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Supplemental Environmental and Socio-economic Assessment

Pointed Mountain Pipeline Abandonment Project

Rev 0

September 2023

Westcoast Energy Inc.

Pointed Mountain Pipeline Abandonment Project

Supplemental Environmental and Socio-economic Assessment

Project No.:	CE809300
Document Title:	Pointed Mountain Pipeline Abandonment Project
Document No.:	230724104041_20706df5
Revision:	Draft – Rev 0
Date:	September 2023
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Acronyms and Abbreviations

AB	Alberta
AIA	Archaeological Impact Assessment
AOA	Archaeology Overview Assessment
ATV	all-terrain vehicle
BC	British Columbia
BC MFLNRO	British Columbia Ministry of Forests, Lands, Natural Resource Operations
BC Reg.	British Columbia Regulation
CAC	criteria air contaminant
CCME	Canadian Council of Ministers of the Environment
CEA	Cumulative Effects Assessment
CER	Canada Energy Regulator
CH_4	methane
CIRNAC	Crown-Indigenous Relations and Northern Affairs Canada
cm	centimetre(s)
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
CR	Conformity Requirement
CWCS	Canadian Wetlands Classification System
DFO	Fisheries and Oceans Canada
EI	Environmental Inspector
EPMR	Environmental Protection and Management Regulation
EPP	Environmental Protection Plan
ERIS	Environmental Risk Information Services
ESA	Environmental and Socio-economic Assessment
ESIS	Environmental Site Information Sheet
GHG	greenhouse gas
GBPU	Grizzly Bear Population Unit
GNWT	Government of the Northwest Territories
ha	hectare(s)
HORU	Human Occupancy and Resource Use
ID	identification
IUCN	International Union on the Conservation of Nature Task Force
IWA	Important Wildlife Area
km	kilometre(s)
KP	Kilometre Post
LSA	Local Study Area

m	metre(s)
m^3/ha	cubic metre(s) per hectare
mm	millimetre(s)
N/A	not applicable
N_2	nitrogen gas
No.	number
NO_2	nitrogen dioxide
NPS	Nominal Pipe Size
NT1	Northwest Territories range
NTS	National Topographic System of Canada
NWT	Northwest Territories
NWT ENR	Northwest Territories Environment and Natural Resources
PCEM	postconstruction environmental monitoring
Project	Pointed Mountain Pipeline Abandonment Project
PM	Pointed Mountain
PVC	polyvinyl chloride
QP	Qualified Professional
RAP	Restricted Activity Period
RCMP	Royal Canadian Mounted Police
RSA	Regional Study Area
SARA	Species at Risk Act
SERC	Socio-Economic Requirements of Contractors
TLP	Test Lead Post
TLRU	Traditional Land and Resource Use
TLU	Traditional Land Use
TSS	total suspended solids
TWS	temporary workspace
UNDRIP	United Nations Declaration of Rights of Indigenous Peoples
UTM	Universal Transverse Mercator
WC	watercourse
Westcoast	Westcoast Energy Inc.
YESAA	*Yukon Environmental and Socio-Economic Assessment Act*
YESAB	Yukon Environmental and Socio-economic Assessment Board
YG	Government of Yukon
Yukon CDC	Yukon Conservation Data Centre
ZOI	zone of influence

1. Introduction

In February 2022, Westcoast Energy Inc. (Westcoast) submitted an Application (original Application) (Canada Energy Regulator [CER] File No. C17537) under Section 241 of the Canadian Energy Regulator Act for approval to abandon the Pointed Mountain Pipeline (the Project). The Project consists of the abandonment of approximately 56 kilometres (km) of Nominal Pipe Size (NPS) 20 natural gas pipeline situated in the southwestern corner of the Northwest Territories (NWT), southeastern corner of the Yukon, and northeastern corner of British Columbia (BC) and is regulated by the CER. The pipeline is deactivated and has no prospective future use. As such, Westcoast is planning to take the Pointed Mountain Pipeline permanently out of service by moving on to the abandonment phase.

The buried pipeline will be abandoned in place. Physical abandonment activities (e.g., cutting, capping) will be confined to the existing right-of-way and areas where aboveground infrastructure is located. The Project footprint is made up of the area directly disturbed by Project physical abandonment and cleanup activities, including associated physical works and activities (i.e., i.e., pipeline right-of-way, temporary workspace [TWS], and access routes). Subject to receipt of regulatory approval, physical abandonment activities are scheduled to commence in fall 2024 and be complete by summer 2025.

Westcoast had commissioned Jacobs Consultancy Canada Inc. (Jacobs) to prepare an Environmental and Socio-economic Assessment (ESA) to identify potential effects, predict the residual effects, and evaluate their significance associated with the Project (original ESA). This ESA dated January 2022, was filed as part of the original Application (File No. C17537-5).

1.1 Objectives

Since preparing and submitting the original ESA, Project details have been refined, and further planning and design has been completed on the Project. The objective of this document is to provide the CER with supplemental environmental and socio-economic information related to certain updates to the Project (supplemental ESA).

Specifically, the intent of this document is to provide the following information to the CER:

- Section 2: A summary of changes to the Project
- Section 3: An update on engagement conducted since the original ESA was filed
- Section 4: A summary of the environmental and socio-economic considerations resulting from changes to the Project and ongoing engagement, including an updated greenhouse gas (GHG) calculation
- Section 5: Proposed changes to the mitigation described in the Environmental Protection Plan (EPP) submitted as part of the original ESA (Appendix A provides an updated EPP for the Project)
- Section 6: An evaluation of the potential effects and Cumulative Effects Assessment (CEA) completed for the Project considering the changes to the Project, updated engagement activities, additional studies, and changes to the proposed mitigation
- Section 7: A summary of the findings of the supplemental ESA
- Section 8: A references list of the citations used to generate this report
- Appendix A: Updated Environmental Protection Plan (EPP)
- Appendix B: Updated Environmental Site Information Sheets (ESISs) for new sites and right-of-way access

2. Changes to the Project

This section describes proposed changes to the Project, including:

- The addition of two new sites where physical abandonment activities will occur
- A change in season for physical abandonment activities in the NWT
- New access plans for execution of the Project
- Additional details about the construction camp locations

Figure 2-1 shows the location of aboveground infrastructure sites.

2.1 New Physical Abandonment Sites

In addition to the nine physical abandonment sites contemplated in the original ESA, there are two new sites where physical abandonment activities will occur, indicated as Project Update in Table 2-1.

Table 2-1. Site Features Along the Pointed Mountain Pipeline

Site Feature	Original ESA or Project Update	KP	Legal	Province or Territory
PM-1: Pointed Mountain Launcher	Original ESA	0.00	95B5NW (NTS Grid 20K)	NWT
PM-2: Producer Tie-in	Original ESA	11.10	95B5SW (NTS Grid 20K)	NWT
PM-3: N_2 Vent	Original ESA	18.04	95B4NW (NTS Grid 20K)	NWT
PM-4: N_2 Vent	Original ESA	19.25	95B4NW (NTS Grid 20K)	NWT
PM-4A: Pipe Exposure (New)	**Project Update**	28.60	**95C1NE (NTS Grid 20K)**	**NWT**
PM-6: Producer Tie-in	Original ESA	34.28	95C1SE (NTS Grid 20K)	Yukon
PM-7: Launcher	Original ESA	34.92	95C1SE (NTS Grid 20K)	Yukon
PM-7A: Pipe Exposure (New)	**Project Update**	46.30	**95C1SE (NTS Grid 20K)**	**Yukon**
PM-8: Aboveground Riser	Original ESA	54.50	94N16NE (NTS Grid 20K)	BC
PM-9: Aboveground Riser	Original ESA	55.00	94N16NE (NTS Grid 20K)	BC
PM-10: Receiver	Original ESA	55.64	94N16NE (NTS Grid 20K)	BC

Notes:
KP = Kilometre Post
N_2 = nitrogen gas
NTS = National Topographic System of Canada
PM = Pointed Mountain

Both of the new sites are located at and adjacent to watercourses and include PM-4A and PM-7A, where exposed pipe will be removed. The approximate lengths of pipe to be removed at these locations is 50 metres (m) at PM-4A and 105 m at PM-7A.

TWS is required at each of these sites, and will include:

- PM-4A: A 200m by 20.12m TWS area centred on the right-of-way
- PM-7A: A 400 m by 20.12 m TWS area centred on the right-of-way

There are 22 test lead posts (TLPs) that are part of the cathodic protection system for the Pointed Mountain Pipeline. The TLPs consist of a core assembly within a polyvinyl chloride (PVC) conduit that extends approximately 0.6 m above grade.

The original ESA indicated that nine TLPs were planned to be removed as they are located along the portion of existing right-of-way that would be used for access (Table 2.4-3 of the original ESA). The removal of the remaining 13 TLPs would have required vegetation brushing, including wetlands in areas that otherwise would have remained undisturbed, hence the proposal to leave the TLPs in place. With the addition of the two new physical abandonment sites, seven additional TLPs between PM-2 and PM-4 may be encountered and will therefore be removed if conditions allow. Table 2-2 provides an updated list of TLPs that are proposed to be removed and those that are proposed to be left in place, subject to conditions at the time of access.

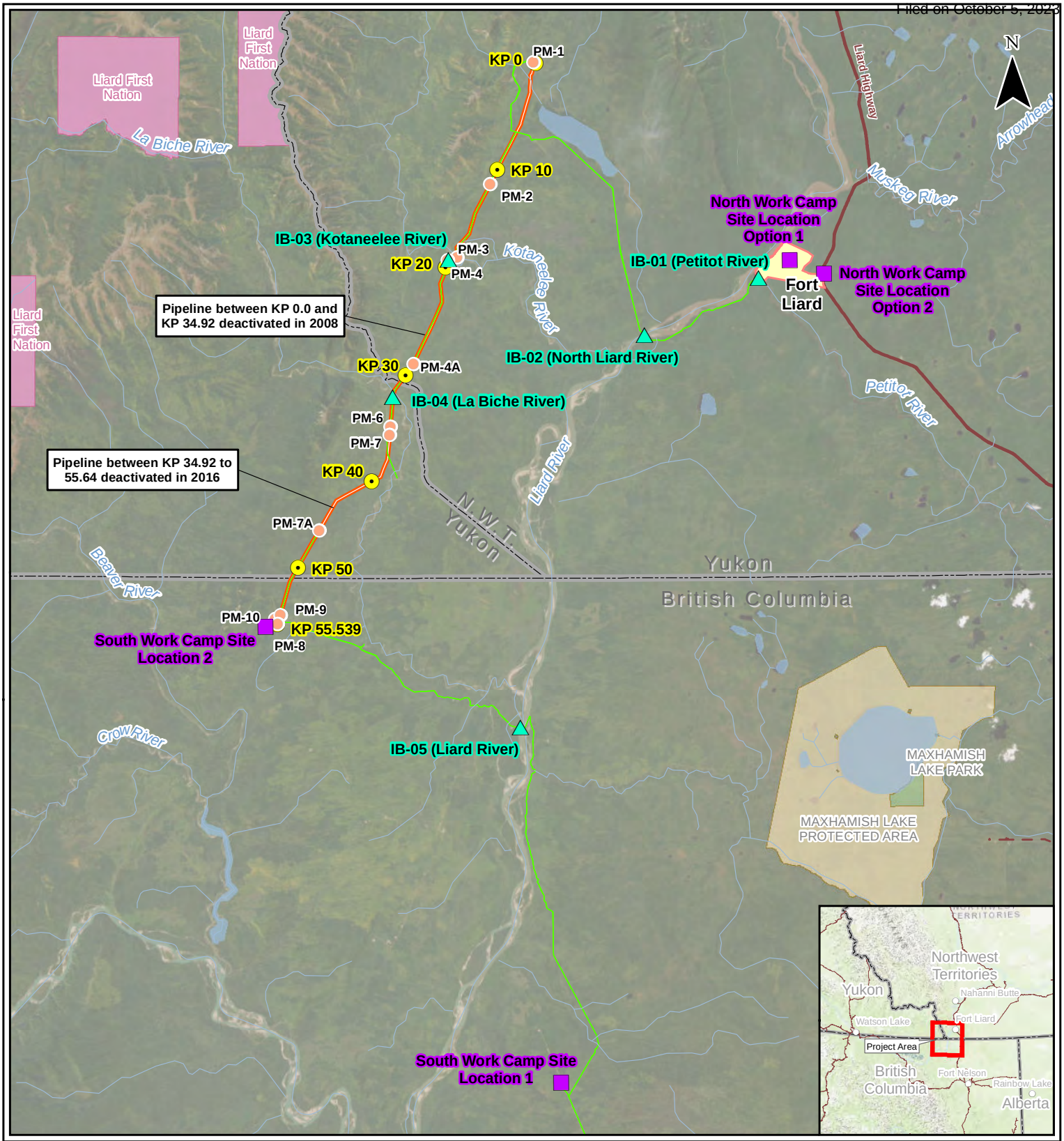
Table 2-2. Test Lead Posts

KP	Legal	Province or Territory	Removal or Left In Place
3.61	95B5SW (NTS Grid 20k)	NWT	Left in place
5.31	95B5SW (NTS Grid 20k)	NWT	Left in place
6.87	95B5SW (NTS Grid 20k)	NWT	Removal
8.99	95B5SW (NTS Grid 20k)	NWT	Removal
13.72	95B5SW (NTS Grid 20k)	NWT	Left in place
15.34	95B5SW (NTS Grid 20k)	NWT	Left in place
16.91	95B5SW (NTS Grid 20k)	NWT	Left in place
18.70	95B4NW (NTS Grid 20K)	NWT	Already removed
20.94	95B4NW (NTS Grid 20K)	NWT	Left in place
22.42	95B4NW (NTS Grid 20K)	NWT	Left in place
23.61	95B4NW (NTS Grid 20K)	NWT	Left in place
26.60	95B4NW (NTS Grid 20K)	NWT	Left in place
29.88	95C1NE (NTS Grid 20k)	Yukon	Removal
33.17	95C1NE (NTS Grid 20k)	Yukon	Removal
39.65	95C1SE (NTS Grid 20K)	Yukon	Removal
43.23	95C1SE (NTS Grid 20K)	Yukon	Removal
45.05	95C1SE (NTS Grid 20K)	Yukon	Removal
46.68	95C1SE (NTS Grid 20K)	Yukon	Removal
48.34	95C1SE (NTS Grid 20K)	Yukon	Removal
50.38	95C1SE (NTS Grid 20K)	Yukon	Removal
51.62	94N16NE (NTS Grid 20K)	BC	Removal
54.35	94N16NE (NTS Grid 20K)	BC	Removal

Notes:
KP = Kilometre Post

The following changes to the physical activities identified in Table 2.5-1 of the original ESA are anticipated:

- Additional brushing along the Pointed Mountain Pipeline right-of-way to facilitate access
- Brushing along the 12-km-long temporary access route near Fort Liard
- Pipe exposure removal at PM-4A and PM-7A
- Additional construction camp



Kilometre Post
Site Location
Camp
Ice Bridge
Pointed Mountain Pipeline Route
Access Road
Provincial Boundary
Highway
Watercourse
Water Body
Municipal Boundary
First Nations (Interim Protected Lands)
Protected Area
Provincial Park

FIGURE 2-1

PROJECT OVERVIEW ENVIRONMENTAL AND SOCIO-ECONOMIC ASSESSMENT

WESTCOAST ENERGY INC. POINTED MOUNTAIN PIPELINE

NAD 1983 UTM Zone 10N
Satellite Imagery: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community; Roads: NRCan 2014-2015; Railway: NRCan 2012.

SCALE: 1:450,000
0 5 10
Kilometres
(All Locations Approximate)

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Although there is no reason to believe that there are any errors associated with the data used to generate this product or in the product itself, users of these data are advised that errors in the data may be present.

September 2023

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2.2 Change of Season for Physical Activities

In the original ESA, physical abandonment activities were assumed to occur during the summer in the NWT. All Project activities are now scheduled for the winter.

2.3 Access Requirements

Access to physical abandonment sites has been refined since the original ESA. In general, access to sites in the Yukon and BC remains almost unchanged, with only minor refinements to the details of access, and the addition of two new sites requiring access along the existing right-of-way or existing access roads. However, access to sites in the NWT has changed more substantively, including with the planned installation of four additional ice bridges.

Access to physical abandonment sites in the NWT (PM-1, PM-2, PM-3, PM-4) will be by existing winter resource roads and the Pointed Mountain right-of-way. From Fort Liard, an ice bridge is planned at the Petitot River (IB-01) to facilitate temporary access west to an existing 12 km access road. An ice bridge is also planned at the Liard River (IB-02) to facilitate access to an existing Government of Northwest Territories (GNWT) road, which travels north to the existing Pointed Mountain Pipeline right-of-way. From the Pointed Mountain right-of-way, the existing GNWT road extends northeast directly to PM-1, and extends south, paralleling the right-of-way, allowing access to PM-2. From PM-2, the existing right-of-way will be used to access PM-3 through PM-4, with an ice bridge planned at the Kotaneelee River (IB-03).

Access to the PM-4A and PM-7A pipe exposures will be from the south, utilizing existing roads and the existing Pointed Mountain right-of-way. Ice bridges are planned to facilitate access at the La Biche River (IB-04) and the Liard River (IB-05).

To support winter access along the Pointed Mountain right-of-way, there are two water source locations identified on the La Biche River. Water source 1 is located between PM-7 and PM-7A. Water source 2 is located between PM-10 and IB-05. The water source locations have existing access and workspace, which may require vegetation brushing prior to use.

It remains the case that no new permanent access roads are required for the Project. Figure 2-1 shows the proposed access roads and ice bridge locations.

Vegetation brushing will be required along the existing Pointed Mountain Pipeline right-of-way and for the temporary access road. Table 2-3 lists the access plans and construction timing.

Table 2-3. Site Feature Access Plans for the Project

Site Feature	Construction Timing	Planned Access
PM-1	Winter	Existing winter resource roads, ice bridges (IB-01 and IB-02)
PM-2	Winter	Existing winter resource roads, ice bridges (IB-01 and IB-02)
PM-3	Winter	Existing winter resource roads, ice bridges (IB-01 and IB-02), Pointed Mountain right-of-way
PM-4	Winter	Existing winter resource roads, ice bridges (IB-01, IB-02, and IB-03), Pointed Mountain right-of-way
PM-4A	Winter	Existing winter resource roads, ice bridges (IB-04 and IB-05), Pointed Mountain right-of-way

Site Feature	Construction Timing	Planned Access
PM-7A	Winter	Existing winter resource roads, ice bridge (IB-05), Pointed Mountain right-of-way

2.4 Construction Workforce and Camps

Physical abandonment activities will require an estimated peak workforce of up to 120 people at one time, an increase from 25 assessed in the original ESA. This is due to work being completed in the northern portion (NWT) and southern portion (BC and Yukon) concurrently. Some additional labour will be required for construction of ice roads but is anticipated to be sourced locally. The same skill sets are required as outlined in the original ESA.

The original ESA included the use of an existing construction camp. As part of the new execution plan, two additional construction camps (Figure 2-1) are proposed as follows.

North Work Camp Site Location: Two locations are being considered for this camp, but only one camp will be used during construction in the north. Option 1 or 2 will be finalized when the contractor is selected.

- Option 1 – Use of an existing camp currently in use by Paramount Resources Ltd. and located next to the Beaver Enterprise Yard by Valley Main Street in Fort Liard, NWT. No additional clearing is required for this site; however, additional physical structures will be required.
- Option 2 – Use of a site next to the intersection of Highway 7 and Valley Main Street in Fort Liard, NWT. No additional clearing is required for this site; however, additional physical structures will be required.

South Work Camp Site Locations:

- South Work Camp Location 1 –Use of the Patry Flats Camp in BC, (assessed in the original ESA).
- South Work Camp Location 2 – Use of a site between PM-9 and PM-10. No additional clearing is required for this site; however, additional physical structures will be required.

3. Engagement

Westcoast has continued to carry out engagement activities with municipalities, provincial and territorial regulatory authorities, public stakeholders, and Indigenous groups to provide information and to understand concerns or issues that may arise regarding the Project. Attachment 4 of the original Application and Section 3 of the original ESA included the results of Westcoast's engagement efforts from May 2020 to February 2022. Engagement activities that have occurred since filing of the original Application are provided in Appendix C to the Project update.

4. Environmental and Socio-Economic Considerations

This section provides a summary of the changes to the environmental and socio-economic setting that result from the new Project footprint, including new physical abandonment sites and access requirements. Land use and environmental and socio-economic conditions along the existing Pointed Mountain Pipeline right-of-way remain the same as described in the original ESA.

4.1 New Physical Abandonment Sites

A summary of the environmental and socio-economic settings information for the new physical abandonment sites identified in Section 2.1 is provided in Table 4-1 and Table 4-2. The summary of considerations was prepared using desktop review of available sources and field surveys conducted from May 3 to 4, 2023 for aquatics and wildlife, July 25 to 29, 2023 for vegetation and wetlands, and August 23 to 26, 2023 for aquatics.

Table 4-1. Environmental and Socio-economic Elements and Considerations for PM-4A

Environmental and Socio-Economic Element	Summary of Considerations
Physical Environment and Soil and Soil Productivity	Terrain and soils at PM-4A are the same as those described for PM-4 in the physical environment and soil overview for the NWT in Section 5.2.2.1 of the original ESA. The Phase 1 and ERIS reports for the original ESA indicated that there were no records of contaminated sites near the Project property (Jacobs 2022c). Westcoast therefore does not expect any contamination of soils at PM-4A.
Vegetation	PM-4A is located on the existing regenerating pipeline footprint, dominated by shrubs within a wetland complex. Shrub cover includes river alder (*Alnus incana* ssp. *tenuifolia*), and fewer red-osier dogwood (*Cornus sericaea*), and balsam willow (*Salix pyrifolia*), which are present throughout most of the pipeline footprint. There are some mature trees at the edges of the site which are mostly black spruce (*Picea mariana)* and tamarack (*Larix laricina)*, with fewer balsam poplar (*Populus balsamifera*) and aspen (*Populus tremuloides*). Herb cover is low in this area. Grasses and sedges become more common close to the open water area of the wetland. The wetland to the southeast of the site becomes bog dominated by black spruce (*Picea mariana*) and common Labrador tea (*Rhododendron groenlandicum*). The site is heavily beaver influenced.
Aquatic Resources	PM-4A is located at unnamed tributary to the Kotaneelee River (WC-27a). The work to remove the pipe exposure will involve instream works that may temporarily impact fish and fish habitat and surface water quality; limited impact to groundwater quality is anticipated. Within the assessed reach, this watercourse has a channel and an oxbow. The oxbow is not connected to the mainstem. During the August 2023 field visit, the average channel and wetted widths were 2.4 m and 0.7 m, respectively. The approximate channel width of the oxbow was 5.0 m. The habitat was shallow run habitat with primarily fine and small gravel substrates. No fish were captured during fish sampling efforts.

Environmental and Socio-Economic Element	Summary of Considerations
Wetlands	PM-4A is located within a large wetland complex that extends east and west of the existing pipeline right-of-way and north of the exposure site and is associated with the Kotaneelee River (WC-27a). The wetland class on the exposure site and existing pipeline right-of-way is mixed treed swamp and there is an oxbow present on the site. There are various wetland classes within the complex, including bog habitat to the southeast and shrub swamp habitat to the north. Beaver activity has altered the hydrology within the wetland complex near the exposure site.
Wildlife and Wildlife Habitat	PM-4A is located along the existing pipeline right-of-way within a slow-moving watercourse and adjacent to shrubby wetlands. This site is located in an Important Wildlife Area (IWA) for moose (*Alces alces*) (Government of the NWT [GNWT] 2023), and is within the boreal woodland caribou (*Rangifer tarandus caribou*) range of the NWT (NT-1), which is considered critical habitat (Government of Canada 2020; GNWT 2023). This site is located within the Nahanni wood bison (*Bison athabascae*) range, a disease-free population in NWT (GNWT 2023). In May 2023, aerial- and ground-based surveys identified an old beaver dam adjacent to this site, which will not be impacted by physical abandonment activities. No recent beaver activity or beavers were observed. In August 2023, a potential bear den was identified during aquatics field assessments approximately 113 m to the south of PM-4A.
Air Emissions and GHGs	PM-4A is in a forested area with limited anthropogenic disturbance; therefore, air pollutants are limited.
Acoustic Environment	PM-4A is in a remote forested area, where noise sources and human noise receptors are generally limited to oil and gas operators and land users (e.g., recreation, hunting, trapping, and TLU). There are no residences or permanent receptors near PM-4A.
Heritage Resources	PM-4A is within previously disturbed areas with low archaeological potential.
TLRU	Indigenous groups have indicated that Crown land in the Project area is used for TLRU activities, including hunting, trapping, fishing, and plant gathering. TLRUs are unchanged from those described in the original ESA.
Socio-Economic Elements	Socio-economic conditions for the following elements are unchanged from those described in the original ESA: HORU Navigation and Navigation Safety Social and Cultural Wellbeing Infrastructure and Services Human Health Employment and Economy

Notes:
ERIS = Environmental Risk Information Services
HORU = Human Occupancy and Resource Use
WC = watercourse

Table 4-2. Environmental and Socio-economic Elements and Considerations for PM-7A

Environmental and Socio-Economic Element	Summary of Considerations
Physical Environment and, Soil and Soil Productivity	Terrain and soils at PM-7A are the same as those identified for PM-7 in the physical environment and soil overview for the Yukon in Section 5.2.2.1 of the original ESA. The Phase 1 and ERIS reports for the original ESA indicated that there were no records of contaminated sites near the Project property (Jacobs 2022c). Westcoast therefore does not expect contaminated soils at PM-7A.
Vegetation	PM-7A is located on the existing regenerating pipeline footprint, dominated by regenerating shrubs in a clearing within a wetland. Dominant shrubs present were willow species (*Salix spp.*) with scattered wild red raspberry (*Rubus idaeus*). Some very young trees were scattered throughout the clearing. The surrounding plant communities were more mature. There was a mature mixedwood forest to the east dominated by aspen (*Populus tremuloides*) and white spruce (*Picea glauca*) and a similar young mixedwood forest to the west. To the south there was a young deciduous forest dominated by aspen (*Populus tremuloides*). To the north there was a beaver dam and wetland.
Aquatic Resources	PM-7A is located on the unnamed tributary to the La Biche River (WC-36). The work to remove the pipe exposure will involve instream works that may temporarily impact fish and fish habitat and surface water quality, though limited impacts to groundwater quality is anticipated. A large beaver dam has been constructed on top of the exposed pipe and, multiple active beaver dams were identified upstream and downstream of the pipe exposure locations. Within the assessed reach, this stream is deep impoundment habitat dominated by fine and organic substrates and abundant woody debris and water depth as cover. During the August 2023 assessment the wetted width ranged from 1.9 m to 55.0 m wide. Two Arctic grayling were captured during fish sampling efforts. A large beaver dam has been constructed on top of the exposed pipe and created a large impoundment habitat.
Wetlands	PM-7A is located within the existing pipeline right-of-way in a mixed treed swamp associated with WC-36 that extends east of west of the existing pipeline right-of-way and north of the exposure site. There is a large beaver dam near the exposed pipe which has altered the wetland hydrology causing an impoundment that was outside of the exposure site at the time of the 2023 field work, although beaver activity has the potential to cause impoundment over the exposure site at various times of year.
Wildlife and Wildlife Habitat	PM-7A is located in a shrub-dominated area within a treed swamp associated with WC-36. This site is not located in woodland caribou herd range (YG 2023a), but is located within Nahanni wood bison range (YG 2023b). In May 2023, aerial- and ground-based surveys identified a large beaver dam requiring partial or full removal to release backend pressure to complete pipeline abandonment activities. Recent signs of beaver activity were observed, but no beavers.
Air Emissions and GHGs	PM-7A is located in a remote forested area with limited anthropogenic disturbance; therefore, air pollutants are limited.

Environmental and Socio-Economic Element	Summary of Considerations
Acoustic Environment	PM-7A is located in a remote forested area, where noise sources and human noise receptors are generally limited to oil and gas operators and land users (e.g., recreation, hunting, trapping, and TLU). There are no residences or permanent receptors near PM-7A.
Heritage Resources	PM-7A is within previously disturbed areas with low archaeological potential.
TLRU	Indigenous groups have indicated that Crown land in the Project area is used for TLRU activities, including hunting, trapping, fishing, and plant gathering. TLRUs are unchanged from those described in the original ESA.
Socio-Economic Elements	Socio-economic conditions for the following elements are unchanged from those described in the original ESA: HORU Navigation and Navigation Safety Social and Cultural Wellbeing Infrastructure and Services Human Health Employment and Economy

4.2 Additional Temporary Access Routes and Ice Bridges

The additional temporary access road, the new access along the Pointed Mountain Pipeline right-of-way, and the ice bridge locations are located in similar environmental and socio-economic settings as the settings described in the original ESA. Table 4-3 identifies and describes new environmental features that interact with the Project as a result of the additional temporary access road, access along the Pointed Mountain Pipeline right-of-way from PM-2 to PM-6, and the construction of ice bridges. Where the settings information remains the same, no information is included in the environmental and socio-economic considerations, including for:

- Physical environment
- Soil and soil productivity
- Air quality and GHGs
- Acoustic environment
- Socio-economic elements
  - HORU
  - Navigation and Navigation Safety
  - Social and Cultural Wellbeing
  - Infrastructure and Services
  - Human Health
  - Employment and Economy

The summary of considerations was prepared using desktop review of available sources and field surveys conducted from May 3 to 4, 2023 for aquatics and wildlife, July 25 to 29, 2023 vegetation and wetlands, and August 23 to 26, 2023 for aquatics.

Table 4-3. New Environmental Features that Interact with the Project

Access	Ice Bridges	Environmental and Socio-Economic Considerations
Fort Liard to North Liard River Crossing (IB-01 to IB-02)	Petitot River (IB-01) Liard River (IB-02)	**Vegetation and Land Use** A flyover was conducted for the access road in July 2023, and it was confirmed that the footprint is dominated by shrubs and pole sapling trees. Brushing of trees and shrubs along the additional temporary access road includes upland vegetation and wetland vegetation. **Wetlands** Brushing of trees and shrubs along the additional temporary access road includes brushing within a wetland, a mixed treed swamp. **Aquatics** A flyover was conducted of the access road in May 2023, and 13 watercourse crossings were identified (WC- Access-3 to WC-Access-14), with ice bridges (IB-01 and IB-02) proposed across the Petitot River (WC-Access-3) and the Liard River (WC-Access-14). **There is limited historical fish information for the unnamed tributary crossings, but the historical fish documented on the rivers include (Government of BC 2023a,b,c; McPhail 2007):** Petitot River: Arctic grayling Brook stickleback (*Culaea inconstans*) Burbot (*Lota lota*) Finescale dace (*Chrosomus neogaeus*) Goldeye (*Hiodon alosoides*) Lake chub (*Couesius plumbeus*) Leopard dace (*Rhinichthys falcatus*) Longnose dace (*Rhinichthys cataractae*) Longnose sucker Ninespine stickleback (*Pungitius pungitius*) Northern pike (*Esox lucius*) Slimy sculpin Trout-perch (*Percopsis omiscomaycus*) Umatilla dace (*Rhinichthys umatilla*) Walleye White sucker Liard River: Arctic cisco (*Coregonus autumnalis*) Arctic grayling Bull trout Burbot Chinook salmon (*Oncorhynchus tshawytscha*) Chum salmon (*Oncorhynchus keta*) Dolly Varden (*Salvelinus malma*) Finescale dace Flathead chub Goldeye Inconnu (*Stenodus nelma*) Lake chub Lake trout (*Salvelinus namaycush*) Lake whitefish (*Coregonus clupeaformis*) Longnose dace Longnose sucker Mountain whitefish Northern pearl dace (*Margariscus nachtriebi)* Northern pike Pygmy whitefish (*Prosopium coulterii*) Rainbow trout (*Oncorhynchus mykiss*) Round whitefish (*Prosopium cylindraceum*) Slimy sculpin Spoonhead sculpin Trout-perch Walleye

Access	Ice Bridges	Environmental and Socio-Economic Considerations
		Chinook salmon are documented on a vagrant historical record in the Liard River and unlikely to occur with any regularity in the Liard River (McLeod and O'Neil 1983). The Liard River is also notable for having a small and possibly sporadic chum salmon run from the Beaufort Sea. This is the only anadromous salmonid species noted to occur historically with some regularity within the Mackenzie River basin (that the Liard River is a part of) (McLeod and O'Neil 1983). Dolly Varden are present in the upper Liard River basin, although some historical records indicate that these are likely bull trout from when the two char were considered the same species (McPhail 2007). **Wildlife** Brushing will occur along the additional temporary access road in forest and shrub habitat. The access is within IWAs for moose, beaver (*Castor canadensis*), western toad, and wood bison (GNWT 2023), and is within critical habitat for boreal caribou within the NT-1 caribou range (Government of Canada 2020).
Pipeline Right-of-way (PM-2 to PM-4 and PM-4A to PM-10)	Kotaneelee River (IB-03) La Biche River (IB-04)	**Vegetation and Land Use** A flyover was conducted for the pipeline right-of-way between PM-2 and PM-7 in July 2023, and it was confirmed that the pipeline footprint is dominated by shrubs and pole sapling trees. A rare plant survey was conducted from KP 16.5 to 18.5 (north of PM-3) due to the potential for Raup's willow (*Salix raupii*) in the area, but no rare vegetation was observed. A rare plant survey was conducted at the La Biche River crossing near KP 31 where an ice dam will be built, but no rare vegetation was observed. Brushing of regenerating shrubs along the existing right-of-way includes upland, wetland, and riparian vegetation. Land cover is dominated by shrub communities (32.8 ha, 48.7%) and wetland communities (17.4 ha, 25.9%). Communities with moderate coverage of the right-of-way are treed - deciduous communities (5.2 ha, 7.7%), treed – mixed communities (6.1 ha, 9.0%), and treed – coniferous communities (4.0 ha, 6.0%). Communities with low coverage are cleared (0.8 ha, 1.2%), water (0.7 ha, 1.1%), and disturbed communities (0.3 ha, 0.4%). **Wetlands** Brushing of regenerating woody vegetation along the additional temporary access road includes brushing within wetlands. Access along the pipeline right-of-way crosses an additional 24 wetlands since the submission of the original ESA. Wetland classes crossed include bog, fen, swamp, marsh and shallow water. **Aquatics** There are 21 watercourse crossings along the right-of-way access (WC-22.1 to WC-31), no sampling has been previously documented on any of the watercourses, excluding the Kotaneelee River (WC-22.1) and the La Biche River, including the backwater and side channel (WC-28, WC-29, WC-30). Kotaneelee River: Stream resident populations of bull trout are likely present in the Kotaneelee River system. Stream resident populations indicate they are non-migratory and inhabit spawning tributaries year-round (Stewart et al. 2007).

Access	Ice Bridges	Environmental and Socio-Economic Considerations
		La Biche River (Government of BC 2023a,b,c): Arctic grayling Bull trout Flathead chub Longnose sucker Mountain whitefish Slimy sculpin Spoonhead sculpin Walleye White sucker **Wildlife** **Brushing of the right-of-way will occur in upland, wetland, and riparian habitat types. The right-of-way in NWT interacts with IWAs for beaver, lynx, moose, western toad, and wood bison (disease free) and is within critical habitat for boreal caribou (GNWT 2023; Government of Canada 2020). The right-of-way in the Yukon is outside of woodland caribou herd ranges (YG 2023a) but is within the Nahanni wood bison range (YG 2023b). In BC, the right-of-way interacts with known wood bison occurrences (Government of BC 2023d).**
Water Source 1 Access and Temporary Workspace	N/A	**Vegetation and Land Use** Brushing of regenerating shrubs and trees along the Water Source 1 access includes upland vegetation. No vegetation field work was conducted along this existing access trail in 2023. Vegetation communities encountered along the access and TWS include disturbed communities and treed- mixed communities. **Wetlands** Areas of brushing along the access and TWS do not encounter wetlands. **Aquatics** No new watercourse crossings were identified during the flyover and assessment at the Water Source 1 location. Access is already existing, and no upgrades are anticipated. The water withdrawal is located in the La Biche River, which has previously documented occurrences of the following fish (Government of BC 2023a,b,c): Arctic grayling Bull trout Flathead chub Longnose sucker Mountain whitefish Slimy sculpin

Access	Ice Bridges	Environmental and Socio-Economic Considerations
		Spoonhead sculpin Walleye White sucker **Wildlife** **Brushing of regenerating shrubs along the Water Source 1 access and TWS is required. The access and TWS is outside woodland caribou herd range (YG 2023a), but within the Nahanni wood bison range (YG 2023b).**
Water Source 2 Temporary Workspace		**Vegetation and Land Use** Brushing of the TWS for Water Source 2 includes upland vegetation. No vegetation field work was conducted in 2023. Vegetation communities encountered include tree-deciduous communities. **Wetlands** Areas of brushing for the TWS do not encounter wetlands. **Aquatics** The water withdrawal is located in the La Biche River, which has previously documented occurrences of the following fish (Government of BC 2023a,b,c): Arctic grayling Bull trout Flathead chub Longnose sucker Mountain whitefish Slimy sculpin Spoonhead sculpin Walleye White sucker **Wildlife** Brushing of regenerating shrubs within the TWS is required. The TWS is outside of woodland caribou herd range (YG 2023a), but within the Nahanni wood bison range (YG 2023b).

Notes:
N/A = not applicable
ha = hectare(s)

4.3 Construction Camps

Use of a camp in Fort Liard, NWT, which was not assumed as part of the original ESA, is located at the northern end of the Project. Table 4-4 provides a summary of the environmental and socio-economic settings information for the North Work Camp Site Location (Options 1 and 2). Two site options are being considered for this camp. Option 1, currently in use by Paramount Resources Ltd., is located next to the Beaver Enterprise Yard by Valley Main Street. Option 2 is next to the intersection of Highway 7 and Valley Main Street. The summary of considerations was prepared using desktop review of available sources.

Table 4-4. Environmental and Socio-economic Elements and Considerations for the North Work Camp Site Location (Options 1 and 2)

Environmental and Socio-Economic Element	Summary of Considerations
Physical Environment and, Soil and Soil Productivity	Both options for the North Work Camp Site Location are located on previously disturbed lots in or near the Hamlet of Fort Liard.
Vegetation	Both options for the North Work Camp Site Location are located on previously disturbed lots in or near the Hamlet of Fort Liard that were not included in the locations surveyed in 2023 as they have low to no potential to support rare vegetation.
Aquatic Resources	There are no watercourses within 30 m of either option for the North Work Camp Site Location.
Wetlands	Both options for the North Work Camp Site Location are located on previously disturbed lots in or near the Hamlet of Fort Liard, and there are no potential wetland interactions with either option based on desktop review. Therefore, they were not included in the locations surveyed in 2023.
Wildlife and Wildlife Habitat	Both options for the North Work Camp Site Location are located on previously disturbed lots in or near the Hamlet of Fort Liard. The site is within IWAs for beaver, moose, western toad, and wood bison (GNWT 2023) and within critical habitat for boreal caribou within the NT-1 caribou range (Government of Canada 2020).
Air Emissions and GHGs	Both options for the North Work Camp Site Location are located in or near the Hamlet of Fort Liard, where ambient air quality and GHG emissions are from vehicles and heating of homes.
Acoustic Environment	Sources of noise in or near the Hamlet of Fort Liard include residential noise and traffic.
Heritage Resources	Both options for the North Work Camp Site Location are located on previously disturbed lots in or near the Hamlet of Fort Liard.
TLRU	Indigenous groups have indicated that Crown land in the Project area is used for TLRU activities, including hunting, trapping, fishing, and plant gathering. Areas within and adjacent Fort Liard are core use areas for Acho Dene Koe First Nation and Fort Liard Métis Local 67 (Diaz 2012).
Socio-Economic Elements	Both options for the North Work Camp Site Location are located on existing disturbed land in or near the Hamlet of Fort Liard, NWT. The Hamlet of Fort Liard is located in the southwestern corner of the NWT, 37 km north of the BC border. In 2022, the population of the Hamlet of Fort Liard was 523, the lowest population numbers in 10 years. The population has been declining since a peak of 566 in 2018 (NWT Bureau of Statistics 2023).

Environmental and Socio-Economic Element	Summary of Considerations
	In 2022, most residents (90%) of the Hamlet of Fort Liard were Indigenous, being members of either Acho Dene Koe First Nation or the Fort Liard Métis Local 67 (NWT Bureau of Statistics 2023). Residents of Fort Liard were more engaged in traditional activities than their territorial counterparts, with 71% of households in Fort Liard consuming traditional foods (compared to 23% for NWT as a whole) and 68% of people hunting and fishing (compared to 36 % for NWT as a whole) (NWT Bureau of Statistics 2023). Economic drivers in the Hamlet of Fort Liard include the oil and gas industry and traditional crafts, such as birch bark making (Hamlet of Fort Liard 2017). Fort Liard has limited infrastructure and services. There is a community learning centre, recreational facilities, a health centre, a fire hall, and an RCMP detachment. There are two grocery stores that serve the community. Transportation infrastructure includes a small airport and an all-weather road (NWT Bureau of Statistics 2023).

Notes:
RCMP = Royal Canadian Mounted Police

Westcoast plans to build a construction camp on disturbed land between PM-9 and PM-10. Table 4-5 provides a summary of the environmental and socio-economic settings information for the South Work Camp Site Location 2 (Location 1 was assessed as part of the original ESA). The summary of considerations was prepared using desktop review of available sources and a site visit in July 2023.

Table 4-5. Environmental and Socio-economic Elements and Considerations for the South Work Camp Site Location 2

Environmental and Socio-Economic Element	Summary of Considerations
Physical Environment and, Soil and Soil Productivity	The South Work Camp Site Location 2 will be located on a previously disturbed area.
Vegetation	The South Work Camp Site Location 2 will be located on a previously disturbed area that was not included in the locations surveyed in 2023 as it has low to no potential to support rare vegetation.
Aquatic Resources	There are no watercourses within 30 m of the South Work Camp Site Location 2.
Wetlands	The South Work Camp Site Location 2 will be located on a previously disturbed area. The proposed irregular temporary workspace intended for access to the camp site is located within a graminoid marsh as confirmed during the 2023 field work.
Wildlife and Wildlife Habitat	The South Work Camp Site Location 2 will be located on a previously disturbed area. The site is within the Nahanni wood bison range and the Hyland GBPU (Government of BC 2023d).
Air Emissions and GHGs	Ambient air quality and GHG emissions at the South Work Camp Site Location 2 are limited.

Environmental and Socio-Economic Element	Summary of Considerations
Acoustic Environment	The South Work Camp Site Location 2 is in a natural area where ambient noise levels are low.
Heritage Resources	The South Work Camp Site Location 2 will be located on a previously disturbed land between PM-9 and PM-10 with low archaeological potential.
TLRU	Indigenous groups have indicated that Crown land in the Project area is used for TLRU activities, including hunting, trapping, fishing, and plant gathering. TLRUs between PM-9 and PM-10 are unchanged from those described in the original ESA). Acho Dene Koe First Nation explained that the area around PM-9 is beside a tributary of the La Biche River and directly adjacent to wetland habitat. These sites are situated on a Acho Dene Koe member-held trapline area and an area used for moose hunting (CER File No. A8C3D3).
Socio-Economic Elements	The South Work Camp Site Location 2 is on existing disturbed land between PM-9 and PM-10 in a remote area of BC. Socio-economic conditions for the following elements are unchanged from those described in the original ESA: HORU Navigation and Navigation Safety Social and Cultural Wellbeing Infrastructure and Services Human Health Employment and Economy

Notes:
GBPU = Grizzly Bear Population Unit

5. Changes to Mitigation

Since the original ESA was filed in February 2022, Westcoast has continued to refine its Project-specific mitigation measures. Changes to the timing of physical abandonment activities in the NWT; the addition of new physical abandonment sites and temporary access; and the proximity of PM-4A and PM-7A to watercourses have resulted in changes to mitigation measures. Updates also include winter watercourse and wetland crossing mitigation as a result of information requests and Project decision from CIRNAC (CIRNAC 2022, 2023a). The EPP (Appendix A of this supplemental ESA) has been updated with these changes as well as to align with the most recent version of the Enbridge EPP (Enbridge 2023).

6. Effects and Cumulative Effects

The information gathered since the time of writing the original ESA has been reviewed in the context of the potential implications to the conclusions of the Project effects and CEA conducted for the original ESA. The assessment methods described in Section 4 of the original ESA are followed. A summary of the findings specific to each environmental and socio-economic element are presented in this section. The effects assessment and CEA conducted for accidents and malfunctions and changes to the Project caused by the environment are not anticipated to change as a result of the changes to the Project. As such, no additional information was provided for these elements.

6.1 Physical Environment and Soil and Soil Productivity

The physical environment, and soil and soil productivity is similar to that described in Section 5 of the original ESA for the original Project footprint. No new interests related to the physical environment, and soil and soil productivity were identified as a result of the following:

- The new physical abandonment sites (PM-4A, PM-7A)
- Additional temporary access

No new Project interactions, Project residual effects, or cumulative effects were identified beyond those discussed in Section 5 of the original ESA. No new mitigation measures are recommended beyond those provided in the original ESA, including the EPP, as a result of the proposed Project changes. All site-specific mitigation measures for physical environment, and soil and soil productivity on the Project footprint are provided in the updated EPP and ESISs (Appendices A and B of this supplemental ESA).

Jacobs has reviewed the information gathered since the filing of the original ESA in the context of the ESA and has determined that the significance conclusions of the original ESA with regards to the physical environment, and soil and soil productivity remain unchanged for potential Project-related effects and the Project's contribution to cumulative effects (Section 5 of the original ESA).

6.2 Vegetation

Vegetation surveys were completed from July 28 to August 1, 2023, at the following locations:

- New physical abandonment sites (PM-4A and PM 7A) on foot as described in the previous Section 4.1
- The additional temporary access road (Fort Liard to North Liard River Crossing), from Petitot ice bridge (IB-01) to North Liard ice bridge (IB-02) as described in the previous Section 4.2
- Select locations along the right-of-way where brushing will be required for access between PM-2 and PM-4 from PM-3 and at La Biche River crossing as described in Section 4.2
- Select locations along the right-of-way where brushing will be required for access between PM-4A and PM-6 as described in Section 4.2
- PM-3 and PM-4 on foot, as these locations were not included in the original 2021 vegetation survey as described in the following paragraphs.

PM-3 is mostly shrub dominated with mountain alder (*Alnus incana* ssp. *tenuifolia*).

PM-4 is mostly shrub dominated with standing water throughout the footprint. Shrub species included mountain alder (*Alnus incana* ssp. *tenuifolia*), red-osier dogwood (*Cornus sericea*), and young balsam

poplar (*Populus balsamifera*) with a dense graminoid understory dominated by fowl bluegrass (*Poa palustris*), and bluejoint reedgrass (*Calamagrostis canadensis*).

6.2.1 Assessment of Residual Effects on Vegetation

The vegetation at the new physical abandonment sites and construction camp sites is similar to that described in Section 6 of the original ESA for the original Project footprint. No new interests related to vegetation were identified as a result of the following:

- The new physical abandonment sites
- Change of timing of physical activities for the NWT
- Engagement conducted since the time of the original ESA

The vegetation along the additional temporary access routes has resulted in new interests related to vegetation regarding potential changes to vegetation communities. In the original ESA, the assessment determined that vegetation loss as a result of brushing will be limited in extent and is expected to regenerate to current conditions relatively quickly (i.e., in the medium-term) following physical abandonment activities. Removal of infrastructure and reclamation of disturbed areas were expected to have a positive effect that would increase vegetation regeneration. This was determined because brushing was limited to the existing pipeline right-of-way that was dominated by regenerating shrubs. In addition to regenerating relatively quickly, the existing pipeline right-of-way would be allowed to continue to regenerate into forested successional stages because the abandoned pipeline would no longer require vegetation maintenance. While this remains true on the existing pipeline right-of-way, the new execution plan requires some brushing of shrubs and pole sapling forest for the temporary access road from Petitot ice bridge (IB-01) to North Liard ice bridge (IB-02).

6.2.1.1 Change to Composition of Native Vegetation

Brushing of woody vegetation along the additional temporary access route in the NWT will result in alteration of native vegetation. Areas prone to erosion will be seeded with an appropriate native seed mix or cover crop to reduce invasive plant species from establishing in areas where exposed soil results from clearing activities. The magnitude of the effect on native vegetation will be reduced by the implementation of the proposed mitigation and reclamation measures summarized in Table 6.4-1 of the original ESA and the updated EPP (Appendix A of this supplemental ESA). The change to composition of native vegetation as a result of clearing and brushing of woody vegetation along the additional temporary access is limited to the Vegetation Local Study Area (LSA) and is reversible to pre-activity or equivalent conditions and of medium magnitude (Table 6-1).

Following physical abandonment activities, the timeline for reclamation to equivalent land capability depends on the communities altered. The rates of regeneration will depend on the following factors:

- Soil type
- Elevation
- Aspect
- Slope
- Plant species
- Presence of invasive plants

Equivalent land capability will be assessed following cleanup and reclamation activities. The alteration of native vegetation from existing conditions will cease upon completion of physical abandonment activities because ongoing operations and maintenance of the pipeline right-of-way is not required, and the additional temporary access will be allowed to revegetate. It is expected that each successional stage of

forest development will serve to contribute to different aspects of ecosystem services, such as providing habitat for certain wildlife and rare vegetation species and contributing to biodiversity.

The assessment of the magnitude of predicted effect on native vegetation is based on a qualitative understanding informed by the following sources:

- Regulatory guidelines
- An understanding of the ecological and land use context
- Previous environmental assessments approved under provincial and federal environmental regulatory processes
- Previous PCEM results
- The professional experience of the assessment team

As noted in the original ESA, the *Dehcho Land Use Plan* (The Dehcho Land Use Planning Committee 2006) provides Conformity Requirements (CRs) for projects to receive authorization so that that new land uses approved by the plan will help to achieve the vision and goals for the region. This Project is located in the Liard Range Special Management Zone (Zone 26), where oil and gas is a permitted use. CRs applicable to vegetation include:

- **CR Number (No.) 5**: Identifying important plant-gathering areas and developing appropriate mitigation measures to protect continued access for community use.
- **CR No.18**: Seed mixes used for revegetation will not include invasive plant species (as determined by the Northwest Territories Environment and Natural Resources [NWT ENR]) and will include native plant species.
- **CR No.19**: Harvesting of timber for land uses other than forestry will not be permitted unless it can be demonstrated that the loss or waste of timber was reduced, and the local forestry operators or Indigenous groups have been notified so that they can undertake timber recovery.

Following physical abandonment activities, vegetation loss as a result of brushing woody vegetation will be limited in extent and is expected to regenerate to current conditions in the short-term for shrubby plant communities and in the long-term for pole sapling forested plant communities. Residual effects resulting in a change in vegetation communities due to a change in composition of native vegetation during brushing of vegetation along the additional temporary access route in the NWT is predicted to be adverse in direction, short- to long-term in duration, and reversible.

Table 6-1. Project Residual Effects on Vegetation

Predicted Residual Effects	Temporal Context						
	Direction	Spatial Boundary	Duration	Frequency	Reversibility	Magnitude	Significance
Change in Composition of Native Vegetation Following Physical Abandonment Activities	Adverse	Vegetation Local Study Area (LSA)	Short- to long-term	Isolated	Reversible	Medium	Not significant

6.2.2 Assessment of Cumulative Effects on Vegetation

Table 6.7-1 of the original ESA identifies potential Project interactions with existing and reasonably foreseeable developments and activities that may have cumulative effects related to vegetation. Where Project-related residual environmental effects act cumulatively with those from the past, present, and reasonably foreseeable future projects and physical activities, a CEA is completed to determine their significance.

6.2.2.1 Changes in Composition of Native Vegetation

Clearing activities involve the removal of pole sapling trees and brushing of woody vegetation. Existing activities in the Vegetation Regional Study Area (RSA) that have resulted in clearing trees and brushing woody vegetation include forestry, oil and gas activities, and the creation and maintenance of transportation infrastructure (e.g., resource and winter roads) (as identified in Table 6.7-1 of the original ESA). These existing activities will act cumulatively with the Project to affect the composition of native vegetation in the Vegetation RSA.

Ongoing responsible forestry practices by existing operators, the Project, and other reasonably foreseeable developments are anticipated to maintain the cumulative effect associated with the clearing and brushing of woody vegetation to medium magnitude levels. Also, the new access will be temporary and will be allowed to return to preconstruction plant communities following the physical abandonment activities.

The magnitude of the cumulative effect regarding a change in composition of native vegetation is considered medium in the RSA. The Project is predicted to have a limited incremental contribution to the cumulative effects causing a change to the composition of native vegetation in the Vegetation RSA, considering the efforts to use existing access where possible. The Project's contribution to the cumulative effect is reversible. No mitigation beyond the Project-specific mitigation already recommended in Table 6.4-1 of the original ESA and the updated EPP (Appendix A of this supplemental ESA) is warranted.

Table 6-2 provides the cumulative effect characterization for each cumulative effect using the criteria defined in Subsection 4.8 of the original ESA.

Table 6-2. Project Cumulative Effects on Vegetation

Predicted Cumulative Effects	Temporal Context						
	Direction	Spatial Boundary	Duration	Frequency	Reversibility	Magnitude	Significance
Change in Composition of Native Vegetation	Adverse	RSA	Short- to Long-term	Isolated	Reversible	Medium	Not significant
Contribution from the Project to the Cumulative Effect	Not significant: The Project may result in changes to composition of native vegetation; however, with the proposed mitigation, the Project's contribution to the cumulative effect is of low magnitude at the regional scale and reversible.						

6.2.3 Conclusion

No new mitigation measures are recommended beyond those provided in the original ESA as a result of the Project updates.

Jacobs has reviewed the information gathered since the filing of the original ESA in the context of the ESA and has determined that the significance conclusions of the original ESA with regards to changes in

vegetation species are unchanged for potential Project-related effects and the Project's contribution to cumulative effects (Section 6 of the original ESA). Jacobs has determined that the significance conclusions of the original ESA with regards to changes in vegetation communities due to changes in composition of native vegetation have changed for potential Project-related effects and the Project's contribution to cumulative effects.

As Table 6-1 and Table 6-2 note, there are no situations of a residual effect or cumulative effect that are irreversible and of high magnitude, or reversible but long-term in duration, and of high magnitude. Therefore, the predicted residual effects and cumulative effects are not significant.

Prediction confidence for the remaining effects is high based on the following sources:

- Results of past PCEM
- Professional judgment
- The quality of publicly available literature, Project data, and field surveys
- Past effectiveness of proposed mitigation measures

6.3 Aquatics

Aquatics surveys were completed from May 2 to May 5 and August 23 to August 26, 2023, at the following locations (Table 6-3):

- New physical abandonment sites (PM-4A [WC-27a] and PM-7A [WC-36])
- Ice bridge locations
- Water withdrawal locations

During the May 2023 flyover and field surveys along the access and right-of-way, 47 additional potential watercourses were identified that were not identified during desktop review. An additional 29 watercourse crossings were added due to the changes to access and construction timing (Table 6-3).

Historical fish sampling has not been documented at the unnamed tributary to the Kotaneelee River (WC-27a), fish sampling was conducted as part of the August 2023 assessment and no fish were captured or observed. Due to the limited species information for this system, connectivity to downstream watercourses was reviewed. The Kotaneelee River also has limited species information, but stream resident populations of bull trout are likely present in the system (Stewart et al. 2007). The Kotaneelee River flows into the Liard River. Fish sampling has occurred within the La Biche River (WC-29) with the following species being previously documented (Government of BC 2023b,c):

- Arctic grayling
- Bull trout
- Flathead chub
- Longnose sucker
- Mountain whitefish
- Slimy sculpin
- Spoonhead sculpin
- Walleye
- White sucker

Historical fish sampling data have not been documented for the unnamed tributary to the La Biche River (WC-36), fish sampling was conducted as part of the August 2023 assessment and two Arctic grayling were captured. Due to the limited fish species information available for the crossing locations, connectivity to downstream watercourses was reviewed. The La Biche River flows into the Liard River. A total of 34 fish species have been documented within the Liard River.

Bull trout (Western Arctic populations) are federally listed as Special Concern under the *Species at Risk Act* (SARA) (Government of Canada 2023a), as well as by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) (COSEWIC 2021) and the *Yukon species at risk* website (YG 2023c). Dolly Varden (Western Arctic populations) are also federally listed as Special Concern under SARA and COSEWIC (Government of Canada 2023a); however, they are only documented in the headwaters of the Liard River basin and are unlikely to be present within the Project area in the lower Liard River. Some historical records are also believed to be observations of bull trout when the two char were considered the same species (McPhail 2007; McPhail and Carveth 1993).

In October 1979, a chinook salmon was captured at Fort Liard, NWT (Irvine et al. 2009). This was the first confirmed record of a chinook salmon within the Mackenzie River watershed. Chinook salmon are considered a vagrant historical record in the Liard River and unlikely to occur with any regularity in this system. The Liard River is also notable for having a small and possibly sporadic chum salmon run from the Beaufort Sea. This is the only anadromous salmonid species noted to occur historically with some regularity within the Mackenzie River basin (that the Liard River is a part of) (McLeod and O'Neil 1983). The status of chum salmon in the Yukon are currently under review (YG 2023c).

The Yukon Conservation Data Centre (Yukon CDC) maintains a list of animal species when more information is needed and there is some concern over their conservation (Yukon CDC 2019). Mountain whitefish, ninespine stickleback, and spoonhead sculpin are on the Yukon watch list and are documented to occur in the La Biche River or the Liard River, or both (Government of BC 2023a).

At PM-4A (KP 28.6), a high-level assessment of the pipe exposure location within the unnamed tributary to the Kotaneelee River (WC-27a) was conducted in May 2023 during partially frozen conditions and a fish and fish habitat assessment was conducted in August 2023 during open water conditions. Within the assessed area there is the stream and an oxbow that is not currently connected to the mainstem. At the time of August 2023 assessment, the stream had a channel and wetted width of approximately 2.4 m and 0.7 m, respectively, and an average water depth of approximately 0.07 m, while the oxbow's channel width was approximately 5 m. The substrate is primarily composed of fines and small gravels with some organics. Sloping, moderately unstable banks approximately 1 m high composed of fines and organic material were observed at the exposed pipeline location. There is no previously documented fish information for this stream and no fish were captured or observed during the August 2023 assessment.

At PM-7A (KP 34.28), a high-level assessment of the pipe exposure location within the unnamed tributary to the La Biche River (WC-36) was conducted in May 2023 during partially frozen conditions and a fish and fish habitat assessment was conducted in August 2023 during open water conditions. A large beaver dam was identified and may impact proposed works. Multiple active beaver dams and beavers were identified throughout the assessed reach. The exposed pipe is under the beaver dam, so there is a potential risk to the access crossing if the beaver dam is removed after installation. The large volume of water and complex woody debris cover likely will require more fish salvage effort.

At the time of August 2023 assessment, the stream was a deep impoundment habitat with fine and organic substrates and no visible banks at the exposed pipeline location. Abundant cover was available for fish as woody debris, water depth and undercut banks. Wetted width ranged from 1.9 m to 55 m throughout the assessed reach with an average water depth of 0.7 m. two Arctic grayling were captured during the August 2023 assessment.

Assessments were conducted at the two proposed water withdrawal sites, both on the La Biche River (Water Source 1 [WC-31.1] and Water Source 2 [WC-44]). Due to the river's large size, Water Source 1 will likely be an adequate water withdrawal location during winter conditions. Fine substrates observed at the entrance to the access roads may become mobilized due to water withdrawal or additional icing activities

to support access to the withdrawal location. The approach to the watercourse is composed of dominantly large and small gravels, sand, and some cobbles.

Water Source 2 will also likely be an adequate water withdrawal location. Fine substrates noted in the watercourse at the entrance to the access road may be mobilized due to water withdrawal or additional icing activities to support access to the withdrawal location. The approach to the watercourse is composed of dominantly cobbles with some gravels and sand.

Table 6-3. Additional Watercourses Crossed by the Pointed Mountain Pipeline

Potential Watercourse Name[a]	Site No.	Location	RAP[b]	UTM Zone	UTM Easting	UTM Northing	Fish Species Previously Documented[c]	Notes
Watercourses with New Instream Work Scope								
Unnamed tributary to the Kotaneelee River	WC-27a	NWT	August 15 to July 15	10	443754	6670250	No fish sampling documented	PM-4A: Pipe exposure and access crossing
Unnamed tributary to the La Biche River	WC-36	Yukon	September 2 to June 14	10	435456	6656150	No fish sampling documented; Arctic grayling captured August 2023	PM-7A: Pipe exposure and access crossing
Newly Identified Watercourse Crossings								
Unnamed tributary to Fisherman Lake	WC-08.01	NWT	August 15 to July 15	10	454192	6694636	No fish sampling documented	
Unnamed tributary to Fisherman Lake	WC-08.02	NWT	August 15 to July 15	10	454200	6694513	No fish sampling documented	
Unnamed tributary to Fisherman Lake	WC-11.01	NWT	August 15 to July 15	10	454161	6694053	No fish sampling documented	
Unnamed tributary to Fisherman Lake	WC-11.02	NWT	August 15 to July 15	10	454151	6693884	No fish sampling documented	
Unnamed tributary to Fisherman Lake	WC-11.03	NWT	August 15 to July 15	10	454151	6693855	No fish sampling documented	
Unnamed tributary to Fisherman Lake	WC-15a	NWT	August 15 to July 15	10	452571	6689268	No fish sampling documented	
Unnamed tributary to Fisherman Lake	WC-16a	NWT	August 15 to July 15	10	451924	6688043	No fish sampling documented	

Potential Watercourse Name[a]	Site No.	Location	RAP[b]	UTM Zone	UTM Easting	UTM Northing	Fish Species Previously Documented[c]	Notes
Unnamed tributary to Fisherman Lake	WC-16b	NWT	August 15 to July 15	10	451658	6687551	No fish sampling documented	
Unnamed tributary to Fisherman Lake	WC-17a	NWT	August 15 to July 15	10	450917	6686144	No fish sampling documented	
Unnamed tributary to Fisherman Lake	WC-17b	NWT	August 15 to July 15	10	450525	6685394	No fish sampling documented	
Unnamed tributary to Fisherman Lake	WC-17c	NWT	August 15 to July 15	10	450403	6685160	No fish sampling documented	
Kotaneelee River	WC-22.1	NWT	August 15 to July 15	10	447056	6679257	bull trout	Ice Bridge
Unnamed tributary to the Kotaneelee River	WC-23a	NWT	August 15 to July 15	10	446670	6678395	No fish sampling documented	
Unnamed tributary to the Kotaneelee River	WC-25a	NWT	August 15 to July 15	10	446309	6675461	No fish sampling documented	
Unnamed tributary to the Kotaneelee River	WC-26a	NWT	August 15 to July 15	10	444761	6672219	No fish sampling documented	
Unnamed tributary to the Kotaneelee River	WC-26b	NWT	August 15 to July 15	10	444476	6671640	No fish sampling documented	
Unnamed tributary to the Kotaneelee River	WC-26c	NWT	August 15 to July 15	10	444324	6671336	No fish sampling documented	
Unnamed tributary to the Kotaneelee River	WC-26d	NWT	August 15 to July 15	10	443975	6670631	No fish sampling documented	
Unnamed tributary to the Kotaneelee River	WC-27a	NWT	August 15 to July 15	10	443754	6670250	No fish sampling documented	PM-4A: Pipe exposure and access crossing

Potential Watercourse Name[a]	Site No.	Location	RAP[b]	UTM Zone	UTM Easting	UTM Northing	Fish Species Previously Documented[c]	Notes
Unnamed tributary to the Kotaneelee River	WC-27b	NWT	August 15 to July 15	10	442103	6668037	No fish sampling documented	
Unnamed tributary to the Kotaneelee River	WC-27c	NWT	August 15 to July 15	10	442126	6667884	No fish sampling documented	
Unnamed tributary to the La Biche River	WC-30a	Yukon	September 2 to June 14	10	441938	6666767	No fish sampling documented	
Unnamed tributary to the La Biche River	WC-30b	Yukon	September 2 to June 14	10	441783	6665216	No fish sampling documented	
Unnamed tributary to the La Biche River	WC-31a	Yukon	September 2 to June 14	10	441662	6664105	No fish sampling documented	
Unnamed tributary to the La Biche River	WC-31b	Yukon	September 2 to June 14	10	441592	6663442	No fish sampling documented	
Unnamed tributary to the La Biche River	WC-31c	Yukon	September 2 to June 14	10	441494	6662470	No fish sampling documented	
Unnamed tributary to the La Biche River	WC-31d	Yukon	September 2 to June 14	10	441474	6662284	No fish sampling documented	
Unnamed tributary to the La Biche River	WC-31e	Yukon	September 2 to June 14	10	441278	6661792	No fish sampling documented	
Unnamed tributary to the La Biche River	WC-31f	Yukon	September 2 to June 14	10	441145	6661475	No fish sampling documented	
Unnamed tributary to the La Biche River	WC-32a	Yukon	September 2 to June 14	10	440615	6660594	No fish sampling documented	
Unnamed tributary to the La Biche River	WC-33a	Yukon	September 2 to June 14	10	439962	6660261	No fish sampling documented	

Potential Watercourse Name[a]	Site No.	Location	RAP[b]	UTM Zone	UTM Easting	UTM Northing	Fish Species Previously Documented[c]	Notes
Unnamed tributary to the La Biche River	WC-33b	Yukon	September 2 to June 14	10	439135	6659828	No fish sampling documented	
Unnamed tributary to the La Biche River	WC-34	Yukon	September 2 to June 14	10	438688	6659613	No fish sampling documented	
Unnamed tributary to the La Biche River	WC-34.01	Yukon	September 2 to June 14	10	438259	6659389	No fish sampling documented	
Unnamed tributary to the La Biche River	WC-35a	Yukon	September 2 to June 14	10	436872	6658468	No fish sampling documented	
Unnamed tributary to the La Biche River	WC-35b	Yukon	September 2 to June 14	10	436789	6658325	No fish sampling documented	
Unnamed tributary to the La Biche River	WC-35c	Yukon	September 2 to June 14	10	436673	6658145	No fish sampling documented	
Unnamed tributary to the La Biche River	WC-35d	Yukon	September 2 to June 14	10	436563	6657964	No fish sampling documented	
Unnamed tributary to the La Biche River	WC-35e	Yukon	September 2 to June 14	10	436377	6657657	No fish sampling documented	
Unnamed tributary to the La Biche River	WC-35f	Yukon	September 2 to June 14	10	436243	6657436	No fish sampling documented	
Unnamed tributary to the La Biche River	WC-35g	Yukon	September 2 to June 14	10	436038	6657090	No fish sampling documented	
Unnamed tributary to the La Biche River	WC-35h	Yukon	September 2 to June 14	10	435882	6656829	No fish sampling documented	
Unnamed tributary to the La Biche River	WC-36a	Yukon	September 2 to June 14	10	434854	6655107	No fish sampling documented	

Potential Watercourse Name[a]	Site No.	Location	RAP[b]	UTM Zone	UTM Easting	UTM Northing	Fish Species Previously Documented[c]	Notes
Unnamed tributary to the La Biche River	WC-36b	Yukon	September 2 to June 14	10	434646	6654763	No fish sampling documented	
Unnamed tributary to the La Biche River	WC-36c	Yukon	September 2 to June 14	10	434566	6654623	No fish sampling documented	
Unnamed tributary to the La Biche River	WC-36d	Yukon	September 2 to June 14	10	434368	6654296	No fish sampling documented	
Unnamed tributary to the La Biche River	WC-36e	Yukon	September 2 to June 14	10	433938	6653574	No fish sampling documented	
Unnamed tributary to the La Biche River	WC-36f	Yukon	September 2 to June 14	10	433851	6653426	No fish sampling documented	
Unnamed tributary to the La Biche River	WC-36g	Yukon	September 2 to June 14	10	433769	6653281	No fish sampling documented	
Unnamed tributary to the La Biche River	WC-40a	BC	August 16 to July 14	10	432523	6650547	No fish sampling documented	
Petitot River	WC-Access-3	NWT	August 15 to July 15	10	473200	6677251	Arctic grayling, brook stickleback, burbot, finescale dace, goldeye, lake chub, leopard dace, longnose dace, longnose sucker, ninespine stickleback, northern pike, slimy sculpin, trout-perch, umatilla dace, walleye, white sucker	Ice Bridge
Unnamed tributary to Liard River	WC-Access-4	NWT	August 15 to July 15	10	472403	6676185	No fish sampling documented	

Potential Watercourse Name[a]	Site No.	Location	RAP[b]	UTM Zone	UTM Easting	UTM Northing	Fish Species Previously Documented[c]	Notes
Unnamed tributary to Liard River	WC-Access-5	NWT	August 15 to July 15	10	472364	6675805	No fish sampling documented	
Unnamed tributary to WC 250001897	WC-Access-6	NWT	August 15 to July 15	10	471918	6675345	No fish sampling documented	
Unnamed tributary to Liard River	WC-Access-7	NWT	August 15 to July 15	10	470210	6674739	No fish sampling documented	
Unnamed tributary to Liard River	WC-Access-8	NWT	August 15 to July 15	10	469808	6674640	No fish sampling documented	
Unnamed tributary to Liard River	WC-Access-9	NWT	August 15 to July 15	10	467672	6673356	No fish sampling documented	
Unnamed tributary to Liard River	WC-Access-9a	NWT	August 15 to July 15	10	466228	6672499	No fish sampling documented	
Unnamed tributary to Liard River	WC-Access-10	NWT	August 15 to July 15	10	465461	6672057	No fish sampling documented	
Unnamed tributary to Liard River	WC-Access-11	NWT	August 15 to July 15	10	464812	6671978	No fish sampling documented	
Side channel of the Liard River	WC-Access-12	NWT	August 15 to July 15	10	464519	6672000	No fish sampling documented	
Side channel of the Liard River	WC-Access-13	NWT	August 15 to July 15	10	463668	6671996	No fish sampling documented	

Potential Watercourse Name[a]	Site No.	Location	RAP[b]	UTM Zone	UTM Easting	UTM Northing	Fish Species Previously Documented[c]	Notes
Liard River	WC-Access-14	NWT	August 15 to July 15	10	463558	6672452	Arctic cisco, Arctic grayling, bull trout, brook stickleback, burbot, chinook salmon, chum salmon, Dolly Varden, emerald shiner, finescale dace, flathead chub, goldeye, inconnu, lake chub, lake trout, lake whitefish, longnose dace, longnose sucker, mountain whitefish, northern pearl dace, Northern redbelly dace, northern pike, pygmy whitefish, rainbow trout, round whitefish, slimy sculpin, spoonhead sculpin, spottail shiner, trout-perch, walleye and white sucker[e]	Ice Bridge
Unnamed tributary to DSWC 250008	WC-Access-15	NWT	August 15 to July 15	10	462807	6674545	No fish sampling documented	
Unnamed tributary to DSWC 250008	WC-Access-16	NWT	August 15 to July 15	10	461562	6680238	No fish sampling documented	
Unnamed tributary to DSWC 250008	WC-Access-17	NWT	August 15 to July 15	10	461164	6683828	No fish sampling documented	
Unnamed tributary to Fisherman Lake	WC-Access-18	NWT	August 15 to July 15	10	460012	6686018	No fish sampling documented	
Unnamed tributary to Fisherman Lake	WC-Access-19	NWT	August 15 to July 15	10	459097	6686898	No fish sampling documented	

Potential Watercourse Name[a]	Site No.	Location	RAP[b]	UTM Zone	UTM Easting	UTM Northing	Fish Species Previously Documented[c]	Notes
Unnamed tributary to Fisherman Lake	WC-Access-20	NWT	August 15 to July 15	10	458530	6687436	No fish sampling documented	
Unnamed tributary to Fisherman Lake	WC-Access-21	NWT	August 15 to July 15	10	457450	6688458	No fish sampling documented	
Unnamed tributary to Fisherman Lake	WC-Access-22	NWT	August 15 to July 15	10	454189	6689292	No fish sampling documented	
Unnamed tributary to DSWC 25000800046488	WC-Access-23	NWT	August 15 to July 15	10	452517	6690083	No fish sampling documented	
Unnamed tributary to Fisherman Lake	WC-Access-24	NWT	August 15 to July 15	10	452460	6691189	No fish sampling documented	
Unnamed tributary to DSWC 25000800047755	WC-Access-25	NWT	August 15 to July 15	10	452880	6692724	No fish sampling documented	
Unnamed tributary to DSWC 25000800047755	WC-Access-26	NWT	August 15 to July 15	10	453128	6693315	No fish sampling documented	
Unnamed tributary to DSWC 25000800047755	WC-Access-27	NWT	August 15 to July 15	10	452827	6694461	No fish sampling documented	
Unnamed tributary to Fisherman Lake	WC-Access-28	NWT	August 15 to July 15	10	453303	6695738	No fish sampling documented	
Unnamed tributary to DSWC 2500080004755	WC-Access-29	NWT	August 15 to July 15	10	453652	6695885	No fish sampling documented	

[a] Potential watercourses were identified by desktop review, and a field visit would need to confirm whether defined bed and banks and fish habitat potential are present.

