, Coastal GasLink submitted a letter of response to Dark House (Chief Knedebeas, Ms. Huson, and Dr. Tait) on May 28, 2020 (Attachment A), addressing the interests and concerns raised. Further to this, Coastal GasLink has established Terms of Reference (Attachment B) with Dark House's preferred consultant, Crossroads Cultural Resource Management (Crossroads CRM) and funded work to inform information gathering by Dark House for a submission to EAO on impacts to traditional use of the project.</p>	<p>Information provided by Dark House has been considered in the updated Condition 1 Report 2 for submission to EAO in July 2020.</p> <p>Coastal GasLink recognizes that the level of assessment detail in the Condition 1 report is not reflective of all site-specific concerns and interests raised by Dark House. To the extent that there is interest by Dark House, Coastal GasLink is committed to continue working collaboratively with Dark House to implement Phases 2 and 3 of the attached Terms of Reference (Attachment B) as part of its continued efforts around detailed project design and detailed construction planning. Coastal GasLink views these efforts to be beyond the scope of Condition 1, but important to the successful construction and operation of the Project.</p>
<p>Pesticides Dark House expressed questions regarding the use of pesticides.</p>	<p>Coastal GasLink responded to the concerns raised by Dark House in a meeting with Dark House and EAO on May 15, 2020. In follow up, Coastal GasLink submitted a letter of response to Dark House (Chief Knedebeas, Ms. Huson, and Dr. Tait) on May 28, 2020 (Attachment A), addressing the interests and concerns raised.</p>	<p>Information provided by Dark House has been considered in the updated Condition 1 Report 2 for submission to EAO in July 2020.</p>
<p>Archaeology/ Heritage Assessment Dark House representatives have raised concerns about the scope of the archaeological and heritage investigations relative to the AIR for the Project.</p>	<p>Coastal GasLink responded to the concerns raised by Dark House in a meeting with Dark House and EAO on May 15, 2020. In follow up, Coastal GasLink submitted a letter of response to Dark House (Chief Knedebeas, Ms. Huson, and Dr. Tait) on May 28, 2020 (Attachment A),</p>	<p>Information provided by Dark House has been considered in the updated Condition 1 Report 2 for submission to EAO in July 2020.</p>

Interest or Concern Raised by Dark House	Coastal GasLink Response Actions Taken	Status
<p>Titanium Peak Compressor Station Dark House expressed concerns regarding the Titanium Peak Compressor Station and how it could affect Dark House members and UHC clients due to its proximity to cabins and intensive use sites. Questions included the following.</p> <ul style="list-style-type: none"> • How has Coastal GasLink considered where the human receptor sites are located? • How has Coastal GasLink considered the location of the UHC and cabin sites in relation to the compressor station? • What residual and cumulative effects are anticipated? 	<p>The Titanium Peak Compressor Station is outside of the reduced MRTB area, and therefore outside of the scope of this Condition 1 review process. Coastal GasLink responded to the concerns raised by Dark House in a meeting with Dark House and EAO on May 15, 2020. In follow up, Coastal GasLink submitted a letter of response to Dark House (Chief Knedebeas, Ms. Huson, and Dr. Tait) on May 28, 2020 (Attachment A), addressing the interests and concerns raised.</p>	<p>Information provided by Dark House has been considered in the updated Condition 1 Report 2 for submission to EAO in July 2020.</p> <p>Coastal GasLink recognizes that the level of assessment detail in the Condition 1 report is not reflective of all site-specific concerns and interests raised by Dark House. To the extent that there is interest by Dark House, Coastal GasLink is committed to continue working collaboratively with Dark House to implement Phases 2 and 3 of the attached Terms of Reference (Attachment B) as part of its continued efforts around detailed project design and detailed construction planning. Coastal GasLink views these efforts to be beyond the scope of Condition 1, but important to the successful construction and operation of the Project.</p>

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CGL4703-CGP-DARKH-REG-LTR-3785

28 May 2020

Dark House
620 CN Station Road
Smithers, BC, V0J 2N1

via email

Dear Chief Knedebeas, Ms. Huson and Dr. Tait

Re: Coastal GasLink Pipeline Project – Responses to Dark House

On March 11, 2014, Coastal GasLink Pipeline Ltd. (Coastal GasLink) submitted an Application for an Environmental Assessment Certificate (EAC) to the British Columbia (BC) Environmental Assessment Office (EAO) for the Coastal GasLink Pipeline Project (the Project). On October 23, 2014, Coastal GasLink received EAC No. E14-03 for the Project, which includes Schedule B, Table of Conditions. Condition No. 1 (EAC Condition 1) requires Coastal GasLink to complete and report on biophysical information collected for the Morice River Technical Boundary (MRTB). To fulfill the biophysical requirements of EAC Condition 1, Coastal GasLink submitted the following three reports:

1. EAC No. E14-03 Condition 1 Report No. 1 (October 30, 2015), hereafter referred to as the 2015 COR1;
2. EAC No. E14-03 Condition 1 Report No. 2 (November 19, 2019), hereafter referred to as the 2019 COR2; and
3. EAC No. E14-03 Condition 1 Report No. 2, hereafter referred to as the updated COR2 Report.

As part of BC EAO's ongoing review of the updated COR2 Report, consultation with representatives of Dark House is ongoing. Dark House representatives reviewed the updated COR2 Report and provided questions and comments to BC EAO and Coastal GasLink on May 1, 2020. In this document, Coastal GasLink provides information in response to the questions raised. The information is provided in topical themes, including:

- biophysical valued components (VCs): wetlands, aquatics and vegetation;
- collection of Aboriginal Traditional Knowledge (ATK);
- cumulative effects;
- human health;
- use of pesticides;
- archaeology/heritage;
- compressor stations;
- viability of the Unist'ot'en Healing Centre (UHC); and
- Dark House use of traditional territory.

Wetlands

Dark House expressed concerns and questions regarding the integrity of the Gosnell Wetland Complex as this is considered a significant wetland used by Dark House and UHC clients. Activities include beaver hunting, moose hunting, waterfowl hunting and trapping of certain species. The following questions relating to wetlands were asked by Dark House:

- Was wetland function field work conducted here?
- What about residual and cumulative effects to Gosnell Wetland Complex function?

Coastal GasLink acknowledges the potential adverse effects of the Project on wetland function in the EAC Application and describes mitigation that has been demonstrated as effective in pipeline construction in other wetland complexes of similar altitude and complexity. For example, mitigation measures implemented for past pipeline construction projects have successfully reduced effects on wetlands. Post-construction environmental monitoring of wetland function at disturbed wetlands along pipeline projects on forested, higher elevation lands, similar to lands crossed by the Project, have shown that mitigation measures implemented during construction (e.g., profile reconstruction, allowing natural regeneration, seed back maintenance, hydrology maintenance, proper soil handling) have proven to be successful; wetlands have been confirmed to be resilient when such mitigation methods are utilized. For example, the TMX – Anchor Loop Project (TERA Environmental Consultants [TERA] 2009a,b, 2011a,b, 2013a,b,c,d) showed that the wetland mitigation was successful and that wetlands were on the trajectory to reaching pre-construction conditions within 5 years of construction.

Other pipeline projects in BC and in the Green Area of Alberta, such as NOVA Gas Transmission Ltd.'s Groundbirch Mainline Project (TERA 2013e) and Tanghe Creek Lateral Loop No. 2 (Sloat Creek Section) (TERA 2014) have shown through post-construction environmental monitoring that wetland function was restored successfully and that successional vegetation within some wetland types (i.e., graminoid dominated wetlands) would regenerate within wetlands within the first year following construction, while treed and shrubby wetland vegetation regenerated in following years.

Coastal GasLink acknowledges that the Project alignment crosses the Gosnell Wetland Complex (WL-1257). Field work related to wetland function was conducted at the Gosnell Wetland Complex on June 6, 2015. In addition, and as part of mitigation implementation for the Project, a route walk will be conducted in spring/early summer 2020 along Construction Section 7 to confirm current wetland boundaries and classification prior to construction. The Gosnell Wetland Complex will be included in this data confirmation program.

In the context of Condition 1, Coastal GasLink completed a comprehensive wetlands program of the area in 2015, and results are defined in the COR 1 report, available here:

https://www.projects.eao.gov.bc.ca/api/public/document/5c4b69d52c4b4b00240b6451/download/CGL4703-CGP-ENV-RP-017_Wetland_TDR_Rev%200_Oct%2030.pdf

The following specific sections contain relevant information:

- Section 3.4 of the 2015 Condition 1: Wetlands Technical Data Report (TDR) describes the attributes that determine a wetland's capacity to provide hydrological functions such as peak flow attenuation, downstream erosion reduction, groundwater recharge and baseflow provision.
- Section 4.0 of the 2015 Condition 1: Wetlands TDR reported that the wetlands within the MRTB study area provide the following hydrological functions: peak flow attenuation, groundwater recharge and downstream erosion reduction. Section 4.0 of the 2015 Condition 1: Wetlands TDR also reports that the key findings for wetlands within the MRTB are comparable to the baseline results presented for the TDR and the EAC Application for the proposed route of the Project.

In addition to the assessment of wetlands capacity to provide hydrological functions that is presented in the 2015 Condition 1: Wetlands TDR, pre-construction field surveys have been completed within the MRTB to assess wetlands potential to provide hydrological functions in accordance with the Wetland Management Plan (WMP), which was prepared in response to EAC Condition 6. Section 2.2 of the WMP describes the field methods used to assess hydrological functions of wetlands subject to the scope of the WMP.

Residual and cumulative effects that apply to the Gosnell Wetland Complex are addressed in Section 9 of the EAC Application for the Project. Temporary disturbance due to pipeline construction and operations activities is not expected to result in a net loss of functional wetland area when mitigation measures (e.g., restoring pre-construction contours and proper soil handling) are properly implemented.

Aquatics/Fish and Fish Habitat

Dark House expressed concerns and questions relating to aquatics and fish and fish habitat, inclusive of no snorkel survey for spawning habitat being conducted at the Gosnell crossing and that the crossing has not been assessed for its effects on fish spawning habitat.

Field programs to inform the EAC Application did not include snorkel surveys, which CGL explained would typically be done prior to construction but not during EA process. Field programs to inform the EAC Application were completed in accordance with the Fisheries and Oceans Canada *Practitioner's Guide to the Risk Management Framework for DFO Habitat Management Staff* (DFO 2006), per the Application Information Requirements (AIR). A full description of the methods used for field data collection is described in the EAC Application and associated Fish and Fish Habitat TDR.

Coastal GasLink implemented extensive aquatics programs in 2019 for multiple purposes, including satisfying Condition 1 and gathering more detailed, site-specific information about watercourse crossings to inform detailed construction planning and permit applications. The updated COR2 Report included information that was collected to inform Condition 1. Additional available information on stream crossings at the time of writing was also provided in the Aquatics Technical Data Report submitted alongside the COR 2 report.

As part of ongoing construction planning and permitting-related activities, crews have been remobilized for the detailed stream assessments and snorkel survey program for 2020. This includes a reconnaissance crew to determine whether conditions are appropriate for snorkel surveys and to perform additional surveys such as conditions and spawning assessments, as conditions allow. These surveys will be performed weekly until spawning is observed. Once spawning has been observed at a site, the surveys focus on gathering information about the spawning site (*i.e.*, how many redds are in the project footprint), and the frequency of subsequent surveys is reduced. Surveys will continue until July 2020 or until the conditions are no longer suitable for spring spawning, a determination that is made by the Qualified Professionals.

Vegetation

Dark House expressed a concern about the rare plant survey frequency conducted within the MRTB. Questions asked included the following:

- why does the COR2 Report indicate that the growing season within the MRTB is only 8 to 10 weeks; and
- which botanists conducted the survey?

Rare plant surveys were conducted within the MRTB; the kilometre post (KP) range was approximately KP 553 to KP 593 in 2014, 2015, 2018, and 2019. Fifteen rare plant survey plots were completed prior to the 2019 COR2 rare plant field program, and 18 more survey plots were added in 2019, bringing the total number of rare plant survey plots within the MRTB to 33 plots within the approximately 40-kilometre (km) section of the Project. Details are as follows:

- one plot between KP 553 and KP 554 (DP19145 on July 20, 2019);
- three plots between KP 554 and KP 555 (DP19144, DP19146 and DP19148 on July 20, 2019);
- one plot between KP 555 and KP 556 (DP19149 on July 20, 2019);
- three plots between KP 558 and KP 559 (DP19138, DP19139 and DP19141 on July 19, 2019);
- four plots between KP 564 and KP 565 (DP19133, DP19134, DP19135 and DP19136 on July 18, 2019);
- one plot between KP 565 and KP 566 (DP19137 on July 18, 2019);
- three plots between KP 567 and KP 568 (DP19128, DP19129 and DP19130 on July 16, 2019);
- two plots between KP 568 and KP 569 (DP19131 and DP19132 on July 16, 2019);
- one plot between KP 571 and KP 572 (DP14009 on July 12, 2014);
- six plots between KP 581 and KP 582 (DP14014 and DP14015 on July 14, 2014, DP14020 on July 15, 2014, and DP15215, DP15216 and DP15217 on September 3, 2015);

- two plots between KP 582 and KP 583 (DP18211 and DP18212 on August 9, 2018);
- four plots between KP 588 and KP 589 (DP14018 and DP14019 on July 15, 2014, and DP15226 and DP15227 on September 6, 2015); and
- two plots between KP 592 and KP 593 (DP18213 and DP18214 on August 9, 2018).

All rare plant surveys were completed between July 12 and September 6, 2019 (a seasonal period of approximately 7 weeks) because the MRTB study area spans a relatively high elevation in the Sub-Boreal Spruce moist cold (SBSmc) and Engelmann Spruce - Subalpine Fir moist cool and moist cold (ESSFmk and ESSFmc) biogeoclimatic (BGC) subzones. The elevation in this area ranges from 740 metres (m) to more than 1,000 m above sea level (averaging approximately 900 m). At this elevation, and in these BGC subzones, the growing season and flowering period is relatively short (e.g., 8 to 10 weeks) due to snow that may occur into late June/early July and return as early as mid- to late August or early September. Therefore, these rare plant surveys were timed to capture the peak flowering period, when chances of detecting and identifying potential rare plant occurrences are highest.

Dmitry Petelin, Ph.D (40 years of professional experience) was the lead botanist for the rare plant surveys in all 4 years, including the 2019 field program described in the COR2 Report. He was supported in 2014 by **Jessica Feschuk, M.Sc, P.Biol.** (19 years of professional experience) and in subsequent years by **Gabriel Garcia, A.Sc., R.B.Tech.** (8 years of professional experience; Terrace-based). All three are experienced with conducting rare plant surveys in the ecosystems crossed by the Project.

Field program planning and reporting of results were quality reviewed by **Matthew Ramsay, M.Sc, P.Ag.** (18 years of professional experience) and/or **Terry Conville, B.Sc., R.P.F.** (30 years of professional experience).

Collection of Aboriginal Traditional Knowledge

Dark House expressed concerns and questions related to collection of ATK, and suggested that the ATK was not collected in accordance with AIR methodology.

Coastal GasLink has been collecting ATK throughout Project planning and has made numerous offers to Dark House to participate. To inform the development of the COR 2 Report, Coastal GasLink offered an opportunity for interested Indigenous groups to participate in biophysical field investigations for the Project, including within the MRTB, and to contribute ATK in accordance with the AIR for the Project. ATK considers both Traditional Use Studies (TUS) and Traditional Ecological Knowledge (TEK). Indigenous groups with an interest in the Project contributed TUS investigations within the study area to inform the EAC Application.

On May 24, 2019, Coastal GasLink provided letters to the six Indigenous groups with an interest in the reduced MRTB, including:

- Dark House;
- Nee Tahi Buhn Band;
- The Office of the Hereditary Chiefs of the Wet'suwet'en;
- Skin Tye Nation;
- Witsset First Nation (previously Moricetown Indian Band); and
- Wet'suwet'en First Nation.

This letter provided an invitation to participate in the baseline field program within the reduced MRTB, and outlined two different options for participation.

For the 2019 field program carried out within the reduced MRTB, TEK was provided by community members from Witsset First Nation (previously Moricetown Indian Band), Skin Tye Nation and Wet'suwet'en First Nation. Wet'suwet'en community members attended biophysical field studies, as facilitated through a third-party Aboriginal contractor, but they did not participate on behalf of the Office of the Hereditary Chiefs of the Wet'suwet'en and Dark House, and they did not provide TEK. Nee Tahi Buhn Band chose not to participate in the 2019 field program. Results from the TEK program are provided in the updated COR2 Report.

Coastal GasLink is planning archaeology and wetland field programs in the area, and Coastal GasLink will continue to reach out to the six Indigenous groups mentioned, inviting them to participate. These field programs are outside of the scope of Condition 1.

Cumulative Effects

Dark House expressed concerns and questions relating to the collection of cumulative effects, inclusive of the following:

- Will multiple pipelines impacting the Gosnell wetland complex have cumulative adverse effects?
- why were there residual effects identified in COR2, but cumulative effects were not assessed, as required by the AIR?

Coastal GasLink updated the COR2 Report in order to provide a greater level of detail on the relevant effects pathways associated with the UHC, but an update of the cumulative effects assessment was not necessary given the assessment that was completed for the EAC Application. Coastal GasLink completed a cumulative effects assessment in the EAC Application in accordance with the AIR that considered a broad set of proposed projects at the time. A number of these projects are no longer being pursued. As a result, the cumulative potential adverse impacts on traditional land and resource use are conservatively represented in the EAC Application.

There would be no material change to the assessment of cumulative effects on the Traditional Land and Resource Use VC presented in the EAC Application.

Nonetheless, Coastal GasLink recognizes that there are potential effects and potential cumulative effects on traditional use activities in the area that are important to Dark House, and Coastal GasLink continues to be committed to working with Dark House to understand how the Project may impact these activities and to align on specific mitigation to address these concerns.

Human Health

Dark House indicated that new human habitation locations (human receptor sites) have been established in the MRTB since the Application was submitted.

Coastal GasLink is interested in understanding the locations of additional human habitation sites and discussing with Dark House the concerns that may exist relative to the Project and relevant mitigation to be applied.

In the context of Condition 1, Coastal GasLink updated the Human Health Assessment in the updated COR 2 report to address potential effects of Project construction on the UHC.

Use of Pesticides

Dark House expressed questions regarding the use of pesticides.

Concerns about the use of pesticides by some Indigenous groups along the Project are known and have been discussed throughout Project planning. The Project EAC contains the following condition specific to pesticide use:

“The Holder must use alternative methods of vegetations control, as specified in the Holder’s Invasive Plant Management Plan, in the asserted territories of Aboriginal Groups that have requested pesticides or herbicides not be used, and tracked in the Working Group Issue-Response Tracking Table (including First Nations) for the Coastal GasLink Pipeline Project, provided those alternative methods are consistent with the Integrated Pest Management Act”.

Coastal GasLink has developed an Invasive Plant Management Plan in accordance with Condition 16. Coastal GasLink notes that the Working Group Issues-Response Tracking Table referenced in Condition 16 does not contain a mention of concerns with pesticides by Dark House. Coastal GasLink has made numerous attempts to engage with Dark House on its content, starting in late February 2020. At this time, Coastal GasLink has not received any feedback. Additionally, through implementation of the Invasive Plant Management Plan, Coastal GasLink can employ alternate approaches, including mechanical removal for managing invasive plants if Dark House prefers not to use pesticides and herbicides.

Archaeology/Heritage

Dark House representatives have raised concerns about the scope of the archaeological and heritage investigations relative to the AIR for the Project.

Coastal GasLink recognizes that it must comply with the Heritage Conservation Act (HCA) and is committed to maintain its applicable regulatory commitments associated with heritage resources. Coastal GasLink conducted an archaeological assessment in accordance with the AIR to inform the environmental assessment. Having completed this work at the time of the EAC Application development, there was no need to do further work for the COR 2 report to satisfy Condition 1. Site-specific archaeological work is proceeding to inform permit applications. Dark House has been, and will continue to be, invited to participate in archaeological field work within its traditional territory. The following points address Coastal GasLink's approach to heritage resources in association with Condition 1:

- Completion of the EAC Application relied upon a desktop-based Archaeological Overview Assessment. Assessment conclusions pointed back to the comprehensive regulatory process that exists for archaeology through the BC Oil and Gas Commission (OGC) permitting process. Field-based archaeological assessments have been conducted throughout the Project in advance of construction. These assessments are planned for the reduced MRTB in June and July 2020.
- At the EAC Application development stage, route selection is ongoing and permitting level information is unknown; it is for this reason that site-specific discussions on the avoidance or disturbance of archaeological sites are conducted during Project permitting, which is informed by additional detail on detailed construction planning and detailed engineering.
- As the project progresses, Coastal GasLink completes archaeological impact assessments for the Archaeology Branch of Ministry of Forests, Lands, Natural Resources Operations and Rural Development to determine whether there are archaeological sites requiring permits for alteration or removal. Where sites have been identified, Coastal GasLink has made the appropriate applications to the OGC for removal or alteration of those sites.

Compressor Station

Dark House expressed concerns regarding the Titanium Peak Compressor Station and how it could affect Dark House members and UHC clients due to its proximity to cabins and intensive use sites. Questions included the following:

- How has Coastal GasLink considered where the human receptor sites are located?
- How has Coastal GasLink considered the location of the UHC and cabin sites in relation to the compressor station?
- What residual and cumulative effects are anticipated?

The Titanium Peak Compressor Station is outside of the reduced MRTB area and consequently beyond the scope of Condition 1. Coastal GasLink has not received any information from Dark House on the location of any additional human receptor sites, but is committed to ongoing collaboration with Dark House to understand these locations relative to the Titanium Peak Compressor Station and to discuss planned mitigation. Although Coastal GasLink views this topic to be outside of the scope of the Condition 1 COR2 Report, it provides the following information on the noise of the compressor station includes the following:

- In Coastal GasLink's most recent BC OGC application, compressor station noise at 1.5 km is expected to be about 36.8 decibels (dB). This is similar to a new and efficient refrigerator, or the level of noise if you are sitting quiet in your living room. The UHC is located greater than 1.5 km away from the Titanium Peak Compressor Station.
- The BC OGC application states a maximum case of 45.6 dB during the day and 39.0 dB at night, which is under the BC OGC-defined permissible sound levels for rural environments. BC OGC permissible sound levels for rural environments are 50 dB during the day and 40 dB at night.
- At the Titanium Peak Compressor Station fenceline, the noise level is approximately 97.8 dB. This noise level is similar to when you use some of your noisier home workshop tools, or a noisy motorcycle (both about 95 dB), or a jet taking off when you are 600 m away (100 dB).

Dark House also inquired about whether the Titanium Peak Compressor Station would be staffed. Coastal GasLink confirms that the Titanium Peak site will normally run without 24/7 onsite support, and safety systems are built into the stations to ensure the safety of the facility, employees, surrounding communities and the environment. Compressor stations are monitored 24/7 by safety systems, and will automatically shut down in case of abnormal operating conditions.

Technicians will be employed to monitor and maintain each compressor station location. As the Titanium Peak Compressor Station is located in a remote area, it contains living quarters that will be used intermittently throughout the year on an as-needed basis when technicians and operations personnel visit the compressor station for maintenance activities.

Viability of the Unist'ot'en Healing Centre

Dark House raised a number of concerns and questions regarding the viability of the UHC. Concerns include the following:

- Construction and operations will result in residual and cumulative effects on Dark House and the UHC, including impacts from curtailing UHC activities during construction and pipeline maintenance.
- Impacts on grant funding, employee and client retention, and the UHC's ability to provide services to clients. Dark House has indicated that some UHC participants clients curtailed their program participation in 2019 due to interference in trapping programs by Coastal GasLink contractors.
- Coastal GasLink construction activities, to date, have significantly affected community quality of life for Dark House and UHC clients. Additional impacts are anticipated as a result of further construction and operations.
- Increased traffic as a result of Coastal GasLink construction activities, to date, has significantly affected Dark House and UHC clients. Additional impacts are anticipated as a result of further construction and operations.

Additionally, questions regarding the viability of the UHC have been raised by Dark House, specifically asking how Coastal GasLink has:

- considered cumulative and residual effects on Dark House community economic resilience, including impacts on grant funding, employee and client retention, retention of partnerships with local health authorities, and overall effectiveness of UHC programming and activities;
- considered how construction in the surrounding areas affected Dark House and the UHC so far;
- considered whether UHC clients have been unable to complete treatment programs due to construction activities;
- considered whether UHC clients have experienced relapses as a result of impacts on UHC programming, and what further effects will occur; and
- considered how increased traffic has affected Dark House and UHC programming, to date, and whether the effects have been successfully mitigated using the measures laid out in the EAC Application for the Project.

Coastal GasLink believes that it is possible for the Project to exist and the UHC to thrive if a collaborative approach is taken to fine-tuning mitigation, implementing it and monitoring its effectiveness, and Coastal GasLink is committed to doing so.

The economic effects assessment has been completed in accordance with the AIR, which requires effects of the Project to be considered based on current economic conditions in local communities and the region. In accordance with the AIR, the assessment of effects of the Project on economy was completed at the Local Study Area (LSA) and Regional Study Area (RSA) scale (as defined in Section 12 of the EAC Application), with a focus on the economic impacts on municipalities and Aboriginal communities for the LSA and regional districts for the RSA. Assessment was not completed on the level of individual businesses, but on the economy of the jurisdictions overall. The focus was on the economy of each community, municipality and regional district affected. Baseline data were presented on economy for each Aboriginal community potentially affected, using community socio-economic baseline reports, information from Coastal GasLink's engagement program and desktop research (Section 12 of the EAC Application). Information presented for Dark House is reflective of Dark House's choice to not participate in socio-economic baseline data collection.

The EAC Application is considered complete and reflective as it captured the economic activities in the region. The assessment did not consider specific business operations, but rather considered the effects on categories of business activity that included guide outfitting and businesses like the UHC. Coastal GasLink did not assess any specific businesses like the UHC, as the assessment was completed at a different scale. The EAC Application did acknowledge potential adverse economic effects. While the assessment did not consider specific business operations such as the UHC, the residual effect “Temporary disruption of resource-based activities in the proposed Project area, including guide outfitting, hunting, trapping and agriculture” and its characterization continues to apply, including for specific examples like the UHC.

The Socio-economic Effects Management Plan (SEEMP) (Condition No. 24) identifies Coastal GasLink’s approach to implementing mitigation during construction to avoid or reduce potential adverse effects on economy, community infrastructure and community services. The process for how Coastal GasLink will monitor and report on the effectiveness of the mitigation includes engagement with SEEMP contacts a minimum of twice a year on potential adverse effects and mitigation effectiveness.

Coastal GasLink outlined extensive mitigation approaches to address social and economic effects and is committed to implementing these. In the case of the UHC, implementation of mitigation requires collaborative discussion between Coastal GasLink and the operators of the UHC to drive business continuity.

The following are some examples of base mitigation that could be refined through ongoing engagement.

- Communicate the Project schedule and identify the short-term nature of Project construction activities to local economic development organizations to manage expectations.
- Adhere to the Traffic Control Management Plan to reduce construction-related traffic and corresponding potential adverse effects on local business operations.
- Coastal GasLink shall notify registered trappers and guide outfitters a minimum of 2 weeks prior to commencing construction to confirm the timing and location of proposed Project activities (BC OGC: *BC Oil and Gas Activities Act*).

Relative to the concerns about the cumulative effects assessment, Coastal GasLink completed a cumulative effects assessment in the EAC Application that considered a broad set of proposed projects at the time. A number of these projects are no longer being pursued. As a result, the cumulative potential adverse impacts on economy is thought to be conservatively represented in the EAC Application and the COR2 was not updated to reflect this reduced cumulative effect.

Dark House Use of Traditional Territory

Dark House raised a number of concerns and questions regarding the use of their traditional territory. Concerns include the following:

- Dark House has indicated that the Project will affect traditional use activities as this is the only area that Dark House and UHC clients can operate in freely according to Wet’suwet’en Law. Specific uses include the following.
- Recreational areas to carry out cultural/traditional activities and activities related to UHC programming.
- Trails are used by Dark House members and UHC clients to carry out cultural/traditional activities and activities related to UHC programming. Some of the trails could overlap significantly with the pipeline footprint.
- Dark House has indicated that according to Wet’suwet’en Law, this is the only area where Dark House and UHC clients can freely hunt and fish. Dark House has also indicated that permission would be required to make use of the territories of other Wet’suwet’en Houses for traditional purposes.
- This is core harvesting territory for Dark House members, which supports UHC activities.
- Gathering places for Dark House members and UHC clients could overlap with the pipeline footprint and LSA, and may be disrupted as a result of construction and operations.
- The Project footprint or LSA overlaps with gathering places used by Dark House members and UHC clients for cultural/traditional activities and UHC activities. Project construction and operation may disrupt and interfere with access to and use of these sites.

Additionally, Dark House has questions regarding the use of their traditional territory, specifically how Coastal GasLink has:

- determined where these activities are carried out, including where these activities occur within the LSA or the Project footprint, and how the activities will be affected;
- determined the specific locations of these recreational areas in respect to the Project and the LSA, the time of year they are used by Dark House and UHC clients, the type of activities carried out in these areas, and how the Project will affect these activities;
- considered the location of the trails, whether the trails are located within the Project footprint rather than the LSA, how the trails are used to support Dark House activities and UHC core programming, what time of year the trails are used, and how the Project will affect the trails and related activities;
- determined the location of hunting blinds, cabins or fishing weir or camp sites and whether the locations are within the Project footprint, not just the LSA;
- considered which areas are used by Dark House members and the UHC for harvesting and whether those locations are within the Project footprint/LSA;
- determined where the traplines and cabins are located, where future cabins are to be placed and what the effects on these activities will be;
- determined the location of these trails, travelways and habitation sites, whether they are within the Project footprint rather than the LSA, how the trails are used to support UHC core programming, the time of year they are used and how the use of these sites will be affected;
- considered the location of gathering places used by Dark House members and UHC clients, the significance of these places for Dark House and the UHC, whether they are within the LSA or the Project footprint, and what the effects on Dark House members and UHC clients will be as a result of disruptions to gathering places;
- considered where the gathering places are located, whether they are within the LSA or the Project footprint, how the gathering places are used by Dark House and for UHC programming, what time of year they are used and what effects are anticipated on these locations.

In preparing the updated COR2 Update, Coastal GasLink considered the information that was available at the time of writing, including the following:

- biophysical data that has been collected in the MRTB;
- information from the EAC Application;
- direction received in BC EAO's February 19, 2020 letter to Coastal GasLink;
- UHC Program Plan 2020-2021;
- additional information provided by Coastal GasLink on January 28, 2020 in response to BC EAO and Dark House information requests, including:
 - Assessment of Updated TLU Baseline Conditions in the MRTB (Jacobs memorandum);
 - Condition 1 Biological Data Update (Stantec Consulting Ltd. memorandum); and
 - table of BC EAO Analysis and Query and Coastal GasLink Responses provided on January 23, 2020.

Since starting to plan the Project, Coastal GasLink has repeatedly invited Dark House to engage in Project planning, including ATK studies, and Dark House chose not to provide information or participate.

Coastal GasLink outlined extensive mitigation approaches to address social and economic effects and is committed to implementing these approaches. Effective implementation of mitigation requires site-specific planning with Dark House. Some examples of mitigation being implemented on the Project that Indigenous groups are deeply engaged with include the following.

- Coastal GasLink developed and implemented the Construction Monitoring and Community Liaison (CMCL) Program. The CMCL Program provides opportunities for Indigenous participation within their traditional territory for the purposes of engaging, observing, recording and reporting on construction activities.

- Coastal GasLink implemented the Extraordinary Legacy Initiative program, an internal program aimed to empower all Project personnel to create an extraordinary legacy of safety and respect for all people, communities and the environment. To date, over 1,000 employees and contractors have attended leadership workshop sessions as part of the program.

Coastal GasLink is committed to working collaboratively with Dark House to conduct this site -specific planning and to align detailed mitigation approaches to reduce the amount of disruption to the UHC caused by the construction of the Project. Coastal GasLink seeks to avoid disruption during the operations of the Project, to the extent feasible.

Coastal GasLink looks forward to continued dialogue with Dark House. Should you have any questions, please do not hesitate to contact Joel Forrest by telephone at (403) 921.0237 or via email (joel_forrest@tcenergy.com).

Sincerely,

Original signed by

Joel Forrest

Director, Environment, Land, Regulatory & Law

Coastal GasLink Pipeline Project

Cc: Kate Gunn, First Peoples Law

Jason Slade

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Dark House & Coastal GasLink – Condition 1 Information Gathering Report

Terms of Reference (June 12, 2020)

In reference to Dark House document titled “Phase 2 Report – Information Gathering and Assessment Condition 1 Report #2” (the Report), Coastal GasLink would like to implement a phased approach to addressing the interests and concerns raised by Dark House in the context of satisfying Environmental Assessment Certificate (EAC) Condition 1 as well as ongoing efforts to understand and co-operatively manage concerns raised by Dark House about Coastal GasLink construction and operations.

The work described in this document will be executed based on the following governance principles:

- Crossroads Cultural Resource Management (Crossroads CRM) will lead the completion of technical work associated with the scope described below, and will engage Jason Slade as a sub-contractor in support of the work and to drive continuity in discussions about Condition 1 to date.
- Before initiating work, Coastal GasLink will review Crossroads CRM’s scope, approach and cost estimate. Coastal GasLink will fund agreed-upon scope of work.
 - Where Crossroads CRM’s work includes Dark House community members, elders, contractors not directly employed by Crossroads CRM, Crossroads CRM will compensate those individuals by way of an honorarium, the price of which has been agreed upon between Coastal GasLink and Crossroads CRM.
- Rick Budhwa will lead Crossroads CRM’s execution of work, and the work will be executed based on direction by both Coastal GasLink and Dark House, whereby:
 - Coastal GasLink and Dark House will each provide input on the scope and deliverables of those aspects of the work which are to be funded by Coastal GasLink. At a minimum the items described in Phase 1 of these Terms of Reference will be included in the report. For greater certainty, Dark House retains the right to obtain and provide such further information in respect of the Condition 1 requirement and other project-related activities that Dark House considers relevant for the Condition 1 Report #2 review process.
 - Dark House provides input to Crossroads CRM on information to be considered and concerns and interests to be addressed as part of the work funded by Coastal GasLink. In advance of completion timelines described for each phase of work, Dark House is given an opportunity to review draft documentation from Crossroads CRM to confirm it accurately captures the concerns and interests raised.

Coastal GasLink has three desired outcomes of this work including:

- a) satisfying the requirements of EAC Condition 1,
- b) continuing to work with Dark House on site specific mitigation planning to inform final construction planning, and

- c) through continued communication and collaboration, continue to develop a productive working relationship with Dark House.

To that end, Coastal GasLink would like to proceed with the program in a phased approach, as outlined below.

Phase 1

Phase 1 work will be undertaken to capture additional information gathering relative to the scope of Condition 1. This scope involves gathering of available information required to describe and characterize, at a non-site specific level, the potential effects of the Project on Dark House, including general mitigation.

Specific scope has been defined based on the Report and Coastal GasLink's desired outcomes of completing this work, and includes:

- Preliminary oral information gathering regarding the COR2 in relation to the Unist'ot'en Healing Centre. Information gathering will be based on discussions with Dark House members and preliminary identification of specific land use locations in Dark House territory, including cabins, cabin sites, camp sites, ceremonial sites, cultural sites, and intensive-use hunting, trapping and travelway resources in the reduced Morice River Technical Boundary.
- Information regarding the potential impacts of the project on the economic viability of the Healing Centre, and defining the desired outcomes for the viability of the Healing Centre that will inform mitigation planning.
- Information regarding the potential impacts of the project on Community Quality of Life of the Dark House community, including a definition of desired outcomes that will inform mitigation planning.

Completion Timeline (Submission to EAO and Coastal GasLink): July 9, 2020

Responsible for delivery: Crossroads CRM under the leadership of Rick Budhwa

Deliverables: The Phase 1 deliverable will be a report outlining effects of the Project on Dark House, consistent with the valued components and scope defined in the AIR.

Report will be submitted to Coastal GasLink and EAO directly. Coastal GasLink will use the information to make a final update to Condition 1 Report 2, and EAO will consider it alongside Coastal GasLink's report in reaching a decision on Condition 1.

Phase 2 (Phase 2 and 3 are yet to be finalized)

Coastal GasLink recognizes the importance and value of site-specific information gathering and collaborative mitigation planning, and would like to work with Dark House to undertake location specific mitigation planning in areas where the Project overlaps with Dark House traditional territory. Phase 2 will be undertaken outside of the scope of Condition 1, and will therefore consider site specific mitigation planning of locations where the Project overlaps the traditional territory of Dark House, including areas outside the boundaries of the reduced Morice River Technical Boundary. Consistent with detailed mitigation planning for other valued components on the project corridor, site specific, detailed mitigation planning will be undertaken to inform final construction planning, and Coastal GasLink seeks to undertake the detailed mitigation planning in collaboration with Dark House.

Specific scope has been defined based on the Report and Coastal GasLink's desired outcomes for completing this work, and includes the following tasks:

- Crossroads CRM will oversee a walk-through of locations where Project activities will overlap with Dark House traditional territory and document the specific resources with photos, descriptions and GPS coordinates. Crossroads CRM will engage Dark House community members in this field program
- Coastal GasLink will conduct a walk through with Crossroads CRM and interested Dark House community members to view these sites and exchange information about the construction plans at the location, and discuss site specific mitigation options.

Completion Timeline: July 24, 2020

Responsible for delivery: Crossroads CRM under the leadership of Rick Budhwa, in collaboration with Dark House

Deliverables: Report of specific locations of concern requiring site specific mitigation and mitigation recommendations.

Report will be submitted to Coastal GasLink, and will inform collaborative mitigation discussions. Coastal GasLink will record outcomes of discussions in its Aboriginal Consultation Report, in accordance with Condition 31 of the Project's Environmental Assessment Certificate.

Phase 3

Coastal GasLink recognizes that the work that will be undertaken as part of Phases 1 and 2 will form a foundation of mutual understanding between Dark House and Coastal GasLink. Coastal GasLink anticipates that ongoing work will be required to refine and monitor the effectiveness of mitigation to reach the desired outcomes of progressing with Project construction while also addressing the interests of Dark House community members.

Through advancing the work associated with Phases 1 and 2, it is expected that additional work will be defined that will need to be undertaken by Coastal GasLink, Dark House or its representatives.

Activities associated with Phase 3 will be defined as an outcome of work completed in Phases 1 and 2.

Completion Timeline: To be determined

Responsible for delivery: To be determined

Deliverables: To be determined

Appendix D

**Coastal GasLink Response to LUOS Mitigation
Recommendations**

Proposed Mitigation in the LUOS	CGL Response
Avoidance of the territories	Coastal GasLink confirms that the Project cannot avoid the traditional territories of Yex T’sa Wilk’us (‘Dark House’) and Cas’Yex (‘Grizzly House’). Alternate routing was considered and determined to not be feasible. Coastal GasLink recognizes that Dark House and Grizzly House are opposed to the pipeline and is committed to working with both Houses to address concerns and work towards reducing the effects of the pipeline.
Ensure Pipeline development activities (including presence of CGL contractors and the RCMP) are not scheduled during Healing Centre programming, and are performed in a culturally appropriate, respectful manner.	<p>Coastal GasLink acknowledges the concern about construction activities scheduled during Healing Centre programming. While Coastal GasLink is unable to commit to ensuring no pipeline development activities will occur during Healing Centre programming, Coastal GasLink is willing to work collaboratively on timing activities to reduce disturbance to programs. With an understanding of the timing and location of Healing Centre programming, Coastal GasLink may be able to arrange the construction schedule to avoid certain activities occurring in the same area at the same time as the Healing Center Programming. Coastal GasLink is committed to working with Dark House to determine how to maintain programming at the Healing Centre. Coastal GasLink has appreciated the regular communication with Dark House and its representatives on a nearly weekly basis since March 2020, and Coastal GasLink will seek ongoing regular engagement with Dark House at a frequency to be determined in coordination with Dark House (through a communication protocol). Coastal GasLink proposes to continue this regular communication to enable the exchange of advance notification of Healing Centre programming activities and Project construction activities and how to manage these activities to reduce potential effects.</p> <p>Coastal GasLink is prepared to support the development of cultural awareness training in conjunction with Dark House and Grizzly House representatives for people working in this area.</p>
CGL and the Province return to the table for meaningful negotiations on a Nation to Nation basis, recognizing that making deals with Wet’suwet’en Indian Act Bands does not constitute consent from the hereditary system of governance. The House groups wish that free, prior,	Coastal GasLink is committed to ongoing engagement and meaningful discussions with the Wet’suwet’en Hereditary Chiefs and other members of the Wet’suwet’en community.

Proposed Mitigation in the LUOS	CGL Response
and informed consent (FPIC) is obtained.	
<p>Considering that no civil or criminal charges were laid as a result of the forcible removals and in light of UNDRIP Article 10 that reparations are made for the past harms to compensate the individuals, Healing Centre, and to the loss of any physical property. CGL must immediately ensure that the safety, security, and wellbeing of Wet'suwet'en are accommodated for past wrongs and that the relationship is rebuilt to ensure Wet'suwet'en feel safe returning to the land.</p>	<p>Coastal GasLink is committed to working towards building a relationship with Dark House and Grizzly House based on mutual respect and growing trust. We agree that this new relationship should have as a goal that Wet'suwet'en people feel safe in their territories. We are also committed to the safety and wellbeing of both the Wet'suwet'en people and Project personnel. Coastal GasLink is open to discussing, as part of the relationship building process, the experiences and consequences of the enforcement of the injunction. Coastal GasLink is open to participating in a healing circle or similar action if deemed appropriate by Dark House.</p>
<p>That the RCMP continue negotiations in good faith with the Wet'suwet'en to outline their role and presence on the territory. Cas'Yex Hereditary leadership have repeatedly requested that the RCMP vacate their House territory.</p>	<p>Coastal GasLink does not have the authority to speak on behalf of the RCMP. Having said that, Coastal GasLink is prepared to encourage the RCMP to continue their negotiations with the Wet'suwet'en regarding their role and presence on the territory.</p> <p>It is Coastal GasLink's desire that with a new relationship established, where all parties feel safe on the territory, the conditions that led to the injunction and its enforcement would be removed and that there would no longer be a need for RCMP presence in the territory.</p>
<p>Ensure that Wet'suwet'en and allied supporter activities to harvest traditional foods, medicines, water, and conduct ceremony are not impeded, harassed, or criminalized. Wet'suwet'en regularly carry rifles for harvesting purposes as well as for protection against bears. This includes RCMP, security, and CGL not monitoring/filming/intimidating harvesters. CGL supports the Wet'suwet'en to encourage members to continue harvesting in their Yintah by demonstrating the above safety and security precautions are met.</p>	<p>Coastal GasLink is supportive of finding ways for the Wet'suwet'en to harvest traditional foods, medicines, water and conduct ceremony. Coastal GasLink has appreciated the regular communication with Dark House and its representatives on a nearly weekly basis since March 2020, and Coastal GasLink will seek ongoing regular engagement with Dark House at a frequency to be determined in coordination with Dark House (through a communication protocol). Coastal GasLink proposes that this regular communication enables the exchange of advance notification of traditional harvesting activities and Project construction activities and how to manage these activities to reduce potential effects.</p> <p>Coastal GasLink is prepared to support the development of cultural awareness training in conjunction with Dark House and Grizzly House representatives for people working in this area.</p>

Proposed Mitigation in the LUOS	CGL Response
<p>That CGL avoids these areas entirely and/or ensures that no project related activities or RCMP presence occurs during Healing Centre or Culture relating camp programming.</p>	<p>Coastal GasLink acknowledges the concern about construction activities scheduled during Healing Centre programming. While Coastal GasLink is unable to commit to ensuring no pipeline development activities will occur during Healing Centre programming, Coastal GasLink is willing to work collaboratively on timing activities to reduce disturbance to programs. With an understanding of the timing and location of Healing Centre programming, Coastal GasLink may be able to arrange the construction schedule to avoid activities occurring in the same area at the same time as the Healing Center Programming. Coastal GasLink is committed to working with Dark House to determine how to maintain programming at the Healing Centre.</p> <p>Coastal GasLink has appreciated the regular communication with Dark House and its representatives on a nearly weekly basis since March 2020, and Coastal GasLink will seek ongoing regular engagement with Dark House at a frequency to be determined in coordination with Dark House (through a communication protocol). Coastal GasLink proposes to this regular communication enables the exchange of advance notification of Healing Centre programming activities and Project construction activities and how to manage these activities to reduce potential effects.</p> <p>Coastal GasLink is prepared to support the development of cultural awareness training in conjunction with Dark House and Grizzly House representatives for people working in this area.</p>
<p>That CGL immediately stops promoting that they have received consent from Wet’suwet’en bands and a majority of Indigenous groups. The Wet’suwet’en Hereditary Clans have agreed to stand united, as you cannot make a pipeline with a section missing. CGL must do the same and work to reach consensus with ALL Indigenous peoples along the route. CGL agrees to work with the Wet’suwet’en Hereditary Chiefs as the rightful titleholders of Wet’suwet’en Yintah.</p>	<p>Coastal GasLink commits not to publicize that ‘consent’ has been achieved with Indigenous groups without acknowledging areas where ‘consent’ has not been achieved.</p> <p>Coastal GasLink is committed to working towards consensus with all Indigenous peoples across the route, however, agreements have been made with a majority of Indigenous groups across the route. Coastal GasLink does not believe that it would be appropriate to stop acknowledging that it has reached agreements with a majority of Indigenous groups across the project. It is a key accomplishment that Coastal GasLink has been able to work with Indigenous groups to develop these agreements. We have an obligation to honor the commitments that have been made with Indigenous groups across the Project and that does not preclude an agreement with the Wet’suwet’en Hereditary Chiefs.</p>
<p>That CGL avoids these areas [<i>cultural healing camps</i>] entirely and/or ensures that no project related</p>	<p>The Coastal GasLink route continues to avoid the Healing Centre and the project has no intent to construct at the Healing Centre location</p>

Proposed Mitigation in the LUOS	CGL Response
<p>activities or RCMP presence occurs during Healing Centre or Culture relating camp programming. (page 90) That CGL either reroute the pipeline or ensure that no construction activities or RCMP presence occurs during Healing Centre or Culture relating camp programming.</p>	<p>near the Morice River Bridge. In earlier project planning, alternate routing was considered and determined to not be feasible.</p> <p>Coastal GasLink acknowledges the concern about construction activities scheduled during Healing Centre programming. While Coastal GasLink is unable to commit to ensuring no pipeline development activities occur during Healing Centre programming, Coastal GasLink is willing to work collaboratively on timing activities to reduce disturbance to programs. With an understanding of the timing and location of Healing Centre programming, Coastal GasLink may be able to arrange the construction schedule to avoid certain activities occurring in the same area at the same time as the Healing Center Programming. Coastal GasLink is committed to working with Dark House to determine how to maintain programming at the Healing Centre.</p> <p>Coastal GasLink has appreciated the regular communication with Dark House and its representatives on a nearly weekly basis since March 2020, and Coastal GasLink will seek ongoing regular engagement with Dark House at a frequency to be determined in coordination with Dark House (through a communication protocol). Coastal GasLink proposes that this regular communication enables the exchange of advance notification of Healing Centre programming activities and Project construction activities and how to manage these activities to reduce potential effects.</p>
<p>That a full archaeological impact assessment is conducted within the study area, that recognizes and incorporates Wet’suwet’en oral historical information.</p>	<p>Coastal Gaslink confirms that an archaeological impact assessment is currently being completed for the Project footprint within the Morice River Technical Boundary Area to meet requirements of the BC Archaeology Branch.</p>
<p>That CGL workers undergo intensive cultural safety training approved by the Hereditary Chiefs and that reparations are made for the trauma from RCMP invasions on the territory. (page 90) Ensure that all workers, including new employees receive a Wet’suwet’en approved cultural safety training. Provide funding to Wet’suwet’en contractors to develop a training if an</p>	<p>Coastal GasLink is prepared to support the development of cultural awareness training in conjunction with Dark House and Grizzly House representatives for people working in this area.</p>

Proposed Mitigation in the LUOS	CGL Response
acceptable program is not currently available.	
That CGL does not threaten, intimidate, or destroy Wet'suwet'en communal or individual held property on the territory. And that reparations are made for previous damage towards camp and vehicles.	<p>Through the implementation of mitigation, including upcoming work with Dark House representatives on pre-construction site specific mitigation planning (contemplated in Phase 2 of Terms of Reference with Crossroads, included in Appendix C), Coastal GasLink will seek to work with Dark House to develop site-specific mitigation at established cabins.</p> <p>Coastal GasLink has appreciated the regular communication with Dark House and its representatives on a nearly weekly basis since March 2020, and Coastal GasLink will seek ongoing regular engagement with Dark House at a frequency to be determined in coordination with Dark House (through a communication protocol). Coastal GasLink proposes that this regular communication enables the exchange of information regarding property that may impede construction activities and how to manage these activities to reduce potential effects.</p>
That all CGL access roads are repatriated to their natural state; that pesticides and other toxins are not used on the pipeline route and that impacts to wetlands and unnecessary clearings do not occur.	<p>Where we are the sole user/maintainer of a road, Coastal GasLink is committed to reclaiming that road back to a natural state once the road is no longer required. Roads that are required for operations will be permitted accordingly. Existing roads will be left in a state that is equivalent to the original state unless otherwise requested by the relevant regulatory authority or road owner.</p> <p>Coastal GasLink respects the request that pesticides or herbicides not be used within the traditional territory of Dark House and Grizzly House and will use alternative methods of vegetation control, provided those alternative methods are consistent with the <i>Integrated Pest Management Act</i>.</p> <p>Coastal GasLink's cleared footprint will be limited to only the space that is required for safe construction. The area of the project footprint will be reduced in wetlands, to the extent practical and protective measures such as mats, geotextile, and/or ramps will be used to reduce disturbance. Wetlands are then reclaimed and are monitored as part of the project's post-construction monitoring activities. Coastal GasLink will engage with Indigenous groups for their input on the reclamation plan prior to finalizing.</p>
Conduct a thorough review of climate change and cumulative impacts with the participation of Wet'suwet'en and other impacted Indigenous nations.	Coastal GasLink recognizes the importance of climate change and would like to discuss with Wet'suwet'en the role of LNG in the global energy transition to lower GHG emissions. However, Coastal Gaslink considers the request for a thorough review of climate change to be outside of the scope of Condition 1 as greenhouse gas emissions from

Proposed Mitigation in the LUOS	CGL Response
<p>The impact of climate change is a critical concern for the Wet'suwet'en.</p>	<p>the project as a whole were considered in Chapter 6.7 of the Environmental Assessment Certificate Application.</p> <p>The EAO Assessment Report concluded that there would likely be significant effects from the project related to GHG emissions however it was also recognized that the impacts of GHG emissions must be addressed globally, and that it was not possible to estimate the impacts of an individual project's emissions on global climate change.</p>
<p>Halt construction during cultural and ceremonial camps</p>	<p>Coastal GasLink acknowledges the concern about construction activities scheduled during cultural and ceremonial camps. With an understanding of the timing and location of cultural and ceremonial camps, Coastal GasLink may be able to arrange the construction schedule to avoid certain activities occurring in the same area at the same time as the cultural and ceremonial camps. Coastal GasLink is willing to work collaboratively on timing activities to reduce disturbance to these camps, where practical however is unable to commit to ensuring no pipeline development activities occur during all cultural and ceremonial camps.</p> <p>Coastal GasLink has appreciated the regular communication with Dark House and its representatives on a nearly weekly basis since March 2020, and Coastal GasLink will seek ongoing regular engagement with Dark House at a frequency to be determined in coordination with Dark House (through a communication protocol). Coastal GasLink proposes that this regular communication enables the exchange of advance notification of traditional activities such as cultural and ceremonial camps and Project construction activities and how to manage these activities to reduce potential effects.</p>
<p>Remove any gates restricting access to House group membership.</p>	<p>Coastal GasLink is committed to discussing access restrictions with House group membership. Due to requirements in the Project Access Control Management Plan as well as requirements under WorkSafe BC, certain access restrictions will need to be maintained on the project footprint at times, however, Coastal GasLink is committed to dialogue regarding how to reduce the temporary restrictions and to explore whether alternative access measures may be available.</p> <p>Coastal GasLink has appreciated the regular communication with Dark House and its representatives on a nearly weekly basis since March 2020, and Coastal GasLink will seek ongoing regular engagement with Dark House at a frequency to be determined in coordination with Dark House (through a communication protocol). Coastal GasLink proposes that this regular communication enables the exchange of information about access needs and how to manage these activities to reduce potential effects.</p>

Proposed Mitigation in the LUOS	CGL Response
<p>Accommodate access to areas pertinent to seasonal round and sustenance activities</p>	<p>Coastal GasLink is committed to discussing ways in which project activities can avoid interference with important areas on the territory. As indicated above, during construction it may not be possible to avoid restrictions on the project footprint itself, however, Coastal GasLink is committed to dialogue regarding how to reduce the restrictions.</p> <p>Coastal GasLink has appreciated the regular communication with Dark House and its representatives on a nearly weekly basis since March 2020, and Coastal GasLink will seek ongoing regular engagement with Dark House at a frequency to be determined in coordination with Dark House (through a communication protocol). Coastal GasLink proposes that this regular communication enables the exchange of information about access needs and how to manage these activities to reduce potential effects.</p>
<p>Allow access to existing roadways free of harassment or intimidation and based on respectful dialogue and relationships.</p>	<p>Coastal GasLink is committed to providing access to existing roadways in a respectful manner while ensuring safety of all parties in the area.</p> <p>Coastal GasLink has appreciated the regular communication with Dark House and its representatives on a nearly weekly basis since March 2020, and Coastal GasLink will seek ongoing regular engagement with Dark House at a frequency to be determined in coordination with Dark House (through a communication protocol). Coastal GasLink proposes that this regular communication enables the exchange of advance notification of Healing Centre programming activities and Project construction activities and how to manage these activities to reduce potential effects.</p>
<p>Develop communication protocol and cultural safety training around the Wet'suwet'en use of rifles for hunting and bear safety (i.e. do not call in the RCMP if they see a gun).</p>	<p>Coastal GasLink will endeavor to jointly develop with Dark House an urgent issues resolution protocol to address concerns with activities in the territory</p> <p>Coastal GasLink is prepared to support the development of cultural awareness training in conjunction with Dark House and Grizzly House representatives for people working in this area.</p>
<p>Work with the Wet'suwet'en to reassure Clan and House members that it is safe to return to the area during construction/operations (i.e. the RCMP and/or security won't be called or follow them around).</p>	<p>Coastal GasLink is committed to working with the Wet'suwet'en Hereditary Chiefs to reduce the impacts of the Project on Clan and House members and to ensure the safety of all parties in the area.</p> <p>Coastal GasLink has appreciated the regular communication with Dark House and its representatives on a nearly weekly basis since March 2020, and Coastal GasLink will seek ongoing regular engagement with Dark House at a frequency to be determined in coordination with Dark House (through a communication protocol). Coastal GasLink proposes that this regular communication enables the exchange of advance notification of Healing Centre programming</p>

Proposed Mitigation in the LUOS	CGL Response
	activities and Project construction activities and how to manage these activities to reduce potential effects.
Create and implement a comprehensive plan for man camp workers regarding safe and culturally appropriate protocols that follow MMIWG inquiry recommendations.	<p>Coastal GasLink will seek to engage with Dark House on workforce accommodations to:</p> <ul style="list-style-type: none"> • ensure a safe and respectful environment for workers and the community • promote relationship building and transparency • develop and implement meaningful programs and training for workforce accommodation residents • build capacity for Indigenous communities to support their members working on the Project <p>Coastal GasLink is prepared to support the development of cultural awareness training in conjunction with Dark House and Grizzly House representatives for people working in this area.</p>
Ensure that all camp workers are aware that they must leave a minimal footprint on the territory. I.e., no loud noises or substance use, no speeding or reckless driving on roads, no harassment/intimidation/other negative interactions with Wet’suwet’en/land users.	Coastal GasLink is prepared to support the development of cultural awareness training in conjunction with Dark House and Grizzly House representatives for people working in this area.
Absolutely no harvesting of flora or fauna during work hours or time off without the explicit consent of House Clans as per traditional Wet’suwet’en law.	<p>Coastal GasLink has implemented a policy that all personnel are prohibited from hunting, trapping, fishing and plant gathering during working hours. Coastal GasLink will not facilitate the ability for Project personnel to undertake these activities outside of working hours by restricting the ability to store recreational hunting/fishing equipment at the workforce accommodations and/or in work vehicles. However, under Canadian law, Coastal GasLink cannot restrict otherwise lawful activities of workers in their non-working hours.</p> <p>Coastal GasLink is prepared to support the development of cultural awareness training in conjunction with Dark House and Grizzly House representatives for people working in this area.</p>
Conduct interim reviews on the impact of the camps in consultation with the Office of	Coastal GasLink is committed to engaging with the Wet’suwet’en Hereditary Chiefs and Dark House regularly for the purpose of discussing and mitigating socio-economic impacts of the Project.