[b] RAPs are from BC MFLNRO (2016) and DFO (2013, 2014). BC and Yukon implement least risk windows when instream work can occur; for this table, the timing has been presented as when work should not occur for consistency. RAPs assume defined bed and banks and fish presence. Aquatic habitat assessments in the field, if warranted for any ground disturbance work, could clarify whether a RAP is applicable (e.g., if no fish habitat potential exists at a given site). If fieldwork confirms that a site is a nonclassified drainage or lacks fish habitat potential, the RAP may not apply, and there would be no timing restrictions in regard to fish.

Potential Watercourse Name[a]	Site No.	Location	RAP[b]	UTM Zone	UTM Easting	UTM Northing	Fish Species Previously Documented[c]	Notes

[c] McPhail (2007), Government of BC (2023a,b,c). Locations with no fish documented have not been sampled or lack inventory data and should be assumed to be fish bearing unless fieldwork is conducted.

Notes:
BC MFLNRO = British Columbia Ministry of Forests, Lands and Natural Resource Operations
DFO = Fisheries and Oceans Canada
RAP = Restricted Activity Period
UTM = Universal Transverse Mercator

6.3.1 Assessment of Residual Effects on Aquatic Resources

The watercourses at the new physical abandonment sites and along the new access are similar to that described in Section 7 of the original ESA for the original Project footprint. New interests related to aquatic resources were identified as a result of changes to the Project since the time of the original ESA and include:

- The new physical abandonment sites
- Water withdrawal locations
- Additional temporary access crossings

Table 6-4 identifies the new potential effect pathways of the Project on aquatic resources during physical abandonment activities and as a result of abandonment in place, including consideration of the following activities:

- The new physical abandonment sites
- Water withdrawal
- Temporary access roads

Effects on aquatic resources are generally limited to watercourse crossings. Timing of instream works will also impact the effects of abandonment activities, though the work occurring during the winter may reduce impacts.

Table 6-4. Project Activities, Effect Pathways, and Indicators for Aquatic Resources

Potential Effect	Project Activities and Effect Pathways	Effects Indicators
Change in surface water quality and quantity	Increased erosion and sedimentation instream may result from placement of materials or structures instream (e.g., dams and pumps) and instream excavations.	Surface water quality parameters (e.g., TSS, temperature)
	Physical abandonment activities instream or within water bodies (e.g., placement of intake pumps and isolation installations) may result in changes in natural flow patterns and the resuspension or entrainment of sediments.	Transport of sediments in surface water
Change in groundwater quality and quantity	Disturbance to physical hydraulic properties of soil and parent material above or below the water table may result from excavation activities.	Transport of contaminants to groundwater Groundwater flowing to the surface Change in baseflow
Change in fish and fish habitat or fish mortality risk	Excavation for instream pipe removal may result in a change in channel morphology and shoreline.	Change in habitat structure
	Water withdrawal for icing temporary access roads is anticipated to be sourced from existing borrow pits and watercourses, and pumping may cause harm to fish.	Fish mortality

Notes:
TSS = total suspended solids

6.3.1.1 Change in Surface Water Quality and Quantity

Planned construction activities and physical abandonment for the Project may cause a temporary change to surface water quality due to an increase in suspended sediments from construction activities. There may be a temporary increase in suspended sediments due to the following activities:

- Removal of riparian vegetation
- Installation or removal of instream materials and structures (i.e., dams or sheet piling)
- Installation and operation of bypass pumps
- Reclamation activities

There is also the potential for an input of fine sediments at the newly identified watercourse crossings. Suspended sediment moves downstream through the zone of influence (ZOI) and may impact fish habitat downstream. It is anticipated that with the successful implementation of the proposed mitigation measures, the average TSS levels during instream construction will be within Canadian Council of Ministers of the Environment (CCME) guidelines (CCME 2002).

Water withdrawal for building and maintaining temporary access crossings and ice bridges may impact the quantity of water within the water source watercourses by decreasing water levels. Due to the large size of the La Biche River, it is not expected that this decrease in river water quantity will have an overall impact on fish or fish habitat.

Residual effects to both surface water quality and quantity due to instream abandonment activities, temporary access crossings, and water withdrawal activities is predicted to be adverse in direction, immediate to medium-term in duration, and reversible.

6.3.1.2 Change in Groundwater Quality and Quantity

Abandoning the pipeline in place is not anticipated to divert enough water to reduce areas of recharge or impact groundwater quality or quantity in the event a water conduit is created.

Residual effects to groundwater quality due to instream abandonment activities, temporary access, and water withdrawal activities is predicted to be adverse in direction, immediate to medium-term in duration, and reversible.

6.3.1.3 Change in Fish Habitat and Mortality Risk

Physical abandonment activities will temporarily cause a change in fish habitat due to riparian disturbance, beaver dam modifications or removal, and excavation of the exposed pipe sections. Riparian disturbance is expected to be minimal, and existing roads will be used where available. Habitat restoration at the instream abandonment sites is expected to mitigate the impacts of excavation and removal of infrastructure. The installation of temporary isolations may impact the migration of fish species to nearby habitat but can be mitigated with an assisted migration plan, if needed.

Physical abandonment activities and water withdrawal may lead to an increase in the risk of fish mortality or injury to adults, fry, and eggs. Fish mortality from construction activities will be minimized by Qualified Professionals (QPs) conducting fish salvages, including capture and relocation within the isolated areas and stranding walks during dewatering. Completing instream works outside of the RAP is expected to mitigate potential effects on eggs.

Water withdrawal and bypass pumps increase the risk of entrainment or impingement. Meeting the intake velocity DFO guidelines (Di Rocco and Gervais 2023) and screening pumps with a minimum mesh size of 2.54 millimetres (mm) is expected to prevent fish from accidentally being entrained or impinged (DFO 2020).

Instream fish habitat changes as a result of instream work for the abandonment activities will be limited in extent, and it is expected that restoration will be effective in returning the sites to pre-work conditions.

Residual effects resulting from changes in instream habitat and mortality risk due to riparian disturbance, clearing, and instream activity due to physical abandonment activities is predicted to be adverse in direction, short- to medium-term in duration, and reversible (Table 6-5).

Table 6-5. Project Residual Effects on Aquatics

Predicted Residual Effects	Temporal Context						
	Direction	Spatial Boundary	Duration	Frequency	Reversibility	Magnitude	Significance
Change in Surface Water Quality and Quantity	Adverse	Aquatic RSA	Immediate to short-term	Isolated to occasional	Reversible	Low	Not significant
Change in Groundwater Quality and Quantity	Adverse	Aquatic LSA	Short to medium-term	Isolated	Reversible	Low	Not significant
Change in Fish Habitat and Mortality Risk	Adverse	Aquatics LSA	Short- to medium-term	Isolated to occasional	Reversible	Medium	Not significant

6.3.2 Assessment of Cumulative Effects on Aquatic Resources

Section 7 of the original ESA did not access cumulative effects on aquatic resources, as the potential residual effects were avoided with the implementation of mitigation measures. This supplemental ESA identifies new potential Project interactions with existing and reasonably foreseeable developments and activities that may have cumulative effects related to aquatic resources in the RSA. Where Project-related residual environmental effects act cumulatively with those from past, present, and reasonably foreseeable future projects and physical activities, a CEA is completed to determine- their significance.

6.3.2.1 Change in Surface Water Quality and Quantity

For the newly defined physical abandonment sites where instream works are to occur, impacts to the surface water quality and quantity are expected. At locations PM-4A and PM-7A, instream works to remove exposed pipes are expected to occur. Water withdrawal activities are expected to take place at Water Source 1 (WC-21.1) and Water Source 2 (WC-44).

Physical abandonment activities may cause a cumulative change to surface water quality due to the following activities:

- Removal of riparian vegetation
- Installation of temporary isolation structures, such as a dam or sheet piling
- Beaver dam modifications and removal

- Installation and operation of intake and bypass pumps
- Equipment working instream
- Excavation
- Reclamation

Cumulative increase in suspended sediment may result from increased bank erosion due to riparian clearing and restoration. Suspended sediment would move downstream through the ZOI. All efforts should be taken to minimize the volume of sedimentation caused through instream works to mitigate the addition of fine substrate within the watercourse to reduce the volume of fine substrate in the bedload downstream of the crossing.

New access crossings present a potential to change surface water quality as a result of introduction of fine sediments into watercourses. Water withdrawal for creation of the temporary access crossings and ice bridges may impact the quantity of water present within the selected water source watercourses temporarily but is not expected to have a cumulative impact to water quantity. After construction and reclamation has been completed, limited impact to surface water quality is expected to remain.

Existing activities in the Aquatic Resources RSA that have resulted in changes to surface water quality and quantity include forestry, oil and gas activities, and the creation and maintenance of transportation infrastructure (such as resource and winter roads). These existing activities will act cumulatively with the Project to affect the surface water quality and quantity in the Aquatic Resources RSA.

Ongoing responsible forestry practices by existing operators, the Project, and other reasonably foreseeable developments are anticipated to maintain the cumulative effect associated with surface water quality and quantity to low levels. The magnitude of the cumulative effect regarding a change in surface water quality and quantity is considered low in the RSA. The Project is predicted to have a limited incremental contribution to the cumulative effects causing a change in surface water quality and quantity in the Aquatic Resources RSA. The Project's contribution to the cumulative effect is reversible. Mitigation added to the EPP (Appendix A of this supplemental ESA) will reduce the potential for cumulative effects.

6.3.2.2 Change in Groundwater Quality and Quantity

Abandoning the pipeline in place and excavation activities are not anticipated to divert enough water to reduce areas of recharge or impact groundwater quality or quantity in the event a water conduit is created.

Ongoing responsible forestry practices by existing operators, the Project, and other reasonably foreseeable developments are anticipated to maintain the cumulative effect associated with groundwater quality and quantity to low levels. The magnitude of the cumulative effect regarding a change in surface water quality and quantity is considered low in the LSA. The Project is predicted to have a limited incremental contribution to the cumulative effects causing a change in groundwater quality and quantity in the Aquatic Resources LSA. The Project's contribution to the cumulative effect is reversible. Mitigation added to the EPP (Appendix A of this supplemental ESA) will reduce the potential for cumulative effects.

6.3.2.3 Change in Fish Habitat and Mortality Risk

For the newly defined physical abandonment sites where instream works are to occur, impacts to fish habitat and mortality risk are expected. At locations PM-4A and PM-7A, instream works to remove exposed pipes are expected to occur. Water withdrawal activities are expected to take place at Water Source 1 (WC-21.1) and Water Source 2 (WC-44).

Physical abandonment activities may cause a cumulative change to fish habitat and fish mortality risk due to the following activities:

- Removal of riparian vegetation
- Installation of temporary isolation structures (i.e., a dam or sheet piling)
- Beaver dam modifications and removal
- Installation and operation of intake and bypass pumps
- Equipment working instream
- Excavation
- Reclamation

The riparian disturbance is expected to be minimized near watercourse crossings; and where available, existing roads will be used. Habitat restoration at the instream abandonment sites is expected to mitigate the impacts of excavation activities and limit the cumulative effects of the instream abandonment works. If, during the aquatic assessment, a harmful alteration, disruption, or destruction of fish habitat is anticipated, offsetting can be discussed with appropriate regulators.

Fish mortality risk is only expected to increase during immediate construction activities for the Project, and with appropriate restoration and mitigation measures, should not contribute to potential cumulative effects.

Ongoing responsible forestry practices by existing operators, the Project, and other reasonably foreseeable developments are anticipated to maintain the cumulative effect associated with changes to fish habitat and fish mortality risk to low levels. The magnitude of the cumulative effect regarding a change in fish habitat and fish mortality risk is considered low in the LSA. The Project is predicted to have a limited incremental contribution to the cumulative effects causing a change to fish habitat and fish mortality risk in the Aquatic Resources LSA. The Project's contribution to the cumulative effect is reversible. Mitigation added to the EPP (Appendix A of this supplemental ESA) will reduce the potential for cumulative effects.

Table 6-6 provides the cumulative effect characterization for the cumulative effect using the criteria defined in Subsection 4.8 of the original ESA.

Table 6-6. Project Cumulative Effects on Aquatic Resources

Predicted Cumulative Effects	Direction	Spatial Boundary	Temporal Context				
			Duration	Frequency	Reversibility	Magnitude	Significance
Change in Surface Water Quality and Quantity	Adverse	Aquatic RSA	Immediate to Short-term	Isolated to occasional	Reversible	Low	Not significant
Change in Groundwater Quality and Quantity	Adverse	Aquatic LSA	Short- to medium-term	Isolated	Reversible	Low	Not significant
Change in Fish Habitat and Mortality Risk	Adverse	Aquatic LSA	Short- to medium-term	Isolated to occasional	Reversible	Medium	Not significant

Predicted Cumulative Effects	Direction	Spatial Boundary	Temporal Context				
			Duration	Frequency	Reversibility	Magnitude	Significance
Contribution from the Project to the Cumulative Effect	Not significant: The Project may result in changes to surface water and groundwater quality and quantity, and fish habitat and mortality risk; however, with the proposed mitigation, the Project's contribution to the cumulative effect is of low magnitude at the regional scale and reversible.						

6.3.3 Conclusion

The aquatic environment at the new physical abandonment sites, additional temporary access, and construction camp sites is similar to that described in Section 7 of the original ESA for the original Project footprint. New Project interactions and residual effects related to aquatic resources were identified as a result of the following new locations that were beyond those discussed in Section 7 of the original ESA:

- New physical abandonment sites
- Additional temporary access
- Water withdrawal

New mitigation measures are recommended as a result of the proposed Project changes resulting in instream works and are provided in the EPP (Appendix A of this supplemental ESA).

As Table 6-5 and Table 6-6 note, there are no situations of residual or cumulative effects on aquatic resources that are irreversible or of a high magnitude. Therefore, the predicted residual effects are not significant.

Prediction confidence for the remaining effects is high based on the following sources:

- Results of past PCEM
- Professional judgment
- The quality of publicly available literature, Project data, and field surveys
- The past effectiveness of proposed mitigation measures

6.4 Wetlands

This section provides a regulatory update and provides results of the wetlands assessment.

6.4.1 Regulatory and Policy Setting Update

Since filing the original ESA, YG has released *A Policy for the Stewardship of Yukon's Wetlands* (YG 2022). The policy applies to all classes of wetlands where the YG has decision -making authority (e.g., projects regulated under the *Yukon Environmental and Socio-Economic Assessment Act* [YESAA]). The policy is intended to:

- Improve YG's knowledge and understanding of Yukon's wetlands
- Manage impacts of human activities on wetlands through implementation of a mitigation hierarchy (avoid, minimize, reclaim, and offset as a last resort)

- Identify and protect Wetlands of Special Importance through legislative designation and application of specific mitigation measures to achieve no loss or reduction of benefits within Wetlands of Special Importance

YG aims to ensure no loss or reduction of wetland benefits (functions) from new or future human activities within Wetlands of Special Importance, and conditions for activities to be conducted within wetlands will exist for these wetlands. Wetlands of Special Importance are designated as such if they meet more than one of the following criteria:

- The wetland has significant social or cultural importance, as identified by an Indigenous government or group.
- A wetland, which, if impacted, would result in substantial alteration of the quality, quantity, or rate of flow, including seasonal rate of flow, of water on, adjacent to, or flowing through a Yukon First Nations Settlement Land.
- The wetland is identified as a Wetland of International Importance (a Ramsar Site) (Ramsar 1971) or as a national or international Key Biodiversity Area (an area or site that contributes significantly to the global persistence of biodiversity). The area or site must meet the criteria described in the new *A Global Standard for the Identification of Key Biodiversity Areas* developed by the International Union on the Conservation of Nature Task Force (IUCN) (2016) and recommended for use in Canada by the Pathway to Target 1 National Advisory Panel.
- The wetland provides Critical Habitat for the recovery of one or more federally listed species at risk (species listed under SARA [2002]), defined as follows:
  - Habitat required for the continued survival and optimal productivity of a fish or wildlife species in the Yukon
  - A rare or threatened type of wetland in the Yukon
  - An important source of surface or groundwater for a Yukon community
  - Important flood control upstream of a community
  - Critical water filtration downstream of sources of impacted waters
  - A significant carbon reservoir
  - An intact representative wetland in a watershed where further alteration or loss will cross an accepted ecological or management threshold

The Project does not interact with Wetlands of Special Importance.

The policy requirements will be addressed by YG through their participation in assessment and regulatory processes for human activities. YG will provide input into the environmental assessment process and interventions during regulatory reviews conducted by the Yukon Water Board or other external regulators to confirm consistency with this policy.

Westcoast is required to provide information on how the Project will follow the steps of the mitigation hierarchy, potential wetland impacts, and mitigations in documents supplied during assessments conducted by independent boards or committees (e.g., water use licence applications to the Yukon Environmental and Socio-economic Assessment Board [YESAB]) and in documents required during independent regulatory review (e.g., water use licence applications submitted to the Yukon Water Board).

A mitigation hierarchy was applied to wetland interactions with the Project as appropriate (Section 6.4.2).

6.4.2 Wetland Results Summary

Wetland survey locations were based on potential wetland interactions observed during desktop review, using methods described in Section 8 of the original ESA. Wetland surveys were completed from July 28 to August 1, 2023, at the following locations:

- New physical abandonment sites (PM-4A and PM-7A)
- The temporary access road from Petitot ice bridge (IB-01) to North Liard ice bridge (IB-02)
- Select locations along the right-of-way where brushing will be required for access between PM-2 and PM-4
- South Work Camp Site Location 2

As a result of the additional temporary access along the Pointed Mountain Pipeline right-of-way and the 12 km temporary access road from IB-01 to IB-02,, an additional 24 wetlands are encountered by the Project since the submission of the original ESA.

Table 6-7 summarizes wetland interactions with temporary access along the Pointed Mountain Pipeline right-of-way and the temporary access road from IB-01 to IB-02. The access to Water Source 1does not encounter wetlands. Two wetland complexes (WET-042 and WET-065) are encountered by new physical abandonment sites. Table 6-8 summarizes wetland interactions with new physical abandonment sites and the North Work Camp Site Locations (Option 1 and 2) and the South Work Camp Site Location 2.

Table 6-7. Wetlands Crossed by Temporary Access

Wetland Unique ID	Province or Territory	CWCS Wetland Classification [a]	Start KPs [b]	End KPs [b]	UTM Zone	Start Easting [b]	Start Northing [b]	End Easting [b]	End Northing [b]	Approximate Wetland Length Crossed in Project Footprint (km)	Approximate Wetland Area in Crossed Project Footprint (ha)	Total Wetland Area (ha)
Additional Temporary Access Along the Pointed Mountain Pipeline Right-of-Way												
WET-023	NWT	Mixed Treed Swamp	11.45	11.85	10U	450570	6685490	450372	6685142	0.40	0.80	5.39
WET-025	NWT	Mixed Treed Swamp	12.83	12.90	10U	449925	6684271	449890	6684204	0.08	0.08	1.33
WET-029	NWT	Mixed Treed Swamp	14.04	14.29	10U	449354	6683192	449229	6682987	0.24	0.48	17.67
WET-028	NWT	Mixed Treed Swamp	14.74	15.09	10U	449094	6682552	449010	6682211	0.35	0.65	49.44
WET-030	NWT	Treed Bog	15.69	16.05	10U	448833	6681642	448727	6681301	0.36	0.68	59.88
WET-031	NWT	Shrub Bog	16.04	16.60	10U	448716	6681313	448346	6680901	0.56	1.10	46.07
WET-032	NWT	Treed Bog	16.57	16.96	10U	448375	6680910	448108	6680625	0.39	0.73	51.12
WET-103	NWT	Shrub Swamp	17.65	17.69	10U	447665	6680121	447663	6680082	0.04	0.07	0.13
WET-083	NWT	Shrub Swamp	18.25	18.29	10U	447698	6679518	447717	6679479	0.04	0.07	0.39
WET-095	NWT	Shrub Swamp	19.28	19.29	10U	446894	6679164	446885	6679158	0.01	0.01	10.21
			19.38	19.46	10U	446831	6679075	446832	6678997	0.08	0.15	
WET-034	NWT	Shrub Swamp	19.98	20.09	10U	446704	6678493	446658	6678387	0.11	0.20	0.52
WET-035	NWT	Mixed Treed Swamp	20.98	21.01	10U	446392	6677541	446384	6677508	0.03	0.06	0.15
WET-036	NWT	Treed Bog	21.24	21.60	10U	446276	6677316	446193	6676968	0.36	0.72	27.61
WET-038	NWT	Treed Bog	21.94	22.05	10U	446243	6676632	446247	6676517	0.11	0.21	11.48
WET-039	NWT	Shrub Swamp	23.05	23.19	10U	446313	6675528	446256	6675405	0.14	0.25	2.20
WET-041	NWT	Shrub Swamp	28.57	28.77	10U	443936	6670551	443831	6670382	0.20	0.37	1.53
WET-042	NWT	Mixed Treed Swamp	28.57	28.81	10U	443936	6670551	443809	6670338	0.07	0.49	28.88
WET-046	YK	Mixed Treed Swamp	31.81	31.97	10U	442104	6667896	442037	6667743	0.17	0.29	3.16
WET-047	YK	Graminoid Marsh	32.83	32.90	10U	441937	6666896	441929	6666818	0.08	0.13	0.55
WET-048	YK	Mixed Treed Swamp	33.45	33.55	10U	441886	6666276	441881	6666174	0.10	0.19	0.9

Wetland Unique ID	Province or Territory	CWCS Wetland Classification [a]	Start KPs [b]	End KPs [b]	UTM Zone	Start Easting [b]	Start Northing [b]	End Easting [b]	End Northing [b]	Approximate Wetland Length Crossed in Project Footprint (km)	Approximate Wetland Area in Crossed Project Footprint (ha)	Total Wetland Area (ha)
WET-049	YK	Mixed Treed Swamp	33.08	33.13	10U	441921	6666641	441925	6666593	0.05	0.08	0.45
WET-054	YK	Swamp	36.30	36.48	10U	441592	6663442	441552	6663261	0.18	0.35	3.55
WET-055	YK	Swamp	36.59	36.66	10U	441560	6663146	441553	6663080	0.07	0.09	0.45
Petitot Ice Bridge (IB-01) to North Liard Ice Bridge (IB-02) Access												
WET-102	NWT	Mixed Treed Swamp	16.067	16.067	10U	465744	6672227	465483	6672077	0.30	0.30	55.34

[a] Wetlands were classified according to the CWCS (NWWG 1997).

[b] Start and end KPs and UTMs are approximate and indicate where the wetland intersects the Project footprint (access along right-of-way or additional temporary access).

Notes:
CWCS = Canadian Wetlands Classification System

Table 6-8. Wetland Interactions with Physical Abandonment Sites and Camps

Project Component	Wetland Interaction (Yes or No)	Wetland Unique ID	Province or Territory	CWCS Wetland Classification and BC Wetland Riparian Class[a]	UTM Zone	Easting[b]	Northing[b]	Approximate Wetland Area in Crossed Project Footprint (ha)	Total Wetland Area (ha)
PM-4A	Yes	WET-042	NWT	Mixed Treed Swamp	10U	443826	6670330	0.05	28.88
PM-7A	Yes	WET-065[c]	YK	Mixed Treed Swamp	10U	435585	6656345	0.33	5.11
North Work Camp Site Location (Option 1 and 2)	No	--	--	--	--	--	--	--	--
South Work Camp Site Location 2	No	--	--	--	--	--	--	--	--
South Work Camp Site Location 2 - Temporary Workspace for Access	Yes	WET-079[c]	BC	Graminoid Marsh W2	10U	431995	6648832	0.21	1.14

[a] All wetlands were classified according to the CWCS (NWWG 1997). Riparian classes, per the EPMR (BC Reg. 200/2010) (BC OGC2021), are based on the area of the entire wetland complex. [b] Start and end KPs and UTMs are approximate and indicate where the wetland intersects the Project footprint (access along right-of-way or additional temporary access).
[c] Wetland was noted as also being encountered by the pipeline right-of-way in the original ESA.

Notes:
-- = not applicable for the province or territory

In addition to Table 6-7 and Table 6-8, a summary of wetland classes crossed by the existing right-of-way are provided in Section 8 of the original ESA. Physical abandonment activities (e.g., vegetation brushing, excavation, isolation, backfilling), and access where wetlands are encountered along the existing right-of-way are provided in the EPP (Appendix A of this supplemental ESA).

The mitigation hierarchy has been considered for wetlands that interact with the Project. Additional temporary access for the Project is along the existing pipeline route and existing access routes to minimize new disturbance to wetlands. Physical abandonment sites within wetlands cannot be avoided, as they are required sites along the existing pipeline right-of-way. Mitigation will be implemented to reduce wetland disturbance, and so there is no permanent loss of wetland function. Wetlands have been avoided by the construction camp sites.

6.4.3 Conclusion

The wetland classes at the new physical abandonment sites and additional temporary accesses are similar to those described in Section 8 of the original ESA for the original Project footprint. No new interests or concerns related to wetlands were identified as a result of the following activities:

- The new physical abandonment sites
- Change of timing of physical activities for the NWT
- Additional temporary access roads
- Engagement conducted since the original Application

New wetland interactions are described in this section. No new Project residual effects or cumulative effects were identified beyond those discussed in Section 8 of the original ESA. No new mitigation measures are recommended beyond those provided in the original ESA or EPP as a result of the proposed Project changes.

Jacobs has reviewed the information gathered since the filing of the original ESA in the context of the ESA and has determined that the significance conclusions of the original ESA with regards to wetlands remain unchanged for potential Project-related effects and the Project's contribution to cumulative effects (Section 8 of the original ESA).

6.5 Wildlife and Wildlife Habitat

Wildlife fieldwork for the new Project footprint components was conducted on May 3 and 4, 2023, using aerial and ground-based surveys at select locations, including:

- New physical abandonment sites (PM-4A, PM-7A)
- Ice bridge locations
- Additional temporary access roads

During the May 2023 wildlife field surveys, old beaver dam activity was observed adjacent to PM-4A, which will not be impacted by physical abandonment activities. Recent signs of beaver activity were observed at PM-7A, but no beavers were observed. At this site, the exposed pipe is situated underneath a large beaver dam, and partial or full removal of the dam will be required to release backend pressure to complete pipeline abandonment activities. No additional wildlife habitat features or species of conservation concern were observed during the May 2023 wildlife surveys.

In August 2023, a potential bear den was discovered incidentally near PM-4A during the aquatics field assessment, approximately 113 m to the south of the site. No bears were observed. No additional wildlife habitat features or species of conservation concern were observed during surveys conducted for any other discipline.

The presence of beaver dams at the new physical abandonment sites, and the anticipated need to partially or fully remove the dam does constitute a new Project effect pathway related to loss or alteration of wildlife habitat; however, there are no anticipated changes to the effects indicators identified in the original ESA. This new effect pathway does not change the Project interactions assessed in the original ESA, as potential effects from physical abandonment and abandonment in-place activities associated with the loss or alteration of wildlife habitat were previously considered. Additional mitigation is included in the updated EPP (Appendix A of this supplemental ESA) to minimize potential effects to fish and wildlife, and their habitats, from the beaver dam breaching or removal.

The presence of a potential bear den at the new physical abandonment site (PM-4A) does not change the Project interactions previously assessed in the original ESA. Potential Project effects to nearby denning bears was captured through loss or alteration of wildlife habitat (i.e., sensory disturbance reducing habitat effectiveness within a ZOI) and through increased wildlife mortality risk (i.e., disturbance of occupied habitat during sensitive periods for wildlife may increase wildlife mortality). Mitigation was included in the original ESA to avoid or reduce potential Project effects to denning bears and this mitigation will be carried through in the updated EPP (Appendix A of this supplemental ESA).

The change in season for physical abandonment activities in the NWT (i.e., from summer to winter) is not a new effect pathway, as winter works were previously considered for the Project activities in the Yukon and BC. There are no changes to the Project interactions assessed in the original ESA, including the potential effects to boreal caribou. Potential for changes in habitat, movement, and mortality risk to caribou from physical abandonment activities was previously considered. As mentioned in the original ESA, because of the lack of potential caribou habitat (e.g., presence of wood bison along the right-of-way) and lack of caribou observations in the area where abandonment activities will take place, the relative importance of the area for boreal caribou can be considered low.

Additional mitigation is included in the updated EPP (Appendix A of this supplemental ESA) to minimize potential effects to caribou movement and mortality risk in consideration of the overlap of physical abandonment activities with winter sensitive timing periods. With the implementation of mitigation in the updated EPP, this effect pathway is expected to be avoided or mitigated to negligible levels, as was concluded in the original ESA.

Additionally, where the original ESA included potential effects on wildlife species with sensitive summer periods (such as, sensory disturbance to breeding birds), these effect pathways would no longer apply, and associated mitigation has been removed from the EPP (Appendix A of this supplemental ESA).

The construction and operation of the North Work Camp Site Locations and South Work Camp Site Location 2 were not previously assessed in the original ESA, as an existing established, permanent industrial camp was proposed to house construction crews (Patry Flats Camp [South Work Camp Site Location 1]). Potential effects pathways to wildlife related to construction camps are generally attributed to increased risks for wildlife mortality from vehicle collisions, human-wildlife conflict, and attraction of wildlife to work sites, which may result in the need for removal or destruction of the animal. These effect pathways were already described in the original ESA under increased wildlife mortality risk and effectively reduced or avoided through the implementation of mitigation outlined in the EPP (Appendix A of this supplemental ESA). There are no anticipated changes to this Project interaction with wildlife, and no additional mitigation is recommended.

6.5.1 Assessment of Residual Effects on Wildlife and Wildlife Habitat

In the original ESA, the potential residual effects anticipated to remain after the implementation of mitigation measures included:

- Loss or alteration of wildlife habitat
- Loss or alteration of boreal caribou habitat

The following subsections assess these residual effects in the context of the new Project footprint and additional mitigation to be included in the updated EPP (Appendix A of this supplemental ESA).

6.5.1.1 Loss or Alteration of Wildlife Habitat

The original ESA concluded that the overall predicted residual effect of loss or alteration of wildlife habitat was considered positive, and this remains the same with the updates.

Similar to the original ESA, physical abandonment activities at new sites are anticipated to alter wildlife habitat where vegetation removal or soil disturbance is required, and brushing of additional temporary access is also anticipated to alter wildlife habitat. Habitat fragmentation is not anticipated to result from the new Project components, as the new physical abandonment sites are limited mainly to the existing right-of-way and facility sites or existing access routes, and the current revegetation is patchy and has not reached a seral stage that would alleviate the existing fragmentation effects of the right-of-way.

Considering the new physical abandonment activities will be confined to the existing right-of-way with only patchy early seral vegetation regeneration, and with reclamation to re-establish natural vegetation communities that will, in time, regenerate to conditions similar to the adjacent undisturbed habitat, the predicted residual effects on loss or alteration of wildlife habitat are still expected to be minor, as the Project activities will not alter a substantial proportion or critical element of the habitat. This is the same conclusion as the original ESA.

The new Project components will not substantially change how the Project could affect wildlife habitat effectiveness. Potential sensory effects from Project-generated noise, light, and activity on wildlife were previously considered in the original ESA. With the change in season for physical abandonment activities in the NWT activities, there will no longer be sensory disturbance potential to species with sensitive summer periods, such as amphibians, bats, and migratory birds. The original ESA already considered sensory disturbance on year-round resident, winter-active wildlife, and winter-denning species that may be present in the Project area and could be temporarily displaced from habitats on and adjacent to the Project footprint.

The partial or full removal of beaver dams during physical abandonment activities is considered a minor and temporary alteration or loss of wildlife habitat. As described in the original ESA, the adverse effects of habitat disturbance are considered minor for most wildlife species unless a substantial portion or critical element of the habitat is rendered unsuitable by the development (Harper et al. 2001). The removal of the beaver dam does not render the area unsuitable for future use.

Following the completion of physical abandonment activities, there will be no further Project-related activities that would deter beavers from using the area for foraging and dam building. As such, the adverse effect of partial or full beaver dam removal is considered minor and temporary, and does not change the residual effects assessment on the loss or alteration of wildlife habitat.

6.5.1.2 Loss or Alteration of Boreal Caribou Habitat

The original ESA concluded that the overall predicted residual effect of loss or alteration of boreal caribou habitat was considered neutral, and this remains the same with the Project updates.

Project interactions with caribou ranges and habitat from Project updates remain the same as the original ESA. In the NWT, the new physical abandonment sites, access, and a construction camp are within the NT-1 caribou range. In BC and the Yukon, the new sites are not within any designated caribou herd ranges.

Similar to the original ESA, alteration of potential boreal caribou habitat is not expected as a result of the new Project components. With the scarcity of potential boreal caribou habitat (e.g., presence of wood bison along the right-of-way) and lack of caribou observations in the area where abandonment activities will take place, the relative importance of the area for boreal caribou remains the same as the original ESA. That is, it can be considered low, and it is anticipated that there will be no net loss of undisturbed habitat as a result of the Project.

The Project changes will not substantially change how the Project could affect habitat effectiveness for boreal caribou. Potential sensory effects from Project-generated noise, light, and activity on boreal caribou was previously considered in the original ESA. With the change in season for physical abandonment activities in the NWT activities, there will no longer be sensory disturbance to boreal caribou during the summer months. The original ESA already considered sensory disturbance on boreal caribou from winter works and concluded that the residual effect is considered to be low magnitude.

6.5.2 Conclusion

Jacobs has reviewed the information gathered since the filing of the original ESA and has determined that the conclusions on predicted residual effects are unchanged for potential Project-related effects, with the effective implementation of mitigation measures outlined in the updated EPP (Appendix A of this supplemental ESA). There are no predicted adverse effects on wildlife and wildlife habitat.

6.6 Air Emissions and Greenhouse Gases

Ambient air quality at the new physical abandonment sites is similar to that described in Section 10 of the original ESA for the original Project footprint. However, as identified in Section 10 of the original ESA, Project activities do not result in continuous criteria air contaminant (CAC) emissions; therefore, the potential for CAC emissions following physical abandonment activities is limited to occasional monitoring (e.g., ground and helicopter surveillance) and is considered negligible.

No new interests or concerns related to air quality were identified as a result of the following activities:

- The new physical abandonment sites
- Additional temporary access roads

GHG emissions related to the Project changes are similar to that described in Section 10 of the original ESA for the original Project footprint. Project-related GHG emissions are anticipated to increase as a result of additional machinery and equipment used for the Project changes.

Table 6-9 provides the updated estimate of GHG emissions that accounts for the new Project activities.

Table 6-9. Estimates of Greenhouse Gas Emissions from New Project Activities

Project Activities	Emission Estimates (kilotonnes)			
	CO_2	CH_4	NO_2	Total CO_2e
Vehicle and equipment use	19.8	0.0018	0.0006	20.04
Brushing, including decay of vegetative debris	N/A	N/A	N/A	9.25
Total Emissions	**19.8+**	**0.0018+**	**0.0006+**	**29.27**

Notes:

Emission factors from Deforestation Emissions for British Columbia by Region (Dymond 2014). North East Region were used for Brushing emission estimates.

Hourly usage of on- and off-road equipment estimated from similar project and scope. Brush biomass loading estimated as 10 m^3/ha based on information provided in *Boreal stand volume TDA table (cubic meters* [sic] *per hectare m3/ha)* (Government of AB 2023).

Due to rounding, emission estimates for CO_2, CH_4, and NO_2 may not add up to the total CO_2e emissions.CH_4 = methane
CO_2 = carbon dioxide
CO_2e = carbon dioxide equivalent
m^3/ha = cubic metre(s) per hectare
NO_2 = nitrogen dioxide
n/a = not available

No new Project interactions, Project residual effects, or cumulative effects were identified beyond those discussed in Section 10 of the original ESA. No new mitigation measures are recommended beyond those provided in the original ESA or EPP as a result of the proposed Project changes. All site-specific mitigation measures for GHG emissions on the Project footprint are provided in the updated EPP and ESISs (Appendices A and B of this supplemental ESA).

Jacobs has reviewed the information gathered since the filing of the original ESA in the context of the ESA and has determined that the significance conclusions of the original ESA with regards to GHGs remain unchanged for potential Project-related effects and the Project's contribution to cumulative effects (Section 10 of the original ESA).

6.7 Acoustic Environment

The acoustic environment is similar to that described in Section 11 of the original ESA for the original Project footprint. The construction camp and the construction of the ice bridge across the Petitot River are close to the community of Fort Liard; as such, the potential for human receptors to noise is present at these locations. Vehicle and equipment use during Project activities will change noise levels temporarily. The construction of the ice bridge at the Petitot River is anticipated to take approximately 2 weeks, and nearby residents and businesses may be temporarily affected by additional noise levels during that time.

No new interests related to the acoustic environment were identified as a result of the following activities:

- The new physical abandonment sites
- Additional temporary access roads

No new Project interactions, Project residual effects, or cumulative effects were identified beyond those discussed in Section 11 of the original ESA. No new mitigation measures are recommended beyond those provided in the original ESA or EPP as a result of the proposed Project changes. All site-specific mitigation measures for noise on the Project footprint are provided in the updated EPP and ESISs (Appendices A and B of this supplemental ESA).

Jacobs has reviewed the information gathered since the filing of the original ESA and has determined that the significance conclusions of the original ESA with regards to noise remain unchanged for potential Project-related effects and the Project's contribution to cumulative effects (Section 11 of the original ESA).

6.8 Heritage Resources

Heritage resources is similar to that described in Section 12 of the original ESA for the original Project footprint. No new interests related to heritage resources were identified as a result of the following activities:

- The new physical abandonment sites
- Additional temporary access roads

No new Project interactions, Project residual effects, or cumulative effects were identified beyond those discussed in Section 12 of the original ESA. No new mitigation measures are recommended beyond those provided in the original ESA or EPP as a result of the proposed Project changes. All site-specific mitigation measures for heritage resources on the Project footprint are provided in the updated EPP and ESISs (Appendices A and B of this supplemental ESA).

Jacobs has reviewed the information gathered since the filing of the original ESA in the context of the ESA and has determined that the significance conclusions of the original ESA with regards to heritage resources remain unchanged for potential Project-related effects and the Project's contribution to cumulative effects (Section 12 of the original ESA).

6.9 Traditional Land and Resource Use

TLRU is similar to that described in Section 13 of the original ESA for the original Project footprint. No new interests or concerns related to TLRU were identified as a result of the following activities:

- The new physical abandonment sites
- Additional temporary access roads

No new Project interactions, Project residual effects, or cumulative effects were identified beyond those discussed in Section 13 of the original ESA. No new mitigation measures are recommended beyond those provided in the original ESA or EPP as a result of the proposed Project changes. All site-specific mitigation measures for TLRU on the Project footprint are provided in the updated EPP and ESISs (Appendices A and B of this supplemental ESA).

Jacobs has reviewed the information gathered since the filing of the original ESA in the context of the ESA and has determined that the significance conclusions of the ESA with regards to TLRU remain unchanged for potential Project-related effects and the Project's contribution to cumulative effects (Section 13 of the original ESA).

6.10 Socio-economic Elements

The socio-economic conditions at the new physical abandonment sites and additional temporary access are similar to that described in Section 14 of the original ESA for the original Project footprint:

- HORU
- Navigation and Navigation Safety
- Social and Cultural Wellbeing Human Health
- Infrastructure and Services Employment and Economy

The North Work Camp Site Location (Option 1 and 2) have the potential to interact with socio-economic elements in a different way than the original plan to accommodate the workforce in South Work Camp Site Location 1. The North Work Camp Site Location (Option 1 and 2) are located within the Hamlet of Fort Liard, a small, primarily Indigenous community in the NWT. A peak workforce of 70 people is anticipated for physical abandonment activities. The workforce for construction of the temporary winter road and ice bridges is anticipated to be sourced locally. Considering the small size of the Hamlet of Fort Liard and the location of the camp within the community, effects on the social and cultural fabric of the community may occur.

Engagement with local contractor ADK Holdings (Economic Development Corporation of Acho Dene Koe First Nation) led to the selection of both North Work Camp Locations (Option 1 and 2).

In the original ESA, it was determined that there would be no interaction with social and cultural wellbeing With the new Project details and North Work Camp Site Location (Option 1 and 2), it is anticipated that an interaction will occur, but with hiring of local workforce to the extent practical, and the construction of a fully serviced camp, the residual effects on the social and cultural fabric of Fort Liard are anticipated to be negligible.

Interactions between the North Work Camp Site Location (Option 1 and 2) and the other elements are not anticipated to be materially different than those identified in the original ESA. No new mitigation measures are recommended beyond those provided in the original ESA or EPP as a result of the proposed Project changes.

Jacobs has reviewed the information gathered since the filing of the original ESA and has determined that the significance conclusions of the original ESA with regards to the socio-economic elements remain unchanged for potential Project-related effects and the Project's contribution to cumulative effects (Section 14 of the original ESA).

6.11 Rights of Indigenous Peoples

The Rights of Indigenous Peoples is similar to that described in Section 15 of the original ESA for the original Project footprint.

However, through the CER hearing registration process (C22678, C23572), the following Indigenous groups are listed as intervenors:

- Driftpile Cree Nation
- Foothills First Nation
- Louis Bull Tribe
- Sucker Creek First Nation
- Whitefish Lake First Nation

In addition, McLeod Lake applied as an intervenor and later withdrew.

6.11.1 Driftpile Cree Nation

Driftpile Cree Nation is located on the southern shore of Lesser Slave Lake, 50 km east of High Prairie, Alberta (AB), and 725 km southeast from the Project. Driftpile Cree Nation is affiliated with the Lesser Slave Lake Regional Council. The registered population of Driftpile Cree Nation as of August 2023 was 3,177 (CIRNAC 2023b).

Driftpile Cree Nation registered to participate in the CER hearing on December 8, 2022 (C22463). Driftpile Cree Nation is a signatory of Treaty 8. Driftpile Cree Nation explains that "Since time immemorial, Driftpile has occupied the lands of present-day AB, BC, Saskatchewan, and the NWT. In addition to its Treaty rights, Driftpile exercises its inherent Indigenous rights, including its rights to hunt, fish, trap, gather, and engage in ceremonial traditions within its traditional territory, which is not confined to the specific boundaries of Treaty No. 8" (C22463 PDF pp. 2-3).

Driftpile Cree Nation's concerns include:

- Cumulative impacts
- Abandonment methods
- Crown obligations under Section 35 of the *Constitution Act*, 1982 and the United Nations Declaration of Rights of Indigenous Peoples (UNDRIP)

To date, engagement activities for the Project have not indicated specific activities regarding the exercise of Driftpile Cree Nation's Indigenous rights within and beyond Treaty 8.

6.11.2 Foothills First Nation

Foothills First Nation's centre of community is at Kelly Lake, BC, and 580km southeast from the Project. Foothills First Nation have explained that "they are the descendants of multiple indigenous ethnographic groups, including Beaver, Cree, Sekani, and Assiniboine, who formed marital alliances with Iroquois freemen who had moved into [Foothills First Nation] traditional territory with the fur trade in the eighteenth century" (C22603-1 PDF p. 1). The reported population of Foothills First Nation as of December 16, 2022 was 125 (C22603-1 PDF p. 1).

Foothills First Nation registered to participate in the CER hearing on February 28, 2023 (C23440). Previously, Foothills First Nation shared that they "exercise their constitutionally protected s.35 rights on the same lands used by their ancestors to hunt, fish, pick berries and medicines, trap, and guide" (C22603-1 PDF p. 1). While Foothills First Nation reside within lands covered by Treaty 8, they are not a signatory of Treaty 8, and have explained that they were omitted from Treaty 8 adhesions (C22603-1 PDF p. 1).

Foothills First Nation have not identified any issues or concerns. The Project is 470 km north of Foothills First Nations traditional territory (C22603-1 PDF p. 8). To date, engagement activities for the Project have not indicated specific activities regarding the exercise of Foothills First Nation's Indigenous rights. No sites identified in the Foothills First Nation Traditional Land Use Study for the NOVA Gas Transmission Lts 2021 System Expansion Project cross the Project (C00098).

6.11.3 Louis Bull Tribe

Louis Bull Tribe is located near Maskwacis, AB, and 1,025 km from the Project. The registered population of Louis Bull Tribe as of August 2023 was 2,450 (CIRNAC 2023c).

Louis Bull Tribe registered to participate in the CER hearing on December 8, 2022 (C22464 PDF p.1). Louis Bull Tribe are a signatory to Treaty 6. Louis Bull Tribe explain that "members hold inherent Indigenous and Treaty rights. These rights, which include the right to hunt, fish, trap, gather, and engage in ceremonial traditions on its traditional territories, are practiced throughout western and northern Canada, including in Treaty No. 8 territory" (C22464 PDF p.1).

Louis Bull Tribe's concerns include:

- Cumulative impacts
- Abandonment methods
- Crown obligations under Section 35 of the Constitution Act, 1982 and the UNDRIP

To date, engagement activities for the Project have not indicated specific activities regarding the exercise of Louis Bull Tribe's Indigenous rights. Louis Bull Tribe noted that "The southern portion of the Pointed Mountain Pipeline extends into Treaty No. 8 territory and beyond into other areas of potential importance to [Louis Bull Tribe]" (C22464 PDF p.3).

6.11.4 McLeod Lake

McLeod Lake are located at McLeod Lake BC, and are 560 km south of the Project. The registered population of McLeod Lake as of August 2023 was 568 (CIRNAC 2023d).

McLeod Lake registered to participate in the CER hearing on December 8, 2022 (C22460) and later withdrew on December 12, 2022 (C22492). McLeod Lake are a signatory to Treaty 8. McLeod Lake explained that they "have inherent Indigenous and Treaty rights, including the right to hunt, fish, gather, and engage in ceremonial traditions, which are regularly practiced throughout [McLeod Lake's] traditional territory" (C22460 PDF p. 2).

McLeod Lake's concerns include:

- Cumulative impacts
- Abandonment methods
- Crown obligations under Section 35 of the Constitution Act, 1982 and the UNDRIP

To date, engagement activities for the Project have not indicated specific activities regarding the exercise of McLeod Lake's Indigenous rights.

6.11.5 Sucker Creek First Nation

Sucker Creek are located on the southwest shore of Lesser Slave Lake near High Prairie, AB, and are 695 km southeast of the Project. The registered population of Sucker Creek First Nation as of August 2023 was 3,194 (CIRNAC 2023e).

Sucker Creek First Nation registered to participate in the CER hearing on December 8, 2022 (C22462). Sucker Creek First Nation is a signatory to Treaty 8. Sucker Creek First Nation explain that "[i]n addition to its Treaty rights, [Sucker Creek First nation] exercises its inherent Indigenous rights, including its rights to hunt, fish, trap, gather, and engage in ceremonial traditions on its traditional territory, which is not confined to the specific boundaries of Treaty No. 8" (C22462 PDF p. 3).

Sucker Creek First Nation's concerns include:

- Cumulative impacts
- Abandonment methods
- Crown obligations under Section 35 of the Constitution Act, 1982 and the UNDRIP

To date, engagement activities for th e Project have not indicated specific activities regarding the exercise of Sucker Creek First Nation's Indigenous rights. Sucker Creek First Nation shared that the "southern portion of the Pointed Mountain Pipeline extends into Treaty No. 8 territory and beyond into other areas of potential importance to [Sucker Creek First Nation]" (C22462 PDF p. 3).

6.11.6 Whitefish Lake First Nation

Whitefish Lake First Nation are located at Atikameg, AB, and are 673 km southeast of the Project. The registered population of Whitefish Lake First Nation as of August 2023 was 3,129 (CIRNAC 2023f).

Whitefish Lake First Nation registered to participate in the CER hearing on December 8, 2022 (C22461). Whitefish Lake First Nation are a signatory to Treaty 8. Whitefish Lake First Nation expressed concerns around the cumulative impacts of develop on their "well-being and ability to exercise its inherent Indigenous and Treaty rights" (C22461 PDF p. 3). Whitefish Lake First Nation explained the Inherent Indigenous Rights Guaranteed by Treaty 8 to the CER in the proceeding for the NorthRiver Midstream Northeast BC Connector (C25638 PDF pp. 22-24).

Whitefish Lake First Nation's concerns for the Project include:

- Cumulative impacts
- Abandonment methods
- Crown obligations under Section 35 of the Constitution Act, 1982. and the UNDRIP

To date, engagement activities for the Project have not indicated specific activities regarding the exercise of Whitefish Lake First Nation's Indigenous rights. Whitefish Lake First Nation explain that the "southern portion of the Pointed Mountain Pipeline extends into Treaty No. 8 territory and beyond into other areas of potential importance to [Whitefish Lake First Nation]" (C22461 PDF p. 3).

7. Conclusion

This supplemental ESA for the Project concludes that the Project changes do not impact the conclusion from the original ESA that the physical abandonment activities and abandonment in place will not result in significant environmental or socio-economic effects.

The new environmental interests identified in this supplemental ESA are consistent with expected and known potential effects arising from the Project and can be mitigated by standard environmental protection and monitoring measures.

The new socio-economic concerns interests identified in this supplemental ESA are consistent with expected and known potential effects arising from the Project. As noted in the original ESA, the Project is in an area of high TLRU, and the abandonment of the pipeline will allow the land and resources to return to a more natural state for use by Indigenous groups. Westcoast's engagement activities will continue throughout the regulatory process and beyond, with a focus on addressing issues that remain and informing the potentially affected parties as construction planning commences.

8. References

British Columbia Ministry of Forests, Lands, and Natural Resource Operations (BC MFLNRO). 2016. *Terms and Conditions for Water Sustainability Act Changes In and About a Stream as specified by Ministry of Forests, Lands & Natural Resource Operations (FLNRO) Habitat Officers, Northeast Region*. https://www2.gov.bc.ca/assets/gov/environment/air-land-water/water/working-around-water/terms_and_conditions_northeast_region_sept_2016.pdf.

British Columbia Oil & Gas Commission (BC OGC). 2021. *Environmental Protection and Management Guideline.* Version 2.9. December 23. p. 126. https://www.bcogc.ca/content/environmental-protection-and-management-guideline.

Canadian Council of Ministers of the Environment (CCME). 2002. "Canadian Water Quality Guidelines for the Protection of Aquatic Life: Total Particulate Matter." *Canadian environmental quality guidelines*. Canadian Water Quality Guidelines for the Protection of Aquatic Life - Total Particulate Matter (ccme.ca).

Committee on the Status of Endangered Wildlife in Canada (COSEWIC). 2021. *COSEWIC Assessment and Status Report on the Bull Trout Salvelinus confluentus in Canada*. Bull Trout,Salvelinus confluentus (sararegistry.gc.ca).Bull Trout,Salvelinus confluentus (sararegistry.gc.ca).

Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC). 2022. *Pointed Mountain Pipeline Abandonment Project Information Request No. 2.* https://yesabregistry.ca/projects/f0465aac-bcb1-4b8e-981c-655a7df36314/information-requests/b244068c-5e45-49e1-822d-08e6ef53abe3/answer.

Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC). 2023a. *Yukon Environmental & Socio-economic Assessment Act Decision Document*. https://yesabregistry.ca/projects/f0465aac-bcb1-4b8e-981c-655a7df36314/documents.

Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC). 2023b. "Driftpile Cree Nation" *First Nation Detail*. September 5, 2023. https://fnp-ppn.aadnc-aandc.gc.ca/fnp/Main/Search/FNRegPopulation.aspx?BAND_NUMBER=450&lang=eng.

Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC). 2023c. "Louis Bull Tribe" *First Nation Detail*. September 5, 2023. https://fnp-ppn.aadnc-aandc.gc.ca/fnp/Main/Search/FNRegPopulation.aspx?BAND_NUMBER=439&lang=eng.

Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC). 2023d. "McLeod Lake" *First Nation Detail*. September 5, 2023. https://fnp-ppn.aadnc-aandc.gc.ca/fnp/Main/Search/FNRegPopulation.aspx?BAND_NUMBER=618&lang=eng.

Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC). 2023e. "Sucker Creek First Nation" *First Nation Detail*. September 5, 2023. https://fnp-ppn.aadnc-aandc.gc.ca/fnp/Main/Search/FNRegPopulation.aspx?BAND_NUMBER=456&lang=eng.

Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC). 2023f. "Whitefish Lake First Nation" *First Nation Detail*. September 5, 2023. https://fnp-ppn.aadnc-aandc.gc.ca/fnp/Main/Search/FNRegPopulation.aspx?BAND_NUMBER=459&lang=eng.

Di Rocco, R., and R. Gervais. 2023. SPOT: Swim Performance Online Tools. March 21. http://www.fishprotectiontools.ca/.

Diaz, R. 2012. *Acho Dene Koe Traditional Use Study -Final Report*. Prepared for the Government of Canada and Acho Dene Koe First Nation. DM Cultural Services, Ltd. August 15. http://www.adkfirstnation.ca/community/wp-content/uploads/2018/09/TUS-Final-Report-Aug-15_12-2-002.pdf.

Dymond, C. 2014. Deforestation Emission Estimates Tool, Emission Factors from Deforestation Emissions for British Columbia by Region.

Enbridge Pipelines Inc. (Enbridge). 2023. Gas Transmission and Liquid Pipelines Engineering Projects April 2023. Prepared by Enbridge Liquid Pipelines.

Fisheries and Oceans Canada (DFO). 2013. *Northwest Territories Restricted Activity Timing Windows for the Protection of Fish and Fish Habitat*. December 27. https://www.dfo-mpo.gc.ca/pnw-ppe/timingperiodes/nwt-eng.html.

Fisheries and Oceans Canada (DFO). 2014. *Freshwater Timing Windows Identified for the Yukon*. January 24. https://www.dfo-mpo.gc.ca/pnw-ppe/timing-periodes/yk-eng.html.

Fisheries and Oceans Canada (DFO). 2020. *Interim code of practice: End-of-pipe fish protection screens for small water intakes in freshwater*. February 6. https://www.dfo-mpo.gc.ca/pnw-ppe/codes/screen-ecran-eng.html.

Fisheries and Oceans Canada (DFO). 2022. *Measures to protect fish and fish habitat*. November 22. http://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures-eng.html.

Government of Alberta (Government of AB). 2023. *Boreal stand volume TDA table (cubic meters per hectare m3/ha)*. July 1. https://open.alberta.ca/publications/boreal-stand-volume-tda-table-cubic-meters-per-hectare.

Government of British Columbia (Government of BC). 2022. *Requirements and Best Management Practices for Making Changes In and About a Stream in British Columbia*. Version 2022.01. January 10. https://www2.gov.bc.ca/assets/gov/driving-and-transportation/transportation-infrastructure/contracting-with-the-province/documents/25271-0000/scht3_-23-requirements_and_best_management_practices_for_making_changes_in_and_about_a_stream_in_british_columbia.pdf.

Government of British Columbia (Government of BC). 2023a. *HabitatWizard*. Accessed July 2023. https://www2.gov.bc.ca/gov/content/environment/plants-animalsecosystems/ecosystems/habitatwizard.

Government of British Columbia (Government of BC). 2023b. *EcoCat Ecological Reports Catalogue*. Accessed July 2023. https://www2.gov.bc.ca/gov/content/environment/research-monitoring-reporting/libraries-publication-catalogues/ecocat.

Government of British Columbia (Government of BC). 2023c. *Fish Inventories Data Queries (FIDQ).* Accessed July 2023. http://a100.gov.bc.ca/pub/fidq/welcome.do.

Government of British Columbia (Government of BC). 2023d. *iMapBC*. Accessed July 2023. https://maps.gov.bc.ca/ess/hm/imap4m/.

Government of Canada. 2020. *Amended Recovery Strategy for the Woodland Caribou* (Rangifer tarandus caribou)*, Boreal Population, in Canada.* https://www.sararegistry.gc.ca/virtual_sara/files/plans/Rs-CaribouBorealeAmdMod-v01-2020Dec-Eng.pdf.

Government of Canada. 2023a. *Species at risk public registry*. Accessed June 2023. https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry.html.

Government of Canada. 2023b. *Code of practice: Beaver dam breaching and removal*. May 30. https://www.dfo-mpo.gc.ca/pnw-ppe/codes/beaver-dam-barrage-castor-eng.html.

Government of the Northwest Territories (GNWT). 2023. *NWT Species and Habitat Viewer*. Accessed July 2023. https://www.maps.geomatics.gov.nt.ca/Html5Viewer/index.html?viewer=NWT_SHV.

Government of Yukon (YG). 2022. *A Policy for the Stewardship of Yukon's Wetlands*. Whitehorse, Yukon, Canada. October 1. A Policy for the Stewardship of Yukon's Wetlands released | Government of Yukon.

Government of Yukon (YG). 2023a. *Woodland Caribou*. Accessed July 2023. https://yukon.ca/en/woodland-caribou.

Government of Yukon (YG). 2023b. *Wood Bison.* Accessed July 2023. https://yukon.ca/en/wood-bison.

Government of Yukon (YG). 2023c. *Yukon species at risk*. Accessed June 2023. https://yukon.ca/en/species-risk#species-at-risk-in-the-yukon.

Hamlet of Fort Liard. 2017. "The Old Ways." *A Bit of History*. https://www.fortliard.com/a-bit-of-history.

Harper, W.L., J.M. Cooper, K. Simpson, J. Hamilton, K.A. Dunham, and D.S. Eastman. 2001. *Guidelines for Evaluating, Avoiding and Mitigating Impacts of Major Development Projects on Wildlife in British Columbia*. p. 204.

International Union on the Conservation of Nature Task Force (IUCN). 2016. *A Global Standard for the Identification of Key Biodiversity Areas*. Version 1.0. March 23. https://portals.iucn.org/library/sites/library/files/documents/2016-048.pdf.

Irvine, J.R., Linn, E., Gillespie, K., McLeod, C., Reist, J.D. 2009. Pacific Salmon in Canada's Arctic Draining Rivers, With Emphasis on Those in British Columbia and the Yukon. Prepared for Pacific Fisheries Resource Conservation Council. Accessed July 2023. https://psf.ca/wp-content/uploads/2021/10/Download-PDF558-1.pdf.

Jacobs. 2021a. *Archaeological Overview Assessment Pointed Mountain Pipeline Abandonment Northwest Territories*. Calgary Alberta Jacobs Consultancy Canada Inc.

Jacobs. 2021b. *Archaeological Overview Assessment Pointed Mountain Pipeline Abandonment Yukon Territory*. Calgary Alberta: Jacobs Consultancy Canada Inc.

Jacobs. 2022a. *Archaeological Impact Assessment Pointed Mountain Pipeline Abandonment Northwest Territories, Permit 21-04.* Final. Prepared for Westcoast Energy Inc. Report on File at the Prince of Wales Heritage Centre, NWT. May.

Jacobs. 2022b. *Historic Resources Impact Assessment Pointed Mountain Pipeline Abandonment - Yukon, Permit 21-11ASR (Class 2).* Prepared for Westcoast Energy Inc. Report on File at Government of Yukon Department of Tourism and Culture. May.

Jacobs. 2022c. *Phase 1 Environmental Site Assessment*.

Jacobs. 2023. *Archaeological Impact Assessment Pointed Mountain Pipeline Abandonment Northwest Territories, Permit 22-006*. Final. Prepared for Westcoast Energy Inc. Report on File at the Prince of Wales Heritage Centre, NWT. May.

Mackenzie, W.H., and J.R. Moran. 2004. *Wetlands of British Columbia: A Guide to Identification*. 2004, Wetlands of British Columbia: A Guide to Identification (gov.bc.ca).

McLeod C.L., and J. P. O'Neil. 1983. *Major range extensions of anadromous salmonids and first record of chinook salmon in the Mackenzie River drainage*. Edmonton, Alberta: R.L.&L Environmental Services Ltd. p. 2.

McPhail, J. D. 2007. *The Freshwater Fishes of British Columbia*. Edmonton, Alberta: The University of Alberta Press, Ring House 2. pp. 392-397.

McPhail, J.D., and Carveth, R. 1993. *Field Key to the Freshwater Fishes of British Columbia*. Vancouver: Department of Zoology, University of British Columbia. p. 230. https://www.zoology.ubc.ca/~etaylor/nfrg/fresh.pdf.

National Wetland Working Group (NWWG). 1997. *The Canadian Wetland Classification System*. 2nd Ed. Canadian Wetland Classification System — Wetland Policy.*System*. 2nd Ed. Canadian Wetland Classification System — Wetland Policy.

Northwest Territories (NWT) Bureau of Statistics. 2023. *Fort Liard Statistical Profile*. Accessed June 2023. https://www.statsnwt.ca/community-data/infrastructure/Fort_Liard.html.

Ramsar, I. 1971. *Convention on Wetlands of International Importance especially As Waterfowl Habitat*. February 2. https://www.ramsar.org/sites/default/files/documents/library/current_convention_text_e.pdf.

Stewart, D.B, N.J. Mochnacz, C.D. Sawatzky, T.J. Carmichael, and J.D. Reist. 2007. *Fish life history and habitat use in the Northwest Territories: bull trout* (Salvelinus confluentus). Canadian Manuscript Report of Fisheries and Aquatic Sciences 2801. September. Winnipeg, Manitoba. (PDF) Fish life history and habitat use in the Northwest Territories: bull trout (Salvelinus confluentus) (researchgate.net).(PDF) Fish life history and habitat use in the Northwest Territories: bull trout (Salvelinus confluentus) (researchgate.net).

The Dehcho Land Use Planning Committee. 2006. *Dehcho Land Use Plan*. May. https://www.dehcholands.org/docs/dehcho_final_draft_june_02_06/Final%20Draft%20Dehcho%20Land%20Use%20Plan_June%202-06.pdf.

Yukon Conservation Data Centre (Yukon CDC). 2019. *Animal watch list*. February. https://yukon.ca/sites/yukon.ca/files/env/env-cdc-animal-watch-list.pdf.

Appendix A
Environmental Protection Plan

Environmental Protection Plan

Westcoast Energy Inc.
Pointed Mountain Pipeline Abandonment Project
September 2023

Version Date: 29/09/2023

Document Version Register

VERSION NO.	VERSION DATE	SECTION NO. AND TITLE	DETAILS OF VERSION
1.0	August 2021		Original version
2.0	November 2021		Updated
3.0	January 2022		Updated
4.0	September 2023		Updated for new Project scope

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- D1 Plant Species or Ecological Communities of Concern Discovery Contingency Plan
- D2 Wildlife Discovery Contingency Plan
- D3 Wet or Thawed Soils Contingency Plan
- D4 Soil Erosion Contingency Measures
- D5 Emergency Contacts

ACRONYMS AND ABBREVIATIONS

BC	British Columbia
BC MOF	British Columbia Ministry of Forests
CER	Canada Energy Regulator
cm	centimetres(s)
CM	Construction Manager
CMT	culturally modified tree
Contractor	Construction Contractor
DFO	Fisheries and Oceans Canada
ECD	erosion and sediment control device(s)
EI	Environmental Inspector
Enbridge	Enbridge Inc. or Enbridge Pipelines Inc.
EPP	Environmental Protection Plan
GNWT	Government of the Northwest Territories
km	kilometre(s)
KP	Kilometre Post
m	metre(s)
m/s	metre(s) per second
m^3	cubic metre(s)
mg/L	milligram(s) per litre
mm	millimetre(s)
N/A	not applicable
NPS	Nominal Pipe Size
NTU	nephelometric turbidity unit
NWT	Northwest Territories
OD	Outside Diameter
OHWM/OHWL	ordinary high-water mark/ordinary high-water level
PEL	Project Environment Lead
PLS	Pure Live Seed
PM	Project Manager
RAP	restricted activity period
the Project	Pointed Mountain Pipeline Abandonment Project
TSS	total suspended solids
TWS	temporary workspace
UTM	Universal Transverse Mercator
VSC	Vegetation Species of Concern
WC	watercourse

Westcoast	Westcoast Energy Inc.
WSC	Wildlife Species of Concern
Yukon	Yukon Territory

1.0 INTRODUCTION

Westcoast Energy Inc. (Westcoast) is planning to abandon the Pointed Mountain Pipeline through the Pointed Mountain Pipeline Abandonment Project (the Project). This Environmental Protection Plan (EPP) outlines the general and specific environmental protection and mitigation measures to be implemented and is intended to meet or exceed federal, provincial, territorial and local environmental protection requirements. This document is based on the Enbridge EPP for Gas Transmission and Liquid Pipelines Engineering Projects (Canada), April 2023 (Enbridge 2023), and addresses typical circumstances that may occur during activities related to pipeline maintenance and/or system projects. Project-specific permit conditions and/or stakeholder agreements may supersede or augment the general practices described in this document.

Environmental requirements will consist of commitments and applicable regulatory requirements. These include, but may not be limited to:

- federal, provincial, territorial, and local permits or approvals;
- Project-specific supplemental EPPs;
- environmental commitments made to third-parties (e.g., Indigenous groups and/or other stakeholders); and
- other applicable Westcoast environmental policies and procedures.

The Project Environmental Lead (PEL) will identify, coordinate, and communicate these requirements to the Project team in coordination with the Project Manager (PM). If a conflict arises between the construction contract documents and the environmental requirements (permits, EPP, regulatory approvals, etc.), the more rigorous protective measures will take precedence.

If alternative construction and maintenance procedures are implemented in lieu of this EPP, it is expected these will provide an equal or greater level of protection to the environment and have received advance approval from Westcoast prior to implementation. Unless otherwise specified, the Construction Contractor (Contractor) is responsible for implementing the requirements of this EPP. Where Westcoast is referenced in this EPP, it is intended to include employees, inspectors, Consultants, and/or Contractors representing or working on behalf of Westcoast.

1.1 PROJECT DESCRIPTION

Westcoast has applied under Section 241 of the *Canadian Energy Regulator Act* for the Project. The Pointed Mountain Pipeline is a natural gas pipeline situated in the southwest corner of the Northwest Territories (NWT), southeast corner of the Yukon Territory (Yukon), and northeast corner of British Columbia (BC) and regulated by the Canada Energy Regulator (CER) (Figure 1). The Nominal Pipe Size (NPS) 20 (508 millimetres [mm] outside diameter [OD]) Pointed Mountain Pipeline is approximately 56 kilometres (km) long. The existing pipeline is located within a right-of-way approximately 18 metres (m) to 21 m wide entirely on provincial and territorial Crown land, except for 600 m of private land at the southern end of the pipeline.

The carbon steel pipeline has previously been deactivated, which included being purged, cleaned of residual product, internally coated with corrosion inhibitor, and physically isolated from sources of upstream pressure. The pipeline has been filled with nitrogen gas to a minimum pressure of 70 kilopascals

and has active cathodic protection systems to prevent corrosion. The section of pipe exposed by the Kotaneelee River was removed in 2016.

With no prospective future use, Westcoast is planning to take the pipeline permanently out of service by moving on to the abandonment phase. The Project will include:

- abandonment in-place of approximately 56 km of pipeline;
- removal of aboveground facilities associated with the Pointed Mountain Pipeline
- removal of exposed pipe; and
- disconnecting cathodic protection facilities.

The buried pipeline will be abandoned in-place and all physical abandonment activities (e.g., cutting, capping) will be confined to the existing right-of-way and areas where aboveground infrastructure is located. Physical abandonment activities (e.g., excavation, isolation, backfilling) along the Pointed Mountain Pipeline will occur at 11 site locations (PM-1, PM-2, PM-3, PM-4, PM-4A, PM-6, PM-7, PM-7A, PM-8, PM-9, PM-10), and test lead posts will be removed as encountered during the course of other abandonment activities to the extent practical.