Proposed Mitigation in the LUOS	CGL Response
<p>Wet'suwet'en, House Clans, spokespeople, and Healing Centre staff. Address any concerns immediately.</p> <p>No CGL employees will have weapons within the territory for any reason whatsoever.</p>	<p>With respect to firearms, only designated wildlife monitors may carry a firearm for animal control purposes on the Project.</p>
<p>CGL employees are to maintain confidentiality around harvesting areas (i.e. do not share information around locations of berry, medicinal plant, wildlife locations).</p>	<p>Coastal GasLink will not share confidential information regarding harvesting areas and will highlight that to Project personnel as part of the cultural awareness training.</p> <p>Coastal GasLink is prepared to support the development of cultural awareness training in conjunction with Dark House and Grizzly House representatives for people working in this area.</p>
<p>CGL employees will not utilize the territory for their recreational purposes as this territory is usually a quiet, rarely visited place. This is particularly important during the pandemic.</p>	<p>Coastal GasLink has implemented a policy that all personnel are prohibited from hunting, trapping, fishing and plant gathering during working hours. Coastal GasLink will not facilitate the ability for Project personnel to undertake these activities outside of working hours by restricting the ability to store recreational hunting/fishing equipment at the workforce accommodations and/or in work vehicles.</p> <p>Coastal GasLink is prepared to support the development of cultural awareness training in conjunction with Dark House and Grizzly House representatives for people working in this area.</p>
<p>Ensure that camp footprints once the Projects are complete are decommissioned and rehabilitated to their original state. This includes reforestation with native trees not replanting a tree farm.</p>	<p>Coastal GasLink is developing a reclamation plan that will maintain equivalent land capability, ensuring the ability of the land to support various land uses equivalent to the uses that existed before construction. Coastal GasLink will engage with Indigenous groups, including Dark House, for their input on the reclamation plan prior to finalizing.</p>
<p>Ensure noise from compressor stations and other industrial equipment do not negatively impact the Healing Centre or other encampments.</p>	<p>Coastal GasLink will abide by the British Columbia Noise Control Best Practices Guideline.</p>
<p>Meet and exceed all environmental standards. Compensating the Wet'suwet'en with potable water for the destruction of pristine water is highly</p>	<p>Coastal GasLink is committed to constructing the crossing of the Wedzin Kwa (Morice River) and Talbits Kwa (Gosnell Creek) with no residual impacts to water quality. Coastal GasLink has engaged the Wet'suwet'en Hereditary Chiefs and their representatives in regard to watercourse crossing methods and will continue to engage regarding the crossing plan for the Wedzin Kwa (Morice River) as it is being finalized.</p>

Proposed Mitigation in the LUOS	CGL Response
<p>inadequate. If construction cannot guarantee the current pristine, drinking water quality of the Wedzin Kwa then the Project needs to be reconsidered so that this concern is appropriately managed. The existing plans for this water crossing need to be discussed thoroughly with Wet’suwet’en Hereditary Chiefs and their technical experts. The belief is that there is no way to mitigate damage to the pristine and sacred waters of <i>Wedzin Bin</i> or other watersheds that may be impacted by this Project.</p>	
<p>Meet and exceed all environmental standards. (impacts to watersheds)</p>	<p>Coastal GasLink is committed to meeting the requirements of applicable environmental laws and regulations, as well as the commitments as outlined in the Environmental Management Plan and other management plans to reduce the impact of the project to extent practical.</p> <p>Coastal GasLink acknowledges that it has had instances of non-compliance thus far on the project. We take these incidents seriously and have taken corrective actions in an effort to ensure that these types of incidents do not occur again. This is an ongoing process and Coastal GasLink is committed to improving in this regard.</p>
<p>Decommission all roads to vehicle and ATVs.</p>	<p>Where we are the sole user/maintainer of a road, Coastal GasLink is committed to reclaiming that road back to a natural state once the road is no longer required. Roads that are required for operations will be permitted accordingly. Existing roads will be left in a state that is equivalent to the original state unless otherwise requested by the relevant regulatory authority or road owner.</p> <p>Coastal GasLink will engage with Indigenous groups, including Dark House, for their input on the reclamation plan prior to finalizing.</p>
<p>Restore the relationship with present day Wet’suwet’en peoples and their lands.</p>	<p>Coastal GasLink recognizes the connection of Wet’suwet’en people and the land.</p> <p>Coastal GasLink has appreciated the regular communication with Dark House and its representatives on a nearly weekly basis since March 2020, and Coastal GasLink will seek ongoing regular engagement with Dark House at a frequency to be determined in coordination with Dark House (through a communication protocol). As part of this regular communication, Coastal GasLink is committed to discussing with Dark House ways that Coastal GasLink may be able to help facilitate the restoration of this connection with the land.</p>

Proposed Mitigation in the LUOS	CGL Response
<p>Conduct a review of climate change that includes the Wet’suwet’en and other Indigenous perspectives.</p>	<p>Coastal GasLink recognizes the importance of climate change and would like to discuss with Wet'suwet'en the role of LNG in the global energy transition to lower GHG emissions. However, Coastal Gaslink considers the request for a thorough review of climate change to be outside of the scope of Condition 1 as greenhouse gas emissions from the project as a whole were considered in Chapter 6.7 of the Environmental Assessment Certificate Application.</p> <p>The EAO Assessment Report concluded that there would likely be significant effects from the project related to GHG emissions however it was also recognized that the impacts of GHG emissions must be addressed globally, and that it is was not possible to estimate the impacts of an individual project’s emissions on global climate change.</p>
<p>Heavily weigh the impacts of cumulative environmental impacts.</p>	<p>Coastal GasLink recognizes that cumulative effects may be viewed in different ways which may include the combined effects of project related activities on the Wet’suwet’en people, and another being the additive aggregate effects of multiple projects and activities over time in the traditional territory.</p> <p>Through continued engagement between Coastal GasLink and Wet’suwet’en Hereditary Chiefs regarding interests, concerns and related mitigations, Coastal GasLink seeks to reduce the combined effects of the project on Wet’suwet’en people.</p> <p>The cumulative effects assessment presented in the EAC application is considered conservative as it contemplated numerous large pipeline projects and other activities in the area that are no longer being pursued.</p>
<p>Consider and implement strategies to decolonize the relationship with Wet’suwet’en peoples and their lands.</p>	<p>Coastal GasLink supports reconciliation with Indigenous groups and is committed to engaging with the Wet’suwet’en Hereditary Chiefs and Wet’suwet’en people.</p>

Commitment Summary List

Commitments noted in the table above are listed below. There may be slight variations in wording to improve the ability to track or measure the commitments. Coastal GasLink refers only to Dark House in these commitments however it recognizes that in certain circumstances it would be appropriate to include Grizzly House and/or Unist’ot’en Healing Centre.

- In Summer 2020, Coastal GasLink commits to seeking to work with Dark House to establish agreed upon frequency and forum for communication (communication protocol) and coordination of activities to reduce effects

- In Summer 2020, Coastal GasLink commits to seeking to work with Dark House to develop a plan for the development of cultural awareness training
- Throughout the construction and operations of the Project, Coastal GasLink commits to seek ongoing engagement with the Wet'suwet'en Hereditary Chiefs and other members of the Wet'suwet'en community.
- Throughout construction, Coastal GasLink commits not to publicize that 'consent' has been achieved with Indigenous groups without acknowledging areas where 'consent' has not been achieved.
- Coastal GasLink commits to not construct at the Healing Centre location near the Morice River Bridge.
- Coastal GasLink commits to completing the archaeological impact assessment for the Project footprint within the Morice River Technical Boundary as required by the BC Archaeology Branch
- Through the implementation of mitigation, including upcoming work with Dark House representatives on pre-construction site specific mitigation planning (contemplated in Phase 2 of Terms of Reference with Crossroads, included in Appendix C), Coastal GasLink will seek to work with Dark House to develop site-specific mitigation at established cabins.
- Where Coastal GasLink is the sole user/maintainer of a road, we are committed to reclaiming that road back to a natural state once the road is no longer required. Roads that are required for operations will be permitted accordingly. Existing roads will be left in a state that is equivalent to the original state unless otherwise requested by the relevant regulatory authority or road owner.
- Throughout construction, Coastal GasLink commits to not use pesticides and herbicides within the traditional territory of Dark House and will use alternative methods of vegetation control, provided those alternative methods are consistent with the *Integrated Pest Management Act*.
- Coastal GasLink's cleared footprint will be limited to only the space that is required for safe construction.
- The area of the project footprint will be reduced in wetlands, to the extent practical and protective measures such as mats, geotextile, and/or ramps will be used to reduce disturbance.
- Coastal GasLink commits to engaging with Indigenous groups in the finalization of the reclamation plan.
- Coastal GasLink is committed to dialogue regarding how to reduce temporary access restrictions and to explore whether alternative access measures may be available.
- In Summer 2020, Coastal GasLink commits to seeking to jointly develop with Dark House an urgent issues resolution protocol.
- Throughout construction, Coastal GasLink will seek to engage with Dark House on workforce accommodations to:

- ensure a safe and respectful environment for workers and the community
- promote relationship building and transparency
- develop and implement meaningful programs and training for workforce accommodation residents
- build capacity for Indigenous communities to support their members working on the Project.
- Throughout Construction, Coastal GasLink is implementing a policy that all personnel are prohibited from hunting, trapping, fishing and plant gathering during working hours and from storing recreational hunting/fishing equipment at the workforce accommodations and/or in work vehicles.
- Throughout Construction, only designated wildlife monitors may carry a firearm for animal control purposes on the project.
- Throughout construction, Coastal GasLink commits to constructing the crossing of the Wedzin Kwa (Morice River) and Talbits Kwa (Gosnell Creek) with no residual impacts to water quality. Coastal GasLink commits to continuing to engage Wet'suwet'en Hereditary Chiefs and their representatives regarding the crossing plan for the Wedzin Kwa (Morice River) and Talbits Kwa (Gosnell Creek) as it is being finalized.
- In response to the feedback provided by Indigenous groups, including Dark House, Coastal GasLink will provide the results from water quality monitoring conducted at the Morice River, Gosnell Creek and Crystal Creek during crossing activity to interested Indigenous groups.
- Throughout Construction, Coastal GasLink commits to meeting the requirements of applicable environmental laws and regulations, as well as the commitments as outlined in the Environmental Management Plan and other management plans to reduce the impact of the project to extent practical.

Appendix E

Summary of Key Mitigation for the Aquatic Environment, Vegetation and Wildlife and Wildlife Habitat for the Reduced Technical Boundary

Valued Component	Interaction Pathway	Key Mitigation from the Approved Environmental Management Plans
<p>Protection of Recreationally, Commercially and/or Culturally Important Fish and Fish Habitat</p>	<p>Alteration or loss of riparian habitat function on the following KIs: Species of fish, including their habitats, that are important for recreation, cultural or traditional use, and commercial fisheries</p>	<p>Key mitigation measures to address alteration or loss of riparian habitat function include the following:</p> <p>From Sections 7.2.3, 8.2.3, and 8.4.3 of the approved Environmental Management Plan prepared to satisfy Condition 26 of the EAC #E14-03:</p> <ul style="list-style-type: none"> • Coastal GasLink will obtain and follow all applicable federal and provincial permits or authorizations prior to the commencement of construction and instream activities. • The Contractor shall develop a detailed site-specific watercourse crossing plan and submit the plan to Coastal GasLink prior to initiating watercourse crossing activities. • Avoid road construction in the Morice River 100-year floodplain, where practical. • Construct or install temporary vehicle access across waterbodies, shorelines, and riverbanks in a manner that protects the banks from erosion and maintains the flows in the waterway and follows the BC Water Sustainability Act and Water Regulation as well as applicable DFO conditions. • Construct and install all watercourse vehicle crossings as outlined in the Fish and Fish Habitat Technical Data Report (Appendix 2-G of the EAC Application) and in accordance with the typical drawings (Appendix B, Dwgs. STDS-03-ML-05-101, STDS-03-ML-05-103, and STDS-03-ML-05-104). • Construct all bridges (ice and snowfill or single-span) beyond the ends of the banks and with a minimum depth of 0.5 m of snowfill or fill material at each bank. Do not place fill within primary banks for bridge abutment construction, unless approved by the relevant regulatory authority. • If fill material is required during the construction of bridge abutments with wings, place geotextile fabric between the fill material and the surface layer. • Line single span bridges with geotextile. All watercourse crossing structures must have a minimum of 30-cm-high side boards. Side containment for single span bridges must be constructed of plywood. Snow bridges can use watered snow. • Install and remove any temporary vehicle crossings in a manner that protects the banks from erosion and maintains the flow in the waterway. These crossings will be returned to their construction preparation condition. • Reduce grading throughout the ROW, especially at watercourses, wetlands and rare plant sites and on moderately steep slopes, if practical. Reduce the width of grading in order to limit the potential for erosion and subsoil compaction, where practical. • Where practical, avoid grading in riparian areas until installation of the vehicle crossing. • Prohibit clearing of extra temporary workspace within 10 m of a watercourse to protect riparian areas. This area shall be clearly marked prior to clearing operations. The construction footprint will be narrowed through the riparian area, if practical. • Limit clearing activities at watercourse crossings to the removal of trees and shrubs to the ditch line and work side areas required for vehicle crossings. • Fell trees away from watercourses. Immediately remove trees, debris or soil inadvertently deposited below the high watermark of a watercourse. When altering a tree that is located on the bank of a waterbody, where practical, ensure that the root structure and stability are maintained to help bind the soil and encourage rapid colonization of low-growing plant species. • If the working surface is unstable, do not permit clearing equipment within the 10 m riparian buffer, pending consultation with the Environmental Inspector(s). Following clearing, the 10 m riparian buffer will remain intact (i.e., consisting of low-lying understory vegetation). • When riparian areas are being crossed the following mitigation will be implemented: include no extra temporary workspace, limit grubbing to the ditch line, and lay geotextile material or place log corduroy alongside the riparian area for heavy machinery, where applicable. • Return the bed and banks of each watercourse to as close as practical to their original construction preparation contours. Do not realign or straighten watercourses or change their hydraulic characteristics. • Implement permanent bank reclamation measures to re-establish riparian vegetation and fish habitat as a part of backfill operations (Refer to Appendix B, Dwgs. STDS-03-ML-05-601, STDS-03-ML-05-602, STDS-03-ML-05-603, STDS-03-ML-05-604, STDS-03-ML-05-606, STDS-03-ML-05-607, and STDS-03-ML-05-608). • Seed disturbed banks and riparian areas with an approved native seed mixture. The Environmental Inspector(s) will determine on-site whether other reclamation methods need to be applied to stabilize banks (e.g., soil wraps, brush layers, and matting).
<p>Protection of Recreationally, Commercially and/or Culturally Important Fish and Fish Habitat</p>	<p>Alteration or loss of instream habitat function on the following KIs: Species of fish, including their habitats, that are important for recreation, cultural or traditional use, and commercial fisheries</p>	<p>Key mitigation measures to address alteration or loss of instream habitat function include the following:</p> <p>From Section 8.4.3 of the approved Environmental Management Plan prepared to satisfy Condition 26 of the EAC #E14-03:</p> <ul style="list-style-type: none"> • Ensure all notifications are completed in accordance with DFO requirements as well as the BC <i>Water Sustainability Act</i> and <i>Water Sustainability Regulation</i>.

Valued Component	Interaction Pathway	Key Mitigation from the Approved Environmental Management Plans
		<ul style="list-style-type: none"> • If directed by the relevant regulatory authority (e.g., Transport Canada), install warning signs along the banks both upstream and downstream of the crossing to caution users of a navigational hazard, where appropriate. • The Contractor shall develop a detailed site-specific watercourse crossing plan and submit the plan to Coastal GasLink prior to initiating watercourse crossing activities. <p><u>Vehicle Crossings</u></p> <ul style="list-style-type: none"> • Construct or install temporary vehicle access across waterbodies, shorelines, and riverbanks in a manner that protects the banks from erosion and maintains the flows in the waterway and follows the BC Water Sustainability Act and Water Regulation as well as applicable DFO conditions. • Construct and install all watercourse vehicle crossings as outlined in the Fish and Fish Habitat Technical Data Report (Appendix 2-G of the EAC Application) and in accordance with the typical drawings (Appendix B, Dwgs. STDS-03-ML-05-101, STDS-03-ML-05-103, and STDS-03-ML-05-104). • Construct all bridges (ice and snowfill or single-span) beyond the ends of the banks and with a minimum depth of 0.5 m of snowfill or fill material at each bank. Do not place fill within primary banks for bridge abutment construction, unless approved by the relevant regulatory authority. • If fill material is required during the construction of bridge abutments with wings, place geotextile fabric between the fill material and the surface layer. • Line single span bridges with geotextile. All watercourse crossing structures must have a minimum of 30-cm-high side boards. Side containment for single span bridges must be constructed of plywood. Snow bridges can use watered snow. • Install and remove any temporary vehicle crossings in a manner that protects the banks from erosion and maintains the flow in the waterway. These crossings will be returned to their construction preparation condition. • Consider alternate methods of vehicle crossings on a site-specific basis. The decision-making process will include the Contractor, Construction Manager and the Environmental Inspector(s). Decision criteria will include protection of the riparian vegetation and fisheries values associated with the crossing, and applicable legislation. • During winter construction, where conditions permit, employ ice and snowfill bridges as temporary crossing structures. Install ice and snowfill bridges using water drawn from an approved source or clean snow ploughed in from surrounding areas or made. Design, construct and deconstruct ice bridge and snow fill vehicle crossing at waterbodies in a manner that prevents erosion, scouring and sedimentation during spring break-up. <p><u>Pipeline Installation</u></p> <ul style="list-style-type: none"> • Before the installation of the water crossing and the commencement of instream activity, the Contractor will ensure that all necessary equipment and materials are available and are on-site. • The Contractor shall weld, coat and weight the water crossing portion of pipe prior to starting instream ditching activities. The Contractor shall make every effort to ditch, lower-in and backfill water crossings during the same working day or in as short a time as practical. • Use biodegradable hydraulic oil in excavators working within the wetted areas of watercourse crossings. When implementing a trenched (i.e., open-cut or isolated) pipeline installation method, and where practical, salvage the upper 0.5 m (minimum) of granular material, if present. Stockpile separately from the remainder of the trench spoil so that the salvaged, native granular material can be used to cap the upper portion of the trench. Alternatively, replace with clean cobble material if salvaged material is not of sufficient quantity. <p><u>Trenchless Crossings</u></p> <ul style="list-style-type: none"> • For pipeline crossings conducted using a trenchless crossing method, follow Dwg. STDS-03-LA-SK-001. • Excavate entry and exit sites back from the ordinary high watermark and far enough from the watercourse to provide for containment of sediments and other deleterious substances above the high watermark. Vegetation removal for the entry and exit sites is only to occur within the approved construction ROW and temporary workspace. • Ensure that water from dewatering entry and exit sites with a high sediment load is not discharged or allowed to flow into any waterbody. Remove the sediment load (e.g., filtered or discharged into a vegetated area) before discharge water is allowed to enter any watercourse. • Where warranted, develop a water quality monitoring plan with input from an aquatics specialist that includes monitoring for total suspended solids (TSS) and turbidity if trenchless methods are used. • Coastal GasLink intends to cross the Morice River with a trenchless crossing method that will not disturb the riverbed of the Morice River or have an effect on water quality. In the event that a trenchless crossing is not technically feasible, measures outlined in the approved Water Quality Monitoring Plan (Appendix E.2 of the Environmental Management Plan, developed in accordance with Condition 4 of the EAC) will be implemented. <p><u>Isolated Open-Cut Crossings (Dry or Frozen to Bottom)</u></p>

Valued Component	Interaction Pathway	Key Mitigation from the Approved Environmental Management Plans
		<ul style="list-style-type: none"> • Conduct crossings of watercourses that are dry or frozen to the bottom in accordance with provincial regulatory requirements (e.g., BC Water Sustainability Act), DFO Measures to Avoid Causing Harm to Fish and Fish Habitat, and any required DFO's review or authorisation, if applicable. • Do not use earthen berms to isolate the crossing construction area. • Pump sediment-laden dewatering discharge into a vegetated area or settling basin to prevent sediment and other deleterious substances from entering any water body. • Dewater the trench onto stable surfaces in a manner that does not cause erosion of soils or sedimentation of the watercourse. Water returning to the watercourse should equal or exceed the background water quality of the watercourse. • Ensure pumps, generators and light towers used within 100 m of a watercourse crossing have secondary containment that can hold a capacity of 125% of the fuel tank. <p><u>Isolated Open-Cut Crossings (Not Dry or Frozen to Bottom)</u></p> <ul style="list-style-type: none"> • Schedule isolated crossings to protect sensitive life stages by adhering to windows of least risk. No construction work will occur outside of the window of least risk unless approval from the relevant regulatory authority is obtained. • Use dams made of non-earthen material, such as water-inflated portable dams, concrete blocks, sandbags, sheet piling, clean rock or other appropriate designs to separate the dewatered work site from flowing water. If earthen material is necessary, develop site-specific plans and drawings for review and approval of relevant regulatory agencies. • If granular material is used to build dams, use clean material that is adequately sized to withstand anticipated flows during construction. • Ensure maintenance of downstream flow at all times when constructing an isolated crossing. If a pump-around method is used to maintain stream flow, back-up pumping capacity must be on-site and ready to take over immediately if operating pumps fail. Monitor pumps continuously to ensure downstream flow is maintained at all times until the dam materials are removed and normal flows are reclaimed to the channel. • Place sumps and pumps used for bypass flows in a location sufficiently far upstream to avoid undermining the isolation structures. <p><u>Fish Salvage</u></p> <ul style="list-style-type: none"> • A Fish Collection Permit from BC MFLNRORD is required for fish salvage activities. Obtain the Fish Collection Permit in accordance with applicable terms and conditions. • The Contractor shall notify Coastal GasLink 5 days before construction of any watercourse crossing or diversions to ensure fish salvage operations are conducted, where required. • If an isolated method is employed at fish-bearing watercourses and drainages conduct a fish salvage led by an aquatics specialist (i.e. Qualified Environmental Professional). • Conduct fish salvage, in accordance with permit conditions, using appropriate methods and equipment. Release all captured fish to areas which provide suitable habitat. <p><u>Blasting In or Near Watercourses</u></p> <ul style="list-style-type: none"> • Coastal GasLink will notify and consult with provincial and federal authorities to ensure that appropriate plans and approvals are in place to protect fish and fish habitat in the event that blasting is required within 150 m of a fish-bearing waterbody • Restrict blasting activities to use of pre-packaged explosives in order to prevent spillage. <p><u>Water Management</u></p> <ul style="list-style-type: none"> • If water levels or flow rates in the trench could overwhelm existing trench water control measures (berms, take offs, etc.), thereby increasing the risk of sediment laden water affecting wetlands or watercourses (e.g., if heavy rains are forecast), dewater and backfill the trench to create a soft plug, or maintain an existing hard plug. • If the trench requires dewatering, pump water onto stable, well-vegetated areas, tarpaulins, sheeting, rocks, sand bags, or into settling ponds, filter bags or other appropriate sediment filtering devices. Ensure dewatering is completed in a manner that does not cause erosion or allow sediment to re-enter a watercourse. • Do not permit pumped trench water to flow directly into any watercourse. If water is released onto private land, landowner consent must be acquired prior to release. • The contractor will ensure the pump intake is elevated from the bottom of the trench to reduce the pumping of sediment. <p><u>Contingency Plans</u></p> <ul style="list-style-type: none"> • Postpone watercourse crossing construction if excessive flows or flood conditions exist or are anticipated, and construction methods cannot be modified to cope with the increased flow, follow the Flood and Excessive Flow Contingency Plan (Appendix C.3). <p><u>Grade Replacement</u></p>

Valued Component	Interaction Pathway	Key Mitigation from the Approved Environmental Management Plans
<p>Protection of Recreationally, Commercially and/or Culturally Important Fish and Fish Habitat</p>	<p>Increased suspended sediment concentrations in the water column on the following KIs:</p> <p>Species of fish, including their habitats, that are important for recreation, cultural or traditional use, and commercial fisheries</p>	<ul style="list-style-type: none"> Re-establish surface drainage patterns following construction, install drainage and erosion control measures and complete the installation of sedimentation control measures at all watercourse crossings. <p>Key mitigation measures to address increased suspended sediment concentrations in the water column include the following:</p> <p>From Section 8.4.3 of the approved Environmental Management Plan prepared to satisfy Condition 26 of the EAC #E14-03:</p> <ul style="list-style-type: none"> Where practical, delay grading of the primary banks of watercourses until immediately before construction of the crossing. If warranted, install appropriate temporary erosion and sediment control structures at the discretion of the Environmental Inspector(s) upon initial disturbance of the vegetative mat and surface material. Direct grading away from waterbodies. Do not place fill material in a waterbody during grading. Ensure that grubbing, surface material removal and grading on approach slopes to watercourses is restricted to an amount necessary to allow the safe passage of equipment, excavation of the trench, and installation of the pipeline. Do not allow grading within the 10 m riparian buffer immediately adjacent to the water crossing until installation of the vehicle crossing. Install sediment control structures such as temporary berms on approach slopes to watercourses following grading, as required (Dwgs. STDS-03-ML-05-001, STDS-03-ML-05-608, STDS-03-ML-05-132, STDS-03-ML-12-221, STDS-03-ML-12-222, and STDS-03-ML-12-223). Inspect the temporary sediment control structures on a daily basis and, if repairs are required, complete before the end of each working day. Install erosion and sediment control such as silt fences at all watercourses or waterbodies and on approach slopes to watercourses and waterbodies as directed by the Environmental Inspector(s). (Appendix B, Dwgs. STDS-03-ML-05-001, STDS-03-ML-05-131, STDS-03-ML-05-132, STDS-03-ML-05-137, STDS-03-ML-05-608). Where water erosion is evident and there is potential for runoff from the ROW to flow into a watercourse, refer to the Soil Erosion Contingency Plan (Appendix C.7). Use only clean ice or snow for construction of an ice or snowfill or ice bridge. Construct approaches to the bridge with compacted snow and ice of sufficient thickness to protect the stream channel and banks. Do not use sand, gravel and soils for ice bridge approaches. If fill material is required during the construction of bridge abutments with wings, place geotextile fabric between the fill material and the surface layer. Line single span bridges with geotextile. All watercourse crossing structures must have a minimum of 30-cm-high side boards. Side containment for single span bridges must be constructed of plywood. Snow bridges can use watered snow. Excavate entry and exit sites back from the ordinary high watermark and far enough from the watercourse to provide for containment of sediments and other deleterious substances above the high watermark. Vegetation removal for the entry and exit sites is only to occur within the approved construction ROW and temporary workspace. Implement the Water Quality Monitoring Plan (Appendix E.2) to monitor water quality during instream construction activities. Exceedances of water quality parameters will be reported to the Environmental Inspector and corrective actions will be developed in consultation with the Resource Specialist, the construction management team and the BC OGC. If corrective actions are not successful, construction activities will be temporarily suspended until effective solutions are identified.
<p>Protection of Recreationally, Commercially and/or Culturally Important Fish and Fish Habitat</p>	<p>Fish mortality and injury associated with the construction, hydrostatic testing of the pipeline, and decommissioning and abandonment on the following KI's:</p> <p>Species of fish, including their habitats, that are important for recreation, cultural or traditional use, and commercial fisheries</p>	<p>Key mitigation measures to address fish mortality and injury include the following:</p> <p>From Sections 8.4.3 and 8.7.3 of the approved Environmental Management Plan prepared to satisfy Condition 26 of the EAC #E14-03:</p> <ul style="list-style-type: none"> No construction activity will occur outside the instream work window of least risk for any watercourse crossing unless: <ul style="list-style-type: none"> it is dry or frozen to the bottom at the time of construction trenchless techniques are employed approval from the relevant regulatory authority is obtained A Fish Collection Permit from BC MFLNRORD is required for fish salvage activities. Obtain the Fish Collection Permit in accordance with applicable terms and conditions. The Contractor shall notify Coastal GasLink 5 days before construction of any watercourse crossing or diversions to ensure fish salvage operations are conducted, where required. If an isolated method is employed at fish-bearing watercourses and drainages conduct a fish salvage led by an aquatics specialist (i.e. Qualified Environmental Professional). <ul style="list-style-type: none"> Conduct fish salvage, in accordance with permit conditions, using appropriate methods and equipment. Release all captured fish to areas which provide suitable habitat

Valued Component	Interaction Pathway	Key Mitigation from the Approved Environmental Management Plans
		<ul style="list-style-type: none"> • Implement an acoustic monitoring program, if deemed necessary by Coastal GasLink in consultation with the appropriate QP, to determine the overpressure zone resulting from the blasting area and its potential adverse effects on fish. Adjust fish exclusion zone to appropriate distances based on monitoring. • Reduce potential detrimental effects to fish by incorporating one or more of the following measures: <ul style="list-style-type: none"> – subdivide large charges into smaller detonations – use lowest weight of explosive charge practical – use time delays to reduce the pressures created – use bubble or air curtains • Deter fish from the blasting zone prior to each blast by means of: <ul style="list-style-type: none"> – pre-blast scare tactics – use of noise generating devices – physical removal of fish from the work area • Restrict water withdrawal for hydrostatic testing to less than 10% of the stream flow of the watercourse at the time of withdrawal or as otherwise specified by the relevant regulatory authority.
<p>Protection of Recreationally, Commercially and/or Culturally Important Fish and Fish Habitat</p>	<p>Disturbance to instream habitat and increased potential for fish mortality or injury due to increased access to fish and fish habitat on the following KIs:</p> <p>Species of fish, including their habitats, that are important for recreation, cultural or traditional use, and commercial fisheries</p>	<p>Key mitigation measures to address disturbance to instream habitat and increased potential for fish mortality or injury due to increased access to fish and fish habitat include the following:</p> <p>From Section 8.4.3 of the approved Environmental Management Plan prepared to satisfy Condition 26 of the EAC #E14-03:</p> <ul style="list-style-type: none"> • For watercourse crossings that require channel realignment to facilitate the installation of the crossing, develop individual, site-specific plans that take downstream effects into consideration and ensure: <ul style="list-style-type: none"> – no net loss of fish habitat – no obstruction to fish migration – no fish mortality or injury • A qualified engineer will design site-specific riprap requirements. Incorporate vegetation into the riprap, where practical, such as: <ul style="list-style-type: none"> – planting pockets – willow stakes • Return the bed and banks of each watercourse to as close as practical to their original construction preparation contours. Do not realign or straighten watercourses or change their hydraulic characteristics. • Implement permanent bank reclamation measures to re-establish riparian vegetation and fish habitat as a part of backfill operations (Refer to Appendix B, Dwgs. STDS-03-ML-05-601, STDS-03-ML-05-602, STDS-03-ML-05-603, STDS-03-ML-05-604, STDS-03-ML-05-606, STDS-03-ML-05-607, and STDS-03-ML-05-608). • Seed disturbed banks and riparian areas with an approved native seed mixture. The Environmental Inspector(s) will determine on-site whether other reclamation methods need to be applied to stabilize banks (e.g., soil wraps, brush layers, and matting). • Site-specific mitigation will be developed where bank protection is required. Where practical, avoid the use of riprap and use alternative approaches to protect banks, such as, but not limited to: <ul style="list-style-type: none"> – hedge and brush layering – live willow and shrub staking – planting baskets and eco-pockets
<p>Protection of Recreationally, Commercially and/or Culturally Important Fish and Fish Habitat</p>	<p>Blockage of fish movements on the following KI's:</p> <p>Species of fish, including their habitats, that are important for recreation, cultural or traditional use, and commercial fisheries</p>	<p>Key mitigation measures to address blockage of fish movements include the following:</p> <p>From Sections 8.4.3 and 8.7.3 of the approved Environmental Management Plan prepared to satisfy Condition 26 of the EAC #E14-03:</p> <ul style="list-style-type: none"> • No construction activity will occur outside the instream work window of least risk for any watercourse crossing unless: <ul style="list-style-type: none"> – it is dry or frozen to the bottom at the time of construction – trenchless techniques are employed – approval from the relevant regulatory authority is obtained • The Contractor shall develop a detailed site-specific watercourse crossing plan and submit the plan to Coastal GasLink prior to initiating watercourse crossing activities.

Valued Component	Interaction Pathway	Key Mitigation from the Approved Environmental Management Plans
		<ul style="list-style-type: none"> • Flow isolation crossings must be planned and conducted in accordance with the relevant detail in the Construction Section's Supplemental Stream Crossings Submission that has been submitted to the satisfaction of the BC OGC, and in accordance with the following requirements: <ol style="list-style-type: none"> a. crossings of fish-bearing streams may commence only after confirming that sufficient equipment and supplies are available to complete the crossing in an efficient and timely manner; b. instream activities, including the location and operation of any equipment must be isolated from water flowing in the stream; c. spawning gravels must not be disturbed when redds that contain eggs are present; d. activities must be suspended if high stream flows present an increased risk to effectively completing the intended crossing installation technique; e. welding, coating, weighting and, where applicable testing, of the pipe must be completed prior to commencement of trenching within fish-bearing water bodies; f. water from flumes, pump-arounds, diversions, or other methods must be released to downstream areas using dissipation structures to avoid causing erosion or sediment release; g. pump intakes must not disturb beds of streams or wetlands and must be screened with a maximum mesh size of 2.54 mm and approach velocity of 0.038 m/s; h. water flows downstream of in-stream construction sites must be maintained consistent with upstream flows; and i. hard ditch plugs must be installed at or near the banks of the crossing and left in place until the crossing has been initiated (see Dwgs. STDS-03-ML-12-202 and STDS-03-ML-12-203). • The Contractor shall weld, coat and weight the water crossing portion of pipe prior to starting instream ditching activities. The Contractor shall make every effort to ditch, lower-in and backfill water crossings during the same working day or in as short a time as practical. • Implement site-specific plans prior to construction for open-cut crossings, developed by a multidisciplinary team, and approved by relevant regulatory agencies. • Schedule open-cut crossings to protect sensitive life stages by adhering to windows of least risk. No construction work will occur outside of the window of least risk unless approval from the relevant regulatory agencies is obtained. • Restrict water withdrawal for hydrostatic testing to less than 10% of the stream flow of the watercourse at the time of withdrawal or as otherwise specified by the relevant regulatory authority.
Protection of Recreationally, Commercially and/or Culturally Important Fish and Fish Habitat	<p>Interbasin transfer of aquatic organisms on the following KIs:</p> <p>Species of fish, including their habitats, that are important for recreation, cultural or traditional use, and commercial fisheries</p>	<p>Key mitigation measures to address interbasin transfer of aquatic organisms include the following:</p> <p>From Sections 7.2.3 and 8.7.3 of the approved Environmental Management Plan prepared to satisfy Condition 26 of the EAC #E14-03:</p> <ul style="list-style-type: none"> • Equipment to be used in or adjacent to a watercourse or waterbody will be clean or otherwise free of external grease, oil or other fluids, excessive muds, soil and vegetation, prior to entering the waterbody. • Prior to discharge of hydrostatic test water, ensure that the appropriate testing and treatment measures are implemented in accordance with local regulatory requirements. • Discharge hydrostatic test water into the same drainage basin from which it was withdrawn, unless otherwise approved by the appropriate authority. • Discharge water into a well-vegetated area. Provide scour protection or an energy diffuser at the discharge site as directed by Coastal GasLink. • Preserve water quality, including preventing the introduction of foreign material (debris, sediment, etc.) into the receiving waterbody/watercourse. Do not dewater directly to watercourses or wetlands. • Monitor the discharge area for erosion.
Species of Conservation Concern	<p>Potential effects on fish species of conservation concern on the following KI:</p> <p>Species of fish that are provincially or federally-listed, or are considered to be of conservation concern in other planning documents (e.g., regional land use plans and BC Conservation Framework)</p>	<p>Key mitigation measures to address potential effects on fish species of conservation concern include the following:</p> <p>From Sections 7.2.3, 8.4.3 and 8.7.3 of the approved Environmental Management Plan prepared to satisfy Condition 26 of the EAC #E14-03:</p> <ul style="list-style-type: none"> • The Contractor shall develop a detailed site-specific watercourse crossing plan and submit the plan to Coastal GasLink prior to initiating watercourse crossing activities. • All key mitigation measures developed to address potential effects to the Protection of Recreationally, Commercially and/or Culturally Important Fish and Fish Habitat

Valued Component	Interaction Pathway	Key Mitigation from the Approved Environmental Management Plans
<p>Ecological Communities of Concern</p> <p>Plant Species at Risk</p>	<p>Alteration or loss of native vegetation communities, including locally relevant indicators through clearing and maintenance of an earlier seral stage;</p> <p>Alteration of native vegetation communities, including locally relevant indicators, through the introduction or spread of invasive plants;</p> <p>Alteration or loss of native vegetation communities, including locally relevant indicators, by the introduction or spread of forest pests on the following KIs:</p> <ul style="list-style-type: none"> • Native vegetation communities • Ecological communities at risk • Plant species at risk • Traditionally important plant species 	<p>Key mitigation measures to address alteration or loss of native vegetation communities include the following:</p> <p>From Tables 5-1 and 5-2 of the approved Invasive Plant Management Plan prepared to satisfy Condition 16 of the EAC #E14-03:</p> <ul style="list-style-type: none"> • All equipment must arrive at the Project site clean and free of soil or vegetative debris. Equipment will be inspected by the Environmental Inspector(s) or designate, and if deemed to be in appropriate condition, will be identified with a suitable marker or tag. • Any equipment that arrives in a dirty condition will not be allowed on the ROW until it has been cleaned. • Post signs at areas identified as having noxious weed infestations before starting construction. • Conduct basic shovel and sweep or compressed-air cleaning before moving equipment from any locations identified as having a noxious weed infestation. • If noxious weed infestations are identified before construction, implement the following: <ul style="list-style-type: none"> – For noxious weed infestations: treat infestation before mats are placed (i.e., construction mats or swamp mats) over the infested areas. Where mats are used, ensure they are free of soil, vegetation and debris before removing from the site. – Avoid the placement of vehicles, equipment and construction material in areas infested with noxious weeds. <p>From Sections 6.3, 7.1.3, 8.2.3, 8.3.3, 8.4.3 and 8.8.3 of the approved Environmental Management Plan prepared to satisfy Condition 26 of the EAC #E14-03:</p> <ul style="list-style-type: none"> • EAC Condition #16 states: "The Holder must use alternative methods of vegetation control, as specified in the Holder's Invasive Plant Management Plan, in the asserted territories of Aboriginal Groups that have requested that pesticides or herbicides not be used, and tracked in the Working Group Issue-Response Tracking Table (including First Nations) for the Coastal GasLink Pipeline Project, provided those alternative methods are consistent with the Integrated Pest Management Act." • Restrict the general application of herbicide near sensitive resources during the operations phase. Spot spraying, wicking, mowing or hand-picking are acceptable measures for weed control in these areas. • Prohibit the use of herbicides in proximity to an open body of water, unless the herbicide application is conducted by ground application equipment, or otherwise approved by the relevant regulatory authority. • Information and mitigation related to the use of herbicides is included in the Invasive Plant Management Plan (IPMP) (Appendix D.10). • If old forests are identified prior to construction, implement the following, where practical. <ul style="list-style-type: none"> – Avoid areas of old forest by: refining the construction footprint, relocating workspace, adjusting the equipment layout or location of the footprint, extending road or watercourse bores or narrowing the ROW or workspace. If that cannot be accomplished, construction methods should be altered to provide the greatest protection to the area. Options for altering construction methods are described in the Ecological Community and Species of Concern Discovery Contingency Plan (Appendix C.9). – In old forests that cannot be avoided, retain old structural elements (including old trees, standing dead trees, large stumps and downed logs supporting small tree and shrub vegetation). Identify areas on environmental worksheets and include in contract documents. – In old forests, if structural elements on the forest floor (e.g. large stumps and downed logs supporting small tree and shrub vegetation) cannot be avoided, cut the elements into large sections that can be moved out of the work area and back onto the work area after construction. Identify areas on environmental worksheets, flag in the field before clearing and include in contract documents. – In old forests, narrow the ROW to retain standing dead trees, where practical. In old forests, if standing dead trees cannot be avoided or are a safety hazard, cut the trees off as high as practical (3 m to 5 m). Stubbed trees will be retained for use by wildlife that transport seeds and plant parts and to assist natural regeneration. • Adhere to industry guidelines, as appropriate, regulations and Codes of Practice outlined in the Forest Practices Code of BC Act: Timber Harvesting and Silviculture Practices Regulation and Forest Practices Act. • Prohibit clearing of extra temporary workspace within 10 m of a watercourse to protect riparian areas. This area shall be clearly marked prior to clearing operations. The construction footprint will be narrowed through the riparian area, if practical. • Limit clearing activities at watercourse crossings to the removal of trees and shrubs to the ditch line and work side areas required for vehicle crossings. • Fell trees away from watercourses. Immediately remove trees, debris or soil inadvertently deposited below the high watermark of a watercourse. When altering a tree that is located on the bank of a waterbody, where practical, ensure that the root structure and stability are maintained to help bind the soil and encourage rapid colonization of low-growing plant species. • Mitigation of sensitive resources should be reviewed with contractor personnel before construction, to ensure personnel understand the procedures involved. • Extend road or watercourse bores and provide alternative measures for equipment to travel past the area of concern (e.g., protective matting, or snow during the winter; drive around).

Valued Component	Interaction Pathway	Key Mitigation from the Approved Environmental Management Plans
		<ul style="list-style-type: none"> • Implement all applicable mitigation outlined in the EMP under the headings of: clearing maintenance, invasive plants and forests pests. • Flag areas identified as having noxious weed infestations before starting construction. • If ecological communities and species of concern are identified prior to or during construction, refer to the Ecological Communities and Species of Concern Discovery Contingency Plan (Appendix C.9) • Complete machine cleanup immediately following construction, prior to spring break-up. If machine cleanup cannot be completed prior to spring break-up, ensure cross ROW drainage is re-established, and sedimentation and erosion controls are installed to protect the ROW and sensitive environmental features. Final cleanup and reclamation will generally occur during the following fall or winter, or as soon as conditions permit. • Cleanup activities will follow completion of backfill operations as closely as practical. • Schedule final cleanup to occur under non-frozen conditions, when soil moisture conditions permit. • Where construction occurs during frozen conditions, delay final cleanup (i.e., soil feathering, grade touch-ups, final contouring and topsoil and surface material replacement) until the following summer. • Seed riparian and erosion prone areas with an approved native cover crop and seed mix that has been approved by the relevant regulatory authority as soon as practical after construction prior to spring freshet, wherever practical. • Seeding will follow as close as practical to rough cleanup and topsoil and surface material replacement, pending seasonal or weather conditions. • On Crown land, allow for natural regeneration, or seed as directed by the relevant regulatory authority. • Apply seed to all disturbed surfaces (except cultivated fields and wetlands), unless otherwise specified on the environmental worksheets. • Use natural recovery in wetlands and areas of ecological communities or plant species of concern and traditionally important plant species unless invasive species or noxious weeds are a concern, unless otherwise specified by Coastal GasLink. • Restrict vehicle access over newly seeded areas • Implement Post-Construction Monitoring (PCM) and treat weed infestation on the ROW and facility sites, as needed. • If reclamation is postponed, contact the relevant regulatory agencies before the initiation of the cleanup and reclamation activities and notify upon completion, as required. <p>From Section 3.2 of the approved Red- and Blue-Listed Plants and Ecological Communities Survey and Mitigation Plan prepared to satisfy Condition 17 of the EAC #E14-03:</p> <ul style="list-style-type: none"> • Narrow the ROW or workspace, or re-orient the area of disturbance and clearly mark and protect the site using fencing and signage. • Restrict access at the site and clearly mark with flagging and signage to inform all users of restrictions. • Propagate specific components of ecological communities or plants of concern on-site (e.g., harvest seed from the ROW or adjacent area and sow onto ROW following clean-up), or by other means (e.g., collect seed or cuttings, grow in greenhouse and plant onto ROW following cleanup). • Temporarily cover the site (e.g., geotextile pads, flex net, snow, rig/swamp mats, plywood) to reduce physical disturbance of the vegetation and soil surface during construction. • Create a raised ramp (e.g., bridge, rig) for traffic to travel on, to reduce compaction of the vegetation or soil surface. • Carefully re-contour the site to match pre-disturbance site conditions so that drainage is not altered. • Construct in winter when the ground is frozen and there is full snow cover if practical. • Reduce impact from compaction by allowing the ground surface to freeze before vehicle access. • During construction, fence or flag community components or populations that are adjacent to the footprint to prevent incidental damage. • Limit the size of the work area through alpine and subalpine areas by reducing workspace and extra workspace in these areas, where practical. • Retain the natural range of alpine and subalpine areas by reducing workspace and extra workspace in these areas where practical. • Retain the natural range of alpine and subalpine plant community types and structure by implementing mitigation such as retaining diverse micro-habitats (i.e., "leave patches"). • Manage the alpine and subalpine habitats as invasive plant-free zones with strict guidelines on vehicle and equipment access as outlined in the EMP. • If previously unidentified ecological communities of concern or plant species of concern are found on the construction footprint before construction, implement the Ecological Community and Species of Concern Discovery Contingency Plan.

Valued Component	Interaction Pathway	Key Mitigation from the Approved Environmental Management Plans
		<ul style="list-style-type: none"> At locations where the Ecological Community and Species of Concern Discovery Contingency Plan is implemented, conduct post-construction monitoring to assess mitigation success (e.g., for three years starting in the first full growing season following cleanup). Implement alternative mitigation deemed appropriate by the Environmental Inspector(s) in consultation with the vegetation resource specialist.
Wildlife and Wildlife Habitat	<p>Change in habitat suitability and effectiveness on the following KIs:</p> <ul style="list-style-type: none"> Grizzly bear Woodland caribou Moose Mountain goat Marten Fisher Bats Pond-dwelling amphibians Western toad Mature/old seral forest birds Early seral forest birds Wetland bird community Grass/shrub land birds Rusty blackbird Common nighthawk Northern goshawk (interior subspecies) Band-tailed pigeon Western screech-owl 	<p>Key mitigation measures to address change in habitat suitability and effectiveness include the following:</p> <p>From Table 5-1 of the approved Grizzly Bear Mitigation and Monitoring Plan prepared to satisfy Condition 7 of the EAC #E14-03:</p> <ul style="list-style-type: none"> Vegetation management will include minimizing disturbance to vegetation at intersections with existing linear features (e.g., leaving bands of uncleared vegetation). If Coastal GasLink cannot adhere to these avoidance measures, Coastal GasLink will consult with a Qualified Professional to identify alternative measures for discussion with the relevant regulatory agency. <p>From Table 4-1 of the approved Wildlife and Wildlife Habitat Management Plan prepared to satisfy Condition 14 of the Environmental Assessment Certificate (EAC) #E14-03:</p> <ul style="list-style-type: none"> Coastal GasLink will avoid construction activities within identified important feeding habitats for grizzly bear during the cautionary periods, to the extent practical: <ul style="list-style-type: none"> April through mid-June: early spring foraging (interior eco-regions) June through August: high-elevation summer foraging (interior eco-regions) Mid-August through October (fall foraging salmon spawning streams) July through October: berry feeding Coastal GasLink will utilize minimum disturbance construction techniques in areas where grading or blasting is not required, where practical. Vegetation will be cleared above ground level and grubbing will be restricted to the trench width to maintain root layer integrity on most of the ROW. Within travel and work surfaces on the ROW, shrub and young forest areas will be identified before construction and, wherever practical, tall shrubs and tree saplings will be walked down (instead of cleared) to facilitate regeneration. Packed snow (during the winter) or matting will be used to protect surface soils and vegetation within travel and work surfaces on the ROW, to allow for quicker recovery following construction. Disturbance to ground-level vegetation and root systems will be minimized by cutting or mowing shrubs and small diameter trees at ground level along portions of the ROW where grading is not required. When conditions are appropriate, snow pack will be left on the ROW to protect ground-level vegetation and surface soils. All timber will be felled onto the ROW during clearing to minimize damage to vegetation off the ROW. Damaged or leaning trees will only be removed, if necessary, for safety concerns. Coarse woody debris will be spread at identified locations over the ROW to conserve moisture, moderate soil temperatures, provide nutrients, reduce soil erosion, provide a seed source, provide microsites for seed germination and protection for regenerating seedlings, and mitigate damage to regenerating vegetation from human use (e.g., off-road access). Slash and non-merchantable timber will be piled along the centreline of the ROW or to a side of the ROW that has been previously cleared in a manner that does not drag soil into the pile. A brush rake attachment may be used on bulldozers to facilitate preservation of surface soils. Remaining merchantable timber will be salvaged in accordance with the applicable permits and approvals. Decked wood will be removed from the ROW, as soon as practical, to facilitate pipeline construction. Vegetation clearing within the ROW and temporary workspace will be limited to what is necessary to facilitate construction and as permitted by the BC OGC. Before starting construction activities, features of concern flagged during biophysical surveys or indicated on the Environmental Worksheets and the Environmental Index Tables will be clearly marked. After clearing, snow fencing will be installed to delineate the sensitive resources. Avoid human contact with bats, and with roosts or hibernacula. If an active bear den is discovered during construction, avoidance mitigation will be implemented following BC OGC permit conditions (e.g., stop work immediately and maintain a minimum 200 m setback) for the duration of the active denning period (at least December 1 to April 30), unless otherwise authorized by the relevant regulatory authority. If this setback or timing cannot be adhered to, Coastal GasLink will consult with a Qualified Professional for alternative mitigation and discuss with BC MFLNRORD. Except with leave of the Commission, the permit holder must not undertake clearing activities between May 1 and July 31 unless pre-clearing surveys are completed and clearing activities do not occur within 100 m of any stick nest, and within 30 m of any songbird nest. If a caribou mineral lick is discovered within 250 m of the Project footprint in caribou range at any time, Coastal GasLink will follow the decision-making framework described in Section 4.0 of the EMP.

Valued Component	Interaction Pathway	Key Mitigation from the Approved Environmental Management Plans
	<p>Change in movement on the following KIs:</p> <ul style="list-style-type: none"> • Grizzly bear • Woodland caribou • Moose • Mountain goat • Marten • Fisher • Bats • Pond-dwelling amphibians • Western toad • Mature/old seral forest birds • Early seral forest birds • Wetland bird community • Grass/shrub land birds • Rusty blackbird • Common nighthawk • Northern goshawk (interior subspecies) • Band-tailed pigeon • Western screech-owl 	<p>Key mitigation measures to address change in movement include the following:</p> <p>From Table 4-1 of the approved Wildlife and Wildlife Habitat Management Plan prepared to satisfy Condition 14 of the EAC #E14-03:</p> <ul style="list-style-type: none"> • Breaks in pipe, soil stockpiles and windrows will be created at least every 500 m if the top height of these barriers is expected to exceed 1.5 m for more than 72 hours (BC OGC 2011). Breaks will be aligned with obvious wildlife trails to facilitate wildlife movement. Breaks in set-up and welded pipe will coincide with gaps in salvaged material, graded material, trench spoil, snow and rollback windrows. Locations where gaps are appropriate will be determined in the field by the Environmental Inspector(s), in consultation with a Qualified Professional, as required. If the spacing of breaks cannot be achieved, Coastal GasLink will consult with a Qualified Professional for advice on additional mitigation. • The ROW, temporary workspace and access roads will be cleared of snow only as required for construction. • Gaps in snow berms will be provided at least every 500 m if snow berms reach higher than 1.5 m (BC OGC 2011) to allow wildlife movement. Gaps in snow berms will correspond to breaks in pipe, soil stockpiles and windrows. Locations of gaps will align with obvious wildlife trails, where practical, and will be determined in the field by the Environmental Inspector in consultation with a Qualified Professional, as required. If the spacing of breaks cannot be achieved, Coastal GasLink will consult with a Qualified Professional for advice on additional mitigation. • Any open excavations, such as sumps used for watercourse crossings, will be fenced to prevent wildlife from becoming trapped or ingesting material. • The amount of open trench will be minimized. Trenching will be conducted as close as practical to lowering-in and backfill operations. • A break (earthen plug) in the open trench will be provided, where appropriate, to allow wildlife to cross the trench. Locations of breaks will be determined by the Environmental Inspector in consultation with a Qualified Professional, as required. • Conduct work expeditiously to maintain a construction section (i.e., interval between front-end work activities such as grading and back-end activities such as cleanup) to reduce the duration of the open trench and to reduce potential barriers and hazards to wildlife. • If the trench must remain open for an extended period then consider additional mitigation, such as fencing, trench covers, berms and lit barricades to discourage wildlife from approaching the open trench. Install escape ramps in case an animal falls into the trench. • Except with leave of the Commission, new cut for additional workspace is not permitted within a wildlife habitat area or ungulate winter range (UWR) other than those identified in the construction plans referenced in Permissions, and in riparian reserve zone (RRZ) or old growth management area as defined in the Environmental Protection and Management Regulation (EPMR) or the Forest and Range Practices Act and its regulations. • Clearing and site preparation, inclusive of workspace, must be confined to the construction corridor and must not, without leave of the Commission, occur within: <ul style="list-style-type: none"> – An area containing a mineral lick or bald eagle, osprey, goshawk or great blue heron nest unless the mineral lick or nest is not damaged by activities authorized under this permit; – A riparian management area (RMA), except to facilitate a stream or wetland crossing, or where it does not involve new clearing; – A wildlife tree retention area other than those identified in the construction plans referenced in Permissions • The recreational use of all-terrain vehicles (ATVs) or snowmobiles by construction personnel on the Project footprint (i.e., pipeline ROW, temporary work spaces and associated facilities) will be prohibited. • ATVs and ARGOs may be used during preconstruction activities if minimal terrain effect is anticipated. Vehicle travel across wetlands and riparian areas should be reduced to the extent practical. • When using aircraft to undertake activities associated with the permit, the permit holder must provide written instructions to the pilot specifying that flights must not, except in the event of an emergency situation (in accordance with Condition 12 of EAC #E14-03): <ul style="list-style-type: none"> – Directly approach, hover over, circle or land near mountain goats, moose, elk or caribou – Directly approach, hover over or circle near or land within 500 m of known wolverine den sites between February 1 and June 30 – Occur over the Telkwa caribou herd area between May 15 and July 15 – Occur within 2,000 m horizontal distance of UWR u-6-003 between November 1 and June 15 except where there is no line of sight – Occur below 400 m elevation when flying directly above UWR u-6-003
	<p>Change in mortality risk on the following KIs:</p> <ul style="list-style-type: none"> • Grizzly bear • Woodland caribou • Moose • Mountain goat 	<p>Key mitigation measures to address change in mortality risk include the following:</p> <p>From Table 4-1 of the approved Wildlife and Wildlife Habitat Management Plan prepared to satisfy Condition 14 of the EAC #E14-03:</p> <ul style="list-style-type: none"> • All Project personnel and other visitors to the ROW will participate in the Contractor orientation program. • Any incidents with wildlife or collisions with wildlife will be reported by the Environmental Inspector to BC MFLNRORD.