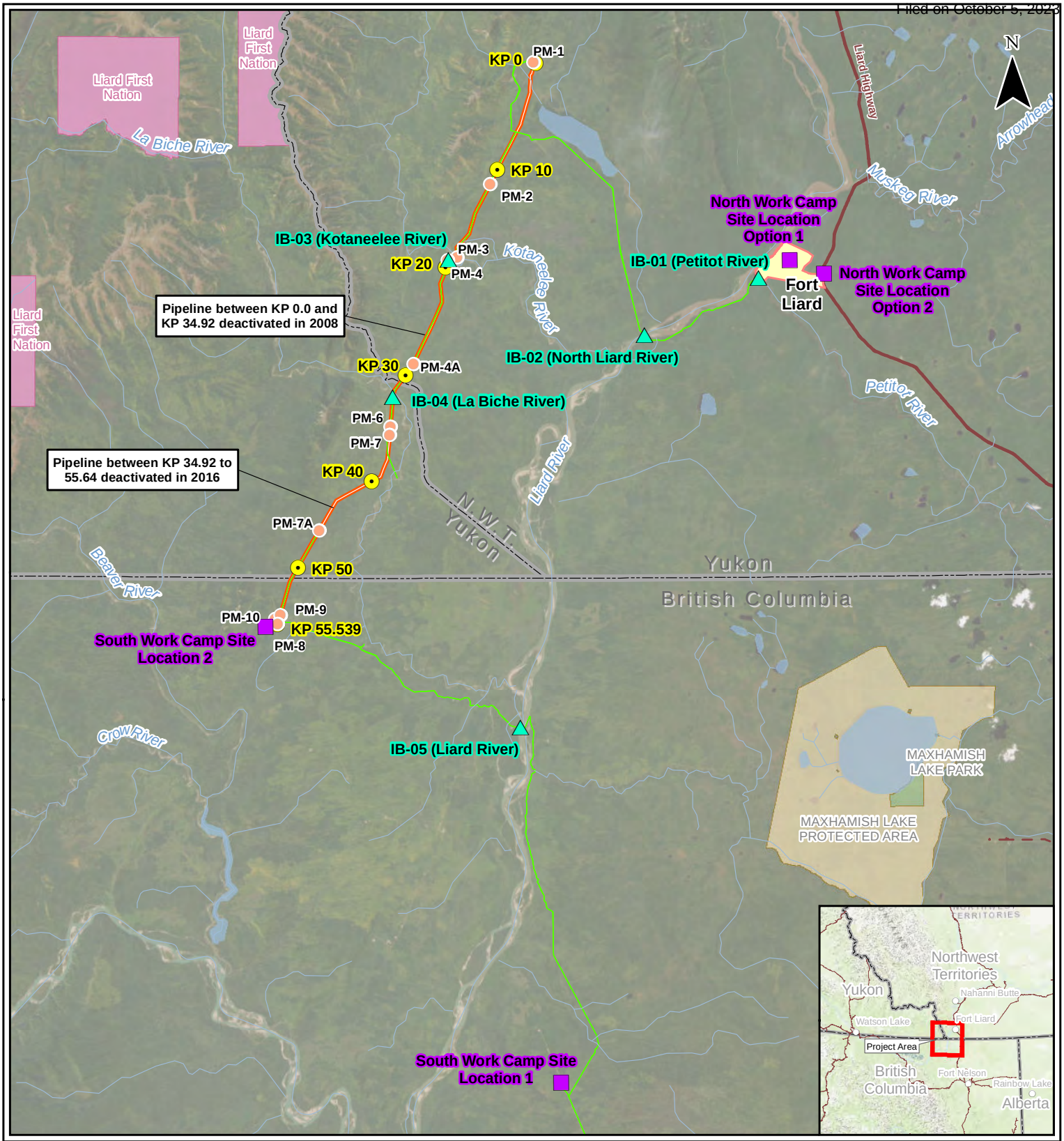
Access during physical abandonment activities will primarily be via existing roads (e.g., high-grade petroleum development roads, resource, and winter roads), and the existing Pointed Mountain Pipeline right-of-way. From Fort Liard, an ice bridge will be installed at the Petitot River to facilitate temporary access west to an existing 12 km access trail (connector road). An ice bridge will be installed at the Liard River to facilitate access to Government of Northwest Territories (GNWT) road, which travels north to the existing Pointed Mountain Pipeline right-of-way. From there, GNWT road extends northeast directly to PM-1, and Prairie Provident Resources Road extends south, paralleling the existing Pointed Mountain Pipeline right-of-way, allowing access to PM-2. From PM-2, the existing Pointed Mountain Pipeline right-of-way will be used to access PM-3 and PM-4, with an ice bridge installed at the Kotaneelee River.

Access to PM-4A, PM-6, PM-7, PM-7A, PM-8, PM-9 and PM-10 will be from the south, utilizing existing roads and the existing Pointed Mountain right-of-way for access. Ice bridges will be installed to facilitate access at the La Biche River and the Liard River.

Vegetation clearing and/or brushing is not anticipated for the construction of access roads, with the exception of the 12 km-long connector Road. Vegetation brushing will be required to open a 10 m wide access route for the extent of the existing Pointed Mountain Pipeline right-of-way being used for access.

Pending regulatory approval, access preparation and physical abandonment activities are expected to commence in fall 2024 and end by spring 2025.

The Project footprint is made up of the area directly disturbed by the Project physical abandonment and cleanup activities, including associated physical works and activities (i.e., pipeline right-of-way, temporary workspace [TWS], and access roads). Throughout the document, where the term “construction” is used, it is meant to include all preparatory work and pipeline abandonment activities.



Kilometre Post
Site Location
Camp
Ice Bridge
Pointed Mountain Pipeline Route
Access Road
Provincial Boundary
Highway
Watercourse
Waterbody
Municipal Boundary
First Nations (Interim Protected Lands)
Protected Area
Provincial Park

FIGURE 1

PROJECT OVERVIEW

WESTCOAST ENERGY INC.
POINTED MOUNTAIN PIPELINE

NAD 1983 UTM Zone 10N
Satellite Imagery: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community; Roads: NRCan 2014-2015; Railway: NRCan 2012.

SCALE: 1:450,000
0 5 10
Kilometres
(All Locations Approximate)

ENBRIDGE

Jacobs

Although there is no reason to believe that there are any errors associated with the data used to generate this product or in the product itself, users of these data are advised that errors in the data may be present.

September 2023

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2.0 PROJECT ROLES AND RESPONSIBILITIES

This section provides standard guidelines for roles and responsibilities for environmental compliance during construction activities.

Westcoast will provide construction oversight to monitor compliance with the measures of this EPP. Environmental Inspectors (EIs) will assist the Contractor in interpreting and implementing the requirements of the EPP and verify compliance with these procedures on behalf of Westcoast.

Environmental compliance is a critical component of Project success. Westcoast expects full compliance by all staff, Contractors, and/or Consultants. During construction, environmental compliance is the responsibility of every person on the Project team.

Exhibit 1. Project Team Organization

Environmental Inspector (EI)

Onsite at a Project location, the EI will report directly to the Construction Manager (CM) and the PEL. The EI will work with the CM and Contractor to confirm all Project personnel are aware of the environmental conditions, commitments, and guidelines for the Project and that the Project is executed in compliance with this EPP. The EI is recognized as an integral part of the construction management team and their role is to be well-defined within the chain of command at Project sites.

EI responsibilities include:

- Work with the CM and the Contractor to confirm construction activities are compliant and aligned with all plans, permit conditions, and the EPP.
- In coordination with the CM and the Contractor, review the planned construction activities to verify execution will not lead to adverse environmental impacts.
- Confirm that mitigation measures are implemented to provide effective protection of the environment in the Project area. Where environmental mitigation measures and/or construction activities need to be improved or amended to avoid adverse impacts to the environment, this will be done in coordination with the CM.

- Attend field Project meetings to understand Project status, developments, and requirements and to verify that environmental risks of the Project are adequately identified.
- Work to identify solutions to potential environmental concerns and identify corrective actions to address any non-compliance activities.
- Identify if permit variances and/or new mitigation strategies are required based on proposed changes to construction plans in the field and assisting in the development of strategies with the PM, CM, and PEL.
- Conduct regular inspection activities and bring any deficiencies or other issues to the attention of the CM.
- The EI, in consultation with the PEL, will have the authority to intervene (including suspension of work), if an activity or site condition could cause or is causing adverse effects to the environment.
- Write daily inspection reports, and issue to the Project team. Reports will contain an update of onsite activities and conditions, issues that need to be addressed, follow-up on previously identified action items, relevant discussions with onsite or offsite personnel, decisions made, etc.
- Support the Project with onsite activities as needed, such as EPP training, site visits, spill, and incident reporting, etc.

In the event an unforeseen environmental issue arises during construction for which no mitigation measures have been approved, the PEL and the EI will develop appropriate measures in consultation with the Project Team and, when appropriate, regulatory agencies. New or amended mitigation measures will be incorporated into this EPP by the PEL and the revised EPP will be issued. The EI will be responsible for distributing the revised copy of the EPP to all appropriate Project personnel.

Project Environment Lead (PEL)

The PEL communicates directly with the PM and CM and has primary functional responsibility for environmental issues and activities. Specific responsibilities include:

- Identify and document environmental requirements and risks for the Project, confirming they are communicated to the Project team.
- Provide Project level training, as necessary, to appropriate Project personnel.
- Function as the primary point of contact and manage communications with federal, provincial, territorial, and/or local environmental regulators.
- Obtain environment approvals required to execute the Project.
- Confirm all pre-construction environmental notifications are completed, as per the requirements of the appropriate regulatory authorities.
- Provide and manage environmental inspection resources.
- Verify consistent interpretation and application of environmental requirements.
- Establish a reporting system and report on Project environmental compliance and or potential compliance issues to Project management team.
- Work with the PM to resolve challenging or disputed environmental issues and to develop acceptable solutions.
- Support the proper documentation and investigation, as required, of environmental incidents.

- Conduct environmental health checks, or provide support to reviews (e.g., by Westcoast Environment) as required, and oversee implementation of corrective action plans.

Construction Contractor (Contractor)

- Responsible to verify that the EPP requirements are executed during all phases of construction.
- Understand environmental risks and requirements.
- Identify and take appropriate action to resolve environmental problems or non-compliances during all Project activities.
- Contact the EI to report environmental incidents and obtain guidance on environmental elements related to Project activities that may be unclear.
- Have the resources available (personnel and materials) to confirm environmental requirements are executed appropriately.
- Implement environmental corrective actions as identified by the EI and Project team.

Construction Manager (CM)

Title is synonymous with the Construction Lead as referred to in the Enbridge Environmental Guidelines for Construction (Enbridge 2020b).

- Westcoast representative who is responsible for planning and execution of the overall project, including environmental compliance.
- Communicate with the EI and PEL to jointly resolve decisions with environmental implications.
- Confirm the Contractor has resources to meet environmental requirements (including upset conditions) and implement corrective actions related to potential or actual non-compliances.
- Provide construction expertise and advice to the PEL/EI as required.

2.1 PROJECT SITE-SPECIFIC MITIGATION REQUIREMENTS

This section describes environmental protection measures that will be used to protect the sensitive environmental features located on or in proximity to the Project Footprint. These measures are in addition to the other measures presented in the remaining sections of the EPP. Project-specific features are identified in a series of three tables: Table 1 presents site-specific features and mitigation; Table 2 presents information on wetlands that are crossed by the Project; and Table 3 presents watercourses that are crossed by the Project. In addition to the information presented in these sections and tables, please refer to the Environmental Site Information Sheets prepared for the Project and/or other Project-specific environmental documents.

Most pipeline watercourse crossings will be abandoned in-place to avoid unnecessary environmental disturbances. However, if the pipeline has been exposed through the erosion/scouring of the water channel, such as at PM-4A and PM-7A, the exposed pipe section will be removed and the ends of the remaining pipe sections capped. Watercourse crossings were field verified to determine if any other pipeline exposures were present. Additional exposed pipe at watercourse crossings found during subsequent field verifications will be removed with the remaining sections being capped at pipeline depth.

Table 1. Site-specific Mitigation

Feature	Feature Code	Location UTM Coordinates Legal Land Description	Timing Windows and/or Regulatory Guidelines	Mitigation	Description of Occurrence/Other Comments
Wildlife and Wildlife Habitat					
General wildlife	--	--	--	• Clear the right-of-way, TWS, and accesses of snow, only as required for construction • Snow berms on plowed access should have alternating side gaps placed a minimum of every 500 m to allow wildlife movement. • Limit brushing of coniferous vegetation that has regrown on the right-of-way to only that necessary to allow safe access of equipment and completion of work. • Backfill excavations as soon as practical following physical abandonment activities to minimize hazards to wildlife. • Minimize wildlife attractants onsite, store all garbage in animal proof containers when potential human/wildlife conflicts may occur. • Project personnel are prohibited from hunting, harassing, feeding, collecting, or possessing wildlife species. • Prohibit the recreational use of all-terrain vehicles or snowmobiles by construction personnel on the Project Footprint. • Utilize multi-passenger vehicles for the transport of construction crews to/from the Project Footprint. • Post signage to discourage unauthorized public access onto the Project footprint. • In the event of unanticipated wildlife or wildlife habitat feature discoveries, implement the *Wildlife Discovery Contingency Plan* (Appendix D2 of the EPP). Discoveries will be discussed and resolved by the EI, Wildlife Resource Specialist(s), and the responsible regulatory agencies, if necessary.	--
Northwest Territories Caribou Critical Habitat (NT-1) Woodland caribou range (Yukon)	--	All physical abandonment sites and access along right-of-way in NWT and Yukon.	• Within NWT, the highest risk timing windows for caribou are March 16 to April 1 and May 1 to June 30 (Government of NWT 2022) • Within Yukon, caribou sensitivity to disturbance is highest in the months of May, June, September, and approximately the first 3 weeks of October (YG 2010).	• Plan access and TWS within caribou range to reduce brushing of regenerating trees to the extent practical. • Prioritize areas in caribou range with the objective of avoiding or reducing working during the high-risk timing windows for caribou. • Monitor the progress of abandonment activities, and if timelines indicate that activities will overlap the high-risk timing windows for caribou, consider increasing productivity to limit the duration of activities during the timing window by adding workforce resources or using alternate equipment that will increase efficiency. • Employ an early in and early out approach to reduce disturbance of caribou by initiating activities as early as ground conditions allow in the winter and working expeditiously to limit late winter activities. • Make reasonable efforts to complete the following activities outside of the caribou sensitive timing window: – Snow and frost packing, as required for access. – Vegetation brushing – Stripping and surface material removal – Watercourse crossings – Final cleanup and reclamation • If caribou are encountered, stop vehicles and equipment, allow the caribou to move through the area undisturbed, and report the sighting to the EI. Advise others working nearby of the presence of caribou in the area and refer to the *Wildlife Discovery Contingency Plan* (Appendix D2 of the EPP). • In the event an injured caribou is encountered, report the sighting to the EI, who will contact the relevant regulatory agency to discuss appropriate options.	No caribou or caribou sign were observed at Project sites within the NWT or Yukon during field surveys.

Table 1. Site-specific Mitigation

Feature	Feature Code	Location UTM Coordinates Legal Land Description	Timing Windows and/or Regulatory Guidelines	Mitigation	Description of Occurrence/Other Comments
Nahanni wood bison population (disease-free) (NWT) Nahanni wood bison range (Yukon) Nahanni-Liard wood bison population (BC)	--	All physical abandonment sites and access along right-of-way	• Nahanni Bison Management Plan and Wood Bison Management Strategy of the NWT outline population management challenges (Government of the NWT 2019, 2010). • Within NWT, management of wood bison outside of Crown land is guided by the Recovery Strategy for Wood Bison in the NWT (Conference of Management Authorities 2019). • Within BC, the critical timing window for bison is April 15th to July 15th (BC MFLNRO 2014)	• Plan access and TWS within bison range to reduce brushing of regenerating trees to the extent practical. • Limit brushing of coniferous vegetation that has regrown on the right-of-way to only that necessary to allow safe access of equipment and completion of work. • If bison are encountered, stop vehicles and equipment, allow the bison to move through the area undisturbed, and report the sighting to the EI. Advise others working nearby of the presence of bison in the area and refer to the *Wildlife Discovery Contingency Plan* (Appendix D2 of the EPP).	Wood bison or wood bison sign (tracks, scat, wallows, rubbed trees) were observed during field surveys in NWT, Yukon, and BC.
Mammal dens	--	All physical abandonment sites and access along right-of-way	• Bear denning period extends from October to end of winter conditions (March to May) (BC MFLNRO 2014). • The timing window for fisher and marten denning is approximately March 15 to June 30 (Badry 2004). • The active denning period for wolverine is from February to May (Copeland et al. 2010, Inman et al. 2012, Magoun and Copeland 1998). • In BC, consult BC OGC Environmental Protection and Management Guideline (BC OGC 2021) for applicable setbacks.	• Mammal den surveys should be completed along sections of the access and right-of-way that impact mature forest prior to any abandonment activities. • In the event that an active mammal den is discovered prior to or during physical abandonment activities, consult with a Wildlife Resource Specialist and implement the appropriate site-specific mitigation (such as, protective setback and monitoring).	One potential bean den was observed during aquatics field assessment in August 2023, located approximately 113 m south of PM-4A, off the ROW. No additional mammal dens were observed during field surveys. There is low potential for additional mammal dens to be present within the Project Footprint due to lack of suitable mature forest habitat.
Beaver dam	--	PM-7A	• Complete beaver dam breaching and removal in accordance with the DFO Code of Practice for beaver dam breaching and removal (Government of Canada 2023). • Beaver dam breaching or removal requires a permit under the Yukon Wildlife Act	• Complete the dam removal by hand where practical; however, if machinery is used, it will be operated from the stream bank or naturally dry channel, and only the bucket from machinery will enter the waterbody. • Install sediment and erosion control measures before the commencement of work onsite. These control measures will be regularly inspected throughout the construction period. • If an isolated method is employed and where recommended by an Aquatics Specialist, conduct a fish salvage led by an Aquatics Specialist. All captured fish will be released to areas downstream of the isolated area that provide suitable habitat. • As water levels drop upstream of the dam, the size of the opening may be increased to drain the head pond to the desired level. The width of the opening of the breached dam will not exceed the width of the original stream channel to prevent bank erosion and flooding of adjacent areas. Limit downstream impact by removing the beaver dam in incremental sections, assessing for potential negative impacts and fish stranding as the water levels change. • Place all material removed above the high-water mark, in a location where it will not re-enter the stream. • Consult with appropriate territorial regulators regarding territorial permitting or other requirements. • The dam removal will be monitored by the EI, who will have authority to modify or halt construction activities if deemed necessary to protect fish and wildlife populations and their habitat.	At PM-7A, the exposed pipe is situated underneath a large beaver dam, and partial or full removal of the dam will be required to release backend pressure to complete pipeline abandonment activities.

Table 1. Site-specific Mitigation

Feature	Feature Code	Location UTM Coordinates Legal Land Description	Timing Windows and/or Regulatory Guidelines	Mitigation	Description of Occurrence/Other Comments
Vegetation					
Invasive Species of Most Concern (white and yellow sweet-clovers)	--	PM-1	• There are no NWT weed regulations, but best practices are available through NWT Environment and Natural Resources	• Ensure equipment arriving at site is clean and free of soil, seeds, and plant material that may spread weed species.	A few sporadically occurring individual plants of white sweet-clover were observed at low density during the pre-construction vegetation survey in August 2021. A single patch plus a few sporadically occurring plants of yellow sweet-clover were observed at low density during the vegetation survey in August 2021. Additional weed species observed during the vegetation survey in August 2021 include: • A few sporadically occurring individual plants of annual hawksbeard at low density. • A single patch of oxeye daisy near the pipeline on the west end of the physical abandonment area at low density. • A single patch plus a few sporadically occurring plants of perennial sow-thistle near the pipeline on the west end of the physical abandonment area at low density. Monitoring is warranted, and mitigation may be warranted to reduce the potential spread of these species.
Highly Invasive weeds (perennial sow-thistle, smooth brome, and white sweet-clover)	--	PM-6	• There are no Yukon weed regulations, but best practices are available through the Yukon Invasive Species Council	• Refer to mitigation provided for PM-1	A few sporadically occurring individual plants of perennial sow-thistle were observed at low density during the vegetation survey in August 2021. A few patches of smooth brome were observed at medium density during the vegetation survey in August 2021. A few sporadically occurring individual plants of white sweet-clover were observed at low density during the vegetation survey in August 2021. Monitoring is warranted, and mitigation may be warranted to reduce the potential spread of these species.
Highly Invasive weeds (perennial sow-thistle, and annual hawksbeard)	--	PM-7	• There are no Yukon weed regulations, but best practices are available through the Yukon Invasive Species Council	• Refer to mitigation provided for PM-1	A single patch of annual hawksbeard was observed at low density around the existing infrastructure during the vegetation survey in August 2021. Several sporadically occurring plants of perennial sow-thistle were observed at low density during the vegetation survey in August 2021. Monitoring is warranted, and mitigation may be warranted to reduce the potential spread of this species.

Table 1. Site-specific Mitigation

Feature	Feature Code	Location UTM Coordinates Legal Land Description	Timing Windows and/or Regulatory Guidelines	Mitigation	Description of Occurrence/Other Comments
Regional Noxious in the adjacent Peace River Regional District weed (oxeye daisy) and Provincial Noxious weed (scentless chamomile)	--	PM-9	• *BC Weed Control Regulation* Regionally Noxious weed (Schedule A, Part I and II) must be controlled as per the BC *Weed Control Act*	• Refer to mitigation provided for PM-1	A few sporadically occurring individual oxeye daisy plants were observed at low density during the vegetation survey in August 2021. A single patch of scentless chamomile plants was observed at low density during the vegetation survey in July 2023. Monitoring is warranted, and mitigation may be warranted to reduce the potential spread of this species.
Regional Noxious in the adjacent Peace River Regional District weed (oxeye daisy)	--	PM-10	• BC *Weed Control Regulation* Regionally Noxious weed (Schedule A, Part II) must be controlled as per the BC *Weed Control Act*	• Refer to mitigation provided for PM-1	A single patch of plants was observed at low density during the vegetation survey in August 2021. Monitoring is warranted, and mitigation may be warranted to reduce the potential spread of this species.
Traditional Land and Resource Use					
Culturally modified trees (n=5)	--	PM-3	• The five CMTs are considered traditional land use features. As the cultural modification of these trees are estimated to be 30 to 40 years in age, they are not considered protected archaeological resources by the NWT *Archaeological Sites Act.*	• Flag for avoidance • Apply signage • Monitor during abandonment activities (especially clearing and topsoil salvage and reclamation)	A total of five bark stripped (girdled) birch trees are in proximity to PM-3 were observed in August 2021 and August 2022. Monitoring is warranted as these features represent active use of the PM 3 area by Indigenous Peoples
Vegetation	--	All physical abandonment sites and access along right-of-way	--	• Where practical, include culturally important plants in the reclamation and restoration plans based on discussions with Indigenous groups.	--

Notes:
BC MOF = British Columbia Ministry of Forests
cm = centimetre(s)
CMT = Culturally Modified Tree
DFO = Fisheries and Oceans Canada
m/s = metre(s) per second
RAP = Restricted Activity Period

Table 2. Wetlands Crossed by the Project

Wetland Unique ID	Province/Territory	Wetland Class[a]	BC Wetland Riparian Class (Riparian Management Widths) and Site Association[b]	Start KPs[c]	End KPs[c]	UTM Zone	Start Easting[c]	Start Northing[c]	End Easting[c]	End Northing[c]	Approximate Length Crossed in Physical Abandonment Footprint (km)	Approximate Area in Crossed Physical Abandonment Footprint (ha)	Total Wetland Area (ha)	Project Component Crossed	Regulatory Requirements[d]
WET-002	NWT	Swamp	N/A	0.489	0.56	10U	454450	6695594	454446	6695524	0.07	0.11	1.40	Access along right-of-way	Access within CER-regulated right-of-way, water licence not required
WET-010	NWT	Shallow Water	N/A	0.55	1.51	10U	454464	6695530	454207	6694619	0.96	1.88	50.71	Access along right-of-way	Access within CER-regulated right-of-way, water licence not required
WET-004	NWT	Swamp	N/A	0.96	1.08	10U	454374	6695128	454346	6695010	0.12	0.03	0.59	Access along right-of-way	Access within CER-regulated right-of-way, water licence not required
WET-005	NWT	Swamp	N/A	1.50	1.54	10U	454191	6694638	454189	6694591	0.05	0.07	6.40	Access along right-of-way	Access within CER-regulated right-of-way, water licence not required
WET-011	NWT	Shallow Water	N/A	1.54	2.65	10U	454201	6694597	454153	6693482	1.12	2.21	104.08	Access along right-of-way	Access within CER-regulated right-of-way, water licence not required
WET-007	NWT	Swamp	N/A	2.64	2.81	10U	454134	6693499	454118	6693326	0.17	0.33	2.91	Access along right-of-way	Access within CER-regulated right-of-way, water licence not required
WET-009	NWT	Shallow Water	N/A	2.81	2.88	10U	454128	6693327	454094	6693259	0.07	0.14	0.22	Access along right-of-way	Access within CER-regulated right-of-way, water licence not required
WET-008	NWT	Fen	N/A	2.87	4.86	10U	454090	6693269	453515	6691373	1.98	3.95	120.44	Access along right-of-way	Access within CER-regulated right-of-way, water licence not required
WET-012	NWT	Fen	N/A	4.89	5.222	10U	453502	6691339	453405	6691022	0.33	0.64	6.35	Access along right-of-way	Access within CER-regulated right-of-way, water licence not required
WET-013	NWT	Fen	N/A	5.723	5.92	10U	453255	6690544	453157	6690374	0.20	0.38	4.02	Access along right-of-way	Access within CER-regulated right-of-way, water licence not required
WET-016[e]	NWT	Fen	N/A	7.07	7.23	10U	452567	6689384	452491	6689240	0.16	0.16	2.54	Access Road (Prairie Provident Resources Road)	Access is off right-of-way. Conduct a self-assessment using Schedule H of the NWT Waters Regulation to confirm water license requirements
				7.07	7.24	10U	452601	6689363	452542	6689210	0.16	0.32		Access along right-of-way	Access within CER-regulated right-of-way, water licence not required
WET-018	NWT	Fen	N/A	9.12	9.23	10U	451657	6687545	451591	6687463	0.10	0.17	0.66	Access along right-of-way	Access within CER-regulated right-of-way, water licence not required
WET-019[e]	NWT	Fen	N/A	9.60	9.68	10U	451416	6687134	451378	6687062	0.08	0.15	1.05	Access along right-of-way	Access within CER-regulated right-of-way, water licence not required
				9.61	9.67	10U	451350	6687151	451324	6687102	0.06	0.05		Access Road (Prairie Provident Resources Road)	Access is off right-of-way. Conduct a self-assessment using Schedule H of the NWT Waters Regulation to confirm water license requirements

Table 2. Wetlands Crossed by the Project

Wetland Unique ID	Province/Territory	Wetland Class[a]	BC Wetland Riparian Class (Riparian Management Widths) and Site Association[b]	Start KPs[c]	End KPs[c]	UTM Zone	Start Easting[c]	Start Northing[c]	End Easting[c]	End Northing[c]	Approximate Length Crossed in Physical Abandonment Footprint (km)	Approximate Area in Crossed Physical Abandonment Footprint (ha)	Total Wetland Area (ha)	Project Component Crossed	Regulatory Requirements[d]
WET-020	NWT	Fen	N/A	10.24	10.32	10U	451119	6686564	451094	6686487	0.08	0.15	0.62	Access along right-of-way	Access within CER-regulated right-of-way, water licence not required
WET-021	NWT	Fen	N/A	10.44	10.57	10U	451041	6686382	450964	6686279	0.13	0.23	1.48	Access along right-of-way	Access within CER-regulated right-of-way, water licence not required
WET-022[e]	NWT	Mixed Treed Swamp	N/A	10.91	10.99	10U	450730	6686018	450695	6685937	0.09	0.08	5.65	Access Road (Prairie Provident Resources Road)	Access is off right-of-way. Conduct a self-assessment using Schedule H of the NWT Waters Regulation to confirm water license requirements
				10.96	10.99	10U	450781	6685933	450763	6685900	0.04	0.05		Access along right-of-way	Access within CER-regulated right-of-way, water licence not required
				11.03	11.06	10U	450669	6685910	450653	6685880	0.03	0.03		Access Road (Prairie Provident Resources Road)	Access is off right-of-way. Conduct a self-assessment using Schedule H of the NWT Waters Regulation to confirm water license requirements
				11.21	11.28	10U	450665	6685712	450631	6685649	0.07	0.13		Access along right-of-way	Access within CER-regulated right-of-way, water licence not required
WET-023	NWT	Mixed Treed Swamp	N/A	11.45	11.85	10U	450570	6685490	450372	6685142	0.40	0.80	5.39	Access along right-of-way	Access within CER-regulated right-of-way, water licence not required
WET-025	NWT	Mixed Treed Swamp	N/A	12.83	12.90	10U	449925	6684271	449890	6684204	0.08	0.08	1.33	Access along right-of-way	Access within CER-regulated right-of-way, water licence not required
WET-029	NWT	Mixed Treed Swamp	N/A	14.04	14.29	10U	449354	6683192	449229	6682987	0.24	0.48	17.67	Access along right-of-way	Access within CER-regulated right-of-way, water licence not required
WET-028	NWT	Mixed Treed Swamp	N/A	14.74	15.09	10U	449094	6682552	449010	6682211	0.35	0.65	49.44	Access along right-of-way	Access within CER-regulated right-of-way, water licence not required
WET-030	NWT	Treed Bog	N/A	15.69	16.05	10U	448833	6681642	448727	6681301	0.36	0.68	59.88	Access along right-of-way	Access within CER-regulated right-of-way, water licence not required
WET-031	NWT	Shrub Bog	N/A	16.04	16.60	10U	448716	6681313	448346	6680901	0.56	1.10	46.07	Access along right-of-way	Access within CER-regulated right-of-way, water licence not required
WET-102	NWT	Mixed Treed Swamp	N/A	16.07	-	10U	465744	6672227	465483	6672077	0.30	0.30	55.34	Access Road (Connector Road)	Access is off right-of-way. Conduct a self-assessment using Schedule H of the NWT Waters Regulation to confirm water license requirements
WET-032	NWT	Treed Bog	N/A	16.57	16.96	10U	448375	6680910	448108	6680625	0.39	0.73	51.12	Access along right-of-way	Access within CER-regulated right-of-way, water licence not required

Table 2. Wetlands Crossed by the Project

Wetland Unique ID	Province/Territory	Wetland Class[a]	BC Wetland Riparian Class (Riparian Management Widths) and Site Association[b]	Start KPs[c]	End KPs[c]	UTM Zone	Start Easting[c]	Start Northing[c]	End Easting[c]	End Northing[c]	Approximate Length Crossed in Physical Abandonment Footprint (km)	Approximate Area in Crossed Physical Abandonment Footprint (ha)	Total Wetland Area (ha)	Project Component Crossed	Regulatory Requirements[d]
WET-103	NWT	Shrub Swamp	N/A	17.65	17.69	10U	447665	6680121	447663	6680082	0.04	0.07	0.13	Access along right-of-way	Access within CER-regulated right-of-way, water licence not required
WET-083	NWT	Shrub Swamp	N/A	18.25	18.29	10U	447698	6679518	447717	6679479	0.04	0.07	0.39	Access along right-of-way	Access within CER-regulated right-of-way, water licence not required
WET-095[e]	NWT	Shrub Swamp	N/A	19.28	19.29	10U	446894	6679164	446885	6679158	0.01	0.01	10.21	Access along right-of-way	Access within CER-regulated right-of-way, water licence not required
				19.29	19.38	10U	446893	6679150	446851	6679069	0.09	0.19		Workspace (PM-4)	Conduct a self-assessment using Schedule H of the NWT Waters Regulation to confirm water license requirements
				19.38	19.46	10U	446831	6679075	446832	6678997	0.08	0.15		Access along right-of-way	Access within CER-regulated right-of-way, water licence not required
WET-034	NWT	Shrub Swamp	N/A	19.98	20.09	10U	446704	6678493	446658	6678387	0.11	0.20	0.52	Access along right-of-way	Access within CER-regulated right-of-way, water licence not required
WET-035	NWT	Mixed Treed Swamp	N/A	20.98	21.01	10U	446392	6677541	446384	6677508	0.03	0.06	0.15	Access along right-of-way	Access within CER-regulated right-of-way, water licence not required
WET-036	NWT	Treed Bog	N/A	21.24	21.60	10U	446276	6677316	446193	6676968	0.36	0.72	27.61	Access along right-of-way	Access within CER-regulated right-of-way, water licence not required
WET-038	NWT	Treed Bog	N/A	21.94	22.05	10U	446243	6676632	446247	6676517	0.11	0.21	11.48	Access along right-of-way	Access within CER-regulated right-of-way, water licence not required
WET-039	NWT	Shrub Swamp	N/A	23.05	23.19	10U	446313	6675528	446256	6675405	0.14	0.25	2.20	Access along right-of-way	Access within CER-regulated right-of-way, water licence not required
WET-041	NWT	Shrub Swamp	N/A	28.57	28.77	10U	443936	6670551	443831	6670382	0.20	0.37	1.53	Access along right-of-way	Access within CER-regulated right-of-way, water licence not required
WET-042[e]	NWT	Mixed Treed Swamp	N/A	28.57	28.81	10U	443936	6670551	443809	6670338	0.07	0.49	28.88	Access along right-of-way	Access within CER-regulated right-of-way, water licence not required
				28.81	28.84	10U	443826	6670330	443797	6670314	0.03	0.04		Workspace (PM-4A)	Conduct a self-assessment using Schedule H of the NWT Waters Regulation to confirm water license requirements
				28.91	28.93	10U	443761	6670263	443750	6670247	0.02	0.01			
WET-046	YK	Mixed Treed Swamp	N/A	31.81	31.97	10U	442104	6667896	442037	6667743	0.17	0.29	3.16	Access along right-of-way	Conduct a self-assessment using Schedule 5 of the YK Waters Regulation to confirm water license requirements
WET-047	YK	Graminoid Marsh	N/A	32.83	32.90	10U	441937	6666896	441929	6666818	0.078366	0.13	0.55	Access along right-of-way	Conduct a self-assessment using Schedule 5 of the YK Waters Regulation to confirm water license requirements

Table 2. Wetlands Crossed by the Project

Wetland Unique ID	Province/Territory	Wetland Class[a]	BC Wetland Riparian Class (Riparian Management Widths) and Site Association[b]	Start KPs[c]	End KPs[c]	UTM Zone	Start Easting[c]	Start Northing[c]	End Easting[c]	End Northing[c]	Approximate Length Crossed in Physical Abandonment Footprint (km)	Approximate Area in Crossed Physical Abandonment Footprint (ha)	Total Wetland Area (ha)	Project Component Crossed	Regulatory Requirements[d]
WET-049	YK	Mixed Treed Swamp	N/A	33.08	33.13	10U	441921	6666641	441925	6666593	0.05	0.08	0.45	Access along right-of-way	Conduct a self-assessment using Schedule 5 of the YK Waters Regulation to confirm water license requirements
WET-048	YK	Mixed Treed Swamp	N/A	33.45	33.55	10U	441886	6666276	441881	6666174	0.10	0.19	0.9	Access along right-of-way	Conduct a self-assessment using Schedule 5 of the YK Waters Regulation to confirm water license requirements
WET-052[e]	YK	Marsh	N/A	35.42	35.53	10U	441768	6664306	441707	6664201	0.11	1.29	1.30	Workspace (PM-7)	Conduct a self-assessment using Schedule 5 of the YK Waters Regulation to confirm water license requirements
				35.51	35.52	10U	441674	6664226	441673	6664214	0.01	0.01		Access along right-of-way	Conduct a self-assessment using Schedule 5 of the YK Waters Regulation to confirm water license requirements
WET-054	YK	Swamp	N/A	36.30	36.48	10U	441592	6663442	441552	6663261	0.18	0.35	3.55	Access along right-of-way	Conduct a self-assessment using Schedule 5 of the YK Waters Regulation to confirm water license requirements
WET-055	YK	Swamp	N/A	36.59	36.66	10U	441560	6663146	441553	6663080	0.07	0.09	0.45	Access along right-of-way	Conduct a self-assessment using Schedule 5 of the YK Waters Regulation to confirm water license requirements
WET-057	YK	Swamp	N/A	37.33	37.53	10U	441483	6662411	441451	6662216	0.20	0.30	1.37	Access along right-of-way	Conduct a self-assessment using Schedule 5 of the YK Waters Regulation to confirm water license requirements
WET-059	YK	Swamp	N/A	37.81	38.06	10U	441347	6661955	441230	6661732	0.25	0.50	3.72	Access along right-of-way	Conduct a self-assessment using Schedule 5 of the YK Waters Regulation to confirm water license requirements
WET-061	YK	Swamp	N/A	41.63	41.82	10U	438616	6659588	438452	6659481	0.20	0.38	10.12	Access along right-of-way	Conduct a self-assessment using Schedule 5 of the YK Waters Regulation to confirm water license requirements
WET-062	YK	Swamp	N/A	43.49	43.57	10U	436995	6658690	436940	6658638	0.07	0.12	10.27	Access along right-of-way	Conduct a self-assessment using Schedule 5 of the YK Waters Regulation to confirm water license requirements
WET-063	YK	Swamp	N/A	43.79	44.25	10U	436844	6658440	436603	6658040	0.47	0.90	26.99	Access along right-of-way	Conduct a self-assessment using Schedule 5 of the YK Waters Regulation to confirm water license requirements
WET-064	YK	Swamp	N/A	44.90	45.92	10U	436269	6657484	435726	6656619	1.02	2.03	87.90	Access along right-of-way	Conduct a self-assessment using Schedule 5 of the YK Waters Regulation to confirm water license requirements

Table 2. Wetlands Crossed by the Project

Wetland Unique ID	Province/Territory	Wetland Class[a]	BC Wetland Riparian Class (Riparian Management Widths) and Site Association[b]	Start KPs[c]	End KPs[c]	UTM Zone	Start Easting[c]	Start Northing[c]	End Easting[c]	End Northing[c]	Approximate Length Crossed in Physical Abandonment Footprint (km)	Approximate Area in Crossed Physical Abandonment Footprint (ha)	Total Wetland Area (ha)	Project Component Crossed	Regulatory Requirements[d]
WET-065	YK	Mixed Treed Swamp	N/A	46.23	46.42	10U	435585	6656345	435471	6656193	0.19	0.33	5.11	Workspace (PM-7A)	Conduct a self-assessment using Schedule 5 of the YK Waters Regulation to confirm water license requirements
WET-066	YK	Fen	N/A	47.00	47.44	10U	435172	6655691	434947	6655314	0.44	0.86	20.38	Access along right-of-way	Conduct a self-assessment using Schedule 5 of the YK Waters Regulation to confirm water license requirements
WET-067[e]	YK	Fen	N/A	47.59	47.67	10U	434888	6655176	434847	6655107	0.08	0.15	25.28	Access along right-of-way	Conduct a self-assessment using Schedule 5 of the YK Waters Regulation to confirm water license requirements
				47.73	48.30	10U	434816	6655055	434505	6654574	0.57	1.13		Access along right-of-way	Conduct a self-assessment using Schedule 5 of the YK Waters Regulation to confirm water license requirements
WET-068	YK	Fen	N/A	48.49	48.56	10U	434411	6654416	434374	6654355	0.07	0.14	12.39	Access along right-of-way	Conduct a self-assessment using Schedule 5 of the YK Waters Regulation to confirm water license requirements
WET-069	YK	Swamp	N/A	49.60	49.62	10U	433846	6653462	433830	6653443	0.02	0.05	0.18	Access along right-of-way	Conduct a self-assessment using Schedule 5 of the YK Waters Regulation to confirm water license requirements
WET-070	YK	Swamp	N/A	49.75	49.89	10U	433772	6653332	433698	6653211	0.14	0.28	1.02	Access along right-of-way	Conduct a self-assessment using Schedule 5 of the YK Waters Regulation to confirm water license requirements
WET-071	YK	Fen	N/A	50.14	50.70	10U	433579	6652984	433279	6652521	0.55	1.08	38.06	Access along right-of-way	Conduct a self-assessment using Schedule 5 of the YK Waters Regulation to confirm water license requirements
WET-073	YK	Swamp	N/A	50.94	50.98	10U	433154	6652309	433131	6652272	0.04	0.04	0.20	Access along right-of-way	Conduct a self-assessment using Schedule 5 of the YK Waters Regulation to confirm water license requirements
WET-074	BC	Swamp	W1	51.97	52.03	10U	432751	6651368	432752	6651303	0.06	0.12	5.23	Access along right-of-way	Approval for Changes In and About a Stream (Section 39 notification) is required.
WET-078	BC	Fen	W1	52.29	53.83	10U	432658	6651063	432227	6649582	1.54	3.02	168.74	Access along right-of-way	Approval for Changes In and About a Stream (Section 39 notification) is required.
WET-082	BC	Marsh	Unclassified	54.37	54.38	10U	432054	6649068	432060	6649054	0.01	0.01	0.01	Workspace (PM-8)	Approval for Changes In and About a Stream (Section 11 notification) is required.
WET-079	BC	Graminoid Marsh	W2	54.56	54.67	10U	431993	6648891	431968	6648777	0.11	0.14	1.14	Access along right-of-way	Approval for Changes In and About a Stream (Section 39 notification) is required.

Table 2. Wetlands Crossed by the Project

Wetland Unique ID	Province/Territory	Wetland Class[a]	BC Wetland Riparian Class (Riparian Management Widths) and Site Association[b]	Start KPs[c]	End KPs[c]	UTM Zone	Start Easting[c]	Start Northing[c]	End Easting[c]	End Northing[c]	Approximate Length Crossed in Physical Abandonment Footprint (km)	Approximate Area in Crossed Physical Abandonment Footprint (ha)	Total Wetland Area (ha)	Project Component Crossed	Regulatory Requirements[d]
				54.62	54.70	10U	431995	6648832	431984	6648738	0.08	0.21		Proposed Irregular Temporary Workspace for Access (South Work Camp Site Location 2)	Approval for Changes In and About a Stream (Section 11 or 39 notification) is required, depending on specific activities.
WET-080	BC	Swamp	W1	55.21	55.36	10U	431690	6648552	431764	6648430	0.15	0.25	12.29	Access along right-of-way	Approval for Changes In and About a Stream (Section 39 notification) is required.
WET-081	BC	Marsh	Unclassified	55.50	55.54	10U	431840	6648310	431837	6648257	0.04	0.06	0.07	Workspace (PM-10)	Approval for Changes In and About a Stream (Section 11 notification) is required.

[a] Wetlands are classified according to the Canadian Wetland Classification System (NWWG 1997).

[b] Wetland site associations were classified at sites that were ground-truthed according to the *Wetlands of British Columbia: A Guide to Identification* (Mackenzie and Moran 2004). Wb, Wf, Wm, Ws, and Ww = bog, fen, marsh, swamp, and shallow water wetland classes, respectively. Riparian classes and Riparian Management Area widths, as per the *EPMR* (BC Reg. 200/2010) (BC OGC 2021), are based on the area of the entire wetland complex.

[c] Start/end KPs and UTMs are approximate and indicate where the wetland intersects the Project Footprint (infrastructure sites, and access along right-of-way).

[d] Access roads or bridges to be upgraded or constructed or water withdrawals from waterbodies (i.e., wetlands, rivers, or lakes) outside of the CER-regulated right-of-way may require a water licence in the NWT. The requirement for a water licence will be determined through self-assessment using Schedule H of the NWT Waters Regulation, to be completed by Westcoast. Access roads or bridges to be upgraded or constructed or water withdrawals from waterbodies (i.e., wetlands, rivers, or lakes) may require a water licence in the Yukon. The requirement for a water licence will be determined through self-assessment using Schedule 5 of the Yukon Waters Regulation.

[e] Wetland is part of a complex and crosses the footprint more than once.

Notes:
CER = Canada Energy Regulator
N/A = not applicable
UTM = Universal Transverse Mercator

Table 3. Watercourses Crossed by the Project

Potential Watercourse (WC) Name[a]	Site Number	Province/ Territory	Restricted Activity Period[b]	UTM Easting (Zone 10)	UTM Northing (Zone 10)	Fish Species Previously Documented[c]	Notes	Regulatory Requirements[d]
Unnamed tributary to Fisherman Lake	WC-01	NWT	August 15 to July 15	454397	6695300	No fish sampling documented	Access along right-of-way	Abandonment activities within CER-regulated right-of-way, water licence not required.
Unnamed tributary to Fisherman Lake	WC-02	NWT	August 15 to July 15	454339	6695053	No fish sampling documented	Access along right-of-way	Abandonment activities within CER-regulated right-of-way, water licence not required.
Unnamed tributary to Fisherman Lake	WC-03	NWT	August 15 to July 15	454315	6694952	No fish sampling documented	Access along right-of-way	Abandonment activities within CER-regulated right-of-way, water licence not required.
Unnamed tributary to Fisherman Lake	WC-04	NWT	August 15 to July 15	454295	6694914	No fish sampling documented	Access along right-of-way	Abandonment activities within CER-regulated right-of-way, water licence not required.
Unnamed tributary to Fisherman Lake	WC-05	NWT	August 15 to July 15	454258	6694880	No fish sampling documented	Access along right-of-way	Abandonment activities within CER-regulated right-of-way, water licence not required.
Unnamed tributary to Fisherman Lake	WC-06	NWT	August 15 to July 15	454217	6694828	No fish sampling documented	Access along right-of-way	Abandonment activities within CER-regulated right-of-way, water licence not required.
Unnamed tributary to Fisherman Lake	WC-07	NWT	August 15 to July 15	454201	6694791	No fish sampling documented	Access along right-of-way	Abandonment activities within CER-regulated right-of-way, water licence not required.
Unnamed tributary to Fisherman Lake	WC-08	NWT	August 15 to July 15	454199	6694751	No fish sampling documented	Access along right-of-way	Abandonment activities within CER-regulated right-of-way, water licence not required.
Unnamed tributary to Fisherman Lake	WC-08.01	NWT	August 15 to July 15	454192	6694636	No fish sampling documented	Access along right-of-way	Abandonment activities within CER-regulated right-of-way, water licence not required.
Unnamed tributary to Fisherman Lake	WC-08.02	NWT	August 15 to July 15	454200	6694513	No fish sampling documented	Access along right-of-way	Abandonment activities within CER-regulated right-of-way, water licence not required.
Unnamed tributary to Fisherman Lake	WC-09	NWT	August 15 to July 15	454182	6694301	No fish sampling documented	Access along right-of-way	Abandonment activities within CER-regulated right-of-way, water licence not required.
Unnamed tributary to Fisherman Lake	WC-10	NWT	August 15 to July 15	454177	6694191	No fish sampling documented	Access along right-of-way	Abandonment activities within CER-regulated right-of-way, water licence not required.
Unnamed tributary to Fisherman Lake	WC-11	NWT	August 15 to July 15	454172	6694104	No fish sampling documented	Access along right-of-way	Abandonment activities within CER-regulated right-of-way, water licence not required.
Unnamed tributary to Fisherman Lake	WC-11.01	NWT	August 15 to July 15	454161	6694053	No fish sampling documented	Access along right-of-way	Abandonment activities within CER-regulated right-of-way, water licence not required.
Unnamed tributary to Fisherman Lake	WC-11.02	NWT	August 15 to July 15	454151	6693884	No fish sampling documented	Access along right-of-way	Abandonment activities within CER-regulated right-of-way, water licence not required.
Unnamed tributary to Fisherman Lake	WC-11.03	NWT	August 15 to July 15	454151	6693855	No fish sampling documented	Access along right-of-way	Abandonment activities within CER-regulated right-of-way, water licence not required.
Unnamed tributary to Fisherman Lake	WC-12	NWT	August 15 to July 15	454152	6693756	No fish sampling documented	Access along right-of-way	Abandonment activities within CER-regulated right-of-way, water licence not required.
Unnamed tributary to Fisherman Lake	WC-13	NWT	August 15 to July 15	454116	6693305	No fish sampling documented	Access along right-of-way	Abandonment activities within CER-regulated right-of-way, water licence not required.
Unnamed tributary to Fisherman Lake	WC-14	NWT	August 15 to July 15	453483	6691236	No fish sampling documented	Access along right-of-way	Abandonment activities within CER-regulated right-of-way, water licence not required.
Unnamed tributary to Fisherman Lake	WC-15	NWT	August 15 to July 15	453441	6691102	No fish sampling documented	Access along right-of-way	Abandonment activities within CER-regulated right-of-way, water licence not required.
Unnamed tributary to Fisherman Lake	WC-15a	NWT	August 15 to July 15	452571	6689268	No fish sampling documented	Access along right-of-way	Abandonment activities within CER-regulated right-of-way, water licence not required.
Unnamed tributary to Fisherman Lake	WC-16	NWT	August 15 to July 15	452367	6688889	No fish sampling documented	Access along right-of-way	Abandonment activities within CER-regulated right-of-way, water licence not required.
Unnamed tributary to Fisherman Lake	WC-16a	NWT	August 15 to July 15	451924	6688043	No fish sampling documented	Access along right-of-way	Abandonment activities within CER-regulated right-of-way, water licence not required.
Unnamed tributary to Fisherman Lake	WC- 16b	NWT	August 15 to July 15	451658	6687551	No fish sampling documented	Access along right-of-way	Abandonment activities within CER-regulated right-of-way, water licence not required.

Table 3. Watercourses Crossed by the Project

Potential Watercourse (WC) Name[a]	Site Number	Province/ Territory	Restricted Activity Period[b]	UTM Easting (Zone 10)	UTM Northing (Zone 10)	Fish Species Previously Documented[c]	Notes	Regulatory Requirements[d]
Unnamed tributary to Fisherman Lake	WC-17	NWT	August 15 to July 15	451604	6687484	No fish sampling documented	Access along right-of-way	Abandonment activities within CER-regulated right-of-way, water licence not required.
Unnamed tributary to Fisherman Lake	WC-17a	NWT	August 15 to July 15	450917	6686144	No fish sampling documented	Access along right-of-way	Abandonment activities within CER-regulated right-of-way, water licence not required.
Unnamed tributary to Fisherman Lake	WC-17b	NWT	August 15 to July 15	450525	6685394	No fish sampling documented	Access along right-of-way	Abandonment activities within CER-regulated right-of-way, water licence not required.
Unnamed tributary to Fisherman Lake	WC-17c	NWT	August 15 to July 15	450403	6685160	No fish sampling documented	Access along right-of-way	Abandonment activities within CER-regulated right-of-way, water licence not required.
Unnamed tributary to the Kotaneelee River	WC-18	NWT	August 15 to July 15	450360	6685109	No fish sampling documented	Access along right-of-way	Abandonment activities within CER-regulated right-of-way, water licence not required.
Unnamed tributary to the Kotaneelee River	WC-19	NWT	August 15 to July 15	450149	6684705	No fish sampling documented	Access along right-of-way	Abandonment activities within CER-regulated right-of-way, water licence not required.
Unnamed tributary to the Kotaneelee River	WC-20	NWT	August 15 to July 15	450106	6684622	No fish sampling documented	Access along right-of-way	Abandonment activities within CER-regulated right-of-way, water licence not required.
Unnamed tributary to the Kotaneelee River	WC-21	NWT	August 15 to July 15	449010	6682248	No fish sampling documented	Access along right-of-way	Abandonment activities within CER-regulated right-of-way, water licence not required.
Unnamed tributary to the Kotaneelee River	WC-22	NWT	August 15 to July 15	448443	6681002	No fish sampling documented	Access along right-of-way	Abandonment activities within CER-regulated right-of-way, water licence not required.
Kotaneelee River	WC-22.1	NWT	August 15 to July 15	447056	6679257	Historic record of bull trout	Ice bridge along right-of-way	Abandonment activities within CER-regulated right-of-way, water licence not required.
Unnamed tributary to the Kotaneelee River	WC-23	NWT	August 15 to July 15	446762	6678798	No fish sampling documented	Access along right-of-way	Abandonment activities within CER-regulated right-of-way, water licence not required.
Unnamed tributary to the Kotaneelee River	WC-23a	NWT	August 15 to July 15	446670	6678395	No fish sampling documented	Access along right-of-way	Abandonment activities within CER-regulated right-of-way, water licence not required.
Unnamed tributary to the Kotaneelee River	WC-24	NWT	August 15 to July 15	446423	6677622	No fish sampling documented	Access along right-of-way	Abandonment activities within CER-regulated right-of-way, water licence not required.
Unnamed tributary to the Kotaneelee River	WC-25	NWT	August 15 to July 15	446243	6676578	No fish sampling documented	Access along right-of-way	Abandonment activities within CER-regulated right-of-way, water licence not required.
Unnamed tributary to the Kotaneelee River	WC-25a	NWT	August 15 to July 15	446309	6675461	No fish sampling documented	Access along right-of-way	Abandonment activities within CER-regulated right-of-way, water licence not required.
Unnamed tributary to the Kotaneelee River	WC-26	NWT	August 15 to July 15	445515	6673774	No fish sampling documented	Access along right-of-way	Abandonment activities within CER-regulated right-of-way, water licence not required.
Unnamed tributary to the Kotaneelee River	WC-26a	NWT	August 15 to July 15	444761	6672219	No fish sampling documented	Access along right-of-way	Abandonment activities within CER-regulated right-of-way, water licence not required.
Unnamed tributary to the Kotaneelee River	WC-26b	NWT	August 15 to July 15	444476	6671640	No fish sampling documented	Access along right-of-way	Abandonment activities within CER-regulated right-of-way, water licence not required.
Unnamed tributary to the Kotaneelee River	WC-26c	NWT	August 15 to July 15	444324	6671336	No fish sampling documented	Access along right-of-way	Abandonment activities within CER-regulated right-of-way, water licence not required.
Unnamed tributary to the Kotaneelee River	WC 26d	NWT	August 15 to July 15	443975	6670631	No fish sampling documented	Access along right-of-way	Abandonment activities within CER-regulated right-of-way, water licence not required.
Unnamed tributary to the Kotaneelee River	WC-27	NWT	August 15 to July 15	443905	6670521	No fish sampling documented	Access along right-of-way	Abandonment activities within CER-regulated right-of-way, water licence not required.
Unnamed tributary to the Kotaneelee River	WC-27a	NWT	August 15 to July 15	443754	6670250	No fish sampling documented; no fish captured or observed during the August 2023 assessment.	Pipe exposure removal	Abandonment activities within CER-regulated right-of-way, watercourse is less than 5 m wide a water license is not anticipated. Conduct a self-assessment using Schedule H of the NWT Waters Regulation to confirm water license requirements.
Unnamed tributary to the Kotaneelee River	WC-27b	NWT	August 15 to July 15	442103	6668037	No fish sampling documented	Access along right-of-way	Abandonment activities within CER-regulated right-of-way, water licence not required.

Table 3. Watercourses Crossed by the Project

Potential Watercourse (WC) Name[a]	Site Number	Province/ Territory	Restricted Activity Period[b]	UTM Easting (Zone 10)	UTM Northing (Zone 10)	Fish Species Previously Documented[c]	Notes	Regulatory Requirements[d]
Unnamed tributary to the Kotaneelee River	WC-27c	NWT	August 15 to July 15	442126	6667884	No fish sampling documented	Access along right-of-way	Abandonment activities within CER-regulated right-of-way, water licence not required.
La Biche River (backwater)	WC-28	Yukon	September 2 to June 14	442068	6667821	Arctic grayling, bull trout, flathead chub, longnose sucker, mountain whitefish, slimy sculpin, spoonhead sculpin, walleye, and white sucker.	Ice bridge along right-of-way	Conduct a self-assessment using Schedule 5 of the YK Waters Regulation to confirm water license requirements
La Biche River	WC-29	Yukon	September 2 to June 14	442009	6667516	Arctic grayling, bull trout, flathead chub, longnose sucker, mountain whitefish, slimy sculpin, spoonhead sculpin, walleye, and white sucker.	Ice bridge along right-of-way	Conduct a self-assessment using Schedule 5 of the YK Waters Regulation to confirm water license requirements
La Biche River (side channel)	WC-30	Yukon	September 2 to June 14	441987	6667296	Arctic grayling, bull trout, flathead chub, longnose sucker, mountain whitefish, slimy sculpin, spoonhead sculpin, walleye, and white sucker.	Access along right-of-way	Conduct a self-assessment using Schedule 5 of the YK Waters Regulation to confirm water license requirements
Unnamed tributary to the La Biche River	WC-30a	Yukon	September 2 to June 14	441938	6666767	No fish sampling documented	Access along right-of-way	Conduct a self-assessment using Schedule 5 of the YK Waters Regulation to confirm water license requirements
Unnamed tributary to the La Biche River	WC-30b	Yukon	September 2 to June 14	441783	6665216	No fish sampling documented	Access along right-of-way	Conduct a self-assessment using Schedule 5 of the YK Waters Regulation to confirm water license requirements
Unnamed tributary to the La Biche River	WC-31	Yukon	September 2 to June 14	441690	6664453	No fish sampling documented	Access along right-of-way	Conduct a self-assessment using Schedule 5 of the YK Waters Regulation to confirm water license requirements
Unnamed tributary to the La Biche River	WC-31a	Yukon	September 2 to June 14	441662	6664105	No fish sampling documented	Access along right-of-way	Conduct a self-assessment using Schedule 5 of the YK Waters Regulation to confirm water license requirements
Unnamed tributary to the La Biche River	WC-31b	Yukon	September 2 to June 14	441592	6663442	No fish sampling documented	Access along right-of-way	Conduct a self-assessment using Schedule 5 of the YK Waters Regulation to confirm water license requirements
Unnamed tributary to the La Biche River	WC-31c	Yukon	September 2 to June 14	441494	6662470	No fish sampling documented	Access along right-of-way	Conduct a self-assessment using Schedule 5 of the YK Waters Regulation to confirm water license requirements
Unnamed tributary to the La Biche River	WC-31d	Yukon	September 2 to June 14	441474	6662284	No fish sampling documented	Access along right-of-way	Conduct a self-assessment using Schedule 5 of the YK Waters Regulation to confirm water license requirements
Unnamed tributary to the La Biche River	WC-31e	Yukon	September 2 to June 14	441278	6661792	No fish sampling documented	Access along right-of-way	Conduct a self-assessment using Schedule 5 of the YK Waters Regulation to confirm water license requirements
Unnamed tributary to the La Biche River	WC-31f	Yukon	September 2 to June 14	441145	6661475	No fish sampling documented	Access along right-of-way	Conduct a self-assessment using Schedule 5 of the YK Waters Regulation to confirm water license requirements
Unnamed tributary to the La Biche River	WC-32	Yukon	September 2 to June 14	440960	6661076	No fish sampling documented	Access along right-of-way	Conduct a self-assessment using Schedule 5 of the YK Waters Regulation to confirm water license requirements
Unnamed tributary to the La Biche River	WC-32a	Yukon	September 2 to June 14	440615	6660594	No fish sampling documented	Access along right-of-way	Conduct a self-assessment using Schedule 5 of the YK Waters Regulation to confirm water license requirements
Unnamed tributary to the La Biche River	WC-33	Yukon	September 2 to June 14	440455	6660538	No fish sampling documented	Access along right-of-way	Conduct a self-assessment using Schedule 5 of the YK Waters Regulation to confirm water license requirements
Unnamed tributary to the La Biche River	WC-33a	Yukon	September 2 to June 14	439962	6660261	No fish sampling documented	Access along right-of-way	Conduct a self-assessment using Schedule 5 of the YK Waters Regulation to confirm water license requirements
Unnamed tributary to the La Biche River	WC-33b	Yukon	September 2 to June 14	439135	6659828	No fish sampling documented	Access along right-of-way	Conduct a self-assessment using Schedule 5 of the YK Waters Regulation to confirm water license requirements
Unnamed tributary to the La Biche River	WC-34	Yukon	September 2 to June 14	438688	6659613	No fish sampling documented	Access along right-of-way	Conduct a self-assessment using Schedule 5 of the YK Waters Regulation to confirm water license requirements
Unnamed tributary to the La Biche River (flows into DSWC 25005828218745)	WC-34.01	Yukon	September 2 to June 14	438259	6659389	No fish sampling documented	Access along right-of-way	Conduct a self-assessment using Schedule 5 of the YK Waters Regulation to confirm water license requirements
Unnamed tributary to the La Biche River	WC-35	Yukon	September 2 to June 14	437187	6658837	No fish sampling documented	Access along right-of-way	Conduct a self-assessment using Schedule 5 of the YK Waters Regulation to confirm water license requirements
Unnamed tributary to the La Biche River	WC-35a	Yukon	September 2 to June 14	436872	6658468	No fish sampling documented	Access along right-of-way	Conduct a self-assessment using Schedule 5 of the YK Waters Regulation to confirm water license requirements
Unnamed tributary to the La Biche River	WC-35b	Yukon	September 2 to June 14 42.6	436789	6658325	No fish sampling documented	Access along right-of-way	Conduct a self-assessment using Schedule 5 of the YK Waters Regulation to confirm water license requirements

Table 3. Watercourses Crossed by the Project

Potential Watercourse (WC) Name[a]	Site Number	Province/ Territory	Restricted Activity Period[b]	UTM Easting (Zone 10)	UTM Northing (Zone 10)	Fish Species Previously Documented[c]	Notes	Regulatory Requirements[d]
Unnamed tributary to the La Biche River	WC-35c	Yukon	September 2 to June 14	436673	6658145	No fish sampling documented	Access along right-of-way	Conduct a self-assessment using Schedule 5 of the YK Waters Regulation to confirm water license requirements
Unnamed tributary to the La Biche River	WC-35d	Yukon	September 2 to June 14	436563	6657964	No fish sampling documented	Access along right-of-way	Conduct a self-assessment using Schedule 5 of the YK Waters Regulation to confirm water license requirements
Unnamed tributary to the La Biche River	WC-35e	Yukon	September 2 to June 14	436377	6657657	No fish sampling documented	Access along right-of-way	Conduct a self-assessment using Schedule 5 of the YK Waters Regulation to confirm water license requirements
Unnamed tributary to the La Biche River	WC-35f	Yukon	September 2 to June 14	436243	6657436	No fish sampling documented	Access along right-of-way	Conduct a self-assessment using Schedule 5 of the YK Waters Regulation to confirm water license requirements
Unnamed tributary to the La Biche River	WC-35g	Yukon	September 2 to June 14	436038	6657090	No fish sampling documented	Access along right-of-way	Conduct a self-assessment using Schedule 5 of the YK Waters Regulation to confirm water license requirements
Unnamed tributary to the La Biche River	WC-35h	Yukon	September 2 to June 14	435882	6656829	No fish sampling documented	Access along right-of-way	Conduct a self-assessment using Schedule 5 of the YK Waters Regulation to confirm water license requirements
Unnamed tributary to the La Biche River	WC-36	Yukon	September 2 to June 14	435456	6656150	No fish sampling documented	Pipe exposure removal	Due to beaver activity, the area is impounded, and a channel could not be located within the right-of-way. Wetted width ranged from 1.9 m to 55 m in the assessed reach. One channel width measurement 200 m downstream was 2.3 m wide. Based on this, channel width is anticipated to be less than 5 m; a water license is not anticipated. Conduct a self-assessment using Schedule 5 of the YK Waters Regulation to confirm water license requirements.
Unnamed tributary to the La Biche River	WC-36a	Yukon	September 2 to June 14	434854	6655107	No fish sampling documented	Access along right-of-way	Conduct a self-assessment using Schedule 5 of the YK Waters Regulation to confirm water license requirements
Unnamed tributary to the La Biche River	WC-36b	Yukon	September 2 to June 14	434646	6654763	No fish sampling documented	Access along right-of-way	Conduct a self-assessment using Schedule 5 of the YK Waters Regulation to confirm water license requirements
Unnamed tributary to the La Biche River	WC-36c	Yukon	September 2 to June 14	434566	6654623	No fish sampling documented	Access along right-of-way	Conduct a self-assessment using Schedule 5 of the YK Waters Regulation to confirm water license requirements
Unnamed tributary to the La Biche River	WC-36d	Yukon	September 2 to June 14	434368	6654296	No fish sampling documented	Access along right-of-way	Conduct a self-assessment using Schedule 5 of the YK Waters Regulation to confirm water license requirements
Unnamed tributary to the La Biche River	WC-36e	Yukon	September 2 to June 14	433938	6653574	No fish sampling documented	Access along right-of-way	Conduct a self-assessment using Schedule 5 of the YK Waters Regulation to confirm water license requirements
Unnamed tributary to the La Biche River	WC-36f	Yukon	September 2 to June 14	433851	6653426	No fish sampling documented	Access along right-of-way	Conduct a self-assessment using Schedule 5 of the YK Waters Regulation to confirm water license requirements
Unnamed tributary to the La Biche River	WC-36g	Yukon	September 2 to June 14	433769	6653281	No fish sampling documented	Access along right-of-way	Conduct a self-assessment using Schedule 5 of the YK Waters Regulation to confirm water license requirements
Unnamed tributary to the La Biche River	WC-37	Yukon	September 2 to June 14	433535	6652930	No fish sampling documented	Access along right-of-way	Conduct a self-assessment using Schedule 5 of the YK Waters Regulation to confirm water license requirements
Unnamed tributary to the La Biche River	WC-38	Yukon	September 2 to June 14	433166	6652376	No fish sampling documented	Access along right-of-way	Conduct a self-assessment using Schedule 5 of the YK Waters Regulation to confirm water license requirements
Unnamed tributary to the La Biche River	WC-39	BC	August 16 to July 14	432962	6651964	No fish sampling documented	Access along right-of-way	Approval for Changes In and About a Stream (Section 39 notification) is required.
Unnamed tributary to the La Biche River	WC-40	BC	August 16 to July 14	432628	6650928	No fish sampling documented	Access along right-of-way	Approval for Changes In and About a Stream (Section 39 notification) is required.
Unnamed tributary to the La Biche River	WC-40a	BC	August 16 to July 14	432523	6650547	No fish sampling documented	Access along right-of-way	Approval for Changes In and About a Stream (Section 39 notification) is required.
Unnamed tributary to the La Biche River	WC-41	BC	August 16 to July 14	432416	6650236	Arctic grayling, finescale dace, longnose sucker, and slimy sculpin	Access along right-of-way	Approval for Changes In and About a Stream (Section 39 notification) is required.
Unnamed tributary to the La Biche River	WC-42	BC	August 16 to July 14	432002	6648885	No fish sampling documented	Access along right-of-way	Approval for Changes In and About a Stream (Section 39 notification) is required.

Table 3. Watercourses Crossed by the Project

Potential Watercourse (WC) Name[a]	Site Number	Province/ Territory	Restricted Activity Period[b]	UTM Easting (Zone 10)	UTM Northing (Zone 10)	Fish Species Previously Documented[c]	Notes	Regulatory Requirements[d]
Unnamed tributary to the La Biche River	WC-43	BC	August 16 to July 14	431971	6648798	No fish sampling documented	Access along right-of-way	Approval for Changes In and About a Stream (Section 39 notification) is required.
Access Road Watercourse Crossings								
Liard River	WC-Access-1	BC	August 16 to July 14	452946	6640067	Arctic cisco, Arctic grayling, bull trout, brook stickleback, burbot, chinook salmon, chum salmon, Dolly Varden, emerald shiner, finescale dace, flathead chub, goldeye, inconnu, lake chub, lake trout, lake whitefish, longnose dace, longnose sucker, mountain whitefish, northern pearl dace, northern redbelly dace, northern pike, pygmy whitefish, rainbow trout, round whitefish, slimy sculpin, spoonhead sculpin, spottail shiner, trout-perch, walleye and white sucker[e]	Ice bridge for access off right-of-way	Approval for Changes In and About a Stream (Section 39 notification) is required.
Unnamed tributary to the La Biche River	WC-Access-2	BC	August 16 to July 14	432002	6648813	No fish sampling documented	Access off right-of-way	Approval for Changes In and About a Stream (Section 39 notification) is required.
Petitot River	WC-Access-3	NWT	August 15 to July 15	473200	6677251	Arctic grayling, brook stickleback, burbot, finescale dace, goldeye, lake chub, leopard dace, longnose dace, longnose sucker, ninespine stickleback, northern pike, slimy sculpin, trout-perch, umatilla dace, walleye, white sucker	Ice bridge for access off right-of-way	Access is off right-of-way. Watercourse is greater than 5 m, a water licence is required.
Unnamed tributary to Liard River	WC-Access-4	NWT	August 15 to July 15	472403	6676185	No fish sampling documented	Access off right-of-way	Access is off right-of-way. Conduct a self-assessment using Schedule H of the NWT Waters Regulation to confirm water license requirements
Unnamed tributary to Liard River	WC-Access-5	NWT	August 15 to July 15	472364	6675805	No fish sampling documented	Access off right-of-way	Access is off right-of-way. Conduct a self-assessment using Schedule H of the NWT Waters Regulation to confirm water license requirements
Unnamed tributary to WC 250001897	WC-Access-6	NWT	August 15 to July 15	471918	6675345	No fish sampling documented	Access off right-of-way	Access is off right-of-way. Conduct a self-assessment using Schedule H of the NWT Waters Regulation to confirm water license requirements
Unnamed tributary to Liard River	WC-Access-7	NWT	August 15 to July 15	470210	6674739	No fish sampling documented	Access off right-of-way	Access is off right-of-way. Conduct a self-assessment using Schedule H of the NWT Waters Regulation to confirm water license requirements
Unnamed tributary to Liard River	WC-Access-8	NWT	August 15 to July 15	469808	6674640	No fish sampling documented	Access off right-of-way	Access is off right-of-way. Conduct a self-assessment using Schedule H of the NWT Waters Regulation to confirm water license requirements
Unnamed tributary to Liard River	WC-Access-9	NWT	August 15 to July 15	467672	6673356	No fish sampling documented	Access off right-of-way	Access is off right-of-way. Conduct a self-assessment using Schedule H of the NWT Waters Regulation to confirm water license requirements
Unnamed tributary to Liard River	WC-Access-9a	NWT	August 15 to July 15	466228	6672499	No fish sampling documented	Access off right-of-way	Access is off right-of-way. Conduct a self-assessment using Schedule H of the NWT Waters Regulation to confirm water license requirements
Unnamed tributary to Liard River	WC-Access-10	NWT	August 15 to July 15	465461	6672057	No fish sampling documented	Access off right-of-way	Access is off right-of-way. Conduct a self-assessment using Schedule H of the NWT Waters Regulation to confirm water license requirements
Unnamed tributary to Liard River	WC-Access-11	NWT	August 15 to July 15	464812	6671978	No fish sampling documented	Access off right-of-way	Access is off right-of-way. Conduct a self-assessment using Schedule H of the NWT Waters Regulation to confirm water license requirements
Side channel of the Liard River	WC-Access-12	NWT	August 15 to July 15	464519	6672000	No fish sampling documented	Access off right-of-way	Access is off right-of-way. Watercourse is greater than 5 m, a water licence is required. Conduct a self-assessment using Schedule H of the NWT Waters Regulation to confirm water license requirements

Table 3. Watercourses Crossed by the Project

Potential Watercourse (WC) Name[a]	Site Number	Province/ Territory	Restricted Activity Period[b]	UTM Easting (Zone 10)	UTM Northing (Zone 10)	Fish Species Previously Documented[c]	Notes	Regulatory Requirements[d]
Side channel of the Liard River	WC-Access-13	NWT	August 15 to July 15	463668	6671996	No fish sampling documented	Access off right-of-way	Access is off right-of-way. Watercourse is greater than 5 m, a water licence is required. Conduct a self-assessment using Schedule H of the NWT Waters Regulation to confirm water license requirements
Liard River	WC-Access-14	NWT	August 15 to July 15	463558	6672452	Arctic cisco, Arctic grayling, bull trout, brook stickleback, burbot, chinook salmon, chum salmon, Dolly Varden, emerald shiner, finescale dace, flathead chub, goldeye, inconnu, lake chub, lake trout, lake whitefish, longnose dace, longnose sucker, mountain whitefish, northern pearl dace, Northern redbelly dace, northern pike, pygmy whitefish, rainbow trout, round whitefish, slimy sculpin, spoonhead sculpin, spottail shiner, trout-perch, walleye and white sucker[e]	Ice bridge for access off right-of-way	Access is off right-of-way. Watercourse is greater than 5 m, a water licence is required. Conduct a self-assessment using Schedule H of the NWT Waters Regulation to confirm water license requirements
Unnamed tributary to DSWC 250008	WC-Access-15	NWT	August 15 to July 15	462807	6674545	No fish sampling documented	Access off right-of-way	Access is off right-of-way. Conduct a self-assessment using Schedule H of the NWT Waters Regulation to confirm water license requirements
Unnamed tributary to DSWC 250008	WC-Access-16	NWT	August 15 to July 15	461562	6680238	No fish sampling documented	Access off right-of-way	Access is off right-of-way. Conduct a self-assessment using Schedule H of the NWT Waters Regulation to confirm water license requirements
Unnamed tributary to DSWC 250008	WC-Access-17	NWT	August 15 to July 15	461164	6683828	No fish sampling documented	Access off right-of-way	Access is off right-of-way. Conduct a self-assessment using Schedule H of the NWT Waters Regulation to confirm water license requirements
Unnamed tributary to Fisherman Lake	WC-Access-18	NWT	August 15 to July 15	460012	6686018	No fish sampling documented	Access off right-of-way	Access is off right-of-way. Conduct a self-assessment using Schedule H of the NWT Waters Regulation to confirm water license requirements
Unnamed tributary to Fisherman Lake	WC-Access-19	NWT	August 15 to July 15	459097	6686898	No fish sampling documented	Access off right-of-way	Access is off right-of-way. Conduct a self-assessment using Schedule H of the NWT Waters Regulation to confirm water license requirements
Unnamed tributary to Fisherman Lake	WC-Access-20	NWT	August 15 to July 15	458530	6687436	No fish sampling documented	Access off right-of-way	Access is off right-of-way. Conduct a self-assessment using Schedule H of the NWT Waters Regulation to confirm water license requirements
Unnamed tributary to Fisherman Lake	WC-Access-21	NWT	August 15 to July 15	457450	6688458	No fish sampling documented	Access off right-of-way	Access is off right-of-way. Conduct a self-assessment using Schedule H of the NWT Waters Regulation to confirm water license requirements
Unnamed tributary to Fisherman Lake	WC-Access-22	NWT	August 15 to July 15	454189	6689292	No fish sampling documented	Access off right-of-way	Access is off right-of-way. Conduct a self-assessment using Schedule H of the NWT Waters Regulation to confirm water license requirements
Unnamed tributary to DSWC 25000800046488	WC-Access-23	NWT	August 15 to July 15	452517	6690083	No fish sampling documented	Access off right-of-way	Access is off right-of-way. Conduct a self-assessment using Schedule H of the NWT Waters Regulation to confirm water license requirements
Unnamed tributary to Fisherman Lake	WC-Access-24	NWT	August 15 to July 15	452460	6691189	No fish sampling documented	Access off right-of-way	Access is off right-of-way. Conduct a self-assessment using Schedule H of the NWT Waters Regulation to confirm water license requirements
Unnamed tributary to DSWC 25000800047755	WC-Access-25	NWT	August 15 to July 15	452880	6692724	No fish sampling documented	Access off right-of-way	Access is off right-of-way. Conduct a self-assessment using Schedule H of the NWT Waters Regulation to confirm water license requirements
Unnamed tributary to DSWC 25000800047755	WC-Access-26	NWT	August 15 to July 15	453128	6693315	No fish sampling documented	Access off right-of-way	Access is off right-of-way. Conduct a self-assessment using Schedule H of the NWT Waters Regulation to confirm water license requirements

Table 3. Watercourses Crossed by the Project

Potential Watercourse (WC) Name[a]	Site Number	Province/ Territory	Restricted Activity Period[b]	UTM Easting (Zone 10)	UTM Northing (Zone 10)	Fish Species Previously Documented[c]	Notes	Regulatory Requirements[d]
Unnamed tributary to DSWC 25000800047755	WC-Access-27	NWT	August 15 to July 15	452827	6694461	No fish sampling documented	Access off right-of-way	Access is off right-of-way. Conduct a self-assessment using Schedule H of the NWT Waters Regulation to confirm water license requirements
Unnamed tributary to Fisherman Lake	WC-Access-28	NWT	August 15 to July 15	453303	6695738	No fish sampling documented	Access off right-of-way	Access is off right-of-way. Conduct a self-assessment using Schedule H of the NWT Waters Regulation to confirm water license requirements
Unnamed tributary to DSWC 2500080004755	WC-Access-29	NWT	August 15 to July 15	453652	6695885	No fish sampling documented	Access off right-of-way	Access is off right-of-way. Conduct a self-assessment using Schedule H of the NWT Waters Regulation to confirm water license requirements

Notes:

[a] Potential watercourses were identified by desktop review and a field visit would be needed to confirm if defined bed and banks and fish habitat potential are present.