Valued Component	Interaction Pathway	Key Mitigation from the Approved Environmental Management Plans
	<ul style="list-style-type: none"> • Marten • Fisher • Bats • Pond-dwelling amphibians • Western toad • Mature/old seral forest birds • Early seral forest birds • Wetland bird community • Grass/shrub land birds • Rusty blackbird • Common nighthawk • Northern goshawk (interior subspecies) • Band-tailed pigeon • Western screech-owl 	<ul style="list-style-type: none"> • All motorized vehicle traffic, including ATV, ARGO and snowmobile traffic, will be confined to the approved route, access roads or trails except where specifically authorized by the relevant regulatory authority. • Open trenches will be monitored for trapped wildlife by the Contractor and Inspection staff. The Environmental Inspector(s) or Construction Manager will be notified and the relevant provincial regulatory agency will be contacted for direction, when warranted. • Project personnel will be prohibited from having dogs on the ROW. Project personnel are not permitted to hunt, fish, trap or gather plants on the work site. • If wildlife species of concern or their site-specific habitat are discovered during construction of the pipeline, the discovery will be assessed by a Qualified Professional based on the criteria provided in the Wildlife Species of Concern Discovery Contingency Plan, and appropriate mitigation will be implemented from the list outlined below. <ul style="list-style-type: none"> – Suspend work immediately in the vicinity of any unanticipated discovery of newly discovered wildlife species of concern or habitat feature. Work at that location will not resume until the appropriate mitigation is implemented. – Notify the Environmental Inspector(s) who will notify the Construction Manager of the unanticipated discovery. – The Environmental Inspector(s) will assess the discovery and implement appropriate mitigation as described in the EMP and Wildlife and Wildlife Habitat Management Plan. After mitigation is implemented, construction will resume. If the mitigation cannot be implemented, or if alternative mitigation is needed, the Environmental Inspector will: <ul style="list-style-type: none"> ▪ Consult with a Resource Specialist/Qualified Professional for advice on alternative mitigation ▪ Discuss the alternative mitigation with the appropriate regulatory agency ▪ The Qualified Professional may deem it necessary to visit the site to develop an appropriate mitigation plan in consultation with the Environmental Inspector. The mitigation available includes that listed in Section 3.2 of the Wildlife Species of Concern Discovery Contingency Plan (EMP, Appendix C.10) ▪ If a discovery is made during construction preparation, wildlife surveys or construction, the appropriate mitigation will be implemented and the Environmental Worksheets will be updated to incorporate these measures. • Where avoidance of caribou range is not practical, Coastal GasLink will limit project activities (i.e., clearing, construction and operational maintenance) in caribou range to avoid the critical timing windows of January 15 to July 15 for the Telkwa herd areas, otherwise authorized by the relevant regulatory authority, and April 1 to May 15 and December 1 to January 1 for the Telkwa herd (BC MFLNRORD 2014), to the extent practical. <p>From Table 4-1 of the approved Human Wildlife Conflict Management Plan prepared to satisfy Condition 9 of the EAC #E14-03:</p> <ul style="list-style-type: none"> • Develop appropriate road, camp and worksite strategies to prevent human-wildlife contact, food conditioning, habituation and conflict. Carefully monitor wildlife sightings and document concerns, and identify opportunities to improve on further reducing the potential for human-wildlife conflict through adaptive management.

Appendix F

Potential Effects, Key Mitigation and Potential Residual Effects for the Social Effects Assessment for the Reduced Technical Boundary

Valued Component	Potential Adverse Effect	Key Mitigation from the Approved Environmental Management Plans	Site-specific Mitigation in the reduced Technical Boundary developed in response to engagement with Aboriginal groups	Potential Residual Adverse Effect
Land and Resource Use				
Current Use of Land and Resources	Disruption of trail use on the following KI's: <ul style="list-style-type: none"> • Human Habitation • Hunting, Fishing and Gathering • Trapping • Recreational Use 	Key mitigation measures to reduce the effects of the Project on disturbance of trail use include: <p>From Section 2.2 of the Access Control Management Plan (Appendix D.3 of the approved Environmental Management Plan prepared to satisfy Condition 26 of the EAC #E14-03):</p> <ul style="list-style-type: none"> • Coastal GasLink will maintain access to trails, traditional land use areas, recreation sites, and trapline or guide outfitting tenures during pipeline construction. In addition, for trails traditionally used by Aboriginal groups and trails used by trappers that area affected by construction, Coastal GasLink will restore access to these trails to construction preparation conditions in compliance with applicable BC OGC Permit Conditions. Access-related issues will be addressed through ongoing consultation and stakeholder engagement activities. <p>From Section 4.4.1 of the Access Control Management Plan (Appendix D.3 of the approved Environmental Management Plan prepared to satisfy Condition 26 of the EAC #E14-03):</p> <ul style="list-style-type: none"> • Maintain existing access routes for Aboriginal groups, trappers, guide outfitters and recreational user groups that have been identified to Coastal GasLink, where safe. Coastal GasLink expects to engage with these groups to determine options, such as alternative routes, creating and flagging breaks in rollback at intersections with trails used to access traditional use areas (e.g., hunting, fishing, or medicinal and food source plants), traplines or hunting trails, or other options to reduce access disruptions. <p>From Section 5.3 of the approved Environmental Management Plan prepared to satisfy Condition 26 of the EAC #E14-03:</p> <ul style="list-style-type: none"> • Use signage and local and community media sources (e.g., newspapers, radio stations) to notify the public, hunters, fishers and gatherers and recreational users of the location and timing of construction activities and distribute construction schedules, maps and other relevant information on anticipated trail, road and area closures to government agencies, community representatives, Aboriginal groups and potential user groups to inform them of the presence of construction activity, potential access restrictions or noise disturbance in recreational areas or navigable waterways. <p>From Section 8.8.3 of the approved Environmental Management Plan prepared to satisfy Condition 26 of the EAC #E14-03:</p> <ul style="list-style-type: none"> • Reclaim recreation trails and use areas disturbed by the Project to the extent practical, to their construction preparation condition and according to the Reclamation Plan. 	In addition to the approved mitigation from Environmental Management Plans, Coastal GasLink is committed to the following measures to further demonstrate its commitment to manage potential social effects of the Project: <ul style="list-style-type: none"> • Worker orientation will include expectations around behaviour to minimize social impacts • Stakeholder Engagement Commitment Statement • Community Investment Program • Extraordinary Legacy Initiative • Coastal GasLink's workforce accommodations and security will be delivered by local Indigenous businesses • Implementation of the Construction Monitoring and Community Liaison (CMCL) Program, that will provide opportunities for Indigenous participation in construction activities within their traditional territory • Provide nurse practitioners in workforce accommodations • Outfit workforce accommodations with first-aid rooms with proper equipment and running water as outlined in the WorkSafe B.C. regulations • Provide workers access to social services or counselling support through on-site medical staff, help-lines and online services • Equip workforce accommodations with recreational facilities including exercise equipment, television/movies, telephone and internet access 	Disruption of trail use
	Change in access to recreational areas on the following KI's: <ul style="list-style-type: none"> • Human Habitation • Hunting, Fishing and Gathering • Trapping • Recreational Use 	Key mitigation measures to reduce the effects of the Project on change in access to recreational areas include: <p>From Section 5.3 of the approved Environmental Management Plan prepared to satisfy Condition 26 of the EAC #E14-03:</p> <ul style="list-style-type: none"> • Use signage and local and community media sources (e.g., newspapers, radio stations) to notify the public, hunters, fishers and gatherers and recreational users of the location and timing of construction activities and distribute construction schedules, maps and other relevant information on anticipated trail, road and area closures to government agencies, community representatives, Aboriginal groups and potential user groups to inform them of the presence of construction activity, potential access restrictions or noise disturbance in recreational areas or navigable waterways. <p>From Section D.2.2 of the Traffic Control Management Plan Appendix D.2 of the approved Environmental Management Plan prepared to satisfy Condition 26 of the EAC #E14-03:</p> <ul style="list-style-type: none"> • All motorized vehicle traffic, including ATV, ARGO and snowmobile traffic, will be confined to the approved route, access roads or trails except where specifically authorized by the relevant regulatory authority. 	<ul style="list-style-type: none"> • Developed and implementing the Community Workforce Accommodation Enhancement Program • Camp Code of Conduct • Security guards will enforce camp rules and regulations 24 hours a day, 7 days a week. • Security Services are provided by Indigenous businesses. 	Disruption of access to recreational areas

Valued Component	Potential Adverse Effect	Key Mitigation from the Approved Environmental Management Plans	Site-specific Mitigation in the reduced Technical Boundary developed in response to engagement with Aboriginal groups	Potential Residual Adverse Effect
	<p>Disruption of hunting and fishing activities on the following KI's:</p> <ul style="list-style-type: none"> • Human Habitation • Hunting, Fishing and Gathering • Trapping • Recreational Use 	<p>Key mitigation measures to reduce the effects of the Project on disruption of hunting and fishing activities include:</p> <p>From Section 5.3 of the approved Environmental Management Plan prepared to satisfy Condition 26 of the EAC #E14-03:</p> <ul style="list-style-type: none"> • Use signage and local and community media sources (e.g., newspapers, radio stations) to notify the public, hunters, fishers and gatherers and recreational users of the location and timing of construction activities and distribute construction schedules, maps and other relevant information on anticipated trail, road and area closures to government agencies, community representatives, Aboriginal groups and potential user groups to inform them of the presence of construction activity, potential access restrictions or noise disturbance in recreational areas or navigable waterways. <p>From Section 7.1.3 of the approved Environmental Management Plan prepared to satisfy Condition 26 of the EAC #E14-03:</p> <ul style="list-style-type: none"> • Prohibit Project personnel from hunting or fishing on the work site. 		<p>Disruption of hunting and fishing activities</p>
<p>Domestic Water Supply</p>	<p>Alteration of domestic water supply quality and quantity on the following KI's:</p> <ul style="list-style-type: none"> • Domestic Water Supply Quantity • Domestic Water Supply Quality 	<p>Key mitigation measures to reduce the effects of the Project on alteration of domestic water supply quality and quantity include:</p> <p>From Section 8.4.3 of the approved Environmental Management Plan prepared to satisfy Condition 26 of the EAC #E14-03:</p> <ul style="list-style-type: none"> • Coastal GasLink will obtain and follow all applicable federal and provincial permits or authorizations prior to the commencement of construction and instream activities. • Ensure all notifications are completed in accordance with DFO requirements as well as the BC Water Sustainability Act and Water Sustainability Regulation. • The Contractor shall develop a detailed site-specific watercourse crossing plan and submit the plan to Coastal GasLink prior to initiating watercourse crossing activities. • Where warranted, develop a water quality monitoring plan with input from an aquatics specialist that includes monitoring for total suspended solids (TSS) and turbidity if trenchless methods are used. • Implement the Water Quality Monitoring Plan (Appendix E.2) to monitor water quality during instream construction activities. Exceedances of water quality parameters will be reported to the Environmental Inspector and corrective actions will be developed in consultation with the Resource Specialist, the construction management team and the BC OGC. If corrective actions are not successful, construction activities will be temporarily suspended until effective solutions are identified. • Provide potable water to residents if water quality of domestic water sources is adversely affected during the construction period. <p>From Section 8.5.3 of the approved Environmental Management Plan prepared to satisfy Condition 26 of the EAC #E14-03:</p> <ul style="list-style-type: none"> • The location of all discharge areas shall be approved by the Environmental Inspector(s) 		<p>Reduction in domestic water supply quality and quantity</p>

Valued Component	Potential Adverse Effect	Key Mitigation from the Approved Environmental Management Plans	Site-specific Mitigation in the reduced Technical Boundary developed in response to engagement with Aboriginal groups	Potential Residual Adverse Effect
Community and Regional Infrastructure and Services				
Transportation Infrastructure and Services	<p>Increased traffic volumes from transportation of workers, supplies and equipment leading to decreased road safety on the following KI's:</p> <ul style="list-style-type: none"> Traffic 	<p>Key mitigation measures to reduce the effects of the Project on increased traffic volumes include:</p> <p>From Appendix A of the approved Social and Economic Effects Management Plan prepared to satisfy Condition 24 of the EAC #E14-03:</p> <ul style="list-style-type: none"> Communicate with RCMP detachments to define traffic safety concerns and mitigation before proposed Project construction. Access points to the ROW will be flagged and signed to discourage public use. Implement the Traffic Control Management Plan in the EMP (Appendix 2A of the Application) and the Access Control Management Plan. <p>From Section 5.3 of the approved Environmental Management Plan prepared to satisfy Condition 26 of the EAC #E14-03:</p> <ul style="list-style-type: none"> Use signage and local and community media sources (e.g., newspapers, radio stations) to notify the public, hunters, fishers and gatherers and recreational users of the location and timing of construction activities and distribute construction schedules, maps and other relevant information on anticipated trail, road and area closures to government agencies, community representatives, Aboriginal groups and potential user groups to inform them of the presence of construction activity, potential access restrictions or noise disturbance in recreational areas or navigable waterways. Confirm the Project construction schedule and road crossing procedures with BC Ministry of Transportation and Infrastructure staff prior to construction activities. <p>From Section 8.1.3 of the approved Environmental Management Plan prepared to satisfy Condition 26 of the EAC #E14-03:</p> <ul style="list-style-type: none"> Transport workers between the temporary construction camps and muster areas to worksites by multi-passenger vehicles, where practical. 	<p>In addition to the approved mitigation from Environmental Management Plans, Coastal GasLink is committed to the following measures to further demonstrate its commitment to manage potential social effects of the Project:</p> <ul style="list-style-type: none"> Worker orientation will include expectations around behaviour to minimize social impacts Stakeholder Engagement Commitment Statement Community Investment Program Extraordinary Legacy Initiative Coastal GasLink's workforce accommodations and security will be delivered by local Indigenous businesses Implementation of the Construction Monitoring and Community Liaison (CMCL) Program, that will provide opportunities for Indigenous participation in construction activities within their traditional territory Provide nurse practitioners in workforce accommodations Outfit workforce accommodations with first-aid rooms with proper equipment and running water as outlined in the WorkSafe B.C. regulations Provide workers access to social services or counselling support through on-site medical staff, help-lines and online services Equip workforce accommodations with recreational facilities including exercise equipment, television/movies, telephone and internet access Developed and implementing the Community Workforce Accommodation Enhancement Program Camp Code of Conduct Security guards will enforce camp rules and regulations 24 hours a day, 7 days a week. Security Services are provided by Indigenous businesses. 	Increased Project-related traffic on highways and local roads
	<p>Disruption of movement on navigable waterways on the following KIs:</p> <ul style="list-style-type: none"> Navigability of Waterways 	<p>Key mitigation measures to reduce the effects of the Project on disruption of movement on navigable waterways include:</p> <p>From Appendix A of the approved Social and Economic Effects Management Plan prepared to satisfy Condition 24 of the EAC #E14-03:</p> <ul style="list-style-type: none"> Obtain necessary approvals under <i>Canadian Navigable Waters Act</i>, as required. <p>From Section 5.3 of the approved Environmental Management Plan prepared to satisfy Condition 26 of the EAC #E14-03:</p> <ul style="list-style-type: none"> Use signage and local and community media sources (e.g., newspapers, radio stations) to notify the public, hunters, fishers and gatherers and recreational users of the location and timing of construction activities and distribute construction schedules, maps and other relevant information on anticipated trail, road and area closures to government agencies, community representatives, Aboriginal groups and potential user groups to inform them of the presence of construction activity, potential access restrictions or noise disturbance in recreational areas or navigable waterways. <p>From Section 8.4.3 of the approved Environmental Management Plan prepared to satisfy Condition 26 of the EAC #E14-03:</p> <ul style="list-style-type: none"> If directed by the relevant regulatory authority (e.g., Transport Canada), install warning signs along the banks both upstream and downstream of the crossing to caution users of a navigational hazard, where appropriate. 		<p>Disruption of movement on navigable waterways</p>

Valued Component	Potential Adverse Effect	Key Mitigation from the Approved Environmental Management Plans	Site-specific Mitigation in the reduced Technical Boundary developed in response to engagement with Aboriginal groups	Potential Residual Adverse Effect
Community Quality of Life	<p>Change in community quality of life during construction and operations on the following KIs:</p> <ul style="list-style-type: none"> Community Quality of Life 	<p>Key mitigation measures to reduce the effects of the Project on community quality of life include:</p> <p>From Appendix A of the approved Social and Economic Effects Management Plan prepared to satisfy Condition 24 of the EAC #E14-03:</p> <ul style="list-style-type: none"> During worker and Contractor orientation sessions, reinforce the importance of respectful conduct when in communities. Adhere to emergency services and health care services mitigation outlined in Appendix A of the Social and Economic Effects Management Plan <p>From Section 4.3 of the approved Environmental Management Plan prepared to satisfy Condition #26 of the EAC #E14-03:</p> <ul style="list-style-type: none"> The Environmental Inspector's main responsibility is to ensure that all environmental commitments, undertakings and conditions of authorizations are met and that work is completed in compliance with applicable environmental regulations and Coastal GasLink policies, procedures and specifications in the most efficient and effective way practical. <p>Adhere to sensory disturbance mitigation outlined in Section 7.1.3 of the approved Environmental Management Plan prepared to satisfy Condition #26 of the EAC #E14-03</p> <p>Adhere to air quality and emissions mitigation outlined in Section 8.1.3 of the approved Environmental Management Plan prepared to satisfy Condition #26 of the EAC #E14-03.</p> <p>See mitigation outlined in this Table for the domestic water supply VC.</p>		Change in community quality of life during construction and operations
Traditional Land and Resource Use				
Current use of land and resources for traditional purposes	<p>Disruption of subsistence activities (hunting, trapping, fishing and plant gathering) during construction and operations on the following KI's:</p> <ul style="list-style-type: none"> Subsistence activities (e.g., hunting, trapping, fishing and gathering) Subsistence Resources Trails, Travelways, Habitation Sites 	<p>Key mitigation measures to reduce the effects of the Project on the disruption of subsistence activities include:</p> <p>From Section 4.4.1 of the Access Control Management Plan (Appendix D.3 of the approved Environmental Management Plan prepared to satisfy Condition 26 of the EAC #E14-03):</p> <ul style="list-style-type: none"> Maintain existing access routes for Aboriginal groups, trappers, guide outfitters and recreational user groups that have been identified to Coastal GasLink, where safe. Coastal GasLink expects to engage with these groups to determine options, such as alternative routes, creating and flagging breaks in rollback at intersections with trails used to access traditional use areas (e.g., hunting, fishing, or medicinal and food source plants), traplines or hunting trails, or other options to reduce access disruptions. <p>From Section 2.2 of the Access Control Management Plan (Appendix D.3 of the approved Environmental Management Plan prepared to satisfy Condition 26 of the EAC #E14-03):</p> <ul style="list-style-type: none"> Coastal GasLink will maintain access to trails, traditional land use areas, recreation sites, and trapline or guide outfitting tenures during pipeline construction. In addition, for trails traditionally used by Aboriginal groups and trails used by trappers that area affected by construction, Coastal GasLink will restore access to these trails to construction preparation conditions in compliance with applicable BC OGC Permit Conditions. Access-related issues will be addressed through ongoing consultation and stakeholder engagement activities. <p>From Table 4-1 of the Human-Wildlife Conflict Management Plan (Appendix D.9 of the approved Environmental Management Plan prepared to satisfy Condition 26 of the EAC #E14-03):</p> <ul style="list-style-type: none"> Confine all motorized vehicle traffic, including ATV, Argo and snowmobile traffic, to the approved route, access roads or trails, except where specifically authorized by the appropriate authority. Transport construction personnel between construction yards and the construction site by multi-passenger vehicles, to the extent practical, to minimize vehicle traffic. Ensure that all Project-related vehicles follow applicable traffic, road-use and safety laws. Where travel along the ROW in the vicinity of sensitive vegetation (e.g., ecological communities of concern or species of concern, or vegetation that is re-establishing) is required (e.g., during 	<p>In addition to the approved mitigation from Environmental Management Plans, Coastal GasLink is committed to the following measures to further demonstrate its commitment to manage potential social effects of the Project:</p> <ul style="list-style-type: none"> Worker orientation will include expectations around behaviour to minimize social impacts Stakeholder Engagement Commitment Statement Community Investment Program Extraordinary Legacy Initiative Coastal GasLink's workforce accommodations and security will be delivered by local Indigenous businesses Implementation of the Construction Monitoring and Community Liaison (CMCL) Program, that will provide opportunities for Indigenous participation in construction activities within their traditional territory Provide nurse practitioners in workforce accommodations Outfit workforce accommodations with first-aid rooms with proper equipment and running water as outlined in the WorkSafe B.C. regulations 	Disruption of subsistence activities during construction and operations

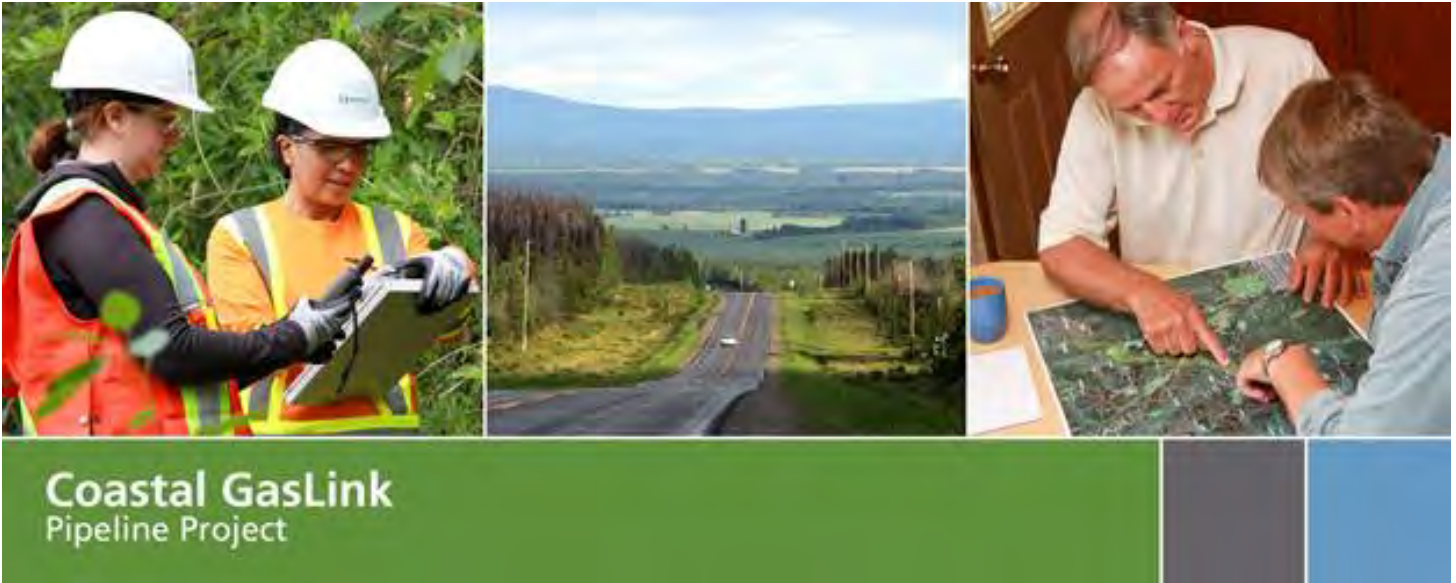
Valued Component	Potential Adverse Effect	Key Mitigation from the Approved Environmental Management Plans	Site-specific Mitigation in the reduced Technical Boundary developed in response to engagement with Aboriginal groups	Potential Residual Adverse Effect
		<p>reclamation monitoring) use foot travel, whenever practical. ATV/Argos will be used only when necessary.</p> <ul style="list-style-type: none"> Dispose of all waste materials in accordance with federal and provincial legislation and Management Plan municipal/regional regulations, as required. <p>From Section 5.0 of the approved Environmental Management Plan prepared to satisfy Condition 26 of the EAC #E14-03:</p> <ul style="list-style-type: none"> Provide Aboriginal groups with the proposed construction schedule and proposed route maps. Ensure schedule changes are communicated to these groups in a timely manner, as appropriate and in accordance with EAC Condition #28. <p>From Section 8.1 of the approved Environmental Management Plan prepared to satisfy Condition 26 of the EAC #E14-03:</p> <ul style="list-style-type: none"> Reduce the amount of disturbance by using previously disturbed areas for stockpiles and temporary construction camp sites, where practical. <p>From Section 7.1.3 of the approved Environmental Management Plan prepared to satisfy Condition 26 of the EAC #E14-03:</p> <ul style="list-style-type: none"> Prohibit Project personnel from hunting or fishing on the work site. Prohibit the recreational use of ATVs or snowmobiles on the work site. Prohibit construction personnel from feeding or harassing wildlife. Dispose of food wastes and industrial waste properly. <p>From Section 8.8.3 of the approved Environmental Management Plan prepared to satisfy Condition #26 of the EAC #E14-03:</p> <ul style="list-style-type: none"> Implement the Access Control Management Plan (Appendix D.3). The location of site-specific measures will be determined in consultation with the relevant regulatory authority 	<ul style="list-style-type: none"> Provide workers access to social services or counselling support through on-site medical staff, help-lines and online services Equip workforce accommodations with recreational facilities including exercise equipment, television/movies, telephone and internet access Developed and implementing the Community Workforce Accommodation Enhancement Program Camp Code of Conduct Security guards will enforce camp rules and regulations 24 hours a day, 7 days a week. Security Services are provided by Indigenous businesses. 	
	<p>Disruption of use of trails, and travelways and reduced use of habitation sites during construction and operations on the following KI's:</p> <ul style="list-style-type: none"> Subsistence activities (e.g., hunting, trapping, fishing and gathering) Subsistence Resources Trails, Travelways, Habitation Sites 	<p>Key mitigation measures to reduce the effects of the Project on the disruption of trails, travelways and reduced use of habitation sites include:</p> <p>From Section 4.4.1 of the Access Control Management Plan (Appendix D.3 of the approved Environmental Management Plan prepared to satisfy Condition #26 of the EAC #E14-03):</p> <ul style="list-style-type: none"> Maintain existing access routes for Aboriginal groups, trappers, guide outfitters and recreational user groups that have been identified to Coastal GasLink, where safe. Coastal GasLink expects to engage with these groups to determine options, such as alternative routes, creating and flagging breaks in rollback at intersections with trails used to access traditional use areas (e.g., hunting, fishing, or medicinal and food source plants), traplines or hunting trails, or other options to reduce access disruptions. <p>From Section 2.2 of the Access Control Management Plan (Appendix D.3 of the approved Environmental Management Plan prepared to satisfy Condition #26 of the EAC #E14-03):</p> <ul style="list-style-type: none"> Coastal GasLink will maintain access to trails, traditional land use areas, recreation sites, and trapline or guide outfitting tenures during pipeline construction. In addition, for trails traditionally used by Aboriginal groups and trails used by trappers that area affected by construction, Coastal GasLink will restore access to these trails to construction preparation conditions in compliance with applicable BC OGC Permit Conditions. Access-related issues will be addressed through ongoing consultation and stakeholder engagement activities. <p>From Section 5.3 of the approved Environmental Management Plan prepared to satisfy Condition #26 of the EAC #E14-03:</p> <ul style="list-style-type: none"> Use signage and local and community media sources (e.g., newspapers, radio stations) to notify the public, hunters, fishers and gatherers and recreational users of the location and timing of construction activities and distribute construction schedules, maps and other relevant information on anticipated trail, road and area closures to government agencies, community representatives, 		<p>Disruption of trail, travelway and habitation site use during construction and operations</p>

Valued Component	Potential Adverse Effect	Key Mitigation from the Approved Environmental Management Plans	Site-specific Mitigation in the reduced Technical Boundary developed in response to engagement with Aboriginal groups	Potential Residual Adverse Effect
		<p>Aboriginal groups and potential user groups to inform them of the presence of construction activity, potential access restrictions or noise disturbance in recreational areas or navigable waterways.</p> <p>From Section 8.1.3 of the approved Environmental Management Plan prepared to satisfy Condition 26 of the EAC #E14-03:</p> <ul style="list-style-type: none"> Reduce the amount of disturbance by using previously disturbed areas for stockpiles and temporary construction camp sites, where practical. <p>From Section 7.1.3, Table 7-1 of the approved Environmental Management Plan prepared to satisfy Condition 26 of the EAC #E14-03:</p> <ul style="list-style-type: none"> If TLU sites not previously identified are found on the ROW during construction, follow conditions outlined in the TLU Sites Discovery Contingency Plan (Appendix C.12). Successful and proven mitigation available to trails transecting the pipeline ROW include: <ul style="list-style-type: none"> detailed recording and mapping to within 100 m on both sides of the pipeline ROW; in partnership with community representatives, a decision is then made about the relative importance of the trail and, if warranted, how best to maintain and control access other mitigation includes signage or scheduling construction during periods of least effect Successful and proven mitigation for habitation sites include: <ul style="list-style-type: none"> detailed mapping, photographic recording and avoidance of the location by the proposed development should avoidance of a site not be practical, mitigation consisting of detailed recording and controlled excavations may be implemented 		
Cultural Sites	<p>Disturbance of gathering places during construction and operations on the following KI's:</p> <ul style="list-style-type: none"> Gathering Places 	<p>Key mitigation measures to reduce the effects of the Project on disturbance of gathering places include:</p> <p>From Section 5.3 of the approved Environmental Management Plan prepared to satisfy Condition 26 of the EAC #E14-03:</p> <ul style="list-style-type: none"> Use signage and local and community media sources (e.g., newspapers, radio stations) to notify the public, hunters, fishers and gatherers and recreational users of the location and timing of construction activities and distribute construction schedules, maps and other relevant information on anticipated trail, road and area closures to government agencies, community representatives, Aboriginal groups and potential user groups to inform them of the presence of construction activity, potential access restrictions or noise disturbance in recreational areas or navigable waterways. <p>From Section 8.1.3 of the approved Environmental Management Plan prepared to satisfy Condition 26 of the EAC #E14-03:</p> <ul style="list-style-type: none"> Restrict all construction activities to the approved, surveyed ROW, and approved temporary workspace, existing roads and approved shoo-flies. All construction traffic will adhere to safety and road closure regulations. Reduce the amount of disturbance by using previously disturbed areas for stockpiles and temporary construction camp sites, where practical. Ensure that noise abatement equipment on machinery is in good working order. Reasonable measures must be undertaken to mitigate noise from construction activity that has the potential to affect public safety or significantly impair the use and enjoyment of lawfully occupied permanent dwellings, significant public use areas during periods of use or other similar areas. Discourage unauthorized public vehicle access along the ROW during construction through the use of signs. 		Disturbance of gathering places during construction and operations

Valued Component	Potential Adverse Effect	Key Mitigation from the Approved Environmental Management Plans	Site-specific Mitigation in the reduced Technical Boundary developed in response to engagement with Aboriginal groups	Potential Residual Adverse Effect
		<p>From Section 7.1.3, Table 7-1 of the approved Environmental Management Plan prepared to satisfy Condition 26 of the EAC #E14-03:</p> <ul style="list-style-type: none"> If TLU sites not previously identified are found on the ROW during construction, follow conditions outlined in the TLU Sites Discovery Contingency Plan (Appendix C.12). Potential adverse effects on gathering places may be mitigated through detailed recording, mapping and avoidance; however, the visual effect will be assessed in the field and mitigation will be refined and optimized, if warranted. <p>From Section 8.8 of the approved Environmental Management Plan prepared to satisfy Condition 26 of the EAC #E14-03:</p> <ul style="list-style-type: none"> Implement the Access Control Management Plan (Appendix D.3). The location of site-specific measures will be determined in consultation with the relevant regulatory authority. 		
Human and Ecological Health				
Human Health	The potential adverse health effects associated with the construction, operations, decommissioning and abandonment of the Project on community members and guests of the Healing Centre were considered and assessed in the technical assessment for related VCs already addressed in this Table (i.e., domestic water supply and community quality of life).	<p>Key mitigation measures to reduce the effects of the Project on change in human health are already addressed for related VCs in the Condition 1 Report #2 including:</p> <ul style="list-style-type: none"> Mitigation of noise levels, air emissions and dust (see Section 2.2 of the Condition 1 Report #2) Mitigation of sedimentation and erosion in freshwater environments (see Section 2.3 of the Condition 1 Report #2) Mitigation to avoid potential adverse effects on surface and groundwater quality (see Section 2.3 of the Condition 1 Report #2) Mitigation of vegetation to prevent degradation of country foods (see Section 2.4 of the Condition 1 Report #2) <p>Given the mitigation listed above, there is no additional mitigation recommended specifically to protect human health.</p>		No residual effects identified

Appendix G

EAC Condition 1 Report #2: Fish and Fish Habitat Technical Data Report #2



Coastal GasLink
Pipeline Project

Appendix B: Environmental Assessment Certificate Condition 1 Fish and Fish Habitat Technical Data Report #2

CGL4703-STC-EN-RP-088

July 17, 2020

Revision 1

Issued for Use



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1.0 INTRODUCTION

On March 11, 2014, Coastal GasLink Pipeline Ltd. (Coastal GasLink) submitted an Application for an Environmental Assessment Certificate (EAC Application) to the British Columbia (BC) Environmental Assessment Office (EAO) for the Coastal GasLink Pipeline Project (the Project). On October 23, 2014, Coastal GasLink received an Environmental Assessment Certificate (EAC) #E14-03 for the Project which includes Schedule B, Table of Conditions. Condition # 1 (EAC Condition 1) requires Coastal GasLink to complete and report on biophysical information collected for the Morice River Technical Boundary Area (Technical Boundary). The Technical Boundary is defined as the area of the Project between Universal Traverse Mercator (UTM) Zone 9U East 611335 North 6003957 and UTM Zone 9U East 577769 North 6000758 (Figure 1-1).

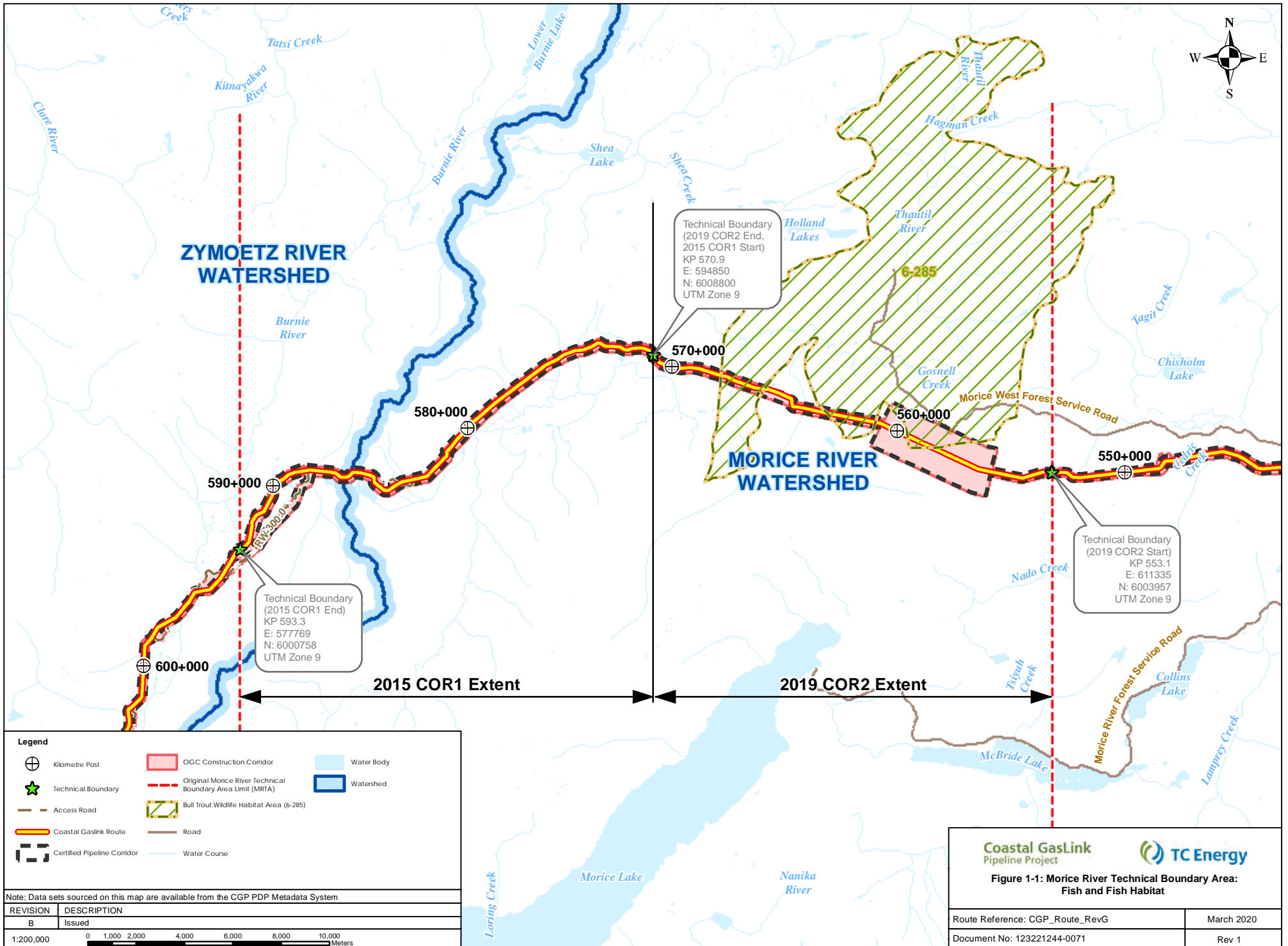
To fulfill the biophysical requirements of EAC Condition # 1, Coastal GasLink submitted the following three reports:

1. Environmental Assessment Certificate #E14-03 Condition 1 Report #1 (October 30, 2015), hereafter referred to as the 2015 COR1.
2. Environmental Assessment Certificate #E14-03 Condition 1 Report #2 (November 19, 2019), hereafter referred to as the 2019 COR2.
3. Environmental Assessment Certificate #E14-03 Condition 1 Report #2 (July 17, 2020), hereafter referred to as the 2020 COR2.

For biophysical requirements to support the Fish and Fish Habitat Valued Component (VC), each of the 2015 COR1, 2019 COR2 and 2020 COR2 submissions included a Fish and Fish Habitat Technical Data Report (TDR). These submissions were based on the requirements of the Application Information Requirements (AIR) and EAC Condition 1, which is described in Section 3.0.

The purpose of the COR1 and COR2 Fish and Fish Habitat TDRs is to support full compliance with EAC Condition 1 by presenting the additional information collected to describe baseline conditions for fish and fish habitat within the Technical Boundary. In this 2020 COR2 TDR, a summary of the 2015 COR1 TDR, and details from the 2019 and 2020 COR2 TDR, are provided collectively for the Technical Boundary. Together, field data from the COR1 and COR2 TDRs were used to verify or update the effects assessment conclusions reached in the EAC Application, and to identify the need for additional mitigation in the Technical Boundary.

Abbreviations and acronyms used in this report are described in Appendix B.1.



Legend

Note: Data sets sourced on this map are available from the CGP PDP Metadata System

REVISION	DESCRIPTION
B	Issued

1:200,000 0 1,000 2,000 4,000 6,000 8,000 10,000 Meters

Figure 1-1: Morice River Technical Boundary Area: Fish and Fish Habitat	
Route Reference: CGP_Route_RevG	March 2020
Document No: 123221244-0071	Rev 1

2.0 OBJECTIVES

The 2015 COR1, 2019 COR2 and this 2020 COR2 are consistent with the direction of the AIRs issued by BC EAO and EAC Condition 1. These reports also consider guidance contained in the BC EAO User Guide (BC EAO 2011, updated 2018), Fairness and Service Code (BC EAO 2009, updated 2011), and the Proponent Guide for Providing First Nation Consultation Information (BC EAO 2010, updated 2013).

The collective objective of the COR fish and fish habitat submissions is to present newly acquired field data that was gathered using methods consistent with the AIR and as described in the EAC Application, Fish and Fish Habitat TDR. The field data were used to supplement the understanding of baseline conditions for the Fish and Fish Habitat VC in the Technical Boundary and to facilitate the assessment of potential adverse effects and potential cumulative effects of the Project. This objective was achieved for the Fish and Fish Habitat VC by completing wildlife field surveys in the Technical Boundary which were not previously accessible and by including Aboriginal participation in those field surveys.

3.0 STUDY AREA BOUNDARIES

Figure 1-1 illustrates the study area boundaries for the Technical Boundary, including demarcation of the portion of the Technical Boundary addressed in each of the 2015 COR1 and 2019/2020 COR2 reports.

3.1 MORICE RIVER TECHNICAL AREA BOUNDARY

The Technical Boundary is the area between Universal Transverse Mercator (UTM) 9U East 611335 North 6003957 and 9U East 577769 North 6000758. The 2015 COR1 report covered the area from UTM Zone 9U East 594850 North 6008800 to UTM Zone East 577769 North 6000758. The area covered by the 2019 COR2 report, where field data were not previously collected for inclusion in the Application due to access limitations is UTM Zone 9U East 611335 North 6003957 and UTM Zone 9U East 594850 North 6008800. And is the area covered by this 2020 COR2 TDR (Figure 1-1). Figure 1-1 also shows data presented in the 2015 COR1 TDR.

3.2 PROJECT FOOTPRINT

The project footprint is a 100-m-wide corridor within the Technical Boundary that has the potential to be directly affected by clearing, construction and cleanup activities, including associated physical works and activities.

3.3 LOCAL STUDY AREA

The Fish and Fish Habitat Local Study Area (LSA) was established to consider the area in which project activities and facilities could have an adverse effect on fish and fish habitat (i.e., the zone of influence). Most of the information presented in this COR2 TDR is relevant to the LSA (i.e., fish and fish habitat that occurs within the project footprint or that may be directly affected by activities that occur within the project footprint).

The LSA is centred on the project footprint within the Technical Boundary and extends 100 m upstream and 300 m downstream of watercourse crossings (Figure 1-1). Field surveys completed at watercourse crossing locations extended at least 50 m upstream and 100 m downstream with a minimum site length of 150 m. Larger streams were surveyed to at least 100 m upstream and 300 m downstream from the watercourse crossing location (400 m site length).

3.4 REGIONAL STUDY AREA

The Fish and Fish Habitat Regional Study Area (RSA) is established to evaluate effects of the Project on fish and fish habitat on a landscape scale. Collection of baseline data in the RSA also facilitates an assessment of potential project-related adverse effects on fish and fish habitat with consideration of effects from other projects or ongoing activities that could act cumulatively on fish and fish habitat. Generally, the RSA boundaries coincide with major watershed boundaries, such that

potential downstream (e.g., sedimentation and loss of juvenile fish recruitment to downstream habitats) and upstream (e.g., unnatural obstacles to fish passage) effects could be captured. The Technical Boundary RSA is the boundaries of the Morice River Watershed (Figure 1-1). The RSA also includes the Certified Pipeline Corridor (CPC) which is defined in the Certified Project Description Schedule A of the EAC #E14-03.

3.5 STUDY AREA OF EXISTING DATA REVIEW

Wherever available, existing fisheries information was incorporated into this COR2 TDR to increase the spatial or temporal extent of fisheries knowledge within the Technical Boundary LSA. Because spatially discrete points that fall outside of the Fish and Fish Habitat LSA are often relevant to aquatic habitats within the LSA, the study area for existing data review was expanded to capture existing historical data within the same watershed or adjacent to the crossed watershed.

Historical data points in the area covered by the 2019 COR2 are displayed in the Technical Boundary: Watercourse Crossings mapbook (Appendix B.2). These data were used when inferring the fish-bearing status and potential species assemblage at a given watercourse crossing. Appendix B.2 includes only watercourse crossings assessed in the 2019 fish and fish habitat assessments.

3.6 ENVIRONMENTAL SETTING

An overview of the physical environment, as it pertains to the overall Project (including the Technical Boundary), is provided in Section 2.3 of the EAC Application: Fish and Fish Habitat TDR (hereafter referred to as the 2014 TDR). The sections below provide a general overview of the physical environments traversed by the Project route, with respect to the Technical Boundary.

3.6.1 Physical Setting

The Technical Boundary lies within the Central Interior Ecoprovince. Ecoprovinces are part of the ecoregion classification system, which provides a systematic view of small-scale ecological relationships in the province based on climate and physiology (Demarchi 2011). Flat topography and distinct seasons (i.e., colder winters, warmer summers and a rainy season during late spring and early summer months) characterize the Central Interior Ecoprovince. However, the Technical Boundary lies at the western edge of the Central Interior Ecoprovince, near the Coast and Mountains Ecoprovince and the topography features higher relief and the climate is influenced by the moist Pacific air masses, so precipitation amounts are greater than typically seen in the Central Interior Ecoprovince.

3.6.2 Drainage Basins

The Technical Boundary lies completely within the Morice River Watershed, a component of the larger Skeena River Watershed in the northeastern portion of the province. Part of the Project route falls within the Gosnell Creek drainage area, a large tributary comprising 12% of the Morice River Watershed.

The Morice River drains from Morice Lake, which is among the largest natural lakes in BC at 97.5 km² and is the second-largest lake in the Skeena Watershed. Morice Lake itself is fed from tributaries draining icefields and glaciers in the Kitimat Ranges of the Coast Mountains. Major tributaries to Morice Lake drain parts of the Tahtsa Ranges to the southeast (*e.g.*, Nanika River) and Bulkley Ranges to the northwest (*e.g.*, Atna River), themselves part of the Hazelton Mountains (Holland 1976).

The Morice River flows in a generally northeasterly direction through the western extent of the Nechako Plateau for 92 km before meeting the Bulkley River just west of the community of Houston, within the RSA. The Bulkley River discharges into the Skeena River mainstem 153 km downstream at the community of Hazelton.

4.0 2015 COR1 TECHNICAL DATA REPORT

Two valued components related to fish and fish habitat were specified in the aquatic environment section of the AIR:

- protection of recreationally, commercially and/or culturally important fish and fish habitat; and
- identification of Species of Conservation Concern.

The AIR for these two VCs did not specify requirements for supplemental data collection. Rather it required a description of:

- recreationally, commercially, and/or culturally important fish and fish habitats that occur in the Aquatic RSA (AIR section 4.3.1); and
- species of conservation concern that occur in the Aquatic RSA (AIR section 4.3.2).

To support 2015 COR1, fisheries field programs were completed in the open water (unfrozen) seasons of 2014 and 2015 within the Technical Boundary to gather information on fish species, habitat values, habitat capabilities, limiting factors, and site-specific management concerns at each of the proposed pipeline watercourse crossing locations. The data collection methods used during the field assessments were consistent with the 2014 TDR (see Section 3.6, pages 28-34) and supports the information requirements specified in the 2013 AIR (Section 4.3, pages 35-38).

Historical data directly relevant to watercourses crossed by the proposed pipeline were available for 14 crossings (27% of crossings within the Technical Boundary). Additional historical data that provided insight into fish distributions within the affected watershed, but not specific to the crossing location, were also available. Seven species of conservation concern were identified in these watersheds and have the potential to occur in watercourses intersecting the right-of-way. The methods used to review and summarize the existing/historical fish and fish habitat information were consistent with the approach outlined in the EAC Application, 2014 Fish and Fish Habitat TDR (Section 3.2, pages 14-18).

In the portion of the LSA within the Technical Boundary, 52 watercourse crossing were identified, and 44 assessments were completed as part of the field program to support the 2015 COR1 Fish and Fish Habitat TDR. Fish sampling was completed at 12 sites where suitable fish habitat characteristics were present (i.e., the watercourse was well defined and there were no known fish barriers downstream of the crossing), sufficient flows were present, and historical data were lacking.

5.0 2019 COR2 TECHNICAL DATA REPORT

The 2019 COR2 Fish and Fish Habitat TDR covered the portion of the Technical Boundary between 9U East 594850 North 6008800 and 9U East 611335 North 6003957 (Figure 1-1). This 2020 COR2 Fish and Fish Habitat TDR presents the objectives, study area boundaries, traditional ecological knowledge, methodology, and updated fish and fish habitat assessment results specific to the same portion of the Technical Boundary covered by the 2019 COR2 Fish and Fish Habitat TDR, as noted above.

6.0 TRADITIONAL ECOLOGICAL KNOWLEDGE

Coastal GasLink offered Aboriginal groups with an interest in the Technical Boundary the opportunity to participate in biophysical field investigations and contribute Aboriginal Traditional Knowledge (ATK) as part of Coastal GasLink's biophysical field investigations in the Technical Boundary in accordance with the Project's AIRs. ATK considers both Traditional Use Studies (TUS) and Traditional Ecological Knowledge (TEK). Aboriginal groups with an interest in the Project area completed TUS within the Technical Boundary study area; these studies were considered in the Environmental Assessment Certificate (EAC) Application effects assessment. Some Aboriginal groups chose not to conduct TUS for the Project and provided information directly to the BC Environmental Assessment Office (EAO) instead. To satisfy the intent of EAC Condition 1, Coastal GasLink therefore focused on collecting TEK in the Technical Boundary in locations where TEK had not been previously gathered during the 2015 field program. CH2M HILL Canada Limited (Jacobs) was commissioned to facilitate the participation of potentially affected Aboriginal groups during the biophysical field work for the Project within the Technical Boundary.

On May 24, 2019, Coastal GasLink sent letters inviting the following Aboriginal groups with an interest in the Technical Boundary study area to participate in the baseline field program:

- Dark House;
- Nee-Tahi-Buhn Band;
- Office of the Hereditary Chiefs of the Wet'suwet'en;
- Skin Tyee Nation;
- Witset First Nation (previously Moricetown Indian Band); and
- Wet'suwet'en First Nation.

For the 2019 field program within the Technical Boundary, TEK was provided by community members from Witset First Nation (previously Moricetown Indian Band), Skin Tyee Nation and Wet'suwet'en First Nation. Participants from Dark House and Office of the Hereditary Chiefs of the Wet'suwet'en were invited to participate through a third-party Aboriginal contractor. These participants attended the field studies but did not participate on behalf of the Office of the Hereditary Chiefs of the Wet'suwet'en and Dark House, and they did not provide TEK. Nee-Tahi-Buhn Band chose not to participate in the 2019 field program.

6.1 TRADITIONAL ECOLOGICAL KNOWLEDGE FIELD SURVEY OBJECTIVES

Aboriginal participation objectives during the biophysical field programs (*i.e.*, the fish and fish habitat field program, the pond-dwelling amphibian survey, and the rare plant vegetation field surveys) were as follows:

- document the TEK of Aboriginal participants who choose to share it;
- supplement the field survey design and execution;
- confirm 2019 TEK field program findings align with TEK previously collected (*i.e.* prior to 2019) as part of the Project;
- identify potential adverse effects of the Technical Boundary on environmental and TEK resources; and
- integrate TEK into mitigation development to manage environmental effects.

Key issues and concerns previously identified by Aboriginal groups during preliminary engagement in 2013 and throughout field surveys in 2014, 2015, and 2016 overlap with concerns raised during the 2019 field surveys for the Technical Boundary. Coastal GasLink's responses to the issues and concerns previously raised were submitted in 2013 to Aboriginal groups and are available in Section 23 of the original EAC Application submitted in March 2014, as well as in the Aboriginal Consultation Reports that have been filed for the Project. Additional issues or concerns raised during participation on subsequent Project field surveys have been considered in Project planning, including the development of management plans to satisfy the Project's EAC conditions.

Coastal GasLink conducted a comprehensive review of recommended mitigation measures and any interests and concerns raised by each Aboriginal group who participated in the 2019 field program for the Technical Boundary

6.2 SUMMARY OF PARTICIPATION

Aboriginal field survey participation for the Technical Boundary was conducted between July 15 and 20, 2019. Table 6-1 summarizes Aboriginal group participation in the fish and fish habitat field program, the pond-dwelling amphibian survey, and the rare plant vegetation field surveys. TEK collected in the field was compiled into a memorandum (results review memos) that was sent to Aboriginal groups for review and accuracy. TEK information collected by Jacobs facilitators was compiled and provided to communities on the dates outlined in Table 6-1.

Table 6-1: Aboriginal Group Participation in the Technical Boundary 2019 Field Surveys

Aboriginal Group	Fish and Fish Habitat	Rare Plants	Pond-Dwelling Amphibians	Results Review Memos Sent
Dark House	July 19, 2019	July 18, 2019 July 20, 2019	July 18, 2019 July 20, 2019	No TEK collected
Skin Tyee Nation	July 19, 2019	July 18, 2019 July 20, 2019	July 16, 2019	August 2, 2019
Witset First Nation	July 20, 2019	July 16, 2019	July 18, 2019 July 19, 2019	August 2, 2019
Office of the Hereditary Chiefs of the Wet'suwet'en	July 20, 2019	July 16, 2019	July 16, 2019	No TEK collected
Wet'suwet'en First Nation	July 20, 2019	July 16, 2019	July 18, 2019 July 19, 2019	August 7, 2019
Wet'suwet'en community members attended biophysical field studies, as facilitated through a third-party Aboriginal contractor but did not participate on behalf of Office of the Hereditary Chiefs of the Wet'suwet'en or Dark House.				

7.0 METHODOLOGY

The types of data gathered for the additional baseline information to support the assessment of potential adverse effects of the Project are consistent with those collected in the 2014 Fish and Fish Habitat TDR (field methods are outlined in Section 2.4.1 of that report) and the methodology outlined in Section 3.0 of the EAC Application and AIR for the Project. The process of selecting key indicators, conducting an existing data and literature review, and identifying mitigation measures remain unchanged.

7.1 WATERCOURSE CROSSING IDENTIFICATION AND EXISTING DATA AND LITERATURE

Existing fisheries data were compiled from a variety of sources and were included on field maps prior to the start of the field surveys. Data that are documented in existing reports, government databases or Internet sites have been added directly to the fish and fish habitat alignment maps as historical data points. Detailed methods for data and literature review are provided in the EAC Application Appendix 2G.

Detailed methods for identifying watercourse crossings are found in the 2014 Fish and Fish Habitat TDR (Appendix 2G). The complete list of sites (pipeline-watercourse crossing intersections) is referred to as the master watercourse crossing table (MWCT). The identified watercourse crossing locations and site identifiers in the MWCT remain unchanged from the 2014 Fish and Fish Habitat TDR, 2015 COR1 Fish and Fish Habitat TDR, and were determined for the purposes of the assessment through the use of Terrain Resource Information Management (TRIM) and desktop mapping. The MWCT for the Technical Boundary included in the 2019 and 2020 COR2 includes all watercourse crossings surveyed in the 2019 fish and fish habitat assessments and is provided in Appendix B.3.

Eight outstanding watercourse crossings were identified in the Technical Boundary using TRIM Watercourse Enhanced Base Map (TRIM) (BC MFLNRO 2019). These are:

- 558 (S1B) – Morice River;
- 559 (S1B) – Unnamed Tributary to Morice River;
- 560 (NCD) – Unnamed Tributary to Morice River;
- 561 (S6) – Unnamed Tributary to Morice River;
- 565 (S1B) – Unnamed Tributary to Gosnell Creek;
- 573B (S2) – Unnamed Tributary to Gosnell Creek;
- 574B (S4) – Unnamed Tributary to Gosnell Creek; and
- 575B (S1B) – Gosnell Creek.

7.2 FIELD SURVEYS

Fish habitat data was collected at the eight watercourse crossing locations within the Technical Boundary previously identified to the EAO (listed in Section 2.1). In addition, field work was completed in 2019 to identify watercourses not identified by TRIM to support *Water Sustainability Act* permitting of the Project.

As with previous studies, field surveys completed at watercourse crossing locations extended at least 50 m upstream and 100 m downstream with a minimum site length of 150 m. Larger streams were surveyed to at least 100 m upstream and 300 m downstream from the watercourse crossing location (400 m site length). There were several scenarios where site length was modified, as follows:

- Where high water depths and flows prevented assessments from being conducted safely. In this case observations were made from the river bank, a helicopter fly over was completed and spawning snorkel survey was completed (Site 558).
- At sites classified as no visible channel (NVC) or non-classified drainages (NCD), where site lengths were generally 150 m. As these watercourses do not provide fish habitat and installation of crossings pose a low risk to potential downstream habitat, increasing the survey length would provide limited beneficial information (Sites: J430.03, J430.99, J425.05, J425.04, J425.03, J426.04, 560, J428.49, J428.02, J428.03, 566B, J430.02, J430.01, J431.01, 5L206, J433.99)
- Situations where a 400 m site length was not practical as there was not enough watercourse length available (for example, where a watercourse discharges into its mainstem within the 300 m downstream survey length) (Site 559).

Site length was recorded on the field survey cards at all sites (Appendix B.4, Jacobs Engineering Group 2019). Where necessary, field crews surveyed outside the Fish and Fish Habitat LSA. These surveys were completed downstream of the crossing, within the LSA, to provide additional insight into fish distribution within the watershed. For example, map interpretation and/or aerial reconnaissance was used to determine the potential for downstream barriers. If a downstream barrier was probable, a decision based on professional judgment determined whether additional data were required and if so, additional site survey length was added.

Fish sampling was not required in the Technical Boundary as there was sufficient historical fish presence/use data for six of the seven watercourses containing fish habitat (Sites 558, 559, 565, 573B, 574B, 575B) and insufficient flow to allow sampling in one watercourse (dry) (Site 557). This approach to data collection was consistent with the EAC Application, Fish and Fish Habitat TDR which states “. . . *fish sampling was completed at all sites where flow was sufficient to support fish and where historical fisheries data were lacking. . .*” (Section 3.6.3, page 31 of 123). Incidental visual observations of fish were recorded in three (Sites 574B, 558, 559) of the five watercourses that were flowing at the time of the assessment.

As noted above, a snorkel survey was completed for the Morice River crossing (Site 558) to identify both potential and active spawning habitat upstream, at the crossing location and downstream. The survey was conducted in November 2019 and a total distance of 4.2 km was assessed during this survey.

7.2.1 Field Programs

A total of seven field programs have been historically completed within the Technical Boundary. Two previous field programs were completed in 2013 (winter and open water) with two additional open water fisheries field programs in 2014 and 2015 to gather information on fish species, habitat values, habitat capabilities, limiting factors and management concerns at watercourse crossing locations. In 2019, supplementary fisheries field work was completed in the Technical Boundary to identify and assess previously undocumented watercourse crossings, to verify watercourse classification, confirm location of previously assessed watercourses, and document fish habitat at each of the watercourse crossings. In addition, a snorkel survey was completed on the Morice River to identify spawning habitat.