[b] RAPs are from BC MFLNRO 2016; DFO 2013 and 2014. BC and Yukon implement least risk windows when instream work can occur, for the purposes of this table the timing has been presented as when work should not occur for consistency. RAPs assume defined bed and banks and fish presence. Aquatic habitat assessments in the field, if warranted for any ground disturbance work, could clarify whether a RAP is applicable (e.g., if no fish habitat potential exists at a given site). If fieldwork confirms that a site is a non-classified drainage (NCD) and/or lacks fish habitat potential, the RAP may not apply and there would be no timing restrictions in regard to fish.

[c] From McPhail 2007 and the various BC databases: Habitat Wizard (Government of BC 2020a), EcoCat Ecological Reports Catalogue (Government of BC 2020b) and the Fish Inventories Data Queries (Government of BC 2020c). Locations with no fish documented have not been sampled/lack any inventory data and should be assumed to be fish-bearing unless fieldwork is conducted.

[d] Access roads or bridges to be upgraded or constructed or water withdrawals from waterbodies (i.e., wetlands, rivers, or lakes) outside of the CER-regulated right-of-way may require a water licence in the NWT. The requirement for a water licence will be determined through self-assessment using Schedule H of the NWT Waters Regulation, to be completed by Westcoast.

Access roads or bridges to be upgraded or constructed or water withdrawals from waterbodies (i.e., wetlands, rivers, or lakes) may require a water licence in the Yukon. The requirement for a water licence will be determined through self-assessment using Schedule 5 of the Yukon Waters Regulation.

[e] Chinook salmon are a vagrant historical record in the Liard River and unlikely to occur with any regularity in the Liard River (McLeod and O'Neil 1983). Dolly Varden are present in the upper Liard River basin, although some historical records are likely bull trout from when the two char were considered the same species (McPhail 2007).

3.0 ACCESS AND RIGHT-OF-WAY REQUIREMENTS

All construction equipment, vehicles and materials will be confined to the approved construction disturbance area. Any work beyond the defined boundary requires regulatory approval, as well as Westcoast approval, and may require workspace agreements and/or special permits.

Westcoast will notify potentially affected land users (e.g., Indigenous groups, trappers, and outfitters) of the intended Project schedule before the start of construction to avoid or reduce impacts to their operations or activities.

The construction disturbance area will vary across the Project and may include some or all of the following areas:

- ***Right-of-Way (Permanent):*** The permanent right-of-way is the area Westcoast maintains for its pipelines to facilitate access and operation of the pipeline system. Typically, Westcoast has an easement for this space.
- ***Temporary Workspace:*** In addition to the permanent right-of-way, construction may require TWS located off-right-of-way. Site-specific additional TWS is necessary at select locations, such as steep slopes, road, waterbody, railroad, some wetland crossings, and to cross under the existing pipelines or foreign utilities. TWS is typically in uplands adjacent to the Project footprint and at least 10 metres (m) away from wetland boundaries and the ordinary high-water mark/ordinary high-water level (OHWM/OHWL) of waterbodies. If safe work practices or site conditions do not allow for a 10 m setback at a waterbody, TWS should be located as far away as practical with approval from the PEL.
- ***Access Route/Road:*** Public roads, Westcoast-approved private roads, unimproved trails, ice bridges, and/or the permanent right-of-way may be used to access the Project site.

3.1 PIPELINE RIGHT-OF-WAY, CONSTRUCTION AREA USE AND ACCESS DEVELOPMENT

Equipment and vehicle traffic associated with activities in the construction disturbance area have the potential to impact wetlands, watercourses, soils, vegetation, wildlife, and historical resources. All vehicular traffic is to be restricted to the approved and staked construction disturbance area (e.g., right-of-way, TWS, and access roads) during all activities related to pipeline abandonment (including biophysical inventory and land surveying activities). Limiting traffic in or adjacent to environmentally sensitive areas during Project activities will reduce potential environmental effects.

The following guidelines are to be followed when accessing the pipeline right-of-way and associated construction areas off- right-of-way:

- **Pre-Job Orientation:** Ensure all project personnel and other visitors receive a pre-job orientation which includes relevant considerations for pipeline right-of-way traffic control measures.
- **One-Call:** Mark and locate all foreign lines and cables using BC 1 Call services, Yukon Energy Call Before You Dig, NWT Call Before You Dig, or the appropriate facility owners in the Yukon or NWT before the start of physical abandonment activities.
- **Flagging:** Sufficiently flag site-specific environmental features of concern (e.g., rare plants communities or historical resource sites) prior to construction activities.

- **Restricted Access:** In areas with a designated RAP (e.g., Ungulate Winter Ranges), restrict access in accordance with regulatory guidelines.
    - ***Scheduling:*** Where environmental features have RAPs, traffic should be scheduled to avoid sensitive periods unless otherwise approved by the appropriate regulatory authority.
- **Wet/Thawed Soil Conditions:** Suspend motorized vehicle traffic during excessively wet soil conditions and/or if the potential exists for topsoil/subsoil mixing due to rutting. Confine traffic to well-sodded, well drained or frozen lands during excessively wet soil conditions. Use frost packing, snow, or ice for access through wet areas.
- **Access:** Restrict access points to environmentally sensitive areas within or along the construction disturbance area, to deter unauthorized access. Abide by any restrictions or "in/out" privileges that are implemented in special protection areas. Where travel along the Project footprint in the vicinity of sensitive vegetation is required (e.g., during reclamation monitoring), use all-terrain vehicle or foot travel whenever practical.
    - ***Multi-Passenger Vehicles:*** Consider vehicle pooling or using alternative access to redirect the flow of non-essential traffic where traffic has a considerable effect on an environmental feature (e.g., around wetlands).
    - **Right-of-way *Travel:*** Consider prohibiting two-way travel in areas where special restrictions are in effect (e.g., narrowing of workspace to limit impact on a feature of concern). If necessary, designate turn around areas for vehicles.
- **Reclamation:** Reclaim all disturbed areas to preconstruction conditions. Temporary access points will be blocked or removed unless otherwise instructed by Westcoast, or the landowner/occupant, in consultation with the EI. Limit vehicle traffic on newly seeded areas until vegetation is re-established.

If a need for additional access is identified during construction, the CM, in consultation with the PEL, EI, and Lands must approve any proposed access not previously authorized for use. The following guidelines are to be followed for upgrading existing or creating new permanent or temporary access roads:

- **Land Use:** Ensure that access development and control measures are consistent with the environmental management objectives of the area (e.g., forestry area, etc.) and the applicable regulatory requirements for the area. Where practical:
    - use existing access roads;
    - coordinate the development of new (temporary) roads with other industrial operators;
    - use existing watercourse vehicle crossings.
- **Access Control Procedures:** Implement access control on existing access routes in a similar fashion to current operators where Westcoast parallels existing rights-of-way. For example, if a third-party operator has installed rollback across their right-of-way to deter access, implement rollback over the Westcoast right-of-way at the same location.
- **Vehicles and Traffic:** Utilize multi-passenger vehicles for the transport of construction crews to/from the construction footprint. Adhere to posted speed limits on access roads to reduce the risk of collisions. Restrict construction traffic where the potential for pulverization of soil or sod is

high. Provide alternate access to the construction footprint, if practical, to avoid unnecessary travel. See Section 11.3 – Soil / Sod Pulverization Contingency Measures for more information.

- **Environmental Mitigation:** Environmental features (e.g., rare plants, dens, trees, etc.) will be identified and either flagged, fenced off or signage will be erected prior to construction activities. These environmental features are included in Table 1 of this EPP.
    - ***Vehicle Cleaning***: Clean any excessive mud tracked onto roads following equipment crossings as soon as practical.
    - ***Snow Removal****:* Avoid peeling of the vegetation layer when clearing snow from areas not intended to have topsoil salvage (e.g., frozen right-of-way access areas).
    - ***Wildlife Human Conflict****:* Project personnel will not feed, approach or harass wildlife.

Following the completion of construction activities, if temporary access roads were established these are to be decommissioned appropriately. The following is to be considered and implemented as appropriate:

- **Clean-up:** Weather permitting, conduct clean-up as soon as practical where construction access is no longer necessary. Except where limited by terrain stability and other considerations, restore all grade cuts to stable contours, approximating preconstruction conditions, or according to applicable provincial/territorial regulatory requirements.

4.0 IDENTIFICATION OF RESOURCES AND ENVIRONMENTALLY SENSITIVE AREAS

To protect various site-specific environmental features occurring in association with the construction disturbance area, the width of the construction area may be narrowed to avoid or reduce the amount of disturbance near these important environmental resources.

It is encouraged that the EI works with the survey crew to flag, stake, or fence-off all environmentally sensitive sites prior to construction. Demarcate the feature being protected as shown in Figure 2 Narrow Down Fencing.

Clearly identify the boundaries of sensitive resource areas, waterbodies, wetlands, key wildlife areas or areas with special requirements along the construction disturbance area as required.

In the event staking, flagging, fencing and/or signage are damaged or in disrepair, personnel are to notify the EI.

4.1 WILDLIFE AND VEGETATION SPECIES OF CONCERN

Through pre-construction planning and site visits, Wildlife Species of Concern (WSC) and Vegetation Species of Concern (VSC) with the potential to occur within or adjacent to the construction disturbance area will be identified and included in Table 1 of this EPP. In addition, Table 1 of this EPP will identify applicable RAPs for WSC/VSC and reference what, if any, species-specific mitigation measures are to be implemented. Unforeseen wildlife or vegetation occurrences may also require mitigation planning to be undertaken by the CM, PEL, and EI prior to, or during construction. Implement measures outlined in the Plant Species or Ecological Communities of Concern Discovery Contingency Plan (Appendix D1) and the Wildlife Discovery Contingency Plan (Appendix D2).

5.0 CONTROLLING SPREAD OF UNDESIRABLE SPECIES

5.1 WEEDS AND UNDESIRABLE VEGETATION SPECIES

It is Westcoast's intent to minimize the potential introduction and/or spread of undesirable species (i.e., invasive species and noxious weeds) on the Project Footprint due to construction activities. However, it is not practical for a Westcoast project to eradicate undesirable species that are on or adjacent to the Project Footprint. During preconstruction planning, weeds and undesirable species requiring mitigation will be identified in Table 1 of this EPP.

To prevent the introduction of undesirable species on the Project Footprint due to construction activities, all equipment, including mats, are required to be cleaned and free of soil or vegetative debris prior to arriving onsite. Salvage and topsoil/strippings will be stored separately where listed weed infestations are identified in Table 1 of this EPP.

If previously unidentified locations with listed weed infestations are found on the construction footprint, the EI(s) or designate(s) will be contacted and will establish the appropriate mitigation or control procedures prior to continuing construction activities in the area. Unless a certificate of weed analysis can be provided, all construction material sources used for supplies of sand, gravel, rock, straw and mulch will be visually inspected to confirm they are free of listed weeds to the extent practical. If sources are suspected as having listed weeds, they will be sampled and lab analyzed for the presence of listed weeds prior to being transported to the Project.

6.0 HISTORICAL RESOURCES

Construction activities such as topsoil salvage and excavations have the potential to affect historical resources. Cultural, historic, archaeological, and paleontological resources are collectively known as historical resources and can include pre-contact and post-contact features and are highly significant features for Indigenous groups (CER 2020).

Where an archaeological site has been identified in association with a construction disturbance area, efforts to avoid disturbance to the area will be made. Recommendations and/or requirements of applicable permitting are to be followed. For sites with high potential for artifacts to occur, activities should be performed carefully, with increased monitoring during clearing and ground disturbance activities, including topsoil salvage and reclamation.

If an artifact is encountered, ground disturbance work is to be suspended and the PEL and EI contacted for further instructions. Personnel are NOT permitted to collect or disturb any artifacts. All historical resources identified must be documented by specialized personnel, and where avoidance is not practical, collected and catalogued prior to submission to the appropriate regulatory authority.

In the event archaeological, historical or palaeontological resources are identified during construction, implement the following measures:

- Suspend work immediately in the vicinity of any newly identified archaeological, palaeontological, or historical sites. Work at that location may not resume until the measures below are completed.

- The Archaeological Resource Specialist will develop an appropriate mitigation plan in consultation with the EI, Westcoast, Indigenous groups, and the appropriate regulatory authority. The mitigation measures available may include the following:
    - Site avoidance - such as amending the development footprint or temporarily covering the site using geotextile pads, swamp mat(s), or subsoil ramps.
    - Systematic data recovery - ranging from artifact collection and site documentation to salvage excavations.
    - Surveillance/monitoring - this involves assigning a qualified archaeologist or palaeontologist to monitor the remainder of the clearing and ground disturbance activities.

7.0 WET AND THAWED WEATHER CONSIDERATIONS

Construction during wet or thawing ground conditions can lead to rutting and/or compaction concerns, which may result in a reduction in soil productivity. To limit terrain disturbance and soil structure damage, mitigation measures may be warranted during periods of wet or thawing conditions.

Examples of mitigation measures include, but are not limited to:

- use of construction matting;
- planning activities around daily temperature fluctuations;
- monitoring dewatering requirements; and
- soil compaction relief following completion of activities.

Westcoast may suspend certain activities during construction in wet/thawed soil conditions based on consideration of the following factors:

- extent of surface ponding;
- extent and depth of rutting and mixing of soil horizons;
- extent and location of potential rutting and compaction; and
- type of equipment and nature of the construction activity proposed.

The EI, in collaboration with the CM, will decide if wet weather shutdown of a construction activity is necessary at a given location. The Contractor will cease work on the applicable activity until Westcoast determines that site conditions are such that work may continue. Implement measures outlined in the Wet or Thawed Soils Contingency Plan (Appendix D3).

8.0 CLEARING AND BRUSHING

Clearing of merchantable timber during construction of the Project is not anticipated to be required; however, initial stages of construction may require incidental clearing and grubbing of brush and tall herbaceous vegetation from the construction work areas. Clearing and brushing may be accomplished with chain saws, mowers, and hydraulic tree-cutting equipment. Poor clearing practices can lead to topsoil/subsoil mixing, slow construction progress and create difficulties for reclamation. This section addresses general clearing, grubbing, and brushing practices.

- **Wildlife:** Review and implement applicable measures from Section 4.1 – Wildlife and Vegetation Species of Concern. If a tree or shrubby area to be cleared contains a bird nest requiring

protection, or if a burrow or den is discovered during clearing or brushing, suspend the work activity in the vicinity of the site (i.e., a minimum of 10 m), fence or flag off the area and contact the EI.

- **Safety of Cleared Areas:** Fallen or leaning trees are not permitted to be left in place or leaning off the Project Footprint (or into watercourses).
- **Vehicle Crossing Structures:** If temporary vehicle crossing structures are not in place, install mats at watercourse crossings to prevent fording watercourses prior to installation. If fording is necessary, appropriate permits and/or notifications must be in place prior to fording.
- **Line-of-Sight Barriers:** Discuss the potential need for wildlife line-of-sight barriers with the PEL or EI prior to clearing activities. If required, retain woody materials (e.g., trees, slash, stumps) from clearing activities for use during post-construction reclamation. Section 19.0 – Clean-Up and Reclamation provides guidance on woody material requirements and installation methods.
- **Permafrost:** Review and implement the mitigative measures in Section 22.0 – Permafrost in areas where permafrost is or may be encountered.

During clearing or brushing of vegetation, the following guidelines should be followed:

- **Staking:** Do not allow clearing or brushing beyond the staked and/or flagged construction disturbance area boundaries. Limit clearing or brushing to the minimum necessary to safely complete the work.
- **Woody Debris:** Where large woody debris provides habitat for plants or wildlife (as identified during pre-construction supporting studies), salvage the woody debris and replace after construction, if practical. If the debris is too fragile to move, fence or narrow the Project Footprint to avoid the feature. Large woody debris may be incorporated into riparian reclamation plans to provide wildlife habitat.
- **Fell Trees onto the** Project footprint **:** Fell bordering trees onto the cleared construction footprint to prevent damaging existing property, pipelines, adjacent trees and brush, and avoid marked sensitive environmental resources.
- **Protection of Ground Surface:** Use equipment that will result in minimal terrain disturbance during clearing to help maintain an intact ground surface.
- **Damaged Trees:** Fell all trees damaged during construction activities immediately. Do not postpone felling of damaged trees until cleanup.

8.1 DISPOSAL OF NON-MERCHANTABLE TIMBER

Where clearing and brushing is required, disposal of non-merchantable timber and slash will occur by mowing, chipping, grinding, and/or hauling offsite to a disposal facility. Material retained for rollback and chip/mulch material, as well as the location of its storage and use, will be in accordance with applicable regulatory requirements.

In non-agricultural, non-wetland areas, chips/mulch may be evenly spread over the construction disturbance areas, including slopes as soon as practical after grading to act as erosion control. Chips/mulch will be worked into soils during cleanup. The chips/mulch is to be spread in a layer no thicker than 5 cm (2 inches), or as directed by the appropriate regulatory authority.

8.2 DISPOSAL OF MERCHANTABLE TIMBER

Clearing of merchantable timber is not anticipated for this Project.

9.0 EROSION AND SEDIMENT CONTROLS

9.1 TEMPORARY EROSION AND SEDIMENT CONTROLS

Select the appropriate erosion and sediment control option for the site-specific conditions in consultation with the EI. Temporary erosion and sediment control devices (ECDs) will be installed after clearing and prior to any grading activities to the satisfaction of the EI and the appropriate regulatory authority. Temporary ECDs installed across access may be removed during active daytime construction; however, they must be properly reinstalled after equipment passage, or once activities in the area are completed for the day. These ECDs must also be repaired and/or replaced when damaged, or prior to inclement weather (when forecasted).

Temporary ECDs may be installed in other areas determined by the EI to slow water leaving the site and prevent siltation of waterbodies and wetlands down slope or outside of the construction footprint (e.g., swales and side slopes). When working in or near a wetland, install a temporary sediment barrier (e.g., silt fence, silt curtain) at the edge of the construction disturbance area to eliminate the flow of sediment from clean spoil piles and disturbed areas into nearby wetlands.

When working on or near slopes, temporary ECDs will be placed across the entire construction disturbance area at the base of slopes greater than 5 percent, where the base of the slope is less than 15 m from tile line inlets, drainage ways, wetlands, and/or waterbodies. Adequate room is to be maintained between the base of the slope and the sediment barrier to accommodate ponding of water and sediment deposition. ECDs are generally to be left in place at the base of slopes until revegetation of the construction footprint is complete or until the risk of erosion has dissipated.

ECDs are to remain in place until final stabilization occurs and there is no potential scouring or sediment transport to surface waters or sensitive features. Daily inspection of the temporary ECDs adjacent to or in watercourses and wetlands is required and repairs are to be completed before the end of each working day.

For all other areas, regular monitoring of the ECDs should occur as determined by the PEL and EI. Where deficiencies are identified, these are to be repaired, replaced, or supplemented within 24 hours after discovery, or as soon as practical.

9.1.1 Silt Fence

Figure 3 includes the installation specifications for silt fences. If the Contractor uses silt fence, sediment must be removed when the depth reaches one-third of the above grade fence height. If applicable, review regulatory permits.

9.1.2 Mulch

Westcoast may require mulch (wood fibre, hydromulch, or a functional equivalent) to provide temporary stabilization for topsoil/subsoil or during restoration to support revegetation. Westcoast may require mulch on (EI discretion):

- Slopes with high erosion potential

- Dry, sandy areas subject to wind and/or water erosion

Mulch will be free of Noxious weeds and/or invasive species, as listed in applicable provincial, territorial and/or federal laws. The Contractor will be responsible for identifying and acquiring sources of weed-free mulch and receive Westcoast approval prior to purchase. Mulch will be applied no thicker than 5 cm, unless otherwise stipulated by permit conditions.

Liquid tackifiers and hydromulch may be used for stabilization. Advance written approval from an applicable regulatory authority and/or Westcoast may be required, and application must follow the manufacturer's recommended method and rate. All applications of tackifier must also follow individual site specifications provided by the EI. All products applied will be biodegradable, non-toxic, and will have been approved by the EI.

9.1.3 Temporary Stabilization

Temporary seeding (e.g., annual cover crop), mulch (straw or hydromulch) or other appropriate erosion control measures may be required in certain locations (including topsoil piles) if there are construction delays within a spread of at least 14 days. Westcoast may require the Contractor to install temporary stabilization materials sooner based on site conditions, or as required in Project permits.

To reduce drifting soils and loss of topsoil in areas prone to wind erosion, consider spreading wood chips/wood mulch or straw crimp, walking down tree and shrub debris (i.e., small diameter slash) over exposed soils, and/or applying tackifier on exposed soil.

9.2 NOISE AND DUST CONTROL

Reasonable steps to control construction-related noise and dust will be taken near areas identified by Westcoast. Control practices may include wetting the right-of-way and access roads with water, limiting working hours in residential areas, erecting noise barriers, re-establishment of vegetation and/or additional measures as appropriate based on site-specific conditions.

The following are general noise abatement mitigation measures to be implemented:

- **Noise By-Laws:** Unless otherwise noted in municipal noise by-laws, construction activity should only be conducted between 7:00 a.m. and 10:00 p.m.
- **Equipment:** Confirm that noise abatement equipment (e.g., mufflers) on machinery is in good working order. Turn off equipment when not in use. Enclose noisy equipment and use noise barriers, where warranted, to limit the transmission of noise beyond the construction site. Locate stationary equipment, such as compressors and generators, away from noise receptors. Replace or repair equipment parts generating excessive noise.
- **Trucking:** Inform truck drivers and mobile equipment operators that the use of engine retarder brakes will not be permitted in previously identified noise-sensitive locations.
- **Access:** Maintain access roads to limit vehicle noise and noise from vibration.

9.3 SOIL EROSION CONTINGENCY MEASURES

Where warranted during construction, the EI may recommend to the CM or designate that soil erosion contingency measures are required to be initiated. A record of the location, timing and reason for implementation of the contingency measures will be maintained by the EI.

If wind or water erosion is evident during construction, all necessary equipment and personnel should be made available to control the erosion (as determined by the EI/PEL). The subsections below and Appendix D4 provide guidelines of control options that can be implemented.

9.3.1 Water Erosion

In the event water erosion poses a risk to the construction disturbance area, consider suspending construction until the risk of erosion has been reduced or the conditions improve. Where the risk of erosion is severe, consider the use of mulch matting (in accordance with applicable regulatory requirements) or tackifier to stabilize soil.

Where suspending construction is not practical, salvage remaining topsoil, if required, and store away from the area to be regraded. Consider installing temporary ECDs such as silt fences (Figure 3) or equivalent near the base of slopes.

During reclamation, confirm that any rills and gullies formed by water erosion are regraded to match the surrounding contours of the landscape.

9.3.2 Wind Erosion

In the event water erosion poses a risk to the construction disturbance area, consider suspending construction until the winds dissipate and/or conditions improve. If wind erosion of the topsoil pile is of concern during construction, consider implementing the following:

- apply water to the topsoil pile (water use permit may be required);
- layer snow over the topsoil pile;
- install wind barriers (e.g., slat fences, snow fences); or
- compact the topsoil pile.

Where wind erosion is a concern after topsoil replacement, the following are options to mitigate the concern:

- apply hydromulch or tackifier; or
- install wind fences.

10.0 WATER WASHING/HYDROVAC SLURRY

Hydrovac excavation may be used to positively identify the location of pipelines and other buried utilities. The resulting hydrovac slurry will be stored in a Westcoast-approved subsoil area (if no contamination is suspected) using a bermed containment area, designated disposal sumps or a topography-contained subsoil area within the construction workspace. It is the Contractor's responsibility to confirm that hydrovac material is contained within the designated release area (i.e., will not migrate to a waterbody or onto topsoil).

The guidelines for managing water washing/hydrovac slurry include:

- **General:** Ensure hydrovac trucks/tanks arrive on the construction footprint in a clean condition to avoid the introduction of contaminated material from another site (see Section 5.0).

- **Uncontaminated Slurry:** Dispose of slurry at locations satisfying requirements below if there is no indication of potential contamination during a review of historical records and during hydrovac activities:
    - location where topsoils have been salvaged;
    - location that does not allow for runoff into a drainage ditch or watercourse;
    - location that will not cause erosion;
    - location within approved working space (i.e., regulatory approval has been acquired); and
    - once dry consider using clean hydrovac slurry to backfill the hydrovac hole.
- **Areas of Previously Unidentified Contamination:** In the event hydrovac activities reveal materials with an apparent sheen or odour, contact the EI and CM, who will subsequently notify the PEL, prior to disposal of slurry. Where excavated materials appear to have a sheen or odour:
    - dispose of slurry offsite at an approved waste handling facility capable of handling materials containing hydrocarbons, or;
    - store slurry onsite in a bermed and lined holding cell until the material can be tested and disposed of appropriately, and
    - implement the contaminated soils mitigative measures (Section 23.0 – Contaminated Soils and Water).
- **Areas of Known Contamination:** Any material excavated from an area of known contamination should be considered contaminated. Dispose of hydrovac slurry in consultation with the PEL and EI in one of the following ways:
    - dispose of slurry offsite at an approved waste handling facility capable of handling materials containing hydrocarbons, or;
    - store slurry onsite in a bermed and lined holding cell until the material can be tested and disposed of appropriately. If space allows, use separate lined cells for apparently clean soils and suspected contaminated soils; and
    - implement the contaminated soils mitigative measures (Section 23.0 – Contaminated Soils and Water).
- **Disposal Approval:** If hydrovac slurry will be disposed of on land, confirm the appropriate permissions have been acquired (e.g., land authority), if warranted.
- **Record-Keeping:** Maintain a record of hydrovac materials taken to an approved facility, spread on land, mixed or buried on/off the Project Footprint. Records are to be provided to Westcoast for tracking.

11.0 TOPSOIL STRIPPING AND SALVAGE

Poor soil conservation can lower soil productivity through the mixing of topsoil and subsoil, and soil compaction. Effective topsoil salvage, proper storage and careful handling can limit potentially adverse environmental effects. Generally, ‘topsoil’ is characterized as the uppermost layer of soil in non-forested areas where it can range from 5 cm to 45 cm, or more, in depth. In forested areas, the uppermost layer is often referred to as ‘strippings’ which includes organic litter, fine woody material and the layer of topsoil above the mineral soils of the forest floor. For the purposes of this EPP, the term ‘topsoil’ is used for simplicity but can be inferred as both topsoil or strippings, depending on the location.

11.1 TOPSOIL SALVAGE

The following are general guidelines for the stripping and salvage of topsoil:

- **Responsibilities:** A Westcoast representative or EI should oversee topsoil salvage in areas where there is poor colour change between topsoil and subsoil, there are erodible soils and/or, there is uncertainty about the depth of topsoil salvage.
- **Salvage Depth**: Consult the EI before salvaging topsoil to the colour/texture change (e.g., transition layer), plow layer, bottom of sod or duff layer, or 10 cm, whichever is deepest, unless otherwise specified by the appropriate regulatory authority.
- **Salvage Width**: Determine appropriate salvage widths or areas prior to beginning construction activities in consultation with the PEL and Construction Representative.
- **Poor Colour Separation:** Where soil layers are not readily distinguishable by colour, the EI will advise on the depth of topsoil to be salvaged based on the soil survey results (if available) and an evaluation of soil texture and structure.
- **Little or No Topsoil:** Where there is little to no topsoil on bush land, salvage all available topsoil, to the colour change, or to 15 cm, whichever is greatest.
- **Avoid Admixing:** Store topsoil within the construction footprint boundaries, in a manner that avoids admixing of topsoil and spoil. Confirm subsoil is not collected with topsoil during salvage.
- **Soil Pulverization:** Consider salvage of topsoil where heavy traffic is anticipated, as well as extremely dry areas to reduce loss of soil structure.

11.1.1 Topsoil Salvage – Frozen Soil Conditions

Frozen soil conditions exist when frost has reached the depth of the interface between the topsoil and subsoil. If construction activities are scheduled to occur at a time when frozen soil conditions exist, the following are guidelines to facilitate topsoil salvage:

- **Maintain Snow Cover:** Maintain snow cover over the area to be salvaged as long as practical, as an insulator. Remove snow immediately prior to topsoil salvage and pile to the edges of the construction footprint.
- **Gaps in Snow Windrows:** Leave periodic gaps in large snow windrows to allow wildlife movement (Figure 17 Gaps and Plugs).
- **Work Areas:** Remove or pack snow on the work area to increase frost penetration into the soil in the winter. In mid- to late-winter, pack snow on the work area to avoid premature thawing of the upper soils.
- **Access:** Grade snow over the access, if rough, to improve driving conditions; and either grade the spoil pile area or grade snow over the spoil pile area to facilitate removal of spoil during backfilling.
- **Spoil Areas**: Limit removal of snow from the spoil areas. Remove excess snow that could interfere with backfilling operations. An 8 to 10 cm buffer layer of snow may be left in place to avoid topsoil/subsoil mixing during backfilling.
- **Topsoil Piles:** Walk down the topsoil pile and pile snow over it to reduce the risk of wind erosion during the winter. Consider watering down the topsoil pile if snow is not available.

- **Frozen Topsoil Salvage:** Use specialized equipment capable of accurately separating topsoil from subsoil when salvaging topsoil during frozen conditions. On rare occurrences, mulching of frozen topsoil may be necessary for proper separation. Discuss this practice with the EI and the PEL prior to implementation to identify scenarios where this technique is suitable.

11.2 TOPSOIL SALVAGE IN/ADJACENT TO WATERCOURSES AND WETLANDS

In general, when constructing in wetland areas or watercourses without standing/flowing water, up to 30 cm of topsoil (organic layer) will be stripped from the excavation area and stockpiled separate from spoil to preserve the native seed stock. In standing water wetlands, organic soil segregation is not typically practical; however, the Contractor will attempt to segregate as much of the organic layer as practical based on site/saturation conditions.

Place topsoil in distinct piles above the average annual high-water mark in a manner that does not block drainage or runoff, construction activities, or replacement of grade material or spoil, and prevents erosion and siltation. Salvaged surface organic material (e.g., low vegetation, leaf litter, partially decomposed organic matter) with the upper topsoil (to the depth of the root zone) should be used for reclamation.

In addition to the general guidelines for topsoil salvage provided in subsection 11.1 – Topsoil Salvage, the following are specific to salvage in/adjacent to wetlands:

- **Test Holes:** Consider excavating test holes on the salvage area to determine mineral soil/organic content and water table depth. This may help to identify surface material depth, water management needs (if thawing is a possibility), potential for sloughing, and other factors that may affect construction.
- **Salvage Depth (Mineral Soils):** Salvage the upper surface material of all mineral wetlands to a maximum depth of 40 cm, or to the depth of colour change where there is less than 40 cm of surface material, or as advised by the EI.
- **Salvage Depth (Peatlands):** Salvage the upper 40 cm of peat material during frozen and nonfrozen conditions. In some instances, the total depth of peat will be salvaged, as per Project-specific recommendations or the advice of the EI. Areas of peat greater than 40 cm in depth will be excavated with a single lift to the total depth of peat, whichever is encountered first. Avoid admixing by maintaining separation between the topsoil/peat piles and the subsoil.
- **Salvage Width (Mineral Soils/Peatlands)** Reduce the salvage widths within wetlands to minimum area required, as advised by the EI. Salvage width should be narrow enough to minimize disturbance, and wide enough to prevent topsoil/subsoil mixing in the event of excavation instability.
- **Shallow Peatlands:** Salvage and store peat separately from the underlying mineral material and replace in order such that the peat material remains on the surface to confirm that future drainage through the shallow peat material is not impeded.
- **Storage:** Store salvaged surface material at a sufficient distance from the excavation so that it does not slump or flow into the hole if excavation instability occurs.

11.3 SOIL/SOD PULVERIZATION CONTINGENCY MEASURES

Pulverization may occur on non-salvaged sodded land areas, particularly on sandy or clay soils.

The following contingency measures may be implemented where pulverization is occurring and topsoil was not salvaged from the entire working area of the Project, as decided by the EI and CM.

- **Access:** Provide alternative access to the construction disturbance area to avoid areas prone to soil/sod pulverization.
- **Traffic:** Reduce traffic along the access road in areas where soils/sod is prone to pulverization.
- **Equipment:** Use equipment with wide pad tracks during soils handling (i.e., salvaging and replacing topsoil). Use construction matting to protect soils from high traffic effects.
- **Topsoil Salvage:** Salvage areas of topsoil before pulverization worsens.
- **Alternatives:** Implement other suitable mitigation depending on conditions encountered during construction (e.g., availability of temporary workspace, soil moisture levels, land use, etc.).

Implement the following measures during cleanup and reclamation along portions of the construction disturbance areas where soil/sod pulverization occurred:

- **Reclamation:** Broadcast seed the area as appropriate (see Section 16.0 – Revegetation).

12.0 GRADING

Grading generally follows topsoil salvage and involves levelling the construction disturbance area to create an even working surface for equipment and vehicles, if necessary. In addition, grading and erosion near streams may damage riparian habitats and result in siltation of aquatic habitats.

The following guidelines are provided for use during grading activities:

- **Grade Plan:** Consult with the EI and/or PEL to identify potential environmental issues prior to the development of a Grade Plan.
- **Reduce Grading:** Where practical, minimize grading especially at watercourses and wetlands, and on forested lands. Where practical, reduce the width of grading to limit the potential for erosion and subsoil compaction. Do not mix topsoil and subsoil salvaged during grading with foreign material (e.g., stumps and brush).
- **Vehicle Crossing Structures:** Avoid grading, if practical, when constructing bridge, fill or ford crossings. Where grading is necessary, confirm grading does not conflict with Approval Conditions and reduce the amount of grading conducted. Confirm that no excavation of the streambed or banks occurs during installation of the vehicle crossing unless approved by the appropriate regulatory authority.
- **Contain Materials:** Do not store or push graded materials into treed areas. Verify graded material does not spread beyond the limits of the construction disturbance area.

12.1 GRADING NEAR WATERCOURSES AND WETLANDS

The following are required for grading work near/in watercourse and wetlands.

- **Erosion Control:** Confirm erosion control measures are in place at wetland and watercourses crossings prior to commencing grading (Figure 3).

- **Drainage Channels:** Reduce disturbance to natural drainage channels during grading. Avoid blocking channels with graded material.
- **Delay Grading:** Do not grade in the vicinity of watercourses and wetlands until construction of the crossing is imminent.
- **Riparian Areas and Buffer Zones:** The following mitigative measures are to be implemented for grading in the vicinity of watercourse and wetland buffer zones:
  - Reduce grading within the riparian area to leave a buffer of undisturbed vegetation on the banks of watercourses and wetlands, unless otherwise approved by the appropriate regulatory authority. Note that riparian buffer widths may differ across provincial or territorial regulations or recommendations. Grading within the riparian area width of the watercourse or wetland, if approved, may be appropriate if completion of this activity results in a reduced erosion and sedimentation risk. If grading within the buffer, install temporary sediment barriers to prevent sediment from flowing into the watercourse or wetland (Figure 3).
  - Leave an organic mat where practical as a buffer zone to limit the potential for sediment to enter the watercourse or wetland. Do not grade the entire width of the construction work area in proximity to a watercourse or wetland unless absolutely necessary.
- **Grade Direction:** Direct grading away from watercourses and wetland to reduce the risk of sediment and other material entering the watercourse or wetland. Do not place fill material in a watercourse or wetland during grading.
- **Equipment:** Verify grading equipment is not operated directly in watercourses and confirm that appropriate vehicle crossings are in place to allow grading equipment to cross watercourses.
- **Temporary Berms/Silt Fences (Watercourses and Wetlands):** Install temporary berms on approach slopes to watercourses and wetlands and erect silt fence or equivalent temporary erosion/sediment control device near the base of approach slopes to watercourses immediately following grading (Figures 3 and 4). Inspect the temporary erosion control structures daily and repair, if warranted, before the end of each working day.

13.0 EXCAVATION

Excavating in uplands typically occurs using a tracked excavator. Excavated material will be stockpiled within the approved construction disturbance area with at least 1 m separation from topsoil. Excavations must also be sloped where they start and end to allow ramps for access and egress. Trench boxes may be used in areas with limited workspace or unstable soils (i.e., wetlands) (Figure 6). Temporary fencing should be used to create a barrier to entry for wildlife.

Contractors should limit the amount of open excavation days to the minimum time required to complete work. During winter construction, reduce the time excavations are left open to limit the potential for sloughing, the amount of frost penetration, and interference with wildlife.

14.0 BACKFILLING AND SOIL IMPORTATION

In areas where topsoil segregation occurred, the subsoil will first be replaced, and the topsoil spread uniformly over the area from which it was removed. If multiple lifts of soil were salvaged to maintain soil quality, these must be replaced in their original order.

The following guidelines are to be considered when conducting backfilling activities:

- **Large Clods:** Confirm that large clods are broken prior to, or during, backfilling.
- **Topsoil/Subsoil Mixing:** Backfill the construction area without mixing spoil with the topsoil pile.
- **Droughty Soils:** Droughty soils can be very difficult to compact. If droughty soil conditions are encountered and the ditch spoil is excessively dry:
  - wet the ditch spoil prior to backfilling, if practical; and/or
  - backfill the ditch spoil in separate lifts and compact between lifts.
- **Additional Backfill:** Import additional or replacement backfill, if warranted, from locations approved by the appropriate land/regulatory authority and the EI, according to Westcoast procedures. Testing of the material may be required prior to hauling it to site (see Section 5.0 – Controlling Spread of Weeds and Undesirable Species).
- **Pre-construction Grades:** Recontour and restore areas to pre-construction grades and drainage patterns. Where restoration of the pre-construction grade is not practical due to risk of failure of fill on slopes, recontour to grades not exceeding 1:3 (rise:run), or as directed by a Geotechnical Engineer.

The following additional guidelines are to be considered during backfilling activities under frozen conditions:

- **Schedule:** Verify that all segments excavated during frozen conditions are backfilled prior to spring break-up.
- **Compact Trench Spoil:** Break up frozen clods of soil prior to backfilling to reduce later settling. Where practical, postpone compaction of frozen spoil until final clean-up in late spring or early summer.
- **Snow/Spoil Mixing:** Avoid mixing snow with spoil material during backfill.
- **Excess Spoil:** Where practical, postpone feathering-out of excess spoil until after spring break-up.
- **Contours:** Where practical, postpone final regrading of the disturbance areas until after spring break-up if the subsoil is frozen to an extent that would impair the restoration to pre-construction profile.

14.1 BACKFILLING OF WETLANDS

Following work completion, backfilling of wetland disturbance areas will take place promptly, or as approved by the EI. Wetlands will be restored as near as practical to pre-construction conditions and reasonable attempts will be made to return the subsoil to its pre-construction density.

Subsoil that exceeds the elevation of the ground adjacent to the disturbance area will be removed from the wetland and disposed of in an upland location approved by the EI and appropriate regulatory authorities.

For peatlands, backfill peat and mineral soils in the appropriate order such that peat material rather than the underlying mineral soils remain at the surface (such that future drainage through the shallow peat material is not impeded). Confirm that wetlands disturbed during frozen conditions are backfilled prior to spring break-up.

Install temporary ECDs (e.g., silt fences) within 24 hours of backfilling the wetland crossing. Verify silt fences have been installed properly, are solid, and filter fabric is tight (Figure 3).

After the disturbance area is backfilled with subsoil, the previously segregated topsoil will be spread over the excavation area and mounded no more than 30 cm above the adjacent, undisturbed soil. Recontour the wetland and restore surface drainage patterns to as close to pre-construction profile as practical.

14.2 BACKFILLING OF HYDROVAC HOLES

If daylighting is completed by hand digging, topsoil, and subsoil will be segregated according to Section 11.0. If a hydrovac is used, replacement fill may be necessary to minimize settling. For areas with lumpy or clay soils, backfilling may be done with sand to reduce voids that cause later settling, as approved by the EI.

After completion of construction activities, backfill and compact the soil in the reverse order that the material was excavated. A crown may be left to allow for subsidence of the hydrovac hole.

15.0 CLEANUP AND RECLAMATION

Cleanup involves removing construction debris (including litter generated by construction crews and excess rock) and large woody debris. Reclamation includes restoring disturbed areas as near as practical to pre-construction conditions, returning the topsoil where stripped, preparing a seedbed and decompacting subsoil (where applicable) for permanent seeding, installing or repairing temporary ECDs, repairing/replacing fences, and installing permanent erosion controls.

Poor cleanup and reclamation may result in reduced recreational and other land use capabilities and may cause long-term effects to fish populations and wildlife habitats. In addition, public relations with stakeholders and appropriate regulatory authorities may be adversely affected if cleanup and reclamation activities do not meet stakeholder expectations and/or applicable regulatory requirements.

15.1 CLEANUP AND RECLAMATION DURING FROZEN CONDITIONS

For projects constructed during frozen ground conditions, rough cleanup activities (including backfilling of the disturbance area) will generally also be performed during frozen conditions. However, final cleanup activities such as topsoil replacement are generally delayed until after spring break-up. If activities are within areas with no summer access, then final cleanup and reclamation will be completed prior to break-up. Cleanup is to begin on all disturbed areas during construction in frozen soil conditions as soon as practical after backfilling and before spring break-up.

The following guidelines and considerations are recommended for when conducting cleanup and reclamation activities during frozen conditions:

- **Permafrost:** Review and implement the mitigative measures in Section 22.0 – Permafrost in areas where permafrost is or may be encountered.
- **Remove construction-related materials and waste**: All construction-related materials will need to be removed during frozen conditions, including but not limited to:
  - Swamp mats, matting, geotextiles, and ramps.
  - Vehicle crossings: Remove vehicle crossing structures at watercourses prior to spring break-up, unless otherwise approved by the appropriate regulatory authority. Restore and stabilize

streambeds, streambanks, and other disturbed areas following removal of vehicle crossing structures. If vehicle crossings are needed for access to complete seeding during final cleanup, they can be replaced after spring break-up.

- Waste: Collect and dispose of all construction-related garbage, debris, wastes, and hazardous material from the construction footprint in designated containers or at approved facilities. For appropriate waste management practices, see Section 24.0 – Waste Management.

- **Watercourses:** Recontour and stabilize banks and approach slopes, and install berms, cross ditches and/or silt fences at any location where runoff from the construction footprint may flow into a watercourse (Figures 3 and 4 and Section 18.0 – Watercourse Crossing and Construction General Requirements).
- **Contours:** Recontour the construction footprint to approximate the pre-construction profile. If fill is still frozen, postpone recontouring until spring, if practical.
- **Temporary Erosion Control:** Use temporary ECDs (e.g., sandbags or logs) during rough cleanup on well-sodded areas. To reduce drifting soils and loss of topsoil in areas prone to wind erosion, spread wood chips, sow a fast-growing ground cover, and apply slash over exposed soils.
- **Temporary Slope Berms/Sediment Barriers:** During frozen conditions, install temporary berms and sediment barriers (e.g., silt fence during rough cleanup) if final cleanup is not completed until the following spring.
- **Temporary Fences and Gates:** Install temporary fences and gates until replaced with permanent structures in spring if not already installed during clearing.
- **Topsoil Piles:** Walk down topsoil pile and pile snow over the topsoil pile to reduce the risk of wind erosion during the winter. Consider watering down the topsoil pile if snow is not available.
- **Final Cleanup:** In areas where access may be difficult in the spring/summer (e.g., muskeg) complete final cleanup during the winter.

16.0 REVEGETATION

Revegetation of the construction footprint involves preparing the seed bed and seeding disturbed areas to establish a permanent ground cover of desirable vegetation. Reclaim disturbed areas following abandonment activities. Reclamation and restoration measures may include natural regeneration (particularly in shrubby and graminoid wetlands or wetland buffers) or active restoration methods, such as site preparation, conifer seedling planting, and access control.

16.1 PROJECT SEED SPECIFICATIONS

Use only Common No. 1 or Canada Certified No. 1 seed in reclamation seed mixes and confirm seed certificates of analysis are provided to Westcoast. Westcoast Environment will review seed certificates of analysis when any other seed grade is proposed for reclamation projects, or a custom seed mix is used per a third-party requirement. Seeding should occur as soon as practical after final cleanup, as weather and soil conditions permit. Allow mineral wetlands and peatlands to naturally regenerate following construction. Do not seed mineral wetlands or peatlands.

Westcoast seed mixes and recommended rates are outlined in Appendix A. Westcoast may utilize specialized seed mixes on a site-specific basis.

Seed will be purchased on a Pure Live Seed (PLS) basis. Seed tags will identify:

- Purity
- Germination
- Date tested
- Total weight and PLS weight
- Weed seed content
- Seed supplier's name and business information

During seeding activities, seed tags will be recorded and provided to Westcoast. A Westcoast representative will review tags prior to installation to confirm that the seed mix complies with Westcoast's specifications and that the seed is being applied to the correct location. If bulk delivery of seed occurs, the above information will still be made available to Westcoast.

16.2 RIPARIAN AREAS

Seed disturbed banks and riparian areas with the approved seed mix provided in Appendix A. The EI or designate(s) will determine onsite whether other restoration methods need to be applied to stabilize banks (e.g., soil wraps, brush layers, and matting).

16.3 WETLAND AREAS

No fertilizer, lime, or mulch will be applied in wetlands.

Westcoast does not plan to seed wetland areas because the re-establishment of vegetation occurs best through natural process without supplemental seeding. Westcoast plans to allow natural reforestation of TWS areas within forested wetlands via stump sprouting, root sprouting, and natural recruitment. If required, replant salvaged trees/shrubs along the disturbed margin(s) of the wetland as instructed by EI.

Do not seed mineral wetlands or peatlands (i.e., allow for natural regeneration) unless approved by Project-specific authorizations. Consult with the Westcoast PEL and EI to determine if seeding of the riparian areas adjacent to the wetland is required. Remove any sediment barriers that remain after the disturbed area is revegetated and stable.

16.4 SEED BED PREPARATION AND SEEDING PROCEDURES

No soil amendments need to be incorporated into the soil during seedbed preparation (Appendix A).

16.5 SEEDING METHODS

The EI will approve appropriate seeding procedures to confirm even distribution of all species in each seed mix. This may involve, but is not limited to:

- using seed box agitators to prevent stratification of large and small seeds;
- seeding large and small seed species from separate seed boxes, or in separate passes with the seeder; or
- using an inert filler agent with the seed mix.

Seed will be applied uniformly at specified rates across the prepared work area by drill seeding, broadcasting or hydroseeding. The EI will suspend seeding activities if conditions are such that equipment will cause rutting of the surface in the designated areas. Westcoast will continue to monitor right-of-way

conditions to resume seeding activities as site conditions improve and according to the general seeding timing restrictions listed in subsection 16.7 – Seeding Periods.

16.5.1 Drill Seeding

Drill seeding will be conducted on flatter lands, where it is practical. Seed only the salvaged area of the construction footprint unless otherwise instructed by the EI.

16.5.2 Broadcast Seeding

Broadcast seed on non-cultivated lands where drill seeding cannot be conducted. Seed only the salvaged area of the construction footprint unless otherwise instructed by the EI. After broadcast seeding, firm the seedbed with a harrow-packer or roller. Delay broadcast seeding during high wind conditions, as advised by the EI.

16.5.3 Hydroseeding

Hydroseeding rate will be the same as the broadcast seeding rate. Seed will be applied alone or in combination with hydromulch slurry. If seed is applied alone, the amount of hydromulch material will be adjusted to the seed slurry to show where seeding has taken place, providing a means to identify uniform cover of the construction footprint. Westcoast will pre-approve all hydromulch products.

16.6 SEEDING METHODS FOR DIFFICULT LANDSCAPES

Where problems may be expected in establishing vegetation (e.g., on sandy soils or slopes), consider using any or a combination of the following:

- install or implement ECDs (see subsection 9.1 – Temporary Erosion and Sediment Controls);
- prepare the surface to enhance seed germination by soil texturing through creating gouges/divots or impressions with track mounted equipment;
- install water diversion berms and ditches on slopes (Figure 4); and
- plant container-grown native shrubs and herbaceous species.

To promote seed germination on dry or wind exposed sites, the following methods may be considered:

- spread and walk down small diameter slash (import if necessary) on non-cultivated areas, and/or
- where approved, spread wood chips in accordance with applicable regulatory requirements (see subsection 8.1 Non-merchantable Timber):
  - in non-cultivated areas where the intent is to suppress grass vegetation and to promote re-establishment of woody plant species; and
  - in non-cultivated upland areas mulch may also be applied to retain moisture.

16.7 SEEDING PERIODS, TIMING AND DORMANT SEEDING

Upon final grading of the construction disturbance areas and upon the restoration of wetlands and waterways (where applicable), seeding and restoration/stabilization should occur within 48 hours if weather and soil conditions allow. The appropriate seed mix(es) will be based on the habitat type present and the time of year to allow for successful revegetation of the disturbance areas. See Appendix A for approved seed mixes and recommended seeding periods.

Westcoast may delay seeding during frozen ground conditions until the applicable spring seeding period or will complete dormant seeding where conditions allow (i.e., no snow cover; see Appendix A).

Dormant seeding is a method used after soil temperatures cool to 2 degrees Celsius or cooler to prevent germination. Dormant seeding is only practical if the soil is not frozen and snow is not present. Procedures for applying soil amendments, seedbed preparation, seeding, and mulching are the same as outlined for permanent revegetation in this section.

Where dormant seeding is conducted, one or more of the following temporary ECDs may be installed within 48 hours of seeding:

- Noxious weed-free straw mulch, at not more than 2 tons/acre, anchored;
- hydromulch, at 2 tons/acre, anchored; and/or
- erosion control blanket.

Additional ECDs will be applied at the request of the EI.

16.8 POST-RECLAMATION MONITORING

Westcoast will conduct post-construction monitoring following the completion of abandonment activities. The abandonment sites will be assessed for success of reclamation activities and reclamation deficiencies will be recorded and corrected.

The monitoring program includes measurable parameters that will be recorded and compared to representative control areas to measure success. Deficiencies discovered or opportunities for enhancement will result in developing proposed recommendations for corrective actions. The remedial actions are to be implemented as soon as practical during the most appropriate season, preferably summer, but may be outside of this period due to environmental timing restrictions (reproductive periods and migration periods), field and weather conditions or social and public concerns.

Areas that do not meet equivalent land capability for items such as landscape features, vegetation establishment, soils and reclamation success will be identified and records maintained for any remedial measures implemented, the success of these measures and to ensure that outstanding issues are investigated and resolved.

17.0 WETLAND CROSSING AND CONSTRUCTION GENERAL REQUIREMENTS

The intent of these procedures is to minimize construction-related disturbance and sedimentation of wetlands. Construction activities should be minimized in wetlands and/or special construction techniques employed to reduce disturbance to plants, soils and wetland function (e.g., hydrologic, water quality and habitat).

Table 2 of this EPP lists the wetlands encountered by the physical abandonment footprint and regulatory requirement information.

Review Section 4.0 – Identification of Resources and Environmentally Sensitive Areas for additional information on working in wetlands and potential for WSC and VSC.

Where practical, narrow down the proposed area of disturbance (e.g., access) and clearly delineate the access boundaries by using fencing, stakes, or flagging. Identify the start and end points of the wetland and limit disturbance or encroachment beyond the delineated access. See Figure 2 for details.

Refer to Figure 7 for the typical wetland crossing technique. Note that additional techniques outlined in Section 18.0 - Watercourse Crossing and Construction General Requirements may also be applicable to wetlands in certain cases.

The following general measures are recommended while conducting construction activities within wetlands:

- **Isolation:** Where standing water is present, an AquaDam, surface soil, or Westcoast-approved equivalent will be required to prevent free-flowing water from entering the work area.
- **Spill Prevention:** Review Section 25.0 – Spill Prevention, Containment, and Control Measures prior to commencement of construction activities.
- **Buffer Zones:** Protect and maintain shallow shoreline areas that contain emergent vegetation (e.g., graminoids) by establishing buffer zones. Generally, a 10 m buffer zone is to be established at all wetlands.
- **Workspace:** Locate all additional work areas (e.g., staging areas, grade/borrow areas for ramping, additional spoil storage areas) a minimum 10 m, if practical, from wetland boundaries except where adjacent upland consists of actively disturbed land.
- **Equipment:** Use wide-track equipment, low-ground pressure equipment or conventional equipment operated from swamp or rig mats. Ensure all equipment is clean and in proper operating condition.
- **Vegetation Salvage:** Salvage flagged or fenced live trees or shrubs from banks of wetlands if requested by the EI. Store salvaged trees and shrubs on the side of the construction footprint in a manner such that they do not dry out before replanting during restoration.
- **Culverts:** The EI in consultation with the PEL will provide approval for the installation of temporary culverts, if warranted, to materials from blocking natural drainage and causing ponding.
- **Weather:** The EI will advise the CM to postpone construction in wetlands if excessive rain or flood conditions exist or are anticipated, and construction methods cannot be modified to cope with the increased water. If thawed soil conditions occur during winter construction, implement the procedures related to Wet and Thawed Weather Considerations in Section 7.0.

Refer to the following sections for additional details regarding construction requirements in wetland areas:

- Clearing and Brushing, Section 8.0
- Erosion and Sediment Control, Section 9.0
- Topsoil Stripping and Salvage, Section 11.0
- Grading, Section 12.0
- Backfilling, Section 14.0
- Revegetation, Section 16.0

17.1 FOOTPRINT STABILIZATION

Typically, low-ground pressure equipment will be used, limiting disturbance to the wetland. Tree stumps, slash, imported soil, and rock fill will not be brought in to stabilize the right-of-way in wetlands. Where

low-ground pressure equipment is not used, operate from swamp mats, rig mats, or corduroy ramps when working on saturated soils during wet or thawing conditions.

Limit access through wetlands to vehicles/equipment necessary for wetland construction. During frozen conditions, remove or pack snow over the work area in early winter to protect the ground surface, fill in depressions and limit compaction and rutting. Subsoil from the disturbance area will be side cast within the wetland construction workspace. Subsoil may be placed on top of equipment mats for additional stabilization around the excavation. All swamp mats, construction debris, and larger woody vegetative debris will be removed during cleanup of wetlands.

18.0 WATERCOURSE CROSSING AND CONSTRUCTION GENERAL REQUIREMENTS

Working in and around watercourses requires adequate planning, design and environmental mitigation. Improper measures can result in harmful effects to aquatic habitats, fish populations, wildlife (e.g., mammals, amphibians, waterfowl, etc.), water quality, and watercourse dynamics.

The following Sections provide measures for working within and adjacent to watercourses, as well as acceptable options for watercourse crossing equipment (e.g., temporary bridges). Note that watercourse crossing methods (e.g., temporary crossings) should be determined prior to construction and approved by the PEL. In addition, Section 25.0 – Spill Prevention, Containment and Control Measures should be reviewed when working in and around watercourses and wetlands.

Similar to wetland crossings, Table 3 of this EPP provides site-specific requirements when working within and adjacent to watercourses, including but not limited to: regulatory permits and approvals; timing of construction; potential for rare plants and wildlife; in-water and wildlife RAPs; fish and/or amphibian salvages; and a schedule for when vegetation clearing can occur.

Prior to site disturbance the riparian buffer width is to be established around all watercourses (CAPP et al. 2005) to the satisfaction of the EI.

Maintain low growing vegetation or a vegetated ground mat within the buffer zone of watercourses to the extent practical by walking, storing material, or constructing over the undisturbed areas. Flag the edge of the riparian buffer zone before any site disturbance activities in the vicinity of a watercourse occurs. Ensure temporary workspace does not encroach within the vegetated buffers of the watercourse. If additional temporary workspace is required, this should be communicated to the EI and PEL prior to initiation of construction activities, as additional approval may be required based on permit conditions.

In addition, any fill material required (e.g., clean gravel, cobble, and riprap) for stabilization and reclamation will be sourced and approved by the EI/PEL prior to the commencement of construction activities.

If warranted, fish salvage by qualified specialists will occur within the isolated area prior to dewatering. The PEL will ensure that all appropriate permits for fish salvage are in place and onsite prior to construction, as applicable. Once the workspace has been isolated to conduct works, the following measures should be considered during construction activities:

- **Water Quality Monitoring:** Implement water quality monitoring to assess the immediate effects of construction as directed by regulatory permits, approvals, authorizations, etc. (see Section 18.4 - Water Quality Monitoring).

- **Sedimentation:** Suspend instream work if sedimentation is occurring unless explicitly authorized by regulatory authorities. Implement the mitigative measures presented in subsection 18.4 – Watercourse / Wetland Sedimentation Prevention and Excessive Flow Contingency Measures to control sediment loading.
- **Equipment:** Confirm that hydraulic, fuel, and lubrication systems of any equipment working instream are clean and in good repair to avoid leakage. Operate all equipment in a manner that prevents deleterious substances from entering the watercourse. Ensure that all material placed within the wetted perimeter of a watercourse is not toxic to aquatic species.
- **Flow:** Maintain 100% of downstream flow throughout in-water works in fish-bearing waterbodies.
- **Limit Duration of works:** All reasonable efforts should be made to limit the duration of in-water works. Complete all in-water activity as quickly as practical to reduce the duration and severity of disturbance.
- **Fish Presence:** In the event fish are discovered within the isolated work area following salvage or where they were not anticipated (i.e., a nonfish-bearing waterbody):
  - Suspend work immediately in the watercourse. Work at that location may not resume until the measures below are undertaken.
  - Notify the EI who will notify the Westcoast CM or designate.
  - The EI will assess the discovery and either allow construction to be resumed or, in the event of a confirmed or potential discovery proceed by notifying the Westcoast PEL and, if warranted, the appropriate regulatory authorities.
  - The PEL may deem it necessary for a qualified aquatic specialist/qualified environmental specialist to visit the site to develop appropriate mitigation.

18.1 FISH HABITAT RECLAMATION TECHNIQUES

Following the completion of in-water construction activities, the following measures are recommended to restore fish habitat and should be completed in accordance with regulatory permits (if applicable):

- **Restoration:** Maintain or restore natural drainage and channel configuration.
- **Reclamation Methods:** Ensure reclamation methods, techniques and structures are completed in accordance with the applicable environmental permits, authorizations, approvals and guidelines.
- **Stabilization:** Install erosion and sediment controls to stabilize prone areas. Consider use of clean materials such as cobbles or rip-rap to armour banks that experience high flow and erosion potential.
- **Monitoring:** Monitor watercourse reclamation activities during construction and at intervals described in post-construction monitoring plans. Obtain and comply with all necessary environmental permits, authorizations, approvals and/or guidelines. Focus post-construction monitoring on persistence and effectiveness. Consider corrective measures where reclamation is not successful.

18.2 TEMPORARY BRIDGES

Temporary bridges will be used to cross some watercourses. Bridges will be constructed as described below and will be removed as soon as practical following completion of abandonment activities. The final

selection of vehicle crossing method will be completed by the Westcoast CM (or designate), in consultation with the EI and, when necessary, the appropriate regulatory authority. Existing bridges should be used whenever practical.

Except for clearing-related and bridge installation equipment, fording of waterways will not be permitted (i.e., hydrovac or other equipment are not permitted to ford waterways prior to bridge placement). A single pass across waterbodies prior to bridge installation is allowable for these units, unless restricted by applicable permits.

18.2.1 Types of Temporary Bridges

Equipment bridges will be constructed using one of the following techniques:

- Typical span type bridge (timber mats - refer to Figures 8 and 9)
- Ice bridge (Figure 10)
- Swamp mats (Figure 11)
- Snow fill (Figure 12)
- Flexi-float or other pre-fabricated portable bridges
- Other methods as approved by Westcoast CM/EI and appropriate regulatory authorities

18.2.2 Bridge Design and Maintenance

Bridges will be installed as close to perpendicular to the axis of the stream channel, creating the shortest crossing length, using clean materials, and will be built and maintained in accordance with applicable permits. Equipment bridges will be designed to withstand the maximum foreseeable flow of the stream without causing restriction or pooling. Instream support may be utilized, and bridge headers may be keyed into the stream bank. Bridges will be designed and maintained to prevent soil from entering the waterbody (i.e., lined with geotextile cloth) and soil that accumulates on the bridge decking will be removed.

18.2.3 Bridge Removal

Remove crossing structures and associated debris, where practical, prior to break-up (for winter construction). Crossing structures may be left in place for final cleanup (e.g., reseeding) if no other access is available and if they are designed to withstand high-water flows during spring break-up. Regulatory approvals may be required to leave temporary bridges in place during spring break-up. Snow fill crossings should be notched prior to de-mobilization to facilitate drainage flows during melt conditions.

18.3 INSTREAM WORK METHODS

The following methods may be used to conduct activities (e.g., pipe exposure removal), subject to further restrictions and approval by Westcoast, and applicable permits.

18.3.1 Open Cut Crossing Method

The open cut crossing method may be used to conduct maintenance activities when other techniques (flume or dam and pump) are not practical, if approved by the PEL and applicable regulatory agencies, where required, and in accordance with the following procedures:

- Open cut crossings should be conducted during dry or frozen bottom conditions. Where water is present, attempts should be made to schedule construction during periods of low flow and/or

low sensitivity for fish and wildlife (e.g., outside in-water RAP), if practical. See Figure 14 Channel Diversion Method, Figure 15 Open Cut Method for Dry/Frozen Watercourse and Figure 16 Open Cut Method for Flowing Watercourses.

- Where standing water is present, an AquaDam or Westcoast-approved equivalent may be required to prevent water from entering the work area.
- Install ECDs at the vegetative buffer boundary left on each stream bank, if sedimentation into the watercourse is possible.
- Grade watercourse banks and areas necessary for safe temporary bridge installation, if required and approved by regulatory agencies.
- After grading, use a tracked excavator to excavate a trench. Where practical, excavating equipment will operate from one or both banks, without entering the stream. If equipment must encroach into the stream, it will operate on clean construction mats or sled, if practical. Any streambed material excavated will be segregated (e.g., upper 30 cm) with the remaining trench spoil stored separately within the approved construction work area limits above the OHWM/OHWL in a manner that does not block drainage or runoff. Storage of streambed spoil within the stream will only occur if expressly approved in the applicable permits.
- Construct a temporary storage area for spoil above the OHWM/OHWL of the watercourse if spoil is likely to be highly saturated. Excavate a pit or construct berms of packed earth or staked straw bales, if warranted, to prevent spoil from flowing back into the watercourse. Containment berms and spoil should be situated away from the streambank to maintain the vegetative buffer.
- Do not place spoil piles within the stream channel or block the channel. Consult with the PEL prior to storing spoil within the channel. The PEL will consult with the appropriate regulatory authorities if warranted.

18.3.2 Dam and Pump Method

The dam and pump method involves damming of the watercourse upstream and downstream of the construction disturbance area to create dry working conditions (refer to Figure 37). Water is then pumped around the isolated area to allow for continuous flow.

The following procedures should be followed when using the dam and pump technique:

- Construct dams using sandbags, inflatable dams, AquaDams, sheet piling, steel plates or other Enbridge-approved material to create a tight seal of the watercourse bed and banks. An impermeable plastic membrane on the outside of the dam can also promote a proper seal. The dams will prevent the stream from flowing into the construction area. Continuously monitor the dams for a proper seal. Additional sandbags, plastic sheeting, steel plating, or similar materials may be necessary to minimize the amount of water seeping around the dams and into the construction work area.
- Pumping of the watercourse around the isolated area will commence simultaneously with dam construction to prevent interruption of downstream flow. Pump watercourse flow across the construction area through a hose and discharge to an energy-dissipation device, such as plywood boards, to prevent scouring of the streambed.

- Place the pumps and fuel containers on the upstream side of the crossing in impermeable, sided structures which will act as containment units (refer to Section 25.0 – Spill Prevention, Containment and Control Measures). Pumps will have a capacity greater than the anticipated stream flow. The pumping operation will be staffed 24 hours a day, if overnight pumping is required. Pumping will be adjusted as necessary to maintain an even flow of water across the work area and near-normal water levels upstream and downstream from the crossing.
- Suspend the pump intake to prevent sediment uptake from the bottom of the stream and equip with a screen, or equivalent device, to prevent fish uptake. Install screens on any water intake and outlet pipes to prevent entrainment or impingement of fish, as per DFO requirements (https://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures-eng.html). In freshwater, follow the design and installation for intake end of pipe fish screens, as per DFO standards in fish-bearing watercourses:
    - Screens should be located in areas and depths of water with low concentrations of fish throughout the year.
    - Screens should be located away from natural or artificial structures that may attract fish that are migrating, spawning, or in rearing habitat.
    - The screen face should be oriented in the same direction as the flow.
    - Ensure openings in the guides and seals are less than the opening criteria to make “fish tight”.
    - Screens should be located a minimum of 300 mm (12 in.) above the bottom of the watercourse to prevent entrainment of sediment and aquatic organisms associated with the bottom area.
    - Structural support should be provided to the screen panels to prevent sagging and collapse of the screen.
    - Large cylindrical and box-type screens should have a manifold installed in them to ensure even water velocity distribution across the screen surface. The ends of the structure should be made of solid materials and the end of the manifold capped.
    - Heavier cages or trash racks can be fabricated out of bar or grating to protect the finer fish screen, especially where there is debris loading (woody material, leaves, algae mats, etc.). A 150 mm (6 in.) spacing between bars is typical.
    - Provision should be made for the removal, inspection, and cleaning of screens.
    - Ensure regular maintenance and repair of cleaning apparatus, seals, and screens is carried out to prevent debris-fouling and impingement of fish.
- Pumps should be shut down when fish screens are removed for inspection and cleaning.
- Where practical, excavating equipment will operate from one or both banks, without entering the stream. If equipment must encroach into the stream, it will operate on clean construction mats or sled, if practical. Segregate streambed material place within a spoil containment structure in approved construction work area limits, above the OHWM/OHWL in a manner that does not block drainage or runoff. Storage of streambed spoil within the stream will only occur if approved by the EI and regulatory authorities/applicable permits.

- Manage standing water isolated in the construction area by the dams in accordance with Section 19.1 – Excavation Dewatering.
- Upon completing bank stabilization, the dam will be removed in the reverse order in which it was constructed, to resume natural stream flow.

18.3.3 Backfilling and Supplemental Bank Stabilization

Following construction activities, backfill the in-water trench so that the watercourse bottom is as near as practical to its pre-construction condition, with no impediments to normal water flow. Backfill material will consist of the spoil material excavated from the trench and parent streambed unless permits/approvals specify otherwise. Pump the trench dry and compact the dry soil in lifts to prevent streambed sloughing, to the extent practical.

Permanent stabilization will be initiated within 24 hours of backfilling the crossing, which includes restoring the watercourse banks as near as practical to pre-construction conditions unless the slope is determined to be unstable. If Westcoast determines that the slope is unstable, the banks will be reshaped to prevent slumping. Once the banks are reshaped, temporary ECDs will be installed within 24 hours. Inspect the temporary ECDs daily and complete any required repairs before the end of the day.

Unstable soils and/or site-specific factors such as stream velocity and flow direction may require additional restoration efforts, such as installation of rock rip-rap, to stabilize disturbed stream bed/banks. Rock rip-rap will only be used where site-specific conditions require and where Westcoast has acquired applicable permits or approvals.

18.4 WATER QUALITY MONITORING

Water quality monitoring will be implemented as directed by the PEL and conducted on a site-specific basis by the EI or assigned specialist to detect sedimentation of the watercourse. Water quality monitoring involves assessing or measuring turbidity (nephelometric turbidity units [NTUs]) and total suspended solids (TSS) during construction maintenance activities. A change in water quality due to sedimentation may negatively impact downstream aquatic resources.

When conducting in-stream work, Westcoast Inspection personnel will be onsite at all times to confirm that emergency response measures, if warranted, are implemented immediately and effectively. Emergency response personnel will be available to assist with implementation in the event of sedimentation.

The following measures should be implemented while conducting water quality monitoring activities during construction:

- **Prepare**: Review Westcoast's Before You Pump Process Version 2.0 (2020-07-06)
- **Monitoring Plan:** The EI will commence water quality monitoring prior to water crossing construction activities to record baseline data and will monitor water quality on a continuous basis during construction. They will continue monitoring following construction activities until the PEL determines complete.

  The EI will document the following on an individual watercourse basis as part of the water quality monitoring plan:

  - Locations of sampling transects upstream and downstream of the water crossing

  - Sampling depths
  - Sampling frequency, duration, and procedures
- **Communications:** Maintain communication between the CM, construction crew, and EI during water crossing construction, to confirm that the water quality remains compliant, and that the data collected meets the requirements of Westcoast and appropriate regulatory authorities.
- The EI/PEL may provide guidance for maintaining or modifying construction activities.
- **Sampling Methods:** Conduct all manual water quality monitoring during daylight conditions, or as per the specifications outlined in the applicable permits.
- **Sampling Methods:** On watercourses with ice cover, onsite conditions may allow visual monitoring of water quality by observing open reaches or, if safe (i.e., if ice is thick enough), by augering and maintaining an open hole in the ice for sampling. Continue to evaluate ice conditions throughout the monitoring program. If open reaches are not available for monitoring and ice cover is not safe discuss alternative options, if warranted.
- **Sampling Methods:** The EI or designate will collect turbidity samples using a portable turbidity meter. Each time the turbidity will be measured three times and values will be averaged. The EI will calibrate the turbidity meter prior to the commencement of in-water work and as required throughout the duration of construction activities.
- **Turbidity – TSS Relationship:** Use turbidity, expressed as NTU, to provide a surrogate measurement of TSS in milligrams per litre (mg/L), since turbidity is more readily measured in the field. Use the predicted relationship between turbidity and TSS as a tool during the monitoring program to predict real-time TSS values.
- **Sampling Methods:** The EI will collect written notes and take digital photographs of excavation and containment measures each day and during any events that could affect turbidity.
- **Changes to Sampling Frequency:** Ensure any potential changes to the frequency of turbidity sampling onsite are reviewed with the PEL prior to implementation. Ensure sampling frequency is sufficient to describe spatial and temporal changes in water quality and does not compromise the integrity of the water quality monitoring program.
- **Sedimentation Events:** In the event of sedimentation (e.g., release of sediment-laden water), the EI will continuously monitor water quality until background or near-background turbidity levels are restored, unless otherwise advised by the PEL.

  The EI, in consultation with the CM and PEL, if warranted, will make appropriate decisions on the continuance of construction and/or modification of methods.
- **Sedimentation Events:** In the event of sedimentation, collect TSS samples to correspond with turbidity sampling to provide an accurate record of the sedimentation event. A comparison of results from all transects against applicable regulatory guidelines will be needed to determine if TSS concentration guidelines were exceeded. After the TSS sample results are obtained from a laboratory, a relationship between TSS and turbidity can then be determined. This relationship then allows turbidity results to be compared to exceedance criteria for TSS.
- **Releases**: Releases of contaminants and sediments to watercourses are considered spills. See Section 25.

18.5 WATERCOURSE/WETLAND SILTATION PREVENTION AND EXCESSIVE FLOW CONTINGENCY MEASURES

The following mitigative measures aim to minimize watercourse and wetland sedimentation attributed to periods of extreme precipitation during construction and post-construction or excessive flow or flooding during in-water construction activities.

If abandonment activities are anticipated or observed to be resulting in the sedimentation of a watercourse or drainage, contingency mitigation measures must be implemented as quickly as practical to reduce potential effects on fish and fish habitat and water quality. The EI will notify the CM or designate and the PEL that contingency measures have been initiated and will maintain a record of the location, timing and reason for implementation of the contingency measures.

If sediment levels approach/exceed water quality guidelines (e.g., the Canadian Council of Ministers of the Environment guidelines) and/or the sedimentation is potentially harmful to the aquatic environment, appropriate regulatory authorities such as the BC Energy Regulator, DFO and the CER will be notified as soon as practical, by the EI or Westcoast, that contingency measures have been implemented during the abandonment activities. See also the Flood and Excessive Flow Contingency Plan (see Appendix D5) for the measures to be implemented when high water levels are anticipated or observed that could result in erosion and sedimentation of watercourses or drainages.

Should an extreme precipitation/streamflow event or other circumstances jeopardize the existing sediment control measures, implement the procedures outlined below progressively or individually as warranted.

- Prohibit the operation or parking of construction equipment close to the banks of watercourses where there is a risk of bank sloughing, failure of the vehicle crossing, or flooding of the work area.
- Install additional silt fencing to minimize silt-laden water from entering a watercourse or wetland.
- Excavate cross ditches to divert runoff away from watercourses (Figure 4).
- Construct berms of subsoil, sandbags, rock, timber, or hay bales on approach slopes and/or banks to divert runoff from the disturbance areas and onto well-vegetated lands. The location and material of the sediment control structures will be determined by the EI.
- Import sandbags and place strategically to help stabilize and add height to banks to minimize flooding of nearby areas, especially where vegetation has been removed.
- Implement the Soil Erosion Contingency Measures (see subsection 9.3 – Soil Erosion Contingency Measures and Appendix D4 – Soil Erosion Contingency Measures).
- The PEL may engage a Qualified Aquatic/Environmental Specialist with experience directing mitigative measures to minimize sediment deposition in watercourses related to construction activities.

Cease work immediately if sediment-laden water or other deleterious substances are entering a watercourse. The containment and cleanup of this material is to occur immediately (if practical, without causing further environmental damage) to prevent it from moving downstream.

During flooding events and excessive flow conditions, the following contingency measures are to be implemented during construction activities:

- Monitor weather conditions daily. If a major storm is predicted or occurs, inspect all waterbody crossings where construction is in progress or has been completed, to determine whether additional corrective actions are needed.
- At waterbodies where an isolated crossing method is preferred, the proposed isolation crossing techniques may not be practical during periods of excessive flow or unusually wet seasons. Excessive flows are those greater than the seasonally expected normal range based on existing and predicted flow data.
- Implement the following contingency measures progressively or individually, as warranted, if excessive flow or flood conditions are anticipated **prior** to commencing watercourse crossing construction.
  - Assess the capability of the proposed crossing method to handle the potential flow rates and have backup equipment available. Proceed with the proposed crossing method if it is determined to be adequate by the EI, in consultation with the CM and Contractor.
  - If determined that the proposed crossing method is not adequate to handle the potential flow, defer water crossing construction to a later time when the flow risk has subsided.
  - Alternatively, request the appropriate regulatory authority for permission to use the approved alternative crossing method.

Implement the following contingency measures progressively or individually, as warranted, if excessive flow or flood conditions should occur **during** watercourse crossing construction.

- Withdraw all equipment or tanks containing fuel, oil or other hazardous materials from potential flood areas.
- Relocate all topsoil piles at the direction of the EI.
- Relocate spoil piles, to the extent practical, to a position above the anticipated OHWM/OHWL.
- Remove all stationary and mobile equipment deployed at the crossing site to a safe area above the anticipated OHWM/OHWL.
- Remove any instream flume or dam equipment that may impede streamflow, if safe to do so.
- Evaluate vehicle crossing structure to determine whether adequate free-board is present on bridges and adequate capacity is available in culverts. Take corrective measures as appropriate to avoid flooding of adjacent lands.
- Implement the Soil Erosion Contingency Measures (see Section 9.3 – Soil Erosion Contingency Measures).

19.0 CONSTRUCTION DEWATERING

19.1 EXCAVATION DEWATERING

Prior to initiating dewatering activities, the EI will approve the water discharge plan to verify that best management practices are applied, and to minimize the potential for scour and water containing sediment from reaching a wetland or waterbody. Subsection 18.5 – Watercourse/Wetland Sedimentation Prevention and Excessive Flow Contingency Measures should be reviewed prior to commencement of

activities. Follow any applicable dewatering rates and requirements, based on permit conditions. Ensure understanding of these requirements prior to pumping. The following are guidelines for implementation when conducting dewatering activities:

- **Visual Inspection:** Visually inspect excavation water for debris (e.g., floating solids, visible foam) and/or hydrocarbon sheen prior to dewatering. Remove floating debris, if practical, prior to release. If hydrocarbon sheen is observed, implement the mitigative measures presented in Section 23.0 – Contaminated Soils and Water. If evidence of contamination is present, contact the EI and CM immediately.
- **Equipment:** Place equipment (e.g., pumps, generators) on polyethylene sheeting or other suitable containment to prevent spills. Where practical, place equipment above the OHWM/OHWL of any waterbody.
- **Siltation:** Use a floating suction hose equipped with a screen and elevated intake, or other measures, to prevent sediment from being sucked from the bottom of the trench.
- **Discharge Area:** Direct water to an approved (when applicable) well-vegetated upland area through a filtration device (if required) and at a rate that promotes infiltration of the ground surface. Protect the ground at the discharge location with a sheet of plywood, geotextile or similar means to prevent scouring/erosion. Do not allow sediment-laden water from pumping activities to directly enter a waterbody or wetland without prior filtration (e.g., geotextile filter bag, etc. [Figures 3 and 13]). Confirm that all discharged water is retained on the property where it was encountered. Obtain approval from the municipality if water is to be discharged into a bar ditch or could otherwise leave the property. Monitor the discharge area so that conditions do not become too silted for adequate natural filtration to occur.
- **Flow Rate:** Manage flow rate of the discharged water based on the site conditions to prevent erosion or scouring of the ground surface at the discharge location. Equip discharge outlets with flow dissipaters if the outflow has the potential to cause erosion.

Direct all dewatering discharge through a filtering device as indicated below and approved by the EI:

- **Geotextile Bag:** Size geotextile bags appropriately for the discharge flow and suspended sediment particle size. Use only nonwoven fabric bags for dewatering (Figure 13).
- **Filtering Units:** In certain circumstances, portable filter units may provide another option for water management.

Water discharge points from construction dewatering should not be located within 50 m of a watercourse or wetland without the appropriate filtration and ECD. If vegetation is sparse and/or discharge is near a stream or wetland, direct dewatering discharge into a geotextile bag (Figure 13) then onto an upland area well away from watercourses, wetlands, or drainage ditches.

When working within wetlands, do not dewater the wetland. Although temporary water diversion may be required during physical abandonment activities or wetland crossings, water should not be permanently removed from the wetland.

19.1.1 Regulatory Notification and Reporting

Westcoast will notify and submit reports to agencies if specified by applicable permit conditions. Agency communication and reporting will be managed by the PEL.

20.0 WATER USE AND WITHDRAWAL

20.1 GENERAL

Subject to permit conditions, water may be drawn from local sources, such as lakes, streams, and private or municipal wells for construction activities (e.g., freezing in of access, dust control). Before any taking of water, review with the EI/PEL conditions of any applicable permits or agreements. Requirements vary by jurisdiction, and compliance must be verified before any water withdrawal occurs.

The intake hose will be suspended off the waterbody bottom and equipped with a screen, or equivalent device, to prevent fish uptake. During withdrawal, adequate waterbody flow rates and/or depth levels will be maintained to protect aquatic life and allow for downstream use. The volume and rate of withdrawal will be recorded to comply with applicable permit conditions and/or agreements. In addition, abide by instream RAPs when working in fish-bearing waterbodies, as outlined in Table 3 of this EPP.

20.2 WATER SOURCES

Water will only be withdrawn from Westcoast-approved sources and in accordance with applicable permits. No additives will be used, without written approval from Westcoast and in accordance with applicable permits/agreements. Do not use water outside of the drainage basin from which it is withdrawn.

20.3 EQUIPMENT

Place equipment (e.g., pumps, generators) within suitable secondary containment to prevent spills onto soils. Where practical, place equipment above the OHWM/OHWL of watercourses or wetlands.

The operation and refueling of equipment will be in accordance with the conditions outlined in Spill Prevention, Containment, and Control Measures (Section 25.0).

20.4 FLOW MEASUREMENT AND WATER SAMPLING

The withdrawal rates and volumes must be measured with a flow meter (or equivalent) and the data provided to Westcoast for record-keeping, as it may be required for permit reporting or audits. Where required by permit conditions, Westcoast will sample the water during withdrawal. The Contractor will assist Westcoast in obtaining these samples.

20.5 REGULATORY NOTIFICATION AND REPORTING

Westcoast will notify appropriate regulatory authorities prior to withdrawals, if required by applicable permit conditions. Westcoast will submit reports regarding the volume and quality of the water withdrawn, if required by the applicable permits.

21.0 WINTER CONSTRUCTION

Topsoil salvage during winter construction should be completed in accordance with the measures outlined in Section 11.0 – Topsoil Striping and Salvage. Similarly, grading of the right-of-way can continue through the winter months in accordance with Section 8.0 – Clearing and Brushing. Delay plowing of snow from

areas to be stripped until just prior to ground disturbance to minimize frost penetration. If soils are frozen down to the topsoil/subsoil level and grading of the right-of-way results in mixing of these layers, alternative procedures such as ripping to the topsoil-subsoil layer prior to grading activities will be implemented to avoid mixing. To stabilize access routes, snow may be removed to promote freezing in areas requiring deeper penetration.

Backfill of the disturbance area will continue in the winter months in accordance with Section 14.0 – Backfilling and Soil Importation. However, if weather conditions result in frozen backfill, topsoil replacement should be delayed until soils thaw to allow for any subsidence to be fixed by grading of subsoils. Once grading of subsoil occurs, full topsoil replacement can occur.

If there is snow on the construction footprint while completing topsoil replacement activities, it will be removed prior to topsoil replacement. If weather conditions prevent effective soil decompaction treatment, perform soil decompaction through the topsoil to a deeper depth when soils become dry enough for effective treatment. If decompaction cannot occur through the topsoil to the required subsoil depth, the topsoil will be stripped prior to decompaction when conditions are suitable.

Seeding may continue through the winter months in accordance with Section 16.0 - Revegetation. This includes the requirements for dormant seeding (including mulching) with the addition of cool season species to improve the likelihood of successful revegetation (cool season grasses are active ["green up"] much earlier in the growing season [mid-spring] than other grasses).

If winter conditions prevent final cleanup and topsoil restoration, the area will be stabilized and temporary ECDs will remain in place until installation of permanent erosion control measures is complete. Depending on site and weather conditions, Westcoast may require the use of dormant seeding, mulching, and/or installation of erosion control blankets on stream banks or other sensitive locations in accordance with Section 9.0 – Erosion and Sediment Controls.

22.0 PERMAFROST

Disturbance of the soils and vegetative mat in permafrost areas can result in degradation (e.g., thawing) of the permafrost and subsidence of the disturbed areas with resultant disruption of drainage, erosion, and destabilization.

Construction in permafrost areas also has the potential to create areas of frost heave resulting from the freezing of soils below the pipeline and/or formation of frost bulbs in areas with thawed groundwater (e.g., watercourses).

The following measures should be implemented while conducting activities under permafrost conditions:

- **Snow Management:** Remove snow or pack on work area to increase frost penetration into the soil in the winter. In mid- to late-winter, pack snow on the work area to avoid premature thawing of the upper soils. Take particular care in permafrost areas to create and maintain an adequate snow/ice pad that will limit the potential for disturbance of the vegetation mat. Conduct snow harvesting and water spraying in permafrost areas if snow accumulation is limited to confirm an adequate snow/ice pad in permafrost areas.
- **Erosion Control:** Where soil is fine-grained and/or of high ice content on permafrost terrain, implement erosion control measures as quickly as practical after surface disturbance.

- **Access Roads:** Avoid areas of permafrost terrain when developing shoo-flies, to the extent practical, to reduce the need for grading or levelling of the shoofly. Do not salvage surface materials on permafrost terrain at locations where a snow/ice seasonal access road is to be developed.
- **Access Slopes:** Limit equipment movement on non-graded slopes in permafrost terrain only to that necessary for construction. Non-essential equipment should use approved alternative accesses or shoo-flies, if available.
- **Clearing:** Select equipment and methods (e.g., mulchers) to clear timber in permafrost that will leave the surface mat intact. Walk down or mow shrubs and small trees rather than cutting, if practical, to retain a vegetated mat and limit surface disturbance. Do not grub on permafrost terrain.
- **Grading:** Limit the amount of grading and the width of grading of thaw-sensitive permafrost areas to those needed to operate equipment safely and efficiently. Grade cuts and disturbance of the vegetative layer, on ice-rich slopes may require special measures and materials to avoid degradation of the permafrost. Obtain the advice of a geotechnical expert, if required. Do not permit grading of permafrost on level terrain. Consider using fills rather than grade cuts to the extent practical to attain a level right-of-way in areas of permafrost terrain. Limit disturbance of hummocky permafrost terrain, where practical.
- **Backfilling:** Use thaw-stable materials as backfill, or as otherwise approved by a geotechnical expert. Where spoil material has high ice content, approved imported backfill material may be required. Dispose of unsuitable spoil at an approved location, as directed by the PEL.
- **Peeling:** Avoid peeling of the vegetative mat/sod layer on permafrost during backfill. Use equipment during final pass of backfilling that will reduce peeling (e.g., cleanup bucket) and is approved by the EI.
- **Seeding:** Seed permafrost areas in the winter following construction (i.e., dormant seeding, in non-frozen and snow-free conditions) to promote rapid revegetation of disturbed areas. Reseed in the spring, if warranted.
- **Slash:** If approved, spread non-merchantable slash and/or other vegetative debris over disturbed portions of the construction footprint where permafrost terrain is encountered.
- **Reclamation:** Where the soils are fine-grained and/or of high ice content on permafrost terrain**,** implement reclamation measures as quickly as practical after surface disturbance to reduce the risk of slope failure and ground subsidence. Rehabilitate and stabilize organic mats, vegetation and soils that have been disturbed on permafrost terrain as soon as practical.

23.0 CONTAMINATED SOILS AND WATER

Construction activities may involve excavating and handling contaminated soils and/or groundwater. This subsection describes the procedures to be taken if the presence of contaminated soil and/or groundwater is suspected, as well as procedures for notification of the appropriate regulatory authorities.

During planning, background records will be reviewed for locations of known historical leaks and contamination within a 1 km radius of the Project site. Determine if historic leaks have occurred along the

Project footprint and develop a list of known sites and potential sites of concern where contaminated soil and/or groundwater could be encountered.

At locations with known contaminated soils, implement measures outlined in the Phase II Environmental Site Assessment for the Project. Contaminated soils will be remediated during abandonment activities, where warranted.

In the event of a suspected Westcoast pipeline spill (or from an adjacent pipeline), Enbridge's Pipeline Control Centre will be notified at 1-800-858-5253 (24-hours/day), as well as the EI. Westcoast will coordinate actions requiring emergency response.

During construction activities if contaminated soil and/or groundwater is suspected, the following steps must be taken:

- **Identification:** Consider soils contaminated if free product is present, the soil is a notably different colour than the surrounding soil (black, shades of grey, blue, and green), hydrocarbon odours are present, or there is sheen on excavation water. Notify the EI and CM immediately.
- **Assessment:** Westcoast will immediately assess the situation. If oil is visible and a fresh leak is suspected, shut down or remove all equipment from the area. Sampling or other investigation may have to be done to determine the type and extent of contamination.
- **Notification:** After securing the site, the EI will notify the PEL. The CM will notify Enbridge Control Centre Operations as required to determine appropriate operational actions (e.g., shutdown of lines in the area).
- **Unknown Contamination:** If unknown contaminants are encountered, the EI will notify the CM and PEL as soon as practical. Sampling or other investigation may have to be done to determine the type and extent of contamination.
- **Regulatory Notification:** The PEL is responsible for notifying the appropriate regulatory authorities. The PEL will assist with the investigation and disposal of contaminated materials.
- **Continuance of Work:** The CM in consultation with the PEL will determine when conditions are suitable to resume work.

23.1 CONTAMINATED SOIL

If previously unidentified contaminated soils are encountered, the following measures should be implemented:

- **Soil Handling and Storage:** Separate any soil suspected of contamination from productive topsoil and subsoil. Maintain separate storage piles of each soil. Store soils suspected of contamination within a bermed and lined containment cell (polyethylene sheeting or equivalent). All liners must be high density polyethylene sheeting or equivalent. Locate contaminated soil storage piles a minimum of 100 m from any permanent waterbody and in an area that does not have an excessive slope or risk of flooding or as approved by Westcoast. Label and/or install signs at the contaminated stockpiles so the contents (subsoil or topsoil) of each pile can be readily identified.
- **Erosion Control:** Use plastic tarps to cover the storage pile and anchor the tarp on the outside of the berms to protect against water runoff and accumulation during precipitation events.

- **Soil Sampling:** Sample excavation to ensure all potentially contaminated materials are removed. Confirm qualified personnel collect (or arrange to have collected) samples and GPS coordinates of each soil sample and stockpile suspected of contamination.
- **Soil Analysis:** Submit samples of suspected contaminated soils to a Westcoast-approved laboratory. Analytical parameters will be specified by the PEL or designate. Collect and/or analyze samples for any additional parameters as required by the landfill operator. Review the results with the PEL.
- **Disposal:** Identify a local licensed landfill able to receive soils if contamination is confirmed by lab analysis. Dispose of soil that does not meet applicable regulatory criteria at a licensed landfill. Obtain waste acceptance at the proposed disposal facilities for each location anticipated to contain contaminated soil and/or groundwater. Wherever practical, have disposal acceptance for all wastes anticipated during construction in place prior to initiation of the excavation.
- **Delayed Disposal:** If immediate direct haul to a disposal site is not practical, develop procedures for temporary storage of contaminated soils, until hauling is practical.
- **Subsoil:** Backfill the disturbance area with subsoil that meets applicable regulatory criteria. In the event it is necessary to import subsoil, consult with the PEL to determine appropriate procedures.
- **Topsoil Importation:** If topsoil import is necessary, conduct laboratory analyses for contaminants prior to importation (see Section 14.0 – Backfilling and Soil Importation).

23.2 CONTAMINATED WATER

During construction activities, there is potential to encounter hydrocarbons in water or other contaminants that may require special dewatering approaches (e.g., retention of water in tankage).

If upon commencement of construction activities, contaminated soils are encountered, there is potential for petroleum compounds in excavation water that require mitigation. If contaminated water is suspected (i.e., sheen and/or odour), the following measures should be implemented:

- Before discharging potentially contaminated water, contact Westcoast.
- Consider water contaminated if free product is present, the soil under the water is a notably different colour than the surrounding soil (black, shades of grey, blue, and green), hydrocarbon odours are present or there is sheen on excavation water. Notify the EI immediately.
- Collect a sample of the water and send to a laboratory for analysis. Confirm sampling protocols and required laboratory analyses with the PEL. If practical, leave contaminated water in the trench while waiting for the results of the laboratory analysis.

  If necessary, remove the excavation water to an onsite tank with secondary containment that has been approved by the EI or CM. Upon receipt of the laboratory results, mitigative or disposal options will be determined by the PEL.
- If mitigation of contamination is not practical, water will be disposed of at an approved facility. Lab results will be communicated to the disposal facility. Determine the need for a waste manifest prior to hauling.
- Before commencing dewatering activities, ensure appropriate discharge permits and approvals are in place, if required. Contact Westcoast's EI for further information.

- Before dewatering into tankage, any oil (free product) on the water should be completely removed or contained in the excavation. Use sorbent booms or other means to hold the sheen to a portion of the excavation well away from the pump intake hose. Keep the pump intake hose submerged throughout dewatering to prevent the sheen from entering the hose.
- Attempts should be made to minimize the amount of water withdrawn to that required to complete the work.

23.3 DOCUMENTATION

Record of the suspected contamination discovery, sampling, mitigation, reporting and any disposal should be documented in detail within the EI daily reports. Photographs, GPS locations and sample results should also be contained in these reports. The movement of contaminated soil or water must be tracked according to Section 24.0 - Waste Management.

24.0 WASTE MANAGEMENT

Contractors will handle, store, and dispose of all materials and wastes (hazardous and non-hazardous) generated from Project activities, unless otherwise indicated by Westcoast. The Contractor will determine if the materials and wastes associated with the activities classify as hazardous materials and/or wastes in accordance with applicable federal, territorial, and/or provincial regulatory criteria. The Contractor will provide documentation to Westcoast to substantiate findings of the regulatory status of wastes generated and document the disposal. The EI will act as a resource for waste classification, handling, and disposal decision making.

The Contractor will collect all waste materials, including oil or other waste liquids from equipment maintenance, daily in suitable or approved containers (i.e., labelled and meeting any relevant regulatory requirements).

On an as-required basis, remove the containers of waste from the site and properly dispose of them in accordance with applicable regulatory requirements. Throughout the duration of construction, cleanup areas to the satisfaction of Westcoast. Periodic assessments of disposal manifests should be incorporated into environmental inspection activities. No waste is to be left on Westcoast property, along the right--of--way, buried in an excavation, or otherwise disposed of without documented approval.

24.1 HAZARDOUS WASTES

Contractors must ensure that all hazardous waste materials generated are properly identified, collected, stored, and disposed of at an approved facility.

24.2 WASTE TRACKING

Retain and submit to Westcoast disposal records (e.g., manifests, waybills, etc.) for any wastes that are directly disposed of from a Westcoast site. Westcoast projects must also maintain accurate records of all waste information. Wastes that are removed from site to the Contractor’s yard for purposes of bulk disposal will not have such records generated, but their movement must be tracked in daily site reporting by the Contractor and Westcoast Inspection Staff. If an EI is not available to provide required signature for waste manifests, another Westcoast representative may be assigned, such as the CM or designate. Domestic, nonsewage-based waste, such as food waste or construction material containers, do not require such tracking.

25.0 SPILL PREVENTION, CONTAINMENT, AND CONTROL MEASURES

This section describes planning, prevention, and control measures to minimize impacts resulting from spills of fuels, petroleum products, or other regulated substances as a result of construction. The Contractor will implement these measures, unless otherwise indicated by Westcoast.

Westcoast requires its Contractors to implement proper planning and prevention measures to minimize the likelihood of spills, and to quickly and successfully cleanup spills that do occur. This section sets forth minimum standards for handling and storing regulated substances, as well as cleanup of spills. Potential sources of construction-related spills include machinery and equipment failure, fuel handling, and storage tank leaks. The Contractor will be responsible for implementing, at a minimum, the following planning and prevention measures.

25.1 ROLES AND RESPONSIBILITIES

25.1.1 Spill Coordinator

The Contractor will designate a Spill Coordinator, subject to Westcoast approval. For all construction-related spills, the Spill Coordinator will:

- Immediately report all spills to Westcoast Inspection personnel and the EI
- Mobilize onsite personnel, equipment, and materials for containment and/or cleanup of the spill
- Assist emergency response and monitor containment procedures to confirm that the actions are consistent with the requirements of this section
- In consultation with Westcoast and appropriate regulatory authorities, determine if it is necessary to evacuate spill site to safeguard human health
- Document the incident using the Spill Report Form (Appendix C) or equivalent form containing the same information

25.1.2 Environment

Westcoast Environment will monitor the Contractor's compliance with the provisions of this section to verify that the Contractor utilizes the appropriate prevention measures, allocates spill resources, and accomplishes cleanup in accordance with applicable regulatory and Westcoast requirements.

25.2 TRAINING

The Contractor will confirm that all personnel are trained in the handling of fuels and other regulated substances to follow spill prevention procedures (i.e., use of fueling equipment, establishment of watch person if required). All personnel will be trained to effectively contain and cleanup spills that may occur, in accordance with applicable regulations.

25.3 EQUIPMENT

- Maintain appropriate spill response equipment at all worksites. Each construction site/crew will have adequate materials on hand to enable the rapid containment of any spill that may occur. Spill kit materials may include, but are not limited to, absorbent pads and/or booms, absorbent clay, sawdust, floor-drying agents, spill containment barriers, plastic sheeting, skimmer pumps, and holding tanks. The Contractor will locate this equipment near fuel storage areas and other work locations as necessary to be readily available to control foreseeable spills.

- Assess the risk potential for site-specific spills to determine the appropriate type of response equipment to be stored onsite and suitable location for storage.
- Suitable plastic lining materials will be available for placement below and on top of temporarily stored contaminated soils and materials.
- All fueling and service vehicles will carry spill prevention, containment and cleanup materials that are suitable for the volume of fuels or oils carried. Such material may include, but not be limited to, absorbent pads, sorbent boom, rope, commercial absorbent material, heavy plastic bags with ties, and shovels.
- The Spill Coordinator will inform all Contractor personnel and the EI of the locations of spill control equipment and materials and have them readily accessible during construction activity.
- All mechanical fuel nozzles will include functional automatic shut-offs to prevent overfilling and will not be left unattended during fueling.
- Fuel trucks transporting fuel to onsite construction equipment will travel only on approved access routes.

25.4 SUPERVISION AND INSPECTION

Perform pre-construction inspection and testing of all equipment to confirm that it is in good repair. During construction, regularly inspect hoses, pipes, valves, and tanks to confirm equipment is free of leaks. Remove from service any equipment found to be leaking or in need of service and repair prior to resuming work.

25.5 STORAGE AND HANDLING OF FUELS/HAZARDOUS LIQUIDS

25.5.1 Fuel Storage - General

The Contractor will follow proper fuel storage practices, including, but not limited to the following:

- Bulk fuel storage will be at Contractor yards only (unless Westcoast approves otherwise in advance). Fuel tanks, containers and stationary equipment will not be stored within the normal high-water mark of a watercourse or wetland, unless otherwise indicated in regulatory authorizations.
- Install signage at fuel storage areas to include “Fuel Storage Area – No smoking within 15 m.”
- Keep tools and materials nearby to stop the flow in the event of a leak. Such equipment may include, but is not limited to, plugs of various sizes, tank patches, a hammer, assorted sizes of metal screws with rubber washers, screwdriver(s), and plastic tape.
- Store fuels, lubricants, waste oil, and any other regulated substances in aboveground tanks only.
- Storage tanks and containers will conform to all applicable industry codes.
- Utilize a secondary containment structure at each fuel storage site providing a minimum containment volume equal to 150 percent of the volume of the largest storage vessel. This includes any stationary or portable equipment that contains fuel (i.e., portable pumps, generators).
- Appropriate spill kits will be kept readily available at fuel or hazardous materials storage locations, as well as refueling and maintenance sites.

- Secondary containment areas will not have drains. If visual inspection indicates that no spillage has occurred in the secondary containment structure, the Contractor may discharge accumulated water in accordance with Section 19.0 – Construction Dewatering. If spillage occurred in the structure, the Contractor will collect and dispose and/or recycle at a licensed facility.
- If fuel tank is double-walled, tertiary containment must still be provided.

25.5.2 Refueling

Contractor will make reasonable efforts to dispense fuel only during daylight hours. Construction personnel will monitor fuel dispensing operations at all times. Personnel must monitor at both ends of the hose during fueling, unless both are visible and readily accessible by one person.

25.5.3 Refueling, Maintenance, and Fuel Storage near Wetlands and Waterbodies

Westcoast requires that the storage of petroleum products, refueling, maintenance, and lubricating operations take place in upland areas that are more than 30 m from wetlands, streams, waterbodies (including drainage ditches) and provide secondary containment, unless otherwise indicated in regulatory authorizations. In addition, the Contractor will store hazardous materials, chemicals, fuel, and lubricating oils outside these areas.

In certain instances, refueling, or fuel storage may be unavoidable due to site-specific conditions or unique construction requirements (e.g., continuously operating pumps or equipment on barges). An EI must approve these locations and fueling plans in advance.

Site-specific precautions, in addition to the practices described above, will be implemented when refueling or maintenance activities are required within 100 m of streams, wetlands, or other waterbodies. These precautions include, but are not limited to:

- All containers, hoses, and nozzles are to be free of leaks.
- All fuel nozzles are equipped with automatic shut-offs.
- Operators are stationed at both ends of the hose during refueling unless the ends are visible and readily accessible by one operator.
- Fuel remaining in the hose is returned to the storage container.
- The EI has been consulted prior to equipment being fueled or serviced within the OHWM/OHWL of a waterbody to confirm appropriate mitigation has been utilized.
- Keeping adequate amounts of absorbent materials and containment booms on hand to enable the rapid cleanup of any spill that may occur.
- Using secondary containment for fuel storage and refueling of continuously operating pumps.
- Secondary containment structures will provide a containment volume of at least 150 percent of the storage vessel and allow for at least 30 cm of freeboard.
- Providing adequate lighting for these locations and activities.

25.5.4 Overnight Parking

Equipment parked overnight at the work site must be equipped with adequate secondary containment beneath areas prone to leakage of fuel and oils (i.e., driptray beneath excavator).

Westcoast does not allow overnight parking of equipment (including, but not limited to, light plants, generators, pumps, and machinery) within 30 m of a wetland or waterbody unless the Contractor implements special containment and has prior approval from the EI.

25.6 INITIAL SPILL MANAGEMENT

25.6.1 Immediate Response

Immediately upon learning of any fuel, oil, hazardous material or other regulated substance spill, or upon learning of conditions that will lead to an imminent spill, the person discovering the situation will report to the Spill Coordinator and the EI, who will confirm that:

- Action to contain the fluid that has spilled or is about to spill are taken, and the source of the spill eliminated to the extent safely practical.
- Action is taken to control danger to human life and the environment.
- Westcoast PEL is notified.
- Resources are available to contain and clean up the spill.

In the event of a suspected Westcoast pipeline spill (or from an adjacent pipeline), Enbridge's Pipeline Control Centre will be notified at 1-800-858-5253 (24-hours/day), as well as the EI. Westcoast will coordinate actions requiring emergency response.

25.7 SPILL NOTIFICATION RESPONSIBILITIES

25.7.1 Notification Volumes

The Contractor will notify the EI immediately of any spill of a petroleum product or hazardous liquid, regardless of volume.

25.7.2 Spill Report Form

The Contractor or Spill Coordinator will complete a Spill Report Form (Appendix C) or equivalent document for each release of a regulated substance, regardless of volume within 24 hours of the occurrence. Westcoast may also require the Contractor to provide follow-up written reports or other documentation separately on a site-specific basis as directed by the EI.

25.7.3 Agency Notification

The PEL will report applicable spills to appropriate federal, provincial, territorial, and local agencies, as required.

All reportable spills, including both provincially and federally regulated pipelines and associated facilities need to be reported to the applicable regulator included in the emergency contacts (Appendix D6).

25.8 SPILL CONTAINMENT AND CLEANUP

In the event of a spill, the Contractor will abide by all applicable federal, provincial, territorial, and local regulations. Specific cleanup measures for both upland and wetland/waterbody spills are described below.

25.8.1 Spill Control – Upland Areas

- Assess the safety hazards of the situation.
- If a spill should occur during refueling or other operations, immediately **STOP** the operation.
- The Contractor will identify and contain the source of the spill immediately.
- Following the initial response of a spill of a hazardous material, verify the following containment procedures are carried out:
  - Identify the product, stop the source, and physically contain the spill as soon as it is safe to do so.
  - Avoid use of water or fire extinguishing chemicals on non-petroleum product spills since many chemicals react violently with water and chemical extinguishing agents may release toxic fumes. In addition, chemicals may be soluble in water and dispersal makes containment and cleanup more difficult.
  - Prohibit traffic on contaminated soils, except where required for containment and cleanup.
  - Use natural depressions or berms constructed with materials and equipment in proximity to the site to physically contain a spill on land.
  - Immediately notify the EI of the incident.
- For large spills on land, contain and pump immediately into tank trucks.
- Place absorbent material(s) over spills to minimize spreading and to reduce its penetration into the soil.
- The Spill Coordinator, in consultation with the EI, will determine if spill sites require evacuation to safeguard human health. Evacuation parameters will include consideration for the potential of fire, explosion, and hazardous gases.
- The Contractor will treat and/or dispose of the spilled material, spent absorbent materials, and contaminated soil at an approved facility in accordance with EI guidance, and all applicable federal, provincial, territorial, and local agency requirements (Section 24.0 – Waste Management).
- Any spot spills of fuels or hazardous materials are to be immediately reported to the EI. Suspend construction activity and travel in the immediate vicinity of a spot spill until the CM or EI grants permission to resume activity.

25.8.2 Spill Control – Wetlands and Waterbodies

In addition to the above measures, the following conditions apply if a spill occurs near or into a wetland or waterbody, regardless of size:

- If a spill occurs during refueling or other operations, immediately **STOP** the operation and notify the EI or CM of the incident.
- The Contractor will use absorbent booms, skimmers, sorbents, or other materials and equipment to contain and recover released materials in standing water.
- Implement any additional cleanup measures resulting from consultation with the appropriate regulatory authority and Westcoast representatives.

26.0 FIRE PREVENTION AND CONTROL

Construction has the potential to cause fires through activities such as hot work, vehicle, and equipment operation, and use of flammable materials.

Review regional fire prevention, control and reporting requirements prior to construction. Review Project-specific safety or response plans for fire prevention and control, if available. Designate an appropriately trained emergency contact to be responsible for coordinating initial response to a fire as well as directing any necessary fire suppression activities. All Project vehicles will be equipped with firefighting equipment in accordance with applicable regulations.

- **Equipment:** Ensure that exhaust and engine systems of equipment are in good working condition and inspect undercarriages periodically to confirm that grasses do not accumulate. Do not leave vehicles idling for extended periods of time.
  - All activity inspectors and Contractors' vehicles will carry firefighting equipment in accordance with the applicable regulations. In addition, all motorized equipment must carry a fully charged fire extinguisher. The Fire Boss will confirm that fire extinguishers are present and fully charged.
  - The Fire Boss will ensure that the belly pans of crawler tractors are periodically removed and cleaned.
- **Pre-mow:** Mow the construction footprint prior to construction if the fire hazard is high to reduce potential ignition sources. Mow at appropriate times (i.e., early morning or late evening) when relative humidity is high and the temperature is cool. A water truck or vehicle with appropriate firefighting equipment will accompany the mower. In areas where mowing over rocky terrain could increase the risk of fire, use a nonmetallic roller or equivalent to flatten down rather than mow grasses.
- **Water:** Maintain a water truck on the construction footprint when the fire hazard is high or extreme and weather conditions allow. Topsoil salvage, welding, and coating operations may each need a water truck and delivery system.
- **Prevention:** Prohibit vehicles from parking on tall grass or stubble when the fire hazard is rated high or extreme. Place an appropriate nonflammable barrier between unsalvaged land and work area directly affected by welding operations.
- **Waste Disposal:** Confirm that personnel are made aware of proper disposal methods for welding rods, cigarette butts and other hot or burning material.
- **Smoking:** Smoke only in designated smoking areas that are posted and approved by Westcoast. Keep designated smoking areas clean and equipped with a proper waste container and fire extinguisher. Do not discard cigarettes on the ground.

In the event of a fire the following measures are recommended:

- **Fire:** Follow the measures identified within the site Emergency Response Plan.
- **Suppression:** Commence fire suppression measures immediately upon detection of fire if conditions allow personnel to safely proceed.

- Alert: Report location of fire, as well as its size and the wind direction, to the designated emergency contact. Deploy firefighting equipment and crew to clear or plow fire breaks or extinguish the fire directly, if practical and safe to do so. The emergency contact will be responsible for immediately notifying the local fire department and applicable Forest Fire Reporting Centres. All equipment and personnel adequately fit and trained must be made available to control the fire. The emergency contact will report wildfires and relevant information to the EI and CM (or designate).

  The CM or EI will immediately report accidental fires to the appropriate regulatory authorities, the PEL, and the Westcoast Lands/Safety representatives.
- **Flammables:** Promptly move material, particularly explosive or flammable materials, vehicles, etc., to a safe location whenever there is a possibility of being endangered by fire.
- **Monitoring:** The designated emergency contact or a suitably trained alternate will confirm all burning areas are extinguished and will monitor burn area for smoldering material.

27.0 INCIDENT REPORTING

An environmental incident is defined as any Project-related event that causes or has the potential to cause an adverse environmental effect or that results in an environmental non-compliance. Examples include:

- clearing vegetation outside of permitted areas;
- wildlife impacts;
- sedimentation into a watercourse or wetland;
- impact to historical resources (e.g., archaeological);
- soil admixing and erosion, including sedimentation on topsoil;
- proceeding with work without appropriate notification or approvals from regulatory agencies;
- non-compliance with environmental regulatory requirements, permit conditions, Project-specific EPPs, or commitments communicated to an external stakeholder or regulator; or
- inadvertent leaks and fluid spills of petroleum hydrocarbons or other hazardous materials.
- In the event of an environmental incident, work shall stop immediately, and the appropriate measures taken to mitigate further potential impacts.

27.1 INCIDENT REPORTING

All environmental incidents must be reported immediately to the EI and the CM. The EI will inform the PEL to initiate proper documentation, investigation and corrective action implementation.

Spill reporting requirements are outlined in the Section 25.0 – Spill Prevention, Containment and Control Measures. The occurrence of a reportable spill triggers time-sensitive requirements to report to federal, provincial, territorial, or local environmental regulatory agencies. Following incidents, the PEL will make required notifications to environmental regulatory authorities, where warranted.

27.2 INCIDENT INVESTIGATION AND CLASSIFICATION

To understand the causes and to facilitate the implementation of corrective actions to minimize the potential for future similar incidents, investigations of leaks, spills and environmental incidents will be

conducted in accordance with Westcoast compliance requirements. Incidents will be classified in accordance with Company procedures and guidelines.

27.3 ENVIRONMENTAL OBSERVATION/NEAR MISS PROGRAM AND REPORTING

In the interest of preventing future incidents, a no-fault reporting process exists for Environmental Observations/Near Misses. These are defined as any event or activity that has the potential to create an environmental non-compliance (a violation of applicable environmental regulations, approvals, commitments, or Westcoast environmental requirements).

The information reported can aid in identifying trends for improvement or training that may otherwise not be evident to the PEL. Westcoast encourages pro-active reporting of these situations to the EI, who will record and submit them in the form located in Appendix B.

28.0 REFERENCES

Badry, M. 2004. Fisher – Martes pennanti. in: Accounts and Measures for Managing Identified Wildlife –Accounts V. 2002. 18 pp.

BC Ministry of Forests, Lands and Natural Resource Operations (BC MFLNRO). 2014. North Area. A Compendium of Wildlife Guidelines for Industrial Development Projects in the North Area, British Columbia. https://a100.gov.bc.ca/pub/eirs/finishDownloadDocument.do?subdocumentId=9921

British Columbia Ministry of Forests, Lands and Natural Resource Operations (BC MFLNRO). 2016. Terms and Conditions for Water Sustainability Act Changes In and About a Stream as specified by FLNRO Habitat Officers, Northeast Region. Accessed July 2023. https://www2.gov.bc.ca/gov/content/environment/air-land-water/water/water-licensing-rights/working-around-water/regional-terms-conditions-timing-windows.

British Columbia Oil and Gas Commission (BC OGC). 2021. Environmental Protection and Management Guideline. Version 2.9: December 2021. Accessed July 2023. https://www.bc-er.ca/files/operations-documentation/Environmental-Management/Environmental-Protection-and-Management-Guideline.pdf.

Canada Energy Regulator (CER). 2020. Filing Manual. Inclusive of Release 2023-04 (August 2020). Accessed July 2023. https://www.cer-rec.gc.ca/en/applications-hearings/submit-applications-documents/filing-manuals/filing-manual/index.html.

Canadian Association of Petroleum Producers (CAPP), Canadian Energy Pipeline Association and Canadian Gas Association. 2005. Pipeline Associated Watercourse Crossings 3rd Edition. Prepared by TERA Environmental Consultants, Salmo Consulting Inc. and Applied Aquatic Research Ltd. Calgary, Alberta. 202 pp.

Conference of Management Authorities. 2019. Recovery Strategy for Wood Bison (*Bison bison athabascae*) in the Northwest Territories. Conference of Management Authorities, Yellowknife, Nt. https://www.nwtspeciesatrisk.ca/sites/enr-species-at-risk/files/wood_bison_recovery_strategy_final_formatted_jul1619.pdf

Copeland, J.P., K.S. McKelvey, K.B. Aubry, A. Landa, J. Persson, R.M. Inman, J. Krebs, E. Lofroth, H. Golden, J.R. Squires, A. Magoun, M.K. Schwartz, J. Wilmot, C.L. Copeland, R.E. Yates, I. Kojola, and R. May. 2010. "The bioclimatic envelope of the wolverine (Gulo gulo): do climatic constraints limit its geographic distribution?" Canadian Journal of Zoology. 88: 233–246.

Enbridge Pipelines Inc. (Enbridge). 2020a. Environmental Guidelines for Construction. Prepared by Enbridge Pipelines Inc.

Enbridge Pipelines Inc. (Enbridge). 2023. Gas Transmission and Liquid Pipelines Engineering Projects April 2023. Prepared by Enbridge Liquid Pipelines.

Fisheries and Oceans Canada (DFO). 2014. Freshwater Timing Windows Identified for the Yukon. Accessed July 2023. https://www.dfo-mpo.gc.ca/pnw-ppe/timing-periodes/yk-eng.html.

Fisheries and Oceans Canada (DFO). 2020a. Interim code of practice: End-of-pipe fish protection screens for small water intakes in freshwater. Accessed July 2023. https://www.dfo-mpo.gc.ca/pnw-ppe/codes/screen-ecran-eng.html.

Fisheries and Oceans Canada (DFO). 2020b. Interim code of practice: temporary stream crossings. Accessed July 2023. https://www.dfo-mpo.gc.ca/pnw-ppe/codes/temporary-crossings-traversees-temporaires-eng.html.

Fisheries and Oceans Canada (DFO). 2021. End-of-Pipe Screen Size Tool. Accessed July 2023. http://fishprotectiontools.ca/basicendofpipe/.

Government of British Columbia (Government of BC). 2023a. Habitat Wizard. Accessed July 2023. https://www2.gov.bc.ca/gov/content/environment/plants-animals-ecosystems/ecosystems/habitatwizard.

Government of British Columbia (Government of BC). 2023b. EcoCat Ecological Reports Catalogue. Accessed July 2023.

Government of British Columbia (Government of BC). 2023c. Fisheries Inventory Data Queries. Accessed July 2023. Fisheries Inventory Data Queries (FIDQ) - Province of British Columbia (gov.bc.ca)

Government of the Northwest Territories (GNWT). 2012. Important Wildlife Areas in the Western Northwest Territories. Available: https://www.gov.nt.ca/ecc/sites/ecc/files/221_public_no_appendix_c.pdf

Government of the Northwest Territories (GNWT). 2019. Nahanni Bison Management Plan. Available https://www.gov.nt.ca/ecc/sites/ecc/files/resources/153_file.pdf

Government of the Northwest Territories (GNWT). 2020. Statutory Requirements for Wildlife in the NWT. September 2020.

https://www.gov.nt.ca/ecc/sites/ecc/files/resources/statutory_requirements_for_wildlife_in_the_nwt_september_2020.pdf

Government of the Northwest Territories (GNWT). 2022. Draft Guidelines for Exploration and Development Projects in Boreal Caribou Habitat. Available https://www.gov.nt.ca/ecc/sites/ecc/files/resources/nwt_caribou_guidelines_bilingual_feb24_final_2_2_0.pdf

Government of Yukon. 2002. Wildlife Act, c. 229. Revised statutes of the Yukon 2002. Accessed July 2023. Available: https://laws.yukon.ca/cms/images/LEGISLATION/acts/wildlife.pdf

Government of Yukon. 2010. Flying in Caribou County, How to minimize disturbance from aircraft. MPERG Report 2008-1. https://yukon.ca/sites/yukon.ca/files/env/env-flying-caribou-country.pdf.

Government of Yukon. 2021. Northwest Territories Summary of Hunting and Trapping Regulations. July 1, 2021 to June 30, 2022. Available: https://www.gov.nt.ca/ecc/sites/ecc/files/resources/enr_hunting_and_trapping_summary-en-web.pdf

Inman, R.M., A.J. Magoun, J. Persson, and J. Mattisson. 2012. "The wolverine's niche: linking reproductive chronology, caching, competition, and climate." Journal of Mammalogy. 93(3):634–644.

Mackenzie, W. H. and J. R. Moran. 2004. Wetlands of British Columbia: A Guide to Identification. Land Management Handbook 52. British Columbia Ministry of Forests.

Magoun, A. J., and J. P. Copeland. 1998. "Characteristics of wolverine reproductive den sites." Journal of Wildlife Management. 62:1313–1320.

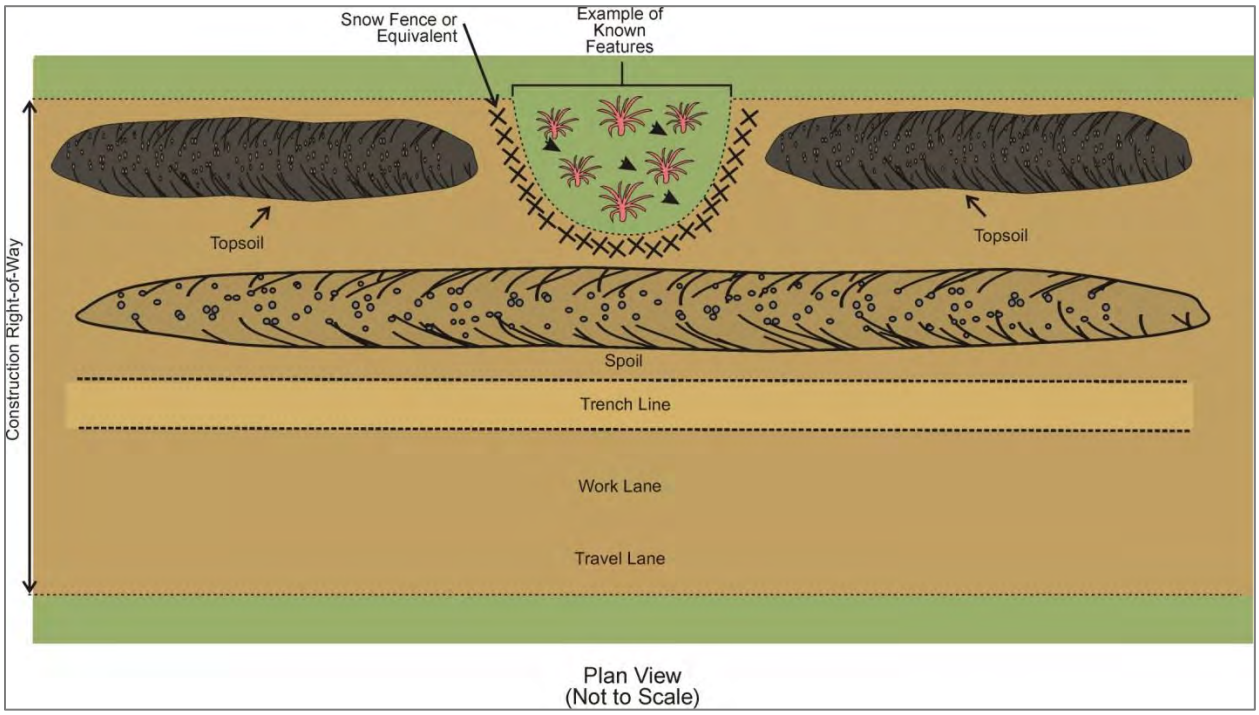
McLeod C.L. and J. P. O'Neil. 1983. Major range extensions of anadromous salmonids and first record of chinook salmon in the Mackenzie River drainage. R.L.&L Environmental Services Ltd. Edmonton, Alberta. 2 pp.

McPhail, J. D. 2007. The Freshwater Fishes of British Columbia. Edmonton, Alberta: The University of Alberta Press, Ring House 2, p. 392-397.

National Wetland Working Group (NWWG). 1997. The Canadian Wetland Classification System. B. G. Warner and C. D. A. Rubec, eds. Waterloo, Ontario: Wetlands Research Centre, University of Waterloo.

Figures

Figure 2
Narrow Down Fencing



Representation Only

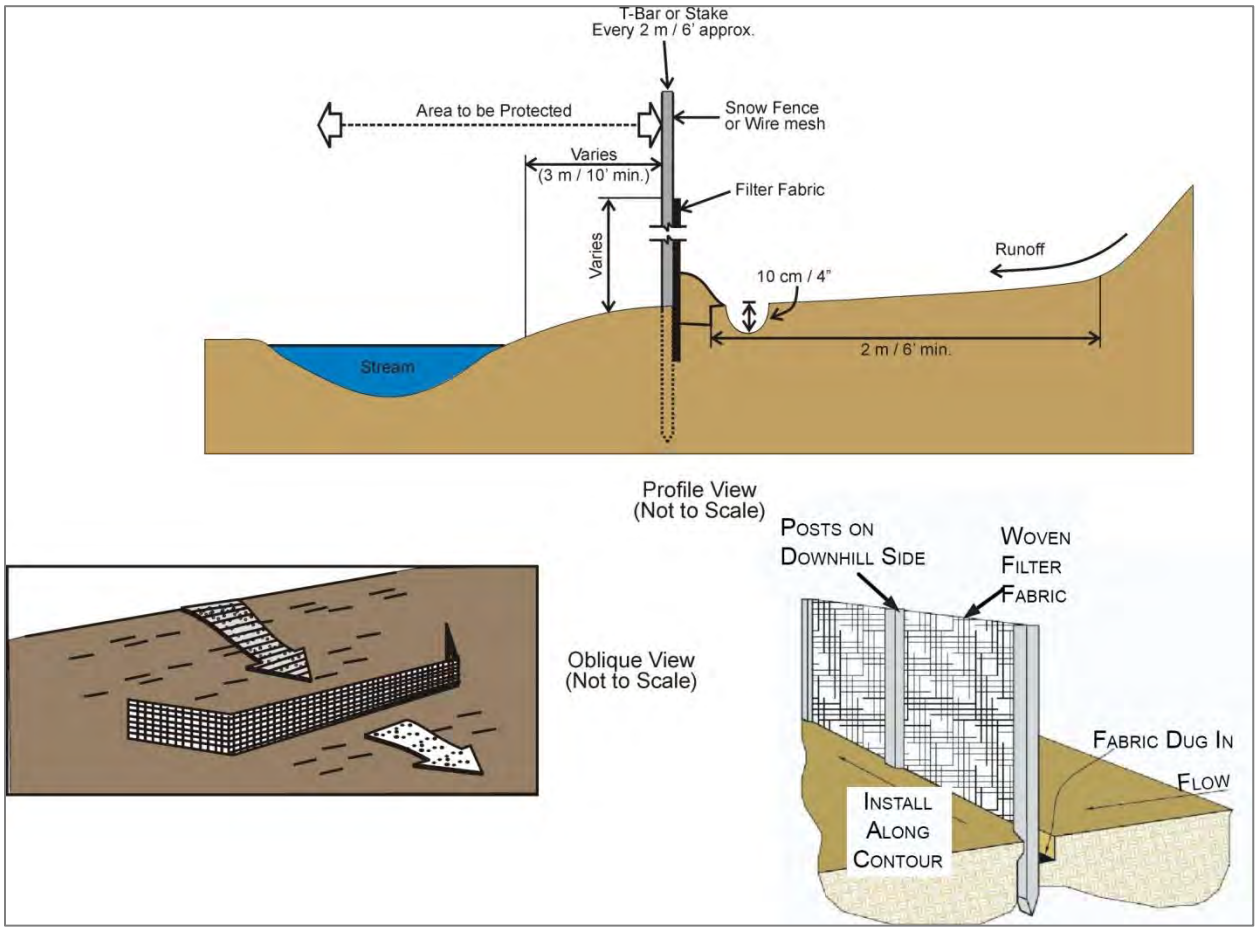
Criteria for Implementation:

The width of the construction right-of-way will be narrowed to avoid site-specific features such as archaeological sites, rare plants, sensitive ecological communities and site-specific wildlife habitat. The specific features will be fenced or otherwise protected throughout the duration of construction.

Notes:

1. Identify and stake or flag the boundaries of the feature to be protected prior to commencement of surveying activities where it encroaches on the construction right-of-way. The Environmental Inspector will ensure the specific feature is flagged with the appropriate colour of flagging for the resource to be protected.
2. Clearly post signs prohibiting workers or equipment from entering the fenced area.
3. Where narrowing on the work side or spoil side is sufficient to protect the feature, minimize the workspace to as narrow an area as safely practical.
4. Where further narrowing is necessary, develop site-specific plans to complete construction through the area while protecting the feature.
5. Maintain fencing and barriers until all construction and reclamation activities are completed.

Figure 3
Installing Silt Fence

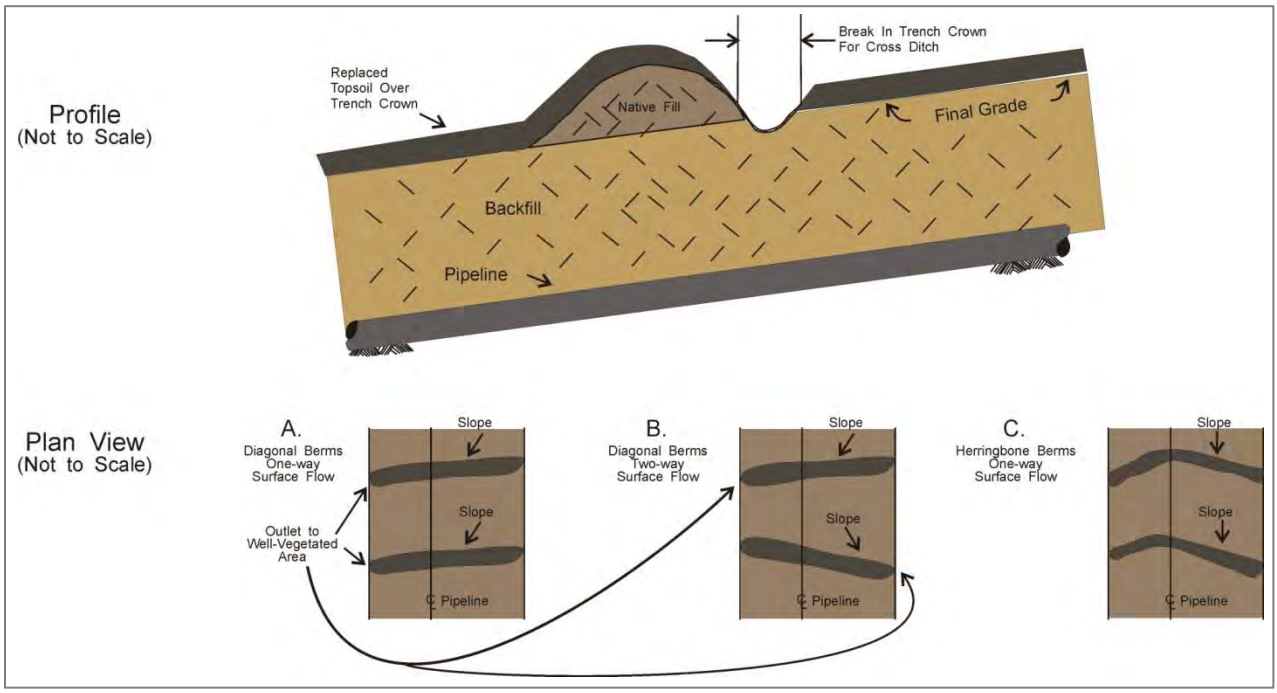


Representation Only

Notes:

1. Watercourses that have moderate to high sensitivity of fish habitat and/or have steep approach slopes at the proposed crossings may need silt fences during construction, as determined by the Environmental Inspector.
2. Install silt fences at the base of approach slopes to watercourses following clearing and grading using the method and materials above or other approved designs.
3. Ensure silt fence is keyed into the substrate. Excavate a narrow trench, place the base of the silt fence in the trench and place the fill back into the trench, securing the silt fence in place.
4. Place silt fences a minimum 2 m (6 feet), if practical, from the toe of the slope in order to increase ponding volume.
5. Inspect temporary erosion control structures on a daily basis and repair, if warranted, before the end of each working day. Remove silt/debris accumulation on regular basis.
6. Maintain silt fences in place at the base of the approach slopes until revegetation of the right-of-way is complete.
7. In areas with frequent traffic, install two or more silt fences in a staggered and overlapped configuration to allow vehicle passage without removal or opening of the silt fence.
8. Install silt fences, where warranted, to eliminate the flow of sediment from clean spoil piles and disturbed areas into nearby wetlands. Inspect and maintain silt fences as per point 5 above.
9. Remove any sediment barriers around wetlands that remain after the disturbed area is revegetated and the area is stable.

Figure 4
Cross Ditches and Berms



Representation Only

Notes:

Install diversion berm(s) and cross ditch(es) on moderate to steep slopes on tame pasture, bush, bush-pasture, native prairie and forested lands in order to prevent run-off along the construction right-of-way and possible subsequent erosion. Install berms immediately downslope of trench breakers to collect seepage forced to the surface.

Skew berm across the right-of-way at downhill gradient of 5-10%.

Construct berms of subsoil capped with topsoil where grading has occurred or extensive disturbance to the sod layer has occurred. Diversion berms can also be constructed of approved timbers, imported logs or sandbags where disturbance of the sod layer is limited. Avoid use of organic material. Where native material is highly erodible, protect upslope of berm and base of cross ditch by burying a geotextile liner 16-20 cm (6-8 inches) below the surface or armour upslope face of berm with earth-filled sand bags, clean granular material, or coir matting, etc.

Typical diversion berm height and widths are approximately 0.75 m (2.5 feet). The Environmental Inspector shall inspect berms after heavy rains and the first spring following construction; replace or restore berms, if warranted.

Leave a break in trench crown immediately upslope of diagonal berm and cross ditch to allow passage of water across the right-of-way.

Use diagonal berms and cross ditch where direction of slope and surface water movement is oblique to pipeline right-of-way.

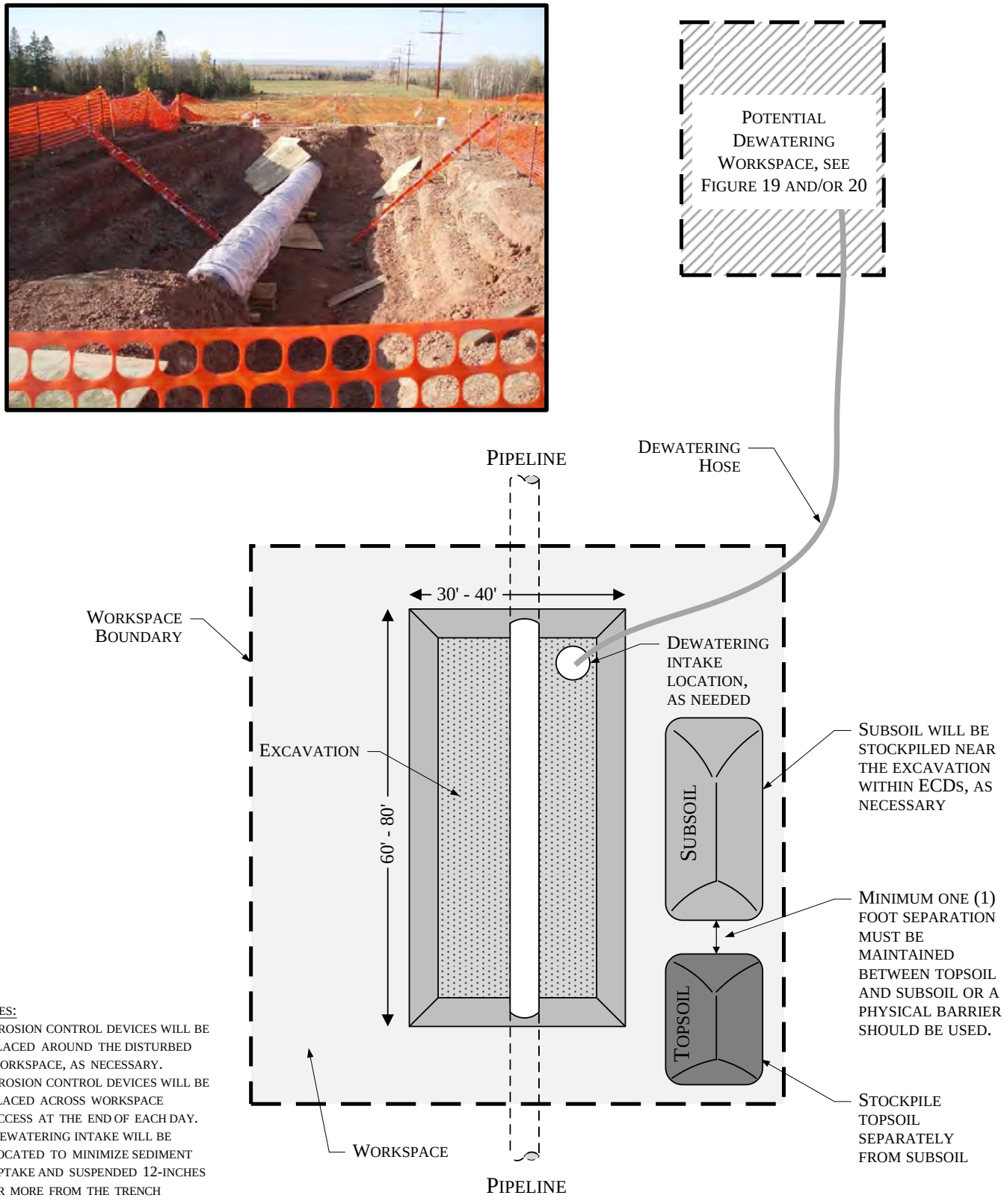
Use herringbone berm and cross ditch where direction of slope and surface water movement is parallel to right-of-way so runoff does not cross ditchline.

Determine location and direction of berm based on local topography and drainage patterns.

Typical diversion berm spacing is indicated on the following page.

Slope Gradient (º ;%)	Typical Spacing (m) Erosion Hazard*			Typical Spacing (feet) Erosion Hazard*		
	High	**Medium**	**Low**	**High**	**Medium**	**Low**
<7; <12	30-45	45-60	60 or more	100-150	150-200	200 or more
7; 12	25	38	51	80	120	160
8; 14	22	33	44	70	105	140
9; 16	19	29	38	60	90	120
11; 19	16	24	32	50	75	100
14; 25	12	18	24	40	60	75
18; 33	9	14	18	30	45	60
27; 51	6	9	12	20	30	40

* High = fine sand silts; medium = clays and coarse sands; low = rock or gravel.



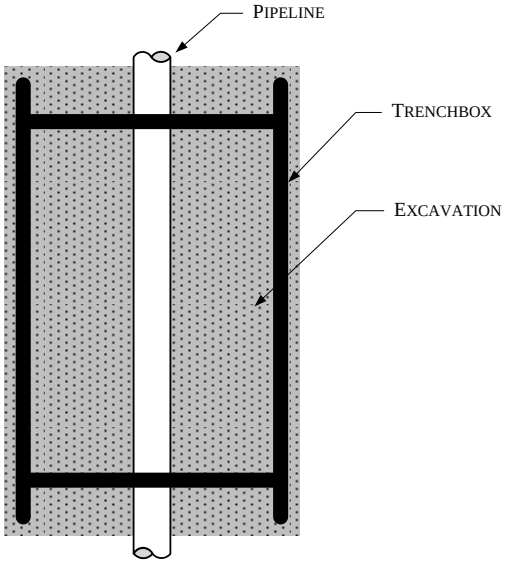
NOTES:
1. EROSION CONTROL DEVICES WILL BE PLACED AROUND THE DISTURBED WORKSPACE, AS NECESSARY.
2. EROSION CONTROL DEVICES WILL BE PLACED ACROSS WORKSPACE ACCESS AT THE END OF EACH DAY.
3. DEWATERING INTAKE WILL BE LOCATED TO MINIMIZE SEDIMENT UPTAKE AND SUSPENDED 12-INCHES OR MORE FROM THE TRENCH BOTTOM.

ENBRIDGE

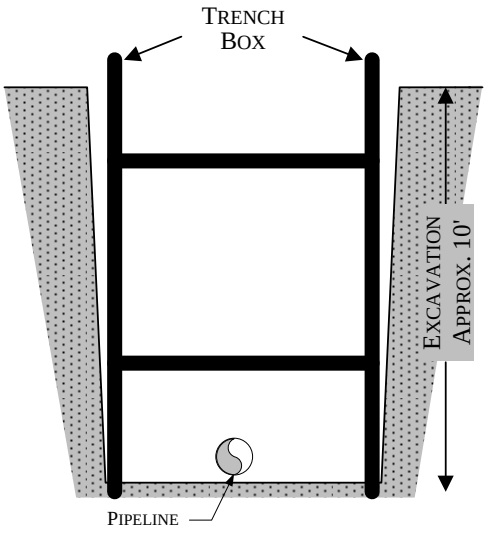
Figure 5
Environmental Protection Plan
Typical Maintenance Excavation
Plan View

Scale: NTS
Date: 3/10/2017
Revised: 4/27/2017
Location: M:\Department Tasks\EPP Figures wBorders\LP ENG EPP Figures\

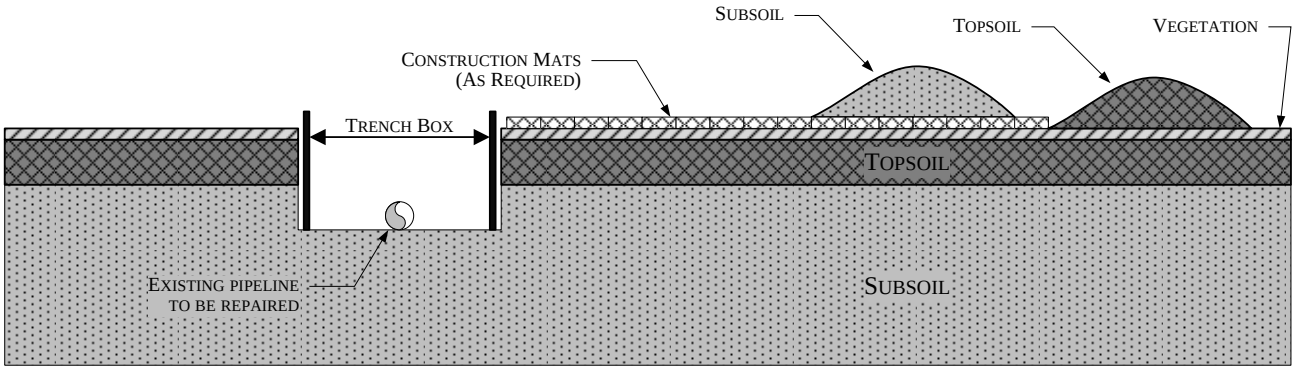
NOTE: TRENCH BOXES CONSIST OF TWO STEEL PLATES THAT HOLD UP THE SIDES OF AN EXCAVATION.
THE PLATES ARE HELD IN PLACE BY STEEL BRACES.