The field programs and dates where sampling occurred within the Technical Boundary, and subsequently, the Technical Boundary, are summarized, as follows:

- Winter Fisheries Program (WFP):
 - February 26 – March 2, 2013
- Open Water Fisheries Program (OWFP) 2013:
 - Spring: May 9 – 10, 2013
 - Summer: June 25 – 27, 2013
- OWFP 2014:
 - Summer: July 14 – July 21, 2014
- OWFP 2015:
 - June 6 – June 12, 2015
 - August 5 – August 10, 2015
 - August 27 – September 4, 2015
- Fish and Fish Habitat Assessments, Technical Boundary 2019:
 - July 19 to July 22, 2019
- Stream Screening Program, Technical Boundary 2019:
 - July 25 – September 20
- Morice River Snorkel Survey:
 - November 2, 2019

7.3 DATA COLLECTION METHODS

The methods used in gathering additional baseline information to support the assessment of potential effects of the Project are the same as those used in the EAC Application. Field study methods for the 2019 Program are based on the following data inputs and requirements:

- Reconnaissance (1:20 000) Fish and Fish Habitat Inventory: Standards and Procedures (RIC 2001)
- Reconnaissance (1:20 000) Fish Collection Methods and Standards (RIC 1997)
- *Oil and Gas Activities Act*: Environmental Protection and Management Regulation
- Environmental Protection and Management Guideline (OGC 2018)
- Fish-stream Identification Guidebook (Forest Practices Code of BC 1998)
- Fish-stream Crossing Guidebook (BC MFLNRO et al, 2012)
- Field Assessment for Determining Fish Passage status of closed bottom structures (BC MOE 2011)
- Water Sustainability Regulation
- Freshwater fishes of northwestern Canada and Alaska (McPhail and Lindsey 1970)

Data was collected electronically using ArcGIS collector in accordance with the Electronic Aquatics Utility (EAU) for ArcGIS Collector (Coastal GasLink Stream Screening Program Version) - User Guide (Stantec Consulting Ltd. 2019).

7.3.1 Permit Acquisitions and Conditions

As required by section 52 of the Fishery (General) Regulations under the *Fisheries Act*, a Scientific License was obtained from Fisheries and Oceans Canada (DFO) to sample in waters that may be frequented by Pacific salmon, which encompasses the Technical Boundary (XR 31 2019 Issued: February 19, 2019, as amended).

Pursuant to section 19 of the *Wildlife Act* (RSBC 1996) Chapter 488 and Section 18 of the Angling and Scientific Regulations of British Columbia (Reg. 125/90), a provincial fish collection permit (SM19-518836 Issued July 9, 2019) was obtained from FrontCounter BC.

7.4 RISK MANAGEMENT FRAMEWORK

A modified version of Fisheries and Oceans Canada's Risk Management Framework (RMF) approach was used to evaluate the biological risks associated with a watercourse crossing based on the sensitivity of the fish and fish habitat at the crossing, the level of potential disturbance, and the watercourse's ability to recover from a potential perturbation (DFO 2006). A detailed description of the methodology

is included in the 2014 Fish and Fish Habitat TDR. The RMF results presented in the 2014 Fish and Fish Habitat TDR have been revised based on updated watercourse crossing information available after the 2019 field sampling program (previous results were based on historical information or conservative estimates of watercourse classification, fish presence and habitat quality).

8.0 RESULTS

8.1 EXISTING DATA SOURCES AND INFORMATION REVIEW

Historical data directly relevant to watercourses crossed by the Project route were available for six crossings (75% of crossings within the Technical Boundary covered by the 2019 and 2020 COR2). Additional historical data that were not directly relevant to watercourse crossings, but which could provide insight into fish distributions within the Morice River Watershed were also available (DeGisi and Schell 1997).

Table 8-1: Historical Data Available for Watercourse Crossings within the Morice River Technical Boundary Area LSA

Data Source	Major Watershed	Comment
Applied Aquatic Research Ltd. (2007) (PTP) *	Stuart, Nechako, Francois Lake, Bulkley, Morice, and Zymoetz Rivers	Watercourse crossing data for the Pacific Trails Pipeline, which occurs in close proximity to the Project route for almost 300 km between KP 293 and KP 589.
BC MOE (2020a) (FISS) ¹	All	Provided species assemblage for most major watercourse crossings, as well as barriers and fish presence at smaller sites that had been documented by government agencies or older historical reports (FISS database appears to be lacking any newer data).
BC MOE (2020b) (FPR) *	All	Amalgamated data from relevant fish permit reports which were obtained through BC MOE's EcoCat on-line catalogue.
Bustard and Schell (2002)	Morice River	Descriptive overview of fish habitat throughout the Morice River Watershed, including locations of key habitats and life history profiles for fish species present.
David Bustard and Associates Ltd. (1998)	Morice River	Fish and Fish habitat inventory of the Gosnell Creek drainage area.
SKR Consultants Ltd. (SKR 2001)	Morice River	Fish and fish habitat inventory re-sampling in the Owen Creek drainage area.
Triton Environmental Consultants Ltd. (Triton 2000)	Morice River	Fish and fish habitat inventory of tributaries to the upper Morice River including Lamprey and Cedric creeks.
Whelen and Bradley (2010) (NGP) *	Morice and Zymoetz Rivers	Watercourse crossing data for the Enbridge Northern Gateway Pipeline, which occur in close proximity to each other for 64 km between KP 527 and KP 591.
NOTES: * Indicates label on maps		

Historical data points are shown on the fish and fish habitat mapbook (Appendix B.2). Appendix B.2 includes all watercourse crossings assessed in the 2019 fish and fish habitat assessments only. Additional data, which may also be relevant at the fish and fish habitat RSA level, or to provide fisheries information at a watershed level, are also included on the fish and fish habitat mapbook (Appendix B.2).

8.2 RESULTS OF FIELD INVESTIGATIONS

A total of 27 watercourse crossing sites were identified within the Technical Boundary covered in the 2019 and 2020 COR2 and were assessed between July 19 to September 20, 2019.

The following sections summarize the results of fish and fish habitat surveys completed within the Technical Boundary as of 2019. Watercourse crossing data sheets for each crossing are included in Appendix B.4 (Jacobs Engineering Group 2019).

8.2.1 Watercourse Classification

Watercourse classifications have been assigned to all 27 watercourses crossed by a portion of the Technical Boundary covered in the 2019 and 2020 COR2 (Table 8-2). Eleven of the watercourses surveyed met the definition of a watercourse as defined in the *Fish-stream Identification Guidebook* (BC MOF and MOE 1998). Seven of these watercourses are considered fish bearing. Fish bearing status was determined by visual observation on-site, historical records, or insufficient evidence to suggest that the watercourse could not support fish.

Table 8-2: 2019 COR2 Morice River Technical Boundary Area Watercourse Class by Watershed Unit

Watershed Unit	Fish-bearing						Non-fish-bearing				Total Sites
	S1A	S1B	S2	S3	S4	L3	S5	S6	NVC	NCD	
Morice River	0	2	0	0	1	0	0	4	0	6	13
Gosnell Creek	0	2	1	0	1	0	0	0	2	8	14
Total	0	4	1	0	2	0	0	4	2	14	27

8.2.2 Fish Sampling

Fish sampling was not required in the Technical Boundary as there was sufficient historical fish presence/use data for six of the seven watercourses containing fish habitat (Sites 558, 559, 565, 573B, 574B, 575B) and insufficient flow to allow sampling in one watercourse (dry) (Site 557). This approach to data collection was consistent with the EAC Application, Fish and Fish Habitat TDR which states “... *fish sampling was completed at all sites where flow was sufficient to support fish and where historical fisheries data were lacking ...*” (Section 3.6.3, page 31 of 123).

Incidental visual observations of fish were recorded in three (Sites 574B, 558, 559) of the five watercourses that were flowing at the time of the assessment.

At the Morice River (Site 559) the snorkel survey identified five species: bull trout (*Salvelinus confluentus*), coho salmon (*Oncorhynchus kisutch*), mountain whitefish (*Prosopium williamsoni*), rainbow trout (*Oncorhynchus mykiss*) and white sucker (*Catostomus commersoni*). Details of this survey of are included in Appendix B.4.

8.2.3 Species Composition

A discussion of known fish species presence and distribution within BC, as they pertain to the overall Project (including the Technical Boundary) is provided in Section 4.3.7 of the 2014 Fish and Fish Habitat TDR. Table 8-3 includes only fish species potentially present in watercourses within the Morice River Watershed within the Technical Boundary (i.e. those specific to the Technical Boundary).

Table 8-3: Potential Fish Species Presence in Watercourses within the Skeena Drainage of the Morice River Technical Boundary Area

Species	Scientific Name	RISC Species Code	Species Presence	Sites with Historical Records
Species listed in the definition of "Fish Stream" in the EPMR				
Salmonids				
Chinook salmon	<i>Oncorhynchus tshawytscha</i>	CH	H	558, 559, 575
chum salmon	<i>Oncorhynchus keta</i>	CM	H ^{a)}	558, 559
coho salmon	<i>Oncorhynchus kisutch</i>	CO	H	558, 559, 565, 575B
pink salmon	<i>Oncorhynchus gorbuscha</i>	PK	H	558, 559, 575B
sockeye salmon	<i>Oncorhynchus nerka</i>	SK	H	558, 559
kokanee	<i>Oncorhynchus nerka</i>	KO	H	None ^a
rainbow trout	<i>Oncorhynchus mykiss</i>	RB	H	558, 559, 575B
steelhead	<i>Oncorhynchus mykiss</i>	ST	H	558, 559, 575B
cutthroat trout	<i>Oncorhynchus clarkii</i>	CT	H	558, 559, 574B, 575B
bull trout	<i>Salvelinus confluentus</i>	BT	H	558, 559, 565, 575B
Dolly Varden	<i>Salvelinus malma</i>	DV	H	558, 559, 565, 574B, 575B
lake trout	<i>Salvelinus namaycush</i>	LT	H	558, 559
brook trout	<i>Salvelinus fontinalis</i>	EB	I	None ^a
mountain whitefish	<i>Prosopium williamsoni</i>	MW	H	558, 559, 575B
lake whitefish	<i>Coregonus clupeaformis</i>	LW	H	None ^a
Other Groups				
burbot	<i>Lota lota</i>	BB	H	None ^a
Species not listed in the definition of "Fish Stream" in the EPMR				
Salmonids				
pygmy whitefish	<i>Prosopium coulterii</i>	PW	H	558, 559

Table 8-3: Potential Fish Species Presence in Watercourses within the Skeena Drainage of the Morice River Technical Boundary Area

Species	Scientific Name	RISC Species Code	Species Presence	Sites with Historical Records
Suckers				
longnose sucker	<i>Catostomus catostomus</i>	LSU	H	558, 559
white sucker	<i>Catostomus commersoni</i>	WSU	H	None ^a
largescale sucker	<i>Catostomus macrosheilus</i>	CSU	H, U	None ^a
Lampreys				
Pacific lamprey	<i>Entosphenus tridentatus</i>	PL	H	558, 559
river lamprey	<i>Lampetra ayresii</i>	RL	H, U	558, 559
western brook lamprey	<i>Lampetra richardsoni</i>	BL	H, U	558, 559
Sculpins				
coastrange sculpin	<i>Cottus aleuticus</i>	CAL	H, U	558, 559
prickly sculpin	<i>Cottus asper</i>	CAS	H	558, 559
slimy sculpin	<i>Cottus cognatus</i>	CCG	H, U	558, 559
Minnnows				
lake chub	<i>Couesius plumbeus</i>	LKC	H	575B
longnose dace	<i>Rhinichthys cataractae</i>	LNC	H	558, 559, 575B
redside shiner	<i>Richardsonius balteatus</i>	RSC	H	575B
northern pikeminnow	<i>Ptycheilus oregonensis</i>	NCS	H	558, 559
peamouth	<i>Mylocheilus caurinus</i>	PCC	H	575B
NOTES: 1: H: Historical presence in RSA U: Possible but unlikely presence in RSA I: Introduced into RSA 2. a = Records exist in FISS, but reported as not present in Morice River Watershed by Bustard and Schell (2002)				

8.3 SPECIES OF CONSERVATION CONCERN

The BC Species and Ecosystems Explorer (BCSEE) web utility (BC MOE 2015c) was searched for all fish species with the potential to occur within the Technical Boundary that met any of the following conditions:

- red- or blue-listed in BC;
- global rank of G3 (vulnerable) or higher;
- COSEWIC status of “special concern” or greater;
- listed under the *Species at Risk Act* (SARA);
- listed/categorized as an Identified Wildlife Species under the *Forests and Range Practices Act* (FRPA); or
- BC conservation framework (CF) priority ranking of 3 or greater for any of the three goals.

In total, there are six species that met one or more of the criteria described above. These results are presented in Table 8-4.

Table 8-4: Species of Conservation Concern Potentially Occurring within the Morice River Technical Boundary Area

Common Name	Scientific Name	Sites with Historical Records	BC List	COSEWIC	SARA	Global Rank	Identified Wildlife	CF Priority Rank		
								Goal 1	Goal 2	Goal 3
bull trout (interior lineage)	<i>Salvelinus confluentus</i>	558, 559, 565, 575B	Blue	Special Concern	-	G4T4	Yes	2 ^a	2 ^a	3 ^a
burbot	<i>Lota lota</i>	None	Yellow	-	-	G5	-	6	2	4
chinook salmon	<i>Oncorhynchus tshawytscha</i>	558, 559, 575B	Yellow	-	-	G5	-	4	2	4
Dolly Varden	<i>Salvelinus malma</i>	558, 559, 565, 573B, 574B, 575B	Yellow	-	-	G5	-	4	2	3
lake trout	<i>Salvelinus namaycush</i>	None	Yellow	-	-	G5	-	6	2	4
sockeye salmon	<i>Oncorhynchus nerka</i>	558, 559	Yellow	-	-	G5	-	4	2	4
NOTE: ^a CF ranking of general listing										

Bull trout are the only fish listed as Identified Wildlife Species by FRPA in the Technical Boundary. Under FRPA, designation of wildlife habitat areas (WHAs) and general wildlife measures (GWMs), as well as recommendations in high level plans (e.g., Land and Resource Management Plans, or LRMPS), can provide bull trout with special protection. Within the Technical Boundary there is one approved WHA (6-285) for bull trout in the Morice River Watershed, which overlaps with four fish bearing sites (Sites 558, 559, 573B). Presence of bull trout was confirmed in the Morice River (Site 559) during the 2019 snorkel survey. This WHA was established to protect important spawning habitat in the Gosnell Creek drainage area, and staging areas in the lower Gosnell Creek at the confluence with the Morice River mainstem.

Bull trout are the only blue-listed species with the potential to occur within the Technical Boundary LSA. Bull trout are also listed as a species of “Special Concern” by COSEWIC. Five species were included as a species of management concern due solely to their CF ranking (they are not otherwise listed in any other category).

A summary of life-history aspects and distribution notes relevant to each species with the potential to be present within the Certified Pipeline Corridor, including those present within the Technical Boundary is included in Section 4.4 of the 2014 Fish and Fish Habitat TDR.

8.4 RISK MANAGEMENT FRAMEWORK

An assessment was conducted to determine the level of risk that potential adverse residual effects identified in the assessment posed to fish and fish habitat. To assess risk, the scale of potential adverse effects was considered in the context of the sensitivity of fish and fish habitat. These two factors were used to characterize the level of risk that the Project activity would pose to the productive capacity of the fish habitat. For the purposes of this assessment, the primary crossing methodology was utilized to determine the scale of potential adverse effects and sensitivity to fish and fish habitat.

8.4.1 Scale of Potential Adverse Effects

The RMF process assigned a high score on the scale of potential adverse effects (cumulative score of nine) to two of the seven watercourse crossings (Appendix B.5).

These watercourses were assigned a high score due to the open-cut crossing method, either under isolated or dry/frozen conditions, construction methods and the presence of spawning habitat at the crossing location. Works will also occur outside of the Least Risk Window (LRW) identified for the watercourses or no LRW exists based on known or potential fish species present.

8.4.2 Sensitivity of Fish and Fish Habitat

The RMF process assigned a high sensitivity score (cumulative scores ranging from 9 to 13) to all seven watercourse crossings (Appendix B.6).

These high scores were the results of the presence, or assumed presence, of salmonid species. There were four crossings ranked high (5) for dependence on specific habitat based on the presence of high-value rearing, spawning, or overwintering habitat for salmonids or other species of conservation concern. No watercourse crossings received a high score for species rarity. Four crossings received a moderate score (3) due to the presence, or potential presence, of blue-listed species (Appendix B.8).

8.4.3 Overall Risk Assessment Results

Scores for the scale of adverse effects and sensitivity of fish and fish habitat for the eight watercourse crossings were plotted onto the risk assessment matrix and overall risk scores were determined. The resulting overall risk rankings are summarized in Table 8-5. Watercourse crossings that received high scores for scale of adverse effects for sensitivity of fish and fish habitat did not necessarily rank high in overall risk assessment process.

Table 8-5: Overall Risk Determination Results

Risk to Fish and Fish Habitat	Watercourse Crossings within the 2019 COR2 Technical Boundary ROW	
	Total	Percentage
Significantly Adverse Effects	0	0
High Risk	1	14.3
Medium Risk	4	57.1
Low Risk	2	28.6
No Risk	0	0
Total	7	

High Risk Watercourse Crossings

Watercourse crossings with a high-risk ranking (Sites 575B) have the potential to adversely affect fish and fish habitat at and downstream from the crossing location. For a watercourse crossing to rank high for the final overall risk ranking, both the scale of adverse effects and the sensitivity of fish and fish habitat scores were high. One major (S1B) watercourse crossing was ranked high risk (Site 575B). Appendix B.7 lists those watercourse crossings with overall high-risk potential.

Medium Risk Watercourse Crossings

Watercourse crossings with a medium risk ranking also have the potential for construction activities to adversely affect fish and fish habitat at the crossing and downstream from the crossing (Site 558, 559, 565, 573B). Three major (S1B) watercourse crossing (Sites 558, 559, 565) and one large (S2) (Site 573B) was ranked medium risk.

Low Risk Watercourse Crossings

Of the seven watercourse crossing sites within the Technical Boundary and assessed by the 2019 field program, the remaining two crossings were ranked low risk (Sites 557, 574B). These two minor (S4) watercourse crossings contained low quality fish habitat.

Watercourse crossings ranked low risk are those that can be managed for adverse effects under existing best management practices (BMPs) or have low potential or no potential for fish presence.

8.5 LEAST RISK WINDOWS FOR INSTREAM WORKS

The LRWs for instream construction associated with the Project within the bounds of the Technical Boundary are presented in Table 8-6. LRWs are specific to each BC MOE region, and are further refined by timber supply area (TSA) within the Skeena Region (Region 6). The LRW is determined using both known and inferred fish species presence. Where multiple fish species are present, the LRW consists of the LRW period that is common to all species. In many cases, where both spring and fall spawning fish are present, short duration (*e.g.*, two weeks) LRWs may apply or there may be no available LRW. Additional qualified professional review will inform further regulatory applications prior to construction (*i.e.* BC OGC and DFO). Mitigation measures and best management practices (BMPs) are discussed in Section 5.0 of the 2014 Fish and Fish Habitat TDR.

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Table 8-6: Least-Risk Window by Species for Instream Construction in the Skeena Region – Morice TSA

Species	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec	Least Risk Window
bull trout													Jun 15 – Aug 31
chinook salmon													Jun 1 - Jul 15
chum salmon													May 15 – Aug 1
coho salmon													Jul 1 - Aug 31
cutthroat trout													Sep 1 – May 15
Dolly Varden													Jun 15 – Aug 31
kokanee													Jun 15 – Jul 15
pink salmon													May 15 – Aug 1
rainbow trout													Sep 1 – May 15
sockeye salmon													Jun 15 – Jul 15
steelhead													Sep 1 – Apr 30
whitefish													Jun 1 - Sep 15
<p>NOTES: Shaded cells bars indicate restricted work periods within the Morice TSA; non-shaded cells indicate instream work period. cells Notwithstanding the above, if any one of the following conditions are met, work may occur within the restricted work period as the timing window is considered not applicable: ¹ the watercourse channel is naturally dry (no flow) or frozen to the bottom at the worksite and the instream activity will not adversely affect fish habitat (e.g., result in the introduction of sediment into fish habitat); or ² construction of a winter crossing is planned and such work does not adversely affect the watercourse channel (including watercourse banks), fish habitat or fish passage</p>													
<p>SOURCE: (BC MOE 2005)</p>													

9.0 KEY FINDINGS AND CONCLUSIONS

The results of the fish and fish habitat assessments within the Technical Boundary presented in this 2020 COR2 Fish and Fish Habitat TDR are consistent with the findings that were originally presented in the EAC Application Appendix 2G. At the time of the EAC Application, not all watercourses within the Technical Boundary had been assessed; however, fish-bearing status and watercourse classification were inferred through the following:

- from adjacent sample sites and sampling at other locations within the watershed;
- using historical information; and
- conservatively assigning classifications based on professional judgment and map interpretation of watercourse order, catchment area, gradient and other factors.

A comparison of the watercourse classifications that were assigned in the EAC Application and the revised watercourse classifications after field assessments in 2019 in the Technical Boundary are provided in Table 9-1.

For the watercourses classified as fish bearing in the EAC Application, the 2019 field program resulted in one watercourse classification changing from fish bearing to non-fish bearing and the revisions of the watercourse classification of three others based on field verification of watercourse widths. These results indicate that the classifications presented in the EAC Application were accurate, and where classification changes have occurred, the initial classifications were conservative (i.e., watercourses received a higher classification in the EAC Application than that assigned during the 2019 field assessment). The primary reason for classification changes in fish bearing watercourses was the result of field collected stream measurements. Therefore, for fish bearing watercourses there are no material differences between the baseline information reported in the EAC Application, 2015 COR1 Fish and Fish Habitat TDR, and the remaining baseline information reported in this 2020 COR2 Fish and Fish Habitat TDR.

As a result of the 2019 baseline studies, which aimed to identify watercourses not depicted on TRIM 1:20,000 base maps, an additional 20 non-fish bearing watercourses were identified. No additional fish bearing watercourses were identified.

Table 9-1: Comparison of Classifications at Watercourse Crossings from EAC Application to Post-2019 Sampling

Assessment	Number of Crossings	S1A	S1B	S2	S3	S4	Total Fish-Bearing	S5	S6	NVC	NCD	Total Non-fish Bearing
EAC Application	8	2	2	-	2	2	8	-	-	-	-	0
Revised for 2019	27	0	4	1	-	2	7	-	4	2	14	20
Change	+19	-2	+2	+1	-2	0	-1	0	+4	+2	+14	+20

NOTE:

One S4 was revised to an NCD and one S4 was revised to an S3 based on 2019 field assessments.

As noted in the EAC Application, there are important chinook salmon spawning and holding areas in the mainstem Morice River between the confluence of Lamprey Creek and the outlet of Morice Lake, including at the Project crossing location (Bustard and Schell 2002). Chinook salmon spawning also occurs in lower Gosnell Creek just downstream from the crossing site (Bustard and Schell 2002). Coho salmon also use these areas, but also travel further upstream in Gosnell Creek, and use other tributaries (e.g., Owen Creek, Lamprey Creek, Shea Creek). Pink salmon spawning occurs in much of the Morice River mainstem from Morice Lake downstream to the confluence of Owen Creek, and also occurs in Gosnell Creek near the Shea Creek confluence. Sockeye salmon primarily migrate upstream past the LSA into Morice Lake, and spawn in lake shoals and within the Nanika and Atna rivers (Bustard and Schell 2002). Steelhead tend to use more tributary habitat for spawning and migrate further upstream than Pacific salmon in the Morice River Watershed.

Key spawning areas in and near the LSA include Owen Creek, Lamprey Creek, the upper Thautil River drainage area, Shea Creek and upper Gosnell Creek (Bustard and Schell 2002). The upper Gosnell Creek, Crystal Creek and Denys Creek mainstems are known spawning areas for bull trout in the Morice River (Bahr 2002; Bahr and Shrimpton 2004). These areas and other accessible tributaries also provide critical rearing and overwintering habitat for juvenile salmon and resident char and trout.

Historical data have documented the presence of Dolly Varden, cutthroat trout, coho salmon, and rainbow trout/steelhead in many of the crossings within the Morice River Watershed. Bull trout are known to occur in some of the larger tributaries within the Gosnell Creek drainage area.

Using the results of the 2015 COR1 and 2019 COR2 historical data review and field surveys, a risk assessment was completed to identify the potential for adverse effects to fish and fish habitat. To assess risk, the scale of negative effects was considered in the context of the sensitivity of fish and fish habitat and the construction methods. These two factors were used to characterize the level of risk that pipeline crossing activities would pose to the productive capacity of the fish habitat. The risk management framework was based on DFO's 2006 risk management framework, which is described in the EAC Application, 2014 Fish and Fish Habitat TDR (Section 3.7, pages 36-43) and used in the EAC Application. The results of these assessments established ratings of high, medium, low, or no risk to fish and fish habitat for each crossing. Relevant mitigations to manage each risk level were considered in the EAC Application and identified in the Environmental Management Plan (EMP) and associated management plans.

The intent of the 2015 COR1, 2019 and 2020 COR2 submissions is to verify the baseline conditions and resulting effects assessment determination through both a review of existing available information and the collection of new fish and fish habitat data. Collectively, this information was used to evaluate baseline conditions

and to confirm that mitigation measures presented in the EMP and associated management plans are appropriate to avoid or reduce potential adverse effects on fish and fish habitat. The data collection and analysis within the 2015 COR1, 2019 COR2 and 2020 COR2 Fish and Fish Habitat TDRs are consistent with the requirements of the AIR and the methods described in the EAC Application, 2014 Fish and Fish Habitat TDR. This information verifies that the mitigation measures in the EMP and associated plans are appropriate for construction activities in the Technical Boundary.

The results of the analyses in the 2015 COR 1 and this 2020 COR2 Fish and Fish Habitat TDRs support the conclusions of the EAC Application and the EAO's Assessment Report that significant adverse effects on fish and fish habitat are not likely. Coastal GasLink further notes that the Project is required to comply with the habitat protection provisions set out in section 35 of the *Fisheries Act* which provides additional levels of regulatory oversight of the Project's interactions with fish and fish habitat.

10.0 REFERENCES

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Appendix B: Environmental Assessment

Certificate Condition 1

Fish and Fish Habitat Technical Data Report #2

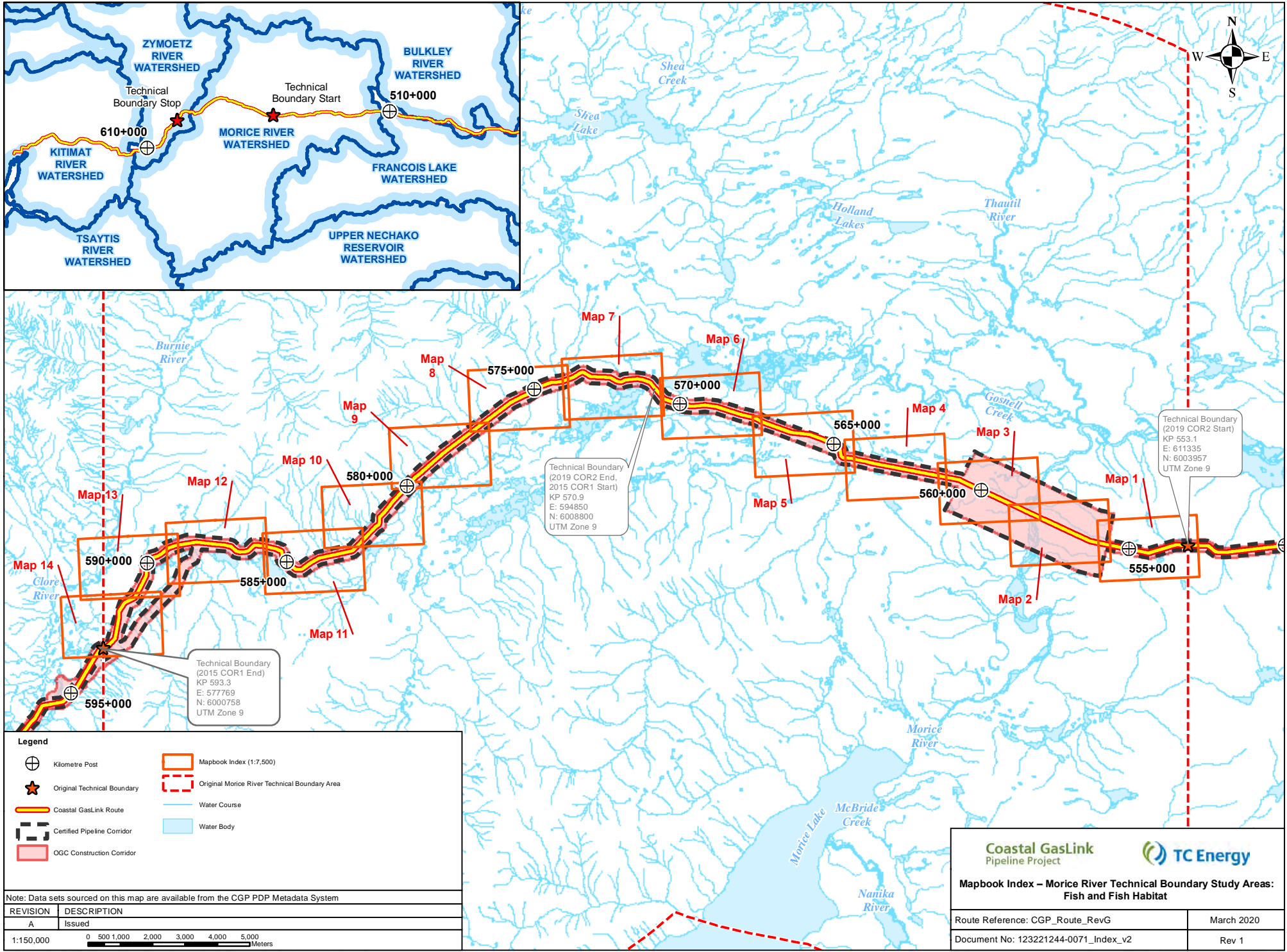
Appendix B.1: Abbreviations and Acronyms

Appendix B.1: Abbreviations and Acronyms

Abbreviation	Definition
AIR	Application Information Requirements
ATK	Aboriginal Traditional Knowledge
BC	British Columbia
BC EAO	British Columbia Environmental Assessment Office
BC MFLNRORD	British Columbia Ministry of Forests, Lands, and Natural Resource Operations and Rural Development
BC MOE	British Columbia Ministry of Environment
BC MOF	British Columbia Ministry of Forests
BCSEE	British Columbia Species and Ecosystem Explorer
BMP	Best Management Practices
CF	Conservation Framework
Coastal GasLink	Coastal GasLink Pipeline Ltd.
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
DFO	Department of Fisheries and Oceans
EAC	Environmental Assessment Certificate
EAC Condition 1	EAC E14-03 Schedule B Condition #1
FISS	Fisheries Information Summary Queries
FPR	Fish Permit Report
FWA	British Columbia Freshwater Atlas
GIS	Geographical Information System
GWM	General Wildlife Measures
km	kilometre
km ²	square kilometre
KP	Kilometre Post
LIDAR	Remote sensing technology using lasers
LNG	Liquefied Natural Gas
LRW	Least Risk Window
LSA	Local Study Area
m	metre
MWCT	Master Watercourse Crossing Table
Technical Boundary	Morice River Technical Boundary Area
NCD	Non-classified Drainage
NVC	No Visible Channel (no watercourse present)
OWFP	Open Water Fisheries Program
Project	Coastal GasLink Pipeline Project
PTP	Pacific Trail Pipeline
RISC	Resource Information Standards Committee

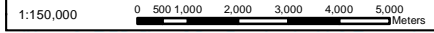
Abbreviation	Definition
RMF	Risk Management Framework
ROW	Right-of-Way
RSA	Regional Study Area
SARA	<i>Species At Risk Act</i>
TDR	Technical Data Report
TEK	Traditional Ecological Knowledge
TLU	Traditional Land Use
TRIM	Terrain Resource Information Management
Triton	Triton Environmental Consultants Ltd.
TSA	Timber supply area
UTM	Universal Transverse Mercator
VC	Valued Component
WFP	Winter Fisheries Program
WHA	Wildlife Habitat Area
2015 COR1	Environmental Assessment Certificate #E14-03 Condition 1 Report #1 (October 30, 2015)
2019 COR2	Environmental Assessment Certificate #E14-03 Condition 1 Report #2 (November 19, 2019)
2020 COR2	Environmental Assessment Certificate #E14-03 Condition 1 Report #2 (July 17, 2020)

Appendix B.2: Morice River Technical Boundary Area: Watercourse Crossings



Note: Data sets sourced on this map are available from the CGP PDP Metadata System

REVISION	DESCRIPTION
A	Issued



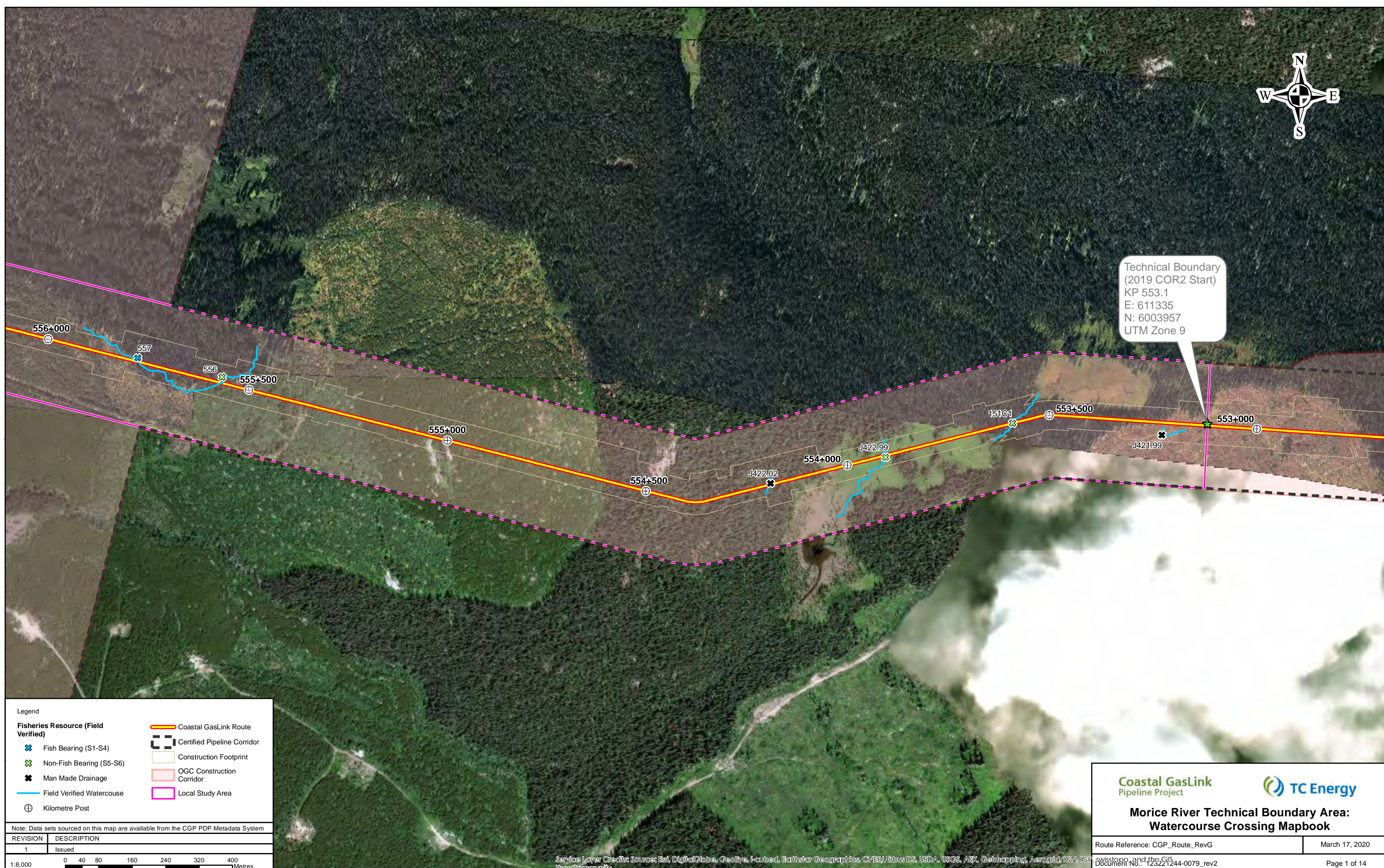
Coastal GasLink
Pipeline Project

**Mapbook Index – Morice River Technical Boundary Study Areas:
Fish and Fish Habitat**

Route Reference: CGP_Route_RevG	March 2020
Document No: 123221244-0071_Index_v2	Rev 1



Technical Boundary
(2019 COR2 Start)
KP 553.1
E: 611335
N: 6003957
UTM Zone 9



Legend

Fish Bearing (S1-S4)	Coastal GasLink Route
Non-Fish Bearing (S5-S6)	Certified Pipeline Corridor
Man Made Drainage	Construction Footprint
Field Verified Watercourse	OGC Construction Corridor
Kilometre Post	Local Study Area

Note: Data sets sourced on this map are available from the CGP PDP Metadata System

REVISION	DESCRIPTION
1	Issued

1:8,000

Coastal GasLink Pipeline Project

**Morice River Technical Boundary Area:
Watercourse Crossing Mapbook**

Route Reference: CGP_Route_RevG	March 17, 2020
Document No.: 123221244-0079_rev2	Page 1 of 14



Legend

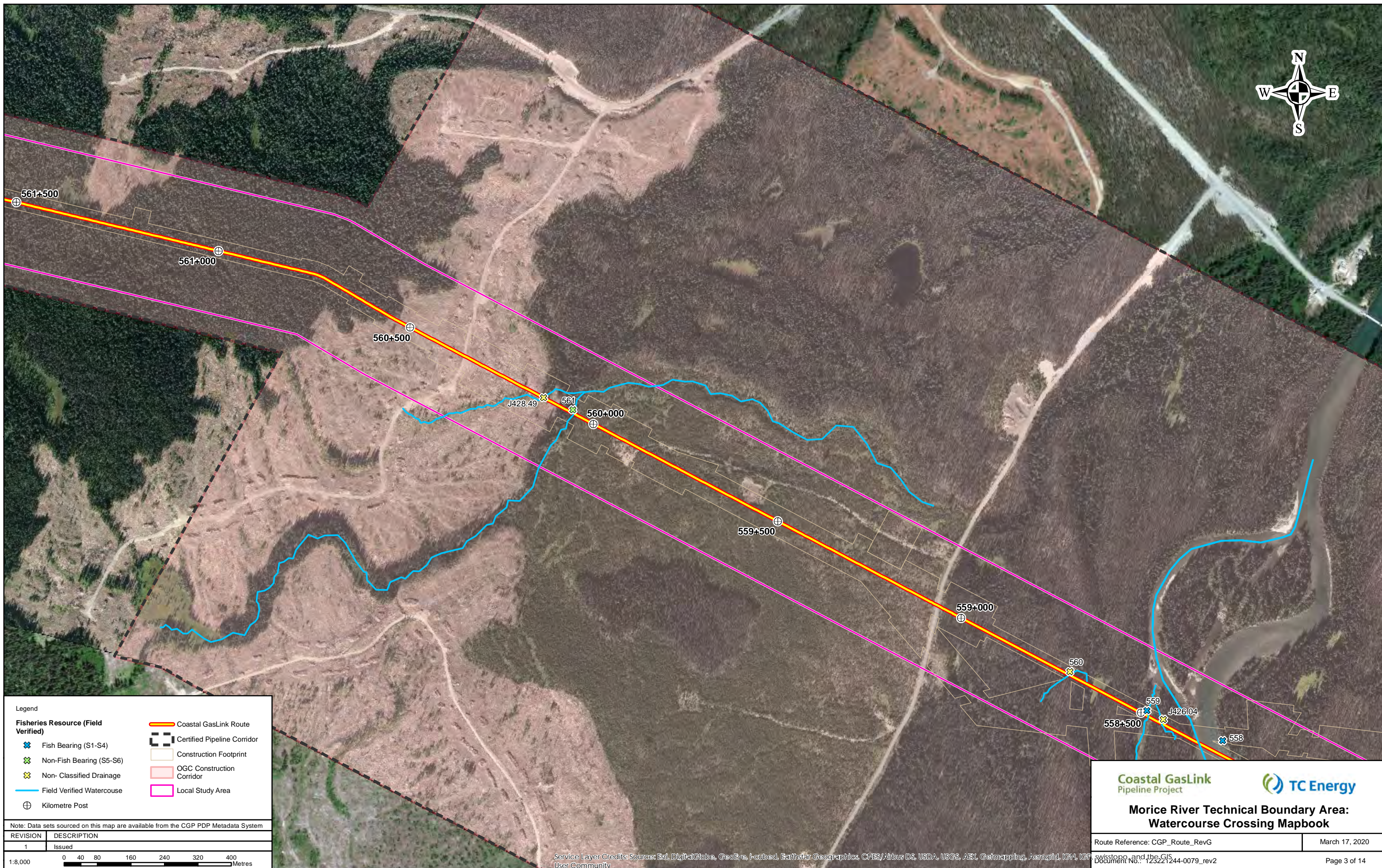
Fish Bearing (S1-S4)	Coastal GasLink Route
Non-Fish Bearing (S5-S6)	Certified Pipeline Corridor
Non- Classified Drainage	Construction Footprint
Field Verified Watercourse	OGC Construction Corridor
Kilometre Post	Local Study Area

Note: Data sets sourced on this map are available from the CGP PDP Metadata System

REVISION	DESCRIPTION
1	Issued

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Morice River Technical Boundary Area: Watercourse Crossing Mapbook	
Route Reference: CGP_Route_RevG	March 17, 2020
Document No.: 123221244-0079_rev2	Page 2 of 14



Legend

Fish Bearing (S1-S4)	Coastal GasLink Route
Non-Fish Bearing (S5-S6)	Certified Pipeline Corridor
Non-Classified Drainage	Construction Footprint
Field Verified Watercourse	OGC Construction Corridor
Kilometre Post	Local Study Area

Note: Data sets sourced on this map are available from the CGP PDP Metadata System

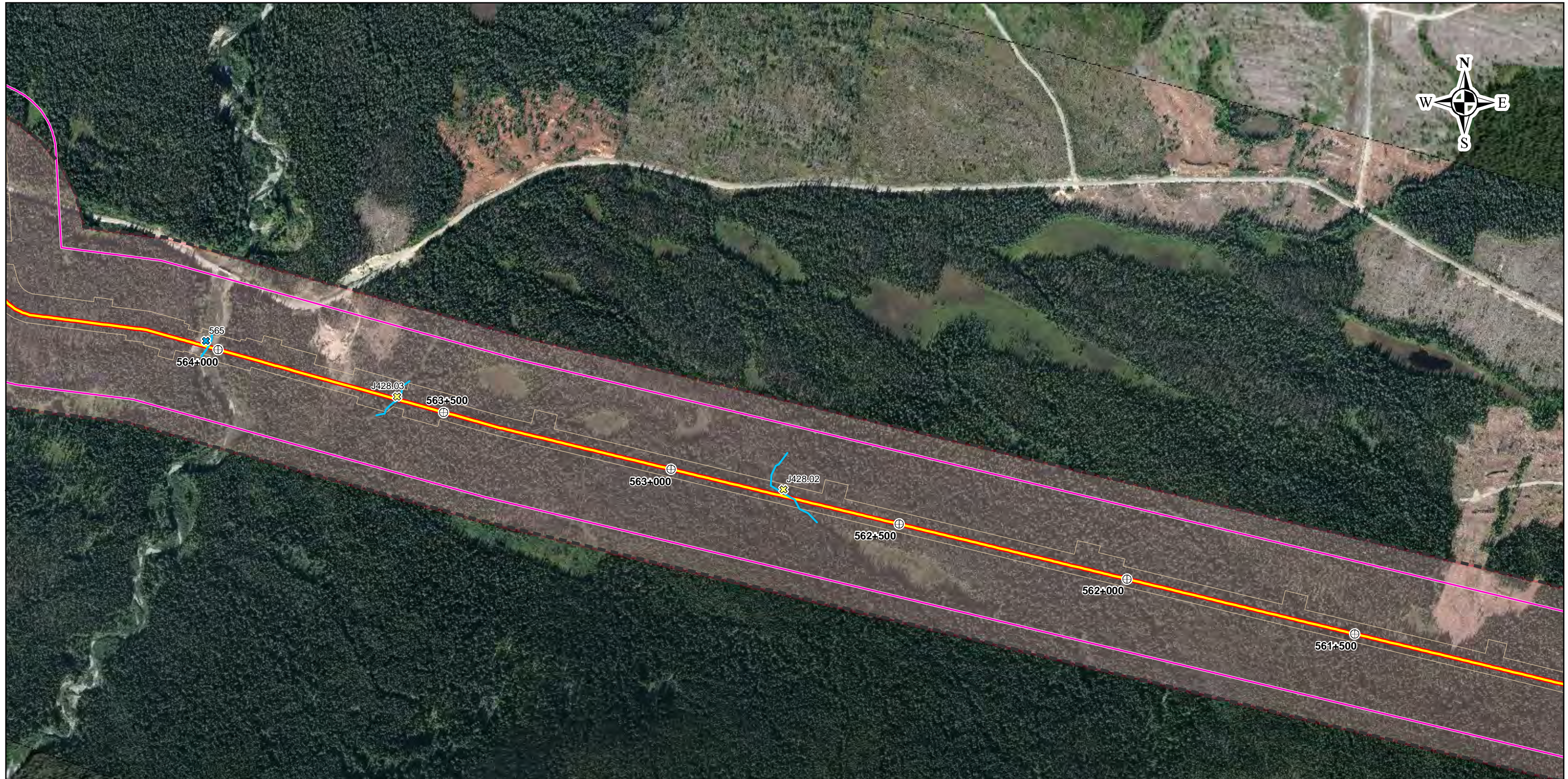
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Coastal GasLink Pipeline Project

Morice River Technical Boundary Area: Watercourse Crossing Mapbook

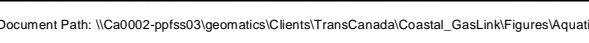
Route Reference: CGP_Route_RevG	March 17, 2020
Document No.: 123221244-0079_rev2	Page 3 of 14



- Legend
- Fish Bearing (S1-S4)
 - Non- Classified Drainage
 - Field Verified Watercourse
 - Kilometre Post
 - Coastal GasLink Route
 - Certified Pipeline Corridor
 - Construction Footprint
 - OGC Construction Corridor
 - Local Study Area

Note: Data sets sourced on this map are available from the CGP PDP Metadata System

REVISION	DESCRIPTION
1	Issued

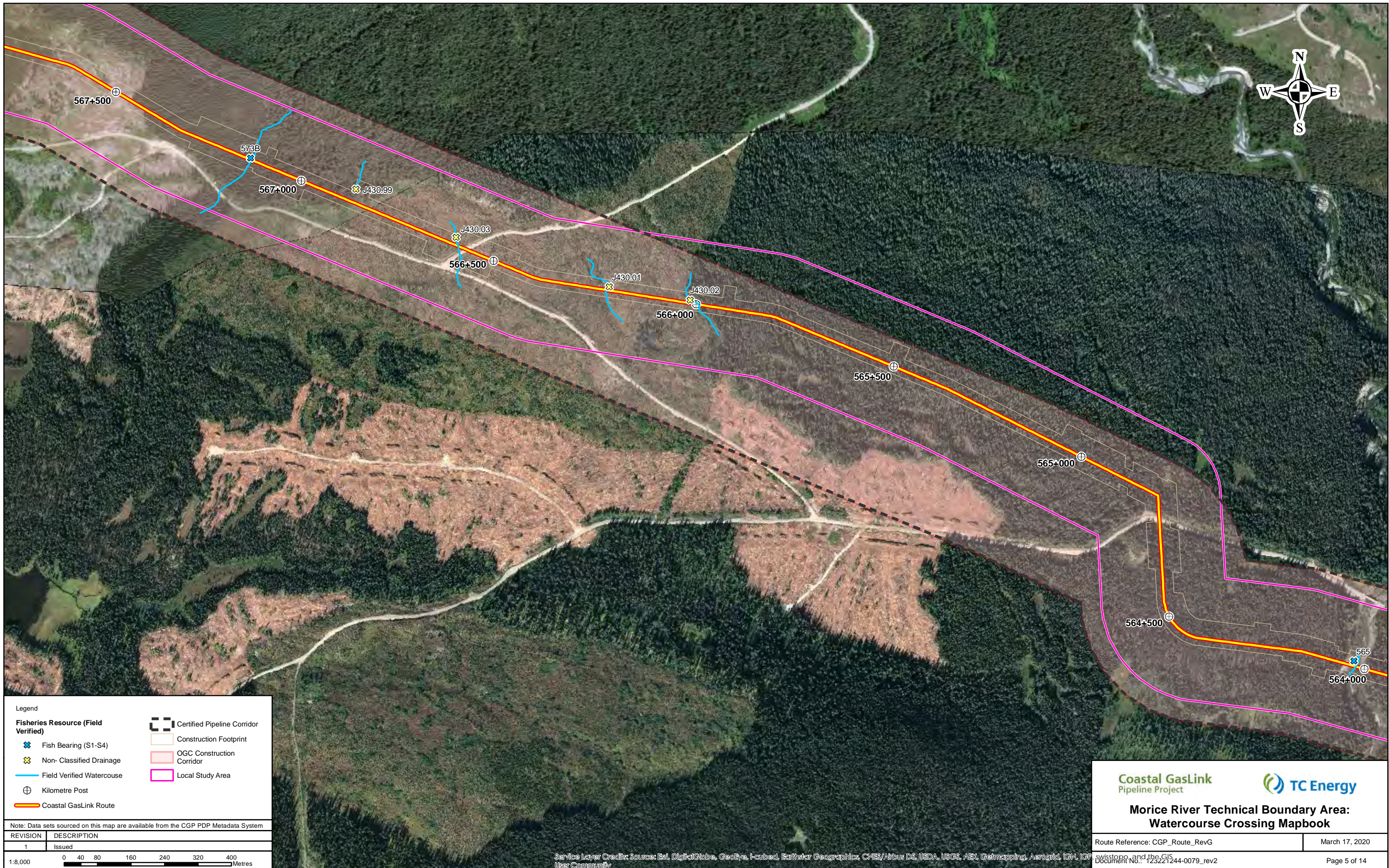


Coastal GasLink
Pipeline Project

**Morice River Technical Boundary Area:
Watercourse Crossing Mapbook**

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Legend

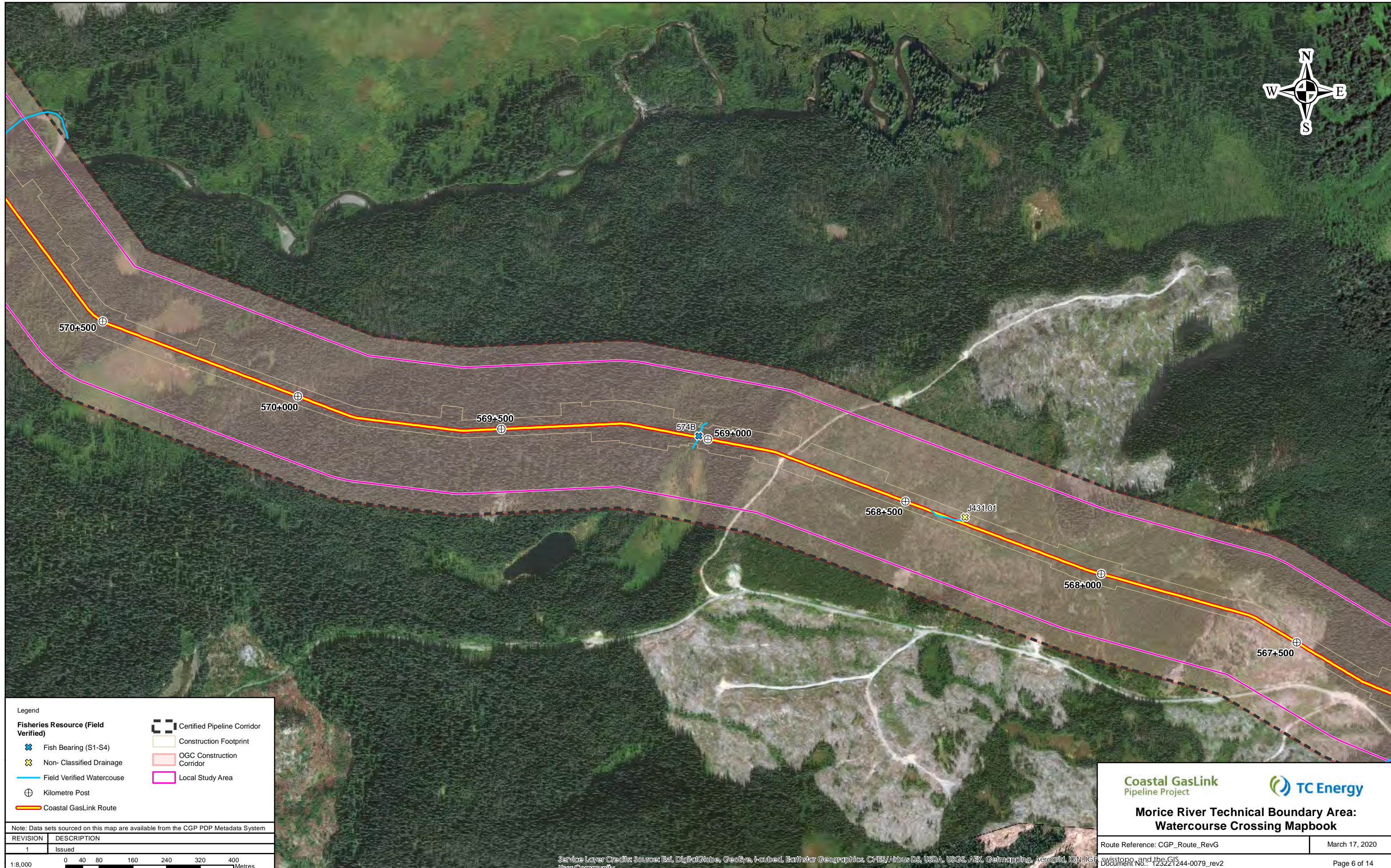
Fish Bearing (S1-S4)	Certified Pipeline Corridor
Non- Classified Drainage	Construction Footprint
Field Verified Watercourse	OGC Construction Corridor
Kilometre Post	Local Study Area
Coastal GasLink Route	

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Legend

Fish Bearing (S1-S4)	Certified Pipeline Corridor
Non- Classified Drainage	Construction Footprint
Field Verified Watercourse	OGC Construction Corridor
Kilometre Post	Local Study Area
Coastal GasLink Route	