PLAN: TRENCH BOX



PROFILE: TRENCH BOX



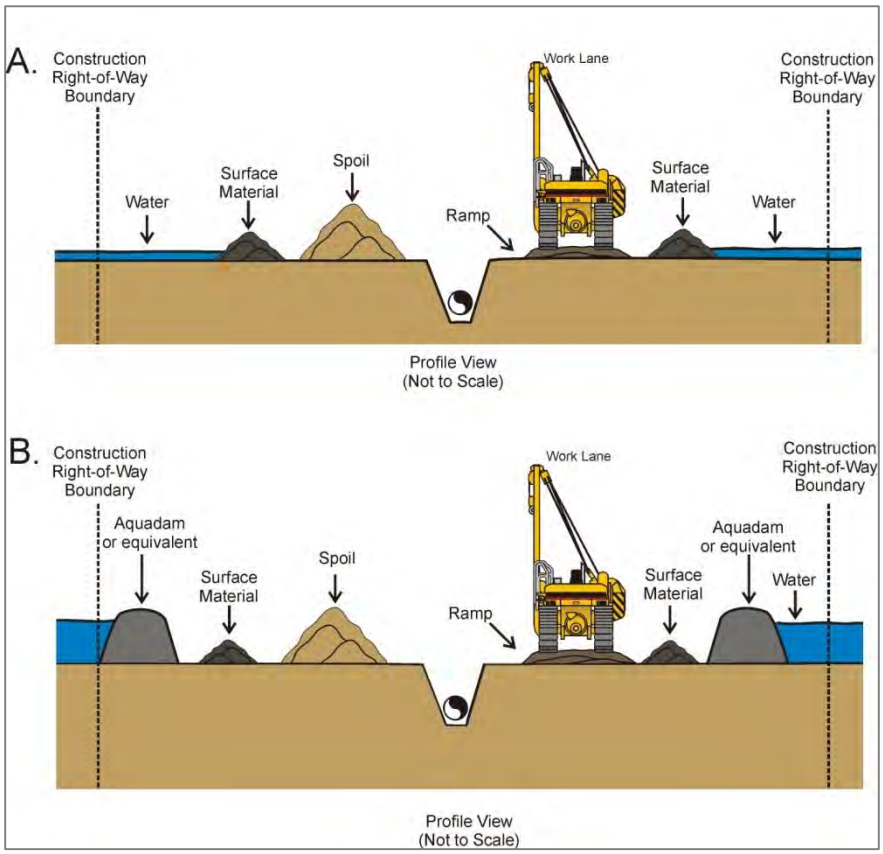
PROFILE: TRENCH BOX

ENBRIDGE

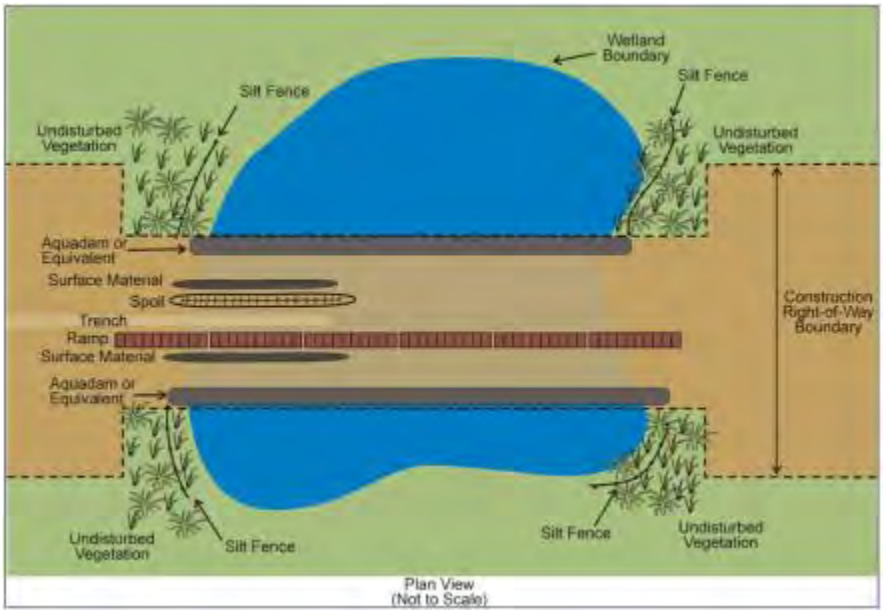
FIGURE 6
ENVIRONMENTAL PROTECTION PLAN
TYPICAL TRENCH BOX

Scale: NTS
Date: 3/10/2017
Revised: 4/27/2017
Location: M:\Department Tasks\EPP Figures wBorders\LP ENG EPP Figures\

Figure 7
Wetland Crossing - General



Representation Only

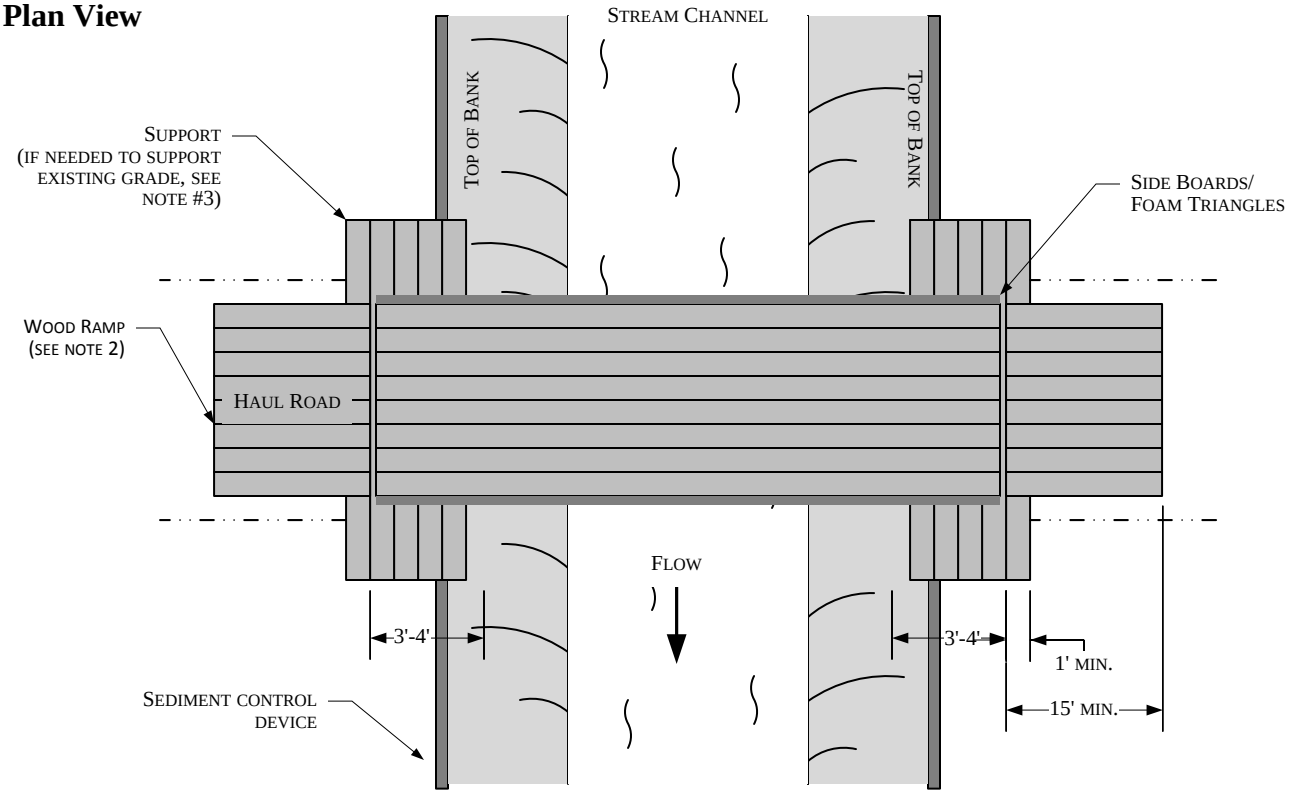


Representation Only

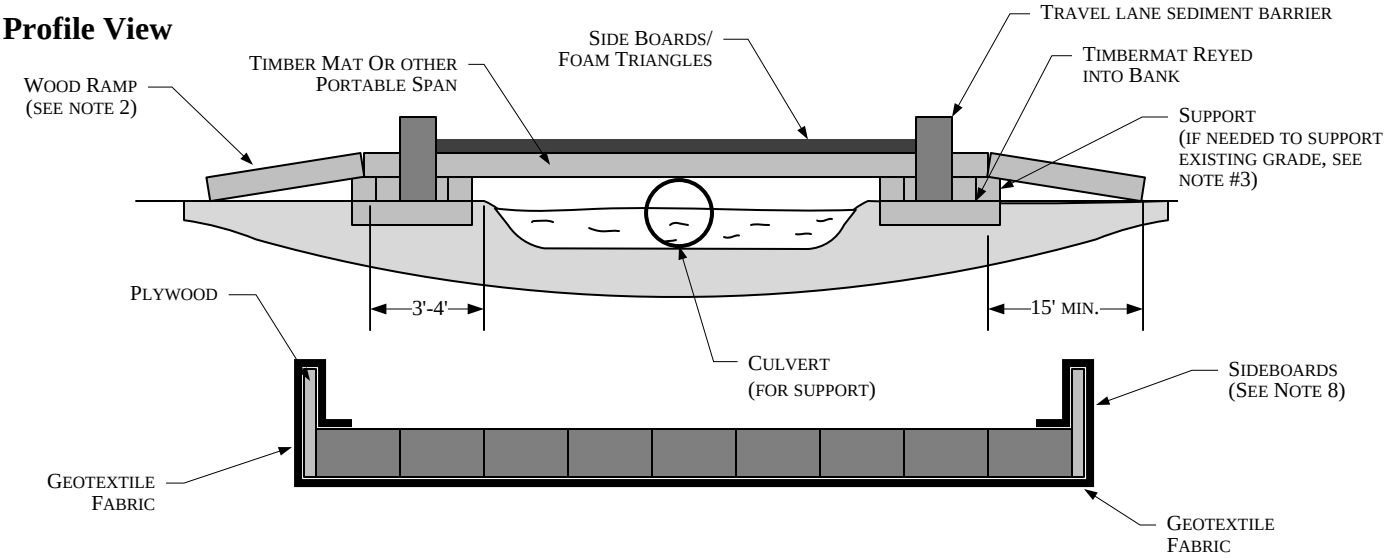
Notes:

1. **Test Holes**: Excavate test holes on the trench line to determine mineral soil/organic content and water table depth that could influence trench stability and water management needs.
2. **Workspace**: Locate workspace areas a minimum 10 m (50 feet in the United States) from wetland boundaries except where adjacent upland consists of actively cultivated land or other disturbed land. Ensure landowner and/or regulatory approvals are in place for all additional work areas prior to use.
3. **Access**: Utilize shoo-flies in upland areas for access, where practical. Where shoo-flies in upland areas do not provide reasonable access, consider ramping options to support work side traffic and pipeline installation.
4. **Equipment**: Use wide pad, low-ground-pressure equipment or have standard equipment work off mats (see Plan View) to install or create containment berms/barriers. Avoid rutting and admixing of wetland with appropriate ramping options such as mats (timber or swamp mats) or geotextile and spoil ramps.
5. **Clearing / Grading**: Restrict vegetation removal only to that area necessary for pipeline construction. Utilize appropriate machinery (i.e., wide pad machines) and swamp mats or equivalent. Review and adhere to the clearing and grading measures presented in Sections 4.3 and 4.5, respectively.
6. **Surface Materials**: Review and adhere to the surface material salvage measures presented in Section 4.11 – Wetland Crossings.
7. **Isolation**: If deep water is encountered, salvaged surface material and trench spoil may be used as a containment berm/barrier (see A.). Consider using spoil material from the trench line as a containment barrier where salvaged surface material is not able to support a berm/barrier. Alternate dam devices such as an aquadam or meter bags are other options (see B.). Pump excess water from work area and trench to opposite side of berm or work ramp.
8. **Dewatering**: Do not dewater any wetland. If the trench requires dewatering prior to lowering-in, pump water into stable and well-vegetated areas. Monitor discharge areas and change discharge location if adequate natural filtration is no longer practical and sedimentation occurs.
9. **Trench Plugs**: Ensure trench does not provide drainage conduit into or out of wetland during or after construction. Install trench plugs where warranted or monitor hard plugs.
10. **Trench Breakers**: Install trench breakers, where warranted, at the edge of wetlands to prevent the pipe trench from acting as a drain and to prevent unconsolidated organic soils from sloughing into the channel.
11. **Buoyancy**: If warranted, weight pipe as per engineering plans prior to installation.
12. **Backfill**: Backfill and do not leave a trench crown during clean-up of mineral wetlands. Leave a low trench crown during clean-up of peatlands to allow for settlement of backfill. Leave breaks in trench crown at obvious drainages.
13. **Restoration**: Restore surface hydrology patterns within the construction right-of-way as close to preconstruction contours as practical during reclamation. Regrade areas with vehicle ruts, erosion gullies or where the trench has settled.
14. **Restoration**: Do not seed wetlands (i.e., allow for natural regeneration). Consult with the Enbridge Environment Project Lead to determine if seeding of the riparian areas adjacent the wetland is required. Seed with an appropriate native or riparian seed mix if it is deemed warranted.
15. **Erosion Control**: Maintain silt fences in place at wetland boundaries until revegetation of adjacent construction right-of-way is stable.

Plan View



Profile View



NOTES:

1. INSPECT BRIDGE OPENING PERIODICALLY AND FOLLOWING RAINFALLS OF OVER ½". REMOVE ANY DEBRIS RESTRICTING FLOW AND DEPOSIT IT AT AN UPLAND SITE OUTSIDE OF FLOODPLAIN.
2. IF PHYSICAL CIRCUMSTANCES PROHIBIT WOOD OR METAL RAMPS, EARTHEN RAMPS MAY BE USED AS APPROVED BY ENBRIDGE.
3. INSPECT BRIDGE ELEVATION SO BRIDGE REMAINS SUPPORTED ABOVE OHWM AND DOES NOT SINK INTO BANK.
4. THE CULVERT SUPPORT MUST BE ANCHORED TO THE STREAM BOTTOM AND MAY NOT BE SUPPORTED WITH FILL.
5. EARTHEN RAMP CANNOT BE TALLER THAN 1' AND CANNOT EXTEND FOR MORE THAN 15' ON EITHER SIDE OF THE CROSSING.
6. THE BRIDGE MUST SPAN FROM TOP OF OHWM.
7. ADDITIONAL SUPPORT MUST BE ADDED ON TOP OF BANK AND UNDER SPAN IF INITIAL SUPPORT STARTS TO SETTLE.
8. SIDEBOARDS WILL BE INSTALLED ON TEMPORARY BRIDGES TO MINIMIZE THE POTENTIAL FOR SEDIMENT TRANSPORT. SIDEBOARDS MAY BE CONSTRUCTED OUT OF PLYWOOD, OR EQUIVALENT, AND AFFIXED TO THE OUTER SIDES OF THE BRIDGE. GEO-TEXTILE FABRIC, OR EQUIVALENT, MUST ALSO BE ADEQUATELY SECURED TO THE UNDERSIDE OF THE BRIDGE TO PREVENT MATERIAL FROM FALLING THROUGH THE BRIDGE DECK. THE GEO-TEXTILE FABRIC OR AN EQUIVALENT SHOULD BE SECURED TO THE BOTTOM OF THE BRIDGE AND WRAPPED AROUND THE SIDEBOARDS IN A CONTINUOUS FASHION.

ENBRIDGE

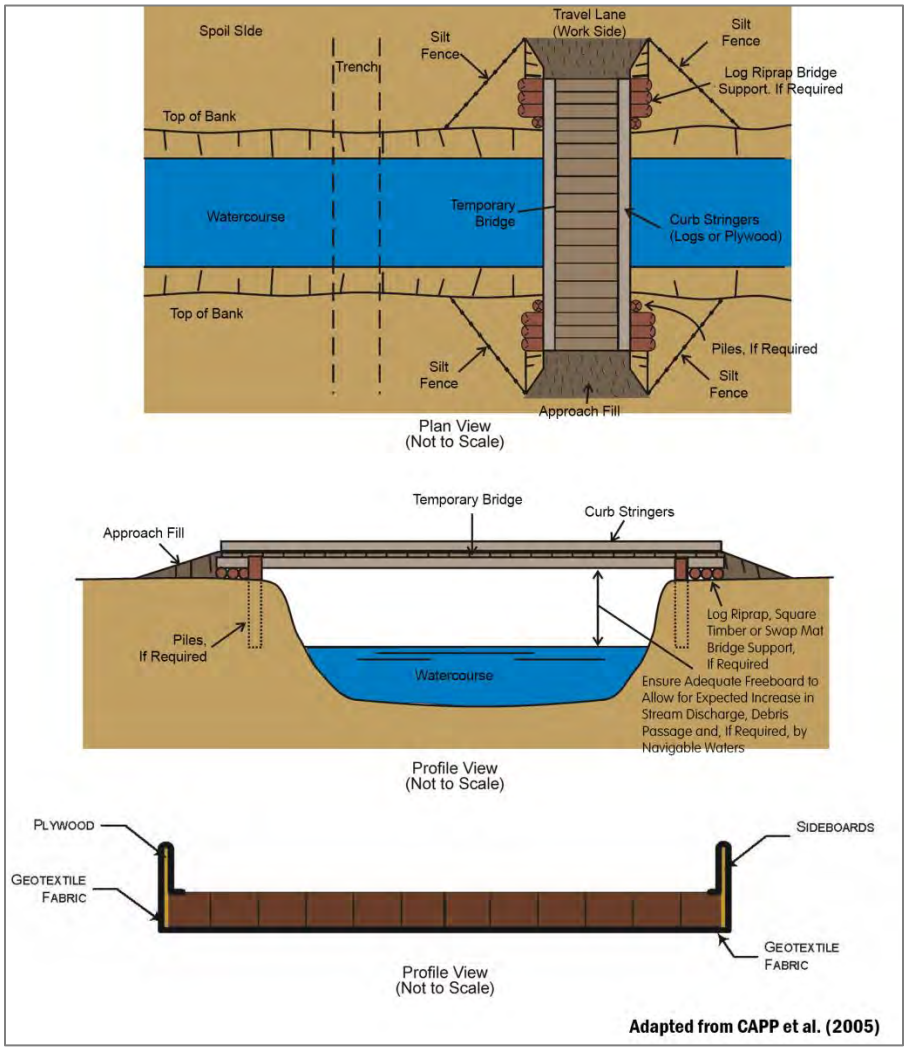
Figure 8

Environmental Protection Plan

Typical Span Type Bridge
With or Without Instream Support

Scale: NTS
Date: 11/16/2016
Revised: 3/28/2017
Location: M:\Department Tasks\EPP Figures wBorders\LP ENG EPP Figures\

Figure 9
Vehicle Crossing - Temporary Bridge

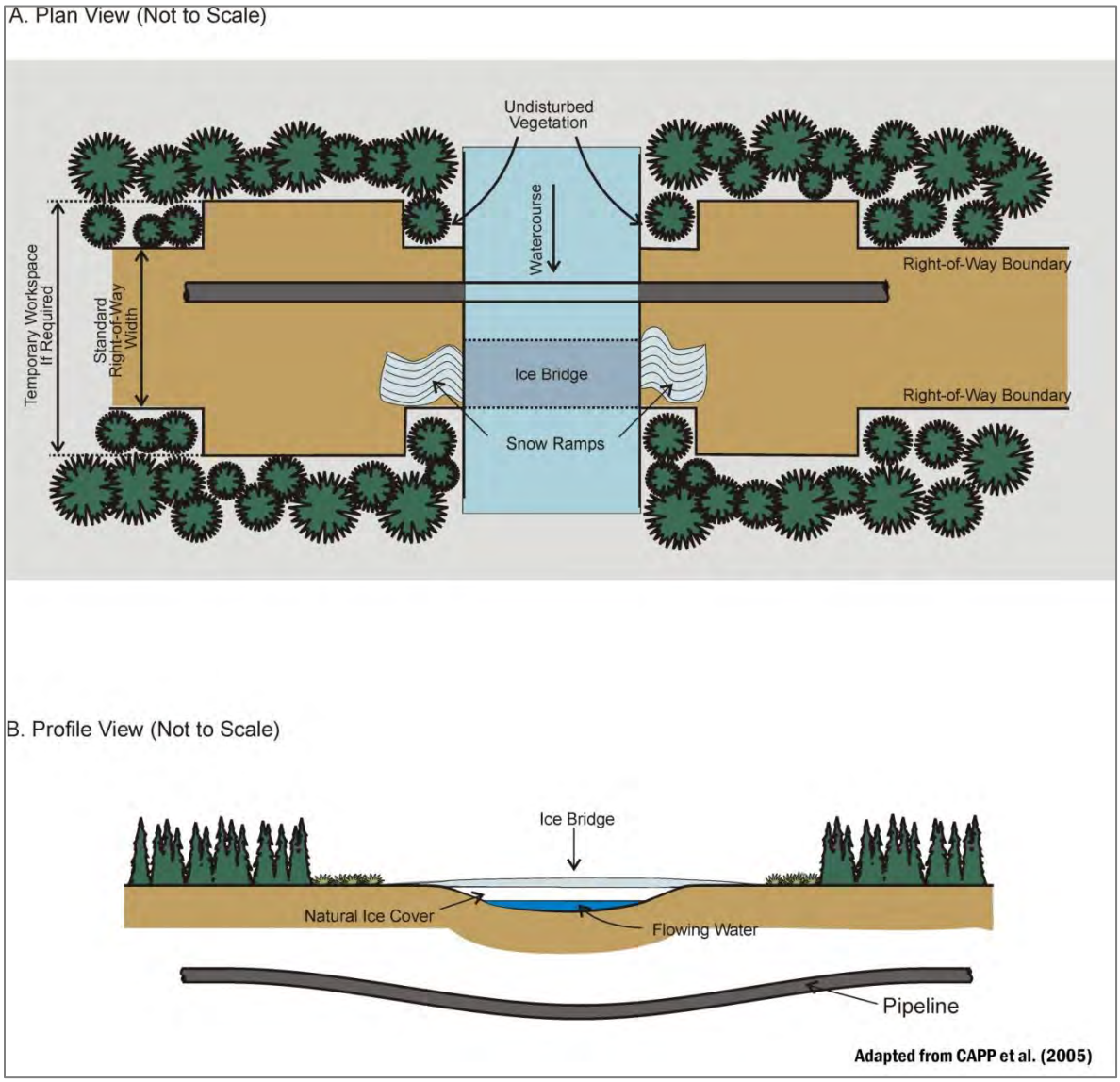


Representation Only

Notes:

1. Install a temporary bridge (*e.g.,* log, pre-fabricated span) to allow vehicles to cross watercourses that are sensitive or that have unstable bed and banks. Bridges are also used where watercourses are too deep, wide or fast to permit an alternative crossing structure. This method minimizes sedimentation of the watercourse, and bank and bed restoration work. It is generally limited to watercourses less than 30 m (100 feet) in width.
2. Utilize approach fills rather than cuts in banks to minimize erosion potential. Do not constrict flow with approach fill or support structures. Ensure adequate free-board to handle anticipated streamflows. Use a geotextile liner to prevent fine material from entering watercourse.
3. Install curb stringers of logs or plywood to ensure that fill material does not spill into the watercourse, where required.
4. Remove bridge immediately after use. If bridge is to remain in place through spring break-up to access final clean-up, it must be designed for spring floods and ice jams. Remove support structures and approach fills. Restore and stabilize banks.

Figure 10
Vehicle Crossing - Ice Bridge

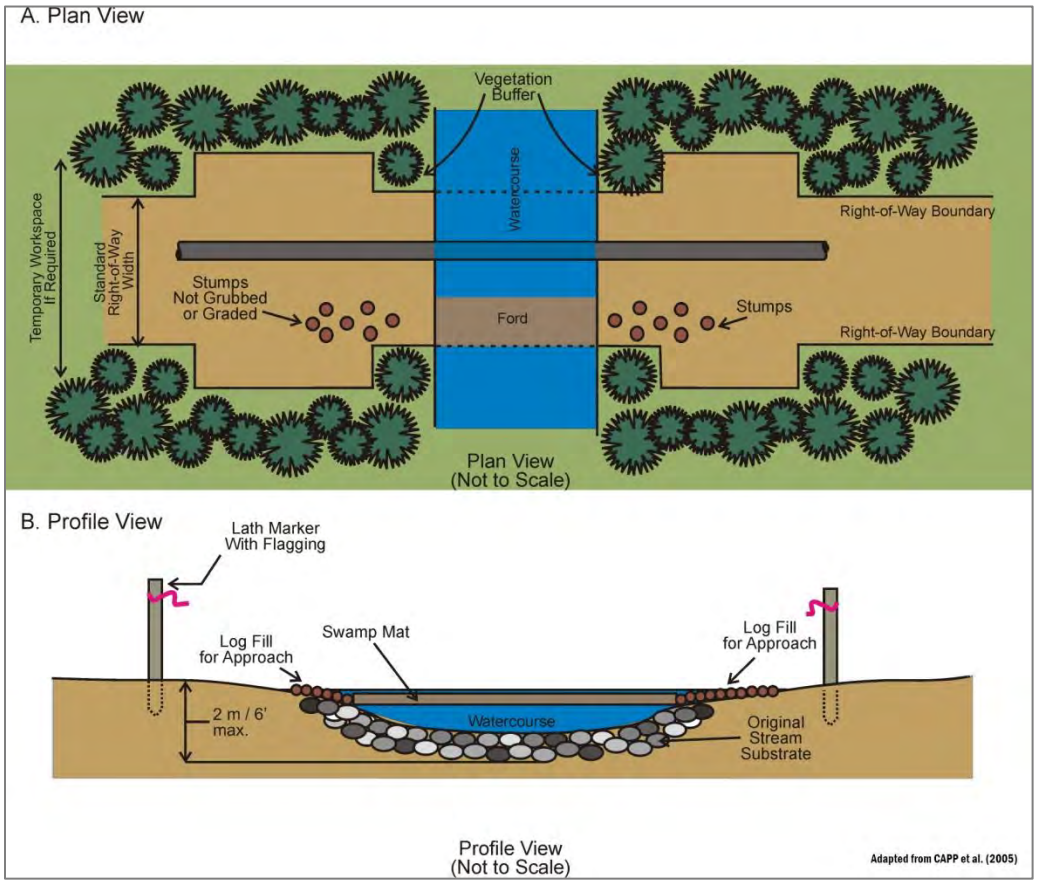


Representation Only

Notes:

1. Install ice bridges on winter projects when a safe ice thickness can be maintained.
2. Locate ice bridges at sites with gently sloping banks to reduce cuts in watercourse banks. Use snow and ice to slope approaches, rather than cut banks.
3. Flood ice surface with water from bore holes downstream of the crossing, not upstream. Cover with snow to increase load bearing capacity. Logs may be used as a base to strengthen the bridge. The ice bridge should not impede flow.
4. Inspect and maintain ice regularly and remove all debris from the ice surface
5. Remove broken ice from trench area to prevent ice jamming against and under the ice bridge.
6. Remove logs (if used) and breach ice bridge by physical means prior to spring break-up.
7. Restore and stabilize banks and approaches prior to spring break-up.

Figure 11
Vehicle Crossing - Swamp Mat Ford



Representation Only

Notes:

1. Use swamp mats to provide vehicular access across relatively shallow (less than 1 m [3 feet]) and narrow watercourses with granular beds and stable banks. Where water depth, streambed composition or bank slopes could pose trafficability problems for rubber tired vehicles, limit swamp mat traffic to tracked equipment. Ensure adequate bank protection through the use of log fills, mats, etc.

Use swamp mats for vehicle crossings in fish-bearing watercourses under nonfrozen conditions only when approved by the appropriate regulatory authority.

Minimize grading in proximity to watercourse. Grade and grub only along the trench line and an area immediately adjacent to the trench line. Pull soil and debris away from watercourse, if banks require sloping.

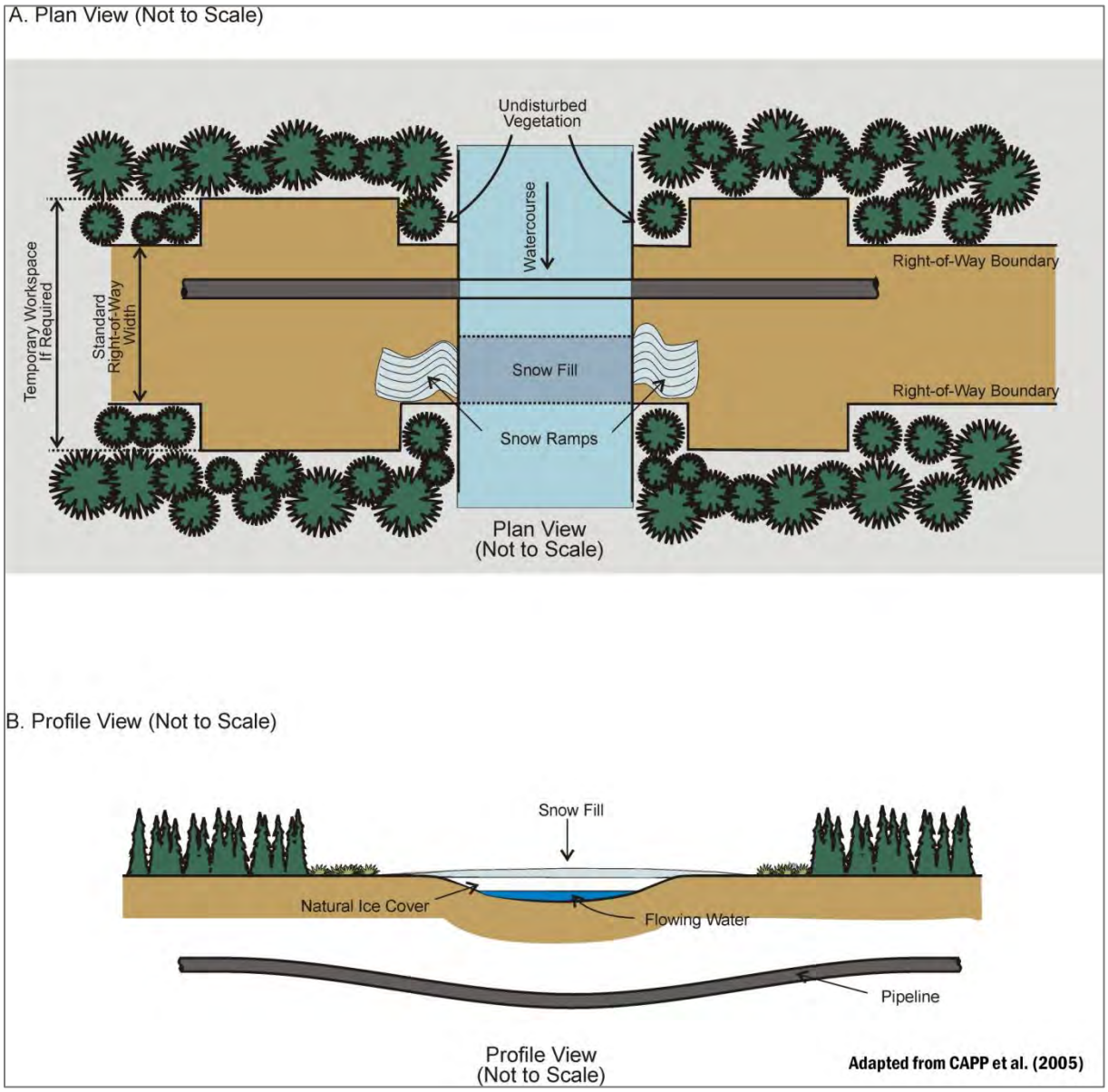
Minimize use of crossing.

Stabilize banks and approaches with granular blanket underlain by a geotextile, if warranted.

Mark boundaries on both sides of crossing to confine all vehicle traffic to swamp mats.

Restore and stabilize beds and banks to original contour when crossing is no longer needed. Granular blanket need not be removed if it is not a barrier to fish during low flow conditions.

Figure 12
Vehicle Crossing - Snow Fill

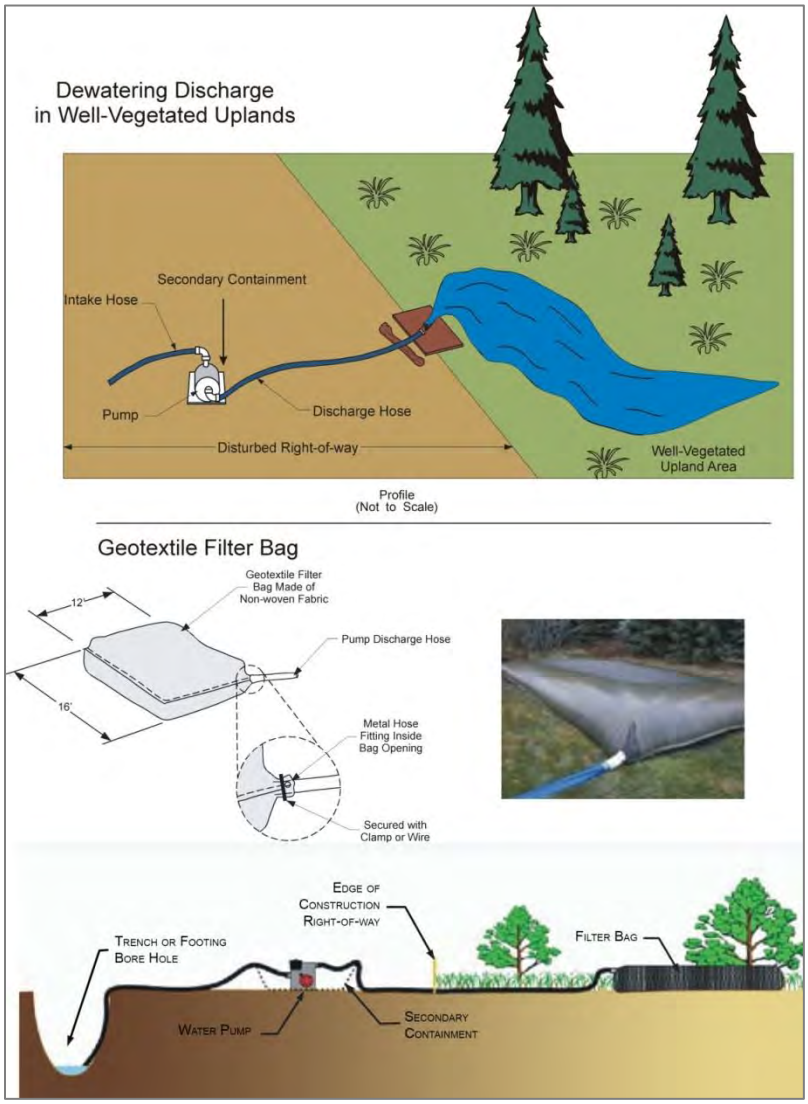


Representation Only

Notes:

1. Locate snow fill bridges at sites with gently sloping banks to reduce cuts in watercourse banks. Use snow and ice to slope approaches, rather than cutting the banks.
2. Use clean snow from a nearby location, if available. If clean snow is not available, use artificial snow.
3. Fill with snow to increase load bearing capacity. Logs may be used as a base to strengthen the bridge. The snow fill should not impede flow.
4. Maintain a clean travel surface. Do not cover a dirty travel surface with clean snow.
5. Remove logs and breach snow fill prior to spring break-up.
6. Restore and stabilize banks and approaches prior to spring break-up.

Figure 13
Dewatering Trench – Filter Bag/Vegetation



Representation Only

Dewatering Discharge In Well-Vegetated Uplands

Notes:

1. Pump intake hose must be secured at least 30 cm (1 foot) above the trench bottom.

If vegetation is sparse, dewater into a geotextile filter bag (as shown above) or straw bale dewatering structure (see Figure 42).

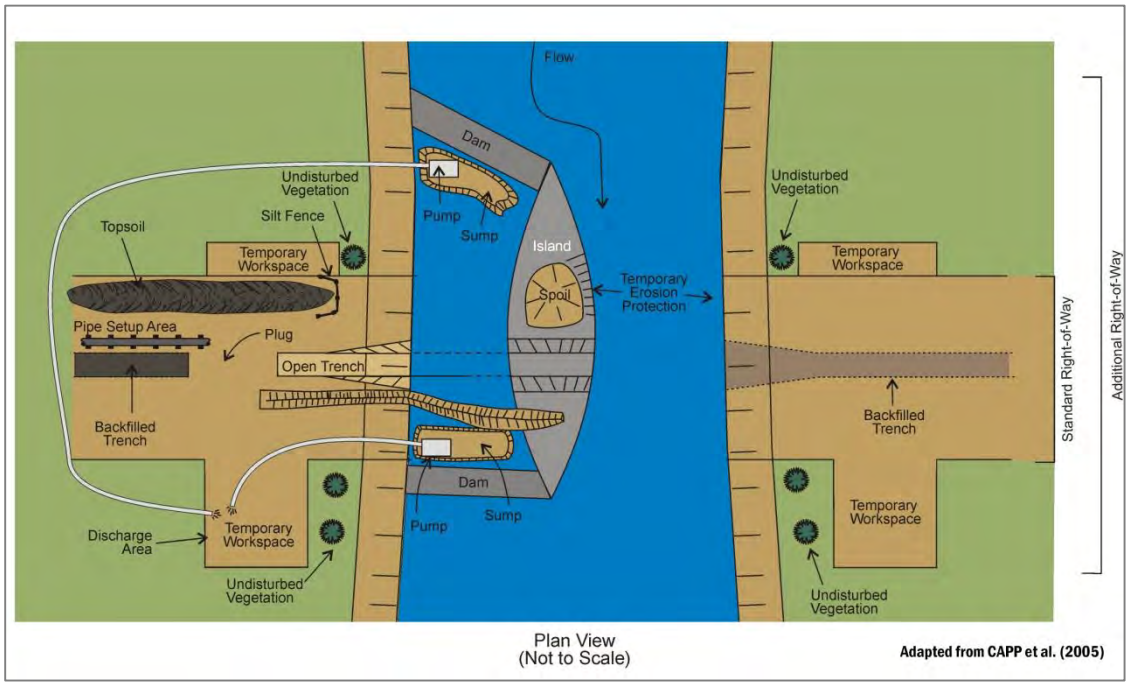
Geotextile Filter Bag

Notes:

1. Size geotextile filter bags appropriately for the discharge flow and suspended sediment particle size.

Filter bag location should be flagged so that bag can be removed.

Figure 14
Channel Diversion Method

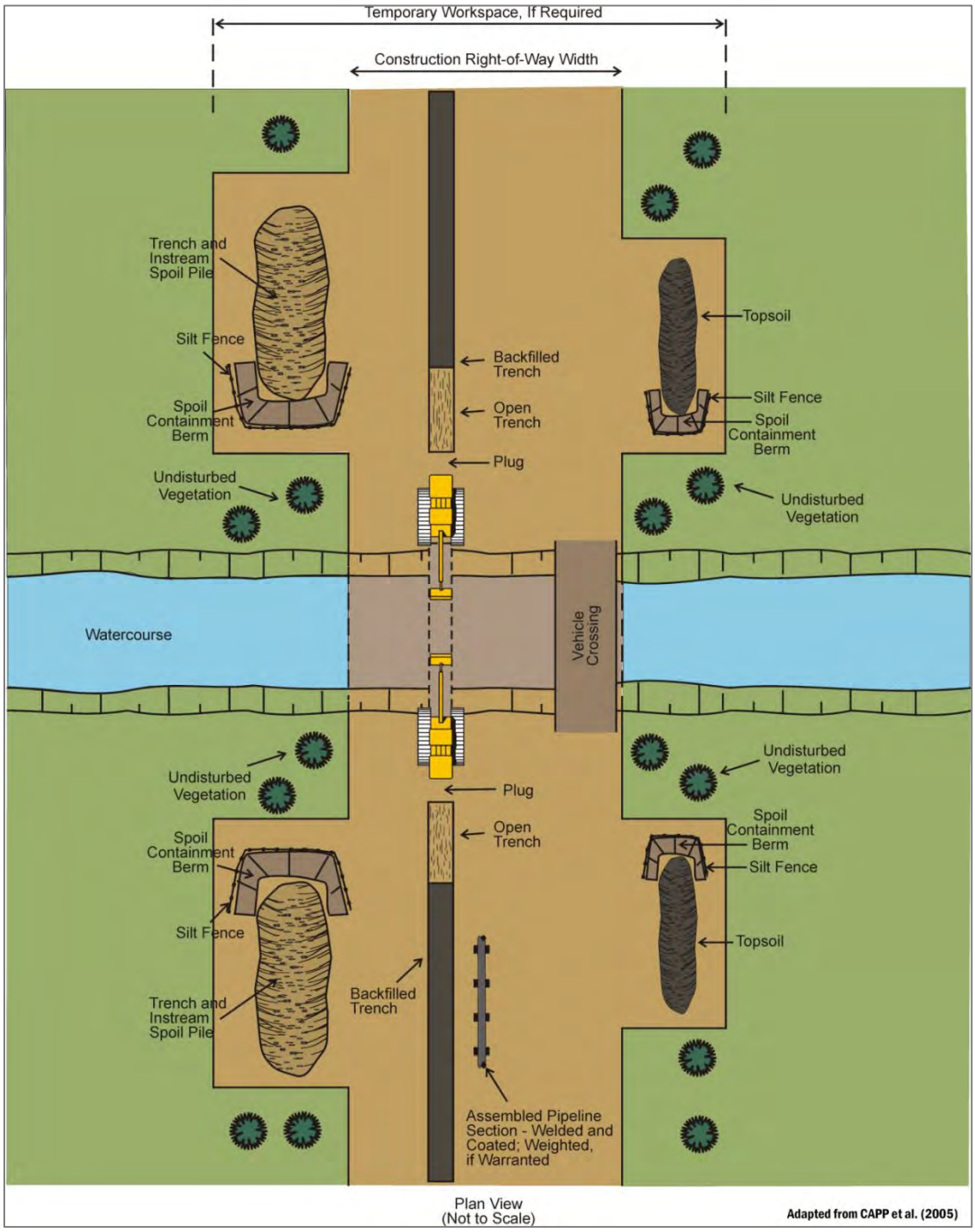


Representation Only

Notes:

1. If there is a high velocity streamflow, install deflection barrier (*e.g.,* median barriers) to permit construction of dam outside full streamflow.
2. Construct dam of clean local materials, sandbags, 1 m^3 (35 ft^3) sandbags, water-filled dams, sheet piling, median barriers, gravel or other appropriate material to extend over halfway across the watercourse.
3. Install impermeable barrier within dam.
4. Install rip rap on upstream side to protect the dam from erosion if dam is constructed of loose material.
5. Spoil storage shall be above the high water mark or protected by erosion control measures to ensure that, when the water level rises after all flow has been channelized into one channel, spoil is not washed away.
6. Install sumps to collect seepage and then pump to dewatering area.
7. Ensure discharge area can handle the volume of water and silt pumped to shore.
8. Complete trenching, lowering in and backfilling.
9. Remove dam, reconstruct bank.
10. Repeat process for other channel.
11. Temporary diversion also may be made through abandoned channels as long as steps are taken to minimize a flush of sediment once the watercourse is redirected through the "new" channel.
12. Temporary diversion through a channel excavated into a flood plain is possible if lined or passed through a flexible conduit to prevent excessive erosion along the "new" channel.

Figure 15
Watercourse Crossing - Open Cut Method for Dry / Frozen Watercourses



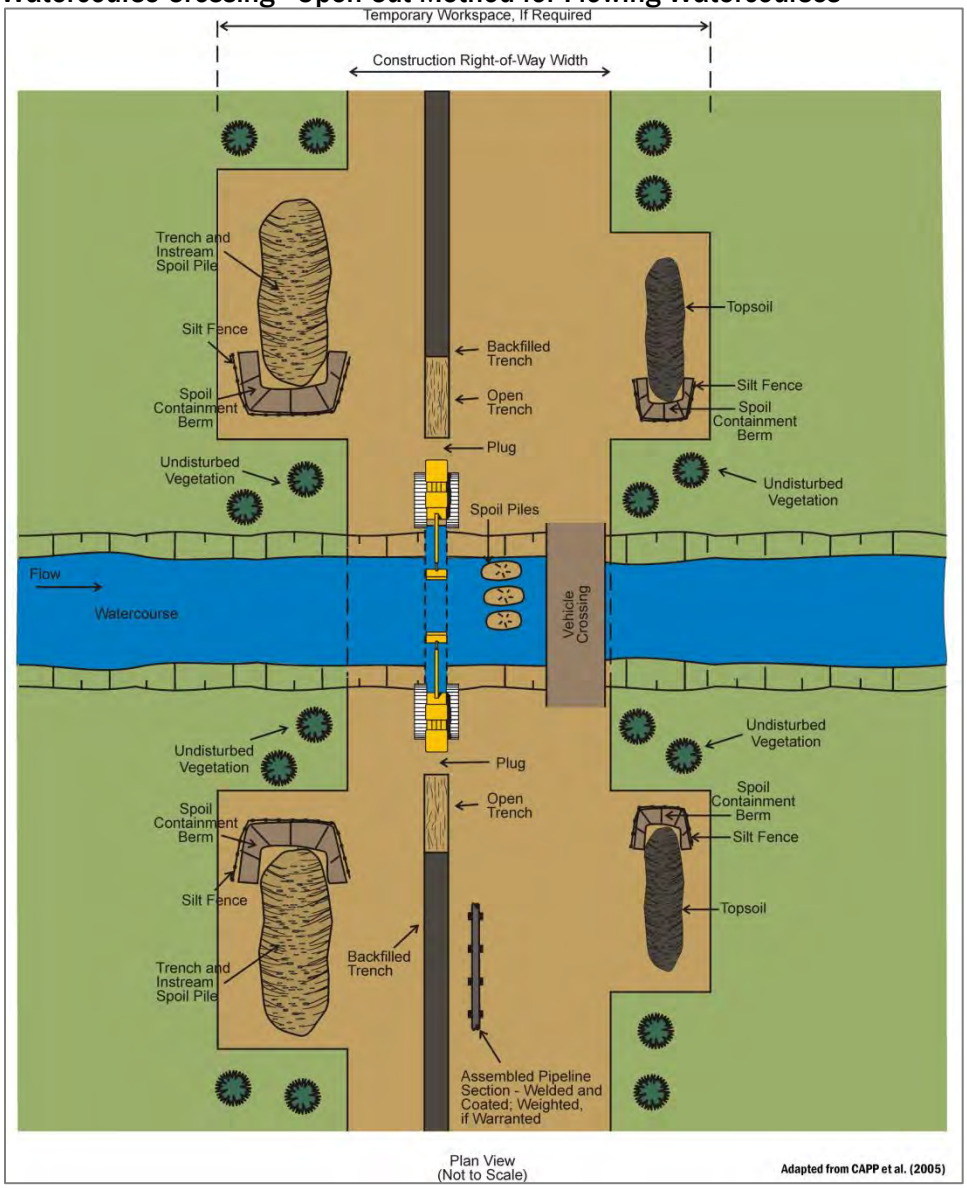
Representation Only

Notes:

1. Trench through watercourse if dry or frozen to the bottom at the time of construction.
2. Use additional temporary workspace to allow instream spoil to be stored on banks.
3. Install sediment and erosion control structures, as required.
4. Leave plugs at end of standard trench.

5. Trench through watercourse retaining hard plugs back from each bank until just prior to pipe installation. Stockpile all instream spoil on banks above the normal high water mark. Construct berms (*e.g.,* subsoil, saddle weights, shotrock) to prevent saturated spoil from flowing back into watercourse.
6. Lower-in and backfill immediately. Restore stream channel to approximate preconstruction profile and substrate. Attempt to complete all instream activity within 48 hours.
7. If necessary to control water flow and trench sloughing, install temporary soft plugs and dewater trench onto stable vegetated land, not directly to watercourse.
8. Restore, stabilize and reclaim watercourse banks and approaches to as close to original grade as practical.

Figure 16
Watercourse Crossing - Open Cut Method for Flowing Watercourses



Representation Only

Notes: This method applies to any watercourse with standing or flowing water (e.g., anything other than dry or frozen to bottom conditions).

1. Leave plugs at the end of the standard trench.
2. Install sediment and erosion control structures, as required.
3. Complete construction of the instream pipe section. Weld, coat and, if warranted, pretest and weight pipe prior to commencement of instream activity.
4. Retain plugs back from each bank until just prior to pipe installation. Stockpile as much spoil on banks as practical. If necessary, store spoil instream in piles avoiding areas of highest water velocity. Instream spoil should be piled in long piles parallel to flow in order to reduce erosion. Do not windrow spoil across the channel or block more than 2/3 of the channel. Maintain streamflow, if present, throughout crossing construction. Exact trenching and spoil storage requirements will depend on local conditions and equipment used.
5. If necessary to control water flow and trench sloughing, install temporary soft plugs and dewater trench on to stable vegetated land, not directly to watercourse.

6. Lower-in pipe and backfill immediately. Restore stream channel to approximate preconstruction profile and substrate. Attempt to complete all instream activity as quickly as practical.
7. Restore, stabilize and reclaim watercourse banks and approaches to as close to original grades as practical.

Appendix A
Seed Mix Information

Seed Mix Information

Prioritize choosing local or northern seed sources for reclamation. Allow mineral wetlands and peatlands to naturally regenerate following construction; do not seed mineral wetlands or peatlands. Consider natural revegetation in other areas, to promote natural species distribution, especially in areas that do not have weed or erosion concerns. Use only Common No. 1 or Canada Certified No. 1 seed in reclamation seed mixes and confirm seed certificates of analysis are retained.

Verify absence of weed seeds, and that all seed certificates of analysis are submitted to Westcoast Environment prior to seed purchase. Westcoast Environment will review seed certificates of analysis when any other seed grade is proposed for reclamation projects, or a custom seed mix is used per a third-party requirement. When applicable, documented approval of proposed seed mix will be kept on file along with a copy of the seed certificate analysis.

Seeding should occur as soon as practical after final cleanup, as weather and soil conditions permit. Determine appropriate seeding method as per Section 16 of the EPP. Assess success of reclamation activities during post-construction monitoring, and record and correct reclamation deficiencies.

As described in Regulator Clarifies Use of Ecologically Suitable Species (BCER 2023), ecologically suitable species should be used in British Columbia, and are prudent to use in the Yukon and Northwest Territories as well. The Yukon Revegetation Manual (Matheus and Omtzigt 2011) is a useful reference document. The following seed mixes are provided:

- Seed Mix A, for upland areas. This mix can be used for dormant seeding as these are cool season grasses.
- Seed Mix B, for riparian areas (disturbed banks). These species can be used for dormant seeding as they are cool season grasses.
- Short-lived Cover Crop, for soil stabilization of slopes or topsoil piles.

Seed Mix Recommendations

Seed Mix, Habitat Type[1,2,3]	Seeding Rate[4]
Seed Mix A, Upland: Fringed brome (*Bromus ciliatus*) (20%) Canada wild rye (*Elymus canadensis*) (20%) Rocky Mountain fescue (*Festuca saximontana*) (20%) Tufted hair grass (*Deschampsia cespitosa*) (15%) June grass (*Koeleria macrantha*) (15%) Hairy wild rye (*Leymus innovatus*) (10%) If needed due to species availability, potential substitutions to this mix can include: tickle grass (*Agrostis scabra*), glaucous bluegrass (*Poa glauca*), or bluejoint reedgrass (*Calamagrostis canadensis*).	Drill Seed at 12 to 14 kg/ha; or Broadcast/Hydroseed at 20 kg/ha

Seed Mix Recommendations

Seed Mix, Habitat Type[1,2,3]	Seeding Rate[4]
Seed Mix B, Riparian (disturbed banks): Preferred (to allow natural regeneration): Canadian wild rye (*Elymus canadensis*) (100%) Alternate (if seed mix needed, e.g., due to weed or erosion pressure): Canada wild rye (*Elymus canadensis*) (30%) Slough grass (*Beckmannia syzigachne*) (20%) Fringed brome (*Bromus ciliatus*) (20%) Tufted hair grass (*Deschampsia cespitosa*) (10%) June grass (*Koeleria macrantha*) (10%) If needed due to species availability, potential substitutions to this mix can include: bluejoint reedgrass (*Calamagrostis canadensis*), fowl bluegrass (*Poa palustris*) or polargrass (*Arctagrostis latifolia*). Do not seed mineral wetlands or peatlands (i.e., allow for natural regeneration) unless approved by Project-specific authorizations.	Preferred: Broadcast/Hydroseed at 5 kg/ha. Alternate: Broadcast/Hydroseed at 18-20 kg/ha.
Short-lived Cover Crop, soil stabilization for slopes or topsoil piles Species options include: annual ryegrass (*Lolium multiflorum*), fall ryegrass (*Lolium perenne*), or barley (*Hordeum vulgare*).	Broadcast/Hydroseed seed at 35-45 kg/ha.

Notes:

[1] Percentages are the desired, in situ composition, not the percentage that goes into the mix. The percentages that go into the mix need to be determined by the seed weight (# seeds/kg), purity (% of weight), and viability (% germination) of each species and seed lot.

[2] No soil amendments need to be incorporated into the soil during seedbed preparation.

[3] Seeding Timing: all species in this table are cool season grasses, so, both Seed Mix A and Seed Mix B can be used as dormant seeding (soil temperature is 2 degrees Celsius or cooler to prevent germination, soil is not frozen and snow is not present), or fall or spring seeding.

[4] After broadcast seeding, firm the seedbed with a harrow-packer or roller. For hydroseeding, if seed is applied alone (not in combination with hydromulch slurry), adjust the amount of hydromulch material to the seed slurry to show where seeding has taken place, to ensure uniform cover.

kg/ha = kilograms per hectare

References:

British Columbia Energy Regulator (BCER). 2023. Regulator Clarifies Use of Ecologically Suitable Species. Accessed July 2023. https://www.bc-er.ca/news/commission-clarifies-use-of-ecologically-suitable-species/.

Matheus, P. and T. Omtzigt. 2011. Yukon Revegetation Manual – Practical Approaches and Methods. 176 pp.

Appendix B
Environmental Observation/ Near Miss Submission Form

Environmental Observation/Near Miss Submission Form

Submit all Environment Near Misses to the PEL.

Business Unit:	Choose an item.
Region Name/Project Name:	
Event Ownership:	Choose an item.
Contractor Company Name (if Applicable):	
Date and Time of Event (Actual Date and Time the Event Occurred):	
Date and Time Reported (Date and Time in which it was Reported to a Westcoast Representative):	
Date and Time Discovered (Date and Time in which it was First Discovered):	
Event Classification:	Near Miss
Event Location:	
Reported By:	
Reported To:	
Description of Event and Any Actions Taken:	

Appendix C
Spill Report Form

ENBRIDGE

MAINLINE PROJECTS
SPILL/RELEASE FIELD REPORT

GW #:
Line #:
CWP #:
Mile Post:
KM Post:

Project Manager:
Construction Manager:
Environmental Lead:
Site Inspector:
Environmental Inspector:

AFE:
WO#:

Report Date:
Incident #:

PRODUCT SPILL/RELEASE INFO:

Date and Time of Spill/Release: _____ (dd/mm/yyyy) _____ (AM/PM)

Source of Spill/Release:

Cause of Spill/Release:

Product(s) Released/Spilled:

Approximate Amount(s) Released/Spilled: _____ (in Litres)

Approximate Area Affected: _____ (m^2)

Ground Conditions: _____ Weather: _____

GPS Coordinates of Spill/Release (NAD 83): Latitude (degrees):

Longitude (degrees):

Within 100 metre proximity to a water body or watercourse? _____ (Yes or No)

If Yes, what is the approximate distance to Water body or Watercourse: _____ (in Metres)

Is the watercourse or water body named? _____ (Yes or No)

If applicable, give name:

SITE SKETCH (If Applicable)

N

ENBRIDGE

MAINLINE PROJECTS
SPILL/RELEASE FIELD REPORT

Report Date: _____
Incident #: _____

GW #: _____
Line #: _____
CWP #: _____
Mile Post: _____
KM Post: _____

SPILL/RELEASE DETAILS:

SPILL/RELEASE CONTAINMENT, CLEAN UP, AND DISPOSAL DETAILS:

ENBRIDGE

MAINLINE PROJECTS
SPILL/RELEASE FIELD REPORT

GW #:
Line #:
CWP #:
Mile Post:
KM Post:

Report Date:
Incident #:

PHOTOGRAPHS:

PHOTOGRAPH 1

PHOTOGRAPH 2

PHOTOGRAPH 3

PHOTOGRAPH 4

PHOTO 1 -
PHOTO 2 -
PHOTO 3 -
PHOTO 4 -

PRINT

SIGNATURE

ENVIRONMENTAL INSPECTOR

Appendix D
Contingency Plans

Appendix D1
Plant Species or Ecological Communities of Concern Discovery Contingency Plan

Plant Species or Ecological Communities of Concern Discovery Contingency Plan

The following delineates how mitigation measures are prescribed for ecological communities and vegetation species of concern prior to and during construction. Areas of native vegetation (e.g., areas dominated by species that would historically and naturally occur, rather than introduced agronomics or invasive species) often provide habitat for ecological communities and vegetation species of concern, but that does not preclude their occurrence elsewhere.

1.0 Ecological Communities or Vegetation Species of Concern Identified During Construction

In the event an ecological community or vegetation species of concern is discovered on or within 30 m of the footprint during construction activities (e.g., survey activities or prior to clearing and topsoil salvage), follow the measures outlined as follows:

- Notify the EI
- If practical, avoid further disturbance to the location or within 30 m of the location until a Vegetation Ecologist has been consulted
- Send a photograph, location information, and any additional information regarding the area of vegetation concern to a Vegetation Ecologist
- A Vegetation Ecologist will determine if site-specific mitigation is required and if deemed necessary, will develop an appropriate site-specific mitigation plan in consultation with the client, and where appropriate, other stakeholders. The appropriate mitigation measures will be determined following an assessment, which will include the following:
  - The location of the plant relative to the footprint
  - The relative rarity of the plant
  - The local abundance of the plant
  - The growth habit and propagation strategy of the plant
  - The habitat preferences of the plant

The suite of mitigation options (i.e., staged mitigation) that may be implemented includes the following:

- Narrow down the proposed area of disturbance and protect the site using fencing or clearly mark the site using flagging
- Inform all users of access restrictions along native vegetation segments and in the vicinity of flagged or fenced sites
- Temporarily cover the site with geotextile pads, flex net or swamp mats

Propagate vegetation species of concern via vegetative or reproductive means (e.g., harvesting of seed from the facility footprint or adjacent area, salvaging and transplanting portions of sod and surrounding vegetation or collecting of cuttings).

Appendix D2
Wildlife Discovery Contingency Plan

Wildlife Discovery Contingency Plan

1.0 Wildlife Discovery Before Construction

In the event a wildlife feature or wildlife species of concern are discovered before construction, the following measures will be taken:

1) The position of the wildlife or wildlife feature with respect to the proposed area of development;
2) The presence of topographic features or vegetation to effectively screen the wildlife or wildlife feature from construction activities;
3) Critical timing constraints for the species; and
4) The potential for an alteration of construction activities to avoid or minimize sensory disturbance.

The Project-specific wildlife study or Environmental Protection Plan will outline the appropriate mitigation to be implemented at each site. The mitigative measures available may include:

- Abide by regulatory timing constraints within the recommended setback distances unless otherwise approved by appropriate regulatory authorities;
- Follow daily timing restrictions on construction activities;
- Where required, narrow down the proposed area of disturbance and protect the site using fencing or clearly mark the site using flagging (Figure 2 – Narrow Down Fencing);
- Alter or delay construction activities to avoid sensory disturbance;
- Inform all users of access restrictions in the vicinity of flagged or fenced sites;
- Salvage and transplant vegetation or native seed of critical importance to wildlife species of concern where the habitat could not be avoided;
- Install nest boxes or platforms or otherwise replace or enhance habitat during reclamation or restoration as appropriate to the species of concern; and
- Relocate nests or other habitat features or individuals if practical (and approved by appropriate regulatory authorities) and monitor post-construction response (where applicable) or as per applicable regulatory requirements.

2.0 Wildlife Discovery During Construction

Suspend work immediately in the vicinity of any newly discovered wildlife species or wildlife feature of concern. Work at that location may not resume until the measures as follows are conducted:

1) Notify the EI who will notify the Westcoast Construction Lead or designate.
2) The EI will assess the discovery and either allow construction to resume or, in the event of a confirmed or potential discovery, proceed by notifying the PEL and, if warranted, the appropriate regulatory authorities.
3) The PEL may deem it necessary for a qualified biologist/qualified environmental specialist to visit the site and will, regardless of whether a site visit is warranted, develop an appropriate mitigation plan (utilizing these mitigative measures) in consultation with the qualified biologist/qualified environmental specialist.

3.0 Wildlife Encounter

In the event of an encounter with wildlife during the construction phase of the Project, either at the construction site or on the commute to and from the construction site, follow the measures outlined as follows:

1) Report any incidents (e.g., aggressive behaviour, nuisance behaviour and its location and details) with wildlife to the EI. The EI will assess the incident and determine if it is safe to continue/resume work. If necessary, the EI will notify the local wildlife authorities and, if appropriate, the local police department.
2) Report any trapped, injured, or dead animals on the site to the EI. The EI will notify the PEL who will contact the appropriate regulatory authority to consult on appropriate action, if warranted.
3) Report location and details of collisions with wildlife to the EI who will notify the PEL if necessary.

In all scenarios above, the PEL will confirm the appropriate regulatory authorities and police are notified, if warranted. Note, the PEL may choose to delegate the EI to conduct notification of appropriate regulatory authorities.

4.0 Impact to Wildlife Habitat

The following measures will be implemented in the event a nearby habitat appears to have been impacted in an unplanned/unanticipated fashion directly or indirectly by Project activities:

1) Contractor is to suspend work immediately in the area of any newly discovered impact, and coordinate with the EI or designated Westcoast representative. Implement internal and external reporting as described in Section 2.0.
2) The PEL or designate will conduct a review of recent activities and potential consequences that may have been missed.
3) The PEL or designate will develop a mitigative program to facilitate resumption of Project activities in a fashion that manages the new impact to a level acceptable to the EI and the designated Westcoast representative. This program should include monitoring resumed activities and the gathering of information to support the identification of the cause of the inadvertent impact.
4) Complete incident reporting and revise Project EPP and/or implement corrective actions to account for lessons learned.

Appendix D3
Wet or Thawed Soils Contingency Plan

Wet or Thawed Soils Contingency Plan

Westcoast will assign EIs with sufficient training and soils-related experience to be able to identify soils that are too wet or thawed for a particular activity and when the soils are sufficiently dry to allow the activity to resume.

The decision to continue or suspend construction activities on lands with excessively wet or thawed soils will be made by Westcoast in consultation with the EI, the CM and appropriate regulatory authorities, if warranted. Factors influencing a decision to postpone start up or shut-down work include the weather forecast, construction schedule, and availability of nonproblem areas (i.e., frozen or well-drained). A record of the location, timing, and reason for implementation of the Wet or Thawed Soils Contingency Plan will be maintained by the EI for documentation in the Environmental As-Built Report (if applicable).

Soils are considered excessively wet when the planned activity could cause damage to soils either due to:

- Rutting by traffic through the topsoil into the subsoil
- Soil structure damage during soil handling or compaction and associated pulverization of topsoil structure damage due to heavy traffic

Contingency measures will be implemented, if warranted, once one of the following indicators occurs:

- Rutting of topsoil to the extent that admixing may occur (rutting is defined as an area of concentrated compaction from tracked or wheeled vehicles measuring 20 metres in length, 20 centimetres (cm) in width, and greater than 10 cm in depth depending upon soil texture)
- Excessive wheel slip
- Excessive build-up of mud on tires and cleats
- Formation of puddles
- Tracking of mud as vehicles leave the construction site

To reduce terrain disturbance and soil structure damage through rutting or compaction due to wet/thawed soil conditions, construction alternatives will be employed, if warranted, in the event of thawed soils during frozen conditions and/or an excessively wet surface during nonfrozen conditions. The contingency measures listed as follows will be implemented individually or in combination, if warranted, based on site-specific conditions.

1.0 Wet Soil Contingency Measures

1) Restrict construction traffic, where practical, to equipment with low-ground pressure tires or wide pad tracks. Prevent rubber-tired traffic from driving on the construction site or road right-of-way.
2) Work only in nonproblem areas, such as well-drained soil or well-sodded lands, until conditions improve.
3) Install geotextiles, swamp mats, matting, or corduroy constructed from non-salvageable timber in problem areas. Immediately stake, flag, mark, label, or otherwise record (e.g., Universal Transverse Mercator [UTM] coordinates) the areas where geotextile, swamp mats, or matting are installed for any reason to ensure removal during cleanup. Provide Westcoast with these data.
4) Consider salvaging an additional width of topsoil in problem areas.
5) Suspend construction until soils dry out.

2.0 Thawed Soil Contingency Measures

1) Restrict construction traffic, where practical, to equipment with low-ground pressure tires or wide pad tracks. Prevent rubber-tired traffic from driving on the construction site or road right-of-way.
2) Work only in nonproblem areas, such as frozen or well-drained soils, until conditions improve.
3) Limit equipment traffic to the late afternoon or early morning when ground conditions are frozen, or delay construction until soils refreeze.
4) Install geotextiles, swamp mats, matting or corduroy constructed from non-salvageable timber in problem areas. Immediately stake, flag, mark, label, or otherwise record (e.g., UTM coordinates) the areas where geotextile, swamp mats, or matting are installed for any reason to ensure removal during cleanup. Provide Westcoast with these data.
5) Employ frost inducement measures, such as snow packing or plowing, to increase the load-bearing capacity of thawed ground.
6) Salvage any excess snow and spread as well as pack the snow on the construction site to avoid premature thawing of the upper soils.
7) Suspend construction until soils dry out or refreeze.

3.0 Resumption of Work

If these indicators of the excessively wet/thawed soil conditions are not evident, soils will be considered sufficiently dry to resume activity.

Appendix D4
Soil Erosion Contingency Measures

Soil Erosion Contingency Measures

If wind or water erosion is evident during the construction phase of the Project, all necessary Contractor equipment and personnel will be made available to control the erosion. During the construction phase, the Environmental Inspector (EI) in consultation with Westcoast's environmental staff and, if required, appropriate regulatory authority, will determine appropriate procedures to be implemented to control soil erosion and other soil handling problems encountered.

Implement the following water erosion control options as soon as practical:

- **Bush/forested lands:** Install temporary berms of subsoil, logs, timbers, sandbags, or bales during construction activities. Install sediment fences near the base of slopes.
    - Salvage remaining topsoil/strippings and store away from area to be regraded.
    - Regrade rills and gullies.
    - Replace salvaged topsoil/strippings.
    - Implement one or a combination of the following mitigation techniques:
        - Construct cross ditches and berms decreasing the spacing on steeper slopes or on more erodible soils;
        - Armour the upslope face of berms with geotextile, logs, or sandbags;
        - Import small diameter slash then roll back and walk down;
        - Apply netting, mulch or tackifier to hold soil;
        - Reseed and hand rake an annual cover crop, hydroseed, or apply seed impregnated mats;
        - Transplant native shrubs, plant willow stakes, or use other bioengineering techniques;
        - Install slope indicators at locations where the risk of slope failure, or creep exists; consult a Geotechnical Engineer;
        - Abide by regulatory timing constraints within the recommended setback distances unless otherwise approved by appropriate regulatory authorities;
        - Follow daily timing restrictions on construction activities.

Implement the following wind erosion control options as soon as practical:

- **Topsoil/Strippings:** Shut-down or relocate construction activities until winds dissipate and conditions improve.
    - Consider using the following techniques if wind erosion of the topsoil/strippings windrow is of concern:
        - Apply water to the topsoil/strippings windrow
        - Windrow snow over the topsoil/strippings windrow
        - Tackify (at rate recommended by the distributor) the topsoil/strippings windrow
        - Pack the topsoil/strippings windrow with a sheepsfoot packer or other suitable equipment
    - Consider using the following techniques if wind erosion is of concern after topsoil/ strippings replacement:
        - Apply hydromulch or tackifier
        - Use a packing roller (e.g., Accuroller) to lightly compact sandy or pulverized soils

  - Import small diameter slash for use as rollback - walk down slash
  - Add locally available manure and cultivate
  - Install wind fences

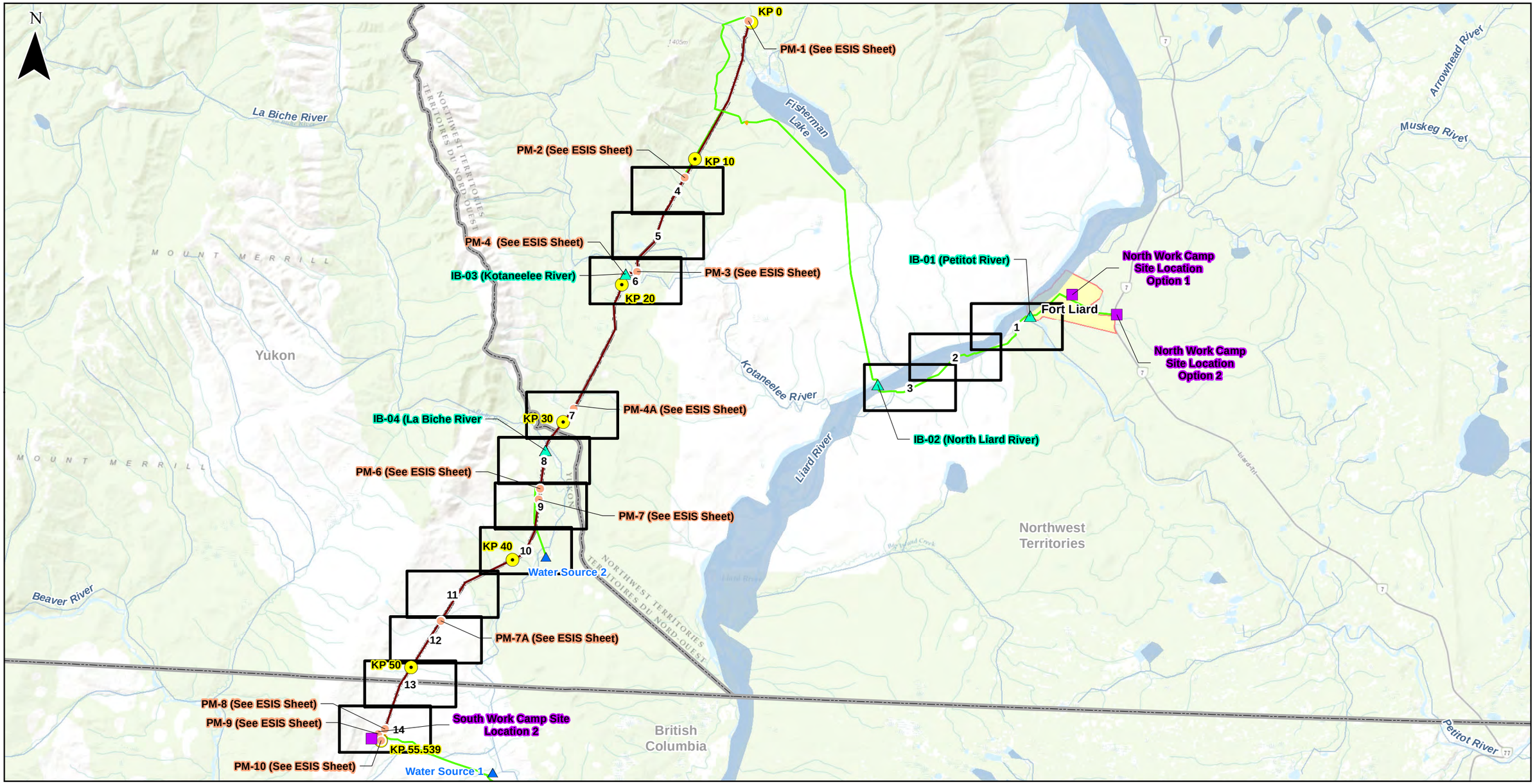
- **Tackifier:** All tackifier products are to be produced from a source approved by the EI. All products are to be biodegradable, non-toxic, of organic origin and pre-approved by the landowner or land authority.
- **Erosion of or Failure of Streambanks:** Implement one or a combination of the following mitigation techniques in consultation with Westcoast's environmental staff:
    - Plant willow stakes in the spring
    - Transplant willow clumps, install willow wattles or brush layering
    - Apply netting or netting with straw mulch complete with seed mix
    - Install log cribwall bank protection
    - Armour bank with rock rip-rap
    - Install vegetated geogrid
    - Install rock gabions
    - Reconstruct stream profile to remove scour holes or instream obstructions.

Appendix D5
Emergency Contacts

Emergency Contacts

Contact	Location	Phone Number
Royal Canadian Mounted Police (RCMP)		**911** 1-867-770-1111 (Fort Liard RCMP)
Ambulance		**911** emergency
Hospital	Fort Liard Health Centre	1-867-770-4301
Canada Energy Regulator (CER) Emergency Contact	Federal	1-403-299-2773
Transportation Safety Board 24 Hour Hotline	Federal	1-819-997-7887
Report a Spill	CER - Spill Report Line	1-867-920-8130
	British Columbia (BC)	1-800-663-3456 (24 hour)
	Northwest Territories (NWT)	1-867-920-8130
	Yukon	1-867-667-7244
Forest Fire Reporting	BC	1-800-663-5555 or *5555 (cell phone)
	NWT	1-877-698-3473
	Yukon	1-888-798-3473
STARS Emergency Link Centre	BC	1-888-888-4567 or *4567 (cell phone)
Emergency Coordination Centre	Emergency Management BC (EMBC)	1-800-663-3456 (24 hour)
Emergency Management Organizations	BC - EMBC	EMBC.CCEMO.Award@gov.bc.ca
	NWT -Emergency Management Organization	NWT_EMO@gov.nt.ca
	Yukon - Emergency Measures Organization	1-867-667-5220 EMO.Yukon@gov.yk.ca

Appendix B
Environmental Alignment and Environmental Site Information Sheets



Water Source
Camp
Ice Bridge
Kilometre Post (KP)
Site

1 Environmental Alignment Sheet (EAS)
Right-of-Way
Temporary Workspace
Camp
Access Road

Existing Pipeline
Provincial Boundary
Watercourse
Water Body
Municipal Boundary

ENVIRONMENTAL NOTES

Wetland and Watercourse Crossings:
- Abide by any water licence or permit conditions, where warranted.
- Limit vegetation brushing in wetlands and watercourse riparian areas to the extent feasible.
- No storage of fuel, refueling or equipment maintenance within 30 m of wetlands and watercourses.
- Recontour wetlands and restore surface drainage patterns to as close to pre-construction profile as practical, where applicable.
- Snow fill and ice bridge crossings should not impede flow; breach snow fill and ice bridge crossings prior to spring break-up.
- Wetlands and watercourses crossed by the Project are listed in Table 2 and Table 3 of Section 2.1 of the EPP, respectively.
- Follow the wetland and watercourse crossing mitigation measures in Sections 17.0 and 18.0 of the EPP, respectively.

Vegetation:
- Follow the weed control and vegetation clearing measures in Sections 5.0 and 8.0 of the EPP, respectively.

Reclamation
- Reclamation and restoration measures may include:
  - o natural regeneration (particularly in shrubby and graminoid wetlands or wetland fringes), or
  - o active restoration methods such as site preparation, seeding, and access control.
- Follow clean-up and reclamation measures in Section 15.0 and revegetation measures in Section 16.0 of the EPP.
- Where practical, include culturally important species in the reclamation and restoration plans based on discussions with Indigenous groups.

Wildlife:
- Follow the wildlife, wildlife feature and wildlife habitat measures in Section 2.1 (Table 1) of the EPP.
- In the event of unanticipated wildlife or wildlife habitat feature discoveries, implement the Wildlife Discovery Contingency Plan (Appendix D2 of the EPP). Discoveries will be discussed and resolved by the Environmental Inspector, Wildlife Resource Specialist(s), and the responsible regulatory agencies, if necessary.

Heritage Resources
- Five Culturally Modified Trees in proximity to PM-3 were observed in August 2021 and August 2022 (refer to Section 2.1 of the EPP).
  - o Flag for avoidance
  - o Apply signage
  - o Monitor during abandonment activities (especially clearing and topsoil salvage and reclamation)

  If heritage features not previously identified are found during construction refer to Section 6.0 of the EPP.

Jacobs

0 3 6 9km

11"x17" MOSAIC
SCALE: 1:250,000

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WESTCOAST ENERGY INC.

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POINTED MOUNTAIN PIPELINE ABANDONMENT PROJECT

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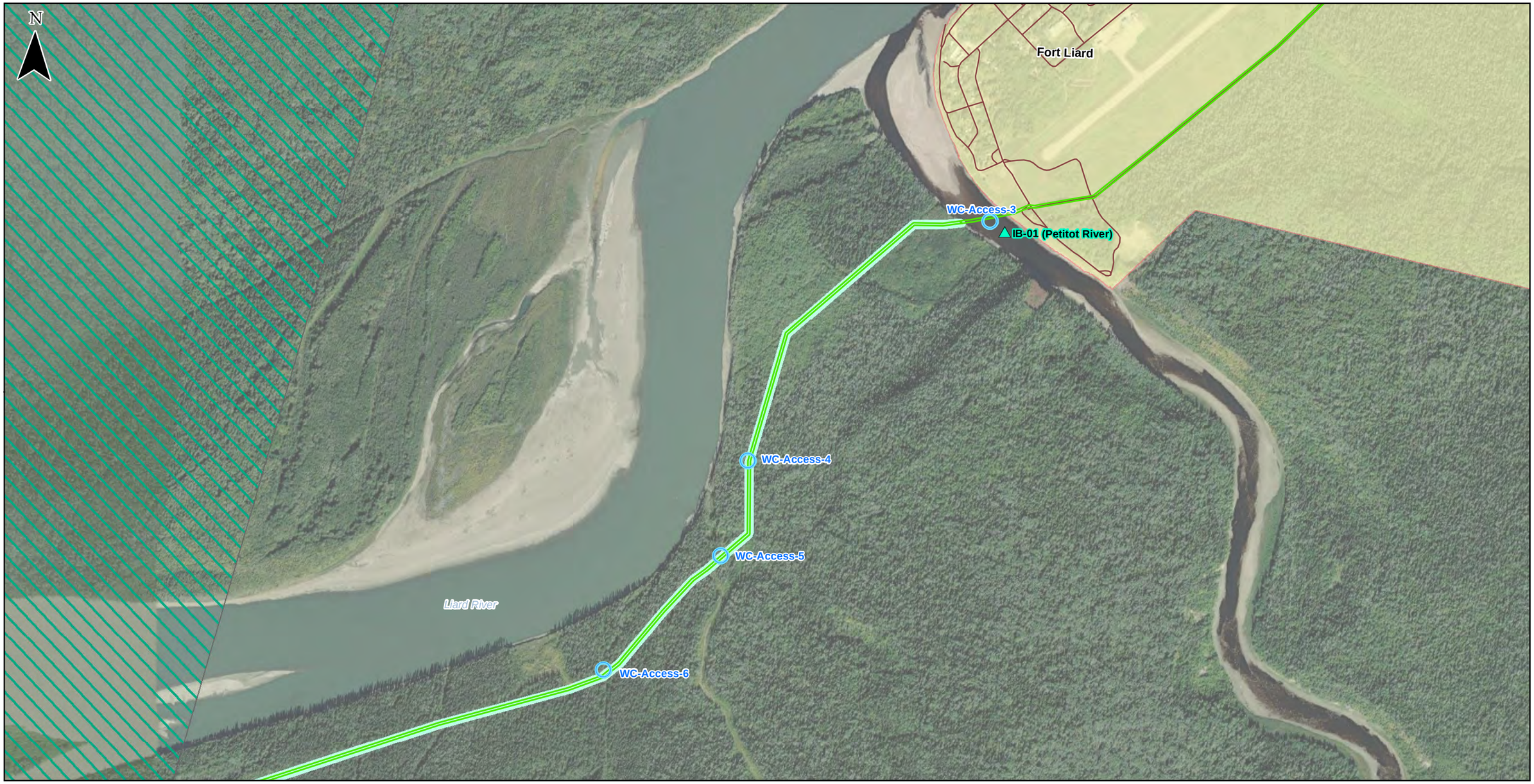

Ice Bridge
Watercourse Crossing
Access Road
Road
Municipal Boundary

Wildlife

- NWT Caribou Critical Habitat (NT-1) (Entire Map Extent)
- Nahanni Wood Bison Population (Disease-Free)
- IWA: Dehcho Beaver Concentration Area (Entire Map Extent)
- IWA: Moose Dehcho Winter Use Areas (Entire Map Extent)
- IWA: Distribution of Western Toad (Entire Map Extent)
- IWA: Nahanni Wood Bison Herd Range (Entire Map Extent)

Vegetation

- Brushing

ENVIRONMENTAL NOTES

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Jacobs

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11"x17" MOSAIC
SCALE: 1:15,000

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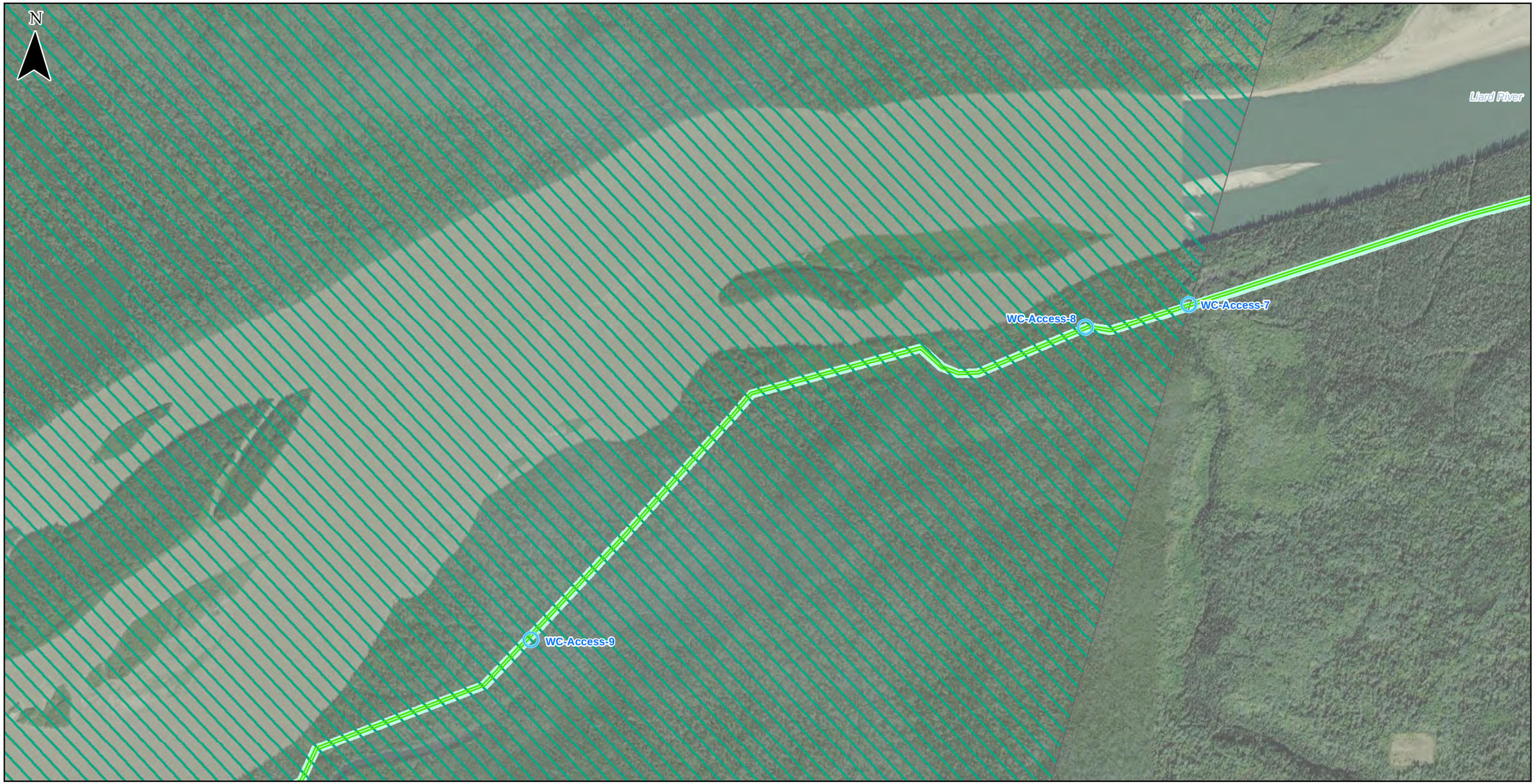

Watercourse Crossing

Access Road

Wildlife

NWT Caribou Critical Habitat (NT-1) (Entire Map Extent)

Nahanni Wood Bison Population (Disease-Free)

IWA: Dehcho Beaver Concentration Area (Entire Map Extent)

IWA: Moose Dehcho Winter Use Areas (Entire Map Extent)

IWA: Distribution of Western Toad (Entire Map Extent)

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Vegetation

Brushing

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Jacobs

0 150 300 450m

11"x17" MOSAIC
SCALE: 1:15,000

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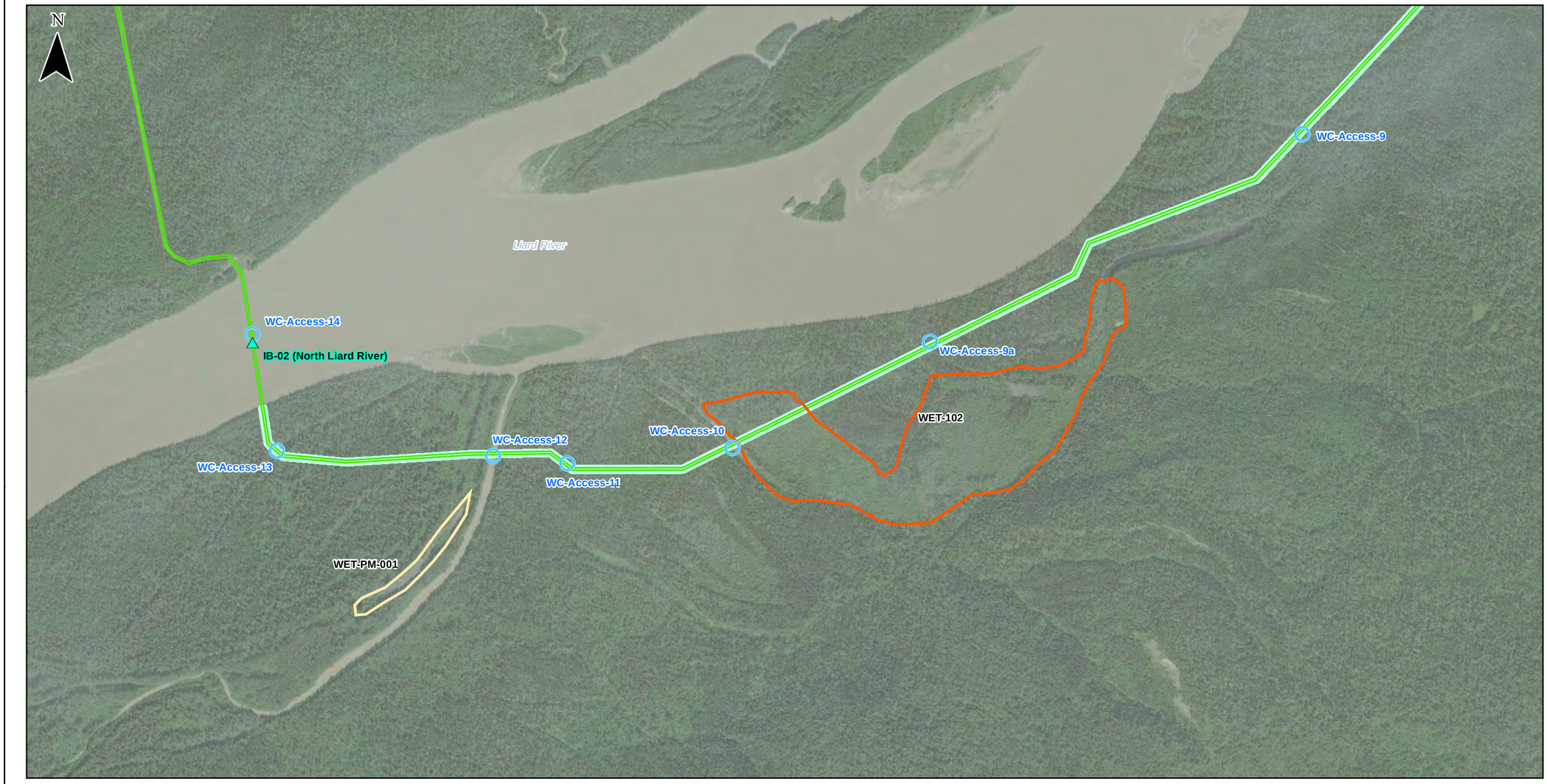

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Watercourse Crossing
Access Road

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Nahanni Wood Bison Population (Disease-Free) (Entire Map Extent)
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IWA: Distribution of Western Toad (Entire Map Extent)
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Wetland

Shrub Swamp
Mixed Treed Swamp

Vegetation

Brushing

ENVIRONMENTAL NOTES

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Jacobs

0 150 300 450m

11"x17" MOSAIC
SCALE: 1:15,000

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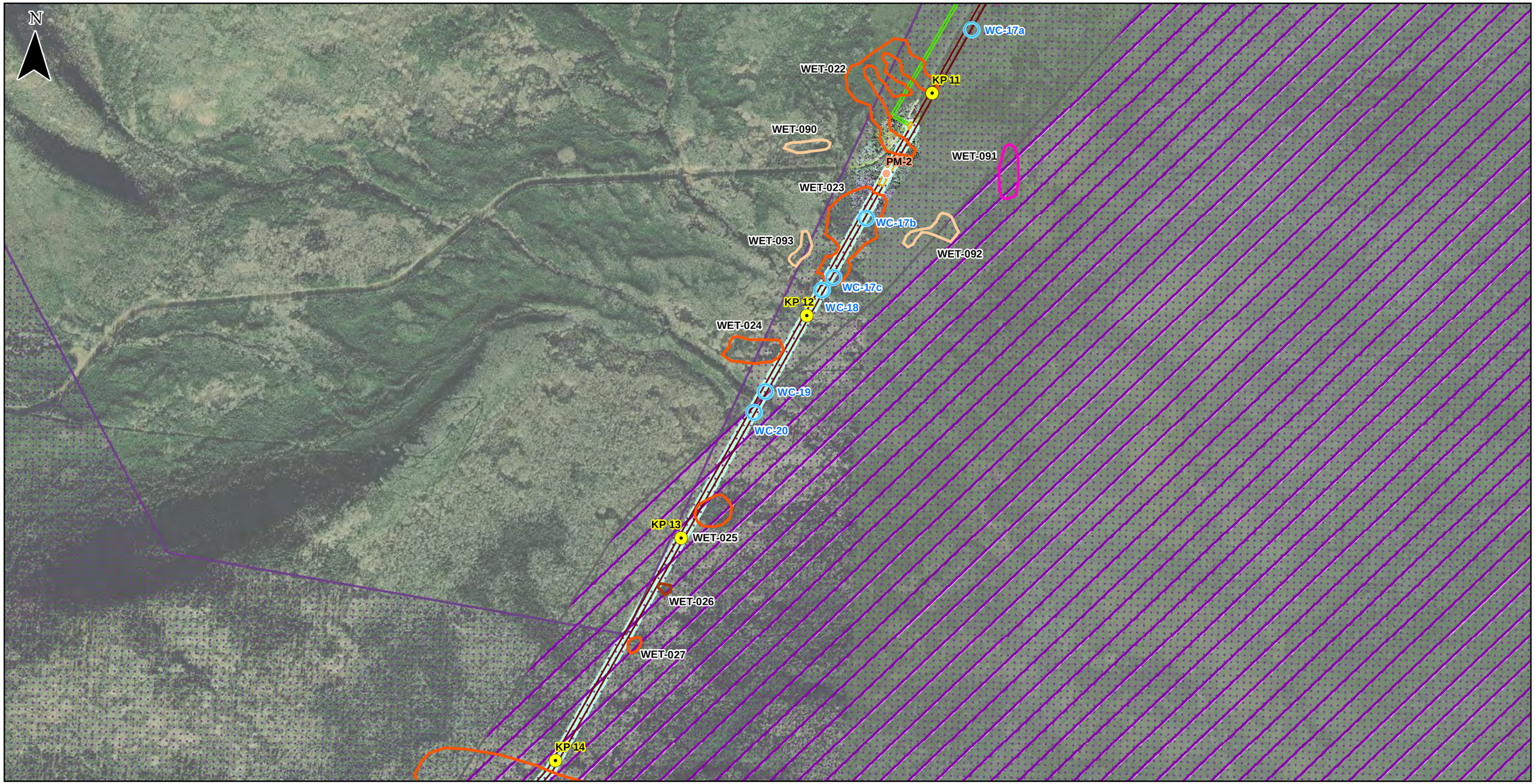

Watercourse Crossing
Kilometre Post (KP)
Abandonment Site - See ESIS
Right-of-Way
Temporary Workspace
Access Road

Wildlife
NWT Caribou Critical Habitat (NT-1)
Nahanni Wood Bison Population (Disease-Free) (Entire Map Extent)
IWA: Moose Dehcho Winter Use Areas
IWA: Distribution of Western Toad (Entire Map Extent)

Wetland
Fen
Swamp
Mixed Treed Swamp
Coniferous Treed Swamp

Vegetation
Brushing

ENVIRONMENTAL NOTES

Wetland and Watercourse Crossings:
- Abide by any water licence or permit conditions, where warranted.
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Vegetation:
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- Reclamation and restoration measures may include:
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Heritage Resources
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  - o Apply signage
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Jacobs

0 150 300 450 m

11"x17" MOSAIC
SCALE: 1:15,000

ENBRIDGE

WESTCOAST ENERGY INC.

EAS PAGE 4 OF 14
POINTED MOUNTAIN PIPELINE ABANDONMENT PROJECT

REV: 0 *DATE:* September 2023 *SHEET:* 4 of 14

REVISION HISTORY

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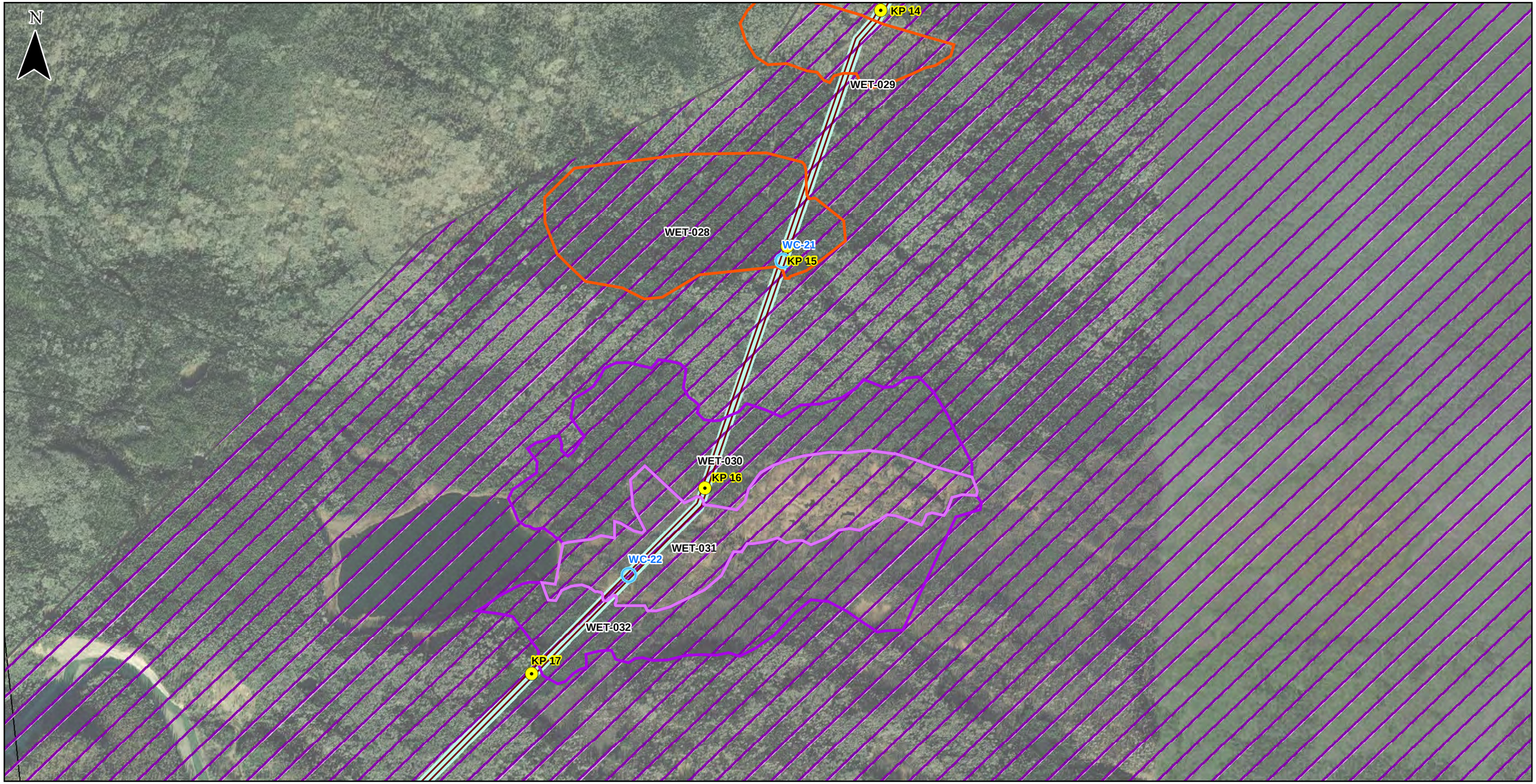

Watercourse Crossing
Kilometre Post (KP)
Right-of-Way

Wildlife
- NWT Caribou Critical Habitat (NT-1)
- Nahanni Wood Bison Population (Disease-Free) (Entire Map Extent)
- IWA: Moose Dehcho Winter Use Areas (Entire Map Extent)
- IWA: Distribution of Western Toad (Entire Map Extent)

Wetland
- Shrub Bog
- Treed Bog
- Mixed Treed Swamp

Vegetation
- Brushing

ENVIRONMENTAL NOTES

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Jacobs

0 150 300 450m

11"x17" MOSAIC
SCALE: 1:15,000

ENBRIDGE

WESTCOAST ENERGY INC.

EAS PAGE 5 OF 14
POINTED MOUNTAIN PIPELINE ABANDONMENT PROJECT

REV: 0 *DATE:* September 2023 *SHEET:* 5 of 14

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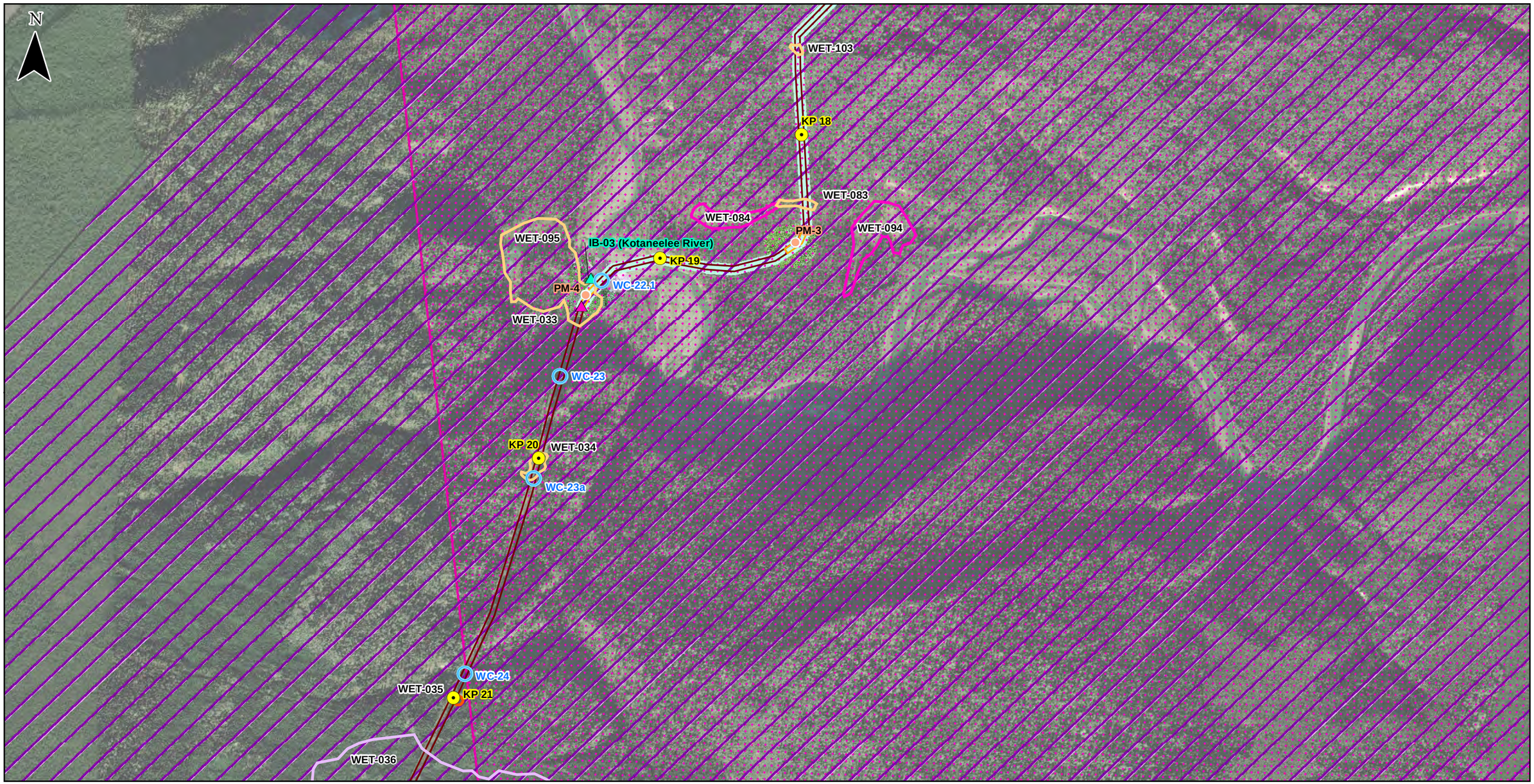

- Ice Bridge
- Beaver Lodge
- Watercourse Crossing
- Kilometre Post (KP)
- Abandonment Site - See ESIS
- Right-of-Way
- Temporary Workspace

Wildlife

- NWT Caribou Critical Habitat (NT-1)
- Nahanni Wood Bison Population (Disease-Free) (Entire Map Extent)
- IWA: Moose Dehcho Winter Use Area (Entire Map Extent)
- IWA: Distribution of Western Toad

Wetland

- Treed Bog
- Fen
- Shrub Swamp
- Mixed Treed Swamp

Vegetation

- Brushing

ENVIRONMENTAL NOTES

Wetland and Watercourse Crossings:

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Jacobs

0 150 300 450m

11"x17" MOSAIC
SCALE: 1:15,000

ENBRIDGE

WESTCOAST ENERGY INC.

EAS PAGE 6 OF 14
POINTED MOUNTAIN PIPELINE ABANDONMENT PROJECT

REV: 0 *DATE:* September 2023 *SHEET:* 6 of 14

REVISION HISTORY

NO.	*DESCRIPTION*	*DATE*	*BY*	*QA*
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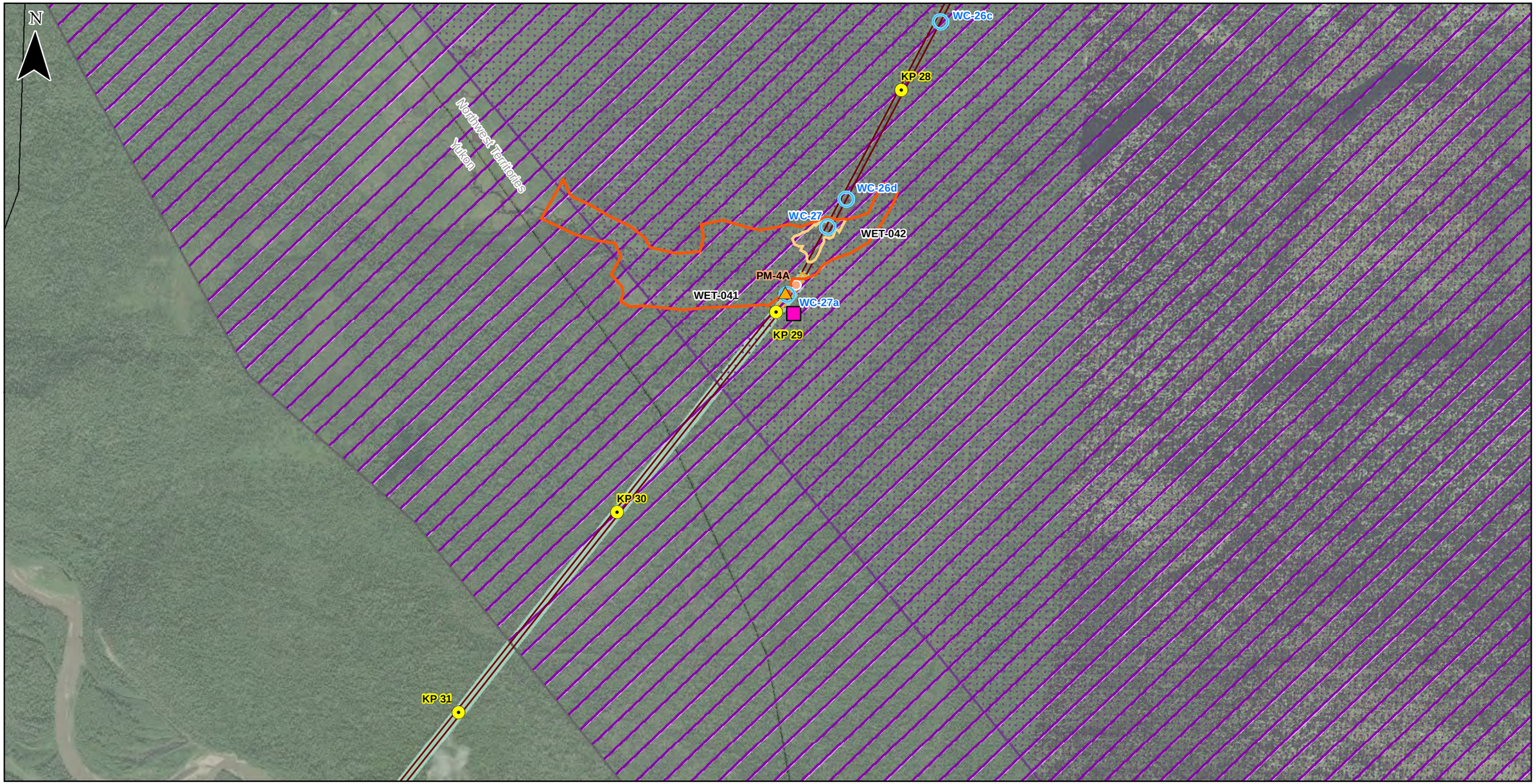

- Bear Den
- Beaver Dam
- Watercourse Crossing
- Kilometre Post (KP)
- Abandonment Site - See ESIS
- Right-of-Way
- Temporary Workspace
- Provincial Boundary

Wildlife
- NWT Caribou Critical Habitat (NT-1)
- Nahanni Wood Bison Population (Disease-Free) (Entire Map Extent)
- IWA: Moose Dehcho Winter Use Area

Wetland
- Shrub Swamp
- Mixed Treed Swamp

Vegetation
- Brushing

ENVIRONMENTAL NOTES

Wetland and Watercourse Crossings:
- Abide by any water licence or permit conditions, where warranted.
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Jacobs

0 150 300 450m

11"x17" MOSAIC
SCALE: 1:15,000

ENBRIDGE

WESTCOAST ENERGY INC.

EAS PAGE 7 OF 14
POINTED MOUNTAIN PIPELINE ABANDONMENT PROJECT

REV: 0 *DATE:* September 2023 *SHEET:* 7 of 16

REVISION HISTORY

NO.	*DESCRIPTION*	*DATE*	*BY*	*QA*
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Ice Bridge
Watercourse Crossing
Kilometre Post (KP)
Right-of-Way
Provincial Boundary

Wildlife
NWT Caribou Critical Habitat (NT-1)
Nahanni Wood Bison Range

Wetland
Graminoid Marsh
Mixed Treed Swamp

Vegetation
Brushing

ENVIRONMENTAL NOTES

Wetland and Watercourse Crossings:
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Jacobs

0 150 300 450m

11"x17" MOSAIC
SCALE: 1:15,000

ENBRIDGE

WESTCOAST ENERGY INC.

EAS PAGE 8 OF 14
POINTED MOUNTAIN PIPELINE ABANDONMENT PROJECT

REV: 0 *DATE:* September 2023 *SHEET:* 8 of 14

REVISION HISTORY

NO.	*DESCRIPTION*	*DATE*	*BY*	*QA*
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Watercourse Crossing
Kilometre Post (KP)
Abandonment Site - See ESIS
Right-of-Way
Temporary Workspace
Access Road

Wildlife
Boreal Caribou Range (NT-1)
Nahanni Wood Bison Range
IWA: Nahanni Wood Bison Herd Range

Wetland
Marsh
Swamp

Vegetation
Brushing

ENVIRONMENTAL NOTES

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Jacobs

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11"x17" MOSAIC
SCALE: 1:15,000

ENBRIDGE

WESTCOAST ENERGY INC.

EAS PAGE 9 OF 14
POINTED MOUNTAIN PIPELINE ABANDONMENT PROJECT

REV: 0 *DATE:* September 2023 *SHEET:* 9 of 14

REVISION HISTORY

NO.	*DESCRIPTION*	*DATE*	*BY*	*QA*
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- Water Source
- Watercourse Crossing
- Kilometre Post (KP)
- Right-of-Way
- Temporary Workspace
- Access Road

Wildlife
- Boreal Caribou Range (NT-1)
- Nahanni Wood Bison Range

Wetland
- Swamp

Vegetation
- Brushing

ENVIRONMENTAL NOTES

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ENBRIDGE

WESTCOAST ENERGY INC.

EAS PAGE 10 OF 14
POINTED MOUNTAIN PIPELINE ABANDONMENT PROJECT

REV: 0 *DATE:* September 2023 *SHEET:* 10 of 14

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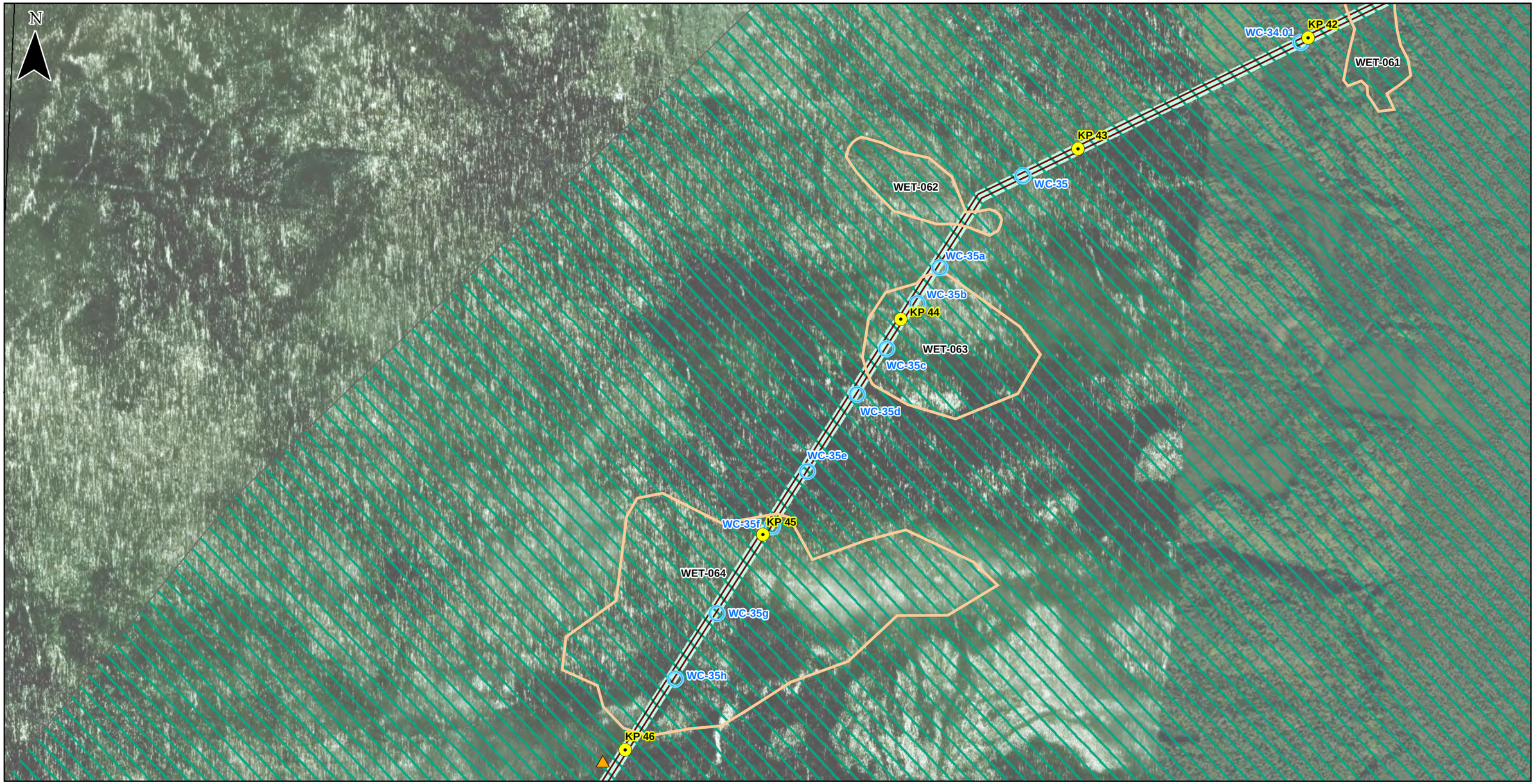

Beaver Dam

Watercourse Crossing

Kilometre Post (KP)

Right-of-Way

Wildlife

Nahanni Wood Bison Range

Wetland

Swamp

Vegetation

Brushing

ENVIRONMENTAL NOTES

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11"x17" MOSAIC
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ENBRIDGE

WESTCOAST ENERGY INC.

EAS PAGE 11 OF 14
POINTED MOUNTAIN PIPELINE ABANDONMENT PROJECT

REV: 0 *DATE:* September 2023 *SHEET:* 11 of 14

REVISION HISTORY

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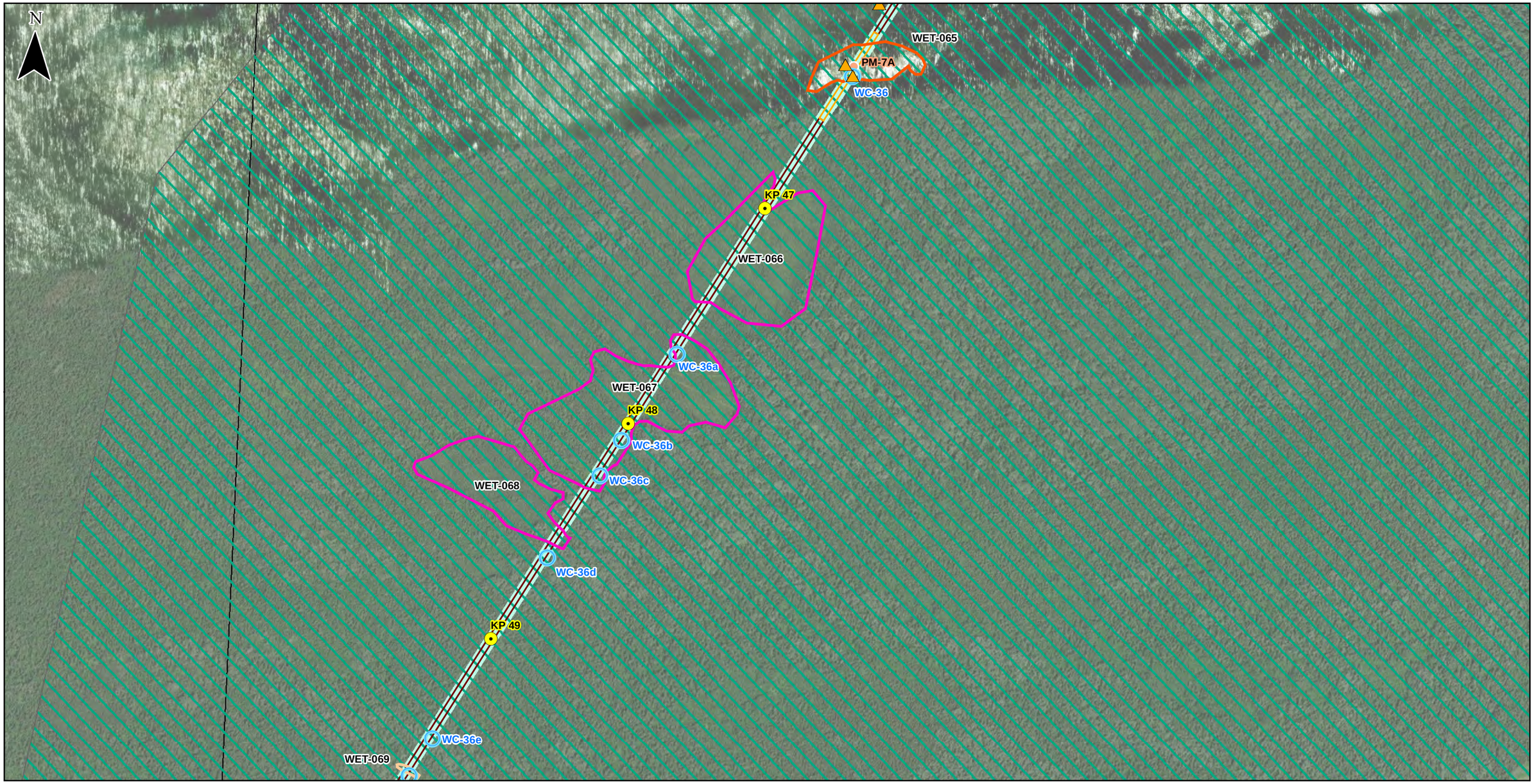

- Beaver Dam
- Watercourse Crossing
- Kilometre Post (KP)
- Abandonment Site - See ESIS
- Right-of-Way
- Temporary Workspace

Wildlife
- Nahanni Wood Bison Range

Wetland
- Fen
- Swamp
- Mixed Treed Swamp

Vegetation
- Brushing

ENVIRONMENTAL NOTES

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Jacobs

0 150 300 450m

11"x17" MOSAIC
SCALE: 1:15,000

ENBRIDGE

WESTCOAST ENERGY INC.

EAS PAGE 12 OF 14
POINTED MOUNTAIN PIPELINE ABANDONMENT PROJECT

REV: 0 *DATE:* September 2023 *SHEET:* 12 of 14

REVISION HISTORY

NO.	*DESCRIPTION*	*DATE*	*BY*	*QA*
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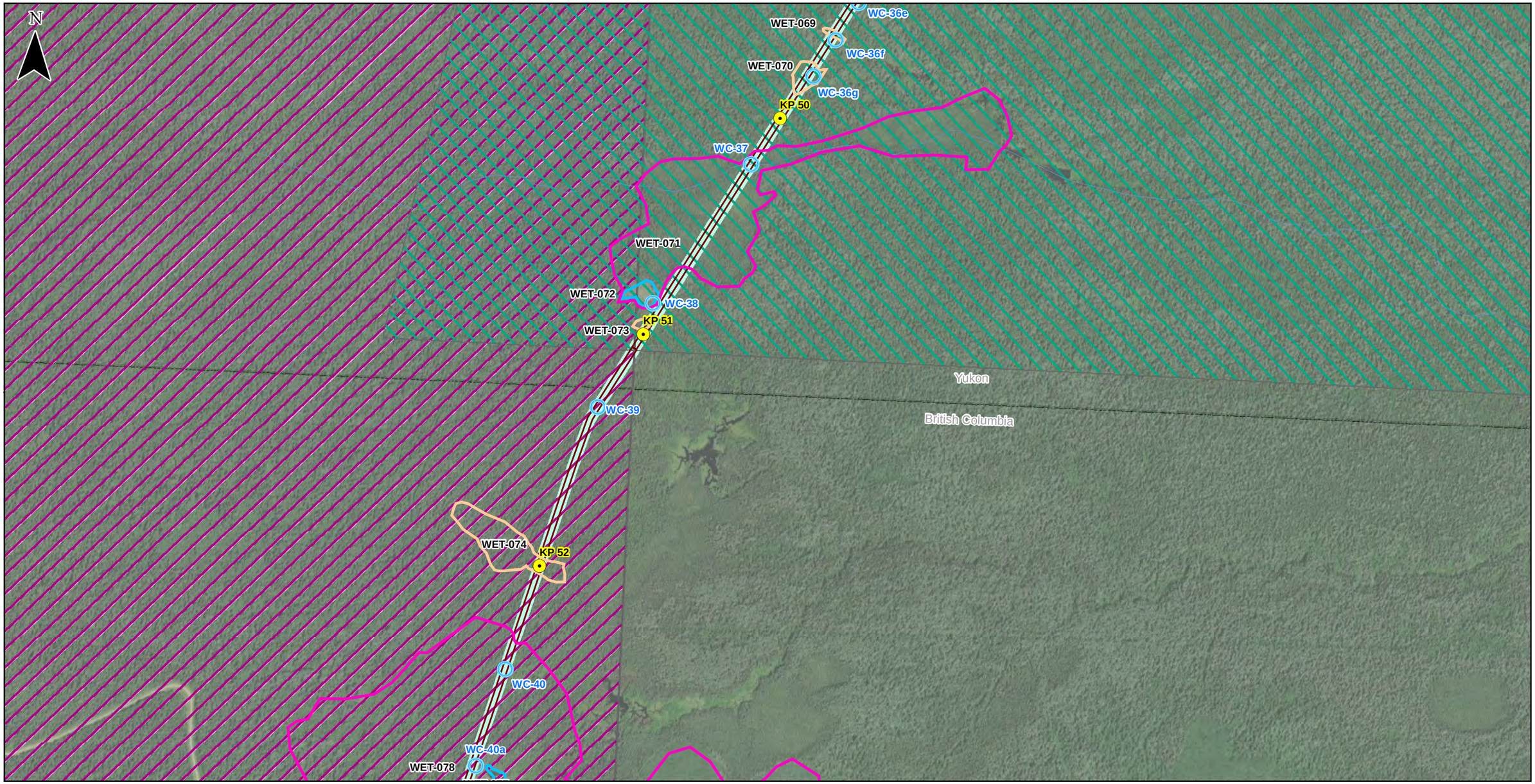


Watercourse Crossing
Kilometre Post (KP)
Right-of-Way
Watercourse
Provincial Boundary

Wildlife
Nahanni Wood Bison Range
Nahanni-Liard Wood Bison Population Range

Wetland
Fen
Shallow Water
Swamp

Vegetation
Brushing

ENVIRONMENTAL NOTES

Wetland and Watercourse Crossings:
- Abide by any water licence or permit conditions, where warranted.
- Limit vegetation brushing in wetlands and watercourse riparian areas to the extent feasible.
- No storage of fuel, refueling or equipment maintenance within 30 m of wetlands and watercourses.
- Recontour wetlands and restore surface drainage patterns to as close to pre-construction profile as practical, where applicable.
- Snow fill and ice bridge crossings should not impede flow; breach snow fill and ice bridge crossings prior to spring break-up.
- Wetlands and watercourses crossed by the Project are listed in Table 2 and Table 3 of Section 2.1 of the EPP, respectively.
- Follow the wetland and watercourse crossing mitigation measures in Sections 17.0 and 18.0 of the EPP, respectively.

Vegetation:
- Follow the weed control and vegetation clearing measures in Sections 5.0 and 8.0 of the EPP, respectively.

Reclamation
- Reclamation and restoration measures may include:
  - o natural regeneration (particularly in shrubby and graminoid wetlands or wetland fringes), or
  - o active restoration methods such as site preparation, seeding, and access control.
- Follow clean-up and reclamation measures in Section 15.0 and revegetation measures in Section 16.0 of the EPP.
- Where practical, include culturally important species in the reclamation and restoration plans based on discussions with Indigenous groups.

Wildlife:
- Follow the wildlife, wildlife feature and wildlife habitat measures in Section 2.1 (Table 1) of the EPP.
- In the event of unanticipated wildlife or wildlife habitat feature discoveries, implement the Wildlife Discovery Contingency Plan (Appendix D2 of the EPP). Discoveries will be discussed and resolved by the Environmental Inspector, Wildlife Resource Specialist(s), and the responsible regulatory agencies, if necessary.

Heritage Resources
- Five Culturally Modified Trees in proximity to PM-3 were observed in August 2021 and August 2022 (refer to Section 2.1 of the EPP).
  - o Flag for avoidance
  - o Apply signage
  - o Monitor during abandonment activities (especially clearing and topsoil salvage and reclamation)
- If heritage features not previously identified are found during construction refer to Section 6.0 of the EPP.

Jacobs

0 150 300 450m

11"x17" MOSAIC
SCALE: 1:15,000

ENBRIDGE

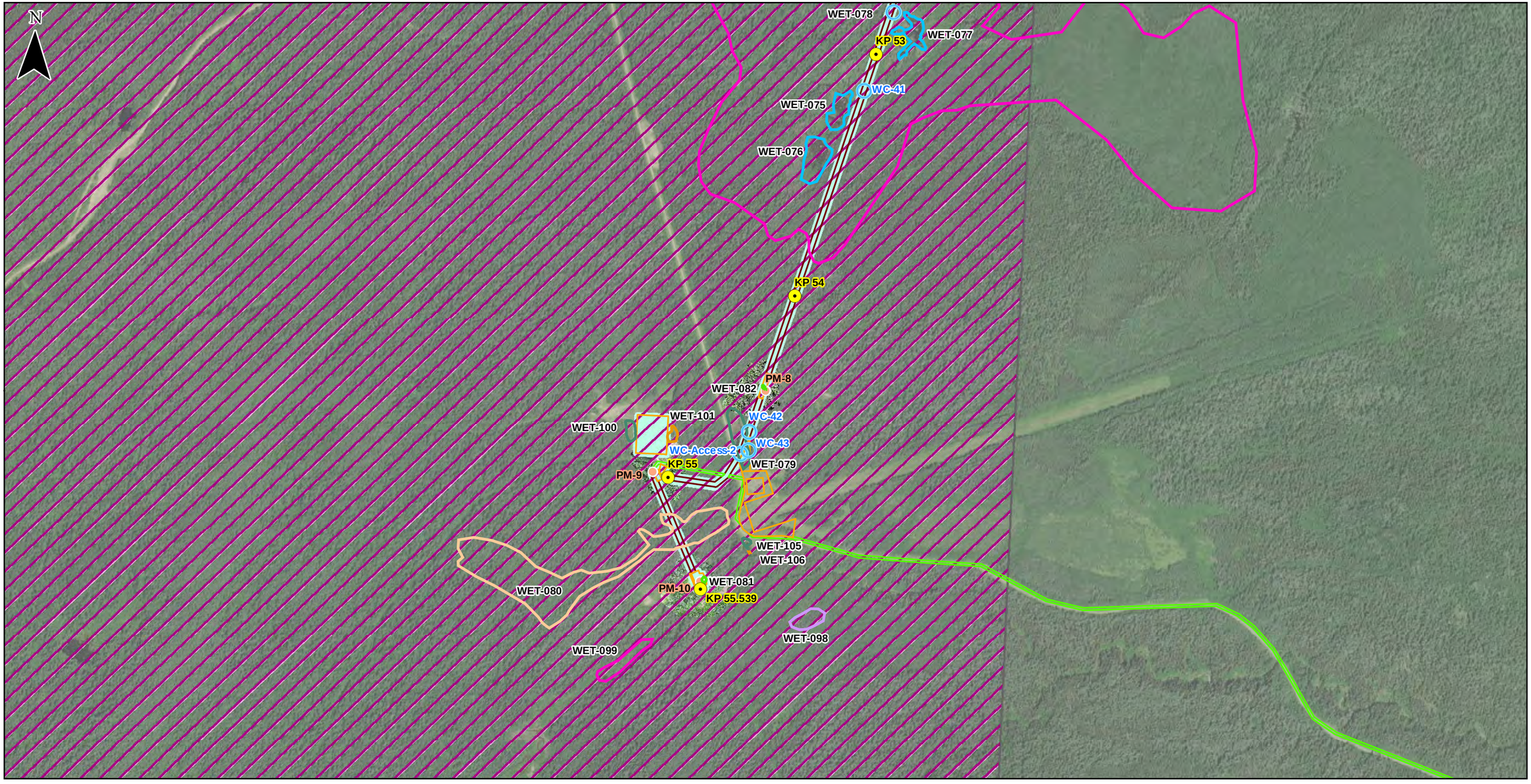
WESTCOAST ENERGY INC.

EAS PAGE 13 OF 14
POINTED MOUNTAIN PIPELINE ABANDONMENT PROJECT

REV: 0 *DATE:* September 2023 *SHEET:* 13 of 14

REVISION HISTORY

NO.	DESCRIPTION	DATE	BY	QA
0	Issued for Use	9/29/2023	KA	EF



Watercourse Crossing
Kilometre Post (KP)
Abandonment Site - See ESIS
Right-of-Way
Temporary Workspace
Access Road

Wildlife
Nahanni-Liard Wood Bison Population Range

Wetland
Bog
Fen
Marsh
Graminoid Marsh
Shallow Water
Swamp
Shrub Swamp

Vegetation
Brushing

ENVIRONMENTAL NOTES

Wetland and Watercourse Crossings:
- Abide by any water licence or permit conditions, where warranted.
- Limit vegetation brushing in wetlands and watercourse riparian areas to the extent feasible.
- No storage of fuel, refueling or equipment maintenance within 30 m of wetlands and watercourses.
- Recontour wetlands and restore surface drainage patterns to as close to pre-construction profile as practical, where applicable.
- Snow fill and ice bridge crossings should not impede flow; breach snow fill and ice bridge crossings prior to spring break-up.
- Wetlands and watercourses crossed by the Project are listed in Table 2 and Table 3 of Section 2.1 of the EPP, respectively.
- Follow the wetland and watercourse crossing mitigation measures in Sections 17.0 and 18.0 of the EPP, respectively.

Vegetation:
- Follow the weed control and vegetation clearing measures in Sections 5.0 and 8.0 of the EPP, respectively.

Reclamation
- Reclamation and restoration measures may include:
  - o natural regeneration (particularly in shrubby and graminoid wetlands or wetland fringes), or
  - o active restoration methods such as site preparation, seeding, and access control.
- Follow clean-up and reclamation measures in Section 15.0 and revegetation measures in Section 16.0 of the EPP.
- Where practical, include culturally important species in the reclamation and restoration plans based on discussions with Indigenous groups.

Wildlife:
- Follow the wildlife, wildlife feature and wildlife habitat measures in Section 2.1 (Table 1) of the EPP.
- In the event of unanticipated wildlife or wildlife habitat feature discoveries, implement the Wildlife Discovery Contingency Plan (Appendix D2 of the EPP). Discoveries will be discussed and resolved by the Environmental Inspector, Wildlife Resource Specialist(s), and the responsible regulatory agencies, if necessary.

Heritage Resources
- Five Culturally Modified Trees in proximity to PM-3 were observed in August 2021 and August 2022 (refer to Section 2.1 of the EPP).
  - o Flag for avoidance
  - o Apply signage
  - o Monitor during abandonment activities (especially clearing and topsoil salvage and reclamation)
- If heritage features not previously identified are found during construction refer to Section 6.0 of the EPP.

Jacobs

0 150 300 450m

11"x17" MOSAIC
SCALE: 1:15,000

ENBRIDGE

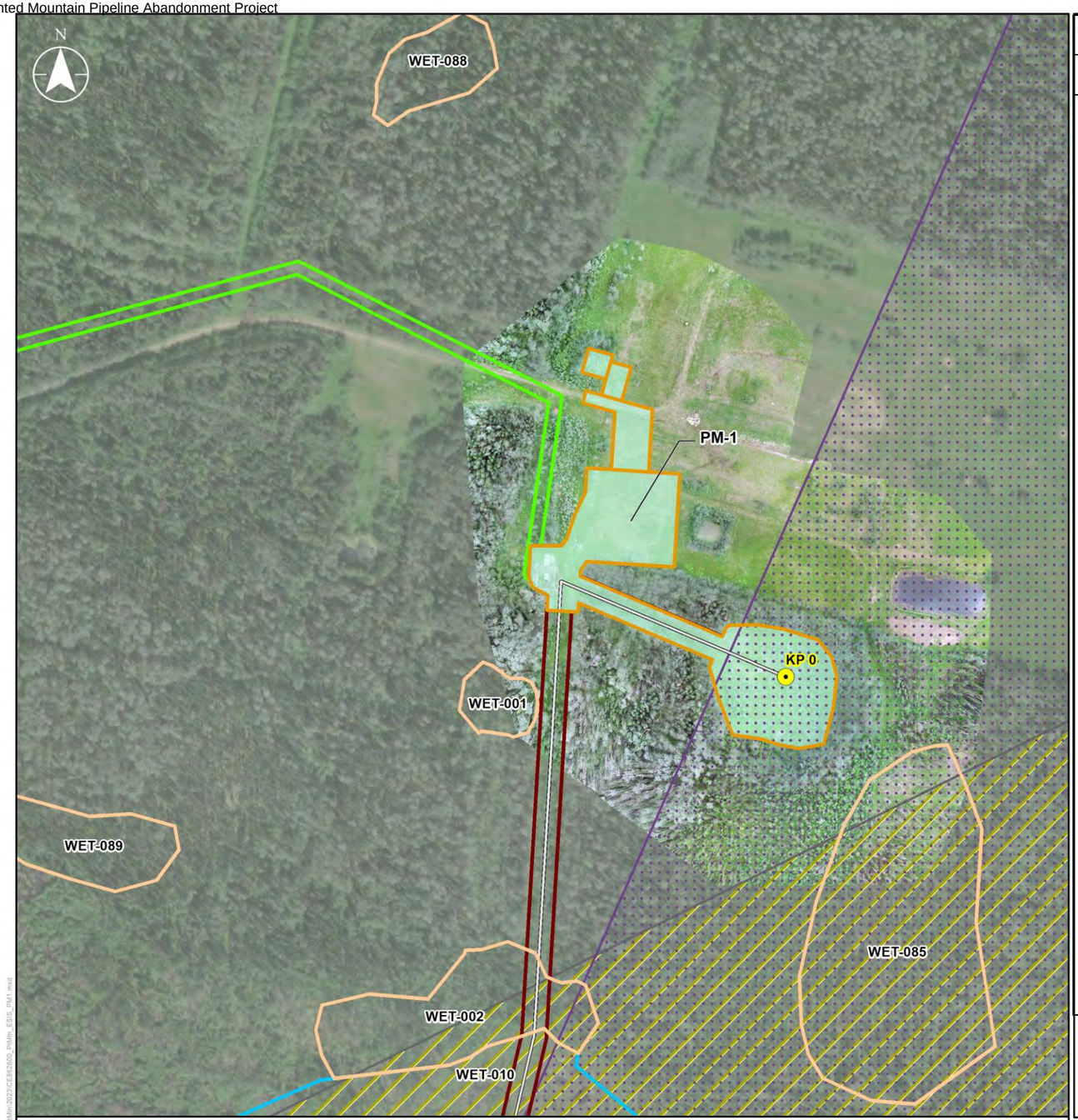
WESTCOAST ENERGY INC.

EAS PAGE 14 OF 14
POINTED MOUNTAIN PIPELINE ABANDONMENT PROJECT

REV: 0 *DATE:* September 2023 *SHEET:* 14 of 14

REVISION HISTORY

NO.	*DESCRIPTION*	*DATE*	*BY*	*QA*
0	Issued for Use	9/29/2023	KA	EF



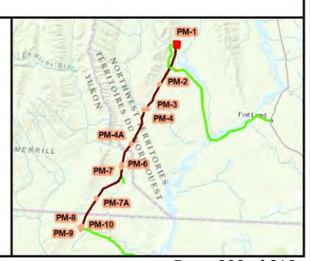
AERIAL PHOTOGRAPHY

Kilometre Post (KP)
Right-of-Way
Temporary Workspace
Access Road
Existing Pipeline

Wildlife
NWT Caribou Critical Habitat (NT-1) (Entire Map Extent)
Nahanni Wood Bison Population (Disease Free) (Entire Map Extent)
IWA: Dehcho Beaver Concentration Area (Entire Map Extent)
IWA: Distribution of Western Toad (Entire Map Extent)
IWA: Moose Dehcho Winter Use Area
IWA: Nahanni Wood Bison Herd Range

Wetland
Shallow Water
Swamp

Vegetation
Brushing Possible



PROJECT COMPONENT		PM-1 (ABANDONMENT, INFRASTRUCTURE REMOVAL, REMEDIATION)
LAND USE / LAND OWNERSHIP		Disturbed/Cleared/Shrubs/Treed – Coniferous/Treed – Deciduous/ Treed – Mixed – Crown Land Northwest Territories
RESOURCE INFORMATION AND PROJECT SPECIFIC MITIGATION MEASURES	VEGETATION AND WETLANDS	<u>Wetlands</u> No wetlands interact with the Project Footprint. <u>Vegetation</u> A few sporadically occurring individual plants of white sweet clover were observed at low density during the pre-construction vegetation survey in August 2021. A single patch plus a few sporadically occurring plants of yellow sweet clover were observed at low density during the vegetation survey in August 2021. Mitigation may be warranted to reduce the potential spread of these species. Refer to Sections 5.0 and 8.0 of the EPP for weed control and vegetation clearing, respectively.
	WILDLIFE AND WILDLIFE HABITAT	Refer to Section 2.1 (Table 1) and Section 4.1 of the EPP for measures specific to wildlife and wildlife habitat. <u>Important Wildlife Areas (Dehcho Beaver Concentration Area, Moose Dehcho Winter Use Area, Distribution of Western Toad, Nahanni Wood Bison Herd Range):</u> Implement general wildlife habitat measures. <u>Northwest Territories Caribou Critical Habitat (NT-1)</u>: Prioritize areas in caribou range with the objective of avoiding or reducing working during the high-risk timing window for caribou. If caribou are encountered, stop vehicles and equipment, allow the caribou to move through the area undisturbed, and report the sighting to the EI. <u>Nahanni Wood Bison Population (Disease-Free):</u> If bison area encountered, stop vehicles and equipment, allow the bison to move through the area undisturbed, and report the sighting to the EI. In the event of unanticipated wildlife or wildlife habitat feature discoveries, implement the Wildlife Discovery Contingency Plan (Appendix D2 of the EPP). Discoveries will be discussed and resolved by the EI, Wildlife Resource Specialist(s), and the responsible regulatory agencies, if necessary.
	FISHERIES RESOURCES	No watercourses interact with the Project Footprint.
	HERITAGE RESOURCES	No known heritage resources interact with this site. If heritage resources not previously identified are found during construction refer to Section 6.0 of the EPP.
	OTHER CONSTRUCTION CONSIDERATIONS	N/A
	ACCESS CONTROL / OTHER	N/A
	RECLAMATION	Reclaim disturbed areas following abandonment activities. Reclamation and restoration measures may include natural regeneration (particularly in shrubby and graminoid wetlands or wetland fringes) or active restoration methods such as site preparation, conifer seedling planting and access control. Restore disturbed areas to preconstruction conditions to the extent practical. Follow Clean-up and Reclamation and Revegetation measures as outlined in Sections 15.0 and 16.0 of the EPP.

NOTES: Refer to the EPP for a complete understanding of the mitigation requirements for the Project.

SHEET REVISION	DATE	PROJECTION	DATUM	CONTRACTOR
0	September 2023	Zone 10	NAD 83	Jacobs

Sources:
Footprint: Enbridge 2023; Watercourse Crossings, Wetlands, Vegatation: Jacobs 2023; Existing Pipeline: Enbridge 2022; Hydrology: NRCan 2007-2011; Road: NRCan 2014; Wildlife Ranges: Government of NWT; Site Imagery: Enbridge 2021; World Imagery: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community.

DATE OF IMAGERY: 2021
PROJECT NUMBER: CE862600
PREPARED FOR: ENBRIDGE

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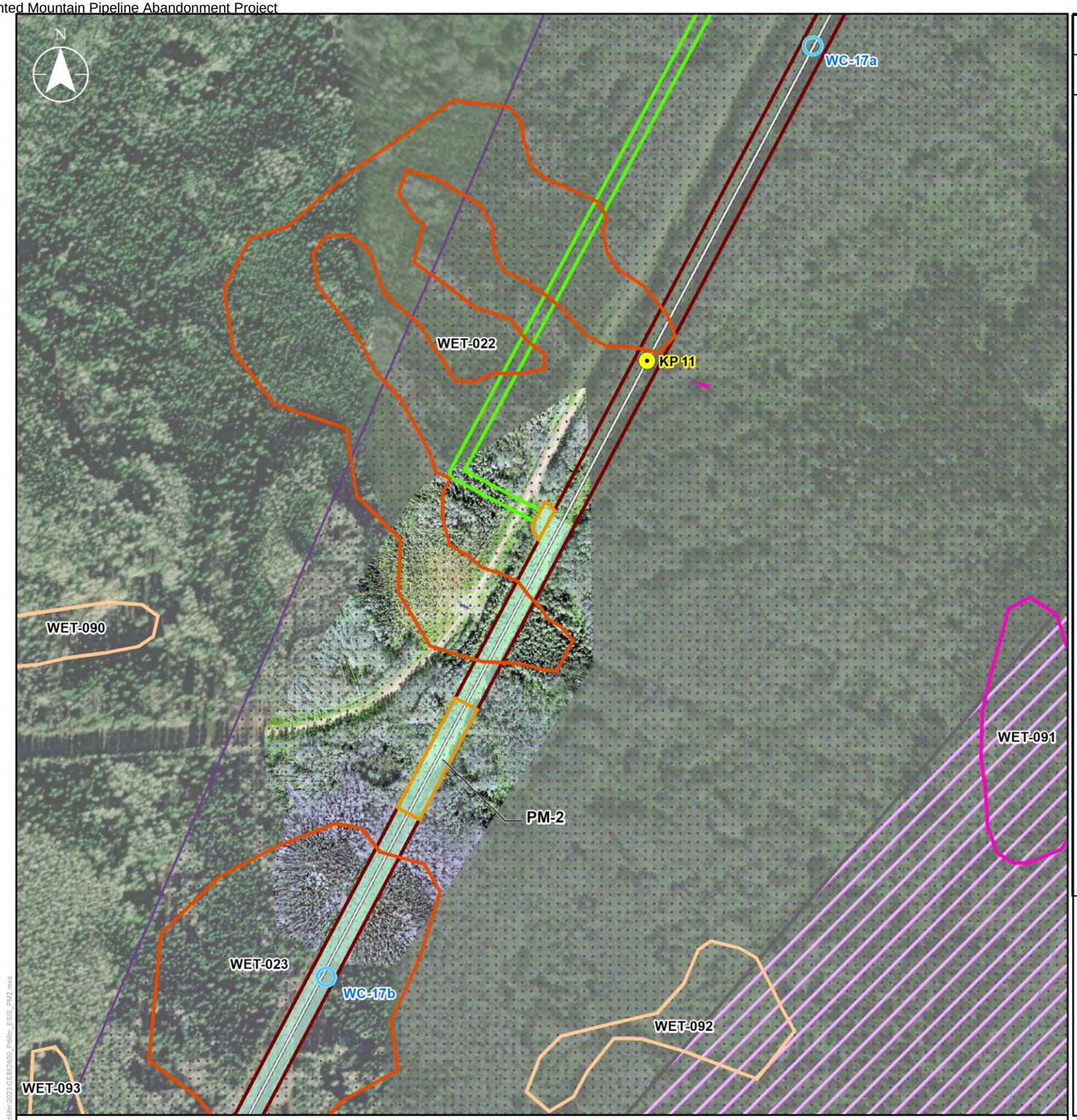
Original Page Size: 11 x 17

WESTCOAST ENERGY INC.