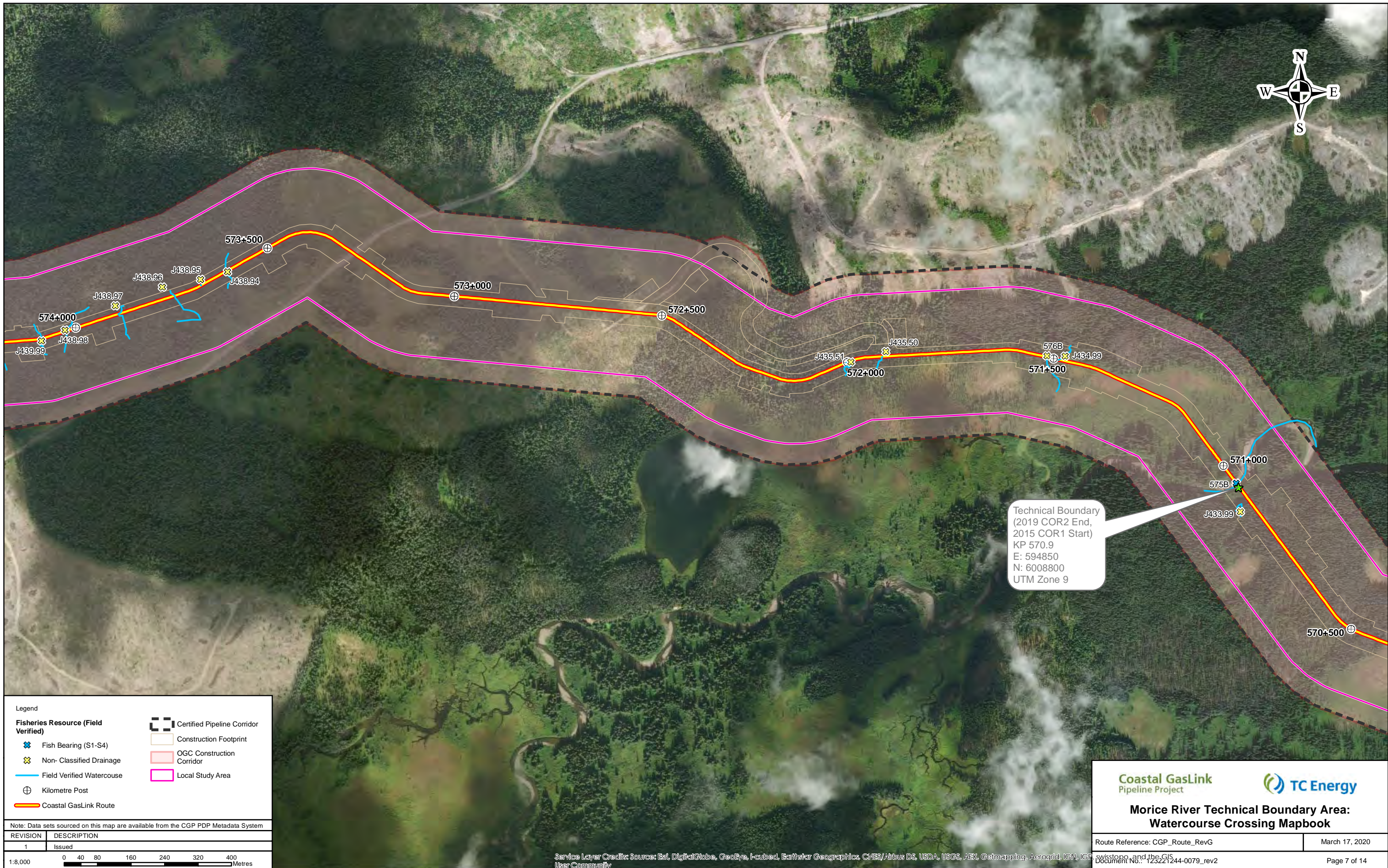
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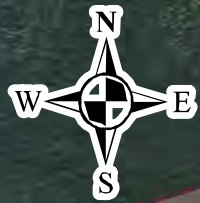


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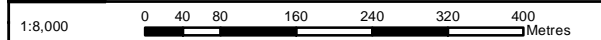


Legend

Fish Bearing (S1-S4)	Coastal GasLink Route
Non-Fish Bearing (S5-S6)	Certified Pipeline Corridor
Non-Classified Drainage	Construction Footprint
Field Verified Watercourse	OGC Construction Corridor
Kilometre Post	Local Study Area

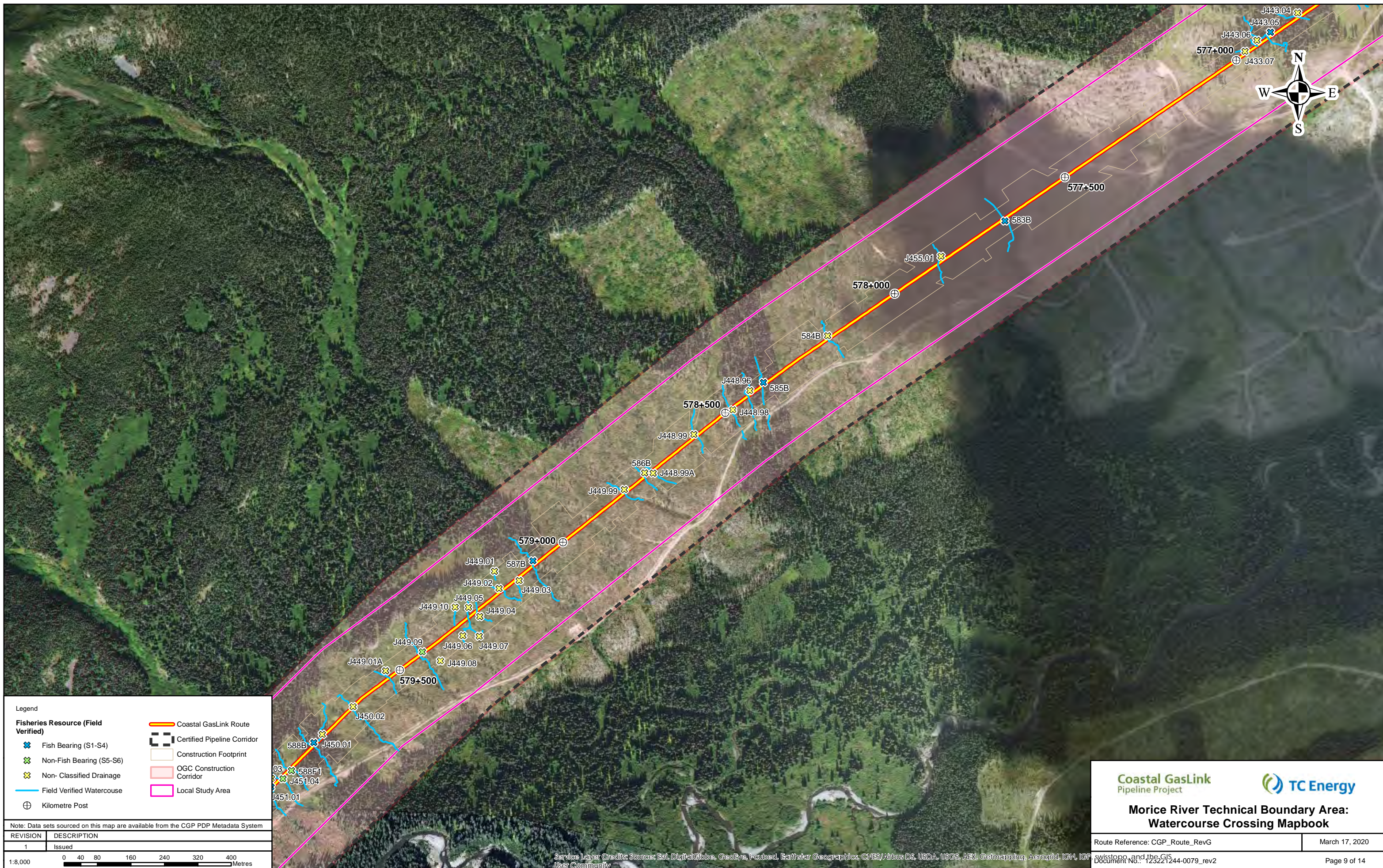
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Legend

Fisheries Resource (Field Verified)

- Fish Bearing (S1-S4)
- Non-Fish Bearing (S5-S6)
- Non-Classified Drainage
- Field Verified Watercourse
- Kilometre Post

- Coastal GasLink Route
- Certified Pipeline Corridor
- Construction Footprint
- OGC Construction Corridor
- Local Study Area

Note: Data sets sourced on this map are available from the CGP PDP Metadata System

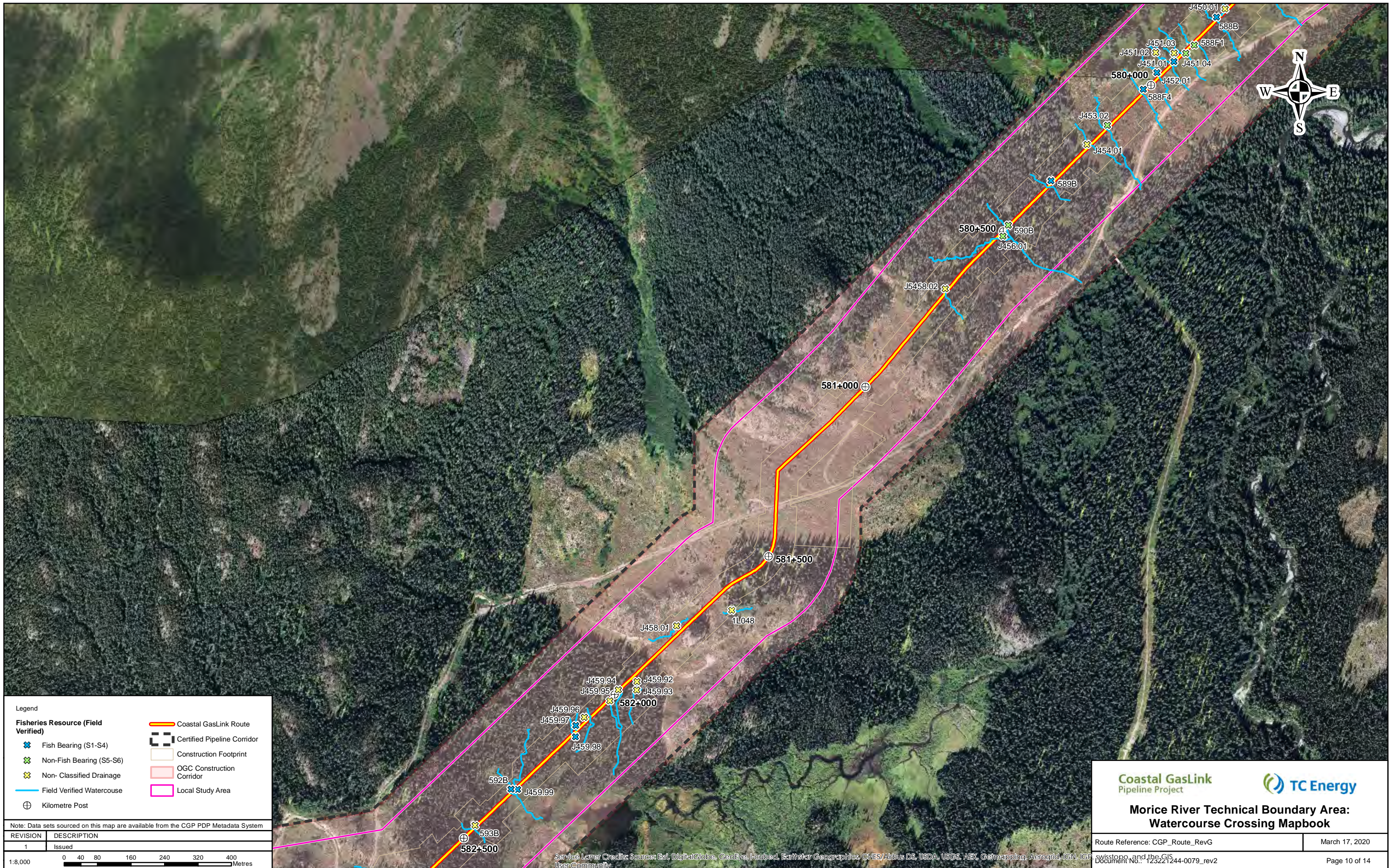
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Morice River Technical Boundary Area: Watercourse Crossing Mapbook

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Legend

Fish Bearing (S1-S4)	Coastal GasLink Route
Non-Fish Bearing (S5-S6)	Certified Pipeline Corridor
Non-Classified Drainage	Construction Footprint
Field Verified Watercourse	OGC Construction Corridor
Kilometre Post	Local Study Area

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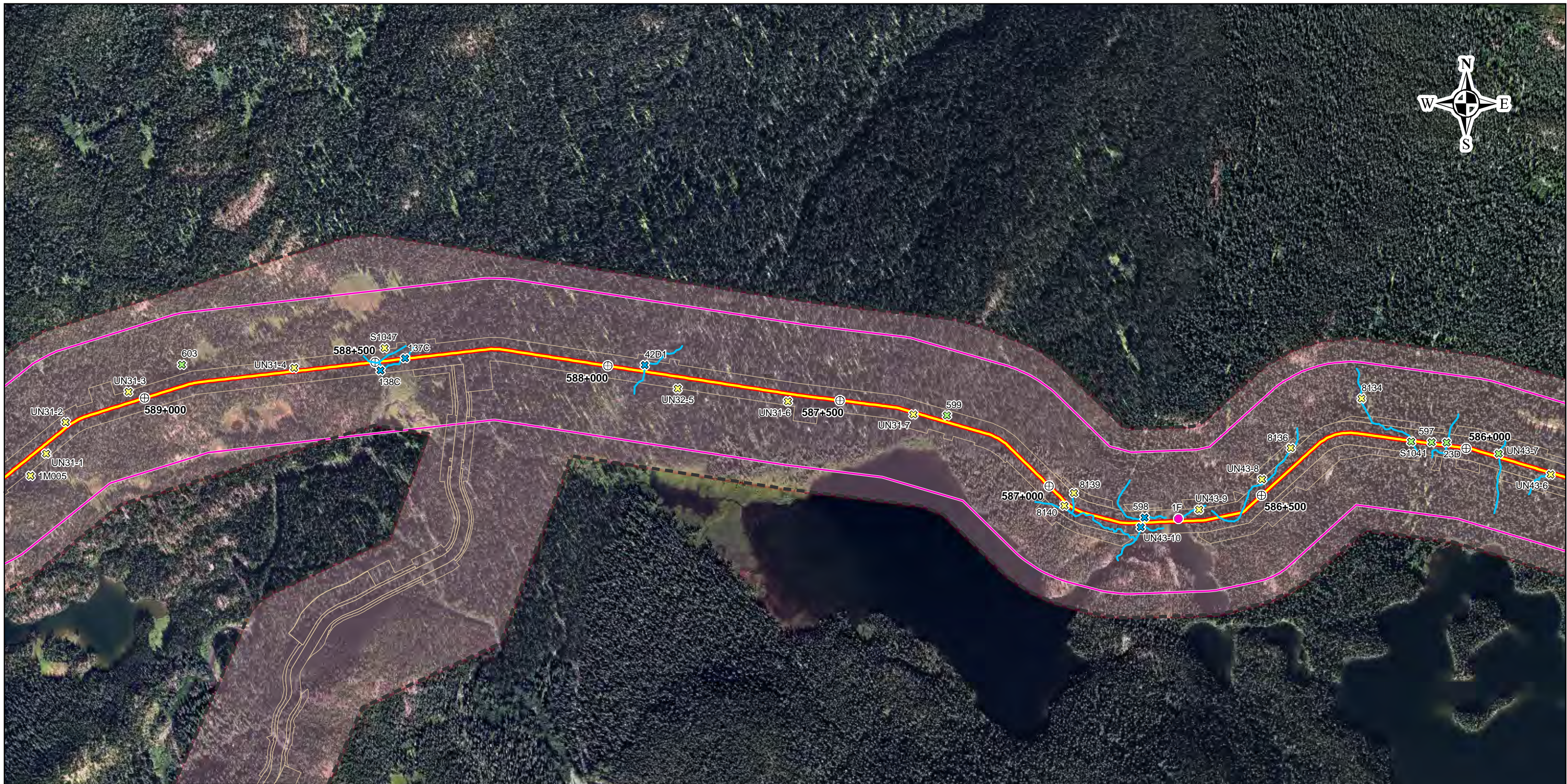
Fish Bearing (S1-S4)	Kilometre Post
Non-Fish Bearing (S5-S6)	Coastal GasLink Route
Man Made Drainage	Certified Pipeline Corridor
Non- Classified Drainage	Construction Footprint
Field Verified Watercourse	Local Study Area
	OGC Construction Corridor

Note: Data sets sourced on this map are available from the CGP PDP Metadata System

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Legend

Fish Bearing (S1-S4)	Kilometre Post
Non-Fish Bearing (S5-S6)	Coastal GasLink Route
Non-Classified Drainage	Certified Pipeline Corridor
Lake	Construction Footprint
Field Verified Watercourse	OGC Construction Corridor
	Local Study Area

Note: Data sets sourced on this map are available from the CGP PDP Metadata System

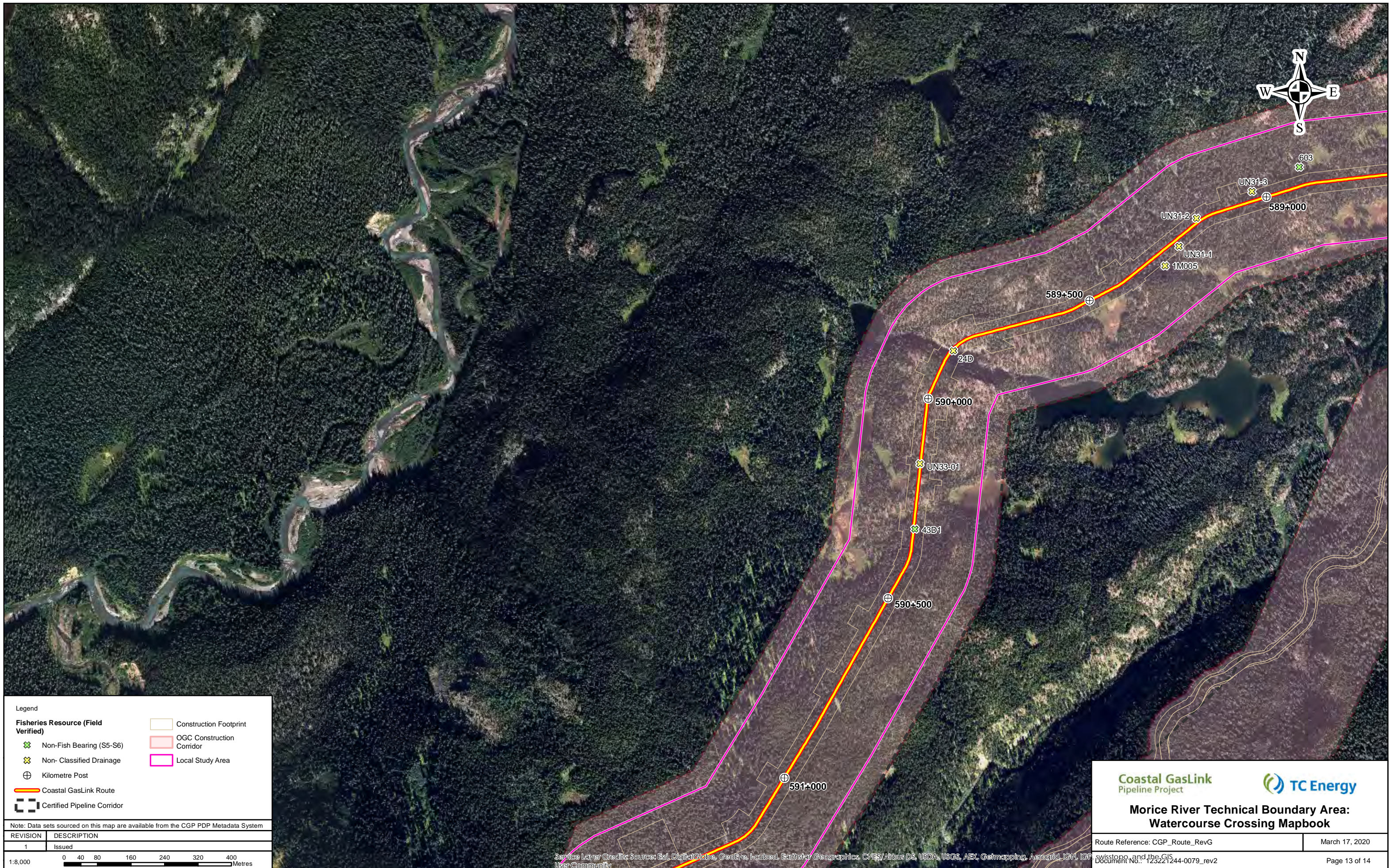
REVISION	DESCRIPTION
1	Issued

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Coastal GasLink Pipeline Project

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Legend

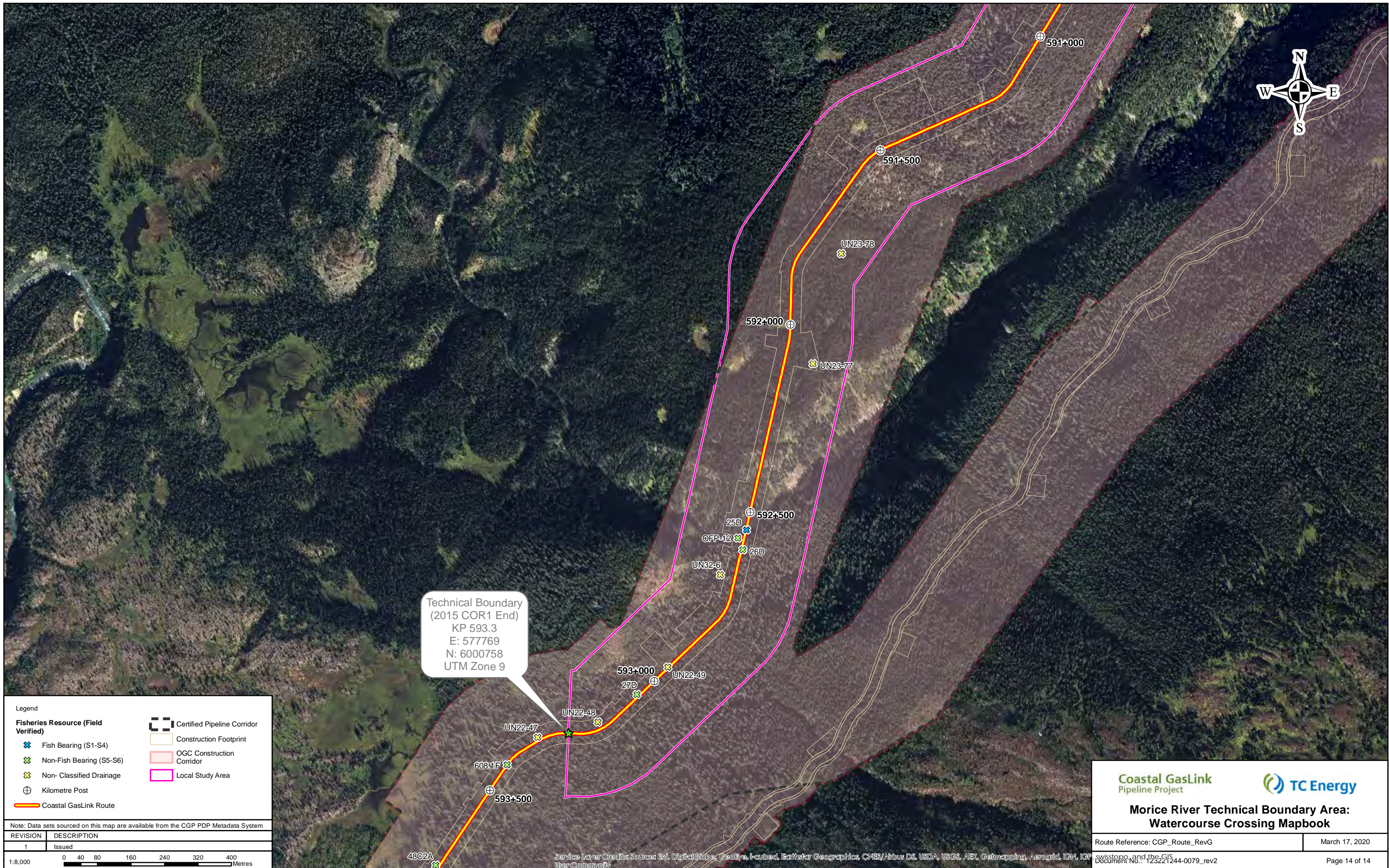
Non-Fish Bearing (S5-S6)	Construction Footprint
Non- Classified Drainage	OGC Construction Corridor
Kilometre Post	Local Study Area
Coastal GasLink Route	
Certified Pipeline Corridor	

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Technical Boundary
(2015 COR1 End)
KP 593.3
E: 577769
N: 6000758
UTM Zone 9

Legend

Fish Bearing (S1-S4)	Certified Pipeline Corridor
Non-Fish Bearing (S5-S6)	Construction Footprint
Non- Classified Drainage	OGC Construction Corridor
Kilometre Post	Local Study Area
Coastal GasLink Route	

Note: Data sets sourced on this map are available from the CGP PDP Metadata System

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Morice River Technical Boundary Area: Watercourse Crossing Mapbook	
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Appendix B.3: Master Watercourse Crossing List

Table B.3-1 Master Watercourse Crossing List

Site ID	Watercourse Name	KP	MOE Region	UTM Zone	UTM Easting	UTM Northing	Proposed Mitigation	Watercourse Class	Least Risk Window	Historical Fish Presence	Primary Pipeline Crossing Method	Recommended Vehicle Crossing Method (Open Water)	Recommended Vehicle Crossing Method (Frozen)
151C1	Unnamed Tributary (Morice River)	553+595	6	9	610864	6003937	Maintain downstream water quality. On-site environmental monitoring. Construct during low flow periods where possible. Rebuild channel with gravel and cobble, revegetate banks.	S6	N/A	N/A	Isolate if flowing, Open Cut if dry or frozen	Open Bottom Structure, Closed Bottom Structure, or Clearspan Bridge	Open Bottom Structure, Closed Bottom Structure, Clearspan Bridge, Logfill, Ice Bridge, or Snowfill
J422.99	Unnamed Tributary (Morice River)	553+911	6	9	610562	6003841	Maintain downstream water quality. On-site environmental monitoring. Construct during low flow periods where possible. Rebuild channel with gravel and cobble, revegetate banks.	S6	N/A	N/A	Isolate if flowing, Open Cut if dry or frozen	Open Bottom Structure, Closed Bottom Structure, or Clearspan Bridge	Open Bottom Structure, Closed Bottom Structure, Clearspan Bridge, Logfill, Ice Bridge, or Snowfill
556	Unnamed Tributary (Morice River)	555+578	6	9	608960	6003947	Maintain downstream water quality. On-site environmental monitoring. Construct during low flow periods where possible. Rebuild channel with gravel and cobble, revegetate banks.	S6	N/A	N/A	Isolate if flowing, Open Cut if dry or frozen	Open Bottom Structure, Closed Bottom Structure, or Clearspan Bridge	Open Bottom Structure, Closed Bottom Structure, Clearspan Bridge, Logfill, Ice Bridge, or Snowfill
557	Unnamed Tributary (Morice River)	555+703	6	9	608763	6003982	Fish salvage. On-site environmental monitoring. Maintain downstream water quality. Construct during timing window and/or low flow periods where possible. Rebuild channel, place gravels where disturbed, revegetate banks.	S4	NO WINDOW	-	Isolate if flowing, Open Cut if dry or frozen	Open Bottom Structure, Closed Bottom Structure, or Clearspan Bridge	Open Bottom Structure, Closed Bottom Structure, Clearspan Bridge, Ice Bridge, or Snowfill
J430.03	Unnamed Tributary (Gosnell Creek)	556+599	6	9	598853	6007521	Maintain downslope water quality if surface water is present. Ensure drainage paths are maintained and water is not diverted between watersheds.	NCD	N/A	N/A	Isolate if flowing, Open Cut if dry or frozen	Open Bottom Structure, Closed Bottom Structure, or Clearspan Bridge	Open Bottom Structure, Closed Bottom Structure, Clearspan Bridge, Logfill, Ice Bridge, or Snowfill
J430.99	Unnamed Tributary (Gosnell Creek)	556+878	6	9	598603	6007645	Maintain downslope water quality if surface water is present. Ensure drainage paths are maintained and water is not diverted between watersheds.	NCD	N/A	N/A	Isolate if flowing, Open Cut if dry or frozen	Open Bottom Structure, Closed Bottom Structure, or Clearspan Bridge	Open Bottom Structure, Closed Bottom Structure, Clearspan Bridge, Logfill, Ice Bridge, or Snowfill
J425.05	Unnamed Tributary (Morice River)	557+452	6	9	607255	6004670	Maintain downslope water quality if surface water is present. Ensure drainage paths are maintained and water is not diverted between watersheds.	NCD	N/A	N/A	Isolate if flowing, Open Cut if dry or frozen	Open Bottom Structure, Closed Bottom Structure, or Clearspan Bridge	Open Bottom Structure, Closed Bottom Structure, Clearspan Bridge, Logfill, Ice Bridge, or Snowfill
J425.04	Unnamed Tributary (Morice River)	557+924	6	9	606788	6004790	Maintain downslope water quality if surface water is present. Ensure drainage paths are maintained and water is not diverted between watersheds.	NCD	N/A	N/A	Isolate if flowing, Open Cut if dry or frozen	Open Bottom Structure, Closed Bottom Structure, or Clearspan Bridge	Open Bottom Structure, Closed Bottom Structure, Clearspan Bridge, Logfill, Ice Bridge, or Snowfill

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Site ID	Watercourse Name	KP	MOE Region	UTM Zone	UTM Easting	UTM Northing	Proposed Mitigation	Watercourse Class	Least Risk Window	Historical Fish Presence	Primary Pipeline Crossing Method	Recommended Vehicle Crossing Method (Open Water)	Recommended Vehicle Crossing Method (Frozen)
J425.03	Unnamed Tributary (Morice River)	558+060	6	9	606668	6004845	Maintain downslope water quality if surface water is present. Ensure drainage paths are maintained and water is not diverted between watersheds.	NCD	N/A	N/A	Isolate if flowing, Open Cut if dry or frozen	Open Bottom Structure, Closed Bottom Structure, or Clearspan Bridge	Open Bottom Structure, Closed Bottom Structure, Clearspan Bridge, Logfill, Ice Bridge, or Snowfill
558	Morice River	558+337	6	9	606480	6004965	Large River. Site-specific plans recommended and will be developed prior to construction.	S1B	NO WINDOW	BT, CC, CH, CM, CO, CT, DV, L, LT, LNC, LSU, MW, NSC, OS, PK, PW, RB, SK, ST, SU	Trenchless; Open Cut Contingency	Move Around - No Vehicle Crossing at Pipeline Crossing	Move Around - No Vehicle Crossing at Pipeline Crossing
J426.04	Unnamed Tributary (Morice River)	558+441	6	9	606334	6005002	Maintain downslope water quality if surface water is present. Ensure drainage paths are maintained and water is not diverted between watersheds.	NCD	N/A	N/A	Isolate if flowing, Open Cut if dry or frozen	Open Bottom Structure, Closed Bottom Structure, or Clearspan Bridge	Open Bottom Structure, Closed Bottom Structure, Clearspan Bridge, Logfill, Ice Bridge, or Snowfill
559	Morice River (Side Channel)	558+482	6	9	606296	6005018	Large River. Site-specific plans recommended and will be developed prior to construction.	S1B	NO WINDOW	BT, CC, CH, CM, CO, CT, DV, L, LT, LNC, LSU, MW, NSC, OS, PK, PW, RB, SK, ST, SU	Trenchless; Open Cut Contingency	Move Around - No Vehicle Crossing at Pipeline Crossing	Move Around - No Vehicle Crossing at Pipeline Crossing
560	Unnamed Tributary (Morice River)	558+701	6	9	606104	6005109	Maintain downslope water quality if surface water is present. Ensure drainage paths are maintained and water is not diverted between watersheds.	NCD	N/A	N/A	Isolate if flowing, Open Cut if dry or frozen	Open Bottom Structure, Closed Bottom Structure, or Clearspan Bridge	Open Bottom Structure, Closed Bottom Structure, Clearspan Bridge, Logfill, Ice Bridge, or Snowfill
561	Unnamed Tributary (Morice River)	560+067	6	9	604885	6005678	Maintain downstream water quality. On-site environmental monitoring. Construct during low flow periods where possible. Rebuild channel with gravel and cobble, revegetate banks.	S6	N/A	N/A	Isolate if flowing, Open Cut if dry or frozen	Open Bottom Structure, Closed Bottom Structure, or Clearspan Bridge	Open Bottom Structure, Closed Bottom Structure, Clearspan Bridge, Logfill, Ice Bridge, or Snowfill
J428.49	Unnamed Tributary (Morice River)	560+136	6	9	604812	6005712	Maintain downslope water quality if surface water is present. Ensure drainage paths are maintained and water is not diverted between watersheds.	NCD	N/A	N/A	Isolate if flowing, Open Cut if dry or frozen	Open Bottom Structure, Closed Bottom Structure, or Clearspan Bridge	Open Bottom Structure, Closed Bottom Structure, Clearspan Bridge, Logfill, Ice Bridge, or Snowfill
J428.02	Unnamed Tributary (Gosnell Creek)	562+755	6	9	602296	6006359	Maintain downslope water quality if surface water is present. Ensure drainage paths are maintained and water is not diverted between watersheds.	NCD	N/A	N/A	Isolate if flowing, Open Cut if dry or frozen	Open Bottom Structure, Closed Bottom Structure, or Clearspan Bridge	Open Bottom Structure, Closed Bottom Structure, Clearspan Bridge, Logfill, Ice Bridge, or Snowfill

Coastal GasLink Pipeline Project

Appendix B: Environmental Assessment Certificate Condition 1
Fish and Fish Habitat Technical Data Report #2

Appendix B.3: Master Watercourse Crossing List

Site ID	Watercourse Name	KP	MOE Region	UTM Zone	UTM Easting	UTM Northing	Proposed Mitigation	Watercourse Class	Least Risk Window	Historical Fish Presence	Primary Pipeline Crossing Method	Recommended Vehicle Crossing Method (Open Water)	Recommended Vehicle Crossing Method (Frozen)
J428.03	Unnamed Tributary (Gosnell Creek)	563+607	6	9	601460	6006516	Maintain downslope water quality if surface water is present. Ensure drainage paths are maintained and water is not diverted between watersheds.	NCD	N/A	N/A	Isolate if flowing, Open Cut if dry or frozen	Open Bottom Structure, Closed Bottom Structure, or Clearspan Bridge	Open Bottom Structure, Closed Bottom Structure, Clearspan Bridge, Logfill, Ice Bridge, or Snowfill
565	Unnamed Tributary (Gosnell Creek)	564+019	6	9	601054	6006617	Large River. Site-specific plans recommended and will be developed prior to construction.	S1B	NO WINDOW	BT, CO, DV, SP, SST	Isolation	Clearspan Bridge or Engineered Bridge	Clearspan Bridge, Engineered Bridge, Ice Bridge or Snowfill
566B	Unnamed Tributary (Gosnell Creek)	564+881	6	9	600484	6007034	N/A	NVC	N/A	N/A	Isolate if flowing, Open Cut if dry or frozen	Open Bottom Structure, Closed Bottom Structure, or Clearspan Bridge	Open Bottom Structure, Closed Bottom Structure, Clearspan Bridge, Logfill, Ice Bridge, or Snowfill
J430.02	Unnamed Tributary (Gosnell Creek)	566+016	6	9	599420	6007409	Maintain downslope water quality if surface water is present. Ensure drainage paths are maintained and water is not diverted between watersheds.	NCD	N/A	N/A	Isolate if flowing, Open Cut if dry or frozen	Open Bottom Structure, Closed Bottom Structure, or Clearspan Bridge	Open Bottom Structure, Closed Bottom Structure, Clearspan Bridge, Logfill, Ice Bridge, or Snowfill
J430.01	Unnamed Tributary (Gosnell Creek)	566+217	6	9	599221	6007432	Maintain downslope water quality if surface water is present. Ensure drainage paths are maintained and water is not diverted between watersheds.	NCD	N/A	N/A	Isolate if flowing, Open Cut if dry or frozen	Open Bottom Structure, Closed Bottom Structure, or Clearspan Bridge	Open Bottom Structure, Closed Bottom Structure, Clearspan Bridge, Logfill, Ice Bridge, or Snowfill
573B	Unnamed Tributary (Gosnell Creek)	567+131	6	9	598350	6007698	Fish salvage. On-site environmental monitoring. Maintain downstream water quality. Construct during timing window and/or low flow periods where possible. Rebuild channel, place gravels where disturbed, revegetate banks.	S2	NO WINDOW	CO, CT, DV, LKC	Isolate if flowing, Open Cut if dry or frozen	Open Bottom Structure, Clearspan Bridge, or Engineered Bridge	Open Bottom Structure, Clearspan Bridge, Engineered Bridge, Ice Bridge or Snowfill
J431.01	Unnamed Tributary (Gosnell Creek)	568+351	6	9	597216	6008097	Maintain downslope water quality if surface water is present. Ensure drainage paths are maintained and water is not diverted between watersheds.	NCD	N/A	N/A	Isolate if flowing, Open Cut if dry or frozen	Open Bottom Structure, Closed Bottom Structure, or Clearspan Bridge	Open Bottom Structure, Closed Bottom Structure, Clearspan Bridge, Logfill, Ice Bridge, or Snowfill
574B	Unnamed Tributary (Gosnell Creek)	569+027	6	9	596568	6008269	Fish salvage. On-site environmental monitoring. Maintain downstream water quality. Construct during timing window and/or low flow periods where possible. Rebuild channel, place gravels where disturbed, revegetate banks.	S4	NO WINDOW	CT, DV	Isolate if flowing, Open Cut if dry or frozen	Open Bottom Structure, Closed Bottom Structure, or Clearspan Bridge	Open Bottom Structure, Closed Bottom Structure, Clearspan Bridge, Ice Bridge, or Snowfill

Appendix B.3: Master Watercourse Crossing List

Site ID	Watercourse Name	KP	MOE Region	UTM Zone	UTM Easting	UTM Northing	Proposed Mitigation	Watercourse Class	Least Risk Window	Historical Fish Presence	Primary Pipeline Crossing Method	Recommended Vehicle Crossing Method (Open Water)	Recommended Vehicle Crossing Method (Frozen)
5L206	Unnamed Tributary (Gosnell Creek)	570+318	6	9	595300	6008387	N/A	NVC	N/A	N/A	Isolate if flowing, Open Cut if dry or frozen	Open Bottom Structure, Closed Bottom Structure, or Clearspan Bridge	Open Bottom Structure, Closed Bottom Structure, Clearspan Bridge, Logfill, Ice Bridge, or Snowfill
J433.99	Unnamed Tributary (Gosnell Creek)	570+868	6	9	594858	6008730	Maintain downslope water quality if surface water is present. Ensure drainage paths are maintained and water is not diverted between watersheds.	NCD	N/A	N/A	Isolate if flowing, Open Cut if dry or frozen	Open Bottom Structure, Closed Bottom Structure, or Clearspan Bridge	Open Bottom Structure, Closed Bottom Structure, Clearspan Bridge, Logfill, Ice Bridge, or Snowfill
575B	Gosnell Creek	570+946	6	9	594846	6008808	Large River. Site-specific plans recommended and will be developed prior to construction.	S1B	NO WINDOW	BT, CH, CO, CT, DV, SP, LKC, LNC, MW, PCC, PK, CAS, RB, RSC, TR, ST, SST, OS, L, SA, WF	Isolation	Clearspan or Engineered Bridge	Clearspan or Engineered Bridge

Appendix B.4: Watercourse Crossing Data Sheets

Coastal GasLink Pipeline Project



Site: 557

Stream Name: Unnamed Tributary (Morice River)

Proj. Component: Ditchline

Survey Date: 30-Jul-19

Crew Lead: Stephen Slongo

Location: UTM NAD83

Zone: 9

Easting: 608763

Northing: 6003982

KP: 555 + 703

Average Stream Measurements

Channel Width (m): 1.28
 Wetted Width (m): 0.12
 Stream Gradient (%): 8.40
 OHWM Depth (m): 0.21

Water Quality

Temperature (°C): --
 Diss. Oxygen (mg/L): --
 Conductivity (µS/cm): --
 pH: --
 Discharge (m³/s): --

Representative Photos



Bank Characteristics

Avg. Left Bank Height (m): 0.36
 Avg. Right Bank Height (m): 0.36
 Left Bank Shape: Sloping
 Right Bank Shape: Sloping
 Left Bank Material (Dom): Organics
 Left Bank Material (Subdom): Cobble
 Right Bank Material (Dom): Organics
 Right Bank Material (Subdom): Cobble

Stream Morphology

Pattern: Irregular Wandering
 Confinement: Occasionally Confined
 Flow Stage: Dry

Reach Attributes

BC Stream Class: S4
 Length Survey Area: 100
 Left Bank Stability: Moderately Stable
 Right Bank Stability: Moderately Stable

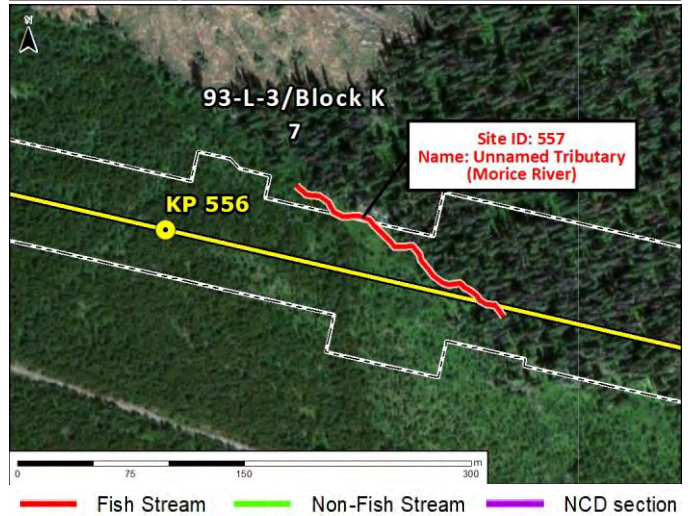
Cumulative Habitat Inventory (m)		Substrate Composition (%)	
Riffle:	95	Organics:	75
Pool:	5	Fines:	0
Run:	--	Small Gravel:	0
Flat:	--	Large Gravel:	0
Rapid/Chute:	--	Cobble:	25
Cascade:	--	Boulder:	0
Impounded Habitat:	--	Bedrock:	0
Step Pool Habitat:	--		

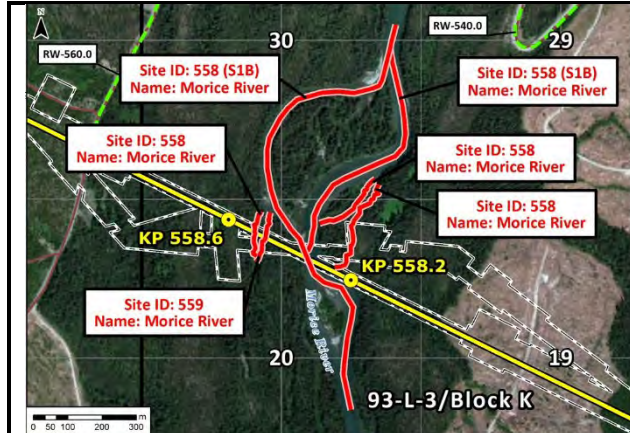


Photo 2. View downstream at right-of-way.

Functional Fish Cover (m²)	
Boulder:	--
Undercut Bank:	--
Overhanging Veg.:	30
Woody Debris:	10
Deep Pool:	--
Instream Veg.:	--
Other Covers:	--
Total Cover:	40

Overview Map





View upstream of crossing (03-11-2019)



View downstream of crossing (03-11-2019)



View of left bank approach at crossing (03-11-2019)



View of right bank approach at crossing (03-11-2019)

Channel Morphology

Pattern:	Straight
Bank Shape	LB: Sloping RB: Sloping
Embeddedness:	Low Embeddedness
Gradient (%):	3

Habitat Units within Surveyed Area

	m ²	%
Riffle:	13573.1	5
Pool:	2008	1
Run:	43524.6	91
Flat:	1440	1
Rapid/Chute:	6426	2
Cascade:	-	-
Impounded:	-	-
Step Pool:	-	-

Refer to detailed habitat map

Fish Presence and Life History Stage

Species	Sampling Method	Observed/Captured	Life Stage Count			Fork Length Range (mm)
			YOY	Juvenile	Adult	
BT	Snorkel	Observed	-	1	2	<254 and >254, respectively
CO	Snorkel	Observed	-	-	53	>254
MW	Snorkel	Observed	-	30	95	<254 and >254, respectively
RB	Snorkel	Observed	-	-	8	>254
WSU	Snorkel	Observed	-	-	15	>254
UnID Salmonid	Snorkel	Observed	-	5	15	<254
UnID	Snorkel	Observed	-	1	-	<254

Species to Manage:

BT, CH, CM, CO, CT, DV, LT, MW, PK, RB, SK, ST

Fish Sampling Effort

Method	Time (s/h)	Distance (m) No. Traps	Date
Snorkel	-	4225 m	03-11-2019

Water Quality Parameters

Water Temperature (°C):	3.5	D. Oxygen (mg/L):	9.0
pH:	6.9	Discharge (m ³ /s):	-
		Turbidity:	Low

Stream Measurements and Bank Characteristics

	Average (m)
Wetted Width:	72.5
Channel Width:	80.6
Left Bank Height:	1.5
Right Bank Height:	10.7
Water Depth:	1.0
Ordinary High Water:	1.3

Bank Material

Dominant	Subdominant
LB: Organics	Small Gravel
RB: Fines	Large Gravel

Riparian

Type:	Coniferous
Dom. Stage:	Mature

Historical Fish Presence (Government of BC 2020):

BT, CC, CH, CM, CO, CT, DV, L, LT, LNC, LSU, MW, NSC, PK, PW, RB, SK, ST, SU

Substrate (%)

Organics:	-	Boulder:	180
Fines:	10	Undercut Bank:	120
Small Gravel:	10	Overhanging Veg:	450
Large Gravel:	30	Woody Debris:	1000
Cobble:	40	Deep Pool:	375
Boulder:	10	Instream Veg:	-
Bedrock:	-	Total Cover:	2125
		No	

Barriers to Fish Movement:

Fish Habitat Potential Ratings

Species	Spawning	Rearing	Wintering
CO	Excellent	Good	Good

Spawning Habitat Identified within Footprint:	Yes
Spawning Survey Completed:	Yes
Spawning Activity Identified within Footprint:	No

Spawning Habitat Comments:

High quality spawning habitat is found throughout the assessed reach and British Columbia Oil and Gas Commission (OGC) corridor, particularly within the large side channel. This general area of the Morice River has been documented to provide high quality spawning habitat for CH (Schell 2003). Redds (86 total), and active CO spawning were observed outside of the footprint but within the OGC corridor.

Recommended Site-specific Mitigation:

Implement applicable measures identified in Sections 6, 7 and 8 of the Environmental Management Plan.

Comments:

A supplemental stream assessment was conducted in November 2019 to collect detailed fish and fish habitat information.

Regional Least Risk Work Window:

No Window

QEP Instream Work Window:

No Window

QEP Instream Work Window Rationale:

Potential spawning habitat for spring and fall spawning species.

Construction Timing:

TBD

Primary Pipeline Crossing Methods:

Trenchless

Contingency Pipeline Crossing Method:

Open Cut

Vehicle Crossing Method (Summer):

Move Around - No Vehicle Crossing at Pipeline Crossing

Vehicle Crossing Method (Winter):

Move Around - No Vehicle Crossing at Pipeline Crossing

Coastal GasLink Pipeline Project		Morice River		S1B	Site 558
Survey Date(s): November 3, 2019	KP: 558+337	Construction Section: Section 7	Work Package: Package 3	Location: UTM NAD83 Zone 9 Easting: 606480 Northing: 6004965	

Coastal GasLink Pipeline Project



Site: 558

Stream Name: Morice River

Proj. Component: Ditchline
Location: UTM NAD83 Zone: 9

Survey Date: 02-Nov-19 Crew Lead: Megan Von Sprecken
Easting: 606480 Northing: 6004965 KP: 558 + 337

Average Stream Measurements

Channel Width (m): 80.67
Wetted Width (m): 72.56
Stream Gradient (%): 3.00
OHWM Depth (m): 1.39

Water Quality

Temperature (°C): 7.2
Diss. Oxygen (mg/L): 9.2
Conductivity (µS/cm): 46.2
pH: 6.9
Discharge (m³/s): --

Representative Photos



Photo 1. View upstream at right-of-way.

Bank Characteristics

Avg. Left Bank Height (m): 1.54
Avg. Right Bank Height (m): 10.72
Left Bank Shape: Sloping
Right Bank Shape: Sloping
Left Bank Material (Dom): Organics
Left Bank Material (Subdom): Small Gravel
Right Bank Material (Dom): Fines
Right Bank Material (Subdom): Large Gravel

Stream Morphology

Pattern: Straight
Confinement: Occasionally Confined
Flow Stage: Low

Reach Attributes

BC Stream Class: S1B
Length Survey Area: 1290
Left Bank Stability: Moderately Stable
Right Bank Stability: Moderately Stable

Cumulative Habitat Inventory (m)		Substrate Composition (%)	
Riffle:	160	Organics:	0
Pool:	40	Fines:	10
Run:	1090	Small Gravel:	10
Flat:	--	Large Gravel:	30
Rapid/Chute:	--	Cobble:	40
Cascade:	--	Boulder:	10
Impounded Habitat:	--	Bedrock:	--
Step Pool Habitat:	--		



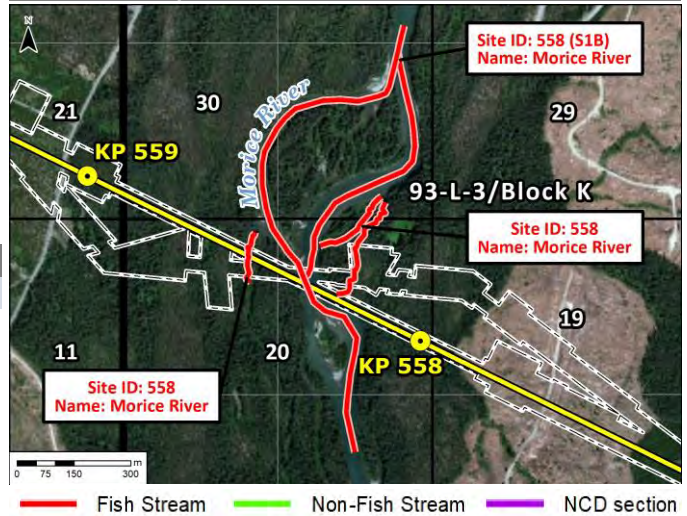
Photo 2. View downstream at right-of-way.

Functional Fish Cover (m²)	
Boulder:	180
Undercut Bank:	120
Overhanging Veg.:	450
Woody Debris:	1000
Deep Pool:	375
Instream Veg.:	--
Other Covers:	--
Total Cover:	2125

Notable Features

Feature Type	Easting	Northing	Feature Comments
Other	606480	6004965	Redds observed throughout system. Refer to Detailed Site Assessment for spawning information.

Overview Map



Coastal GasLink Pipeline Project



Site: 559

Stream Name: Morice River (Side Channel)

Proj. Component: Ditchline

Survey Date: 25-Jul-19

Crew Lead: Neal Foord

Location: UTM NAD83

Zone: 9

Easting: 606296

Northing: 6005018

KP: 558 + 482

Average Stream Measurements

Channel Width (m): 6.58
 Wetted Width (m): 6.58
 Stream Gradient (%): 0.04
 OHWM Depth (m): 0.74

Water Quality

Temperature (°C): 9.3
 Diss. Oxygen (mg/L): 3.3
 Conductivity (µS/cm): 44
 pH: 7.4
 Discharge (m³/s): --

Representative Photos



Photo 1. View upstream at right-of-way.

Bank Characteristics

Avg. Left Bank Height (m): 0.98
 Avg. Right Bank Height (m): 0.86
 Left Bank Shape: Sloping
 Right Bank Shape: Sloping
 Left Bank Material (Dom): Fines
 Left Bank Material (Subdom): Large Gravel
 Right Bank Material (Dom): Fines
 Right Bank Material (Subdom): Large Gravel

Stream Morphology

Pattern: Sinuous
 Confinement: Occasionally Confined
 Flow Stage: Moderate

Reach Attributes

BC Stream Class: S1B
 Length Survey Area: 100
 Left Bank Stability: Stable
 Right Bank Stability: Stable

Cumulative Habitat Inventory (m)

Riffle: --
 Pool: --
 Run: 60
 Flat: 40
 Rapid/Chute: --
 Cascade: --
 Impounded Habitat: --
 Step Pool Habitat: --

Substrate Composition (%)

Organics: 13
 Fines: 31
 Small Gravel: 15
 Large Gravel: 24
 Cobble: 17
 Boulder: 0
 Bedrock: 0

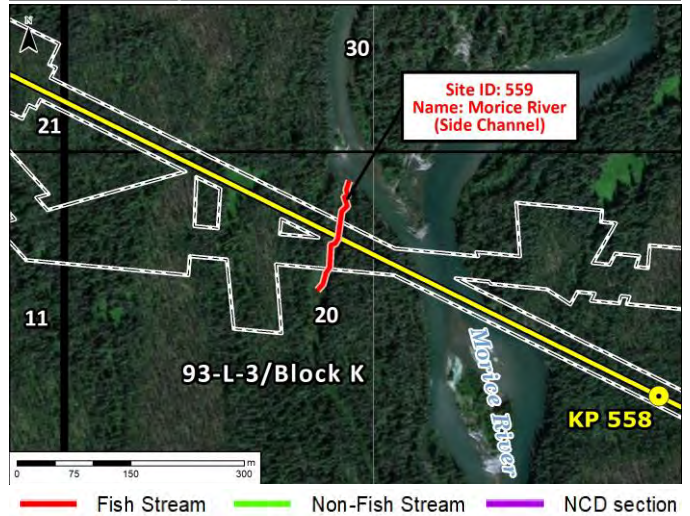


Photo 2. View downstream at right-of-way.

Functional Fish Cover (m²)

Boulder: --
 Undercut Bank: --
 Overhanging Veg.: 5
 Woody Debris: 5
 Deep Pool: 7
 Instream Veg.: 7
 Other Covers: --
 Total Cover: 24

Overview Map



Coastal GasLink Pipeline Project



Site: 565

Stream Name: Unnamed Tributary (Gosnell Creek)

Proj. Component: Ditchline

Survey Date: 10-Sep-19 Crew Lead: Matt Henry

Location: UTM NAD83

Zone: 9

Easting: 601054

Northing: 6006617

KP: 564 + 019

Average Stream Measurements

Channel Width (m): 20.01
 Wetted Width (m): 7.76
 Stream Gradient (%): 3.40
 OHWM Depth (m): 0.55

Water Quality

Temperature (°C): 12
 Diss. Oxygen (mg/L): 8.5
 Conductivity (µS/cm): 59
 pH: 7
 Discharge (m³/s): 2.01

Representative Photos



Photo 1. View upstream at right-of-way.

Bank Characteristics

Avg. Left Bank Height (m): 13.46
 Avg. Right Bank Height (m): 1.48
 Left Bank Shape: Vertical
 Right Bank Shape: Sloping
 Left Bank Material (Dom): Fines
 Left Bank Material (Subdom): Cobble
 Right Bank Material (Dom): Fines
 Right Bank Material (Subdom): Cobble

Stream Morphology

Pattern: Regular Meanders
 Confinement: Occasionally Confined
 Flow Stage: Low

Reach Attributes

BC Stream Class: S1B
 Length Survey Area: 140
 Left Bank Stability: Moderately Unstable
 Right Bank Stability: Moderately Unstable

Cumulative Habitat Inventory (m)

Riffle: 140
 Pool: --
 Run: --
 Flat: --
 Rapid/Chute: --
 Cascade: --
 Impounded Habitat: --
 Step Pool Habitat: --

Substrate Composition (%)

Organics: --
 Fines: 15
 Small Gravel: 20
 Large Gravel: 25
 Cobble: 35
 Boulder: 5
 Bedrock: --

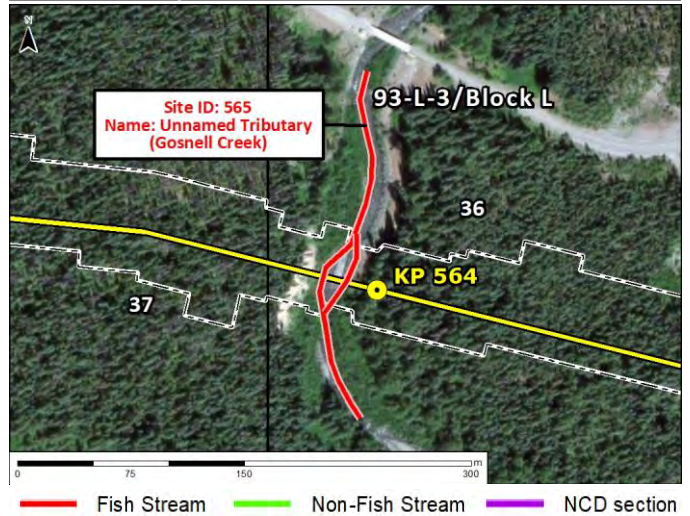


Photo 2. View downstream at right-of-way.

Functional Fish Cover (m²)

Boulder: 10
 Undercut Bank: --
 Overhanging Veg.: 30
 Woody Debris: 15
 Deep Pool: --
 Instream Veg.: --
 Other Covers: --
 Total Cover: 55

Overview Map



Spawning Habitat

Feature Type	Redd/Broadcast	In/Off Footprint	Area (m²)	Avg Depth (m)	% Cover	Velocity (m/s)
Spawning Area	Redd	Off	64	0.0000	0	--
Spawning Area	Redd	Off	36	0.2833	5	0.4

Coastal GasLink Pipeline Project



Site: 573B

Stream Name: Unnamed Tributary (Gosnell Creek)

Proj. Component: Ditchline

Survey Date: 10-Sep-19 Crew Lead: Matt Henry

Location: UTM NAD83

Zone: 9

Easting: 598350

Northing: 6007698

KP: 567 + 131

Average Stream Measurements

Channel Width (m): 5.28
Wetted Width (m): 2.63
Stream Gradient (%): 6.00
OHWM Depth (m): 0.32

Water Quality

Temperature (°C): 11.2
Diss. Oxygen (mg/L): 9
Conductivity (µS/cm): 69
pH: 7
Discharge (m³/s): 0.2091

Representative Photos



Photo 1. View upstream at right-of-way.

Bank Characteristics

Avg. Left Bank Height (m): 0.68
Avg. Right Bank Height (m): 0.75
Left Bank Shape: Vertical
Right Bank Shape: Sloping
Left Bank Material (Dom): Cobble
Left Bank Material (Subdom): Organics
Right Bank Material (Dom): Fines
Right Bank Material (Subdom): Organics

Stream Morphology

Pattern: Straight
Confinement: Occasionally Confined
Flow Stage: Low

Reach Attributes

BC Stream Class: S2
Length Survey Area: 300
Left Bank Stability: Moderately Unstable
Right Bank Stability: Moderately Unstable

Cumulative Habitat Inventory (m)
Riffle: 160
Pool: 60
Run: 40
Flat: --
Rapid/Chute: --
Cascade: 10
Impounded Habitat: 30
Step Pool Habitat: --

Substrate Composition (%)
Organics: 0
Fines: 5
Small Gravel: 5
Large Gravel: 20
Cobble: 60
Boulder: 10
Bedrock: 0



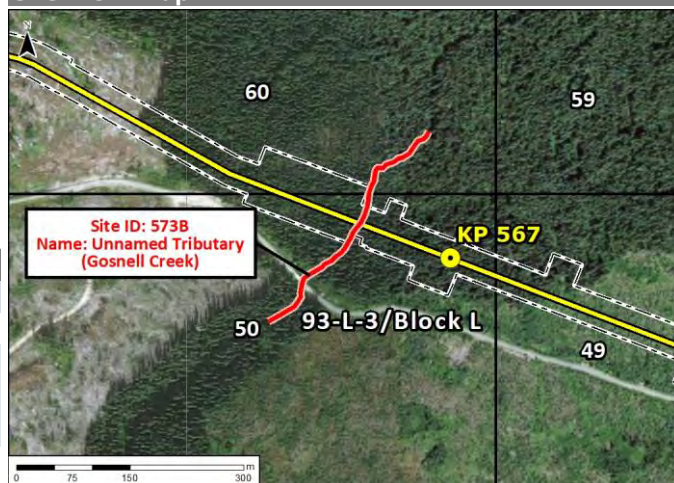
Photo 2. View downstream at right-of-way.

Functional Fish Cover (m²)
Boulder: 50
Undercut Bank: 5
Overhanging Veg.: 35
Woody Debris: 30
Deep Pool: 15
Instream Veg.: --
Other Covers: --
Total Cover: 135

Notable Features

Feature Type	Easting	Northing	Feature Comments
Overwintering Pool	598332	6007662	
Overwintering Pool	598372	6007772	Spawning gravels for medium and smaller sized fish present on margins of the pool.

Overview Map



Legend: Fish Stream (red), Non-Fish Stream (green), NCD section (purple)

Spawning Habitat

Feature Type	Redd/Broadcast	In/Off Footprint	Area (m²)	Avg Depth (m)	% Cover	Velocity (m/s)
Spawning Area	Redd	Off	6	0.2300	0	0.2
Spawning Area	Redd	Off	20	0.0000		
Spawning Area	Redd	In	6	0.0833		0.2
Spawning Area	Redd	Off	1	0.1000	3	0.2

Coastal GasLink Pipeline Project



Site: 573B

Stream Name: Unnamed Tributary (Gosnell Creek)

Proj. Component: Ditchline

Survey Date: 10-Sep-19

Crew Lead: Matt Henry

Location: UTM NAD83

Zone: 9

Easting: 598350

Northing: 6007698

KP: 567 + 131

Spawning Area	Redd	Off	4	0.2167	25	0.2
Spawning Area	Redd	Off	10	0.0000	25	

Coastal GasLink Pipeline Project



Site: 574B

Stream Name: Unnamed Tributary (Gosnell Creek)

Proj. Component: Ditchline

Survey Date: 29-Jul-19

Crew Lead: Ben Hewitt

Location: UTM NAD83

Zone: 9

Easting: 596568

Northing: 6008269

KP: 569 + 027

Average Stream Measurements

Channel Width (m): 1.33
 Wetted Width (m): 1.00
 Stream Gradient (%): 4.67
 OHWM Depth (m): 0.53

Water Quality

Temperature (°C): 10
 Diss. Oxygen (mg/L): --
 Conductivity (µS/cm): 52.5
 pH: 7.1
 Discharge (m³/s): 0.195

Representative Photos



Photo 1. View upstream at right-of-way.

Bank Characteristics

Avg. Left Bank Height (m): 0.87
 Avg. Right Bank Height (m): 0.87
 Left Bank Shape: Sloping
 Right Bank Shape: Sloping
 Left Bank Material (Dom): Cobble
 Left Bank Material (Subdom): Small Gravel
 Right Bank Material (Dom): Cobble
 Right Bank Material (Subdom): Small Gravel

Stream Morphology

Pattern: Irregular Wandering
 Confinement: Occasionally Confined
 Flow Stage: Moderate

Reach Attributes

BC Stream Class: S4
 Length Survey Area: 100
 Left Bank Stability: Stable
 Right Bank Stability: Stable

Cumulative Habitat Inventory (m)

Riffle: --
 Pool: --
 Run: 100
 Flat: --
 Rapid/Chute: --
 Cascade: --
 Impounded Habitat: --
 Step Pool Habitat: --

Substrate Composition (%)

Organics: 5
 Fines: 20
 Small Gravel: 30
 Large Gravel: 25
 Cobble: 20
 Boulder: 0
 Bedrock: 0

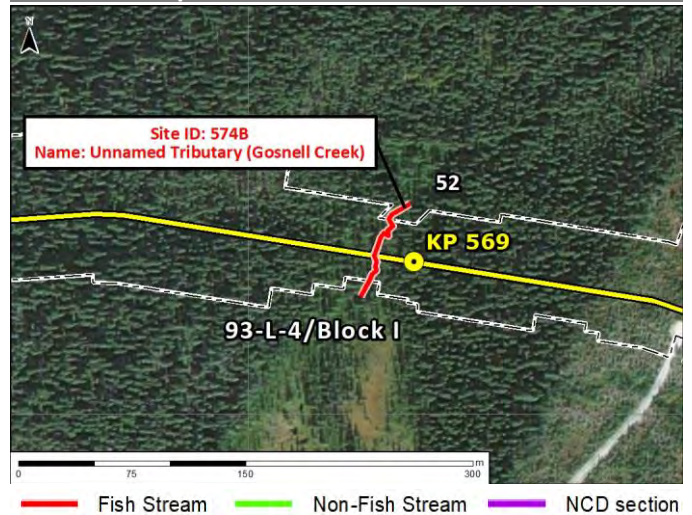


Photo 2. View downstream at right-of-way.

Functional Fish Cover (m²)

Boulder: --
 Undercut Bank: 5
 Overhanging Veg.: 90
 Woody Debris: --
 Deep Pool: --
 Instream Veg.: --
 Other Covers: --
 Total Cover: 95

Overview Map



Coastal GasLink Pipeline Project



Site: 575B

Stream Name: Gosnell Creek

Proj. Component: Ditchline

Survey Date: 11-Sep-19

Crew Lead: Matt Henry

Location: UTM NAD83

Zone: 9

Easting: 594846

Northing: 6008808

KP: 570 + 946

Average Stream Measurements

Channel Width (m): 24.00
 Wetted Width (m): 21.50
 Stream Gradient (%): 1.83
 OHWM Depth (m): 1.15

Water Quality

Temperature (°C): 9.1
 Diss. Oxygen (mg/L): 8.4
 Conductivity (µS/cm): 92.2
 pH: 8.1
 Discharge (m³/s): 2.3443

Representative Photos



Photo 1. View upstream at right-of-way.

Bank Characteristics

Avg. Left Bank Height (m): 1.17
 Avg. Right Bank Height (m): 1.62
 Left Bank Shape: Sloping
 Right Bank Shape: Vertical
 Left Bank Material (Dom): Fines
 Left Bank Material (Subdom): Small Gravel
 Right Bank Material (Dom): Fines
 Right Bank Material (Subdom): Small Gravel

Stream Morphology

Pattern: Sinuous
 Confinement: Confined
 Flow Stage: Moderate

Reach Attributes

BC Stream Class: S1B
 Length Survey Area: 320
 Left Bank Stability: Stable
 Right Bank Stability: Stable

Cumulative Habitat Inventory (m)

Riffle: 100
 Pool: 65
 Run: 115
 Flat: 40
 Rapid/Chute: --
 Cascade: --
 Impounded Habitat: --
 Step Pool Habitat: --

Substrate Composition (%)

Organics: 0
 Fines: 10
 Small Gravel: 40
 Large Gravel: 40
 Cobble: 5
 Boulder: 5
 Bedrock: 0



Photo 2. View downstream at right-of-way.

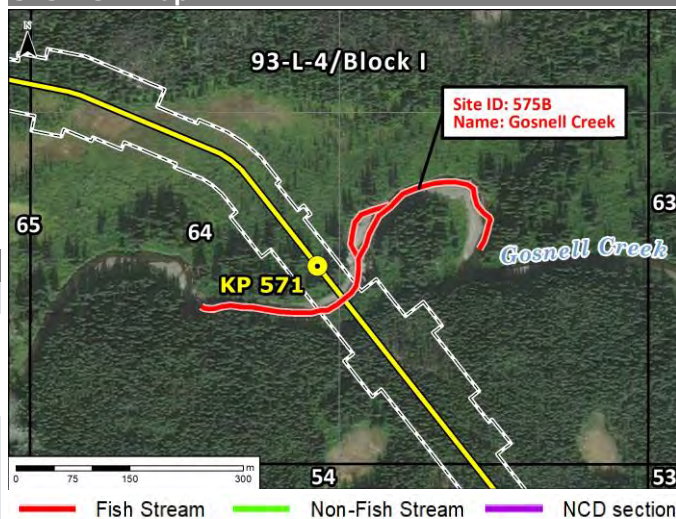
Functional Fish Cover (m²)

Boulder: --
 Undercut Bank: --
 Overhanging Veg.: 45
 Woody Debris: 40
 Deep Pool: 120
 Instream Veg.: 50
 Other Covers: --
 Total Cover: 255

Notable Features

Feature Type	Easting	Northing	Feature Comments
Debris Jam	594862	6008846	Not a fish barrier. Debris jam is located in a deep area. Good quality habitat for fish.
Other	594729	6008790	Could be a potential redd or test redds. Consists primarily of small gravel with fines.

Overview Map



Spawning Habitat						
Feature Type	Redd/Broadcast	In/Off Footprint	Area (m²)	Avg Depth (m)	% Cover	Velocity (m/s)
Spawning Area	Redd	Off	48	--	10	--
Spawning Area	Redd	Off	150	--	--	--
Spawning Area	Redd	Off	40	--	--	--
Spawning Area	Redd	In	240	--	--	--

Coastal GasLink Pipeline Project



Site: 151C1 Stream Name: Unnamed Tributary (Morice River)

Proj. Component: Ditchline Survey Date: 01-Aug-19 Crew Lead: Corey Lavin
 Location: UTM NAD83 Zone: 9 Easting: 610864 Northing: 6003937 KP 553 + 595
 Stream Class: S6

Average Stream Measurements		Bank Characteristics	
Channel Width:	1.58	Avg. Left Bank Height (m)	0.38
Wetted Width:	1.22	Avg. Right Bank Height (m)	0.38
Stream Gradient:	4.25		
OHWL Depth:	0.32		

Representative Photos

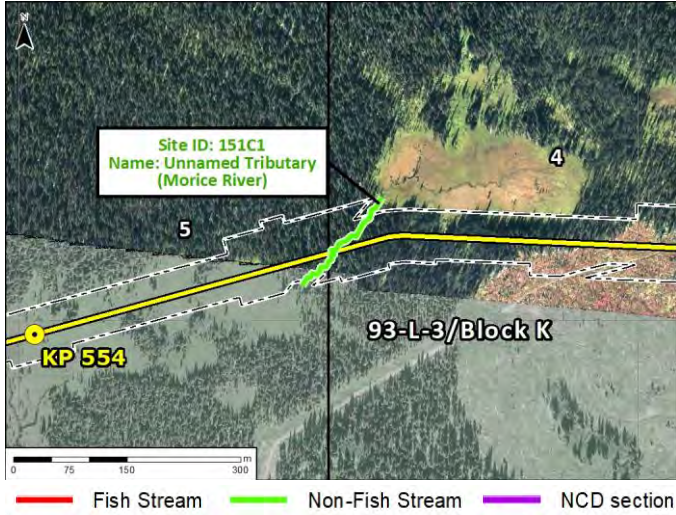


Photo 1. View upstream at right-of-way.



Photo 2. View downstream at right-of-way.

Overview Map



Notable Features

Feature Type	Easting	Northing	Feature Comments
Fish Barrier	610839	6003898	This stream exhibits subsurface flow creating a barrier to fish. The stream loses definition as it enters into a wetland.

General Comments

This stream was classified as a S6 due to poor fish habitat. Upstream and downstream wetlands were acting as barriers to fish migration. There was one main channel mapped through the wetland, however there were a number of drainages diverting from the main channel into all areas of the wetland. The wetland perimeters were traversed to ensure that no other channels were present. None of the channels continue beyond the wetlands and there was no connection to downstream or downslope fish habitat.

Coastal GasLink Pipeline Project



Site: 556 Stream Name: Unnamed Tributary (Morice River)

Proj. Component: Ditchline Survey Date: 30-Jul-19 Crew Lead: Stephen Slongo
 Location: UTM NAD83 Zone: 9 Easting: 608960 Northing: 6003947 KP 555 + 578
 Stream Class: S6

Average Stream Measurements		Bank Characteristics	
Channel Width:	1.28	Avg. Left Bank Height (m)	0.36
Wetted Width:	0.12	Avg. Right Bank Height (m)	0.36
Stream Gradient:	8.40		
OHWL Depth:	0.21		

Representative Photos

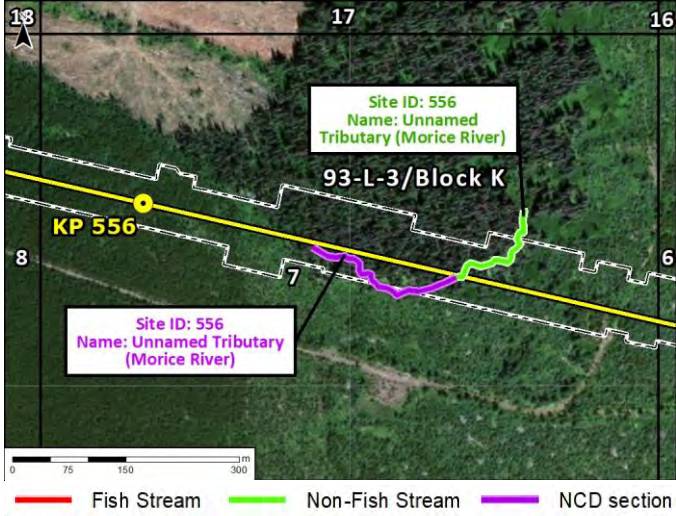


Photo 1. View upstream at right-of-way



Photo 2. Photo 2. Downstream view at right-of-way.

Overview Map



General Comments

--

Coastal GasLink Pipeline Project



Site: 561 Stream Name: Unnamed Tributary (Morice River)

Proj. Component: Ditchline Survey Date: 26-Jul-19 Crew Lead: Ben Hewitt
 Location: UTM NAD83 Zone: 9 Easting: 604885 Northing: 6005679 KP 560 + 067
 Stream Class: S6

Average Stream Measurements		Bank Characteristics	
Channel Width:	1.58	Avg. Left Bank Height (m)	0.43
Wetted Width:	0.68	Avg. Right Bank Height (m)	0.40
Stream Gradient:	6.25		
OHWM Depth:	0.36		

Representative Photos

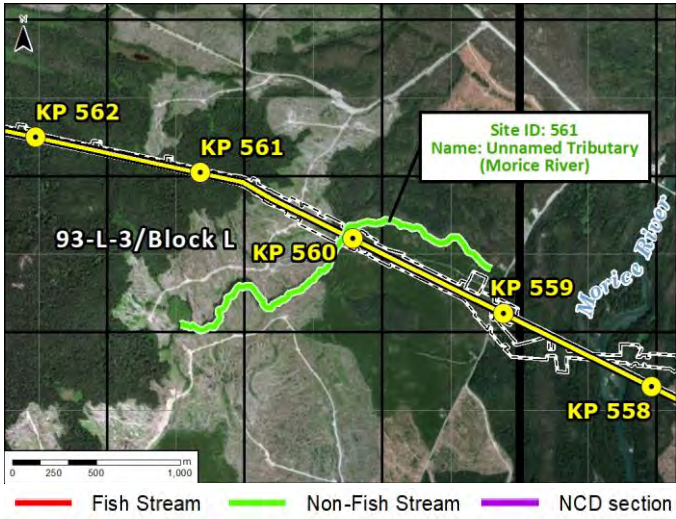


Photo 1. Upstream view at right-of-way.



Photo 2. Downstream view at right-of-way.

Overview Map



General Comments

--

Coastal GasLink Pipeline Project



Site: J422.99 Stream Name: Unnamed Tributary (Morice River)

Proj. Component: Ditchline
 Location: UTM NAD83 Zone: 9
 Stream Class: S6

Survey Date: 19-Sep-19 Crew Lead: Kate Targett
 Easting: 610562 Northing: 6003841 KP 553 + 911

Average Stream Measurements		Bank Characteristics	
Channel Width:	0.98	Avg. Left Bank Height (m)	0.49
Wetted Width:	0.93	Avg. Right Bank Height (m)	0.49
Stream Gradient:	3.00		
OHWM Depth:	0.38		

Representative Photos

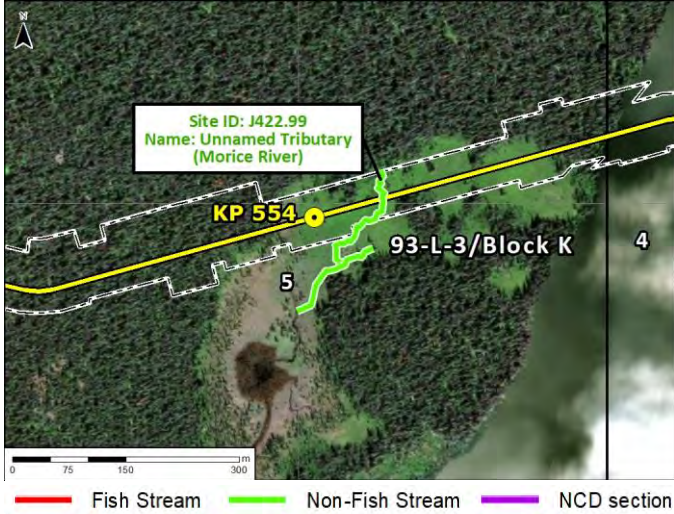


Photo 1. View upstream at right-of-way.



Photo 2. View downstream at right-of-way.

Overview Map



General Comments

The stream is a well-defined S6, flowing through the right-of-way in a Southwest direction. The main channel flows into a small pond 100 meters downstream of right-of-way. The onsite QP confirmed the presence of a fish barrier near this pond.

Coastal GasLink Pipeline Project

Appendix B: Environmental Assessment

Certificate Condition 1

Fish and Fish Habitat Technical Data Report #2

Appendix B.5: Watercourse Crossings Ranked

High for Scale of Potential Adverse Effects

Appendix B.5: Watercourse Crossings Ranked High for Scale of Potential Adverse Effects

Table B.5-1: Watercourse Crossings Ranked High for Scale of Potential Adverse Effects

Site ID	KP	Watercourse Class	Extent Score	Duration Score	Intensity Score	Total Score	Watershed Group
573B	567+131	S2	3	1	5	9	Morice River
575B	570+946	S1B	3	1	5	9	Morice River

Appendix B.6: Watercourse Crossings Ranked High for Sensitivity of Fish Habitat

Table B.6-1: Watercourse Crossings Ranked High for Sensitivity of Fish Habitat

Site ID	KP	Watercourse Class	Species Sensitivity Score	Species Dependence Score	Rarity Score	Fish Sensitivity Score	Watershed Group
557	555+703	S4	5	3	1	9	Morice River
558	558+337	S1B	5	5	3	13	Morice River
559	558+482	S1B	5	5	3	13	Morice River
565	564+019	S1B	5	3	3	11	Morice River
573B	567+131	S2	5	5	1	11	Morice River
574B	569+027	S4	5	3	1	9	Morice River
575B	570+946	S1B	5	5	3	13	Morice River

Appendix B.7: Watercourse Crossings Ranked High using the RMF Process

Table B.7-1: Watercourse Crossings Ranked High using the RMF Process

Site ID	Watercourse Name	KP	Watercourse Class	Construction Timing*	Primary Crossing Method	Least Risk Window	Scale of Adverse Effects	Sensitivity of Fish Habitat	Mitigation	Watershed Group
575B	Gosnell Creek	570+946	S1B	Winter – December 1 to March 31	Isolation	NO WINDOW	9	13	Large crossing. Site-specific plans recommended. Spawning deterrents recommended. Fish salvage. On-site environmental monitoring. Maintain downstream water quality. Construct during timing window and/or low flow periods where possible. Rebuild channel, place gravels where disturbed, revegetate banks.	Morice River

NOTE:

* Based on preliminary construction schedule, assumed that construction will coincide with QEP LRW established for the Technical Boundary. Should construction not occur in the QEP LRW additional regulatory consultation may be required.

Appendix B.8: RMF Scoring for Watercourse Crossings Ranked High and Medium

Table B.8-1: RMF Scoring for Watercourse Crossings Ranked High and Medium

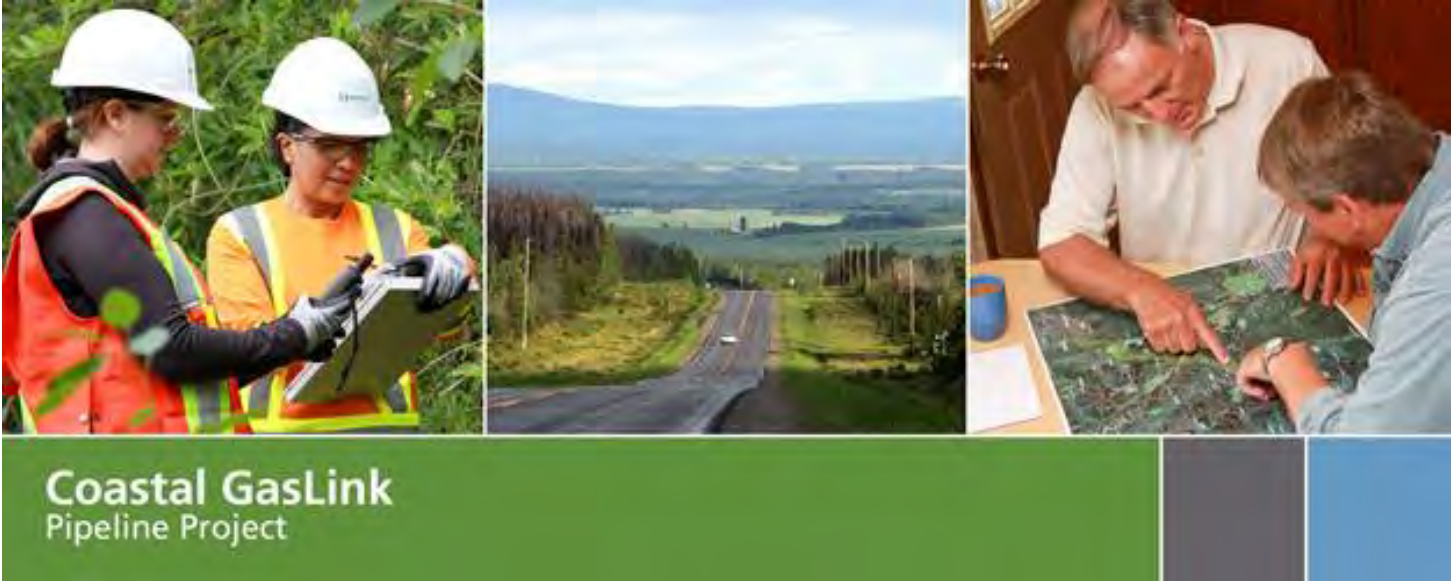
Site ID	Watercourse Name	KP	Watercourse Class	Mitigation	Extent Score	Duration Score	Intensity Score	Total Scale of Adverse Effects	Species Sensitivity Score	Species Dependence Score	Rarity Score	Total Score	Rank	Construction Timing*	Proposed Crossing Method	Watershed Group
558	Morice River	558+337	S1B	Large River. Site-specific plans recommended and will be developed prior to construction.	1	1	3	5	5	5	3	13	Medium	Winter – December 1 to March 31	Trenchless	Morice River
559	Morice River (Side Channel)	558+482	S1B	Large River. Site-specific plans recommended and will be developed prior to construction.	1	1	3	5	5	5	3	13	Medium	Winter – December 1 to March 31	Trenchless	Morice River
565	Unnamed Tributary to Gosnell Creek	564+019	S1B	Large River. Site-specific plans recommended and will be developed prior to construction. Fish salvage. On-site environmental monitoring. Maintain downstream water quality. Construct during timing window and/or low flow periods where possible. Rebuild channel, place gravels where disturbed, revegetate banks.	3	1	3	7	5	3	3	11	Medium	Winter – December 1 to March 31	Isolation	Morice River
573B	Unnamed Tributary to Gosnell Creek	567+131	S2	Spawning deterrents recommended. Fish salvage. On-site environmental monitoring. Maintain downstream water quality. Construct during timing window and/or low flow periods where possible. Rebuild channel, place gravels where disturbed, revegetate banks.	3	1	5	9	5	5	1	11	Medium	Winter – December 1 to March 31	Isolation	Morice River
575B	Gosnell Creek	570+946	S1B	Large crossing. Site-specific plans recommended. Spawning deterrents recommended. Fish salvage. On-site environmental monitoring. Maintain downstream water quality. Construct during timing window and/or low flow periods where possible. Rebuild channel, place gravels where disturbed, revegetate banks.	3	1	5	9	5	5	3	13	High	Winter – December 1 to March 31	Isolation	Morice River

NOTE:

* Based on preliminary construction schedule, assumed that construction will coincide with QEP LRW established for the Technical Boundary. Should construction not occur in the QEP LRW additional regulatory consultation may be required.

Appendix H

**EAC Condition 1 Report #2:
Vegetation Technical Data Report #2**



Coastal GasLink
Pipeline Project

Appendix C: Environmental Assessment Certificate Condition 1 Vegetation Technical Data Report #2

CGL4703-STC-EN-RP-089

July 17, 2020

Revision 1

Issued for Use



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1.0 INTRODUCTION

On March 11, 2014, Coastal GasLink Pipeline Ltd. (Coastal GasLink) submitted an Application for an Environmental Assessment Certificate (EAC Application) to the British Columbia (BC) Environmental Assessment Office (EAO) for the Coastal GasLink Pipeline Project (the Project). On October 23, 2014, Coastal GasLink received an Environmental Assessment Certificate (EAC) #E14-03 for the Project which includes Schedule B, Table of Conditions. Condition # 1 (EAC Condition 1) requires Coastal GasLink to complete and report on biophysical information collected for the Morice River Technical Boundary Area (Technical Boundary). The Technical Boundary is defined as the area of the Project between UTM Zone 9U East 611335 North 6003957 and UTM Zone 9U East 577769 North 6000758 (Figure 1-1).

To fulfill the biophysical requirements of EAC Condition # 1, Coastal GasLink submitted the following three reports:

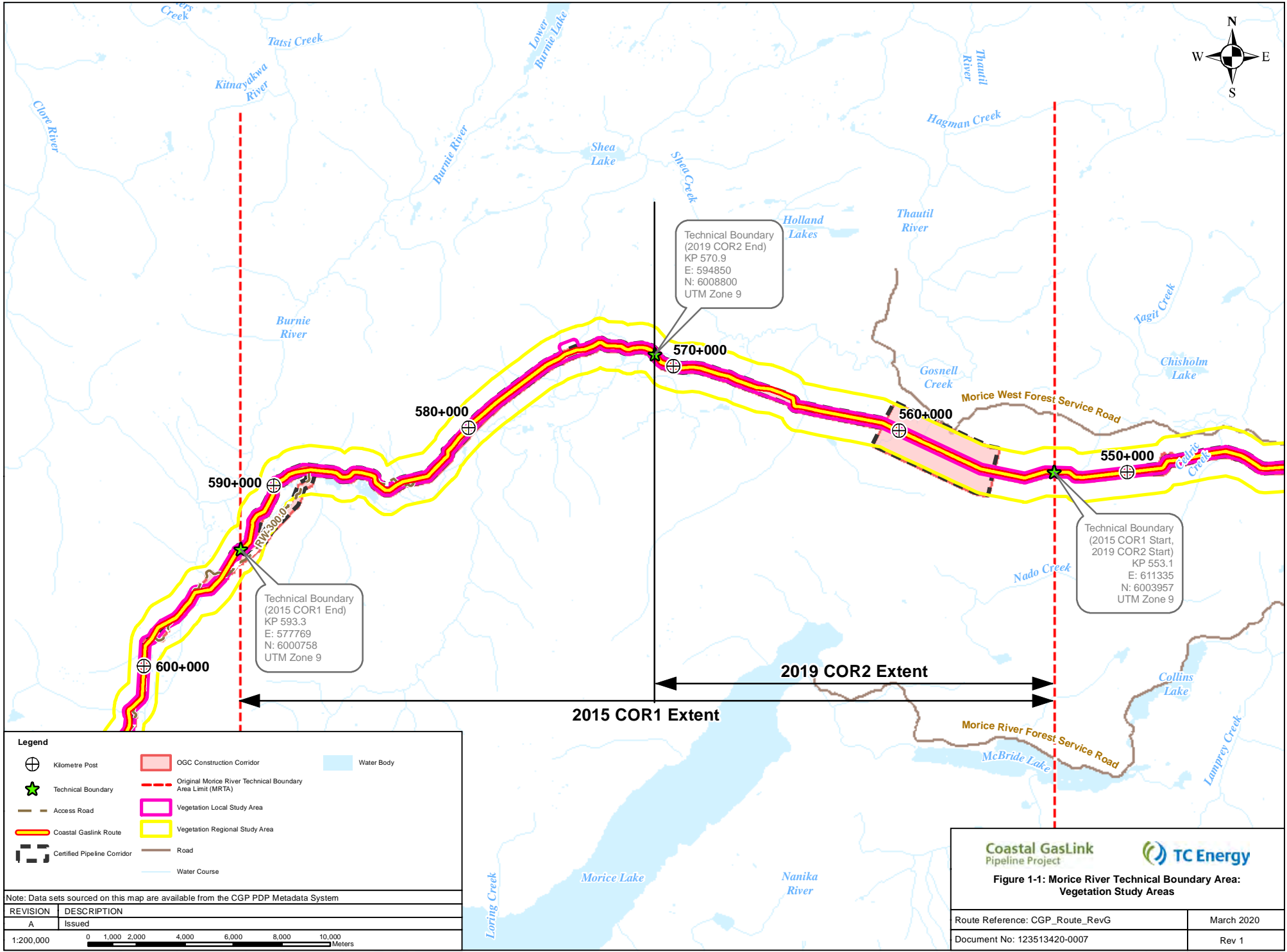
1. Environmental Assessment Certificate #E14-03 Condition 1 Report #1 (October 30, 2015) to the EAO, hereafter referred to as the 2015 COR1.
2. Environmental Assessment Certificate #E14-03 Condition 1 Report #2 (November 19, 2019), hereafter referred to as the 2019 COR2.
3. Environmental Assessment Certificate #E14-03 Condition 1 Report #2 Rev. 1 (July 17, 2020), hereafter referred to as the 2020 COR2.

For biophysical requirements to support the Vegetation Species of Concern Valued Component (VC), Vegetation Ecological Communities of Concern VC, and the Wetland Function VC, the 2015 COR1 submission included a Wetland and a Vegetation Technical Data Report (TDR). The 2019 COR2 submission included a Vegetation TDR, which included wetlands. These submissions were based on a gap analysis, which is described below in Section 4.0.

The purpose of the 2015 COR1 Wetland and Vegetation TDRs and the subsequent 2019 COR2 Vegetation TDR is to support full compliance with EAC Condition 1 by collecting additional information and completing the description of baseline conditions for vegetation within the Technical Boundary.

In this 2020 COR2 Vegetation TDR a summary of the 2015 COR1 Vegetation and Wetland TDRs, and details from the 2019 COR2 Vegetation TDR, are provided collectively for the Technical Boundary. Together, field data from the 2015 COR1 and 2019 COR2 TDRs were used to verify or update the effects assessment conclusions reached in the EAC Application, and to identify the need for additional mitigation in the Technical Boundary.

Abbreviations and acronyms used in this report are described in Appendix C.1.



Technical Boundary
(2019 COR2 End)
KP 570.9
E: 594850
N: 6008800
UTM Zone 9

Technical Boundary
(2015 COR1 End)
KP 593.3
E: 577769
N: 6000758
UTM Zone 9

Technical Boundary
(2015 COR1 Start,
2019 COR2 Start)
KP 553.1
E: 611335
N: 6003957
UTM Zone 9

Legend

- Kilometre Post
- Technical Boundary
- Access Road
- Coastal GasLink Route
- Certified Pipeline Corridor
- OGC Construction Corridor
- Original Morice River Technical Boundary Area Limit (MRTA)
- Vegetation Local Study Area
- Vegetation Regional Study Area
- Road
- Water Course
- Water Body

Note: Data sets sourced on this map are available from the CGP PDP Metadata System

REVISION	DESCRIPTION
A	Issued

Figure 1-1: Morice River Technical Boundary Area: Vegetation Study Areas

Route Reference: CGP_Route_RevG	March 2020
Document No: 123513420-0007	Rev 1

2.0 OBJECTIVE

This 2020 COR2 Vegetation TDR is consistent with the direction of the Application Information Requirements (AIR) issued by BC EAO (BC EAO 2013) and Condition 1 of the EAC (BC EAO 2014). It also refers to the guidance contained in the BC EAO User Guide (BC EAO 2011, updated 2018), Fairness and Service Code (BC EAO 2009, updated 2011), and the Proponent Guide for Providing First Nation Consultation Information (BC EAO 2010, updated 2013).

The collective objective of the Wetland and Vegetation COR submissions is to present additional information about baseline conditions of vegetation resources in the Technical Boundary using methods consistent with the AIR and as described in the EAC Application, Vegetation TDR. This objective was achieved for the Vegetation Species of Concern Valued Component (VC), the Vegetation Ecological Communities of Concern VC, and the Wetland Function VC by utilizing a combination of existing ecosystem mapping for the Project and results from the 2019 rare plant field surveys involving Aboriginal participation.

3.0 STUDY AREA BOUNDARIES

Figure 1-1 illustrates the study area boundaries for the Technical Boundary, including demarcation of the portion of the Technical Boundary addressed in each of the 2015 COR1, and 2019 and 2020 COR2 reports.

3.1 MORICE RIVER TECHNICAL BOUNDARY AREA

The Technical Boundary is defined as the area of the Project between UTM Zone 9U East 611335 North 6003957 and UTM Zone 9U East 577769 North 6000758 (Figure 1-1) where field data were not previously collected for inclusion in the Application for an EAC due to access limitations.

3.2 PROJECT FOOTPRINT

The project footprint is a 100-m-wide corridor within the Technical Boundary that has the potential to be directly affected by clearing, construction and cleanup activities, including associated physical works and activities.

3.3 LOCAL STUDY AREA

The vegetation Local Study Area (LSA) is the area within the Technical Boundary in which Project activities and facilities could indirectly affect vegetation resources. The LSA includes the project footprint plus an additional 150-m buffer. The vegetation LSA for the Technical Boundary equates to approximately 531.5 ha.

3.4 REGIONAL STUDY AREA

The vegetation Regional Study Area (RSA) is established to evaluate effects of the Project on vegetation on a landscape scale. Baseline data in the RSA also facilitates an assessment of potential cumulative effects of the Project on vegetation. The vegetation RSA is a 2-km-wide corridor centred on the pipeline route. The vegetation RSA for the Technical Boundary is 3,527.9 ha. The RSA also includes the Certified Pipeline Corridor, which is defined in the Certified Project Description, Schedule A of the EAC #E14-03.

4.0 GAP ANALYSIS – VEGETATION

Subsequent to the issuance of the EAC, the vegetation resources required verification or updating relating to ecological communities of concern, plant species of concern, and wetlands in the Technical Boundary.

In the 2015 COR1, Coastal GasLink prepared both a Vegetation TDR and Wetland TDR for field studies carried out for the scope of 2015 COR1 within the Technical Boundary.

The field data and results presented in the 2015 COR1 Wetland and Vegetation TDRs and in the 2019 COR2 Vegetation TDR together support the conclusions of the EAC Application and the EAO's Assessment Report that Project effects on the Vegetation Species of Concern Valued Component (VC), the Vegetation Ecological Communities of Concern VC, and the Wetland Function VC, are not significant, and that additional mitigation measures, over and above those included in the Environmental Management Plan, are not required.

The following sections summarize the data from the 2015 and 2019 field programs completed in the Technical Boundary for the Vegetation Species of Concern VC, the Vegetation Ecological Communities of Concern VC, and the Wetland Function VC, in a manner consistent with the AIR used for the EAC Application.

4.1 2015 COR1 TECHNICAL DATA REPORT SUMMARY

The 2015 COR1 covered a portion of the Technical Boundary between UTM 9U East 577769 North 6000758 and 9U East 594850 North 6008800 (Figure 1-1). Field survey methods and results are provided in the 2015 COR1 Wetland and Vegetation TDRs.

The 2015 COR1 Wetland TDR identifies the location and type of wetlands within the Technical Boundary study area (COR1 Wetland TDR, Section 3.1) and provides a summary of their ecological functions (COR1 Wetland TDR, Section 3.4).

For the purposes of the 2015 COR1 Wetland TDR (and the EAC Application, Wetland TDR), baseline wetland functions are inferred from the Terrestrial Ecosystem Mapping (TEM) product according to wetland class and association and are supported by wetland-related wildlife habitat surveys (Section 3.4.3 of the 2015 COR1 Wetland TDR).

The methods and results of the 2015 COR1 Wetland TDR are identical to those used in the Wetland TDR for the EAC Application and both field study programs were conducted in accordance with the baseline scope and methods described in the AIR, which support the verification of the environmental assessment conclusions on wetland functions within the Technical Boundary. The information on wetlands

provided in the 2015 COR1 Vegetation TDR (Section 3.2.1, p.15, Table 3-1) is reported in the context of vegetation communities, which are one of the key indicators for the Ecological Communities of Concern VC.

4.2 2019 COR2 TECHNICAL DATA REPORT SUMMARY

Based on 2015 COR1 results, field data was sufficient to adequately address wetland-specific information needs for the Technical Boundary. However, Coastal GasLink identified a data gap for the Vegetation Species of Concern VC that was not fully addressed in 2015, and therefore an additional rare plant survey was undertaken in 2019 to fill the data gap.

To address the gap, the 2019 COR2 Vegetation TDR covered the portion of the Technical Boundary between 9U East 611335 North 6003957 and 9U East 594850 North 6008800 (Figure 1-1). The 2019 COR2 Vegetation TDR describes the objectives, study area boundaries, traditional ecological knowledge, methodology, and results specific to the gap.

4.3 2020 COR2 TECHNICAL DATA REPORT

The purpose of this 2020 COR2 Vegetation TDR is to present a summary of the information from baseline EAC TDR(s), and the 2015 COR1 and 2019 COR2 data, in one consolidated report. This 2020 COR2 Vegetation TDR presents the methods used to evaluate the baseline conditions for Vegetation. The results of this report will be used with data previously gathered for the 2014 EAC Application to either verify the environmental effects assessment conclusions, or update the environmental effects assessment conclusions, as required by EAC Condition 1.

This 2020 COR2 Vegetation TDR provides an overview of vegetation resources within the Technical Boundary, including a summary of ecological communities present, provincially and federally listed plant species at risk, invasive plant species, and those plant assemblages considered important in the Morice and Kalum Land and Resource Management Plans (LRMPs).

5.0 TRADITIONAL ECOLOGICAL KNOWLEDGE

Coastal GasLink offered Aboriginal groups with an interest in the reduced Technical Boundary the opportunity to participate in biophysical field investigations and contribute Aboriginal Traditional Knowledge (ATK) as part of Coastal GasLink's biophysical field investigations in the Technical Boundary in accordance with the Project's AIRs. ATK considers both Traditional Use Studies (TUS) and Traditional Ecological Knowledge (TEK). Aboriginal groups with an interest in the Project area completed TUS within the reduced Technical Boundary study area; these studies were considered in the Environmental Assessment Certificate (EAC) Application effects assessment. Some Aboriginal groups chose not to conduct TUS for the Project and provided information directly to the BC Environmental Assessment Office (EAO) instead. To satisfy the intent of EAC Condition 1, Coastal GasLink therefore focused on collecting TEK in the reduced Technical Boundary in locations where TEK had not been previously gathered during the 2015 field program. CH2M HILL Canada Limited (Jacobs) was commissioned to facilitate the participation of potentially affected Aboriginal groups during the biophysical field work for the Project within the reduced Technical Boundary.

On May 24, 2019, Coastal GasLink sent letters inviting the following Aboriginal groups with an interest in the reduced Technical Boundary study area to participate in the baseline field program:

- Dark House;
- Nee-Tahi-Buhn Band;
- Office of the Hereditary Chiefs of the Wet'suwet'en;
- Skin Tyee Nation;
- Witset First Nation (previously Moricetown Indian Band); and
- Wet'suwet'en First Nation.

For the 2019 field program within the reduced Technical Boundary, TEK was provided by community members from Witset First Nation (previously Moricetown Indian Band), Skin Tyee Nation and Wet'suwet'en First Nation. Participants from Dark House and Office of the Hereditary Chiefs of the Wet'suwet'en were invited to participate through a third-party Aboriginal contractor. These participants attended the field studies but did not participate on behalf of the Office of the Hereditary Chiefs of the Wet'suwet'en and Dark House, and they did not provide TEK. Nee-Tahi-Buhn Band chose not to participate in the 2019 field program.

5.1 TRADITIONAL ECOLOGICAL KNOWLEDGE FIELD SURVEY OBJECTIVES

Aboriginal participation objectives during the biophysical field programs (*i.e.*, the fish and fish habitat field program, the pond-dwelling amphibian survey, and the rare plant vegetation field surveys) were as follows:

- document the TEK of Aboriginal participants who choose to share it;
- supplement the field survey design and execution;
- confirm 2019 TEK field program findings align with TEK previously collected (*i.e.* prior to 2019) as part of the Project;
- identify potential adverse effects of the reduced Technical Boundary on environmental and TEK resources; and,
- integrate TEK into mitigation development to manage environmental effects.

Key issues and concerns previously identified by Aboriginal groups during preliminary engagement in 2013 and throughout field surveys in 2014, 2015, and 2016 overlap with concerns raised during the 2019 field surveys for the reduced Technical Boundary. Coastal GasLink's responses to the issues and concerns previously raised were submitted in 2013 to Aboriginal groups and are available in Section 23 of the original EAC Application submitted in March 2014, as well as in the Aboriginal Consultation Reports that have been filed for the Project. Additional issues or concerns raised during participation on subsequent Project field surveys have been considered in Project planning, including the development of management plans to satisfy the Project's EAC conditions.

Coastal GasLink conducted a comprehensive review of recommended mitigation measures and any interests and concerns raised by each Aboriginal group who participated in the 2019 field program for the reduced Technical Boundary.

5.2 SUMMARY OF PARTICIPATION

Aboriginal field survey participation for the reduced Technical Boundary was conducted between July 15 and 20, 2019. Table 5-1 summarizes Aboriginal group participation in the fish and fish habitat field program, the pond-dwelling amphibian survey, and the rare plant vegetation field surveys. TEK collected in the field was compiled into a memorandum (results review memos) that was sent to Aboriginal groups for review and accuracy. TEK information collected by Jacobs facilitators was compiled and provided to communities on the dates outlined in Table 5-1.

Table 5-1: 2019 Aboriginal Group Field Survey Participation in the Reduced Technical Boundary

Aboriginal Group	Fish and Fish Habitat	Rare Plants	Pond-Dwelling Amphibians	Results Review Memos Sent
Dark House	July 19, 2019	July 18, 2019 July 20, 2019	July 18, 2019 July 20, 2019	No TEK collected
Skin Tyee Nation	July 19, 2019	July 18, 2019 July 20, 2019	July 16, 2019	August 2, 2019
Witset First Nation	July 20, 2019	July 16, 2019	July 18, 2019 July 19, 2019	August 2, 2019
Office of the Hereditary Chiefs of the Wet'suwet'en	July 20, 2019	July 16, 2019	July 16, 2019	No TEK collected
Wet'suwet'en First Nation	July 20, 2019	July 16, 2019	July 18, 2019 July 19, 2019	August 7, 2019
Wet'suwet'en community members attended biophysical field studies, as facilitated through a third-party Aboriginal contractor but did not participate on behalf of Office of the Hereditary Chiefs of the Wet'suwet'en or Dark House.				

6.0 METHODOLOGY

The methods used in gathering additional baseline information to support the assessment of potential effects of the Project are the same as those used in Coastal GasLink's EAC Application. The process of selecting key indicators and conducting an existing data and literature review remain unchanged.

6.1 ENVIRONMENTAL SETTING

The baseline condition of vegetation in the Technical Boundary was determined using desktop studies, terrestrial ecosystem mapping and field surveys. The Technical Boundary is at the western boundary of the Central Interior Ecoprovince of BC. The Central Interior is generally characterized by flat topography and distinct seasons; however, the Technical Boundary encompasses the foothills on the eastern side of the Coast Mountains.

The climate on the leeward side of the Coast Mountains is characterized by cold winters, warm summers, and a rainy season during the late spring and early summer months. Precipitation is reduced relative to the coast because the Central Interior is in the rain shadow of the Coast Mountains. Arctic air moves into the ecoprovince during the winter and often is trapped and stalls in the narrow valleys of the Central Interior. Rain showers are common in the region during the summer.

The Project crosses two biogeoclimatic (BGC) zones: the Sub-Boreal Spruce (SBS) and Engelmann Spruce – Subalpine Fir (ESSF). The SBS is characterized by a continental climate. The SBS features long, cold winters and moderate growing seasons. Precipitation in the SBS can be as low as 400 mm and as high as 1,650 mm per annum, with the wetter portions of the SBS being considered a part of BC's Interior Wet Belt (Meidinger and Pojar 1991). The Babine Moist Cold Sub-Boreal Spruce subzone-variant (SBSmc2) falls within the Technical Boundary.

The ESSF is characterized by a relatively cold, moist, and snowy continental climate, typically occurring at higher elevations above other BGC zones, and below true alpine areas (Meidinger and Pojar 1991). Within the Technical Boundary, the ESSF is represented by the Moist Cold Engelmann Spruce-Subalpine Fir (ESSFmc) subzone.

Ecological communities with the potential to occur in the Project area, identified through TEM, have been grouped into eight broad categories based on vegetation type, structure, topography, and anthropogenic influence. These categories include upland forest, wetlands, floodplains, non-forested, non-vegetated, grassland, alpine/subalpine, and anthropogenic.

Upland forest includes all forests not considered to be a wetland or floodplain. Wetlands for this report include bogs, fens, swamps, marshes, and shallow open water. These ecosystems have water-saturated soils that support hydrophytic vegetation and are saturated for sufficient periods during the growing season to preclude the development of upland ecosystems (MacKenzie and Moran 2004). Although wetland ecosystems are reported in this 2020 COR2 Vegetation TDR in the context of vegetation communities, additional information about wetlands can be found in the 2015 COR1 Wetlands TDR.

Floodplains are riparian ecosystems, which experience regular inundation or subsurface flow in the rooting zone, and generally occur on coarse-textured soils. They are maintained by annual flooding, erosion, and deposition processes. Typical vegetation includes tall shrub communities on low bench communities, deciduous forests on mid-bench communities, or coniferous forest on high bench communities (MacKenzie and Moran 2004).

Non-forested ecosystems include avalanche tracks, which are not considered upland forest or floodplains, but rather typically consist of shrub-dominated communities or communities dominated by early seral deciduous tree species (MacKenzie 2012). Non-vegetated units are areas that have sparse or no vegetation growing, including gravel bars, rivers, lakes, talus, rock outcrops, ponds, permanent snow, mudflats, and other similar features (MacKenzie 2012).

Grasslands are ecosystems dominated by grasses or low shrubs where the sites are too dry for tree establishment (MacKenzie 2012). Anthropogenic units include rural areas, transmission lines, gravel pits, cultivated fields, pastures, roads, pipelines, reservoirs, urban areas, and railways.

6.2 DEFINITIONS

The vegetation resources described in this report include:

- ecological communities of concern; and
- plant species of concern.

Ecological communities of concern within the Technical Boundary include the full range of ecosystems identified by TEM, including native vegetation communities, ecological communities at risk, old forest, Old Growth Management Areas (OGMAs), deciduous-dominated forests, alpine and subalpine areas, and grasslands.

Ecological communities at risk are defined as plant communities that are listed on the provincial red or blue lists maintained by the BC Conservation Data Centre (BC CDC 2013). Where wetland ecosystems are red- or blue-listed, they are included within this report; however, their potential to provide habitat for at-risk communities is discussed

in more detail in the 2015 COR1 Wetlands TDR. The *Species at Risk Act (SARA)* does not track ecological communities at risk.

Other ecological communities of concern include old forests and certain communities identified as conservation priorities within the LRMPs that overlap with the vegetation RSA of the Technical Boundary. These communities include old forest, deciduous-dominated forests, alpine and subalpine areas, and grasslands. For the purpose of this 2020 COR2 Vegetation TDR, riparian areas include floodplains and are discussed in the 2015 COR1 Wetlands TDR.

Old forest is determined according to the natural disturbance type of each given BGC zone in accordance with the Field Manual for Describing Terrestrial Ecosystems (B.C. Ministry of Forests and Range and B.C. Ministry of Environment 2010). OGMA, a component of old forest, are areas that either contain or will attain old-growth attributes. There are two types of OGMA: legal and non-legal. Legal OGMA must be incorporated into a forest stewardship plan by forest licensees. Forest licensees are not required to incorporate non-legal OGMA into a forest stewardship plan, if they can achieve targets in other ways (Forest Practices Board 2012).

Grasslands were determined based on their site series and the dominance of grasses in the climax community.

Plant species of concern include species at risk, non-native invasive species, and traditionally important species. Plant species at risk include vascular and non-vascular species (bryophytes and lichens) that are listed on the provincial red or blue lists developed and maintained by the BC CDC or on Schedule 1 of *SARA* (BC CDC; Government of Canada 2013, respectively).

Non-native invasive plant species are those defined by the *Weed Control Act* and associated regulations, as well as the Northwest Invasive Plant Council (Government of British Columbia 2011). Invasive plant species can negatively affect the integrity of natural plant communities once established.

Traditionally important species are plant species that have been used for a variety of uses such as medicine, ceremony, food, or fiber by the Aboriginal groups whose traditional territories are crossed by the Project.

6.3 REVIEW OF EXISTING DATA SOURCES AND LITERATURE

A desktop review of existing data sources and literature pertaining to vegetation resources in the RSA included:

- provincially available datasets such as the Broad Ecosystem Inventory (BEI), the BC CDC, and the Vegetation Resources Inventory (VRI);
- published literature including topographic maps, aerial photography, scientific papers, and reference books, as well as provincial and federal government maps and registries, reports, interactive websites, guides, information letters, and fact sheets; and
- results of engagement with Aboriginal communities, local communities and land users, landowners, local and regional governments, federal and provincial government agencies and the general public.

Existing data were obtained by searching libraries and the Internet, as well as from documents received directly from government agencies. The complete list of references used in the preparation of the baseline information can be found in the EAC Application (Section 4.4).

Ecological communities at risk with the potential to occur in the RSA were identified using the BC CDC's Ecosystems Explorer tool (BC CDC 2019). All rare ecological communities (red- or blue-listed) were searched by BGC subzones (SBSmc2 and ESSFmc) for the potential to occur in the vegetation RSA and are summarized in Appendix C.2.

Old forests were mapped in the vegetation RSA prior to fieldwork based on data available publicly through the VRI (MFLNRO 2013). The VRI provides average stand age for the leading and secondary canopy species. Based on this age value for each polygon, a query was performed to identify stands that were potentially old forest, using the appropriate criteria (either >140 years or >250 years) based on the Natural Disturbance Type in each BGC zone (i.e., SBSmc2, ESSFmc). These stands were mapped in the vegetation field atlas and targeted during site visits.

Plant species at risk that could occur in the RSA were identified using the BC CDC Ecosystems Explorer tool (BC CDC 2015), and by referring to the list of SARA-designated plants. Rare plant species with the potential to occur in the RSA are summarized in Appendix C.3.

Prior to fieldwork, non-native invasive plant species with the potential to occur in the RSA were identified based on the *Weed Control Act* and associated regulations and regional Invasive Plant Councils (Government of BC 2011; Appendix C.4). The Northwest Invasive Plant Council oversees the weed management within the areas of the pipeline route and their listings identify regionally specific weeds. In some

instances, the invasive species overlap with the provincial list, but species noted on either list will be managed during all phases of the Project, if found along the ROW.

Background information on the native vegetation communities within the RSA was compiled prior to field work to aid in sample design and compiling a field atlas. Projected on top of orthophoto aerial imagery, these datasets were utilized to acquire the following vegetation information:

- VRI (MFLNRO 2013) is a 1:20,000 scale dataset containing attributed polygons with information on stand composition, age, condition, pathology, etc.
- Land and Resource Data Warehouse (LRDW) (Government of British Columbia ILMB 2013) is a spatial data warehouse providing digital files of various roads, BGC unit boundaries, etc.

6.4 TERRESTRIAL ECOSYSTEM MAPPING

The vegetation RSA delineates the TEM extent for this assessment. Before fieldwork was completed, the vegetation RSA was mapped at a scale of 1:20,000 using three-dimensional orthographic photographs. TEM consists of a hierarchical coding for polygons based on topography, slope position, parent material, soils, and vegetation present. This map was informed by existing data sources, such as Vegetation Resource Inventory, as well as reconnaissance field trips, combined with the visual interpretation of the landscape. TEM was subsequently verified by field studies to confirm the mapping.

All TEM work was completed in accordance with the Standard for Terrestrial Ecosystem Mapping (Resource Inventory Committee 1998), with the aid of Land Management Handbooks produced by the BC MOF to guide in classifying ecosystems, and plant guides to assist in identifying plant species.

6.5 FIELD SURVEYS

Baseline vegetation abundance and distribution were assessed through site visits conducted from 2012 to 2019 where access was allowed. The objectives of sampling were to:

- ground-truth TEM map;
- inform map edits;
- characterize the existing vegetation in the vegetation RSA;
- identify ecological communities at risk;
- identify old forests;
- identify plant species of concern;

- identify traditionally important plant species; and
- identify non-native invasive plant species.

Survey Intensity Level 4 (SIL 4) was followed according to TEM standards within the Project vegetation RSA. The TEM was validated for reliability through field surveys completed both within and outside the Technical Boundary. Three types of TEM plots were used for this purpose: detailed, ground inspection, and visual plots. Detailed and ground inspection plots each cover 400 m² and provide detailed vegetation and environmental site characterization. As well, aerial and ground visual plots were also completed and contain observations of soil moisture, nutrient regime, and dominant vegetation species sufficient to determine the BGC and site unit.

As per provincial standards, the target ratio of detailed: ground inspection: visual plots is 5:20:75 for the RSA of the entire Project route. Within the vegetation RSA of the Technical Boundary, the resulting plot distribution ratio was 3:75:22 (one detailed plot, 24 ground inspection plots, and seven visual plots). The 2014 EAC Application (Coastal GasLink 2013) achieved the target SIL and plot detail ratio; however, the subset of the data presented for the Technical Boundary in this 2020 COR2 Vegetation TDR is weighted more towards ground inspection plots. In other words, more quantitative field data was collected in the Technical Boundary than is required to meet SIL 4 standards, overall the TEM for the entire Project route is produced in accordance with standards cited in the AIR for the EAC Application. As such, the TEM supports vegetation-related analyses to address EAC Condition #1 in accordance with standards and methods cited in the AIR for the EAC Application.