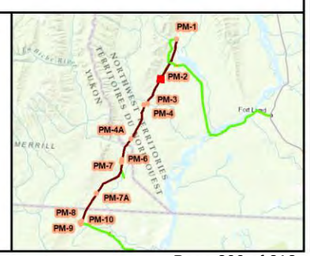
PM-1
POINTED MOUNTAIN PIPELINE ABANDONMENT PROJECT

ENVIRONMENTAL SITE INFORMATION SHEET



AERIAL PHOTOGRAPHY

Watercourse Crossing
Kilometre Post
Right-of-Way
Temporary Workspace
Access Road
Watercourse
Existing Pipeline
Wildlife
NWT Caribou Critical Habitat (NT-1)
Nahanni Wood Bison Population (Disease-Free) (Entire Map Extent)
IWA: Distribution of Western Toad (Entire Map Extent)
IWA: Moose Dehcho Winter Use Area
Wetland
Fen
Swamp
Mixed Treed Swamp
Vegetation
Brushing Possible



PROJECT COMPONENT		PM-2 (ABANDONMENT AND INFRASTRUCTURE REMOVAL)
LAND USE / LAND OWNERSHIP		Shrubs/Treed - Mixed/Treed - Deciduous - Crown Land Northwest Territories
RESOURCE INFORMATION AND PROJECT SPECIFIC MITIGATION MEASURES	VEGETATION AND WETLANDS	Wetlands No wetlands interact with the Project Footprint. Vegetation Refer to Sections 5.0 and 8.0 of the EPP for weed control and vegetation clearing, respectively.
	WILDLIFE AND WILDLIFE HABITAT	Refer to Section 2.1 (Table 1) and Section 4.1 of the EPP for measures specific to wildlife and wildlife habitat. Important Wildlife Areas (Moose Dehcho Winter Use Area, Distribution of Western Toad): Implement general wildlife habitat measures. Northwest Territories Caribou Critical Habitat (NT-1): Prioritize areas in caribou range with the objective of avoiding or reducing working during the high-risk timing window for caribou. If caribou are encountered, stop vehicles and equipment, allow the caribou to move through the area undisturbed, and report the sighting to the EI. Nahanni Wood Bison Population (Disease-Free): If bison are encountered, stop vehicles and equipment, allow the bison to move through the area undisturbed, and report the sighting to the EI. In the event of unanticipated wildlife or wildlife habitat feature discoveries, implement the Wildlife Discovery Contingency Plan (Appendix D2 of the EPP). Discoveries will be discussed and resolved by the EI, Wildlife Resource Specialist(s), and the responsible regulatory agencies, if necessary.
	FISHERIES RESOURCES	No watercourses interact with the Project Footprint
	HERITAGE RESOURCES	No known heritage resources interact with this site. If heritage resources not previously identified are found during construction refer to Section 6.0 of the EPP.
	OTHER CONSTRUCTION CONSIDERATIONS	N/A
	ACCESS CONTROL / OTHER	N/A
	RECLAMATION	Reclaim disturbed areas following abandonment activities. Reclamation and restoration measures may include natural regeneration (particularly in shrubby and graminoid wetlands or wetland fringes) or active restoration methods such as site preparation, conifer seedling planting and access control. Restore disturbed areas to preconstruction conditions to the extent practical. Follow Clean-up and Reclamation and Revegetation measures as outlined in Sections 15.0 and 16.0 of the EPP.

NOTES: Refer to the EPP for a complete understanding of the mitigation requirements for the Project.

SHEET REVISION	DATE	PROJECTION	DATUM	CONTRACTOR
0	September 2023	Zone 10	NAD 83	Jacobs

Sources:
Footprint: Enbridge 2023; Watercourse Crossings, Wetlands, Vegatation: Jacobs 2023; Existing Pipeline: Enbridge 2022; Hydrology: NRCan 2007-2011; Road: NRCan 2014; Wildlife Ranges: Government of NWT; Site Imagery: Enbridge 2021; World Imagery: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community.

DATE OF IMAGERY	PROJECT NUMBER	PREPARED FOR
2021	CE862600	ENBRIDGE

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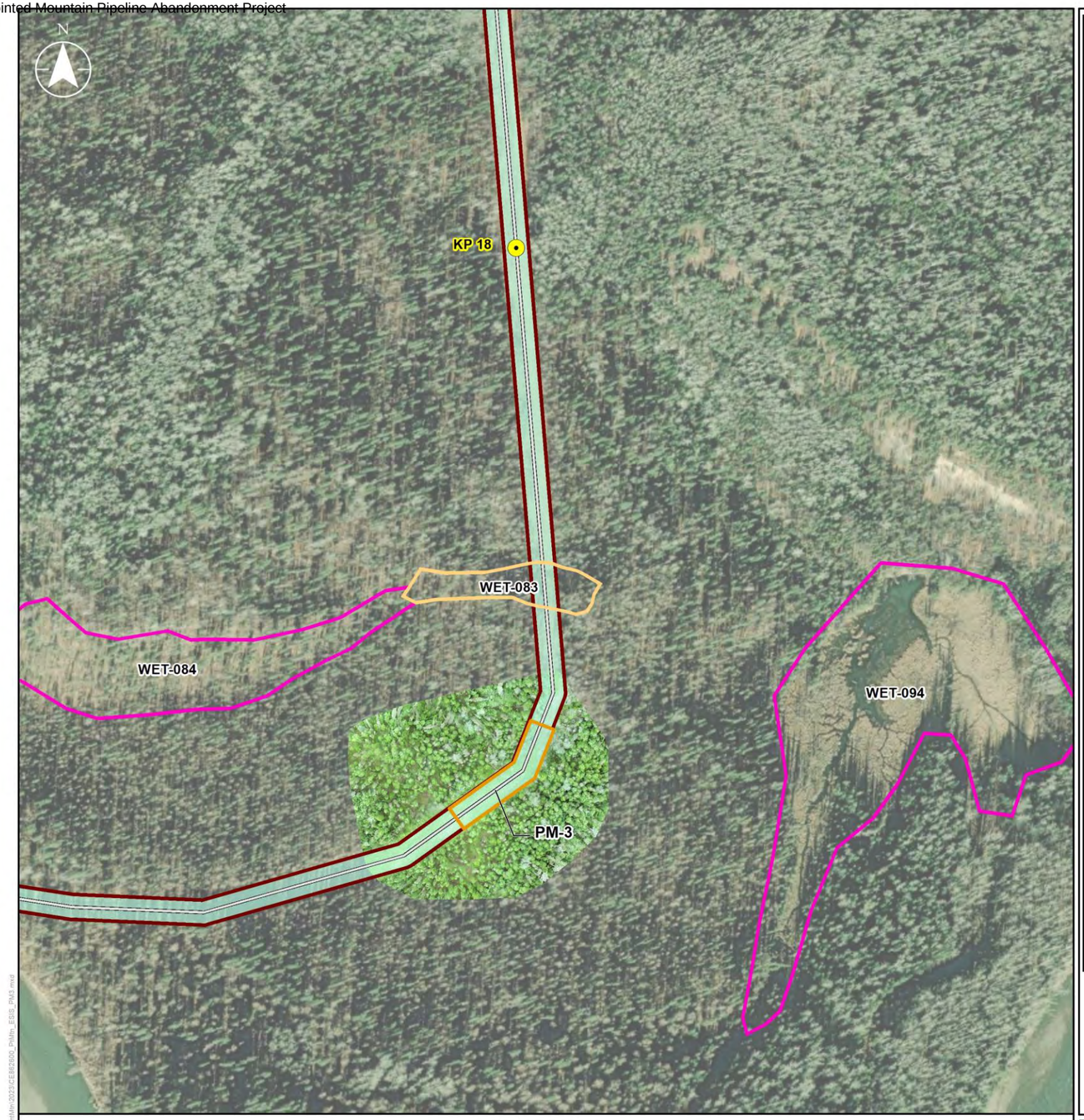
Original Page Size: 11 x 17

WESTCOAST ENERGY INC.

PM-2
POINTED MOUNTAIN PIPELINE ABANDONMENT PROJECT

ENVIRONMENTAL SITE INFORMATION SHEET



AERIAL PHOTOGRAPHY

Kilometre Post (KP)
Right-of-Way
Temporary Workspace
Existing Pipeline

Wildlife
- NWT Caribou Critical Habitat (NT-1) (Entire Map Extent)
- Nahanni Wood Bison Population (Disease-Free) (Entire Map Extent)
- IWA: Distribution of Western Toad (Entire Map Extent)
- IWA: Moose Dehcho Winter Use Area (Entire Map Extent)

Wetland
- Fen
- Shrub Swamp

Vegetation
- Brushing Possible

PROJECT COMPONENT		PM-3 (ABANDONMENT AND INFRASTRUCTURE REMOVAL)
LAND USE / LAND OWNERSHIP		Shrubs/Treed – Conifer/Treed - Mixed - Crown Land Northwest Territories
RESOURCE INFORMATION AND PROJECT SPECIFIC MITIGATION MEASURES	VEGETATION AND WETLANDS	<u>Wetlands</u> No wetlands interact with the Project Footprint. <u>Vegetation</u> Refer to Sections 5.0 and 8.0 of the EPP for weed control and vegetation clearing, respectively.
	WILDLIFE AND WILDLIFE HABITAT	Refer to Section 2.1 (Table 1) and Section 4.1 of the EPP for measures specific to wildlife and wildlife habitat. <u>Important Wildlife Areas (Moose Dehcho Winter Use Area, Distribution of Western Toad):</u> Implement general wildlife habitat measures. <u>Northwest Territories Caribou Critical Habitat (NT-1)</u>: Prioritize areas in caribou range with the objective of avoiding or reducing working during the high-risk timing window for caribou. If caribou are encountered, stop vehicles and equipment, allow the caribou to move through the area undisturbed, and report the sighting to the EI. <u>Nahanni Wood Bison Herd Population (Disease-Free)</u>: If bison area encountered, stop vehicles and equipment, allow the bison to move through the area undisturbed, and report the sighting to the EI. In the event of unanticipated wildlife or wildlife habitat feature discoveries, implement the Wildlife Discovery Contingency Plan (Appendix D2 of the EPP). Discoveries will be discussed and resolved by the EI, Wildlife Resource Specialist(s), and the responsible regulatory agencies, if necessary.
	FISHERIES RESOURCES	No watercourses interact with the Project Footprint.
	HERITAGE RESOURCES	A total of five Culturally Modified Trees in proximity to PM-3 were observed in August 2021 and August 2022 (refer to Section 2.1 of the EPP). • Flag for avoidance • Apply signage • Monitor during abandonment activities (especially clearing and top-soil stripping salvage and reclamation) If heritage features not previously identified are found during construction refer to Section 6.0 of the EPP.
	OTHER CONSTRUCTION CONSIDERATIONS	N/A
	ACCESS CONTROL / OTHER	N/A
	RECLAMATION	Reclaim disturbed areas following abandonment activities. Reclamation and restoration measures may include natural regeneration (particularly in shrubby and graminoid wetlands or wetland fringes) or active restoration methods such as site preparation, conifer seedling planting and access control. Restore disturbed areas to preconstruction conditions to the extent practical. Follow Clean-up and Reclamation and Revegetation measures as outlined in Sections 15.0 and 16.0 of the EPP.

NOTES: Refer to the EPP for a complete understanding of the mitigation requirements for the Project.

SHEET REVISION	DATE	PROJECTION	DATUM	CONTRACTOR
0	September 2023	Zone 10	NAD 83	Jacobs

Sources:
Footprint: Enbridge 2023; Watercourse Crossings, Wetlands, Vegatation: Jacobs 2023; Existing Pipeline: Enbridge 2022; Hydrology: NRCan 2007-2011; Road: NRCan 2014; Wildlife Ranges: Government of NWT; Site Imagery: Enbridge 2021; World Imagery: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community.

DATE OF IMAGERY: 2021
PROJECT NUMBER: CE862600
PREPARED FOR: ENBRIDGE

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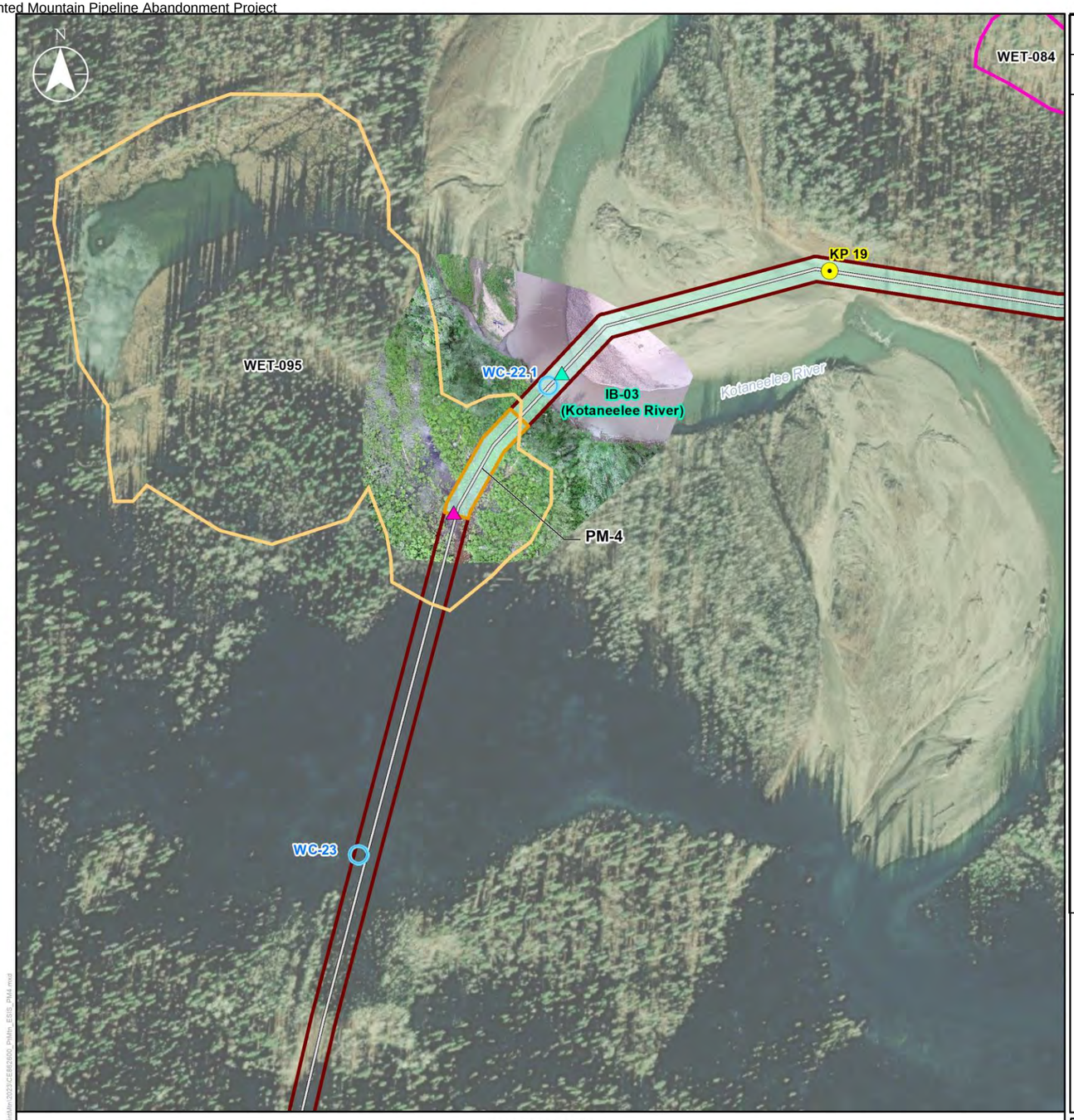
Original Page Size: 11 x 17

WESTCOAST ENERGY INC.

PM-3
POINTED MOUNTAIN PIPELINE ABANDONMENT PROJECT

ENVIRONMENTAL SITE INFORMATION SHEET



AERIAL PHOTOGRAPHY

- Beaver Lodge
- Watercourse Crossing
- Kilometre Post (KP)
- Ice Bridge
- Right-of-Way
- Temporary Workspace
- Existing Pipeline

Wildlife

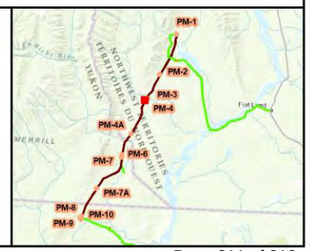
- NWT Caribou Critical Habitat (NT-1) (Entire Map Extent)
- Nahanni Wood Bison Population (Disease-Free) (Entire Map Extent)
- IWA: Western Toad (Entire Map Extent)
- IWA: Moose Dehcho Winter Use Area (Entire Map Extent)

Wetland

- Fen
- Shrub Swamp

Vegetation

- Brushing Possible



PROJECT COMPONENT		PM-4 (ABANDONMENT AND INFRASTRUCTURE REMOVAL)
LAND USE / LAND OWNERSHIP		Shrubs/Treed – Deciduous/Wetland – Crown Land Northwest Territories
RESOURCE INFORMATION AND PROJECT SPECIFIC MITIGATION MEASURES	VEGETATION AND WETLANDS	<u>Wetlands</u> WET-095 Shrub Swamp within the Project Footprint Refer to Sections 11.2, 12.1, 13.0, 14.1, 16.3, 17.0. and 19.1 of the EPP for wetland mitigation. <u>Vegetation</u> Refer to Sections 5.0 and 8.0 of the EPP for weed control and vegetation clearing, respectively.
	WILDLIFE AND WILDLIFE HABITAT	Refer to Section 2.1 (Table 1) and Section 4.1 of the EPP for measures specific to wildlife and wildlife habitat. <u>Important Wildlife Areas (Moose Dehcho Winter Use Area, Distribution of Western Toad):</u> Implement general wildlife habitat measures. <u>Northwest Territories Critical Habitat (NT-1)</u>: Prioritize areas in caribou range with the objective of avoiding or reducing working during the high-risk timing window for caribou. If caribou are encountered, stop vehicles and equipment, allow the caribou to move through the area undisturbed, and report the sighting to the EI. <u>Nahanni Wood Bison Population (Disease-Free)</u>: If bison area encountered, stop vehicles and equipment, allow the bison to move through the area undisturbed, and report the sighting to the EI. <u>Beaver Lodge</u>: Avoid during abandonment activities to the extent practical. If necessary to remove the lodge and/or beavers, refer to the EPP for additional permitting and consultation requirements (Table 1, Section 2.1), . In the event of unanticipated wildlife or wildlife habitat feature discoveries, implement the Wildlife Discovery Contingency Plan (Appendix D2 of the EPP). Discoveries will be discussed and resolved by the EI, Wildlife Resource Specialist(s), and the responsible regulatory agencies, if necessary.
	FISHERIES RESOURCES	The Kotaneelee River (WC-22.1) is within 100 m of the Project Footprint. Refer to Sections 18.0 and 19.0 of the EPP for watercourse crossings and excavation dewatering mitigation, respectively.
	HERITAGE RESOURCES	No known heritage resources interact with this site. If heritage resources not previously identified are found during construction refer to Section 6.0 of the EPP.
	OTHER CONSTRUCTION CONSIDERATIONS	N/A
	ACCESS CONTROL / OTHER	N/A
	RECLAMATION	Reclaim disturbed areas following abandonment activities Reclamation and restoration measures may include natural regeneration (particularly in shrubby and graminoid wetlands or wetland fringes) or active restoration methods such as site preparation, conifer seedling planting and access control. Restore disturbed areas to preconstruction conditions to the extent practical. Follow Clean-up and Reclamation and Revegetation measures as outlined in Sections 15.0 and 16.0 of the EPP.

NOTES: Refer to the EPP for a complete understanding of the mitigation requirements for the Project.

SHEET REVISION	DATE	PROJECTION	DATUM	CONTRACTOR
0	September 2023	Zone 10	NAD 83	Jacobs

Sources:
Footprint: Enbridge 2023; Watercourse Crossings, Wetlands, Vegatation: Jacobs 2023; Existing Pipeline: Enbridge 2022; Hydrology: NRCan 2007-2011; Road: NRCan 2014; Wildlife Ranges: Government of NWT; Site Imagery: Enbridge 2021; World Imagery: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community.

DATE OF IMAGERY: 2021
PROJECT NUMBER: CE862600
PREPARED FOR: ENBRIDGE

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Original Page Size: 11 x 17

WESTCOAST ENERGY INC.

PM-4
POINTED MOUNTAIN PIPELINE ABANDONMENT PROJECT

ENVIRONMENTAL SITE INFORMATION SHEET

AERIAL PHOTOGRAPHY

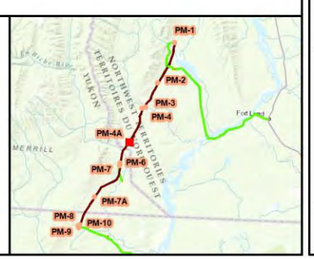
Bear Den
Beaver Dam
Watercourse Crossing
Kilometre Post (KP)
Right-of-Way
Temporary Workspace

Watercourse
Existing Pipeline

Wildlife
NWT Caribou Critical Habitat (NT-1) (Entire Map Extent)
Nahanni Wood Bison Population (Disease-Free) (Entire Map Extent)
IWA: Moose Dehcho Winter Use Area (Entire Map Extent)

Wetland
Mixed Treed Swamp
Shrub Swamp

Vegetation
Brushing Possible



PROJECT COMPONENT		PM-4A (PIPELINE EXPOSURE REMOVAL)
LAND USE / LAND OWNERSHIP		Shrubs/Treed – Coniferous/Wetland – Crown Land Northwest Territories
RESOURCE INFORMATION AND PROJECT SPECIFIC MITIGATION MEASURES	VEGETATION AND WETLANDS	<u>Wetlands</u> WET-042 Mixed Treed Swamp within Project Footprint. Refer to Sections 11.2, 12.1, 13.0, 14.1, 16.3, 17.0. and 19.1 of the EPP for wetland mitigation. <u>Vegetation</u> Refer to Sections 5.0 and 8.0 of the EPP for weed control and vegetation clearing, respectively.
	WILDLIFE AND WILDLIFE HABITAT	Refer to Section 2.1 (Table 1) and Section 4.1 of the EPP for measures specific to wildlife and wildlife habitat. <u>Important Wildlife Areas (Moose Dehcho Winter Use Area, Distribution of Western Toad):</u> Implement general wildlife habitat measures. <u>Northwest Territories Caribou Critical Habitat (NT-1)</u>: Prioritize areas in caribou range with the objective of avoiding or reducing working during the high-risk timing window for caribou. If caribou are encountered, stop vehicles and equipment, allow the caribou to move through the area undisturbed, and report the sighting to the EI. <u>Nahanni Wood Bison Population (Disease-Free)</u>: If bison area encountered, stop vehicles and equipment, allow the bison to move through the area undisturbed, and report the sighting to the EI. <u>Bear Dens:</u> The bear denning period extends from October to end of winter conditions (May to May). Conduct mammal den surveys along sections of the right-of-way that impact mature forest prior to any abandonment activites. If an active bear den is discovered, site-specific mitigation may be warranted (such as, protective setbacks and monitoring). In the event of unanticipated wildlife or wildlife habitat feature discoveries, implement the Wildlife Discovery Contingency Plan (Appendix D2 of the EPP). Discoveries will be discussed and resolved by the EI, Wildlife Resource Specialist(s), and the responsible regulatory agencies, if necessary.
	FISHERIES RESOURCES	WC-27a Unnamed tributary to the Kotaneelee River WC-27 Unnamed tributary to the Kotaneelee River Restricted Activity Period: August 15 to July 15 Refer to Sections 18.0 and 19.0 of the EPP for watercourse crossing and dewatering mitigation, respectively.
	HERITAGE RESOURCES	No known heritage resources interact with this site. If heritage resources not previously identified are found during construction refer to Section 6.0 of the EPP.
	OTHER CONSTRUCTION CONSIDERATIONS	N/A
	ACCESS CONTROL / OTHER	N/A
	RECLAMATION	Reclaim disturbed areas following abandonment activities. Reclamation and restoration measures may include natural regeneration (particularly in shrubby and graminoid wetlands or wetland fringes) or active restoration methods such as site preparation, conifer seedling planting and access control. Restore disturbed areas to preconstruction conditions to the extent practical. Follow Clean-up and Reclamation and Revegetation measures as outlined in Sections 15.0 and 16.0 of the EPP.

NOTES: Refer to the EPP for a complete understanding of the mitigation requirements for the Project.

SHEET REVISION: 0	DATE: September 2023	PROJECTION: Zone 10	DATUM: NAD 83	CONTRACTOR: Jacobs
			DATE OF IMAGERY: 2021	PREPARED FOR: ENBRIDGE
			PROJECT NUMBER: CE862600	

Sources:
Footprint: Enbridge 2023; Watercourse Crossings, Wetlands, Vegatation: Jacobs 2023; Existing Pipeline: Enbridge 2022; Hydrology: NRCan 2007-2011; Road: NRCan 2014; Wildlife Ranges: Government of NWT; Site Imagery: Enbridge 2021; World Imagery: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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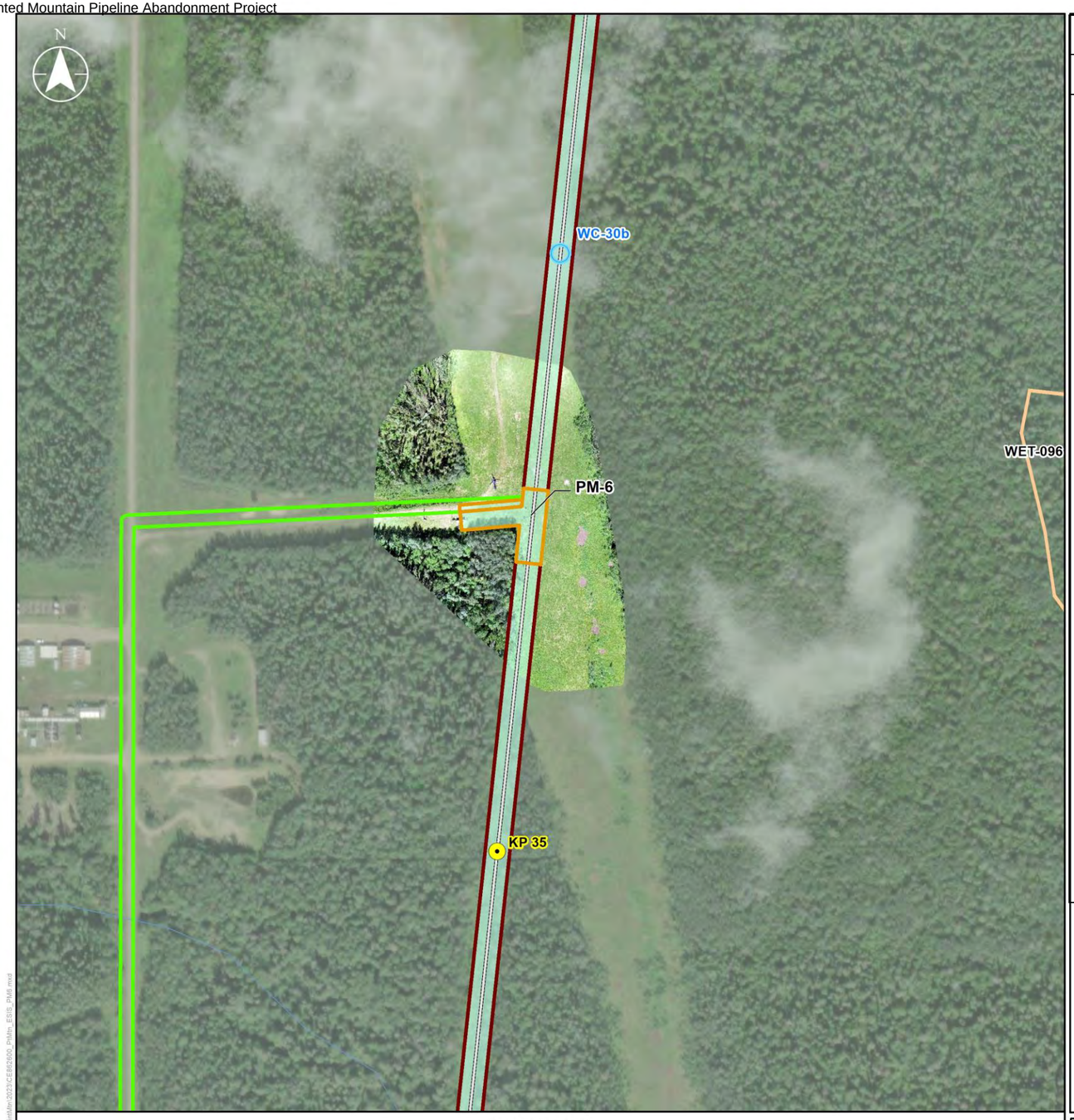
WESTCOAST ENERGY INC.

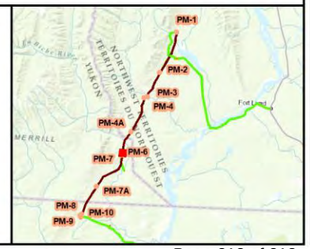
PM-4A
POINTED MOUNTAIN PIPELINE ABANDONMENT PROJECT

ENVIRONMENTAL SITE INFORMATION SHEET



AERIAL PHOTOGRAPHY

Watercourse Crossing
Kilometre Post (KP)
Right-of-Way
Temporary Workspace
Access Road
Watercourse
Existing Pipeline
Wildlife
Nahanni Wood Bison Range (Entire Map Extent)
Wetland
Swamp
Vegetation
Brushing Possible



PROJECT COMPONENT		PM-6 (ABANDONMENT AND INFRASTRUCTURE REMOVAL)
LAND USE / LAND OWNERSHIP		Disturbed/Cleared - Crown Land Yukon
RESOURCE INFORMATION AND PROJECT SPECIFIC MITIGATION MEASURES	VEGETATION AND WETLANDS	Wetlands No wetlands interact with the Project Footprint. Vegetation A few sporadically occurring individual plants of perennial sow-thistle were observed at low density during the vegetation survey in August 2021. A few patches of smooth brome were observed at medium density during the vegetation survey in August 2021. A few sporadically occurring individual plants of white sweet clover were observed at low density during the vegetation survey in August 2021. Mitigation may be warranted to reduce the potential spread of these species. Refer to Sections 5.0 and 8.0 of the EPP for weed control and vegetation clearing, respectively.
	WILDLIFE AND WILDLIFE HABITAT	Refer to Section 2.1 (Table 1) and Section 4.1 of the EPP for measures specific to wildlife and wildlife habitat. Nahanni Wood Bison Range: If bison area encountered, stop vehicles and equipment, allow the bison to move through the area undisturbed, and report the sighting to the EI. In the event of unanticipated wildlife or wildlife habitat feature discoveries, implement the Wildlife Discovery Contingency Plan (Appendix D2 of the EPP). Discoveries will be discussed and resolved by the EI, Wildlife Resource Specialist(s), and the responsible regulatory agencies, if necessary.
	FISHERIES RESOURCES	No watercourses interact with the Project Footprint.
	HERITAGE RESOURCES	No known heritage resources interact with this site. If heritage resources not previously identified are found during construction refer to Section 6.0 of the EPP.
	OTHER CONSTRUCTION CONSIDERATIONS	N/A
	ACCESS CONTROL / OTHER	N/A
	RECLAMATION	Reclaim disturbed areas following abandonment activities. Reclamation and restoration measures may include natural regeneration (particularly in shrubby and graminoid wetlands or wetland fringes) or active restoration methods such as site preparation, conifer seedling planting and access control. Restore disturbed areas to preconstruction conditions to the extent practical. Follow Clean-up and Reclamation and Revegetation measures as outlined in Sections 15.0 and 16.0 of the EPP.

NOTES: Refer to the EPP for a complete understanding of the mitigation requirements for the Project.

SHEET REVISION: 0
DATE: September 2023
PROJECTION: Zone 10
DATUM: NAD 83
CONTRACTOR: Jacobs
DATE OF IMAGERY: 2021
PREPARED FOR: ENBRIDGE
PROJECT NUMBER: CE862600

Sources:
Footprint: Enbridge 2023; Watercourse Crossings, Wetlands, Vegatation: Jacobs 2023; Existing Pipeline: Enbridge 2022; Hydrology: NRCan 2007-2011; Road: NRCan 2014; Wildlife Ranges: Government of NWT; Site Imagery: Enbridge 2021; World Imagery: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community.

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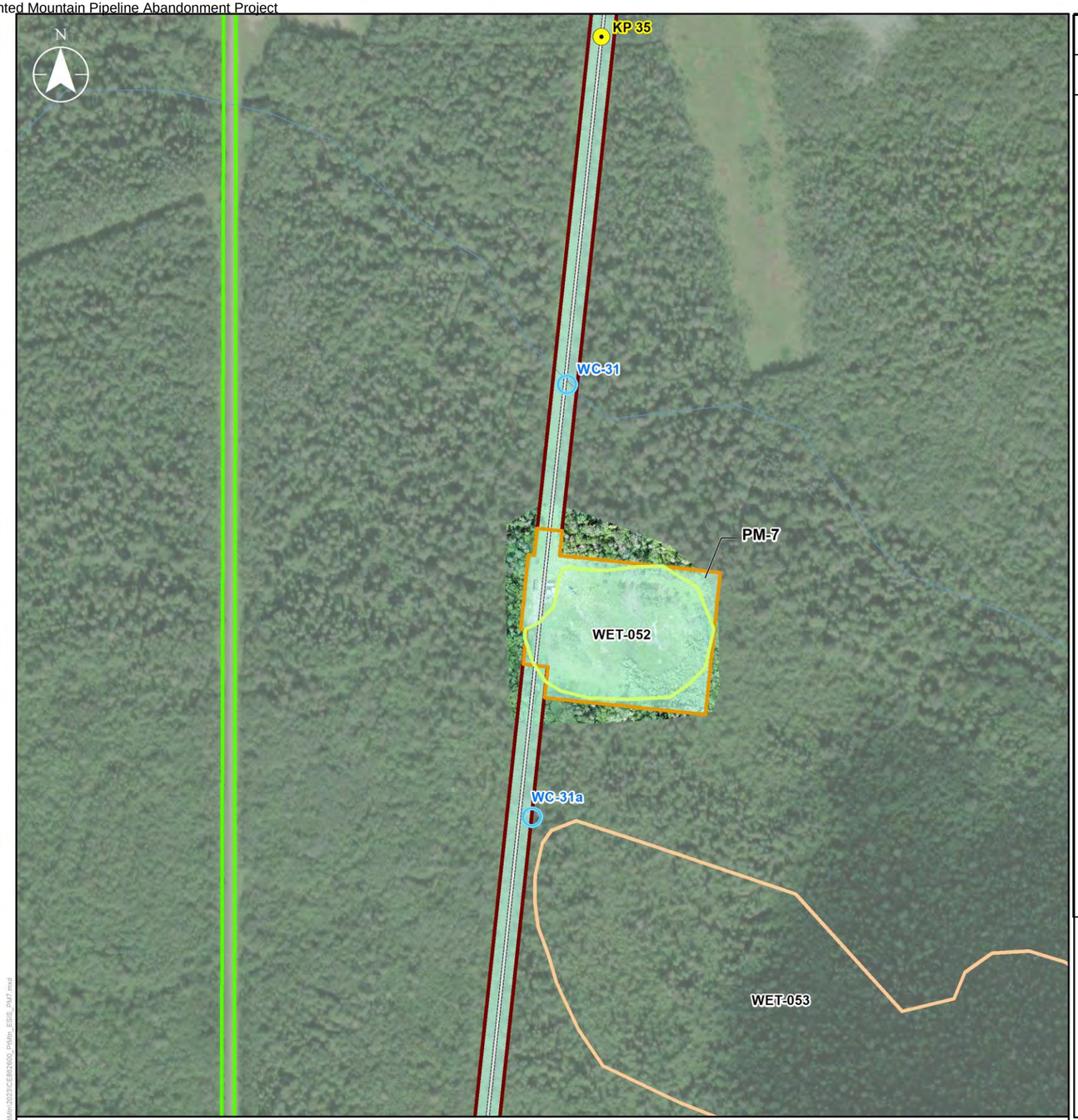
WESTCOAST ENERGY INC.

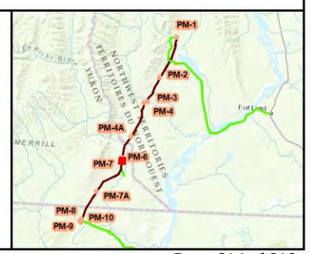
PM-6
POINTED MOUNTAIN PIPELINE ABANDONMENT PROJECT

ENVIRONMENTAL SITE INFORMATION SHEET



AERIAL PHOTOGRAPHY

Kilometre Post (KP)
Watercourse Crossing
Right-of-Way
Temporary Workspace
Access Road
Watercourse
Existing Pipeline
Wildlife
Nahanni Wood Bison Range (Entire Map Extent)
Wetland
Marsh
Swamp
Vegetation
Brushing Possible



PROJECT COMPONENT		PM-7 (ABANDONMENT, INFRASTRUCTURE REMOVAL, REMEDIATION)
LAND USE / LAND OWNERSHIP		Disturbed/Cleared/Shrubs/Treed – Mixed/Wetland – Crown Land Yukon
RESOURCE INFORMATION AND PROJECT SPECIFIC MITIGATION MEASURES	VEGETATION AND WETLANDS	<u>Wetlands</u> WET-052 Marsh within Project Footprint. Refer to Sections 11.2, 12.1, 13.0, 14.1, 16.3, 17.0. and 19.1 of the EPP for wetland mitigation. <u>Vegetation</u> A single patch of annual hawksbeard was observed at low density around the existing infrastructure during the vegetation survey in August 2021. Several sporadically occurring plants of perennial sow-thistle were observed at low density during the vegetation survey in August 2021. Mitigation may be warranted to reduce the potential spread of these species. Refer to Sections 5.0 and 8.0 of the EPP for weed control and vegetation clearing, respectively.
	WILDLIFE AND WILDLIFE HABITAT	Refer to Section 2.1 (Table 1) and Section 4.1 of the EPP for measures specific to wildlife and wildlife habitat. <u>Nahanni Wood Bison Range</u>: If bison area encountered, stop vehicles and equipment, allow the bison to move through the area undisturbed, and report the sighting to the EI. In the event of unanticipated wildlife or wildlife habitat feature discoveries, implement the Wildlife Discovery Contingency Plan (Appendix D2 of the EPP). Discoveries will be discussed and resolved by the EI, Wildlife Resource Specialist(s), and the responsible regulatory agencies, if necessary.
	FISHERIES RESOURCES	No watercourse interaction with the Project Footprint.
	HERITAGE RESOURCES	No known heritage resources interact with this site. If heritage resources not previously identified are found during construction refer to Section 6.0 of the EPP.
	OTHER CONSTRUCTION CONSIDERATIONS	N/A
	ACCESS CONTROL / OTHER	N/A
	RECLAMATION	Reclaim disturbed areas following abandonment activities Reclamation and restoration measures may include natural regeneration (particularly in shrubby and graminoid wetlands or wetland fringes) or active restoration methods such as site preparation, conifer seedling planting and access control. Restore disturbed areas to preconstruction conditions to the extent practical. Follow Clean-up and Reclamation and Revegetation measures as outlined in Sections 15.0 and 16.0 of the EPP.

NOTES: Refer to the EPP for a complete understanding of the mitigation requirements for the Project.

SHEET REVISION	DATE	PROJECTION	DATUM	CONTRACTOR
0	September 2023	Zone 10	NAD 83	Jacobs

Sources:
Footprint: Enbridge 2023; Watercourse Crossings, Wetlands, Vegatation: Jacobs 2023; Existing Pipeline: Enbridge 2022; Hydrology: NRCan 2007-2011; Road: NRCan 2014; Wildlife Ranges: Government of NWT; Site Imagery: Enbridge 2021; World Imagery: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community.

DATE OF IMAGERY: 2021
PROJECT NUMBER: CE862600
PREPARED FOR: ENBRIDGE

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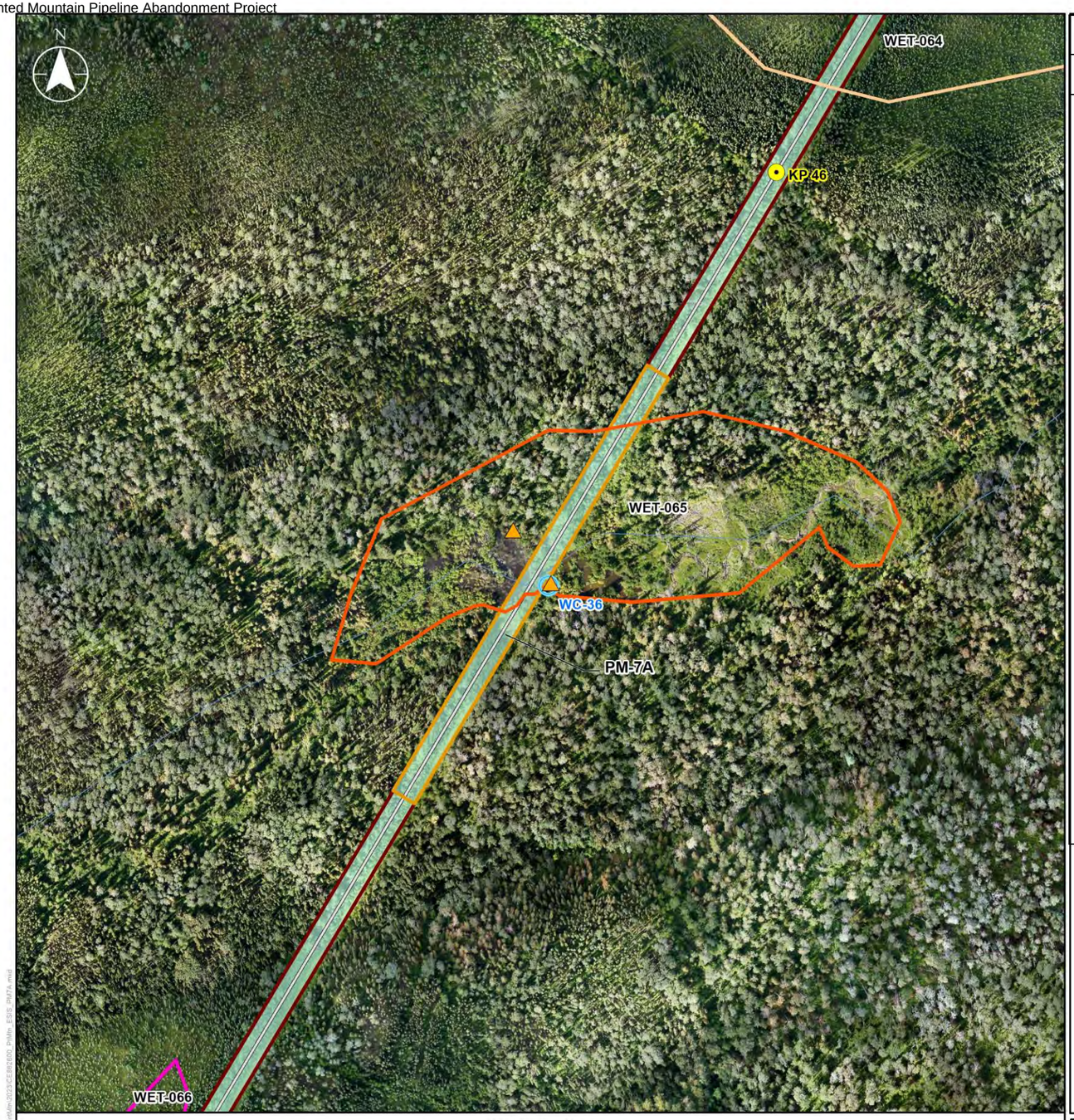
WESTCOAST ENERGY INC.

PM-7
POINTED MOUNTAIN PIPELINE ABANDONMENT PROJECT

ENVIRONMENTAL SITE INFORMATION SHEET



AERIAL PHOTOGRAPHY

- Beaver Dam
- Watercourse Crossing
- Kilometre Post (KP)
- Right-of-Way
- Temporary Workspace
- Watercourse
- Existing Pipeline

Wildlife
- Wood Bison Range (Entire Map Extent)

Wetland
- Fen
- Mixed Treed Swamp
- Swamp

Vegetation
- Brushing Possible

PROJECT COMPONENT		PM-7A (PIPELINE EXPOSURE REMOVAL)
LAND USE / LAND OWNERSHIP		Treed - Mixed/Shrubs/Wetland – Crown Land Yukon
RESOURCE INFORMATION AND PROJECT SPECIFIC MITIGATION MEASURES	VEGETATION AND WETLANDS	<u>Wetlands</u> WET-065 Mixed Treed Swamp within Project Footprint. Refer to Sections 11.2, 12.1, 13.0, 14.1, 16.3, 17.0. and 19.1 of the EPP for wetland mitigation. <u>Vegetation</u> Refer to Sections 5.0 and 8.0 of the EPP for weed control and vegetation clearing, respectively.
	WILDLIFE AND WILDLIFE HABITAT	Refer to Section 2.1 (Table 1) and Section 4.1 of the EPP for measures specific to wildlife and wildlife habitat. <u>Nahanni Wood Bison Range</u>: If bison area encountered, stop vehicles and equipment, allow the bison to move through the area undisturbed, and report the sighting to the EI. <u>Beaver Dam</u>: Obtain a General Wildlife Permit under the Yukon *Wildlife Act* for the removal of beaver dams. Complete beaver dam breaching and removal in accordance with appropriate instream works mitigation and the Federal *Code of practice for beaver dam breaching and removal* (Government of Canada 2023). In the event of unanticipated wildlife or wildlife habitat feature discoveries, implement the Wildlife Discovery Contingency Plan (Appendix D2 of the EPP). Discoveries will be discussed and resolved by the EI, Wildlife Resource Specialist(s), and the responsible regulatory agencies, if necessary.
	FISHERIES RESOURCES	WC-36 Unnamed tributary to the La Biche River Restricted Activity Period: September 2 to June 14 Refer to Sections 18.0 and 19.0 of the EPP for watercourse crossing and dewatering mitigation, respectively.
	HERITAGE RESOURCES	No known heritage resources interact with this site. If heritage resources not previously identified are found during construction refer to Section 6.0 of the EPP.
	OTHER CONSTRUCTION CONSIDERATIONS	N/A
	ACCESS CONTROL / OTHER	N/A
	RECLAMATION	Reclaim disturbed areas following abandonment activities. Reclamation and restoration measures may include natural regeneration (particularly in shrubby and graminoid wetlands or wetland fringes) or active restoration methods such as site preparation, conifer seedling planting and access control. Restore disturbed areas to preconstruction conditions to the extent practical. Follow Clean-up and Reclamation and Revegetation measures as outlined in Sections 15.0 and 16.0 of the EPP.

NOTES: Refer to the EPP for a complete understanding of the mitigation requirements for the Project.

SHEET REVISION	DATE	PROJECTION	DATUM	CONTRACTOR
0	September 2023	Zone 10	NAD 83	Jacobs

Sources:
Footprint: Enbridge 2023; Watercourse Crossings, Wetlands, Vegatation: Jacobs 2023; Existing Pipeline: Enbridge 2022; Hydrology: NRCan 2007-2011; Road: NRCan 2014; Wildlife Ranges: Government of NWT; Site Imagery: Enbridge 2021; World Imagery: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community.

DATE OF IMAGERY	PROJECT NUMBER	PREPARED FOR
2021	CE862600	ENBRIDGE

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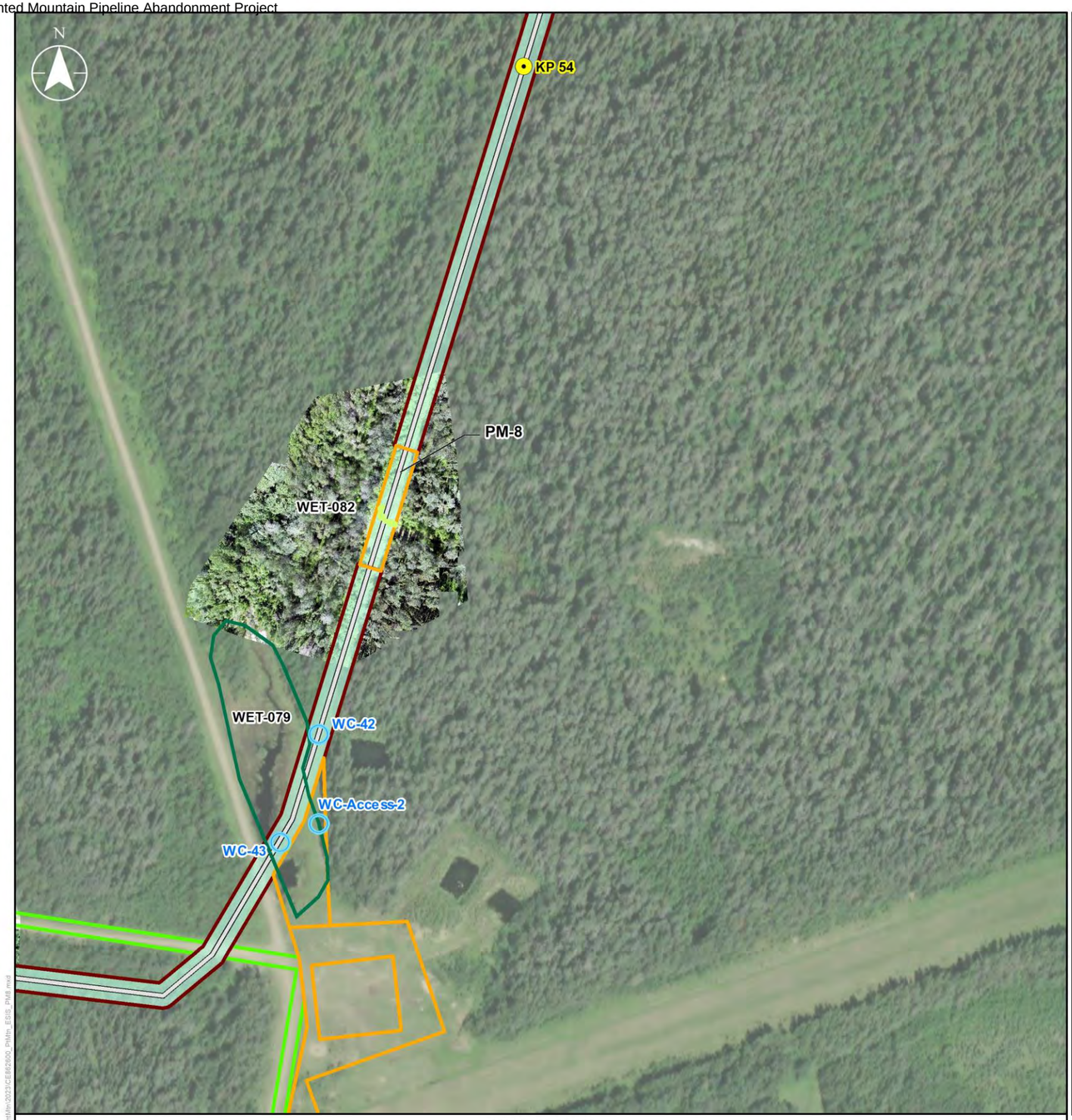
WESTCOAST ENERGY INC.

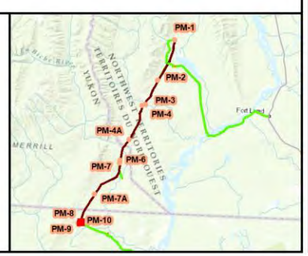
PM-7A
POINTED MOUNTAIN PIPELINE ABANDONMENT PROJECT

ENVIRONMENTAL SITE INFORMATION SHEET



AERIAL PHOTOGRAPHY

Kilometre Post (KP)
Watercourse Crossing
Right-of-Way
Temporary Workspace
Access Road
Existing Pipeline
Wildlife
Nahanni-Liard Wood Bison Population Range (Entire Map Extent)
Wetland
Marsh
Graminoid Marsh
Vegetation
Brushing Possible



PROJECT COMPONENT		PM-8 (ABANDONMENT AND INFRASTRUCTURE REMOVAL)
LAND USE / LAND OWNERSHIP		Cleared/Shrubs/Treed – Conifer/Wetland – Crown Land British Columbia
RESOURCE INFORMATION AND PROJECT SPECIFIC MITIGATION MEASURES	VEGETATION AND WETLANDS	<u>Wetlands</u> WET-082 Marsh within Project Footprint. Refer to Sections 11.2, 12.1, 13.0, 14.1, 16.3, 17.0. and 19.1 of the EPP for wetland mitigation. <u>Vegetation</u> Refer to Sections 5.0 and 8.0 of the EPP for weed control and vegetation clearing, respectively.
	WILDLIFE AND WILDLIFE HABITAT	Refer to Section 2.1 (Table 1) and Section 4.1 of the EPP for measures specific to wildlife and wildlife habitat. Implement measures to reduce human-wildlife conflict at camps. <u>Nahanni-Liard Wood Bison Population Range</u>: If bison area encountered, stop vehicles and equipment, allow the bison to move through the area undisturbed, and report the sighting to the EI. In the event of unanticipated wildlife or wildlife habitat feature discoveries, implement the Wildlife Discovery Contingency Plan (Appendix D2 of the EPP). Discoveries will be discussed and resolved by the EI, Wildlife Resource Specialist(s), and the responsible regulatory agencies, if necessary.
	FISHERIES RESOURCES	No watercourses interact with the Project Footprint.
	HERITAGE RESOURCES	No known heritage resources interact with this site. If heritage resources not previously identified are found during construction refer to Section 6.0 of the EPP.
	OTHER CONSTRUCTION CONSIDERATIONS	N/A
	ACCESS CONTROL / OTHER	N/A
	RECLAMATION	Reclaim disturbed areas following abandonment activities. Reclamation and restoration measures may include natural regeneration (particularly in shrubby and graminoid wetlands or wetland fringes) or active restoration methods such as site preparation, conifer seedling planting and access control. Restore disturbed areas to preconstruction conditions to the extent practical. Follow Clean-up and Reclamation and Revegetation measures as outlined in Sections 15.0 and 16.0 of the EPP.

NOTES: Refer to the EPP for a complete understanding of the mitigation requirements for the Project.

SHEET REVISION: 0	DATE: September 2023	PROJECTION: Zone 10	DATUM: NAD 83	CONTRACTOR: Jacobs
			DATE OF IMAGERY: 2021	PREPARED FOR: ENBRIDGE
			PROJECT NUMBER: CE862600	

Sources:
Footprint: Enbridge 2023; Watercourse Crossings, Wetlands, Vegatation: Jacobs 2023; Existing Pipeline: Enbridge 2022; Hydrology: NRCan 2007-2011; Road: NRCan 2014; Wildlife Ranges: Government of NWT; Site Imagery: Enbridge 2021; World Imagery: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community.

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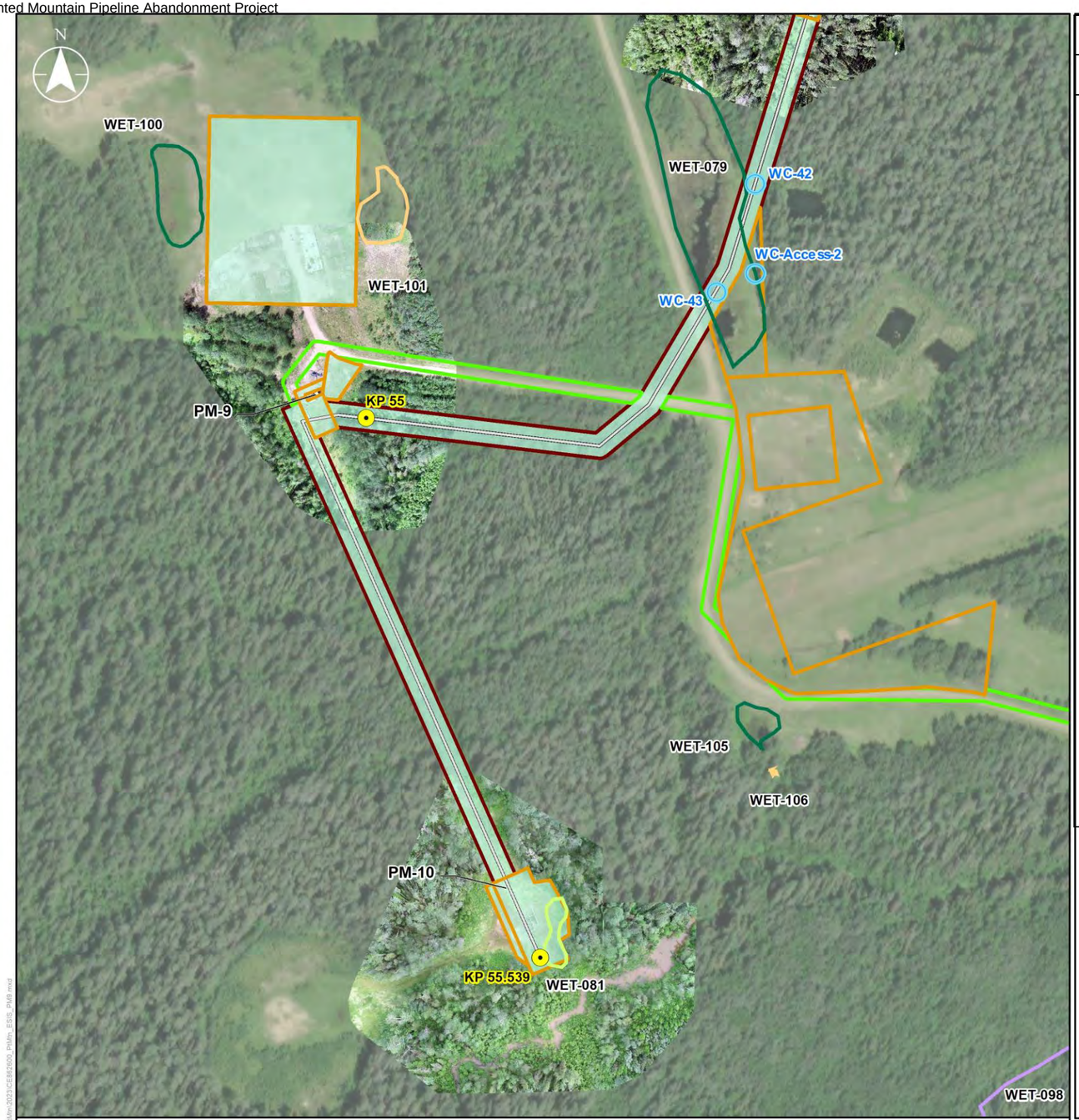
WESTCOAST ENERGY INC.

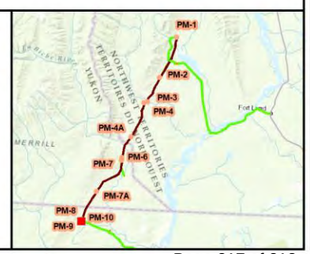
PM-8
POINTED MOUNTAIN PIPELINE ABANDONMENT PROJECT

ENVIRONMENTAL SITE INFORMATION SHEET



AERIAL PHOTOGRAPHY

Kilometre Post (KP)
Watercourse Crossing
Right-of-Way
Temporary Workspace
Access Road
Existing Pipeline
Wildlife
Nahanni-Liard Wood Bison Population Range (Entire Map Extent)
Wetland
Bog
Marsh
Graminoid Marsh
Shrub Swamp
Vegetation
Brushing Possible



PROJECT COMPONENT		PM-9 (ABANDONMENT AND INFRASTRUCTURE REMOVAL)
LAND USE / LAND OWNERSHIP		Disturbed/Cleared/Treed – Mixed – Crown Land British Columbia
RESOURCE INFORMATION AND PROJECT SPECIFIC MITIGATION MEASURES	VEGETATION AND WETLANDS	Wetlands No wetlands interact with the Project Footprint. Vegetation A few sporadically occurring individual oxeye daisy plants were observed at low density during the vegetation survey in August 2021. A single patch of scentless chamomile plants was observed at low density during the vegetation survey in July 2023. Mitigation may be warranted to reduce the potential spread of these species. Refer to Sections 5.0 and 8.0 of the EPP for weed control and vegetation clearing, respectively.
	WILDLIFE AND WILDLIFE HABITAT	Refer to Section 2.1 (Table 1) and Section 4.1 of the EPP for measures specific to wildlife and wildlife habitat. Implement measures to reduce human-wildlife conflict at camps. Nahanni-Liard Wood Bison Population Range: If bison area encountered, stop vehicles and equipment, allow the bison to move through the area undisturbed, and report the sighting to the EI. In the event of unanticipated wildlife or wildlife habitat feature discoveries, implement the Wildlife Discovery Contingency Plan (Appendix D2 of the EPP). Discoveries will be discussed and resolved by the EI, Wildlife Resource Specialist(s), and the responsible regulatory agencies, if necessary.
	FISHERIES RESOURCES	No watercourse interaction with the Project Footprint.
	HERITAGE RESOURCES	No known heritage resources interact with this site. If heritage resources not previously identified are found during construction refer to Section 6.0 of the EPP.
	OTHER CONSTRUCTION CONSIDERATIONS	N/A
	ACCESS CONTROL / OTHER	N/A
	RECLAMATION	Reclaim disturbed areas following abandonment activities. Reclamation and restoration measures may include natural regeneration (particularly in shrubby and graminoid wetlands or wetland fringes) or active restoration methods such as site preparation, conifer seedling planting and access control. Restore disturbed areas to preconstruction conditions to the extent practical. Follow Clean-up and Reclamation and Revegetation measures as outlined in Sections 15.0 and 16.0 of the EPP.

NOTES: Refer to the EPP for a complete understanding of the mitigation requirements for the Project.

SHEET REVISION	DATE	PROJECTION	DATUM	CONTRACTOR
0	September 2023	Zone 10	NAD 83	Jacobs

Sources:
Footprint: Enbridge 2023; Watercourse Crossings, Wetlands, Vegetation: Jacobs 2023; Existing Pipeline: Enbridge 2022; Hydrology: NRCan 2007-2011; Road: NRCan 2014; Wildlife Ranges: Government of NWT; Site Imagery: Enbridge 2021; World Imagery: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community.

DATE OF IMAGERY	PROJECT NUMBER	PREPARED FOR
2021	CE862600	ENBRIDGE

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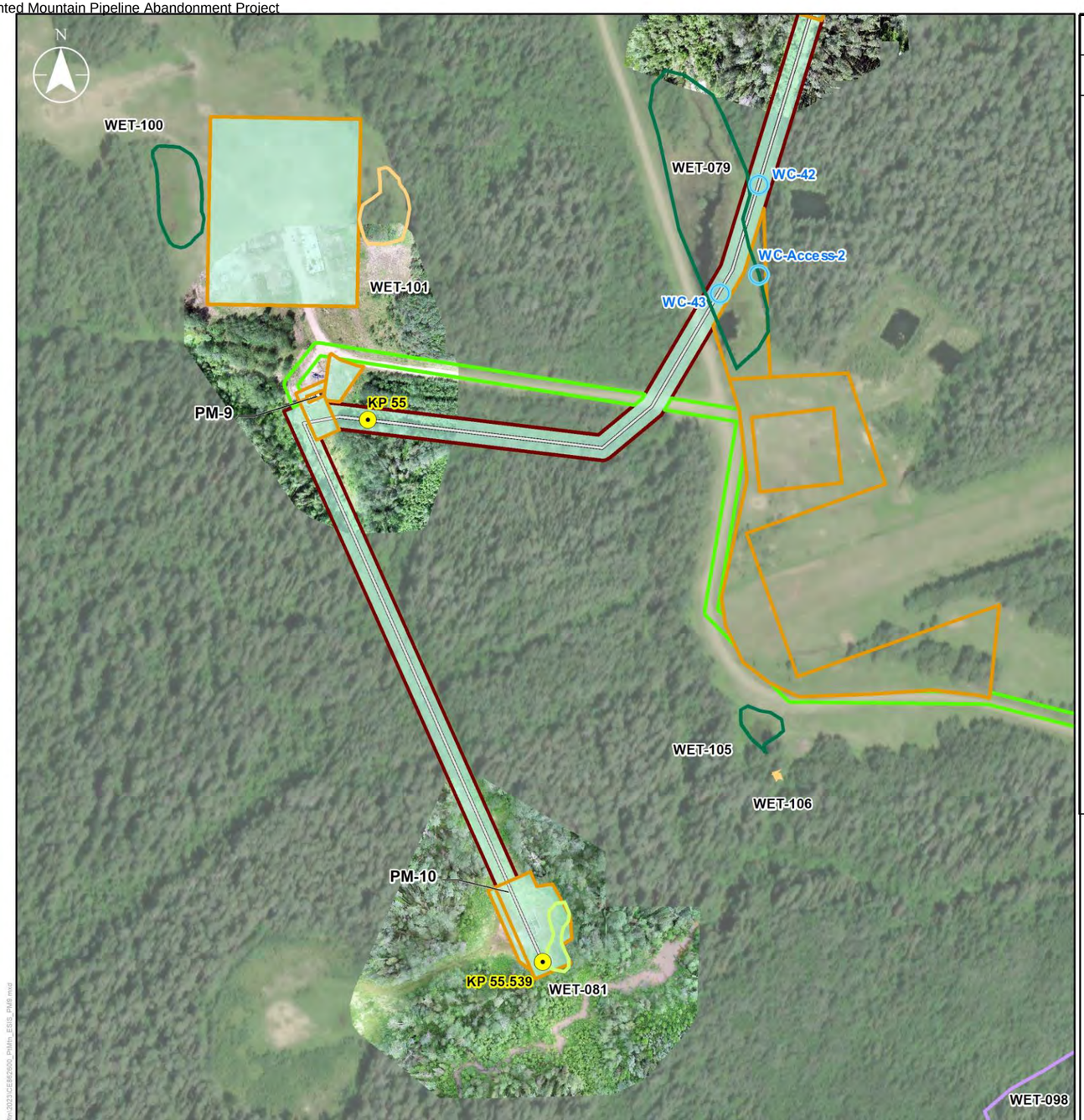
WESTCOAST ENERGY INC.

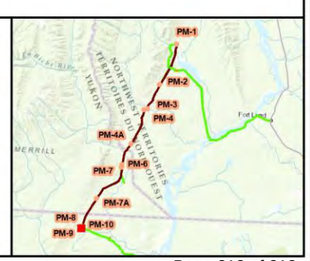
PM-9
POINTED MOUNTAIN PIPELINE ABANDONMENT PROJECT

ENVIRONMENTAL SITE INFORMATION SHEET



AERIAL PHOTOGRAPHY

Kilometre Post (KP)
Watercourse Crossing
Right-of-Way
Temporary Workspace
Access Road
Existing Pipeline
Wildlife
Nahanni-Liard Wood Bison Population Range (Entire Map Extent)
Wetland
Bog
Marsh
Graminoid Marsh
Shrub Swamp
Vegetation
Brushing Possible



PROJECT COMPONENT		PM-10 (ABANDONMENT AND INFRASTRUCTURE REMOVAL)
LAND USE / LAND OWNERSHIP		Disturbed/Cleared/Wetland/Shrubs/Treed – Deciduous – Crown Land British Columbia
RESOURCE INFORMATION AND PROJECT SPECIFIC MITIGATION MEASURES	VEGETATION AND WETLANDS	<u>Wetlands</u> WET-081 Marsh within Project Footprint. Refer to Sections 11.2, 12.1, 13.0, 14.1, 16.3, 17.0. and 19.1 of the EPP for wetland mitigation. <u>Vegetation</u> A single patch of oxeye daisy plants was observed at low density during the vegetation survey in August 2021. Mitigation may be warranted to reduce the potential spread of these species. Refer to Sections 5.0 and 8.0 of the EPP for weed control and vegetation clearing, respectively.
	WILDLIFE AND WILDLIFE HABITAT	Refer to Section 2.1 (Table 1) and Section 4.1 of the EPP for measures specific to wildlife and wildlife habitat. <u>Nahanni-Liard Wood Bison Population Range</u>: If bison area encountered, stop vehicles and equipment, allow the bison to move through the area undisturbed, and report the sighting to the EI. In the event of unanticipated wildlife or wildlife habitat feature discoveries, implement the Wildlife Discovery Contingency Plan (Appendix D2 of the EPP). Discoveries will be discussed and resolved by the EI, Wildlife Resource Specialist(s), and the responsible regulatory agencies, if necessary.
	FISHERIES RESOURCES	No watercourses interact with the Project Footprint.
	HERITAGE RESOURCES	No known heritage resources interact with this site. If heritage resources not previously identified are found during construction refer to Section 6.0 of the EPP.
	OTHER CONSTRUCTION CONSIDERATIONS	N/A
	ACCESS CONTROL / OTHER	N/A
	RECLAMATION	Reclaim disturbed areas following abandonment activities. Reclamation and restoration measures may include natural regeneration (particularly in shrubby and graminoid wetlands or wetland fringes) or active restoration methods such as site preparation, conifer seedling planting and access control. Restore disturbed areas to preconstruction conditions to the extent practical. Follow Clean-up and Reclamation and Revegetation measures as outlined in Sections 15.0 and 16.0 of the EPP.

NOTES: Refer to the EPP for a complete understanding of the mitigation requirements for the Project.

SHEET REVISION	DATE	PROJECTION	DATUM	CONTRACTOR
0	September 2023	Zone 10	NAD 83	Jacobs

Sources:
Footprint: Enbridge 2023; Watercourse Crossings, Wetlands, Vegatation: Jacobs 2023; Existing Pipeline: Enbridge 2022; Hydrology: NRCan 2007-2011; Road: NRCan 2014; Wildlife Ranges: Government of NWT; Site Imagery: Enbridge 2021; World Imagery: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community.

DATE OF IMAGERY: 2021
PROJECT NUMBER: CE862600
PREPARED FOR: ENBRIDGE

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Original Page Size: 11 x 17

WESTCOAST ENERGY INC.

PM-10
POINTED MOUNTAIN PIPELINE ABANDONMENT PROJECT

ENVIRONMENTAL SITE INFORMATION SHEET