Typical data collected at each field survey site included:

- site descriptors such as aspect, coordinates, elevation, and slope position;
- plant species list and percent cover;
- stand age;
- soil moisture and nutrient properties;
- soil structure;
- ecosystem classification;
- identification of plant species of concern (if present);
- old forest determination;
- non-native invasive plant species identification (if present); and
- traditional important species identification.

Baseline wetland functions are inferred from the TEM product according to wetland class and association and are supported by wetland-related wildlife habitat surveys (Section 3.4.3 of the 2015 COR1 Wetlands TDR). The methods of the 2015 COR1 Wetlands TDR are identical to those used in the Wetland TDR for the EAC Application and both field study programs were conducted in accordance with the baseline scope and methods described in the AIR.

The 2019 rare plant field program was completed from July 16 to July 20, 2019 within the previously inaccessible part of the Technical Boundary. The vegetation RSA of the Technical Boundary is located at a relatively high elevation in the Sub-Boreal Spruce moist cold (SBSmc) and Engelmann Spruce - Subalpine Fir moist cool and moist cold (ESSFmk and ESSFmc) biogeoclimatic subzones which average approximately 900 m elevation above sea level, so the growing season and flowering period is relatively short (e.g., eight to ten weeks) due to snow that may occur into late June/early July. Given this, the potential rare plant flowering period may only exist until late August; therefore, a focused rare plant survey was planned, and carried out, during the third week of July to capture the peak of summer. Sampling at this time, as stated by Penny and Klinkenberg (2018), “maximizes the likelihood of detection”. Further, Penny and Klinkenberg (2018) point out that, “flowering plant species are more easily noticed during their flowering period, with a reduction in detection once flowering is past”. This approach is also consistent with the 2012 Alberta Native Plant Council (ANPC) Guidelines for Rare Vascular Plant Surveys in Alberta which is referenced by Penny and Klinkenberg (2018). The 2019 rare plant field program within the Technical Boundary was the only field assessment outstanding from the 2015 COR1 TDR.

Old forest was determined by structural stage in forested ecosystems assigned in the TEM and validated during field surveys.

Non-native invasive plant species were assessed during the TEM vegetation surveys.

6.6 LIMITATIONS OF STUDY

Two main limitations exist for the vegetation studies: the practicality of sampling every mapped polygon and the inherent possibility of concluding the absence of an ecological community at risk or species of concern based on a lack of observation.

In a large study area like the vegetation RSA of the Technical Boundary (3,527.9 ha), it is not feasible to visit each polygon because of the vastness of the landscape. This limitation introduces the possibility of error in determining the extent of all vegetation communities present. In any study, a lack of observation does not conclusively indicate lack of presence. Consequently, there is a possibility of incorrectly concluding that an at-risk element is not present, creating a false negative. This potential for error is mitigated, in part, by targeting ground-based surveys more intensively within the LSA and project footprint (where potential environmental

effects are most likely to occur); and using field observations to refine mapped polygons that were not previously verified in the field.

7.0 RESULTS

The results for the 2019 COR2 portion of the Technical Boundary (Figure 1-1) are summarized below in Sections 7.1 and 7.2. Also Figure 7-1 displays the baseline information with the Technical Boundary.

7.1 EXISTING INFORMATION

7.1.1 Native Vegetation Communities

The SBSmc2 subzone covers 510.3 ha in the LSA (96% of the LSA) and 3,241.0 ha in the RSA (93% of the RSA). The ESSFmc subzone covers 21.2 ha in the LSA (4% of the LSA) and 257.0 ha in the RSA (7% of the RSA). Following the TEM, a total of 14 native vegetation communities were identified within the LSA, and 17 native vegetation communities were identified in the RSA (Table 3-1 below).

7.1.2 Ecological Communities of Concern

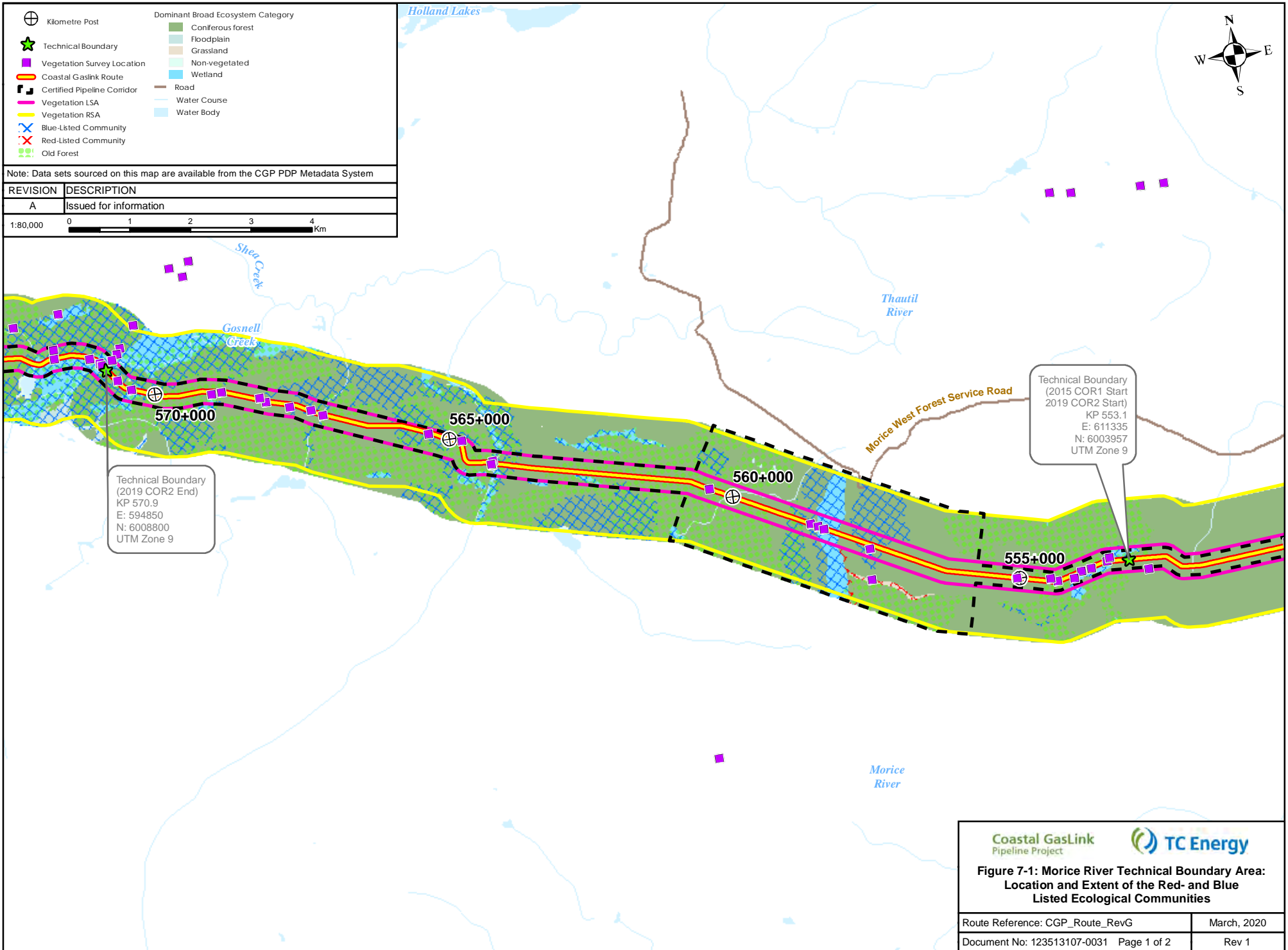
A total of 11 ecological communities at risk were identified by the BC CDC as associated with the BGC subzones (SBSmc2 and ESSFmc) within the vegetation RSA of the Technical Boundary (Appendix C.2).

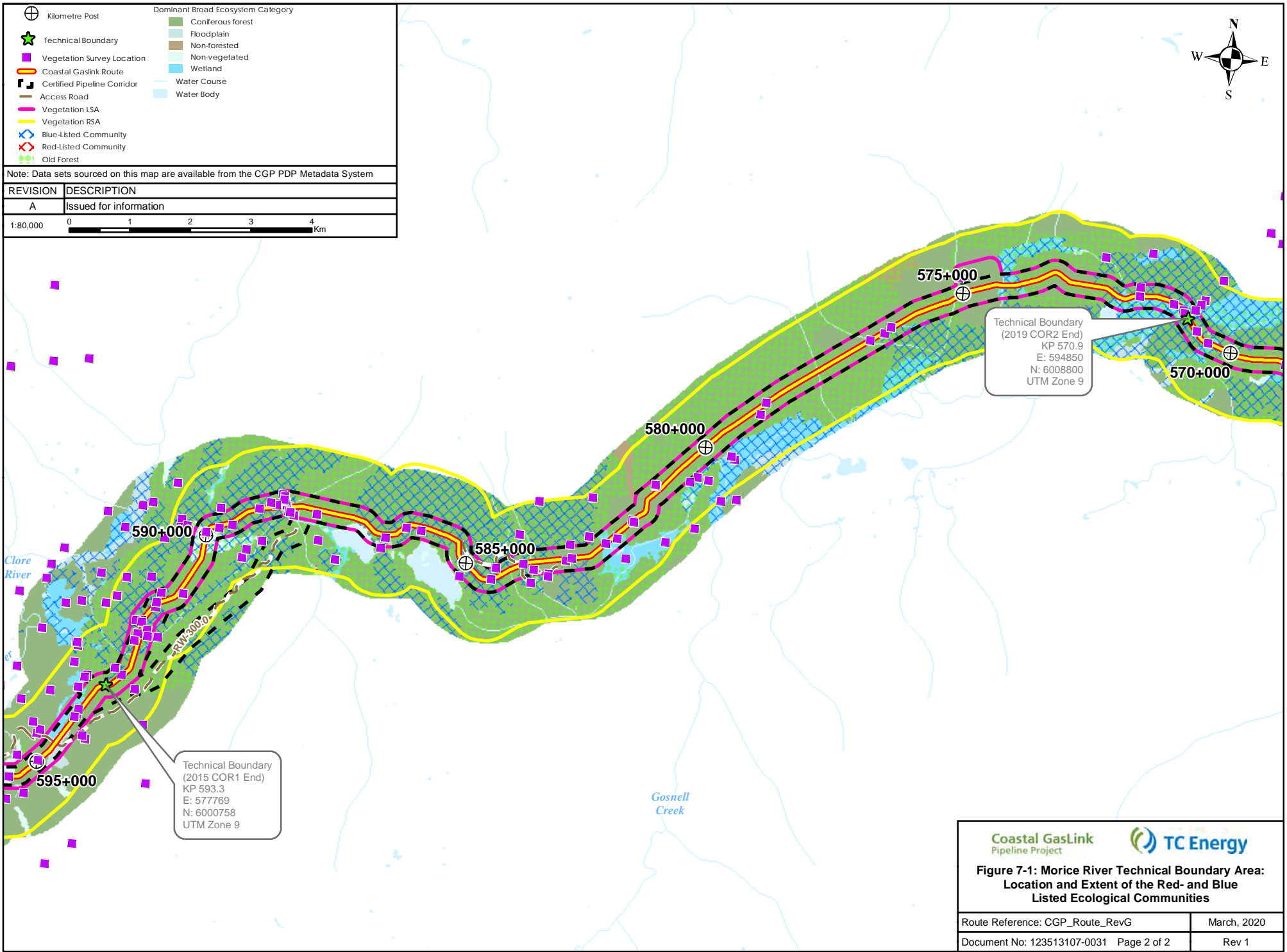
7.1.3 Plant Species at Risk

The BC CDC lists 111 potential plants with a status of red or blue as associated with the BGC zones (SBS and ESSF) within the Technical Boundary (Appendix C.3). Of these, one species is listed on Schedule 1 of SARA – whitebark pine (*Pinus albicaulis*); however, this species was not detected within the Technical Boundary as part of pre-construction assessment for the Project.

7.1.4 Non-native Invasive Plant Species

Non-native invasive plant species lists were compiled from the Northwest Invasive Plant Council, the BC *Weed Control Act* and regulations. A total of 101 plant species have been identified as high priority for management.





7.2 BASELINE VEGETATION OF THE MORICE RIVER TECHNICAL BOUNDARY AREA

7.2.1 Native Vegetation Communities

Data from 32 sample plots visited during field surveys were used to support the TEM of the RSA within the Technical Boundary. The mapped vegetation communities are summarized in Table 7-1 below and are also shown in Figure 7-1. The most abundant ecosystem was the zonal hybrid white spruce/huckleberry association, covering 382.9 ha in the LSA (72% of the LSA) and 2,258.0 ha in the RSA (64% of the RSA). The most common broad ecosystem type was upland forest (459.4 ha in the LSA and 3,006.3 ha in the RSA), followed by wetlands (68.0 ha in the LSA and 440.0 ha in the RSA). Thus, wetlands cover 13% of both the LSA and the RSA. Four types of disturbances were recorded within the vegetation RSA of the Technical Boundary, including facilities, secondary and tertiary roads and cutblocks. The area within these disturbances is not included in the summaries of vegetation below.

Table 7-1: Mapped Vegetation Communities within the Morice River Technical Boundary Area Study Areas

BGC Zone	Site Series	Map Code	Ecosystem Name	Area in LSA (ha)	Area in RSA (ha)
Upland Forests					
ESSFmc	01	FB	subalpine fir / huckleberry / leafy liverwort	9.6	106.1
ESSFmc	03	FC	subalpine fir / huckleberry / crowberry	-	16.0
ESSFmc	04	HH	subalpine fir / huckleberry / curly heron's-bill	3.4	63.7
ESSFmc	06	FO	subalpine fir / oak fern/ heron's-bill mosses	1.6	18.4
ESSFmc	07	FD	subalpine fir / devil's club / lady fern	0.4	41.8
SBSmc2	01	SB	hybrid white spruce / huckleberry	382.9	2,258.0
SBSmc2	02	PH	lodgepole pine / huckleberry / cladonia		9.6
SBSmc2	03	BM	black spruce - lodgepole pine / feathermoss	15.6	123.0
SBSmc2	05	TC	hybrid white spruce / black twinberry / sweet coltsfoot	10.7	28.4
SBSmc2	06	SO	hybrid white spruce / oak fern	21.7	148.3
SBSmc2	07	BF	hybrid white spruce / scrub birch / feathermoss	10.8	113.0
SBSmc2	08	ST	hybrid white spruce / twinberry / oak fern	1.8	14.2
SBSmc2	09	SD	hybrid white spruce / devil's club	0.8	65.8
Total upland forests				459.4¹	3,006.3

Table 7-1: Mapped Vegetation Communities within the Morice River Technical Boundary Area Study Areas

BGC Zone	Site Series	Map Code	Ecosystem Name	Area in LSA (ha)	Area in RSA (ha)
Wetlands					
Bogs					
ESSFmc	Wb09	BH	black spruce / common horsetail / peat moss bog	1.8	3.1
SBSmc2	Wb05	SS	black spruce / water sedge / peat moss bog	4.5	21.3
Subtotal bogs				6.4	24.4
Fens					
ESSFmc	Wf01	SE	water sedge - beaked sedge fen	2.4	4.0
SBSmc2	Wf01	FS	water sedge - beaked sedge fen	2.2	58.6
ESSFmc	Wf02	WS	scrub birch / water sedge fen		0.2
SBSmc2	Wf02	LS	scrub birch / water sedge fen	6.4	40.1
SBSmc2	Wf06	BQ	slender sedge – buckbean		<0.1
Subtotal fens				11.0	103.0
Marshes					
SBSmc2	Wm01	BK	beaked sedge - water sedge marsh		0.5
Subtotal marshes					0.5
Shallow open water					
Subtotal shallow open water				2.6	4.3
Swamps					
SBSmc2	Ws02	WF	mountain alder / hardhack / Sitka sedge	1.1	13.8
SBSmc2	Ws03	BB	Bebb's willow / bluejoint reedgrass swamp	2.2	4.0
SBSmc2	Ws04	WS	Drummond's willow / beaked sedge swamp		0.6
SBSmc2	Ws07	SH	hybrid white spruce / horsetails / leafy moss swamp	42.9	285.7
ESSFmc	Ws08	FH	subalpine fir / Sitka valerian / common horsetail swamp	1.8	3.7
Subtotal swamps				48.0	307.8
Total wetlands				68.0	440.0
Grasslands					
SBSmc2	81/Gg	SW	Saskatoon / slender wheatgrass	<0.1	0.7
Total grasslands				<0.1	0.7
Other vegetated ecosystems					
SBSmc2	FI05	DB	Drummond's willow / bluejoint reedgrass low-bench floodplain	0.7	21.8
SBSmc2	Vs	AF	avalanche shrub	0.2	5.5
Total other vegetated ecosystems				0.9	27.3

Table 7-1: Mapped Vegetation Communities within the Morice River Technical Boundary Area Study Areas

BGC Zone	Site Series	Map Code	Ecosystem Name	Area in LSA (ha)	Area in RSA (ha)
Non-vegetated					
SBSmc2	00	CB	cutbank	0.1	0.9
SBSmc2	00	GB	gravel bar	0.4	3.9
SBSmc2	00	GP	gravel pit	0.5	1.1
SBSmc2	00	PD	pond		4.4
SBSmc2	00	RI	river	2.1	13.4
Total non-vegetated				3.1	23.7
Total				531.5	3,498.0²
<i>Note.</i>					
¹ Any area discrepancies are due to rounding ² Total reflects the mapped area within the RSA					

7.2.2 Ecological Communities at Risk

One red-listed and four blue-listed ecological communities at risk were identified in the vegetation RSA within the Technical Boundary (Table 7-2). The Saskatoon / slender wheatgrass grassland is the only red-listed ecological community; it covers less than 0.1 ha within the LSA and 0.7 ha within the RSA. Scrub birch / water sedge fen, Slender sedge – buckbean fen, Bebb’s willow / bluejoint reedgrass swamp, and Drummond’s willow – bluejoint flood association are blue-listed ecological communities; they cover 9.3 ha in the LSA and 66.1 ha in the RSA.

In total, listed communities cover 9.3 ha in the LSA (1.7% of the LSA) and 66.8 ha in the RSA (1.9% of the RSA).

Table 7-2: Ecological Communities at Risk in the Morice River Technical Boundary Area Study Areas

BGC Unit	Site Series	Map Code	Ecosystem Name	Area in LSA (ha)	Area in RSA (ha)
Red-listed ecological communities					
SBSmc2	81/Gg	SW	Saskatoon / slender wheatgrass	<0.1	0.7
Subtotal red-listed ecological communities				<0.1	0.7
Blue-listed ecological communities					
SBSmc2	F105	DB	Drummond's willow / bluejoint reedgrass low-bench floodplain	0.7	21.8
SBSmc2	Wf02	LS	scrub birch / water sedge fen	6.4	40.1
ESSFmc	Wf02	WS	scrub birch / water sedge fen	-	0.2
SBSmc2	Wf06	BQ	slender sedge – buckbean fen	-	<0.1
SBSmc2	Ws03	BB	Bebb's willow / bluejoint reedgrass swamp	2.2	4.0
Subtotal blue-listed ecological communities				9.3	66.1
Total listed ecological communities				9.3	66.8

7.2.3 Old Forest

A total of 140.7 ha and 1,164.6 ha of old forest were identified within the vegetation LSA or RSA of the Technical Boundary respectively. Specific ecosystems that comprise old forest within the Technical Boundary are summarized in Table 7-3. The most abundant old forest ecosystem was the SBSmc2/01 site association (hybrid white spruce / huckleberry), covering 96.8 ha in the LSA and 545.9 ha in the RSA.

Table 7-3: Old Forest within the Morice River Technical Boundary Area Study Areas

BGC Zone	Site Series	Map Code	Ecosystem Name	Area in LSA (ha)	Area in RSA (ha)
ESSFmc	01	FB	subalpine fir / huckleberry / leafy liverwort	4.5	61.2
ESSFmc	03	BM	subalpine fir / huckleberry / crowberry	-	13.1
ESSFmc	04	HH	subalpine fir / black huckleberry / curly heron's-bill	2.5	62.5
ESSFmc	06	FO	subalpine fir / oak fern/ heron's-bill mosses	1.6	18.4
ESSFmc	07	FD	subalpine fir / devil's club / lady fern	<0.1	35.0
ESSFmc	Wb09	BH	black spruce / common horsetail / peat moss bog	1.8	3.1
ESSFmc	Ws08	FH	subalpine fir / Sitka valerian / common horsetail swamp	1.8	3.7
Subtotal ESSFmc				12.3	197.0

Table 7-3: Old Forest within the Morice River Technical Boundary Area Study Areas

BGC Zone	Site Series	Map Code	Ecosystem Name	Area in LSA (ha)	Area in RSA (ha)
SBSmc2	01	SB	hybrid white spruce / huckleberry	96.8	545.9
SBSmc2	03	BM	black spruce - lodgepole pine / feathermoss	0.8	32.8
SBSmc2	05	TC	hybrid white spruce / black twinberry / sweet coltsfoot	4.7	14.4
SBSmc2	06	SO	hybrid white spruce / oak fern	2.7	44.2
SBSmc2	07	BF	hybrid white spruce / scrub birch / feathermoss	3.8	96.1
SBSmc2	09	SD	hybrid white spruce / devil's club	0.7	62.5
SBSmc2	Wb05	SS	black spruce / water sedge / peat moss bog	<0.1	13.4
SBSmc2	Ws07	SH	hybrid white spruce / horsetails / leafy moss swamp	18.9	158.2
Subtotal SBSmc2				128.4	967.6
Total				140.7	1,164.6

7.2.4 Old Growth Management Areas

There are both legal and non-legal OGMA's within the vegetation LSA or RSA of the Technical Boundary; they total 146.6 ha in the LSA and 1,003.3 ha in the RSA (Table 7-4).

Table 7-4: Old Growth Management Areas in the Morice River Technical Boundary Area Study Areas

OGMA Type	Area in LSA (ha)	Area in RSA (ha)
Legal	78.3	506.1
Non legal	68.3	497.2
Total	146.6	1,003.3

7.2.5 Grasslands

One grassland association (saskatoon / slender wheatgrass) with an area of less than 0.1 ha in the LSA and 0.7 ha in the RSA is present within study areas of the Technical Boundary.

7.2.6 Morice Land and Resource Management Plan Community of Concern

The Morice LRMP identified the ESSFmk/02 whitebark pine / cladonia lichens – curly heron's-bill upland forest as a community of concern. There were no occurrences of this community within the vegetation RSA of the Technical Boundary.

7.2.7 Plant Species at Risk

No plant species at risk were identified in the vegetation LSA or RSA of the Technical Boundary during 2019 field studies.

7.2.8 Invasive Plant Species

No invasive species listed provincially and/or regionally as noxious, ERRD (Early Detection and Rapid Response), extremely or very invasive (Appendix C.4) were identified within the vegetation LSA or RSA of the Technical Boundary during 2019 field studies.

8.0 KEY FINDINGS AND CONCLUSIONS

Baseline data on vegetation resources were collected to characterize the vegetation present in the Technical Boundary in support of the assessment of potential adverse effects of the Project on vegetation resources.

Key results and findings pertaining to vegetation resources are presented for vegetation LSA and RSA within the Technical Boundary and are as follows:

- most of the LSA is covered by upland forest, more than 80% of upland forest refer to the zonal hybrid white spruce/huckleberry association;
- wetlands are not abundant in the Technical Boundary covering 13% of the LSA and 13% of the RSA;
- one red-listed and four blue-listed ecological communities at risk were identified in the Technical Boundary, they cover 1.7% of the LSA and 1.9% of the RSA;
- no plant species at risk were identified within the vegetation LSA or RSA of the Technical Boundary during field surveys, including the 2019 rare plant survey; and
- no invasive species were identified within the vegetation LSA or RSA of the Technical Boundary during 2019 field studies.

There are no material differences between the baseline information reported in the EAC Application, 2015 COR1 TDR, the 2019 COR2 TDR, and the baseline information reported in this 2020 COR2 Vegetation TDR.

The 2015 COR1 and 2019 COR2 Vegetation TDRs and 2015 COR1 Wetlands TDR provided to EAO fully satisfy EAC Condition #1 regarding the collection of information, describing baseline conditions for vegetation, and wetlands within the Technical Boundary in a manner consistent with the AIR (Section 4.4) and EAC Application. Further, no new environmental effects are identified, and thus no new mitigation measures are required. As a result, the baseline data presented for the Technical Boundary support the conclusions of the EAC Application and the EAO's Assessment Report that Project effects on the three vegetation-related VCs are not significant.

9.0 REFERENCES

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Coastal GasLink Pipeline Project

Appendix C: Environmental Assessment

Certificate Condition 1

Vegetation Technical Data Report #2

Appendix C.1: Abbreviations and Acronyms

Appendix C.1: Abbreviations and Acronyms

Abbreviation or Acronym	Definition
AIR	Application Information Requirement
ANPC	Alberta Native Plant Council
BC	British Columbia
BC CDC	British Columbia Conservation Data Centre
BC MOF	British Columbia Ministry of Forests
BEI	Broad Ecosystem Inventory
BGC	Biogeoclimatic
Coastal GasLink	Coastal Gas Link Pipeline Ltd.
2015 COR 1	Environmental Assessment Certificate #E14-03 Condition 1 Report #1 (October 30, 2015)
2019 COR 2	Environmental Assessment Certificate #E14-03 Condition 1 Report #2 (November 19, 2019)
2020 COR2	Environmental Assessment Certificate #E14-03 Condition 1 Report #2 (July 17, 2020)
EA	Environmental Assessment
EAC	Environmental Assessment Certificate
EAC Condition 1	EAC E14-03 Schedule B Condition #1
EAO	Environmental Assessment Office
ESSF	Engelmann Spruce – Subalpine Fir
ESSFmc	Engelmann Spruce-Subalpine Fir moist-cool subzone
GIS	Geographical Information System
km	Kilometre
km ²	Square Kilometre
KP	Kilometre Post
LRDW	Land and Resource Data Warehouse
LRMP	Land and Resource Management Plans
LSA	Local Study Area
m	Metre
OGC	Oil and Gas Commission
OGMA	Old Growth Management Areas
ROW	Right-of-Way
RRA	Riparian Reserve Area
RSA	Regional Study Area
SARA	Species at Risk Act
SBS	Sub-Boreal Spruce
SBSmc2	Sub-Boreal Spruce moist-cool subzone-variant
SIL	System Intensity Level
TDR	Technical Data Report
Technical Boundary	Morice River Technical Boundary Area

Appendix C.1: Abbreviations and Acronyms

Abbreviation or Acronym	Definition
TEK	Traditional Ecological Knowledge
TEM	Terrestrial Ecosystem Mapping
UTM	Universal Transverse Mercator
VC	Valued Component
VRI	Vegetation Resources Inventory

Appendix C.2: Ecological Communities at Risk with the Potential to Occur in the RSA

Table C.2-1: Ecological Communities at Risk with the Potential to Occur in the RSA

Scientific Name	Common Name	Status	Realm (wetland class)
<i>Amelanchier alnifolia</i> / <i>Elymus trachycaulus</i>	Saskatoon / slender wheatgrass	Red	Grassland
<i>Betula nana</i> / <i>Carex aquatilis</i>	Scrub birch / water sedge	Blue	Wetland (fen)
<i>Carex lasiocarpa</i> / <i>Drepanocladus aduncus</i>	Slender sedge / common hook-moss	Blue	Wetland (fen)
<i>Carex limosa</i> – <i>Menyanthes trifoliata</i> / <i>Drepanocladus</i> spp.	Shore sedge – buckbean / hook-mosses	Blue	Wetland (fen)
<i>Eleocharis quinqueflora</i> / <i>Drepanocladus</i> spp.	Few-flowered spike-rush / hook-mosses	Red	Wetland (fen)
<i>Eriophorum angustifolium</i> – <i>Carex limosa</i>	Narrow-leaved cotton-grass / shore sedge	Blue	Wetland (fen)
<i>Picea mariana</i> / <i>Menyanthes trifoliata</i> / <i>Sphagnum</i> spp.	Black spruce / buckbean / peat-mosses	Blue	Wetland (bog)
<i>Pinus contorta</i> / <i>Carex pauciflora</i> / <i>Sphagnum</i> spp.	Lodgepole pine / few-flowered sedge / peat-mosses	Blue	Wetland (bog)
<i>Poa secunda</i> – <i>Elymus trachycaulus</i>	Sandberg's bluegrass – slender wheatgrass	Red	Grassland
<i>Scheuchzeria palustris</i> – <i>Sphagnum</i> spp.	Scheuchzeria / peat-mosses	Blue	Wetland (bog)
<i>Trichophorum alpinum</i> / <i>Scorpidium revolvens</i>	Hudson Bay clubrush / rusty hook-moss	Red	Wetland (fen)

Appendix C.3: Plant Species at Risk with the Potential to Occur in the RSA**Table C.3-1: Plant Species at Risk with the Potential to Occur in the RSA**

Scientific Name	Common Name	Status
<i>Acorus americanus</i>	American sweet-flag	Blue
<i>Androsace chamaejasme ssp. lehmanniana</i>	sweet-flowered fairy-candelabra	Blue
<i>Arnica longifolia</i>	seep-spring arnica	Blue
<i>Atrichum tenellum</i>	-	Red
<i>Aulacomnium acuminatum</i>	-	Blue
<i>Bartramia halleriana</i>	Haller's apple moss	Red
<i>Botrychium campestre var. lineare</i>	Linear-leaf moonwort	Blue
<i>Brachythecium holzingeri</i>	-	Blue
<i>Brachythecium reflexum var. pacificum</i>	-	Red
<i>Bryum blindii</i>	-	Blue
<i>Bryum calobryoides</i>	-	Red
<i>Bryum gemmiparum</i>	-	Blue
<i>Cacaliopsis nardosmia</i>	silvercrown	Red
<i>Campylium calcareum</i>	-	Red
<i>Carex bicolor</i>	two-coloured sedge	Blue
<i>Carex epapillosa</i>	blackened sedge	Blue
<i>Carex paysonis</i>	Payson's sedge	Red
<i>Carex scopulorum var. prionophylla</i>	saw-leaved sedge	Blue
<i>Cladonia decorticata</i>	strip-tease pixie	Blue
<i>Cladonia luteoalba</i>	lemon pixie	Blue
<i>Claytonia cordifolia</i>	heart-leaved springbeauty	Blue
<i>Crepis acuminatasp. acuminata</i>	long-leaved hawksbeard	Red
<i>Crepis atribarbasp. atribarba</i>	slender hawksbeard	Blue
<i>Crepis occidentalis ssp. conjuncta</i>	western hawksbeard	Blue

Table C.3-1: Plant Species at Risk with the Potential to Occur in the RSA

Scientific Name	Common Name	Status
<i>Delphinium bicolor ssp. bicolor</i>	Montana larkspur	Blue
<i>Dendroscosticta wrightii</i>	greater green moon	Red
<i>Didymodon rigidulus var. icmadophilus</i>	-	Blue
<i>Didymodon subandreaeoides</i>	-	Red
<i>Drosera linearis</i>	slender-leaf sundew	Blue
<i>Encalypta brevipes</i>	-	Blue
<i>Encalypta spathulata</i>	-	Blue
<i>Epilobium saximontanum</i>	Rocky Mountain willowherb	Blue
<i>Eriogonum androsaceum</i>	androsace buckwheat	Blue
<i>Evernia divaricata</i>	mountain oakmoss	Blue
<i>Fissidens ventricosus</i>	-	Blue
<i>Fuscopannaria ahlneri</i>	corrugated crackers	Blue
<i>Gentiana calycosa</i>	mountain bog gentian	Blue
<i>Graphephorum wolfii</i>	Wolf's trisetum	Blue
<i>Grimmia mollis</i>	-	Blue
<i>Hygrohypnum alpinum</i>	-	Blue
<i>Hygrohypnum polare</i>	-	Blue
<i>Hypogymnia heterophylla</i>	seaside bone	Red
<i>Isoetes x truncata</i>	truncated quillwort	Red
<i>Leptogium cyanescens</i>	blue-blue vinyl	Red
<i>Lescuraea saxicola</i>	-	Blue
<i>Lewisiopsis tweedyi</i>	Tweedy's lewisia	Red
<i>Lobaria retigera</i>	smoker's lung	Blue
<i>Meesia longiseta</i>	-	Blue
<i>Melica fugax</i>	little oniongrass	Red
<i>Myrinia pulvinata</i>	-	Red

Table C.3-1: Plant Species at Risk with the Potential to Occur in the RSA

Scientific Name	Common Name	Status
<i>Nephroma isidiosum</i>	pebbled paw	Blue
<i>Nephroma occultum</i>	cryptic paw	Blue
<i>Nymphaea leibergii</i>	small white waterlily	Red
<i>Nymphaea tetragona</i>	pygmy waterlily	Blue
<i>Orthotrichum pallens</i>	-	Blue
<i>Oxytropis campestris</i> var. <i>davisii</i>	Davis' locoweed	Blue
<i>Oxytropis campestris</i> var. <i>jordalii</i>	Jordal's locoweed	Blue
<i>Oxytropis nigrescens</i> var. <i>uniflora</i>	one-flower oxytrope	Blue
<i>Oxytropis scammaniana</i>	Scamman's locoweed	Blue
<i>Papaver pygmaeum</i>	dwarf poppy	Red
<i>Phacelia lyallii</i>	Lyall's phacelia	Red
<i>Phacelia sericea</i> ssp. <i>ciliosa</i>	silky phacelia	Red
<i>Phaeophyscia adiantola</i>	granulating shadow	Blue
<i>Philonotis yezoana</i>	-	Blue
<i>Physcomitrium pyriforme</i>	-	Blue
<i>Pinus albicaulis</i>	whitebark pine	Blue
<i>Pinus flexilis</i>	limber pine	Blue
<i>Platyhypnidium riparioides</i>	-	Blue
<i>Poa fendleriana</i> ssp. <i>fendleriana</i>	mutton grass	Red
<i>Pohlia bulbifera</i>	-	Blue
<i>Pohlia crudoides</i>	-	Blue
<i>Pohlia elongata</i>	-	Blue
<i>Pohlia lescuriana</i>	-	Red
<i>Pohlia longicollis</i>	-	Red
<i>Pohlia melanodon</i>	-	Red
<i>Polemonium boreale</i>	northern Jacob's-ladder	Blue

Table C.3-1: Plant Species at Risk with the Potential to Occur in the RSA

Scientific Name	Common Name	Status
<i>Polemonium elegans</i>	elegant Jacob's-ladder	Red
<i>Polygonum sawatchense</i> ssp. <i>oblivium</i>	Sawatch knotweed	Blue
<i>Polystichum lemmonii</i>	Lemmon's holly fern	Red
<i>Polystichum scopulinum</i>	mountain holly fern	Red
<i>Potentilla arenosa</i> ssp. <i>arenosa</i>	scree cinquefoil	Red
<i>Potentilla biflora</i>	two-flowered cinquefoil	Blue
<i>Potentilla glaucophylla</i> var. <i>perdissecta</i>	diverse-leaved cinquefoil	Blue
<i>Potentilla ovina</i> var. <i>ovina</i>	sheep cinquefoil	Red
<i>Primula cuneifolia</i> ssp. <i>saxifragifolia</i>	wedge-leaf primrose	Blue
<i>Pseudephemerum nitidum</i>	-	Red
<i>Racomitrium pygmaeum</i>	-	Blue
<i>Rhodobryum roseum</i>	-	Blue
<i>Ribes cognatum</i>	northern gooseberry	Red
<i>Rubus lasiococcus</i>	dwarf bramble	Blue
<i>Rumex paucifolius</i>	alpine sorrel	Red
<i>Salix petiolaris</i>	meadow willow	Blue
<i>Schistidium atrichum</i>	-	Red
<i>Senecio hydrophiloides</i>	sweet-marsh butterweed	Blue
<i>Senecio megacephalus</i>	large-headed groundsel	Blue
<i>Sphagnum balticum</i>	-	Blue
<i>Sphagnum contortum</i>	-	Blue
<i>Sphagnum jensenii</i>	-	Red
<i>Sphagnum wulfianum</i>	-	Blue
<i>Splachnum vasculosum</i>	-	Blue
<i>Symphyotrichum ascendens</i>	long-leaved aster	Blue
<i>Synthyris wyomingensis</i>	Wyoming kitten-tails	Red

Table C.3-1: Plant Species at Risk with the Potential to Occur in the RSA

Scientific Name	Common Name	Status
<i>Taraxia breviflora</i>	short-flowered evening-primrose	Red
<i>Tayloria splachnoides</i>	-	Red
<i>Tetradontium repandum</i>	-	Blue
<i>Thalictrum dasycarpum</i>	purple meadowrue	Blue
<i>Timmia norvegica</i>	-	Blue
<i>Timmia sibirica</i>	-	Red
<i>Townsendia parryi</i>	Parry's townsendia	Red
<i>Utricularia ochroleuca</i>	ochroleucous bladderwort	Blue
<i>Veronica catenata</i>	pink water speedwell	Blue

Appendix C.4: Invasive Plant Species with Potential to Occur in the RSA

Table C.4-1: Invasive Plant Species with Potential to Occur in the RSA

Scientific name	English Name	Provincially Listed Noxious Species (2018) ^{1,2}	Provincially Listed EDRR Species (2018) ^{3,4}	Noxious Species Regionally Listed in the Coastal GasLink Project Area (2018) ^{5,6}	Species listed as 'Extremely Invasive', and 'Very Invasive' in the NWIPC regions (2018) ^{7,8,9}
<i>Abutilon theophrasti</i>	Velvetleaf	Y	Y	-	-
<i>Aegilops cylindrica</i>	Jointed goatgrass	Y	Y	-	-
<i>Alhagi maurorum</i>	Camel thorn	-	Y	-	-
<i>Alliaria petiolata</i>	Garlic mustard	Y	-	-	-
<i>Alopecurus myosuroides</i>	Slender/meadow foxtail	-	Y	-	-
<i>Anthriscus caucalis</i>	Bur chervil	Y	-	-	-
<i>Arctium minus</i>	Common burdock	-	-	-	Y ("Very Invasive")
<i>Arctium sp.</i>	Burdock	-	-	Y (Bulkley-Nechako)	-
<i>Arundo donax</i>	Giant reed	-	Y	-	-
<i>Avena fatua</i>	Wild oats	Y	-	-	-
<i>Berteroa incana</i>	Hoary alyssum	-	-	-	Y ("Extremely Invasive")
<i>Brachypodium sylvaticum</i>	Slender false-brome	-	Y	-	-
<i>Butomus umbellatus</i>	Flowering rush	Y	-	-	-
<i>Carduus acanthoides</i>	Plumeless thistle	-	-	-	Y ("Very Invasive")
<i>Carduus pycnocephalus</i>	Italian thistle	-	Y	-	-
<i>Carduus tenuiflorus</i>	Slenderflower thistle	-	Y	-	-
<i>Centaurea calcitrapa</i>	Purple starthistle	-	Y	-	-
<i>Centaurea diffusa</i>	Diffuse knapweed	Y	-	-	-
<i>Centaurea iberica</i>	Iberian starthistle	-	Y	-	-
<i>Centaurea jacea</i>	Brown knapweed	-	-	-	Y ("Extremely Invasive")
<i>Centaurea montana</i>	Mountain bluet	-	-	-	Y ("Very Invasive")

Table C.4-1: Invasive Plant Species with Potential to Occur in the RSA

Scientific name	English Name	Provincially Listed Noxious Species (2018) ^{1,2}	Provincially Listed EDRR Species (2018) ^{3,4}	Noxious Species Regionally Listed in the Coastal GasLink Project Area (2018) ^{5,6}	Species listed as 'Extremely Invasive', and 'Very Invasive' in the NWIPC regions (2018) ^{7,8,9}
<i>Centaurea nigra</i>	Black knapweed	-	-	-	Y ("Extremely Invasive")
<i>Centaurea scabiosa</i>	Greater knapweed	-	-	-	Y ("Extremely Invasive")
<i>Centaurea solstitialis</i>	Yellow starthistle	Y	Y	-	-
<i>Centaurea stoebe</i>	Spotted knapweed	Y	-	-	-
<i>Centaurea virgata ssp. squarrosa</i>	Squarrose knapweed	-	Y	-	-
<i>Chondrilla juncea</i>	Rusk skeletonweed	Y	-	-	-
<i>Chrysanthemum leucanthemum (= Leucanthemum vulgare)</i>	Oxeye daisy	-	-	-	Y ("Very Invasive")
<i>Cichorium intybus</i>	Chicory	-	-	-	Y ("Very Invasive")
<i>Cirsium arvense</i>	Canada thistle	Y	-	-	-
<i>Cirsium palustre</i>	Marsh plume thistle	-	-	Y (Bulkley-Nechako)	Y ("Extremely Invasive")
<i>Crupina vulgaris</i>	Crupina	Y	Y	-	-
<i>Cuscuta spp.</i>	Dodder	Y	-	-	-
<i>Cynoglossum officinale</i>	Hound's-tongue	Y	-	-	-
<i>Cyperus esculentus</i>	Yellow nutsedge	Y	Y	-	-
<i>Cyperus rotundus</i>	Purple nutsedge	Y	Y	-	-
<i>Cytisus scoparius</i>	Scotch broom	-	-	-	Y ("Extremely Invasive")
<i>Daucus carota</i>	Wild carrot / Queen Anne's lace	-	-	-	Y ("Very Invasive")
<i>Echium vulgare</i>	Blueweed	-	-	-	Y ("Very Invasive")
<i>Egeria densa</i>	Brazilian elodea / Waterweed	-	Y	-	-
<i>Eichhornia crassipes</i>	Hyacinth, water	-	Y	-	-
<i>Euphorbia cyparissias</i>	Cypress spurge	-	-	-	Y ("Extremely Invasive")

Table C.4-1: Invasive Plant Species with Potential to Occur in the RSA

Scientific name	English Name	Provincially Listed Noxious Species (2018) ^{1,2}	Provincially Listed EDRR Species (2018) ^{3,4}	Noxious Species Regionally Listed in the Coastal GasLink Project Area (2018) ^{5,6}	Species listed as 'Extremely Invasive', and 'Very Invasive' in the NWIPC regions (2018) ^{7,8,9}
<i>Euphorbia esula</i>	Leafy spurge	Y	-	-	Y ("Extremely Invasive")
<i>Euphorbia oblongata</i>	Eggleaf spurge	-	Y	-	-
<i>Fallopia japonica</i>	Japanese knotweed	Y	-	-	Y ("Extremely Invasive")
<i>Fallopia sachalinensis</i> (= <i>Polygonum sachalinense</i>)	Giant knotweed	Y	-	-	Y ("Extremely Invasive")
<i>Fallopia x bohemica</i>	Bohemian knotweed	Y	-	-	Y ("Extremely Invasive")
<i>Galega officinalis</i>	Goatsrue	-	Y	-	-
<i>Glyceria maxima</i>	Giant mannagrass	Y	-	-	-
<i>Halogeton glomeratus</i>	Halogeton / Saltover	-	Y	-	-
<i>Hedera helix</i>	English ivy	-	-	-	Y ("Extremely Invasive")
<i>Helianthus ciliaris</i>	Texas blueweed	-	Y	-	-
<i>Heracleum mantegazzianum</i>	Giant hogweed	Y	-	-	Y ("Extremely Invasive")
<i>Hieracium aurantiacum</i>	Orange hawkweed	-	-	Y (Bulkley-Nechako)	-
<i>Hieracium pilosella</i> (= <i>Pilosella</i> spp.)	Mouse-ear hawkweed	-	Y	-	-
<i>Hieracium</i> spp. (alien species)	Hawkweeds (alien species)	-	-	-	Y ("Extremely Invasive")
<i>Hydrilla verticillata</i>	Hydrilla	-	Y	-	-
<i>Hyoscyamus niger</i>	Black henbane	-	Y	-	-
<i>Ilex aquifolium</i>	English holly	-	-	-	Y ("Very Invasive")
<i>Impatiens glandulifera</i>	Himalayan balsam / Policeman's helmet	-	-	-	Y ("Extremely Invasive")
<i>Iris pseudacorus</i>	Yellow flag iris	Y	-	-	Y ("Extremely Invasive")
<i>Isatis tinctoria</i>	Dyer's wood	-	Y	-	-
<i>Knautia arvensis</i>	Field scabious	-	-	Y (Bulkley-Nechako)	Y ("Extremely Invasive")

Table C.4-1: Invasive Plant Species with Potential to Occur in the RSA

Scientific name	English Name	Provincially Listed Noxious Species (2018) ^{1,2}	Provincially Listed EDRR Species (2018) ^{3,4}	Noxious Species Regionally Listed in the Coastal GasLink Project Area (2018) ^{5,6}	Species listed as 'Extremely Invasive', and 'Very Invasive' in the NWIPC regions (2018) ^{7,8,9}
<i>Lamiastrum galeobdolon</i> (= <i>Lamium galeobdolon</i>)	Yellow archangel	-	-	-	Y ("Very Invasive")
<i>Lepidium latifolium</i>	Perennial pepperweed	-	Y	-	-
<i>Linaria genistifolia</i>	Dalmatian toadflax	Y	-	-	-
<i>Linaria vulgaris</i>	Common/Yellow toadflax	Y	-	-	-
<i>Lysimachia vulgaris</i>	Yellow loosestrife	-	-	-	Y ("Very Invasive")
<i>Lythrum salicaria</i> / <i>Lythrum</i> <i>spp.</i>	Purple loosestrife	Y	-	-	-
<i>Milium vernale</i>	Spring milletgrass	-	Y	-	-
<i>Nymphoides peltata</i>	Yellow floating heart	-	-	-	Y ("Extremely Invasive")
<i>Odontites serotina</i>	Red bartsia	-	Y	-	-
<i>Onopordum acanthium</i>	Scotch thistle	-	-	-	Y ("Very Invasive")
<i>Peganum harmala</i>	African-rue	-	Y	-	-
<i>Phragmites australis</i> <i>subsp. australis</i>	Common reed	Y	Y	-	-
<i>Polygonum polystachyum</i> (= <i>Persicaria wallichii</i>)	Himalayan knotweed	Y	-	-	Y ("Extremely Invasive")
<i>Potentilla recta</i>	Sulphur cinquefoil	-	-	-	Y ("Extremely Invasive")
<i>Pueraria montana</i> <i>var. lobata</i>	Kudzu	-	Y	-	-
<i>Rubus discolor</i>	Himalayan blackberry	-	-	-	Y ("Extremely Invasive")
<i>Salvia aethiopsis</i>	Sage, Mediterranean	-	Y	-	-
<i>Salvia pratensis</i>	Meadow clary	-	Y	-	-
<i>Salvia sclarea</i>	Sage, clary	-	Y	-	-
<i>Sedum acre</i>	Mossy stonecrop	-	-	-	Y ("Very Invasive")

Table C.4-1: Invasive Plant Species with Potential to Occur in the RSA

Scientific name	English Name	Provincially Listed Noxious Species (2018) ^{1,2}	Provincially Listed EDRR Species (2018) ^{3,4}	Noxious Species Regionally Listed in the Coastal GasLink Project Area (2018) ^{5,6}	Species listed as 'Extremely Invasive', and 'Very Invasive' in the NWIPC regions (2018) ^{7,8,9}
<i>Senecio jacobaea</i>	Tansy ragwort	Y	-	-	-
<i>Silybum marianum</i>	Milk thistle	Y	-	-	-
<i>Solanum elaeagnifolium</i>	Silverleaf nightshade	-	Y	-	-
<i>Sonchus arvensis</i>	Perennial sow-thistle	Y	-	-	-
<i>Sonchus oleraceus</i>	Annual sow-thistle	Y	-	-	-
<i>Sorghum halepense</i>	Johnsongrass	-	Y	-	-
<i>Spartina alterniflora</i>	Smooth cordgrass	Y	-	-	-
<i>Spartina anglica</i>	English cordgrass	Y	Y	-	-
<i>Spartina densiflora</i>	Dense-flowered cordgrass	Y	-	-	-
<i>Spartina patens</i>	Saltmeadow cordgrass	Y	Y	-	-
<i>Stratiotes aloides</i>	Water soldier	-	Y	-	-
<i>Taeniatherum caput-medusae</i>	Medusahead	-	Y	-	-
<i>Tanacetum vulgare</i>	Common tansy	-	-	Y (Bulkley-Nechako)	Y ("Extremely Invasive")
<i>Thymelaea passerina</i>	Spurge flax	-	Y	-	-
<i>Tripleurospermum inodorum</i> (= <i>Matricaria maritima</i> , <i>M. perforata</i>)	Scentless chamomile	Y	-	-	Y ("Very Invasive")
<i>Ulex europaeus</i>	Gorse	Y	-	-	Y ("Extremely Invasive")
<i>Ventenata dubia</i>	North Africa grass	Y	Y	-	-
<i>Zygophyllum fabago</i>	Syrian bean-caper	-	Y	-	-

Table C.4-1: Invasive Plant Species with Potential to Occur in the RSA

NOTES

- ¹ Sources: Schedule A, Part I Weed Control Regulations (Government of BC 2011); <https://bcinvasives.ca/invasive-species/about/regulated-invasive-species-in-bc/list-of-regulated-invasive-plants-in-bc/> (Accessed in August 2019)
- ² The 2018 list entirely coincides with the list of provincial noxious weeds (Table 4-2) in the IPMP.
- ³ Source: Invasive Plant Early Detection and Rapid Response Plan for British Columbia (Final Draft, 2012); https://www.for.gov.bc.ca/hra/plants/publications/EDRR_Plan_Final_Draft_Nov2012.pdf (Accessed in August 2019)
- ⁴ The 2018 list entirely coincides with the list of provincial EDRR weed species (Table 4-1) in the IPMP.
- ⁵ Sources: Schedule A, Part II Weed Control Regulations (Government of BC 2011); <https://bcinvasives.ca/invasive-species/about/regulated-invasive-species-in-bc/list-of-regulated-invasive-plants-in-bc/> (Accessed in August)
- ⁶ The 2018 list lacks two species present in the list of regional noxious weeds in the Coastal GasLink Project area (Table 4-3) in the IPMP: *Fagopyrum tataricum* (Tartary buckwheat) and *Lychnis alba* (White cockle), both - in Peace River district.
- ⁷ Source: Northwest Invasive Plant Council - 2018 Target Invasive Plant List; http://nwipc.org/documents/private/NWIPC_2018_Target_Invasive_Plant_List.pdf (accessed in August 2019).
- ⁸ The 2018 NWIPC Target Invasive plant list lacks the "Eradicate" category.
- ⁹ There are differences between the 2018 NWIPC list and the 2012 NWIPC list on which Table 4-5 of the IPMP is based.

Appendix C.5: Species Observed in the RSA

Table C.5-1: Morice River Technical Boundary Area: Plant Species Observed in the RSA

Scientific Name	English Name	BC List	SARA List
Trees			
<i>Abies lasiocarpa</i>	subalpine fir	No	No
<i>Picea engelmannii</i> x <i>glauca</i>	hybrid white spruce	No	No
<i>Pinus contorta</i>	lodgepole pine	No	No
<i>Populus balsamifera</i>	balsam poplar	No	No
<i>Tsuga heterophylla</i>	western hemlock	No	No
<i>Tsuga mertensiana</i>	mountain hemlock	No	No
Shrubs			
<i>Alnus incana</i>	mountain alder	No	No
<i>Alnus viridis</i>	green alder	No	No
<i>Amelanchier alnifolia</i>	saskatoon	No	No
<i>Cornus stolonifera</i>	red-osier dogwood	No	No
<i>Juniperus communis</i>	common juniper	No	No
<i>Lonicera involucrata</i>	black twinberry	No	No
<i>Oplopanax horridus</i>	devil's club	No	No
<i>Paxistima myrsinites</i>	falsebox	No	No
<i>Rhododendron groenlandicum</i>	Labrador tea	No	No
<i>Ribes lacustre</i>	black gooseberry	No	No
<i>Ribes laxiflorum</i>	trailing black currant	No	No
<i>Ribes oxycanthoides</i>	northern gooseberry	No	No
<i>Rosa acicularis</i>	prickly rose	No	No
<i>Rubus idaeus</i>	red raspberry	No	No
<i>Rubus parviflorus</i>	thimbleberry	No	No
<i>Salix alaxensis</i>	Alaska willow	No	No

Appendix C.5: Species Observed in the RSA

Table C.5-1: Morice River Technical Boundary Area: Plant Species Observed in the RSA

Scientific Name	English Name	BC List	SARA List
<i>Salix barclayi</i>	Barclay's willow	No	No
<i>Salix pedicellaris</i>	bog willow	No	No
<i>Salix sp.</i>	willow	No	No
<i>Sambucus racemosa</i>	red elderberry	No	No
<i>Sorbus scopulina</i>	western mountain-ash	No	No
<i>Spiraea douglasii</i>	hardhack	No	No
<i>Symphoricarpos albus</i>	common snowberry	No	No
<i>Vaccinium membranaceum</i>	black huckleberry	No	No
<i>Vaccinium ovalifolium</i>	oval-leaved blueberry	No	No
<i>Viburnum edule</i>	highbush-cranberry	No	No
Dwarf Woody Plant			
<i>Arctostaphylos uva-ursi</i>	kinnikinnick	No	No
<i>Empetrum nigrum</i>	crowberry	No	No
<i>Kalmia microphylla</i>	western bog-laurel	No	No
<i>Linnaea borealis</i>	twinflower	No	No
Ferns and Fern Allies			
<i>Athyrium filix-femina</i>	lady fern	No	No
<i>Cryptogramma acrostichoides</i>	parsley fern	No	No
<i>Diphasiastrum complanatum</i>	ground-cedar	No	No
<i>Equisetum arvense</i>	common horsetail	No	No
<i>Gymnocarpium dryopteris</i>	oak fern	No	No
<i>Lycopodium annotinum</i>	stiff club-moss	No	No
<i>Polystichum lonchitis</i>	northern holly fern	No	No
<i>Selaginella sp.</i>	selaginella	No	No

Table C.5-1: Morice River Technical Boundary Area: Plant Species Observed in the RSA

Scientific Name	English Name	BC List	SARA List
Forbs			
<i>Achillea millefolium</i>	yarrow	No	No
<i>Actaea rubra</i>	baneberry	No	No
<i>Agoseris aurantiaca</i>	orange agoseris	No	No
<i>Anaphalis margaritacea</i>	pearly everlasting	No	No
<i>Angelica genuflexa</i>	kneeling angelica	No	No
<i>Antennaria sp.</i>	pussytoes	No	No
<i>Aquilegia formosa</i>	Sitka columbine	No	No
<i>Arnica angustifolia</i>	alpine arnica	No	No
<i>Arnica cordifolia</i>	heart-leaved arnica	No	No
<i>Aruncus dioicus</i>	goatsbeard	No	No
<i>Canadanthus modestus</i>	great northern aster	No	No
<i>Castilleja miniata</i>	scarlet paintbrush	No	No
<i>Clintonia uniflora</i>	queen's cup	No	No
<i>Cornus canadensis</i>	bunchberry	No	No
<i>Corydalis sempervirens</i>	pink corydalis	No	No
<i>Epilobium angustifolium</i>	fireweed	No	No
<i>Epilobium ciliatum</i>	purple-leaved willowherb	No	No
<i>Erigeron humilis</i>	arctic-alpine daisy	No	No
<i>Erigeron peregrinus</i>	subalpine daisy	No	No
<i>Fragaria virginiana</i>	wild strawberry	No	No
<i>Galium boreale</i>	northern bedstraw	No	No
<i>Galium trifidum</i>	small bedstraw	No	No
<i>Galium triflorum</i>	sweet-scented bedstraw	No	No
<i>Geocaulon lividum</i>	false toad-flax	No	No
<i>Geum macrophyllum</i>	large-leaved avens	No	No

Table C.5-1: Morice River Technical Boundary Area: Plant Species Observed in the RSA

Scientific Name	English Name	BC List	SARA List
<i>Geum rivale</i>	water avens	No	No
<i>Heracleum maximum</i>	cow-parsnip	No	No
<i>Hieracium scouleri</i>	Scouler's hawkweed	No	No
<i>Listera cordata</i>	heart-leaved twayblade	No	No
<i>Maianthemum racemosum</i>	false Solomon's-seal	No	No
<i>Maianthemum trifolium</i>	three-leaved false Solomon's-seal	No	No
<i>Moehringia lateriflora</i>	blunt-leaved sandwort	No	No
<i>Orthilia secunda</i>	one-sided wintergreen	No	No
<i>Osmorhiza berteroi</i>	mountain sweet-cicely	No	No
<i>Parnassia palustris</i>	northern grass-of-Parnassus	No	No
<i>Pedicularis sp.</i>	lousewort	No	No
<i>Penstemon sp.</i>	penstemon	No	No
<i>Petasites frigidus var. palmatus</i>	palmate coltsfoot	No	No
<i>Platanthera dilatata</i>	fragrant white rein orchid	No	No
<i>Polemonium pulcherrimum</i>	showy Jacob's-ladder	No	No
<i>Polygonum sp.</i>	knotweed	No	No
<i>Pyrola asarifolia</i>	pink wintergreen	No	No
<i>Ranunculus uncinatus</i>	little buttercup	No	No
<i>Rubus pedatus</i>	five-leaved bramble	No	No
<i>Rubus pubescens</i>	dwarf red raspberry	No	No
<i>Sanguisorba stipulata</i>	Sitka burnet	No	No
<i>Sedum acre</i>	goldmoss stonecrop	No	No
<i>Senecio triangularis</i>	arrow-leaved groundsel	No	No
<i>Spiranthes romanzoffiana</i>	hooded ladies' tresses	No	No
<i>Streptopus amplexifolius</i>	clasping twistedstalk	No	No
<i>Streptopus lanceolatus</i>	rosy twistedstalk	No	No

Table C.5-1: Morice River Technical Boundary Area: Plant Species Observed in the RSA

Scientific Name	English Name	BC List	SARA List
<i>Streptopus streptopoides</i>	small twistedstalk	No	No
<i>Taraxacum officinale</i>	common dandelion	No	No
<i>Thalictrum occidentale</i>	western meadowrue	No	No
<i>Tiarella trifoliata</i>	three-leaved foamflower	No	No
<i>Turritis glabra</i>	tower mustard	No	No
<i>Valeriana sitchensis</i>	Sitka valerian	No	No
<i>Veratrum viride</i>	Indian hellebore	No	No
<i>Veronica beccabunga</i>	American speedwell	No	No
<i>Vicia americana</i>	American vetch	No	No
<i>Viola canadensis</i>	Canada violet	No	No
<i>Viola sp.</i>	violet	No	No
Graminoids			
<i>Agrostis aequivalvis</i>	Alaska bentgrass	No	No
<i>Agrostis scabra</i>	hair bentgrass	No	No
<i>Bromus inermis</i>	smooth brome	No	No
<i>Calamagrostis canadensis</i>	bluejoint reedgrass	No	No
<i>Carex aquatilis</i>	water sedge	No	No
<i>Carex canescens</i>	grey sedge	No	No
<i>Carex interior</i>	inland sedge	No	No
<i>Carex sp.</i>	sedge	No	No
<i>Elymus glaucus</i>	blue wildrye	No	No
<i>Elymus trachycaulus</i>	slender wheatgrass	No	No
<i>Eriophorum angustifolium</i>	narrow-leaved cotton-grass	No	No
<i>Festuca sp.</i>	fescue	No	No
<i>Glyceria sp.</i>	mannagrass	No	No
<i>Hierochloë hirta ssp. arctica</i>	common sweetgrass	No	No

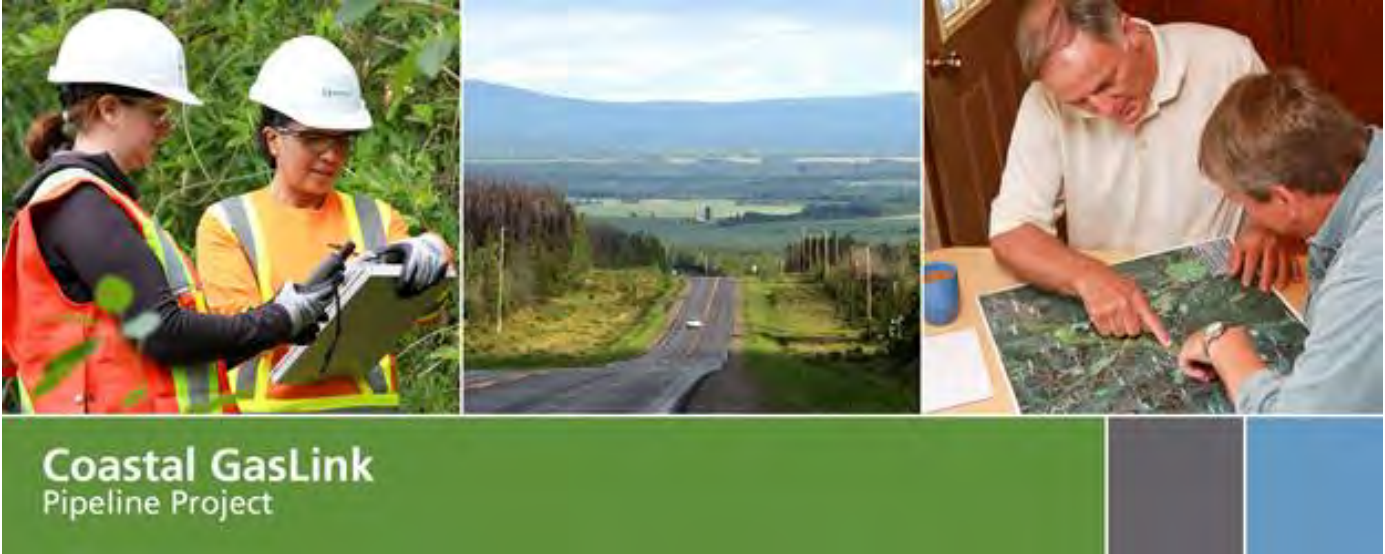
Appendix C.5: Species Observed in the RSA

Table C.5-1: Morice River Technical Boundary Area: Plant Species Observed in the RSA

Scientific Name	English Name	BC List	SARA List
<i>Poa pratensis</i>	Kentucky bluegrass	No	No
<i>Trisetum cernuum</i>	nodding trisetum	No	No
Lichen and Mosses			
<i>Cladonia sp.</i>	clad lichens	No	No
<i>Hylocomium splendens</i>	step moss	No	No
<i>Mnium sp.</i>	leafy mosses	No	No
<i>Peltigera sp.</i>	Dog lichens	No	No
<i>Pleurozium schreberi</i>	red-stemmed feathermoss	No	No
<i>Ptilium crista-castrensis</i>	knight's plume moss	No	No
<i>Sphagnum sp.</i>	peat-mosses	No	No

Appendix I

EAC Condition 1 Report #2: Wildlife and Wildlife Habitat Technical Data Report #2



Coastal GasLink
Pipeline Project

Appendix D: Environmental Assessment Certificate Condition 1 Wildlife and Wildlife Habitat Technical Data Report #2

CGL4703-STC-EN-RP-090

July 17, 2020

Revision 1

Issued for Use

Revision Log

Rev	Section	Revision Description
1	All	Issued for Use

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Appendix D.1: Abbreviations and Acronyms

1.0 INTRODUCTION

On March 11, 2014, Coastal GasLink Pipeline Ltd. (Coastal GasLink) submitted an Application for an Environmental Assessment Certificate (EAC Application) to the British Columbia (BC) Environmental Assessment Office (EAO) for the Coastal GasLink Pipeline Project (the Project). On October 23, 2014, Coastal GasLink received an Environmental Assessment Certificate (EAC) #E14-03 for the Project which includes Schedule B, Table of Conditions. Condition # 1 (EAC Condition 1) requires Coastal GasLink to complete and report on biophysical information collected for the Morice River Technical Boundary Area (Technical Boundary). The Technical Boundary is defined as the area of the Project between Universal Traverse Mercator (UTM) Zone 9U East 611335 North 6003957 and UTM Zone 9U East 577769 North 6000758.

To fulfill the biophysical requirements of EAC Condition 1, Coastal GasLink submitted the following three reports:

1. Environmental Assessment Certificate #E14-03 Condition 1 Report #1 (October 30, 2015) to the EAO, hereafter referred to as the 2015 COR1.
2. Environmental Assessment Certificate #E14-03 Condition 1 Report #2 (November 19, 2019), hereafter referred to as the 2019 COR2.
3. Environmental Assessment Certificate #E14-03 Condition 1 Report #2 (July 17, 2020), hereafter referred to as the 2020 COR2.

For biophysical requirements to support the Wildlife and Wildlife Habitat Valued Component (VC), each of the 2015 COR1 and 2019 COR2 submissions included a Wildlife and Wildlife Habitat Technical Data Report (TDR). These submissions were based on a gap analysis, which is described below in Section 4.0.

The purpose of the 2015 COR1 and 2019 COR2 Wildlife and Wildlife Habitat TDRs is to support full compliance with EAC Condition 1 by collecting additional information and completing the description of baseline conditions for wildlife and wildlife habitat within the Technical Boundary.

In this 2020 COR2 Wildlife and Wildlife Habitat TDR, a summary of the 2015 COR1 Wildlife and Wildlife Habitat TDR, and details from the 2019 COR2 Wildlife and Wildlife Habitat TDR, are provided collectively for the Technical Boundary. Together, field data from the 2015 COR1 and 2019 COR2 Wildlife and Wildlife Habitat TDRs were used to verify or update the effects assessment conclusions reached in the EAC Application, and to identify the need for additional mitigation in the Technical Boundary.

Abbreviations and acronyms used in this report are described in Appendix D.1.

2.0 OBJECTIVE

The 2015 COR1, 2019 COR2, and this 2020 COR2 are consistent with the direction of the Application Information Requirements (AIR) issued by BC EAO and EAC Condition 1. These reports also consider guidance contained in the BC EAO User Guide (BC EAO 2011, updated 2018), Fairness and Service Code (BC EAO 2009, updated 2011), and the Proponent Guide for Providing First Nation Consultation Information (BC EAO 2010, updated 2013).

The collective objective of the COR submissions for Wildlife and Wildlife Habitat is to present newly acquired field data that was gathered using methods consistent with the AIRs and as described in the EAC Application, Wildlife and Wildlife Habitat TDR. The field data were used to supplement the understanding of baseline conditions for the Wildlife and Wildlife Habitat VC in the Technical Boundary and to facilitate the assessment of potential adverse effects and potential cumulative effects of the Project. This objective was achieved for the Wildlife and Wildlife Habitat VC by completing wildlife field surveys in the Technical Boundary which were not previously accessible and by including Aboriginal participation in those field surveys.

3.0 STUDY AREA BOUNDARIES

Figure 3-1 illustrates the study area boundaries for the Technical Boundary, including demarcation of the portions of the Technical Boundary addressed in each of the 2015 COR1 and 2019 COR2 reports.

3.1 MORICE RIVER TECHNICAL BOUNDARY AREA

The Technical Boundary is defined as the area of the Project between UTM Zone 9U East 611335 North 6003957 and UTM Zone 9U East 577769 North 6000758 (Figure 3-1) where field data were not previously collected for inclusion in the EAC Application due to access limitations.

3.2 PROJECT FOOTPRINT

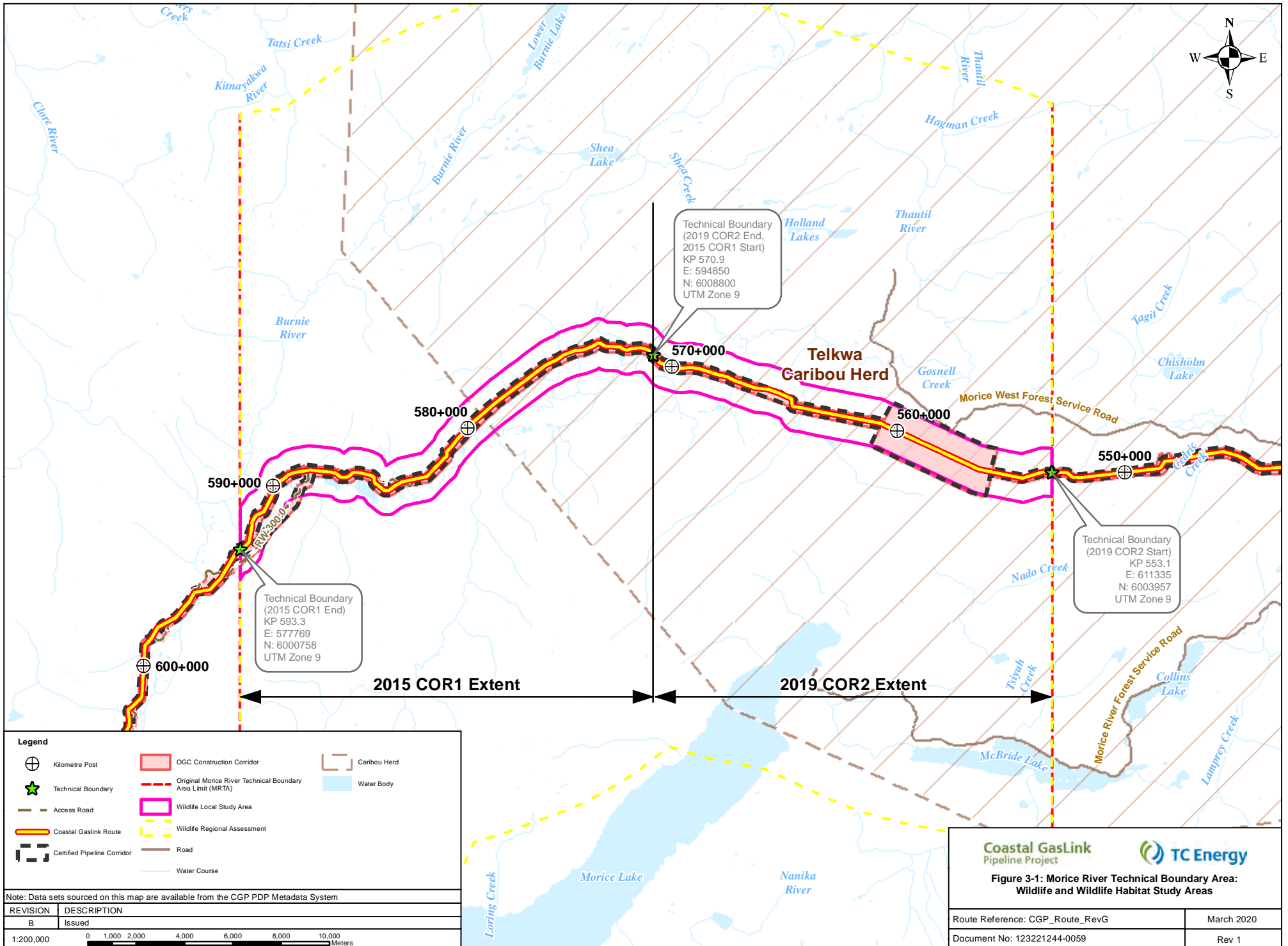
The project footprint is a 100-m-wide corridor within the Technical Boundary that has the potential to be directly affected by clearing, construction, and cleanup activities, including associated physical works and activities.

3.3 LOCAL STUDY AREA

The Wildlife and Wildlife Habitat Local Study Area (LSA) is based on the area within the Technical Boundary in which Project activities and facilities could affect wildlife and wildlife habitat, both directly and indirectly. The LSA includes the project footprint plus an additional 1-km buffer (an approximately 2-km-wide area). The LSA also includes the Certified Pipeline Corridor which is defined in the Certified Project Description Schedule A of the EAC #E14-03. The LSA is illustrated in Figure 3-1.

3.4 REGIONAL STUDY AREA

The Wildlife and Wildlife Habitat Regional Study Area (RSA) was established to evaluate effects of the Project on wildlife and wildlife habitat on a landscape scale. Baseline data for the RSA also facilitates an assessment of potential Project-related adverse effects on wildlife and wildlife habitat considering effects from other past, present, or reasonably foreseeable future projects or activities that could act cumulatively on wildlife and wildlife habitat. The RSA includes the project footprint plus an additional 15-km buffer (an area approximately 30-km-wide). The RSA is illustrated in Figure 3-1.



Note: Data sets sourced on this map are available from the CGP PDP Metadata System

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**Figure 3-1: Morice River Technical Boundary Area:
Wildlife and Wildlife Habitat Study Areas**

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Document No: 123221244-0059	Rev 1

4.0 GAP ANALYSIS – WILDLIFE AND WILDLIFE HABITAT

Subsequent to the issuance of the EAC, the following surveys were identified as needed to verify or update the assessment for the Wildlife and Wildlife Habitat VC in the Technical Boundary:

- breeding bird survey (i.e., songbirds);
- pond-dwelling amphibian survey;
- aerial nest survey; and
- aerial waterfowl survey.

In the 2015 COR1, Coastal GasLink prepared a Wildlife and Wildlife Habitat TDR for field studies carried out for the scope of 2015 COR1 within the Technical Boundary study area. Based on 2015 COR1 results, data from the aerial waterfowl survey was sufficient to adequately address the gap for the entire Technical Boundary. Following the submission of the 2015 COR1, Coastal GasLink identified three gaps for the remaining portion of the Technical Boundary:

- breeding bird survey (i.e., songbirds);
- pond-dwelling amphibian survey; and
- aerial nest survey.

The Aerial Waterfowl Survey undertaken in 2015 (2015 COR1), and the Breeding Bird Survey, Pond-dwelling Amphibian Survey, and Aerial Nest Survey undertaken in 2015 (2015 COR1) and 2019 (2019 COR2), were completed in a manner consistent with the methods described in the EAC Application, Wildlife and Wildlife Habitat TDR (see Sections 3.5.2, 3.5.3, 3.5.7 and 3.5.8 respectively) submitted with the EAC Application. Specific to the Aerial Nest Survey, Coastal GasLink undertook this survey for the Project in 2013, 2014, 2015, 2018, and 2019 (and within portions of the Technical Boundary in 2013, 2015, and 2019). Baseline surveys were undertaken as required to inform the development of mitigation measures, and subsequent surveys in the Technical Boundary were undertaken to verify the effects assessment and confirm appropriateness of the mitigation measures proposed in the Environmental Management Plan (EMP; and associated wildlife-specific management plans). While a relatively small portion of the Technical Boundary was not included in the aerial survey work due to ‘no-fly’ restrictions, the EMP includes commitments to survey for nesting birds during the primary nesting period for birds if clearing activities overlap with that period.

The identification of potential data gaps as they relate to the Technical Boundary was based on the stated purpose and objective provided in the EAC Application, Wildlife and Wildlife Habitat TDR (see Section 1):

This TDR outlines the methods used to evaluate the baseline conditions for Wildlife and Wildlife Habitat. Results contained in this TDR will be used to predict Project effects and assist in identifying mitigation to reduce or avoid adverse environmental effects on Wildlife and Wildlife Habitat during construction and operations. The information contained in this report has been gathered and synthesized from existing literature sources, third-party data sources, consultation (including Working Group meetings), and Project-specific field surveys.

A data gap in terms of field-based studies for large mammals in the Technical Boundary was not identified. As stated in the EAC Application, Wildlife and Wildlife Habitat TDR, Section 3.5.1, remote cameras were used in part to assess potential project and cumulative effects on large mammals (e.g., moose, grizzly bear). Cameras were installed in 2012 along the proposed project alignment within the Wildlife and Wildlife Habitat Local Study Area, including in the Technical Boundary. Subsequent constraints on access to the Technical Boundary precluded Coastal GasLink from retrieving the cameras and data. Despite this constraint, however, data obtained from other remote cameras along the proposed route, as well as other supporting information (i.e., review of other applicable data sources and literature; wildlife habitat assessment ratings from similar ecosystems), provided sufficient data for large mammals to support the effects assessment. Specifically, as stated in the EAC Application, Wildlife and Wildlife Habitat TDR, Section 4.4.1:

“Sufficient detections [of each species which follows] (i.e., greater than 10; Table 4-15) were available to model probability of use of the project ROW by moose (summer and winter), black bear (summer), wolf (annual), Canada lynx (annual), coyote (annual), elk (annual) and grizzly bear (summer)”.

Per Table 4-19 of the AIR for the Project, project effects on most large mammal key indicators were assessed for the entire Project using habitat models. These models identify the suitability of habitats, for each species and seasonal life requisite. The models were developed using provincial standards (see EAC Application, Wildlife and Wildlife Habitat TDR, Section 3.6), and the area of suitable habitat at baseline was reported in the EAC Application, Wildlife and Wildlife Habitat TDR, Section 4.5. Development of the habitat models included assigning a reliability qualifier to describe the accuracy and resultant output of each model. In the EAC Application, Wildlife and Wildlife Habitat TDR, either a ‘moderate’ or ‘moderate-high’ reliability criteria was assigned to each habitat model. A ‘moderate’ reliability qualifier indicates that “*ratings assumptions and adjustments were based on*

information from similar ecosystems as those occurring in the wildlife and wildlife habitat LSA, and field data was available to aid in model development”, and a ‘moderate-high’ reliability qualifier indicates that “ratings assumptions and adjustments were based on information from many of the same ecosystems that occur in the Wildlife and Wildlife Habitat LSA, and more substantive field data was available to aid in model development”.

The habitat suitability model results, the reliability criteria assigned to them, and the availability of supporting information from the literature review and field studies, was considered adequate for assessing project and cumulative effects and for prescribing appropriate mitigation measures for the Project assessment areas, including the Technical Boundary. Subsequently, a gap in field data for large mammals was not identified for the Technical Boundary.

4.1 2015 COR1 TECHNICAL DATA REPORT

The 2015 COR1 covered a portion of the Technical Boundary between UTM 9U East 577769 North 6000758 and 9U East 594850 North 6008800 (Figure 3-1). Field survey methods and results were described in a Wildlife and Wildlife Habitat TDR that was appended to the 2015 COR1. To summarize:

- Breeding Bird Survey – Fifty-two sites were surveyed over two seasons in 2014 (30 sites) and 2015 (22 sites) (Figure 4-1). Most sites (47) were in coniferous forest, and most of those were in mature (18 sites) and old (16 sites) forest. Fifty-two species were detected, of which two are species of conservation concern: olive-sided flycatcher and rusty blackbird.
- Pond-dwelling Amphibian Survey – Seventeen sites were surveyed over two seasons in 2014 (10 sites) and 2015 (7 sites) (Figure 4-2). Amphibians were detected at 13 of the 17 sites. Western toad was the most frequently detected species and occurred at 12 of the 13 sites that had detections. Other species detected were Colombia spitted frog, wood frog, northwestern salamander, and long-toed salamander. Western toad was the only amphibian species of conservation concern that was detected.
- Aerial Nest Survey – A single, unoccupied, osprey nest was located approximately 500 m from the project footprint (Figure 4-3). A second previously known osprey nest could not be relocated and was considered no longer present due to evidence of numerous broken treetops in the vicinity of the site.
- Aerial Waterfowl Survey – Twenty-four wetlands were surveyed within the Technical Boundary LSA¹, of which nine were identified as suitable for

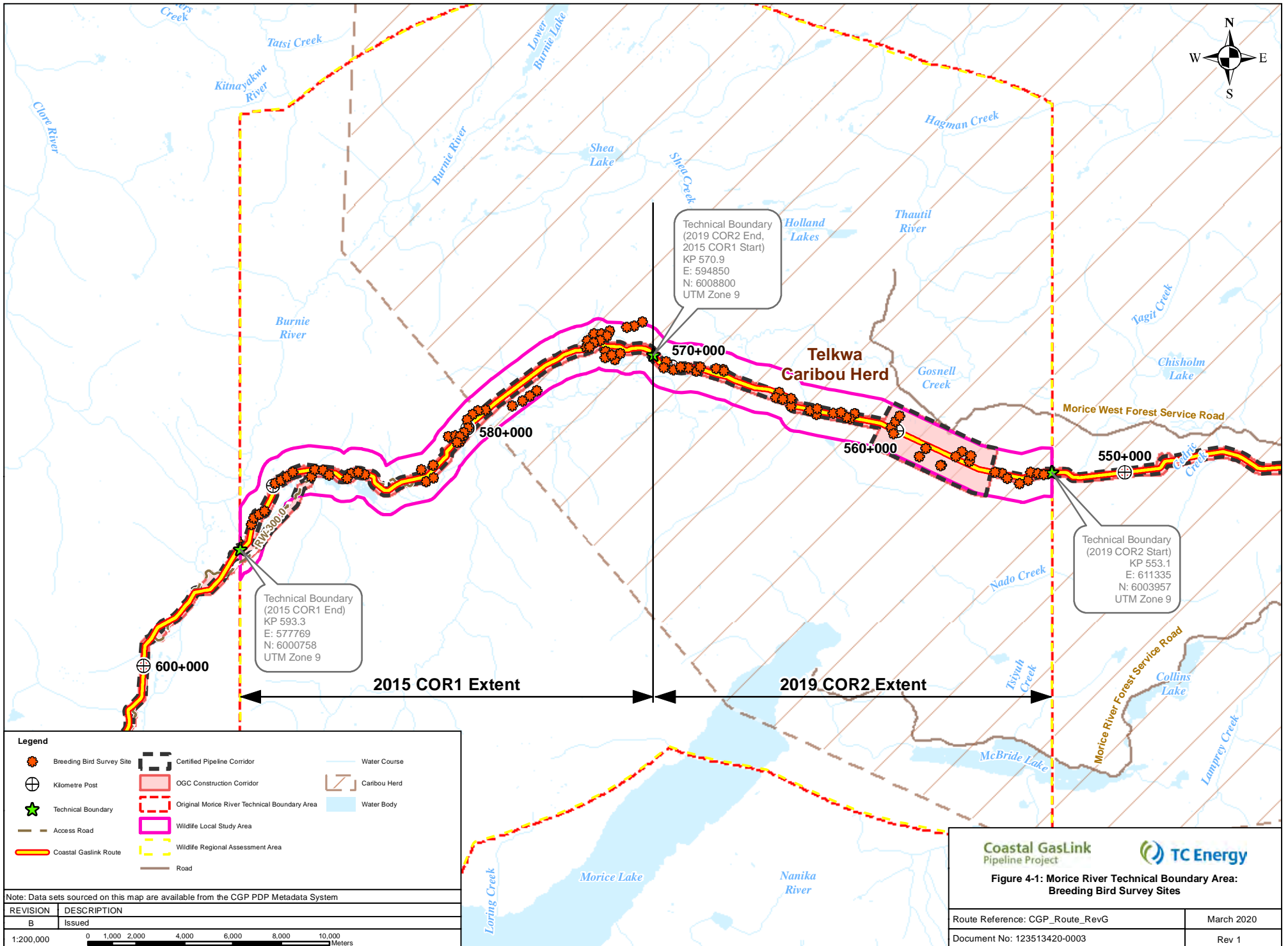
¹ The extent of the 2015 Aerial Waterfowl Survey included a portion of the LSA east of the defined Technical Boundary 2015 COR1 boundary, but not east of the western extent of a ‘no-fly’ boundary. The spatial extent of the Aerial Waterfowl Survey in 2015 was considered adequate for addressing the field data gap in the Technical Boundary.

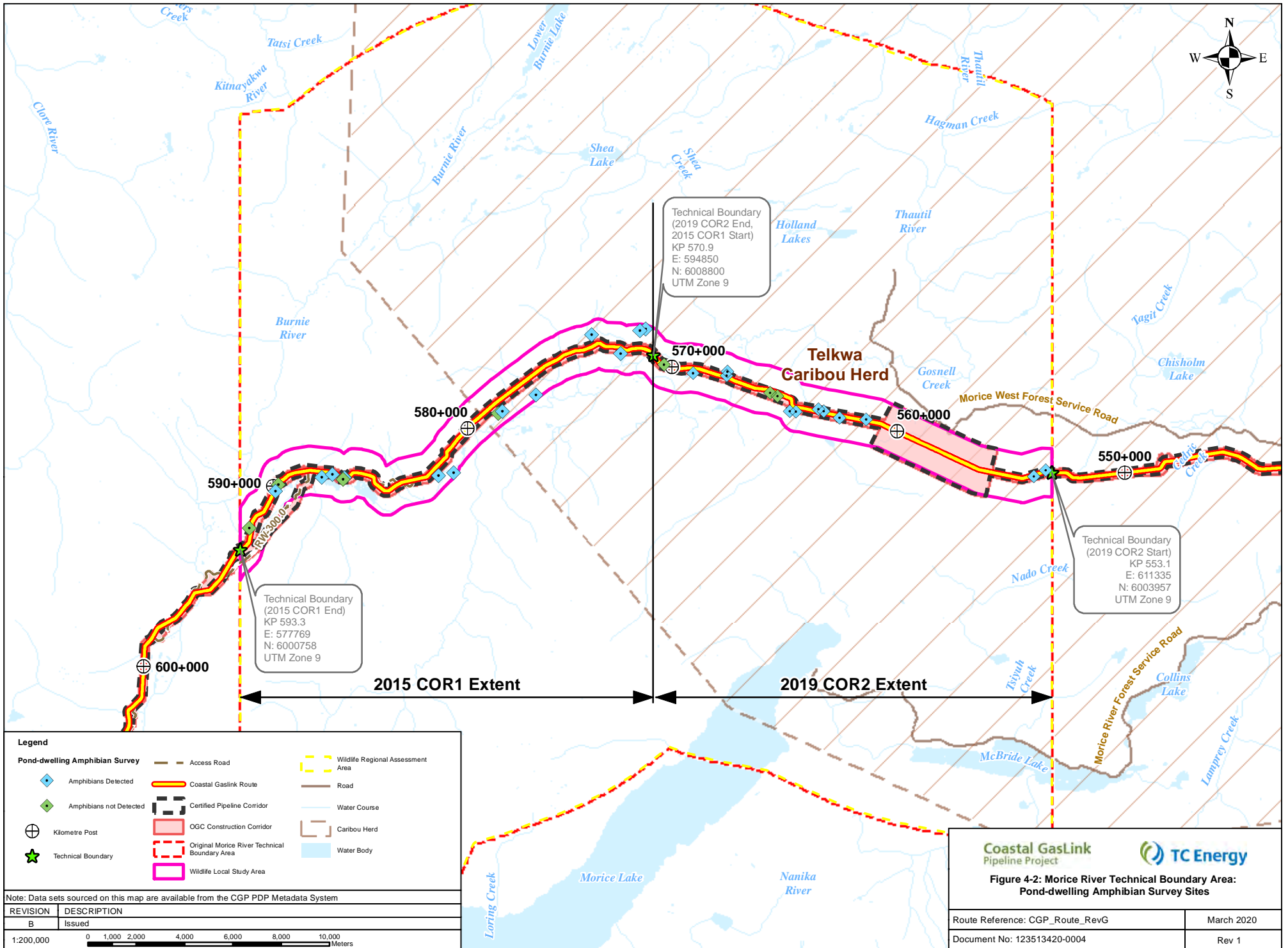
waterfowl and 15 were considered not suitable for waterfowl (Figure 4-4). None of the suitable wetlands overlapped the project footprint. Waterfowl that were detected were represented by four species: Barrow's goldeneye, Canada goose, mallard, and bufflehead. None of these species are species of conservation concern.

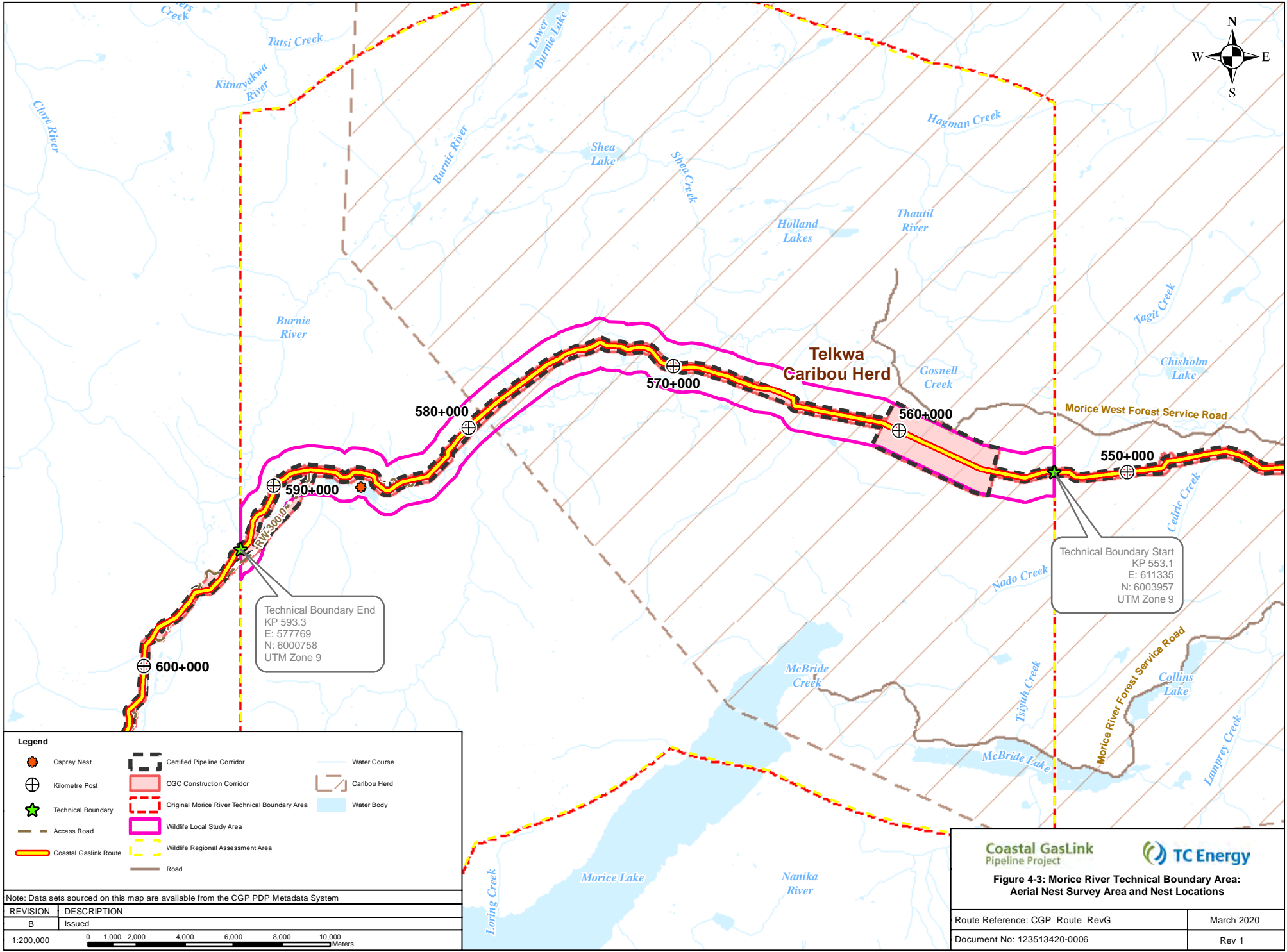
4.2 2019 COR2 TECHNICAL DATA REPORT

The 2019 COR2 Wildlife and Wildlife Habitat TDR covered the remaining portion of the Technical Boundary between 9U East 594850 North 6008800 and 9U East 611335 North 6003957 (Figure 3-1). In this 2020 COR2 Wildlife and Wildlife Habitat TDR, Sections 5.0 to 7.0 describe the traditional ecological knowledge, methodology, and results specific to the portion of the Technical Boundary covered by the 2019 COR2 Wildlife and Wildlife Habitat TDR as noted above. To summarize:

- Breeding Bird Survey – Fifty-three sites were surveyed in June 2019 (Figure 4-1). Most sites (48) were in coniferous forest, and most of those were in mature (30 sites) and young (12 sites) forest. Forty-three species were detected, of which one was a species of conservation concern: olive-sided flycatcher.
- Pond-dwelling Amphibian Survey – Fourteen sites were surveyed in 2019 (Figure 4-2). Amphibians were detected at 11 of the 14 sites. Columbia spotted frog was the most abundant and most frequently detected species and occurred at 8 of the 11 sites that had detections. Western toad, a species of conservation concern, was detected from 6 of the 11 sites that had detections. Long-toed salamander was the only other amphibian species detected.
- Aerial Nest Survey – No raptor or heron nests were observed, although detection of such nests was likely limited in those areas where restrictions on helicopter activity as described in a permit authorization to undertake the survey were applicable.







Legend

- Osprey Nest
- Kilometre Post
- Technical Boundary
- Access Road
- Coastal GasLink Route
- Certified Pipeline Corridor
- OGC Construction Corridor
- Original Morice River Technical Boundary Area
- Wildlife Local Study Area
- Wildlife Regional Assessment Area
- Water Course
- Caribou Herd
- Water Body
- Road

Note: Data sets sourced on this map are available from the CGP PDP Metadata System

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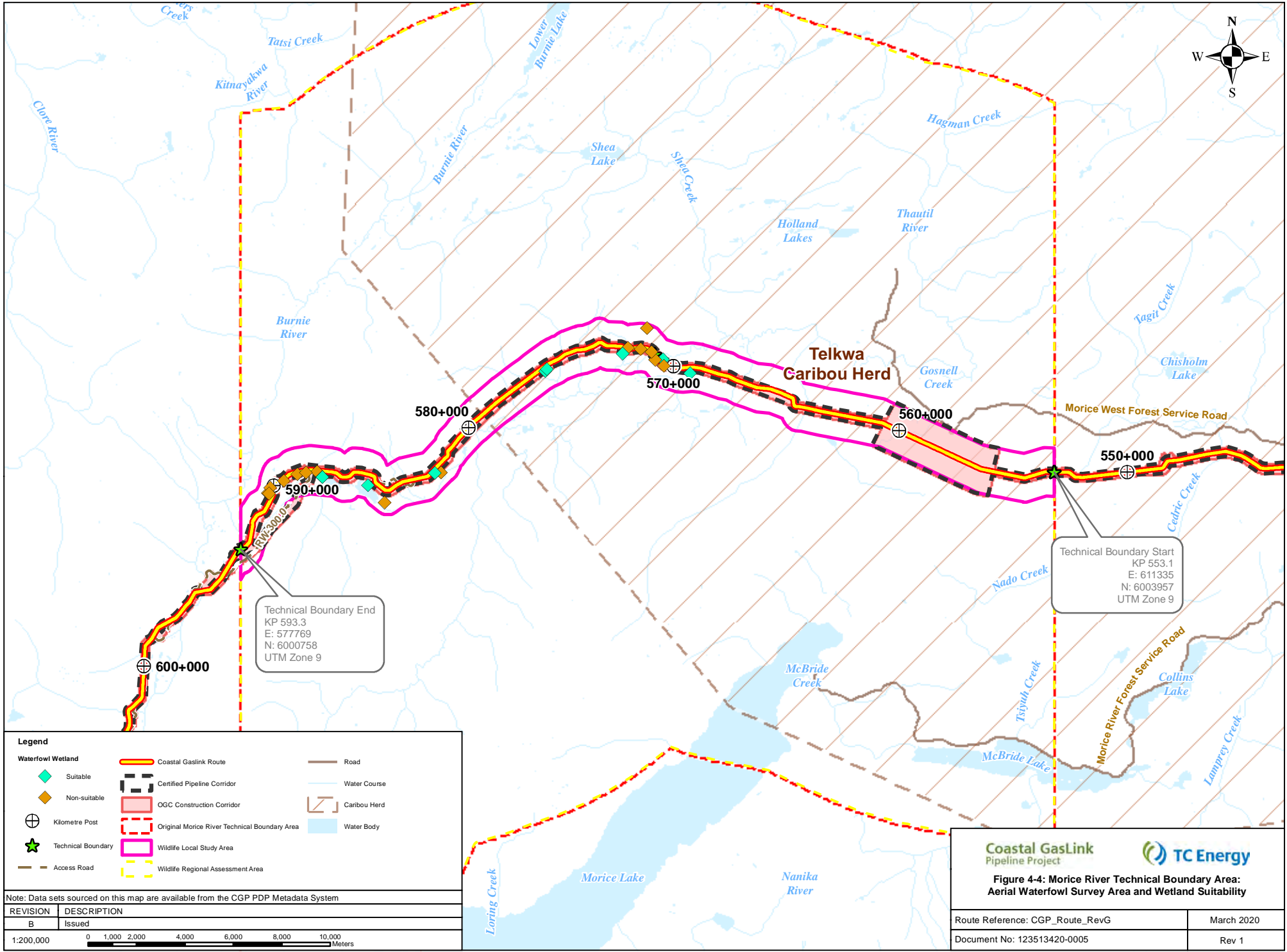
0 1,000 2,000 4,000 6,000 8,000 10,000 Meters

Coastal GasLink Pipeline Project

TC Energy

Figure 4-3: Morice River Technical Boundary Area: Aerial Nest Survey Area and Nest Locations

Route Reference: CGP_Route_RevG	March 2020
Document No: 123513420-0006	Rev 1



Legend

Suitable	Coastal GasLink Route	Road
Non-suitable	Certified Pipeline Corridor	Water Course
Kilometre Post	OGC Construction Corridor	Caribou Herd
Technical Boundary	Original Morice River Technical Boundary Area	Water Body
Access Road	Wildlife Local Study Area	Wildlife Regional Assessment Area

Note: Data sets sourced on this map are available from the CGP PDP Metadata System

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Figure 4-4: Morice River Technical Boundary Area: Aerial Waterfowl Survey Area and Wetland Suitability	
Route Reference: CGP_Route_RevG	March 2020
Document No: 123513420-0005	Rev 1

5.0 TRADITIONAL ECOLOGICAL KNOWLEDGE

Coastal GasLink offered Aboriginal groups with an interest in the reduced Technical Boundary the opportunity to participate in biophysical field investigations and contribute Aboriginal Traditional Knowledge (ATK) as part of Coastal GasLink's biophysical field investigations in the Technical Boundary in accordance with the Project's AIRs. ATK considers both Traditional Use Studies (TUS) and Traditional Ecological Knowledge (TEK). Aboriginal groups with an interest in the Project area completed TUS within the reduced Technical Boundary study area; these studies were considered in the Environmental Assessment Certificate (EAC) Application effects assessment. Some Aboriginal groups chose not to conduct TUS for the Project and provided information directly to the BC Environmental Assessment Office (EAO) instead. To satisfy the intent of EAC Condition 1, Coastal GasLink therefore focused on collecting TEK in the reduced Technical Boundary in locations where TEK had not been previously gathered during the 2015 field program. CH2M HILL Canada Limited (Jacobs) was commissioned to facilitate the participation of potentially affected Aboriginal groups during the biophysical field work for the Project within the reduced Technical Boundary.

On May 24, 2019, Coastal GasLink sent letters inviting the following Aboriginal groups with an interest in the reduced Technical Boundary study area to participate in the baseline field program:

- Dark House;
- Nee-Tahi-Buhn Band;
- Office of the Hereditary Chiefs of the Wet'suwet'en;
- Skin Tyee Nation;
- Witset First Nation (previously Moricetown Indian Band); and
- Wet'suwet'en First Nation.

For the 2019 field program within the reduced Technical Boundary, TEK was provided by community members from Witset First Nation (previously Moricetown Indian Band), Skin Tyee Nation and Wet'suwet'en First Nation. Participants from Dark House and Office of the Hereditary Chiefs of the Wet'suwet'en were invited to participate through a third-party Aboriginal contractor. These participants attended the field studies but did not participate on behalf of the Office of the Hereditary Chiefs of the Wet'suwet'en and Dark House, and they did not provide TEK. Nee-Tahi-Buhn Band chose not to participate in the 2019 field program.

5.1 TRADITIONAL ECOLOGICAL KNOWLEDGE FIELD SURVEY OBJECTIVES

Aboriginal participation objectives during the biophysical field programs (*i.e.*, the fish and fish habitat field program, the pond-dwelling amphibian survey, and the rare plant vegetation field surveys) were as follows:

- document the TEK of Aboriginal participants who choose to share it;
- supplement the field survey design and execution;
- confirm 2019 TEK field program findings align with TEK previously collected (*i.e.* prior to 2019) as part of the Project;
- identify potential adverse effects of the reduced Technical Boundary on environmental and TEK resources; and,
- integrate TEK into mitigation development to manage environmental effects.

Key issues and concerns previously identified by Aboriginal groups during preliminary engagement in 2013 and throughout field surveys in 2014, 2015, and 2016 overlap with concerns raised during the 2019 field surveys for the reduced Technical Boundary. Coastal GasLink's responses to the issues and concerns previously raised were submitted in 2013 to Aboriginal groups and are available in Section 23 of the original EAC Application submitted in March 2014, as well as in the Aboriginal Consultation Reports that have been filed for the Project. Additional issues or concerns raised during participation on subsequent Project field surveys have been considered in Project planning, including the development of management plans to satisfy the Project's EAC conditions.

Coastal GasLink conducted a comprehensive review of recommended mitigation measures and any interests and concerns raised by each Aboriginal group who participated in the 2019 field program for the reduced Technical Boundary

5.2 SUMMARY OF PARTICIPATION

Aboriginal field survey participation for the reduced Technical Boundary was conducted between July 15 and 20, 2019. Table 5-1 summarizes Aboriginal group participation in the fish and fish habitat field program, the pond-dwelling amphibian survey, and the rare plant vegetation field surveys. TEK collected in the field was compiled into a memorandum (results review memos) that was sent to Aboriginal groups for review and accuracy. TEK information collected by Jacobs facilitators was compiled and provided to communities on the dates outlined in Table 5-1.

Coastal GasLink Pipeline Project

Appendix D: Environmental Assessment Certificate

Condition 1

Wildlife and Wildlife Habitat Technical Data Report #2

Section 5.0

Traditional Ecological Knowledge

Table 5-1: 2019 Aboriginal Group Field Survey Participation in the Reduced Technical Boundary

Aboriginal Group	Fish and Fish Habitat	Rare Plants	Pond-Dwelling Amphibians	Results Review Memos Sent
Dark House	July 19, 2019	July 18, 2019 July 20, 2019	July 18, 2019 July 20, 2019	No TEK collected
Skin Tyee Nation	July 19, 2019	July 18, 2019 July 20, 2019	July 16, 2019	August 2, 2019
Witset First Nation	July 20, 2019	July 16, 2019	July 18, 2019 July 19, 2019	August 2, 2019
Office of the Hereditary Chiefs of the Wet'suwet'en	July 20, 2019	July 16, 2019	July 16, 2019	No TEK collected
Wet'suwet'en First Nation	July 20, 2019	July 16, 2019	July 18, 2019 July 19, 2019	August 7, 2019
Wet'suwet'en community members attended biophysical field studies, as facilitated through a third-party Aboriginal contractor but did not participate on behalf of Office of the Hereditary Chiefs of the Wet'suwet'en or Dark House.				

6.0 METHODOLOGY

The methods used to gather additional baseline field data to support the assessment of potential adverse effects and cumulative effects of the Project are consistent with those used in the EAC Application, are based on the approved AIR for the Project, and are provided in Section 6.1 of this 2020 COR2 Wildlife and Wildlife Habitat TDR.

The same key indicators used in the EAC Application are used in this 2020 COR2 Wildlife and Wildlife Habitat TDR, as applicable, based on the expected overlap of the key indicators within the Technical Boundary. Key indicators used in the EAC Application that do not overlap the Technical Boundary RSA are marine birds, marbled murrelet, Canada warbler, and coastal tailed frog.

6.1 FIELD SURVEYS

Breeding bird and pond-dwelling amphibian surveys were completed in the Technical Boundary LSA. The aerial nest survey was undertaken in the Technical Boundary RSA. The methods used for these field surveys are summarized below and described in detail in Section 3.5 of Appendix 2L of the EAC Application.

6.1.1 Breeding Bird Surveys

Breeding bird surveys were completed to determine baseline estimates of species richness, abundance, and diversity. Surveys followed provincial standards for relative abundance (RIC 1999) as described in Section 3.5.7 of Appendix 2L of the EAC Application. Surveys were undertaken from June 21 to June 27, 2019.

6.1.2 Pond-dwelling Amphibian Surveys

Pond-dwelling amphibian surveys were undertaken to provide information on wetland use by amphibians, particularly western toad. Western toad is designated as Special Concern on Schedule 1 of the *Species at Risk Act (SARA)* and is Yellow-listed in British Columbia (BC CDC 2019) [western toad has been down-listed in British Columbia from 'Blue' since the EAC Application was filed]. Field methods followed provincial standards for relative abundance (RIC 1998a) as described in Section 3.5.7 of Appendix 2L of the EAC Application. Supplemental surveys were undertaken from July 16 to July 22, 2019.

6.1.3 Aerial Nest Survey

Aerial nest surveys within the Technical Boundary were undertaken to search for bald eagle, osprey, and great blue heron nests in 2013, 2015, and 2019 with the primary goal of identifying locations of existing nests that may interact with the Project, either directly (i.e., overlapping the project footprint) or indirectly (i.e., the project footprint

would be within a recommended setback associated with the nest). In addition to bald eagle, osprey, or great blue heron nest locations, observations of incidental stick nests and observations of all wildlife species were recorded. Field methods were guided by provincial standards for raptor (RIC 2001) and great blue heron (RIC 1998b) surveys, as described in Section 3.5.3 of Appendix 2L of the EAC Application. In 2019, the aerial nest survey was undertaken on May 8, 2019 within the portion of the Technical Boundary covered by the 2019 COR2.

An application for a General Wildlife Permit under the *Wildlife Act* was submitted to British Columbia Ministry of Forests, Lands, Natural Resource Operations, and Rural Development (BC MFLNRORD) on March 6, 2019, prior to the survey. Due to a backlog of permit applications, BC MFLNRORD issued an interim authorization with conditions. The flight conditions and restrictions applicable to the portion of the Technical Boundary where the survey was planned for were:

- Do not directly approach, hover over, or land near mountain goats, moose, elk, or caribou;
- Do not directly approach, hover over or circle near, or land within 500 m of known wolverine den sites between February 1 and June 30;
- Must not occur over the Telkwa Caribou Herd Area between May 15 and June 15;
- Must not occur below 500 m above ground level over the Telkwa Caribou Range and Telkwa Caribou Wildlife Habitat Area 6-333, with an increased no fly buffer of 1,500 m vertical and horizontal distance from any occupied caribou range;
- If disturbance of animals is detected, the abandonment of the portion of the survey is immediate and follow-up surveys be completed during a window of least risk to be discussed and approved by BC MFLNRORD; and
- Do not circle or hover around raptor nests and ungulates encountered, as classification of species is not an objective, in order to avoid disruption and displacement during this critical period.

The survey was completed in accordance with all BC MFLNRORD authorization conditions. The boundaries of the Telkwa Caribou Herd Areas and Wildlife Habitat Area 6-333 (including the required horizontal distance restrictions) were uploaded onto Collector (an ArcGIS app-based data collection and organization system) and paired with a Trimble R-1 Global Navigation Satellite System device to track the location of the helicopter relative to these areas to confirm that all flight restrictions were followed. Due to limitations associated with the flight restrictions, additional scans with binoculars were used to scan the forest canopy to aid in identifying large conspicuous nests from the required flight altitudes.

7.0 RESULTS

7.1 FIELD SURVEYS

7.1.1 Breeding Bird Surveys

Breeding bird surveys were completed in June 2019 at 53 sites within the portion of the Technical Boundary LSA covered by the 2019 COR2 (see Figure 4-1). Survey target sites were located within coniferous forest (48 sites), deciduous forest (1 site), and wetlands (4 sites). The most frequently surveyed forest types were mature coniferous (30 sites) and young coniferous (12 sites) forest.

During the 2019 breeding bird surveys, 43 bird species were detected. The most frequently detected species were Swainson's thrush (81), dark-eyed junco (50), yellow-rumped warbler (48), pine siskin (29), and ruby-crowned kinglet (26).

One species of conservation concern, olive-sided flycatcher, was detected at four sites during breeding bird surveys, and incidentally at another eight locations. Olive-sided flycatcher is designated as Threatened on Schedule 1 of SARA and is Blue-listed in British Columbia (BC CDC 2019).

7.1.2 Pond-dwelling Amphibian Surveys

Pond-dwelling amphibian surveys were completed in the 2019 field season at 14 sites within the portion of the Technical Boundary LSA covered by the 2019 COR2 (see Figure 4-2). Surveys were completed at bogs (7), fens (5), ephemeral ponds (1), and shallow open water sites (1).

Amphibians were detected at 11 of the 14 sites. Columbia spotted frog was the most abundant and most frequently detected species during amphibian surveys (111 individuals detected across 8 sites). Long-toed salamander was detected at seven sites (107 individuals). One species of conservation concern, western toad, was detected at six sites (14 individuals). Western toad is designated as Special Concern on Schedule 1 of SARA and is Yellow-listed within British Columbia (BC CDC 2019).

7.1.3 Aerial Nest Survey

The flight restrictions described in Section 6.1.3 resulted in limitations to identifying inconspicuous stick nests, as it was difficult to detect this feature within intact mature coniferous forests during flights at 500 m above ground level over the portion of the Technical Boundary covered by the 2019 COR2 Wildlife and Wildlife Habitat TDR (see Figure 4-3). In consideration of this limitation, no large stick nests or active raptor or heron nests were observed during the aerial nest survey.

8.0 MORICE RIVER TECHNICAL BOUNDARY AREA KEY FINDINGS AND CONCLUSIONS

Based on wildlife surveys completed in the Technical Boundary in 2013, 2014, 2015, and 2019, three species of conservation concern were detected: olive-sided flycatcher, rusty blackbird, and western toad. Olive-sided flycatcher and rusty blackbird are Blue-listed provincially, and western toad is Yellow-listed provincially (down-listed from Blue since filing the EAC Application). Olive-sided flycatcher is designated as Threatened under Schedule 1 of *SARA*, and rusty blackbird and western toad are designated as Special Concern under Schedule 1 of *SARA* (BC CDC 2015).

One inactive osprey nest was detected in the Technical Boundary LSA in 2015, and no stick nests were observed in 2019. The osprey nest is located approximately 500 m from the project footprint. Mitigation for osprey nests (and other raptor species) is described in Section 10.6 of the EAC Application. Wildlife habitat features, as well as confirmed breeding locations for designated species, are being considered in ongoing Project design and construction planning.

The bird and amphibian species detected during breeding bird and pond-dwelling amphibian surveys for the Technical Boundary were similar (i.e. no new species were detected) to those species detected in areas surveyed adjacent to the Technical Boundary and reported on in the EAC Application. This similarity was not unexpected given the similarities in habitats in the region. Waterfowl habitat suitability and species diversity were also similar to areas adjacent to the Technical Boundary, whereby wetlands were generally unsuitable (i.e., inundated by trees and/or shrubs with little to no open water) and waterfowl species richness and diversity was low among the few wetlands that were suitable.

Collectively, there are no material differences among the baseline filed data reported in the EAC Application, the 2015 COR1 Wildlife and Wildlife Habitat TDR, and the 2019 COR2 Wildlife and Wildlife Habitat TDR. The field data and results presented in the 2015 COR1 Wildlife and Wildlife Habitat TDR and 2019 COR2 Wildlife and Wildlife Habitat TDR support the conclusions of the EAC Application and the EAO's Assessment Report that significant adverse effects on the indicator species considered in the Wildlife and Wildlife Habitat VC are not likely, and that additional mitigation measures not already included in the EMP are not needed.

9.0 REFERENCES

- BC EAO (British Columbia Environmental Assessment Office). 2009. Fairness and Service Code.
- BC EAO (British Columbia Environmental Assessment Office). 2010, amended 2013. Proponent Guide for Providing First Nation Consultation Information 24 (Non-Treaty First Nations).
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- (RIC) Resources Inventory Committee. 1998a. Inventory methods for pond-breeding amphibians and painted turtle. Standards for Components of British Columbia's Biodiversity No. 37. British Columbia Ministry of Environment, Lands and Parks, Victoria, BC. 94 pp.
- (RIC) Resources Inventory Committee. 1998b. Inventory methods for colonial nesting freshwater birds: eared grebe, red-necked grebe, western grebe, American white pelican and great blue heron. Standards for Components of British Columbia's Biodiversity No. 8. British Columbia Ministry of Environment, Lands and Parks, Victoria, BC. 82 pp.
- (RIC) Resources Inventory Committee. 1999. Inventory methods for forest and grassland songbirds. Standards for Components of British Columbia's Biodiversity No. 15. British Columbia Ministry of Environment, Lands and Parks, Victoria, BC. 37 pp.
- (RIC) Resources Inventory Committee. 2001. Inventory methods for raptors. Standards for Components of British Columbia's Biodiversity No. 11. British Columbia Ministry of Environment, Lands, and Parks, Victoria, BC. 133 pp.

Appendix D.1: Abbreviations and Acronyms

Abbreviation	Definition
AIR	Application Information Requirements
BC	British Columbia
2015 COR1	Environmental Assessment Certificate #E14-03 Condition 1 Report #1 (October 30, 2015)
2019 COR2	Environmental Assessment Certificate #E14-03 Condition 1 Report #2 (November 19, 2019)
2020 COR2	Environmental Assessment Certificate #E14-03 Condition 1 Report #2 (July 17, 2020)
EAC	Environmental Assessment Certificate
EAC Condition 1	EAC E14-03 Schedule B Condition #1
EAO	Environmental Assessment Office
EMP	Environmental Management Plan
LSA	Local Study Area
MFLNRORD	Ministry of Forests, Lands, Natural Resource Operations and Rural Development
RSA	Regional Study Area
SARA	<i>Species at Risk Act</i>
TDR	Technical Data Report
UTM	Universal Traverse Mercator
VC	Valued Component